Sub: Invitation For Investment Opportunities

The Ministry of Industry and Minerals / Republic of Iraq has the pleasure to announce several Investment Opportunities to rehabilitate and modernize its selected factories in different industrial sectors.

Specialized International Companies, Businessmen, and Financers are invited to participate in these Opportunities that may achieve economic feasibility and create rapid positive revenues.

The concept is that the investor and his supporting team shall rehabilitate and manage the plant on his account against a share of production achieved for a negotiated period of time.

The strength points of these opportunities are:-

- 1- High local demand of the products.
- 2- Availability of trained and experienced manpower.
- 3- Availability of local raw materials.
- 4- Adequate investment legislations and favorable terms for agreement.
- 5- Fast return on investment.

The Ministry expresses its willingness to assist you with all the necessary clarification as well as facilitating necessary visits to the factories (if required).

You are kindly requested to submit your offers within the indicated validity (Tuesday, June 5,2007):-

Contact Details

Tel: 00964 1 8162006 Ext. 3127, 3122

E-mail :invest@industry.gov.iq Mobile: 00964 7901 371 867

Address: Ministry of Industry / Investment Department .

Nidhal Street Baghdad – Iraq Republic of Iraq Ministry of Industry & Minerals Investment Department



Investment file

For Rehabilitation of Abu-AL-Khaseeb Fertelizer plant.

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I- INVESTMENT OPPORTUNITY

Investing The Urea Fertilizers plant in Abu Al-khasib/ Basrah South of Iraq

The Ministry of Industry and Minerals (MIM) / Investment Department invites international Competent Companies and Investors to invest in Nitrogen Fertilizer plant (Urea) located at Abu Al-khasib (25KM) south of Basrah – (South of Iraq) through implementing and Financing the rehabilitation and reconstruction activities , manage and operate , the plant at the investor account against share of product accomplished.

Brief history of the project

The plant was implemented by the Japanese firm "MHI" as main Contractor during the period 1973-1976 at a design capacity of 420 000 ton Urea /year. As a result of Military hostilities between 1980-1988 the plant suffered heavy damages. In 1993 a limited reconstruction and rehabilitation work was performed (detailed record of this work is available attached to the Investment file).

The plant located on the coast of shat Al- Arab river near Abu- floos river, south of Abu Al-khasib town, river dock yard is available to load bagged Urea for export.

The plant consumes at its design capacity 40 million standard cubic feet of natural gas per day.

The plant consists of the following main units:-

- Ammonia Unit.
- Urea Unit.
- Industrial utility Units.
- General services (Administration, stores, workshop buildings ... etc).

Strength point of the project

- 1- The plant is located at an area where low cost labor is available,
- 2- Secured and safe area.
- 3- Availability of Natural gas up to plant site .

- 4- Availability of infra-structure such as roads, power transmission and distribution network
- -5 Availability of river dock yard for the purpose of exporting Urea Fertilizer directly from the plant .

Guide line for Investment requirements

- 1. The investor should perform a study on site and plant condition in details, suggesting recommendations for the required measures for revamping and rehabilitations activities, Investment required and detail of Implementation program.
- 2. The investor should have a plan about reconstruction, new installations, replacement and rehabilitation of all the plant, targeting operation with the design capacity or higher according to a technical economical feasibility study on the Investor account.
- 3. To present the investors consideration and suggestions for the formula of profit sharing, product sharing or partnership in capital, in addition to the partnership duration.
- 4. the Investor may (before or after purchasing the investment file) visit the plant to conclude detailed idea about equipments status, documents and for any clarifications necessary.

- 5. The investor should present his plans and philosophy of how to operate and manage the plant according to the newest techniques also his views to market Urea inside Iraq and for Export , also his plans for training and qualifying the Iraqi staff .
- 6. The Investor shall take into consideration to make electricity power supply available to meet the plant requirements .

Concept and Evaluation Criteria

The evaluation criteria for selecting the investor shall be :-

- 1- The share of MIM as a percentage of production offered by the Investor, (not less than the production quantity of year 2002 as a minimum).
- 2- Rehabilitation plan and scope of work.
- 3- Obligation of the Investor/ group of investors to install electrical generation unit with capacity capable to operate all plant production & utilities during and after rehabilitation activities.

4- Obligation of the Investor/ group of investors to keep all current plant personnel, paying their salaries & incentives, yearly increments in salary & any increase obtained according to Iraqi laws, in addition to incentives on increase in production.

- 5- The period planned to implement the rehabilitation activities to conclude the targeted production capacity of the plant.
- 6- The least period of the investment contract.
- 7- Maximum production capacity obliged to be fulfilled by the Investor.
- 8- The Investor Financial Capability to fulfill his under-taking to rehabilitate the plant supported by:-
 - Financial statements for the last three years.
 - Supporting letter from banks and financial houses show the Investor financial capabilities.
 - Documents on the financial capabilities of the investor partners or the Supporting parties.
 - Documents on financial facilities that banks may grant to the investor.

9- The technical and managerial capacity of the investor and his supporting partners to achieve the rehabilitation works (Engineering Companies, Vendors, Site work Contractors), operate and manage the plant after completion of rehabilitation, organizational structure of the investor/group of investors to be provided.

10-Similar experience of the investor and his supporting companies in similar works with documental reference.

The Investor Obligations:

<u>Ist</u>: It is important to the interested investor, before and after purchasing the investment file, to visit the plant to have detail information on site condition, the prevailing conditions of the plant, look at any necessary drawings, and present any request for clarification and questions to the specialized team at the address mentioned below. According to detailed investigation, in addition to the information's and general conditions, The Investor might Submit his investment offer which should contain detailed suggested rehabilitation works, expected investment amount, rehabilitation duration, rehabilitation procedures, intermediate & final targeted production capacities, investment package agreement period, percentage of product share, philosophy and detail procedure for managing & operating the factory before and after completion of rehabilitation activities until the end of investment agreement.

file conditions:

1. The investment package should assure the installation of electric generation unit with a capacity capable to operate all factory units, buildings and utilities.

- 2. The investment package should include obligation to keep & getting use from the current available factory employee and assure the payment of their salaries & incentives.
- 3. The rehabilitation package should be fulfilled all factory production units, utilities, other facilities & Quarry equipment.
- 4. It is preferable for the interested investors to arrange seminar for the project team and the related staff, to show his qualification experience and points of view for the Rehabilitation approach.

Measures

- 1. The Interested investor may send his authorized representative to the:
 - 1-1:Ministry of Industry & Minerals (MIM)/ Investment Dept.
 - Al-Nidhal street, Baghdad \Iraq
 - 1-2: State Company for Fertilizers / Basrah-Iraq

To purchase the investment file against an amount of 250 US\$ (only two hundred and fifty US\$) or equivalent in Iraqi currency ;starting on 15/4/2007

- 2-A specialized team from the Iraqi side shall study all proposals and select the best among them.
- 3-Negotiation will be held with the investor of the best proposal(offer)to finalize and sign the agreement.
- 4-The investor shall present his proposal \offer on or before the day $5\6\2007$ to the Ministry of Industry & Minerals .
- 5-For clarifications, contact the following address:
- -Ministry of Industry & Minerals\Investment Department,

Al-Nidhal Street- Baghdad |Iraq Tel: 009641 8162006 \ ext.3127

Mobile: 00964 790137867

e-mail: invest@industry.gov.iq

Investment Department

Willistry of industry & Willierais Republic of Iraq

II- General Conditions:

(For Plant's Rehabilitation Agreement)

1- Scope of rehabilitation works:

The "investor" shall undertake, according to the agreement, to rehabilitate and develop all production units and utilities in a manner to guarantee achieving the targeted capacity within a certain period. He may reach the targeted capacity in stages. The "investor" shall in his proposal, specify the target capacity of each stage according to his action plan.

2- The Agreement concept:

The core concept of the "investment Agreement" is that the "investor" shall perform all rehabilitation works in accordance with the terms of the investment file, and to undertake management and operation of the plant throughout the period of rehabilitation and afterwards on the agreed upon capacity, including supply and transport of raw material, operational and secondary materials, cost of water, fuel, electricity etc, additionally to pay the salaries and allowances of personnel(staff) (including labors) working at the state company during the rehabilitation period, and afterwards, all at his own expenses against having a share of the production.

3- Action plan:

The "investor" shall submit, within two months from signing the "Agreement" a detailed action plan and a detailed time schedule on the implementation of the rehabilitation works, taking into consideration stoppage of production units, for necessity only, for limited time in order to keep the continuity of production as much as possible during the rehabilitation period.

4- <u>Maximum Use of Employee during Rehabilitation Agreement:</u>
A- The "investor" shall, within two months from signing the Agreement, in coordination with the plant management, submit a plan on maximum use of the plant Employee in access to the

he performs or in other projects he may establish in Iraq.

B- The "investor" shall keep all the employees pay their salaries and annual allowances according to prevailing rates of their colleagues at the Ministry of Industry and Minerals, pay incentives in accordance with an incentive system based on achieving the target capacities to be agreed upon before singing the 'Agreement'

5- <u>Penalty on Delay & non-achieving Production Guaranteed</u> capacities:

A: The investor shall undertake to supply the Ministry of Industry and Minerals /State Company with its share of the targeted stages capacities, regardless of achieving or not that targeted capacity on the contractual date.

B: The Penalty in (A) above shall continue for (3 months) only, starting from the contractual date for achieving that stage capacity. The investor shall be considered failed to complete the work if he couldn't achieve the contractual target capacity at the expiry date of the above mentioned period.

In case the investor succeeds in achieving the targeted production capacity within this (grace) period, this period shall not be a reason or part of request to extend the timing of the succeeding target capacities. Timing schedule should be respected as stated in the Agreement.

C: In case the investor failed to achieve the FINAL targeted capacity (at the end of the rehabilitation period), for a shortage not exceeding than 10% of the targeted FINAL capacity, he shall be liable to supply- as a Penalty- a quantity of production amounting to one ton of production for each one ton shortage.

In case this shortage is more than (10%). The investor should take, within six month, any necessary measures to rectify the situation to reach the contractual targeted capacity on his account. The investor during this period (6 months) shall continue to supply the Ministry

production mentioned above.

In case the investor fail at the end of this period to achieve the targeted production capacity, he shall be considered completely failed to fulfill his contractual obligations and the Agreement shall be considered terminated without any right to the investor to claim for any compensation on actual cost or expenses he has borne for his activities of this "Agreement"

6- Insurance:

The "investor" shall be obliged after signing the "investment Agreement" to get an "All risks insurance" policy for the plant and to insure all plant personnel against work accidents and risks.

7- Abide to labor laws::

The "investor" shall abide to all labor laws and the Iraqi instruction safety rules.

8- Letter of Guarantee:

The "investor" shall, on signing the "Agreement" submit on unconditional letter of Guarantee issued by a recognized Bank amount agreed upon later, The Letter of Guarantee shall be released after the expiry date of the "Agreement" and hand - over the plant.

The Ministry of Industry and Minerals shall have the right to, without court warning or judgment, confiscate the amount of the letter of guarantee in case of regress or failure of fulfillment of the investor obligations.

9- Electricity Generation unit:

The "investor" shall undertake to assure the availability of Electricity generation of a capacity sufficient to meet plant and services requirement of electric power at full production capacity.

10- Plant Management:

The "investor" shall present his work program containing the way he intends to manage the plant, technically and administratively to insure a smooth operation and best performance to achieve the period of rehabilitation and afterwards.

11- Property of executed rehabilitation works:

All supplied and executed works of rehabilitation in accordance with the investment Agreement, after the expiry date of the agreement shall remain in the plant and will be within its property. This does not include personal materials used by the staff of the "investor" personnel, for which he can re-export after listing quantity and type.

12- Continuous Maintenance during Agreement period:

The investor, after completion of rehabilitation works shall continue to achieve agreed upon capacity by performing continuous necessary maintenance during the "Agreement" period and undertake to handover the plant after the expiry date of the Agreement in good technical condition able to produce at the same production rate agreed upon.

13- Letting of Agreement:

The "investor" shall not be allowed to letting the whole Agreement or part of it to a third party without a written approval from the Ministry of Industry & Minerals.

14- Materials used in rehabilitation:

All materials, equipment, machines and their spare parts to be used for rehabilitation should be brand new, reliable and genuine.

15- Monthly Report:

The "investor" shall submit a monthly report to the Ministry of industry & Minerals / technical committee, showing the progress of rehabilitation works and discuss the report to facilitate any obstacles he may meet.

16- Exemption of custom duties:

All equipment, materials, apparatus and their parts imported by the investor for the purpose of rehabilitation works which shall be part of permanent work certified by the Ministry/ state company other exemptions and privileges in accordance with prevailing laws,
in his proposal.

17- <u>Inventory materials at plant stores:</u>

All inventory materials owned by the state company should be listed and priced by the Ministry / State Company. The investor have the option to buy all or part of these materials in case he needs them for the rehabilitation work.

18- Security:

In due time, the investor shall coordinate with the state company management to organize the guard and security of the plant. In such a way that the responsibility of the security and safety inside the plant lay on the investor responsibility, and out side the plant on the relevant Governmental authorities responsibility.

19- Laws and regulation:

The investor shall abide with terms of prevailing Iraqi laws and regulations when performing his obligations of the "Agreement" with out jeopardize to his privileges of the "Agreement".

20- Agreement Period:

The investor, in his proposal, shall specify the minimum Agreement period he finds it necessary. At the end of this period the Agreement shall be ended unless the two parties agree on extension.

21- Entry/ exit visa and Residence permits:

The Ministry/ State Company shall support the investor to obtain Entry/ Exit visa and Residence permits for his Employees according to prevailing Rules and Regulations.

22- Force Majors:

The "Agreement" shall contain "Force Major" clause and the rights and obligations of each party on this case. The prevailing conditions at the time of signing the Agreement will not be considered a force major case.

23- Dispute settlement:

case of failure to reach an amicable settlement the parties may apply
the Arbitration procedures of the prevailing laws in Iraq.

The Iraqi courts, only, shall have the jurisdiction to look in disputes.

24- Care of works:

The "investor" throughout his work in rehabilitation and development shall take due care of the plant, its machines, equipment and facilities, etc. paying utmost care to safety regulations during the Rehabilitation Agreement period.

25- <u>Good Implementation</u>

In case it appears to the Ministry of Industry/ technical committee, that a work is done inadequately, or using improper material or by unqualified labors or in a way endangering other equipment or facilities, the investor should agree to the MIM/ technical committee written request to stop the work and remedy the situation through an action to be agreed upon in a joint meeting.

26- Product Marketing:

The "investor" shall have the right to sell his share locally at the price he finds suitable and export the excess abroad.

27- Secrecy:

The "investor" undertake to keep the informations contained in the "Investment Agreement" confidential. He has no right to disclose or transmit the informations to other parties (except his partners) before he gets a written approval from the Ministry.

28- <u>The "investor" legal entity registration:</u>

The "investor" or the investing group shall establish a legal entity to perform the activities of the Agreement which should be registered at the Companies Registrar office in accordance with the Iraqi Ministry of Trade regulations and terms of companies law No. 21 for the year 1997 and its amendments.

29- Final Report:

over to the Ministry / state company a detailed report targeting to help the Ministry / state company to keep the smooth efficient operation and maintenance of the plant (operation manual, maintenance manuals, inquiry and ordering Manuals and Inventory records etc).

30- Common services:

The investor and the Ministry / state company shall coordinate to control and run the facilities which serve other parties-such as water supply in a-way that such requirements of other parties shall be ensured.

31- Previous liabilities and Obligations:

The investor shall not be part or responsible of any liabilities and Obligations on the Ministry / state company before signing the Agreement concerning the activities of the state company/ Plant The same applies on the other parties liabilities and obligations towards the Ministry or the company or the plant.

32- Termination:

In case this Agreement is Terminated by the Ministry of Industry for no reason related to the failure of the investor to fulfill his contractual obligations, the Ministry shall compensate the "investor" for the actual expenses he spent to Implement his activities according to this Agreement.

33- Present Production:

The "investor" under take to sell to the Ministry at cost the present quantity produced during the period of running the plant parallel to the rehabilitation activities until the end of the first year from the Agreement validity.

In Case the whole quantity received by MIM at prevailing rate, before the end of the year, then the sharing formula shall be applied according to the agreement.

34- Site handover and effective dates:

production stages and final production capacities, shall be counted starting from the date of handing over the plant to the investor to be within three months from the date of signing the Agreement otherwise the terms of clause (8) of this Agreement shall be applied.

1- Introduction:

The construction of Abu-ALkhaseeb fertilizer plant started on 1973 and was completed on 1976 at a design capacity of (420000) metric ton /year of Prilled urea . The main contractor was the Japanese Company Mitsubishi heavy industries (MHI) . The plant owner is the Ministry of Industry and Minerals (MIM) .

The plant is situated on shat – Alarab river bank adjacent to Abu floos river near Abu-Alkhasseeb town , (25~KM) south of Basrah city (South of Iraq) . (see map enclosed) .

The plant was operated on 1977, it was running until 22/9/1980, when stopped due to the Iranian – Iraqi war outbreak . the plan suffered during the war severe damages .

Rehabilitation work commenced 1993 by Iraqi companies under the supervision of the state company for industrial design and consultancy Ministry of Industry (SIDCCO) . The first step was to clear the districted structure .

. A comprehensive inspection of the status was prepared by a team of Engineers from (SIDCCO) .

On the basis the that a plan for rehabilitation was organized and started . According to the evaluation of (SIDCCO) 60% of work was completed . However the Rehabilitation work stopped due to lack of foreign Financial resources and the economical embargo imposed on Iraq during that period .

2- The Investment targeted:

<u>Interested company or group of companies (The Investor) shall be required</u> to do the following:-

* Rehabilitate and reconstruct all the units of the plant, in order to get a plant working at the design capacity at the end of the Rehabilitation work.

* depute a team of technical experts to inspect the site, test and evaluate the scope of work needed to reach the design capacity (or higher) with the specification required of the product. The plant administration shall make available to the investor team all technical data, drawings, spec. to enable the investor to perform an effective site inspection.

- * The Investor shall prepare a technical report showing his proposal for the work to be done, which shall be discussed with the Ministry technical team for the purpose of preparing the final "Technical Report".
- * The Investor shall take into consideration to provide his own generation of Electric power at a capacity sufficient for the plant requirement .
- * The Investor is expected to arrange with partners of financial capacity to finance the rehabilitation work, Competent Engineering Company, Competent Construction Company to reconstruct the plant, operation, running, and management of the plant according to the following:-
- * present his proposal "Technical and Commercial" showing his suggested share in profit /or production based on his estimate of Invested money , his proposal on method of partnership in management and running the plant , marketing of the product (Local and Export) , and any other conditions he finds it necessary .

The Ministry shall negotiate the Investor of the best proposal to reach a final Agreement .

3- General description of the plant and process :

The plant consists of Ammonia Unit, Urea Unit, Utilities and Offsite facilities.

General spec . of these units are included in part (1) of the investment file .

Prevailing status of the plant components are also available in a separate report .

Interested Investors may Familiarize themselves with the design and construction drawings of the original project in order to evaluate the scope of work needed and its relevant cost.

4- Prevailing condition of the plant :

The prevailing status of the plant is explained in part (2) of the investment file. the SIDCOO evaluation of the scope of work needed is given in part (3).

5- Raw material (Feed stock):

Natural gas

A. Quantity of natural gas (40) million cubic feet /day .

Chemical Analysis mole %.

	average	range of variation	
	(%mole)	(%mole)	
Methane	75.5	80.5 – 70.5	
Ethane	13	11 - 15	
Propane	5.4	3.8 - 7	
N – Butane	2	1 - 3	
ISO – Butane	0.7		
N – Pentane	0.5		
SO_2	1.6		
Ar	zero	2.9 or less	
N_2	1.3	J	

B- Impurities

Sulfur Content PPm (size)

Non organic sulfur
organic sulfur
Total sulfur content
Low calorific value at 25
Conditions at boundary limit of the plant

Temp. 4-5 C

Pressure 38.7 Kg/cm² gauge Max 28.7 Kg/cm² gauge Min

6- product specification :

A. Ammonia

State: liquid

Humidity : 0.3% weight max.
Oil content : 5 ppm weight max.

B- Urea

Physical properties Shape: free solid prills.

Color: white min

Grain size: 90% min of prills of .. 1-2.5 MM DIA

Melting point : 132.7 C Specific gravity : 1.335 at 20 C Density : 0.75 ton / M³

Solubility: quickly soluble in water.

Chemical Properties

Total Nitrogen: 46% weight max.

Birett content : 1% weight max.

Humidity : 0.3% weight max . Iron : 2 ppm weight max . Color : 10 Degrees (Hazen)

7- Local Market Demand:

There are now tow plant owned by the Ministry of Industry producing Urea fertilizer at a total design capacity of 1.5 million metric ton/year. However the plants nowadays are working at a very low production rate due to many technical problems. There is a plan for rehabilitation to improve their production capacity.

Local production and demand as follows:-

A. Total Urea production year 2004 338121 m. ton

Total production estimated

after rehabilitation year 2007 1060 000 m. ton

B. Local demand

prevailing demand 1071 000 m. ton / year

Expected year 2007 1360 000 year

Expected 2012 1812 000 m. ton /year

8. Human Resources:

Iraq possess trained skilled and semi-skilled manpower, plus technicians graduated from colleges, technical schools and Industrial Institutes.

and technicians gained wide accumulative experience through out these
years.

Additionally the Investor may hire specialists and experts from outside Iraq for certain period in accordance with the guide line given in the item "Investors obligations" below.

9- Environmental Requirements and standards:

The investor obliged to fulfill (ISO-14000) and the following Environmental requirements:-

a-The investor must present an environmental impact assessment (EIA) certified by the ministry of Environment, and must include:

- 1- The environmental impact evaluation and the positive and negative effect of the project on environment.
- 2- The suggested methods to avoid pollution control methods are to comply with the environmental enforcements and regulations.
- 3- The expected accidental pollutions and the precautions that must be taken.
- 4- the use of the alternative applicable cleaner technology and minimization use of resources.
- 5- Waste minimization and recycling or reuse.
- 6- Assessing the costs of merits and demerits resulting out of the project.
 - b- Treatment of the industrial waste water according to the Iraqi river regulation standard.
 - c- The availability of pollution monitoring instruments and providing the ministry of Environment with the pollution monitoring data. In case of the unavailability of the monitoring instrument the investor (factory) must do the monitoring by a reliable consultants and laboratories.
 - d-The solid wastes must be transferred to special locations in coordination with the relevant authorities.
 - e-Construct and update an environmental database concerning environment protection and pollution level caused by the factory.
 - ${f f-Treatment\ of\ gas\ pollution\ according\ to\ international\ standards\ .}$
 - g-The investor is responsible for the efficiency of him design and performance to meet all the above regiment the same applies during operation of the plant .

mentioned above and others will not eliminate the job of the ministry of Environment to make field inspection to check implementing the environmental requirements and that the factory is applying the environmental law No.3 year 1997.

10- Legal Framework

- 1. The Ministry shall negotiate with the Investor presenting the favorite proposal to reach a contractual legal Agreement based on profit or production sharing against the Rehabilitation work and other services to be presented by the Investor.
- 2. The Investor shall propose the duration of the Agreement based upon profit or product sharing .
- 3. Dispute settlement: Dispute between a foreign Investor and the Ministry or a third party related to his investment in Iraq shall be resolved in accordance with rules of Arbitration stipulated in Iraqi laws. Iraqi courts shall have Jurisdiction on all disputes, amicable settlement, or settlement by Arbitration.

11- Investor Privileges

1. Right to establish trade representation offices and branches in Iraqi, such offices and branches shall be registered at the Iraqi Registrar of companies office\Ministry of Trade.

- 2. Right to establish a business entity jointly with an Iraqi Investor.
- 3. In case the agreement is concluded or basis or product sharing, the Investor shall have the right to sell his share in local market at the price he define or export the product.
- 4. Investor may collaborate with Iraqi partners.
- 5. Right to possess, use, dispose his invested money in Iraq in accordance with central bank regulations.
- 6. Use feely convertible currencies or Iraqi legal Tender . right to transfer money into and out side Iraq in accordance with Central Bank regulations .
- 7. The Ministry shall put at the disposal of the eventual investor the site (Plant) to enable him to fulfill him obligations, Including existing equipment to implement modifications rehabilitation, adequate storage space.
- 8. Insure the plant at an Iraqi or foreign Insurance company according agreement with the Ministry .
- 9. The imported fixed assets shall be exempted from all taxes and duties provided that these are brought to Iraq within three years from the

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- 10. Imported spare parts for the plant shall be exempted from taxes and duties for three years from date of purchase provided that the value of spare parts shall not exceed 20% of the value of the fixed assets .
- 11. Imported fixed assets necessary for extension or development of the plant shall be exempted from taxes and duties if it results in increase of production capacity of the plant.
- 12. Selling of product is not subjected to any price restriction.
- 13. The Investor shall enjoy any additional privileges that may be issued in the future .

12- The Investor obligations:

- 1. The Investor , his supporting technical entity should possess sufficient experience and qualifications to construct (rehabilitate) Urea fertilizer plants .
- 2. The Investor should obtain quality certificate (ISO 9000) and

abide to Urea spec. (see Article 6).

3. Agree to engage Iraqi labors to operate the plant and insure them against risks, supply safety equipment and requirement. He may engage foreign employees for leading technical positions for not more 10% of the total labors force, except during the trail Run period of max 6 months.

4. Abide to Health and safety regulations and Instructions issued by world Health organization (WHO) and International labors organization (I.L.O) and abide to Emission standards criteria callable at the Ministry of labors and social Affairs.

13- Interested Investor:

The Ministry of Industry and Minerals Invite investors with experienced companies in this field who are willing to invest in the project to express their interest in writing to the following address:

Ministry of Industry Al- Nidhal street _ Baghdad - Iraq Tel: 00964 1 8162006 / Ex 3127 ,3122 Tel and Fax 009641 8166040 E.mail:invest@industry.gov.iq The Expression of Interest letter should Include detailed information's on the Interested Investor , Nationality , Supporting technical cooperation's , Qualifications and experience in investment as required in (Form) enclosed .

14- Further clarifications:

The Ministry and its Companies shall provide information's assistance and clarifications to the investor questioners to enable them to take the proper investment decision .

15- Course of Action to be followed by the Investor:

- 1. The interested Investor shall express interest in investment in the Urea fertilizer plant on basis of profit or production sharing to the Ministry of Industry Investment office.
- 2. The company or groups of Companies (The Investor) shall present two separate proposals one technical showing scope of work and other contractual on terms and conditions of implementing the work , timing , financing , running the plant , marketing the product and any other contractual terms including the following:-
 - Percentage of profit or production sharing.
 - Period of agreement (Investment Period).
 - Estimation of amount invested .
 - Plan for implementation .
 - Rights and obligations of each party.
 - Suggested procedure for management after rehabilitation and during implementation .
- 3. A team of specialists of the Ministry shall study the proposals of the investors to select the best proposal.
- 4. The Ministry shall get final approval from concerned authorities to conclude the agreement and provide any necessary assistance to implement the work.

Ministry of Industry & Minerals Data Form

- Project Name: Abu-AL-Khaseeb Fertilizer plant
- Interested Company Name:
- Company legal entity (share holding co, limited, etc), attach copy of establishment certificate and names of shareholders who have 30% share and above:
- Registered Capital:
- Company or Firm legal representative :
- Identification:
- Nationality:
- Applicant address in Iraq:
- Contact details in Iraq and outside Iraq and outside Iraq:
- Suggested Production Capacity *:
- The Applicant must abide by the Technical, Financial and Legal terms stated in the file, clarify how to fulfill *: Indicate reservations if any
- Technical Supporters with confirming documents *:
- Name of the financing group / s with his / their Reference / s , Latest Financial report :
- Technical Expertise *:
- Similar Implemented and under construction projects (References) *:

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Appendix No.(1)

Existing Plant Configuration and General Process Description

1- Plant Configuration:-

1-1Ammonia Unit

Capacity: 800 MTPD of liquid ammonia

Stream days: 330 Days per year

Process configuration for ammonia unit:-

Technology used: Topso for Reforming Section, Catacarb for CO2 Removal

Section and Chemco for Synthesis Converter.

1-2 Urea Unit

Capacity: 1300 MTPD of prilled urea Stream days: 330 days per year

Process configuration for ammonia units: -

Technology used: Snam projetti

1-3 Utility Facilities

- 1- Intake water pumping station
- 2- Raw water treatment
 - 3- Demienerlized water treatment
 - 4- Polisher
 - 5- Package boilers 6-Cooling Tower

4 lines

New Facilities

- 1. R/O Unit
- 2. Waste Water Treatment

1-4 Offsite Facilities

- 1- Flare System
- (1) Flare stack 1 set as flare gas
- 2- Ammonia Storage System
- (1) Liquid Ammonia Storage 8000 ton operated at -32C, atmospheric Tanks

(3) Transfer pumps to the urea units 2 sets

3- Urea Storage and Handling System

(1)Conveyors from prilling tower 1 line

To the bulk storage

(2) Bulk urea storage to the bagging 1 line

(3) Bulk urea storage

(4) Bagging 8 lines (5) Truck Loading 8 lines

(6)Ship loader 2 lines

4- Reception of Feedstock

Natural Gas pipeline 1 line

5- Instrument Air Facilities 1 line

6- Nitrogen Unit

7-Power generation system 1line

Notice: Detail engineering for the plant done by MHI

2- General Process Description :-

2-1 Ammonia Plant:

The plant is designed to produce 800 metric tons of liquid anhydrous ammonia per stream day of normal operation and 23300 Nm3 of carbon dioxide gas per hour of normal operation as a by-product. The process of Ammonia plant is designed on the basis of a single train with high-speed centrifugal compressors, and consists of the following major steps.

1- Synthesis Gas Preparation

The basic raw material, natural gas, is desulfurized by preheating and then absorption of the sulfur compounds on zinc oxide. The desulfurized gas mixed with steam and preheated before being introduced into heated catalyst filled tubes of the primary reformer. In this reforming furnace the natural gas reacts with steam to form hydrogen and carbon oxides.

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The hot, partially reformed gas from the primary reformer is mixed with hot compressed air in the Secondary Reformer to give the required ratio of three hydrogen to one-nitrogen molecules in the final makeup gas. Heat of reaction for further reforming in this vessel is provided by the combustion of a small portion of the processed gas with the oxygen in the air.

2- Purification

The first stage of the reformed gas purification is in the CO converters where the catalytic reaction of carbon monoxide and steam, known as water-gas shift reaction produces hydrogen and carbon dioxide.

Most of the heat content of the gas streams leaving the Secondary Reformer and CO converters is recovered in waste heat boilers, which produce steam for plant and process use.

The converted gas passes through the second stage of purification, the CO2 removal section, where the CO2 content is reduced by absorption in catacarb solution. Regeneration of the catacarb solution releases the CO2, which is as a by-product.

The CO2 removal section includes the necessary equipment to absorb the CO2 and regenerate the catacarb solution as heat exchangers to attain optimum process control and heat conservation.

After CO2 removal the gas passes to the final stage of purification, the Methanator, where residual carbon oxides are reacted catalytically with part of the hydrogen content of the process gas stream to form additional methane before being sent to the compression section.

3- Compressions

The compression section includes the following three compressors.

- 1-Synthesis Gas Compressor and Circulator.
- 2-Process Air Compressor.
- 3-Natural Gas Compressor.

The Synthesis Gas Compressor compresses the reformed, purified gas from 19Kg/cm2G to the synthesis reaction pressure of 239 Kg/cm 2G and Circulator boosts back the unreacted synthesis gas to reaction pressure.

The process Air Compressor provides the nitrogen content in the form of air added to the Secondary Reformer.

The Natural Gas Compressor boosts up the process natural gas to feeding pressure for the primary reformer.

All compressors are steam turbine driven.

In the synthesis section, the recycle gas is initially cooled with some ammonia condensing without separation .the cooled stream is combined with the make-up gas and is further cooled with more ammonia condensing. After separation of the condensed ammonia, the gas is reheated and passed into the Ammonia

Converter. In the Converter, part of the hydrogen and nitrogen react exothermically in the presence of a catalyst to from ammonia. After passing the converter a portion of the ammonia content is condensed outlet gas returned to the recycle stage of the synthesis gas compressor.

5- Refrigeration

Liquid ammonia is used as a coolant in the synthesis section for condensing the gaseous ammonia in the recycling synthesis gas stream. Ammonia liquid is vaporized in the Ammonia cooled condenser, compressed by the refrigeration compressor, cooled and liquefied for further use.

Vent and purge gas from the synthesis section is also cooled by liquid ammonia to condense the gaseous ammonia content before using the non-condensable gas as fuel gas in the package boiler burners.

6- Steam

The steam is used as main power source for driving all compressor turbines and most pump turbines in the plant. Apart of the high pressure steam is obtained from two process waste heat boilers where high temperature steam is cooled and heat is recovered. The rest of the high-pressure steam is generated by package boilers where all purge gas and make-up natural gas will be used as fuel gas. The steam system includes four different pressure levels for various uses. The steam condensed in the turbine condensers is treated in the mixed bed polisher before being returned as make-up to the boiler feed water system.

2-2 Urea Plant

The plant is designed to produce 1300 metric ton of prilled urea per stream day and consists of the following major steps .

1- Urea Synthesis high pressure recovery

Urea is produced by the chemical reaction of liquid ammonia and gaseous carbon dioxide at about 150 kgcm2G and 185 C.

The liquid ammonia from storage is pumped into a holding tank in the Urea Unit.

to the urea reactor using reciprocating pump. The stripping ammonia is pumped and vaporized before entering the stripper.

Carbon dioxide is compressed to reaction pressure, and most of it is fed directly to the reactor.

The heat of formation of carbamate from the entire carbon dioxide make-up stream is in excess of that required to sustain the overall reaction, therefore a small portion of the carbon dioxide by-passes the reactor to be pre-reacted in the carbamate condenser.

The urea-carbamate mixture is heated slightly and stripped with gaseous gaseous ammonia to remove the bulk of the carbon dioxide contained in the solution.

The urea solution leaving the stripper with low residual carbon dioxide content is flashed into the high pressure decomposes, which is the first stage of the purification section.

The overhead vapors from the stripper mixed with the by-passed CO2 enter the high-pressure carbamate condenser, in which the ammonia and carbon dioxide are recovered as liquid carbamate. Except for a small stream of inert gases passing overhead from the condenser, essentially all the feed is recovered and recycled to the reactor.

Condensing the reactants at high pressure and temperature permits the production of steam in the carbamate condensers, thus reducing the cost of utilities for operating the unit.

The high-pressure carbamate solution leaving the condenser is recycled to the reactor via an ejector in which the motive fluid is the compressed liquid ammonia fed to the reactor.

The ammonia pressure drop through the ejector supplies the necessary driving force.

This patented design has many advantages.

The main recycle stream returns to the reactor with minimum capital investment and operating cost.

The difficulties encountered with expensive carbamate pumps in traditional urea plants have been eliminated by a system, which requires less maintenance and is more reliable. The reactor outlet control valve, which does handle urea solution. Is designed for a low-pressure drop with negligible flashing. The high ammonia content in both stripper and high-pressure cabamate condensers reduces corrosion in this equipment.

Corrosion is also reduced in the purification section because less carbon dioxide reaches that section, thus reducing the amount of carbamate to be handled.

The high ammonia content throughout the unit also reduces the biuret formation and actually permits reduction of biuret in the stripper.

in the process reduces considerably operating requirements and costs.

Reaction and stripping conditions have been optimized to obtain the most

economical design.

2- Purification and Low Pressure Recovery

The Purification section consists of low stages of decomposition in series. Each stage takes place at a successively lower pressure. The first stage occurs at about 18 kglcm2G and the second stage at about 2.5 kglcm2G.

The two stages require heat to remove the excess ammonia and residual carbon dioxide from the urea solution. The concentration of the urea solution becomes successively higher as the mixture passes through the various let down stages until a solution containing approximately 80 percent wt. Of urea is produced.

The vapors released from the solution in each decomposer are condensed and recycled to the reactor the 80 percent wt. Of urea solution is sent to the finishing section.

The recovery of the vapors leaving the first and second decomposition steps.

The recovery is essentially a two-step condensation and absorption of

The recovery is essentially a two-step condensation and absorption of ammonia and carbon dioxide to obtain a concentrated solution of ammonium carbonate, which is recycled to the reactor through the high-pressure carbamate condenser. The solution leaving the loe pressure condenser is sent to the high-pressure absorber, in which it contacts the overhead gases coming from the high-pressure carbamate condenser. The over-head vapor from the high-pressure absorber is a pure ammonia stream, which is condensed and collected in the holding tank. The ammonia and carbon dioxide fed to the urea unit contain small quantities of inert gases. These gases are released from the reaction products in the various decomposition steps, and are vented from the condenser associated with the high-pressure absorber. Collected in receiver, and then is treated in a distillation column in which NH3-CO2 are stripped and urea in completely hydrolyzed.

The vapors leaving the top of the column are recovered by condensation in L.P. condenser and the purified water, containing only few ppm of free ammonia, is sent to the battery limit. Besides the advantages of NH3 and CO2 recovery, the most important question is the elimination of pollution problem owing to the effluents.

Appendix No.(2)

PLANT STATUS

1- Civil, Building and Structural Works:

Most of the Building, civil and structural works were damaged. Re – construction, repairing of several buildings and structural works had been done, and others still required reconstruction or repairing.

2- Mechanical Works

This is the discipline where most of the damage had occurred and therefore extensive amount of work is required.

2-1Ammonia unit:

This area had been subcontracted to Iraqi contractors. The work had been started. Some equipment (vessels, heat exchangers, Reactors) was repaired at site. Some other equipment was repaired at the workshop outside the plant and some others were newly manufactured. The major requirement needed as fellows:

1. High pressure equipment are damaged (such as Reformer Gas Waste Heat Boiler, CO2 Absorber, CO2 Regenerator, Ammonia Synthesis Converter) and shall be fabricated and transported as one piece for each one.

- 2. All rotary machinery in this unit are damaged or missing and shall be supplied together with their drivers (excluding synthesis compressor, air compressor, refrigeration compressor which are existing at the site).
- 3. Special material and parts such as pig tails, governors, refractory bricks and cement, packing material for towers, insulation, sprig hangers, etc.
- 4. Part of the Piping and fittings above ground are damaged or missing such as: alloy steel, stainless steel, carbon steel with different sizes and thickness are damaged.
- 5. Strategic spare Rotors and other spare for Main Compressors and Turbines are damaged and to be supplied.
- 6. The condition of underground piping system is not know

2-2 Urea plant

This plant is severely damaged and mostly effected part of the whole complex. Most of the equipment (Vessels, heat exchangers etc.) is damaged few equipment were repaired and some other equipment were fabricated as new.

All rotary machineries with their drivers are missing or damaged.

All piping and fittings (stainless steel and carbon steel with

different sizes and thickness) are damaged.

All special material are damaged or missing.

Most of the equipment are damaged including the Urea Reactor , Urea stripper \dots etc

2-3 Utility System

2-3-1 River Water Intake and Filtration Unit

This unit located within the plant at shatt AL –Arab river. It consist of two clarifiers with alum dosing system and Sand Filtration with chlorine dosing system. There is not much mechanical damage and most of the works were carried by Iraqi subcontractors. Some Rotary machineries are missing, chlorine-dosing system are damaged.

2-3 -2 Demineralized Water Unit

This plant is also heavily damaged during the war. The repair works and equipment manufacturing had been carried out by Iraqi subcontractors Piping and fittings, equipments, all rotary machineries, rubber lining materials, etc. are either damaged or missing.

2- 3- 3 Reverse Osmosis Unit (New one)

The existing system is not functional due to the increase of salinity of water in the Shat. AL-Arab to produce demeneralized water unit.

Therefore completely a new system (Reverse Osmosis Unit) with a treated water capacity of $600 \text{ m}^3/\text{hr}$ is planned to be built.

2-3-4 Polishing Unit

The damage is not much. Repairing of equipment and fabrication new equipment are nearly completed. The progress is high. Pumps and their drivers are missing also some material.

2-3-5 Boilers

There are 4 No.s of Mitsubishi made package boilers. The damage is moderate.

Refractory lining, insulation, some equipment, piping and fitting are damaged. Also pumps are missing.

2-3-6 Cooling Tower

The old cooling tower has been demolished. A new cooling tower with eight cells is under construction. The new design has been adopted by SIDCCO using counter-flow instead of cross-flow for the old one. Presently the concrete structure is completed. Technical evaluation shall be made in order to insure reliable design and performance and accordingly give the recommended fans, gear box, motor filling materials, water distribution pipes, also circulation pumps with their drivers to be supplied.

2-3-7 Waste water Treatment System

In the original design there was not a waste water treatment system. Now

it is planned to install such system . The new system shall designed to

comply with the local rules of pollution.

2-4 Offsite Facilities

Appendix No. (3)

Preliminary Scope of Work

ANNEX NO. 1

Modifications

The complex (Ammonia and Urea Unites) was constructed in the 1974 based on the technology of Toppsoe for ammonia and Snamprogetti for urea at that time. Since more than (25) years is passed and development is take place with these technologies, a certain modifications are concerned.

1- Ammonia Plant: -

1- Modification of Secondary Reformer Burner:

Nozzles of the burner shall be modified by inserting tips at these nozzles (using the new technology developed by toppsoe).

2- Ammonia Converter:

The design of the existing ammonia converter is Chemco Type. Modification of this converter from Chemco to S-200 is foreseen.

3- Process condensate treatment:

All condensate in this unit shall be treated to produce water suitable to be used as boiler feed water.

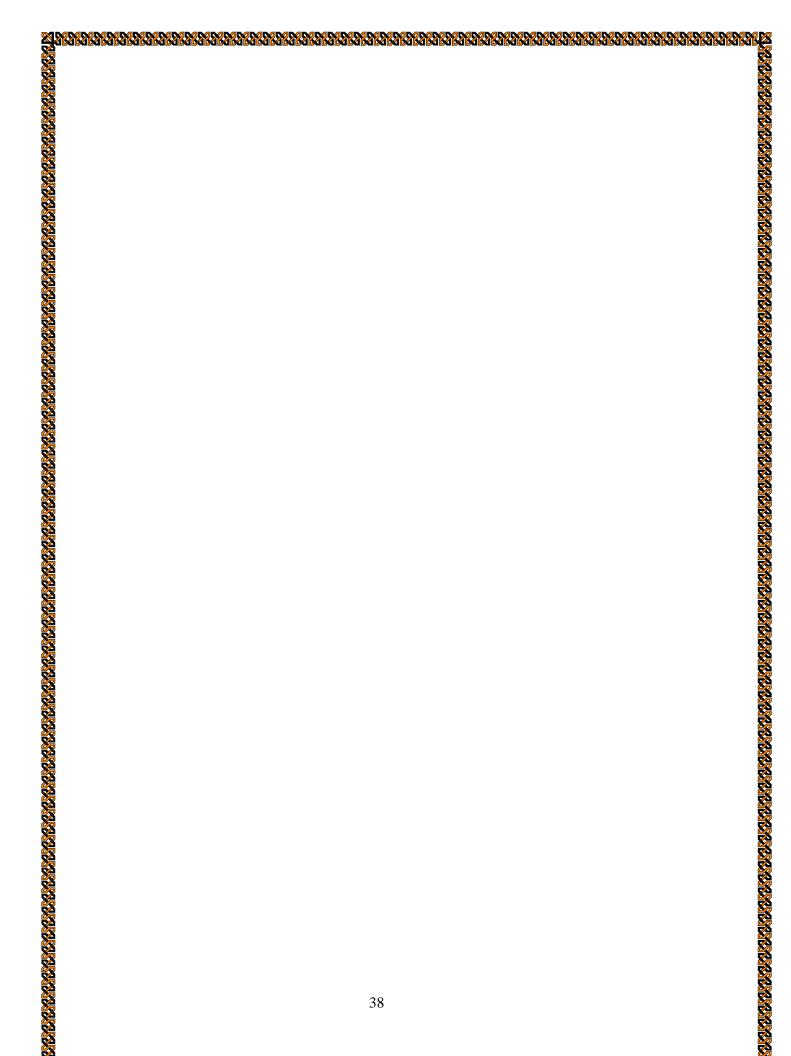
2- Urea Plant:

Modification for this Unit shall be as the following:

- 1-Ten efficient trays are to be added in the urea converter
- 2-MP inert washing tower has been foreseen to reduce ammonia losses in the tail gas.
- 3-The existing crystallizing / prilling processes to be replaced by the vacuum concentration system.
- 4-The process condensate shall be deeply hydrolyzed to recover all the process condensate as boiler feed water.
- 5-The high pressure tail gas from the carbonate separator and the tail gas

from the medium pressure decomposer is recovered and mix the carbonate solution from the P-503AB To heat the urea solution in the vacuum preconcentrator and increase the urea concentration from 73% to 83%.

Thus, the steam consumption is reduced.



Stationary Equipment

- 1- The bidder shall supply the equipment on the list attached here within.
- 2- A complete equipment to be supplied shall be manufactured, tested, inspected and shipped to the port of Basrah.
- 3- The design, manufacture, test and inspection of such equipment shall be according to the latest standard and codes as listed in the Basis of design and in accordance of specifications and drawings and as per the requirements in the original detail design drawings.
- 4- The materials to be supplied for the manufacturing those equipment in Iraq shall be high quality and as per the requirements in the original detail design drawings, which shall include plates that have specific requirements, to the material and dimensions, heat exchanging tubes and general tubes.
- 5- The bidder shall also give an option for supply complete bundles for the heat exchangers and coolers and this will be considered.

CODE	DESC SEAL OIL TRAPS FOR K 301 SYN. GAS H.P CASING SEAL OIL TRAP. SYN. GAS COMPRESSOR GOVOIL ACCUMULATER SYN. GAS H.P & MP SEAL OIL PUMP SUCT ACCUMULATER SYN. GAS H.P & MP SEAL OIL PUMP DISCH ACCUMUL. SYN. GAS H.P & MP SEAL OIL HYDRAULIC DESURGER AIR COMPRESSOR GOV OIL ACCUMULATER MED. PRESSURE UREA SOLUATION HOLDER LOW. PRESSURE SEPERATOR CO2 COMPRESSOR SEAL OIL TRAP CO2 COMPRESSOR GOV OIL ACCUMULATER P-101 A.T OIL COOLER P-101 A.T AIR EJECTOR CONDENSER P-101 A.T LEAKAGE CONDSER CATACARB REBOILER P-201 OIL COOLER 3RD STAGE SYN. GAS COOLER 1ST STAGE AIR COOLER 2ND STAGE AIR COOLER SYN. GAS COMPER MAIN EJECTOR COND SYN. GAS COMPER LEAKAGE CONDENSER AIR COMP. LEAKAGE CONDERSER AIR COOLER CONDENSER AIR COOLER CONDENSER AIR COOLER CONDENSER AIR COOLER CONDENSER
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V-329	SYN. GAS COMPRESSOR GOVOIL ACCUMULATER
V-330A/B	SYN. GAS H.P & MP SEAL OIL PUMP SUCT ACCUMULATER
V-331A/B	SYN. GAS H.P & MP SEAL OIL PUMP DISCH ACCUMUL.
V-332A/B	SYN. GAS H.P & MP SEAL OIL HYDRAULIC DESURGER
V-342	AIR COMPRESSOR GOV OIL ACCUMULATER
V-503	MED. PRESSURE UREA SOLUATION HOLDER
V-504	LOW. PRESSURE SEPERATOR
V-534	CO2 COMPRESSOR SEAL OIL TRAP
V-535	CO2 COMPRESSOR GOV OIL ACCUMULATER
E-115	P-101 A.T OIL COOLER
E-116	P-101 A.T AIR EJECTOR CONDENSER
E-117	P-101 A.T LEAKAGE CONDSER
E-201	CATACARB REBOILER
L-206AB	P-201 OIL COOLER
Z-304	1 ST STAGE AID COOLER
Z-303 Z-206	1 STAGE AIR COOLER
2-300 2-307	2 STAGE AIR COOLER
2-30 <i>1</i> 2-316	SYN CAS COMPED MAIN EIECTOD COND
E-310 E-317	SYN GAS COMPER I FAKAGE CONDENSER
E-320	AIR COMP. LEAKAGE CONDNSER
E-404AB	WATER COOLED CONDENSER
E-461	PRODUCT NH3 HEATER
E-462	NH3 VAPORIZER
E-502	MEDIUM PRESSER DECOMPOSER
E-504	1'ST CARBAMATE CONDENSER
E-505	2'ST CARBAMATE CONDENSER
E-508	AMMONIA CONDENSER
E-531A	3 RD STAGE CO2 COOLER
E-517	WSEHING WATER COOLER
E-531	CO2 COMP LEAKAGE CONDENSER
E-712ABC	P-711A, B, CT OIL COOLER
E-802ABC	K-801 A.T OIL COOLER
Γ-202	CO2 REGENERATOR
F-307A	SYN. GAS COMPRESSOR H.P.SEAL FILTER
F-308	GOV. OIL FILTER
F-316	AIR COMP. GOV. OIL FILTER
F-325AB	NG & REF. COMP. LUBE OIL FILTER

F-327	NG & REF. COMP. GOV. OIL FILTER CO2 COMPRESSOR LUBE OIL FILTER CO2 COMP. SEAL OIL FILTER CO2 COMP. SEAL OIL FILTER TRANSFER BARRIER SEAL OIL TRAPS NG& REF. COMP. GOV. OIL ACCUMALATER LUBE AND SEAL OIL COOLERS CARBAMATE RECYCLE EJECTOR CARBAMATE MIXER METHANATION HEAT EXCHANGER P-101 OIL COOLER OVERHEAD CONDENSER SYN. GAS PRECOOLER 1ST STAGE SYN. GAS COOER 2ND STAGE SYN. GAS COOLER N.G. BY-PASS COOLER N.G. BY-PASS COOLER N.G. & REFR. COMP'R COOLER N.G. & REFR. COMP'R COOLER PRIMARY AMMONIA COLD CONDENSER SECONDARY AMMONIA COLD CONDENSER PURGE GAS CONDENSER AMMONIA CONDENSER REFR. COMP'R LEAKAGE CONDENSER LOW PRESSURE CONDENSER STRIPPING TOWER PREHEATER 2ND STAGE CO2 COOLER STAGE COOLENSER STRIPPING TOWER PREHEATER 2ND STAGE CO2 COOLER
F-530AB	CO2 COMPRESSOR LUBE OIL FILTER
F-531AB	CO2 COMP. SEAL OIL FILTER
F-532	CO2 COMP. GOV. OIL FILTER
V-354A/F	TRANSFER BARRIER
V-355AB	SEAL OIL TRAPS
V-356	NG& REF. COMP. GOV.OIL ACCUMALATER
E-532AB	LUBE AND SEAL OIL COOLERS
J-501	CARBAMATE RECYCLE EJECTOR
J-502	CARBAMATE MIXER
E-106	METHANATION HEAT EXCHANGER
E-118	P-101 OIL COOLER
E-205AB	OVERHEAD CONDENSER
E-301	SYN. GAS PRECOOLER
E-302	1 ST STAGE SYN. GAS COOER
E-303	2 ND STAGE SYN. GAS COOLER
E-308	N.G. BY-PASS COOLER
E-315	SYN. GAS AFTER COOLER
E-318	SYN. GAS COMP'R COOLER
E-324B	N.G. & REFR. COMP'R COOLER
E-402	BFW PREHEATER
E-405	PRIMARY AMMONIA COLD CONDENSER
E-406	SECONDARY AMMONIA COLD CONDENSER
E-408	PURGE GAS CONDENSER
E-412	AMMONIA CONDENSER
E-420	REFR. COMP'R LEAKAGE CONDENSER
E-507	LOW PRESSURE CONDENSER
E-509A/F	STRIPPING TOWER PREHEATER
E-512	2 ND STAGE CO2 COOLER
V-119	N.G. SUCTION SEPERATOR
V-451	AMMONIA STORAGE TANK
V-507	CARBAMATE SOLUTION TANK
V-509	SUCTION K.O. DRUM
V-520	CARBONATE PUMP SECTION
V-552	MOTHER LIQUOR TANK
T-201	CO2 ABSORBER
T-202	CO2 REGENERATOR
R-401	SYNTHESIS CONVERTOR
R-501	UREA REACTOR
E-108	REFORMED GAS WASTE HEAT BOILER
E-501	STRIPPER
	41

E-118 OIL COOLER

TYPE : TSC-3A
MAKER : TAISEI
HEAT EXCHANGED : 6000 Kcal/h

COOLING AREA : 3 m^2

COOLDIC WATER . COOLING TOWER WAT

	SHELL SIDE	TUBE SIDE
FLUID	L.O.	C.T.W
PRESSURE DROP	LESS THAN 0.8 kg/cm^2	LESS THAN 0.3 kg/cm^2
OUTLET TEMP.	40 C	35.8 C
INLET TEMP.	50 C	34.6 C
FLOW RATE		
SHELL	FCD45, SGP	
BODY	SS41, SGP	
SHELL FLANGE	FCD45	
COVER A,B	FC20	
TUBE PLATE A,B	SS41	
RING	SS41	
SUPPORT	SS	
TUBE	SUS304 8 * 0.6 * 1017	
DISTANCE PIPE	STKH12A	
BAFFLE PLATE	SPC	
FLANGE	SS41	
PACKING	RUBBER	
PACKING	V#1500	
"O" RING	RUBBER	
ZINC PLUG	ZN, PT ½	
PLUG	FCMB, PT 3/4	
BOLT	SS41, M12 WITH NUT	
BOLT	SCM3 , M10	
AIR VENT PLUG	FCMB, PT ½	
DRAIN PLUG	FCMB PT 3/4	

TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET	🙏 mitsuuishi k	REAVY ENDUSTRIES, LTD.				
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Second Catalogue Catalog	Find Circulohed CATA CARR SOLUTION Ig/h M.W. 1396/8 kg/h kg/	Fluid Circulated	Fluid Circulated CATACARR SOLUTION REFORMED GAS Vapor	Fluid Corculated	Fluid Corculated	Fluid Circulohed			of One Unit		ube Side	
Vopor	Vapor	Non-Condensable	Vapor	Vapor	Vapor	Vapor	Fluid Circulated					1-75
Depticol M.W. 2//800 kg/h M.W. kg/h 18 M.W. S5/89 kg h Non-Condensable M.W. kg/h M.W. \$5/89 kg h Non-Condensable M.W. kg/h M.W. \$442.9 kg h Non-Condensable M.W. 49/40 kg/m of 1/26,1°c kg/m of 2/26,1°c kg/m of 2/26,1°c cp. of c. c. c. c. c. c. c. c.		Diquid M.W. 2/1800 kg/h M.W. kg/h 18 M.W. 55/89 kg h	Liquel M.W. 2/1800 kg/h M.W. kg/h 18 M.W. 5.5/89 kg.h	Liquel M. W. 2/18.00 M. W. M. M	Liquel M. W. 2/18.00 M. W. M. M	Seam					1376/8	
Non-Condensable	Non-Condensable	Non-Condensable	Non-Condensoble	Non-Condensible	Non-Condensible	Non-Condensoble		M.W. 2//800	kg/h			
Dansity	Density	Density	Danalty	Danaity	Danaity	Danaly						
Specific Heat	Specific Heat 0.739 kcal/kg c at /26.1 c kcal/kg c at c	Second S	Booling Point Conductivity	Booling Point C	Booling Point C	Booling Point C		//90 kg/m³ at	126.1°c		kg/m³	o1 'c
Boiling Point 1	Boiling Point	Boiling Paint	Boiling Point	Boiling Point	Boiling Point	Boiling Point Co. St. Col/mh 'cot 26,1 Co. Conductivity Co. St. Col/mh 'cot 26,1 Co.	0		126.1°C			
Density	Density	Density	Density	Density	Density	Density	.9	*c	I			
Viscosity Cp. at C 0,0/89 Cp. at /55 C	Viscosity	Viscosity	Vicosity	Vicosity	Vicosity	Viscosity				9 79		
Dew Point Color Ther. Conductivity Color Col	Dew Point C	Dev Point	Dew Point C	Dew Point C C C C C C C C C	Dew Point C C C C C C C C C	Dew Point C					cp.	al /55 c
Their Conductivity	Ther. Conductivity	No. of Pass & Velocity Spec. 0.77 kg/cm² Colc.: — kg/cm² Spec.: 0.28 kg/m² (colc.: 0.186 kg/m² kcol/m² (colficient) kcol/m² (co	Ther. Conductivity	Ther. Conductivity	Ther. Conductivity	Ther. Conductivity	Specific Heat		• •		kcol/kg *	/55 '
Purish P	Fluid Vap. or Cond.	Fluid Vap. or Cond.	Fluid Vap.or Cond.	Fluid Vap. or Cond.	Fluid Vap. or Cond.	Fluid Vap. or Cond.		l	•	0,0825		
Common C	Ident Heat	Latent Heat	Lotent Hear	Lotent Hear	Lotent Hear Lotent Hear	Lotent Heat	Fluid Vap. or Cond.			M.W.	20000	
Temp. In. & Out. In: 120.8	Temp. In. & Out.	Temp. In. & Quit.	Temp. In. & Out.	Temp. In. & Out.	Temp. In. & Out.	Temp. In. & Out.						
No. of Pass & Velocity	No. of Pass & Velocity	No. of Pass & Velocity	No. of Pass & Velocity	No. of Pass & Velocity	No. of Pass & Velocity	No. of Fass & Velocity	Temp. In. & Out.	In: /20.8 °c Out: /26	.:/ c			
Pressure Drop Special 0.07 kg/cm² Calc.: kg/cm² Special 0.28 kg/cm² Calc.: 0.28 kg/cm² Calc.: 0.28 kg/cm² Calc.: 0.86 kg/cm² Calc.:	Pressure Drop Spec. 0, 0.7 kg/cm² Calc.: kg/cm² kcal/h kcal/m²h²c	Pressure Drop Special 0.07 kg/cm² Colc.: kg/cm² Special 28 kg/cm² Colc.: /8 kg/cm² Sensible Heat kcal/h kcal/m²h²c kcal/m²h²c kcal/m²h²c kcal/m²h²c kcal/m²h²c kcal/m²h²c kcal/m²h²c bcaigned 59 € kcal²m²h²c kcal/m²h²c Designed 59 € kcal²m²h²c kcal/m²h²c lacyl/m²h²c Designed 59 € kcal²m²h²c kcal/m²h²c lacyl/m²h²c Designed 59 € kcal²m²h²c lacyl/m²h²c lacyl/m²h²c Designed 59 € kcal²m²h²c lacyl/m²h²c lacyl/m²h²c lacyl/m²h²c lacyl/m²h²c lacyl/m²h²c lacyl/m²h²c lacyl/m²h²c lacyl/m²h²c	Pressure Drop Special 0.7 kg/cm² Colci: — kg/cm² Special 0.28 kg/cm² Colci: 0.18 kcal/h kcal/m² kc	Pressure Drop Spec. 0, 0.7 kg/cm² Colc.: - kg/cm² Spec.: 0, 2.8 kg/cm² Colc.: 0. 186 kg. cm² Sensible Heat kcal/h kcal/m² h*c/kcal Spec.: 0.000.2 m² h*c/kcal Spec.: 0.000.2 m² h*c/kcal Spec.: 0.000.2 m² h*c/kcal kcal/m² h*c kcal/m²	Pressure Drop Spec. 0, 0.7 kg/cm² Colc.: - kg/cm² Spec.: 0, 2.8 kg/cm² Colc.: 0. /8 kg. cm² Sensible Heat kcal/h kcal/m² h·c/kcal Spec.: 0.000.2 m² h·c/kcal Spec.: 0.000.2 m² h·c/kcal Spec.: 0.000.2 m² h·c/kcal kcal/m² h·c kcal/m² h·c	Pressure Drop Spec. 9.07 kg/cm² Colc.				1m: 2		
Latent Heat Total Heat Duty 23.08 x 106 kcal/h 23.08 x 106 kcal/h Fouling Factor Spec.: 0.0004 m² h rc/kcal Fouling Factor Spec.: 0.0004 m² h rc/kcal Fouling Factor Spec.: 0.0004 m² h rc/kcal Fouling Factor Spec.: 0.0002 Spec. Fouling Factor Spec.: 0.0002 Spec.: Fouling Factor	Latent Heat	Latent Heat	Latent Heat Total Heat Duty 23.08 x106 kcal/h Fouling Factor Spec.: 0.0004 m³ h c/kcal Spec.: 0.0002 m² h c/kcal Film Coefficient kcal/m² h c Spec.: 0.0002 m² h c/kcal Film Coefficient kcal/m² h c Spec.: 0.0002 m² h c/kcal Film Coefficient kcal/m² h c Spec.: 0.0002 m² h c/kcal Film Coefficient kcal/m² h c Spec.: 0.0002 m² h c/kcal Film Coefficient Spec.: 0.0002 m² h c/kcal Foundation Clean: kcal/m² h c Souled kcal/m² h c Construction Pressure Desin kg/cm² G Desin kg/sm² G Test kg/cm² G Tubo No. per Sheil: Size: 0.0.x Lx Thick.: (min. ave.) Fisch Cleansel: Tubo No. per Sheil: Size: 0.0.x Lx Thick.: Thick.: Channel: Gaiket: Channel: 0.0000 Shell Cover: Gaiket: Channel: Gaiket: Thick.: Thick.: Tubo Sheet: Stationary: Fisck.: Floating Head: Gaiket: Tubo Sheet: Stationary: Thick.: Type: No: Cut: Space: Tubo Sheet: Stationarce mm mm mm Stress Relief No Yes Radiograph: No Yes % Weight per Unit Empty: kg Tubo Bundle: kg Full of Water: kg Nozzle Size & Rating (Shell Side) Size & Rating (Tubo Side) Remarks Toulet Outlet Outlet	Latent Heat	Latent Heat	Latent Heat Total Heat Duty 23.08 x 106 kcal/h Fouling Factor Spec.: 0.0004 m²h²c/kcal Film Coefficient Overell Trans, Coeff. Clean: kcal/m²h²c Fouled kcal/m²h²c Construction Pressure Design Temperature Tube No. per Sheil: Size: O.D.X 1x Thick.(min. ave.) Pinch 2. Material & Other Tube: Shell: (Sheil I.D.: Thick.:) Channel: Gasket: Channel Cover: Shell Cover: Gasket: Floating: Thick.: Floating: Thick.: Tube Sheet: Stationary: Thick.: Type: No: Corss Refler Tube Support: Thick.: Type: No: Tube Sheet: Stationary: Thick.: Type: No: Tube Sheet: Stationarce mm	Pressure Drop	Spec.: 0.07 kg/cm² Calc.: -			kg/cm² Calc.: C	
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Tube	Tube	Tube	Tube	Tube	Tube	Tube No. per Shell: Size: O.D.X LX Thick.(.nin. ave.) Pich △. Material & Other Tube: Shell: (Shell I.D.: Thick.: } Channel: Gasket: Channel Cover: Channel Cover: Channel Cover: Shell Cover: Gasket: Floating Head. Gasket: Tube Sheet: Stationary: Thick.: Floating: Thick.: Cross Baffle: Thick.: Type: No: Cur.: Space: Long Boffle: Thick.: Type: No: Cur.: Space: Tube Jupport: Thick.: Type: No: Space: Corresion Allowance mm mm mm Stress Kelief No. Yes Radiagraph: No. Yes % Weight per Unit Emphy: kg Tube Bundle: kg Full of Water: kg Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) Remarks		Des'n kg/cm² G Test			^c m ¹ G Test	kg√cm³G
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Inlet Cultet Drain	laist Curiet Drain	Inlet Outlet Drain	Inlet Outlet Drain	Inlet	Inlet	Inlet Cullet Drain Vent	Weight per Unit	Empty: kg , Tube Bundl		kg , Full		
Outet Drain	Cullet Drain	Outlet Drain	Oullet Drain	Oullet Drain	Oullet Drain	Outlet Drain		oting (Shell Side) \$ sze & Roting ((ube Side	Remarks		
				Vent	Vent	Vent	Outlet					
												
						43						

E-206AB OIL COOLER SPEC.

NAME OF PURCHASER / <u>MCEC</u> LOCATION / <u>M.O.I. IRAQ</u> PURCHASER'S ITEM NO. / <u>E-206AB</u> SERVICE / P-201AB OIL COOLER

UNIT/ 2

1- PARTICULARS

2-TYPE / OC-84

SURFACE AREA	M^2		8
		SHELL SIDE	TUBE SIDE
FLUID MATERIAL		OIL	C.T.W
QUANTITY & OPERATING PRESS.	M^3/H*KG/CMG	3.5*1.0	5*NOR.5.5
INLET TEMP.	С	55	34.6
OUTLET TEMP.	C	45	37.6
NO. OF PASS		1	4
HYDRO'C TEST PASSES	KG/CM^2G	5	10.5
TUBE NO. OUT DIA	١.	THICK.	PITCH
116 15.9MM		1.6MM	21 MM
WEIGHT DRY.	APPROX. F	ULL WATER	APPROX.
	400KG		500KG
FOULING FACTOR 0.0006 M^2H	C/KCAL		

3-NOZZLES AND CONNECTION * C.W. INLET & OUTLET

- * OIL INLET & OUTLET
- / <u>JIS 10K 2" FF</u> / <u>ANSI150LB- 2" RF</u>

4-ACCESSORIES FOR / UNIT

AC1 VALVE WITH CAP(1/2", SW.800LB)
AC2 VALVE WITH CAP(1/2", SW.800LB)
AC3 VALVE WITH CAP(1/2", SW.800LB)
AC4 PLUG (PF 3/4) AC5 PLUG (PF 3/4) AC6 PLUG (PF 3/4) AC7 PLUG (PF 1/2) AC8 VALVE WITH CAP(1/2", SW ,800LB)

5-SPARE PART FOR 2 UNIT

sheet packing part no. 29 400% (for construction & contract)

6-SPECIAL TOOLS FOR UNIT /

	a MIYS	euniski t	ieavy indus	STRI	ES, LTD.		Γ				/
			HEAT EXCHA				,	Rev. Date Check			
Pk	ant	IRAG EX	P. NH3 UN	IT		frem No.					
Çu	stomer		IRAG			1	E-3	01			
Or	der		•				SYN GA,		ECOOL	R	
Į0	cation	1	ndoor	Outo	<u></u>	No. Regid		1			
Ty	pe pe		BEU			Shells per		. 1			
Sh	ell I,D.	1000	Tube length	500	2011	Surface pe		3/0			m²
Re	gulation		Code ASME	TEMA	·R	Surface pe		. 310	7		m²
						ce of One Uni	!		· · · · · · · · · · · · · · · · · ·		
			·	hell	Side			Tub	e Side		
	uid Circu	la red	SYN. GA	\$			COOLI		WATER		
To	tal		8.90 M.W.		39907			M.W.	71850	20	kg b
	Vapor		M.W.			kg/h		M.W.			kg, h
	Liquid		M.W.			kg/h		M.W.	7/850	20	kg/n
	Steam		18 M.W.		1945		18	M.W.			kg h
		onden subte	8.67 M.W.		37962			M,W.			kg/h
ļ	Density					at c		993.4		01	<u>37</u> '
₽	Visc osi					at 'c		0.695	cp.	O 2	37 -
2		c Heat			kcal/kg 'c	ه اه		D. 998	keal/kg	'c ot	37 '
- [Boiling				*c				°c		
_		Conductivity			kcal/mh *c			0.536	kcal/mh		37 :
ı	Density		5.8	<u> </u>		al 86°c			kg/m³	ot	٠,
5	Viscosi		0.017	0		al 23°C			cp.	O1	<u>'c</u>
Vapor		ic Hect		265	kcal/kg c	al \$2° c			kcal/kg	٠.	<u>'c</u>
1	Dew P			77	'c				*c		
I		onductivity	0.11	30	kcal/mh*c	 			kcal/mh	*c of	<u>, c</u>
	uid Vop.		M.W.			kg/h		M.W.			kg/h
	ean Can		18M.W.		1598	kg/h		M.W.	 		kg. h
	lent lieat				kcal/kg				ksal/kg		
	mp. in. &		In: /35.7			43		6	C Out:	40	
	perating f		/n:		<u> 7. 5</u>	kg/cm² G	/n:		5.5		kg/cm' 5
	essure Dr	& Velocity	L		& 2 Colc.: 0,	- m/s	<u> </u>	2	8		m:
	nsible He		Spec .: 0.22	kg, cm	Calc.: U,		Spec.: 2,	7 kg	cm² Cale	2,64.	
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2.17	110				Constru		EWID!CO.	recieo:	32.4	<u>.</u>	
٥,	essure		Desin kg	/cm² G		kg/cm² G	Desin	kg/ ² m	G Test		kg /cm²
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	aterial &	Other	Tube:		Shell:		(Shell I.D.:	TRICK.	Thick:		
_	Channel:		1004		Gasker:		Channel Cov				
•	Shell Co				Gasket:		Floating Heat		Gesk		
		set: Stationar	······································		Thick ::		Floating:		Thic		
	Cross Ba			Thick.		Type:	No:	Cu			
	long ba			Thick.		Type:	No:				
	Tube Su			Thick.		Type:			Space	6 :	
Co		Howance				.,,,,,	Γ		Dett.		
	ess Kelie		No .		Ye,		Radiograph	No	Yes		%
W	eight per	Unit	Empty: k	<u> </u>	Tube Bunc	ile:	kg .	Full of V			kg .
	vozzie		ing (Shel) Side)			(Tube Side)	Remarks				
	le:										
Ou	itlei						1				
Dn	ain						1				
٧e							t				

Total
Customer MO.I IRAQ Service ST STATE SYTI, GAE COLER
Type BEU Tube length SSOO Surface per Unit
Regulation
Performance of One Unit
Fluid Circulated CODUNS WATER SYN GAS
Torol
13 Liquid M.W. 627800 kg/h M.W. 347 kg 14 Steam 18 M.W. kg/h 18 M.W. 347 kg 15 Non-Condensable M.W. kg/h 8,67 M.W. 37962 kg 16 Density 993. 4 kg/m at 37 ° c kg/m kg/m et 37 ° c 17 Viscosity 0.695 cs. at 37 ° c cs. at 18 Specific Haat 0.998 kcal/kg c at 37 ° c kcal/kg c at 19 Bailing Point c c c 19 Density 0.536 kcal/mh*cat 37 ° c kcal/kg c at 20 Density 0.536 kcal/mh*cat 37 ° c kcal/kg c at 21 Density Viscosity cp. at c 0.0175 cp. at 22 Viscosity cp. at c 0.0175 cp. at 23 Specific Heat kcal/kg c at c 0.7925 kcal/kg c 24 Daw Point c 0.7925 kcal/kg c 25 Ther. Conductivity kcal/mh*cat c 0.7925 kcal/kg c 25 Fluid Vap. or Cond. M.W. kg/h M.W. kg/h 26 Fluid Vap. or Cond. M.W. kg/h M.W. 173 kg 27 Steam Candensed M.W. kg/h M.W. 173 kg Latent Heat kcal/kg at c lin: 148.9 ° c Cot: 43 ° c 30 Operating Press. 19 Spec.: 0.7 kg/cm Calc.:0.504 kg/cm Spec.: 0.50 kg cm Calc.:0.470 kg 31 No. of Pass & Velocity 1 8 m 2 8 m 32 Pressure Drop Spec.: 0.7 kg/cm Calc.:0.504 kg/cm Spec.: 0.50 kg cm Calc.:0.470 kg 33 Canada Haat kcal/m
18 M.W. 18 M.W. 347 kg 15 Non-Condensable M.W. kg/h 8.67 M.W. 379.62 ks 16 Density 973.4 kg/m³ of 37° c kg/m³ of 37° c cp. of 37° cp. of 37° cp. of 37° cp. of 37° c cp. of 37°
Density
Viscosity
Secolific Heat
Ther. Conductivity
Density Reg/m² at 'c 10.89 Reg/m² or 94.5
Specific Heat
Dew Point 'c
Fluid Vap. or Cond. M.W. kg/h M.W. kg/s
Steam Condensed M.W. kg/h /8 M.W. 173 kg
30 Operating Press. 1/2: 5.5 kg/cm ² G 1/2: 39.7 kg/cm ² 31 No. of Poss & Velocity 1 & 8 & m & 2 & 8 & m 32 Pressure Drop Spec.: 0.7 kg/cm ² Calc.: 0.50 kg/cm ² Spec.: 0.50 kg/cm ² Calc.: 0.50 kg/cm ² Spec.: 0.50 kg/cm ² Calc.: 0.50
No. of Poss & Velocity
Sensible Heat
Second S
10 10 10 10 10 10 10 10
Film Coefficient
38 Overall Trans. Coeff. Clean: kcal/m²h²c Fouled kcal/m²h²c Designed 455 kcal/m²h 19 LMTD corrected 35.5
40 Construction
41 Fressure Des'n kg/cm²G lest kg/cm²G Des'n kg 'm²G lest kg cr
42 Design Temperature c c c 43 Tube No. per Shell: Size: O.D.X LX Thick, min. ave.) Prich 4
44 Material & Other Tube: Shell: (Snell I.D.: Thick.:)
45 Channel: Gasket: Channel Cover:
46 Shell Cover: Gasket: Floating Head: Gasket: 47 Tube Sheet: Stationary: Thick: Floating: Thick:
48 Cross Boffle: Thick.: Type: 'No. Cut: Spoce:
49 Long Boffle: Thick.: Type: No: 50 Tube Support: Thick.: Type: Spoce:
51 Corrosion Allowance mm
52 Stress Kelief No Yes Radiograph: No Yes % 53 Weight per Unit Empty kg Tube Bundle: kg Full of Water: kg
54 Nozzle Size & Roling (Shot) Side, Size & Roling (Tube Side) Remarks
55 Inle1
56 Outlet 57 Drain
58 Vent
59 bC Founting
61 Insulation No Hot , Cold Thick mm
Checked by Designed by Date

Customer M.O. I IRAQ	TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET							14
TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET	First	_				Rev	1 81	
Panil	Final IRAQ EXP. NH1 UNIT Service 2/10 STAGE SYN GAS COOLER	Plant IRAQ EXP. NH3 UMIT New No.	Plant IRAQ EXP. NH1 UNIT New No.	١	TUBULAR H	HEAT EXCHANGER DAT	A SHEET	Dáte	k	
	Service Serv	Service Serv	Service Serv	t		P. NH3 UNIT	Item No.			
Shell I.D. Store Shell Shell Store Shell	Shell D. Store Shell Shell Shell Shell D. Shore Shell D. Shell Shell Shell Shell Shell D.	Shell I.D. Store Langth S.O.O. Shell per Unit J.O.O. m²	Shell I.D. Store Langth S.O.O. Shell per Unit J.O.O. m²	ŀ		IRAQ				OLFR
Shell LD	Shell 1.0	Shell CD. Subs Languh SOO Surface per Unit 200 m	Shell CD. Subs Languh SOO Surface per Unit 200 m	-	Location In			Jail /		
Parformance of Core Unit	Particulation	Parformance of Core Unit	Parformance of Cine Unit Shell Side			Tube length 6000			00	
Fluid Circulated COOLING MATER SYN. GAS Syn. GAS Total 78 M.W. 6/9300 kg/h 8.70 M.W. 38/36 kg/h Vapor M.W. 6/9300 kg/h M.W. kg/h Vapor M.W. 6/9300 kg/h M.W. kg/h Steom 18 M.W. kg/h 8.67 M.W. 774 kg/h Non-Condensoble M.W. kg/h 8.67 M.W. 774 kg/h Non-Condensoble M.W. kg/h 8.67 M.W. 779.62 kg/h Dansty 993.4 kg/m oi 37 c c cp. of c Viscosity 2.675 cp. oi 37 c c cp. of c Viscosity 2.675 cp. oi 37 c c kcol/hg cot c Soling Point c c c c Ther Conductivity 0.536 kcol/mh cot 37 c c kcol/mh cot c Soling Point c c 2.0.37 kg/m oi 7	Fluid Circulated	Fluid Circuished	Fluid Circuished	F	Ragulation	Code ASME TEMA · R Performa			<u> </u>	
Total	Total	Total	Total	ŀ						
Liquid M.W. 6/9300 kg/h M.W. kg/h	Second	Speak Spea	Speak Spea	-		18 M.W. 619300	kg/h	8.70 M.W.		
Steam	Steam	Steam	Steam							kg/h
Density	Density	Density	Density	-	Steam	18 M.W.				
								8.67 M.W.	kg/m³ of	· c
Section Pearl Section Point Text	Soling Point No. 25.36 kcol/mh tot) 3.7 c kcol/mh tot) 4.7 c kcol/mh tot) 4.7 c kcol/mh tot) 5.8 c kcol/mh tot) 5.8 c kcol/mh tot) 5.8 c kcol/mh tot) 6.8	Section Pearl Section Point Text	Section Pearl Section Point Text		Viscosity	0.695 cp.				
Density	Density	Density	Density		2	1			*c	
Viscosity	Viscosity	Viscosity	Viscosity					20 1		
Dew Point	Dew Point 'c	Dew Point	Dew Point		Viscosity	cp.	ol 'c	0.01	77 cp. c	94 °c
Ther. Conductivity	Ther. Conductivity	Ther. Conductivity	Ther. Conductivity	l		1	c at °C	0.80		
Steam Condensed	Steam Condansed	Seam Condensed	Seam Condensed		Ther, Conductivity	kcal/mh			keal/mh*e a	
Common Construction Constructi	Temp. In. & Out. Int. 34	Temp. In. & Cot. In: 34.6	Temp. In. & Cot. In: 34.6	l						kg/h
						+		le: 148 3		
No. of Pass & Velocity Pressure Design Emperature Persure Design Emperature Tube No. per Shelf: Shell: Channel: Channel:	No. of Pass & Valority Pressure Desir & Kacl/m² h²c Fouled kcal/m² h²c Pouled kcal/m² h²c Fouled kcal/m² h²c Pouled kcal/m² h²c	No. of Pass & Velocity Pressure Design Emperature Persure Design Emperature Tube No. per Shelf: Shell: Channel:	No. of Pass & Velocity Pressure Design Emperature Persure Design Emperature Tube No. per Shelf: Shell: Channel:			In: 5.5	kg/cm² G	lni	75.5	kg/cm² G
Sensible Heat Seal/h Seal/m² h²c Seal	Sensible Heat Seal/h Seal/m² h²c	Sensible Heat tatent Heat kcal/h kcal/h kcal/h kcal/h kcal/h Total Heat Duty 3.34 x 106 kcal/h kcal/m four a construction Core a construction Pressure Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² G Design Temperature Tube No. per Shelf: Size: O.D.X Thick.(min. ave.) Channel: Casket: Channel Cover: Shell Cover: Gasket: Floating Head: Gasket: Tube Sheet: Stationary: Thick.: Type: No: Cross Boffle: Thick.: Type: No: Cores Boffle: Thick.: Type: Space Coresion Allowance No Weight per Unit Empty: kg Tube Bundle: Remarks Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) Nozzle Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) New Cut: Remarks	Sensible Heat tatent Heat kcal/h kcal/h kcal/h kcal/h kcal/h Total Heat Duty 3.34 x 106 kcal/h kcal/m four a construction Core a construction Pressure Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² G Design Temperature Tube No. per Shelf: Size: O.D.X Thick.(min. ave.) Channel: Casket: Channel Cover: Shell Cover: Gasket: Floating Head: Gasket: Tube Sheet: Stationary: Thick.: Type: No: Cross Boffle: Thick.: Type: No: Cores Boffle: Thick.: Type: Space Coresion Allowance No Weight per Unit Empty: kg Tube Bundle: Remarks Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) Nozzle Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) New Cut: Remarks			· · · · · · · · · · · · · · · · · · ·				
Construction Cons	Contraction Construction Const	Construction Cons	Construction Cons		Sensible Heat		keal/h			
Fouling Factor Fouling Factor Film Coefficient Coverall Trans. Oper R. LMTD Clean: kcal/m²h²c Fouled kcal/m²h²c Designed \$72 kcal/m²h²c Clean: kcal/m²h²c Fouled kcal/m²h²c Designed \$72 kcal/m²h²c Clean: kcal/m²h²c Fouled kcal/m²h²c Designed \$72 kcal/m²h²c Construction Pressure Design Temperature Pessure Design Temperature Construction Pressure Design Temperature Construction Pressure Design Kg/cm²G Test kg/cm²G Design kg,c²m²G Test kg/cm²G Construction Pressure Design Temperature Construction Pressure No. per Shelt: Size: O.D.X LX Thick.(min. ave.) Pitch A.C. Material & Other Tube: Shelt: (Shell I.D.: Thick.:) Channel: Cover: Shell Cover: Tube Sheet: Stationary: Thick.: Floating Head: Gasket: Tope Sheet: Stationary: Thick.: Type: No: Cut: Space: Long Baffle: Thick.: Type: No: Cut: Space: Long Baffle: Thick.: Type: No: Cut: Space: Tube Support: Thick: Type: No: Cut: Space: Tube Support: Thick: Type: No: Cut: Space: Tube Support: Thick: Type: No: Cut: Space: Topic Space: Radiograph: No: Yes % Weight per Unit Empty: kg Tube Bundle: kg Full of Water: kg Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) Remarks Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) Remarks	Fouling Factor Spec.: D. 000.6 mth total Spec.: D. 000.7 mth total Spec.: Spec	Fouling Factor Fouling Factor Film Coefficient Coverall Trans. OpeR. Clean: kcal/m³h c Fouled kcal/m²h c Designed \$72 kcal/m³h c Construction Pressure Design Temperature Tube No. per Sheft: Size: OD.X LX Thick.(min. ave.) Pitch Channel: Gasket: Channel Cover: Shell Cover: Tube Sheet: Stationary: Thick: Type: Corss Boffle: Thick: Type: Tube Support: Thick: Type: Thick: Type: Thick: Type: Tube Support: Thick: Type: Tube Support: Thick: Type: Thick: Thick: Type: Thick: Thick: Type: Thick: Thick: Thick: Type: Thick: Thick:	Fouling Factor Fouling Factor Film Coefficient Coverall Trans. OpeR. Clean: kcal/m³h c Fouled kcal/m²h c Designed \$72 kcal/m³h c Construction Pressure Design Temperature Tube No. per Sheft: Size: OD.X LX Thick.(min. ave.) Pitch Channel: Gasket: Channel Cover: Shell Cover: Tube Sheet: Stationary: Thick: Type: Corss Boffle: Thick: Type: Tube Support: Thick: Type: Thick: Type: Thick: Type: Tube Support: Thick: Type: Tube Support: Thick: Type: Thick: Thick: Type: Thick: Thick: Type: Thick: Thick: Thick: Type: Thick: Thick:			3.34 × 106		3.34	x 106	kcal/h
Overall Trans. Gog ff. Clean:	Overall Trans. Speff. Clean: kcal/m²h²c Fouled kcal/m²h²c Designed ₹72 kcal/m²h²c LMTD Construction Construction Pressure Design kg/cm²G Test kg/cm²G Design kg/cm²G Test kg/cm²G Test kg/cm²G Test kg/cm²G Design kg/cm²G Test kg/cm²G Design kg/cm²G Test kg/cm²G Design kg/cm²G Test kg/cm²G Design Design Kg/cm²G	Overall Trans. Gog ff. Clean:	Overall Trans. Gog ff. Clean:		Fouling Factor			Spec .: 0,0	VV.	
Pressure	Pressure	Construction Pressure Des'n kg/cm² G Test kg/cm² G Des'n kg/cm² G Test kg/cm² G Design Temperature C	Construction Pressure Des'n kg/cm² G Test kg/cm² G Des'n kg/cm² G Test kg/cm² G Design Temperature C			Clean: kcal/m²h*c	Fouled			
Pressure Desin kg/cm² G Test kg/cm² G Tes	Pressure Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² G	Pressure Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Desin kg/cm² G Design Temperature °c °c °c °c °c °c °c °	Pressure Desin kg/cm² G Test kg/cm² G Test kg/cm² G Test No A_C Tube Alones! Gasket: Gasket: Channel Cover: Shell Cover: Gasket: Floating: Thick: Type: No: Cut: Space: Long Baffle: Thick: Type: Type: No: Tub: Space: Thick: Type: No: Space: Tub: No: Thick: Type: No: Space: Thick: Type: No: Yes Rediagraph: No: Yes % Use Bundle:		LMTD	Con		IMTD (Corrected)	35.4	
Tube	Tube	Tube	Tube			Des'n kg/cm² G Test			^c m ² G Test	kg /cm² G
Material & Other Tube: Shell: (Shell I.D.: Thick:)	Material & Other	Material & Other Tube: Shell: (Shell I.D.: Thick:)	Material & Other Tube: Shell: (Shell I.D.: Thick:)				O.D. X		ck.(min. ave.) Pito	h 45
Shell Cover: Gasket: Floating Head: Gasket:	Shelf Cover	Shell Cover Gasket: Floating Head: Gasket:	Shell Cover: Gasket: Floating Head: Gasket:		Material & Other	Tube: Shell:			Thick,:)
Cross Boffle: Thick: Type: No: Cut: Space:	Cross Boffle: Thick: Type: No: Cut: Space:	Cross Boffle:	Cross Boffle:			Gasket:		Floating Head:		
Long Baffle:	Long Baffle: Thick: Type: No:	Long Baffle: Thick: Type. No: Tube Support: Thick: Type: Space:	Long Baffle: Thick: Type. No: Tube Support: Thick: Type: Space:							
Corrosion Allowance	Corrosian Allowance	Cortosian Allowance	Cortosian Allowance	,	Long Baffle:	Thick.:	Туре.	Na:	Sance	
Weight per Unit Empty: kg Tube Bundle: kg Full of Water: kg Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) Inlet Ourlet Drain	Weight per Unit Empty: kg . Tube Bundle: kg . Full of Water: kg Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) Remarks Inlet Outlet Drain	Weight per Unit Empty: kg . Tube Bundle: kg . Full of Water: kg Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) Inlet Outlet Drain	Weight per Unit Empty: kg . Tube Bundle: kg . Full of Water: kg Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) Inlet Outlet Drain				lype:	L	mm	
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Ourier Drain	Ourlet Drain	Outlet Drain	Outlet Drain							
Drain	Drain	Drain	Drain	3	Weight per Unit		ME / LOGE SIDE,			
Veni	Veni	Veni	Veni	3	Weight per Unit Nozzle Size & Ri Inlet		rg (100e 3ne;			
				1	Weight per Unit Nozzle Size & Ri Inlet Outlet		ng (1000 Jide)			
					Weight per Unit Nozzle Size & Ri Inlet Outlet Drain		, and she,			
					Weight per Unit Nozzle Size & Ri Inlet Outlet Drain		ng viole 3 lie,			
					Weight per Unit Nozzle Size & Ri Inlet Outlet Drain		ng viole 3 lie.			
					Weight per Unit Nozzle Size & Ri Inlet Outlet Drain		ng viole side,			
					Weight per Unit Nozzle Size & Ri Inlet Outlet Drain		, Control of the cont			
					Weight per Unit Nozzle Size & Ri Inlet Outlet Drain		, Control of the cont			
				2	Weight per Unit Nozzle Size & Ri Inlet Outlet Drain		, Control of the cont			
				3 4 5 5 7	Weight per Unit Nozzle Size & Ri Inlet Outlet Drain		, vote suc,			
				2 3 4 5 6 7	Weight per Unit Nozzle Size & Ri Inlet Outlet Drain		, vote suc,			
				2 3 4 5 6 7	Weight per Unit Nozzle Size & Ri Inlet Outlet Drain		, vive suc			
				1 2 3 4 5 5 6 6 6 7 6 8 8	Weight per Unit Nozzle Size & Ri Inlet Outlet Drain					
				3 4 5 6 7	Weight per Unit Nozzle Size & Ri Inlet Outlet Drain					
				3 4 5 5 7	Weight per Unit Nozzle Size & Ri Inlet Outlet Drain					
47	477	47	477	2	Weight per Unit Nozzle Size & Ri Inlet Outlet Drain	aring (Shell Side) Size & Rati				
47	47	47	47		Weight per Unit Nozzle Size & Ri Inlet Outlet Drain	aring (Shell Side) Size & Rati				
47	47	47	47		Weight per Unit Nozzle Size & Ri Inlet Outlet Drain	aring (Shell Side) Size & Rati				
47	47	47	47		Weight per Unit Nozzle Size & Ri Inlet Outlet Drain	aring (Shell Side) Size & Rati				

Density	Plant RAQ EXP NH3 LINIT LINE No. E - 304	Plant RAQ EXP NH3 LINIT LINE No. E - 304	Plant RAQ EXP NH3 LINIT LINE No. E - 304	-				STRIES, LTD.		Rev	·	1/
	Density Dens	Description Index	Current FT.O.S. IRAG Service 3RD STAGE SYN GAS COOLER		T(UBULAR	HEAT EXCHA	NGER DATA	A SHEET			
Decision	December	Decesion	Design	-				UNIT	Hem No.	E-304		
Specific Heart Spec	Specific Heart Symbol Sy	Specific Heart Spec	Shall 1D. 830 Tube Isangh 6500 Surface per Unit 230 m²		Order					··· ·	YN GAS	DOLER
Shell I.D. \$30	Shell 1.0 1.0 1.0 1.0 1.0 1.0	Shell 1.0 1.	Shell 1.0. \$3.0 Tube Length \$5.00 Surface per Unit 2.30 m²	_						Unit .	/	
Shell Shel	Shell Shel	Priormance of Cine Unit Shell Side Tube T	Performance of Cine Unit Shell Side Tube Side	_			Tube Length	6500				
Fluid Circulaved COOLING WATER SYN GAS Total 18 M.W. 998560 kg/h K.49 M.W. 38057 kg/h Laud M.W. 378500 kg/h M.W. 38057 kg/h Steam 18 M.W. kg/h kg/h 18 M.W. 90 kg/h Non-Condensable M.W. kg/h kg/h 8,67 M.W. 37962 kg/h Density 993 kg/m' at 37 ° c kg/m' at 27 ° c Viconity 0.695 cp. at 37 ° c kg/m' at 27 ° c Bailing Point C c kg/h at 27 ° c kg/m' at 27 ° c Ther. Conductivity 0.536 kcal//h kcal 37 ° c kcal//kg cot c Density 0.536 kcal//h cat 37 ° c kcal//kg cot c Density 0.536 kcal//h cat 37 ° c kcal//kg cot c Density 0.536 kcal//h cat 37 ° c kcal//kg cot c Density 0.536 kcal//h cat 37 ° c kcal//kg cot c Ther. Conductivity 0.536 kcal//h cat 37 ° c kcal//kg cot c Specific Heat 0.978 kal//m' cat 1 ° c 0.227 ° c c d 1/4 ° c Specific Heat 0.800 M.W. kg/h M.W. kg/h M.W. kg/h Specific Heat 0.800 M.W. kg/h M.W. kg	Flood Crocolaved COOLING WATER SYN SAS Flood 1/8 M.W. 398500 kg/h K.W. 38057 kg/h Laud M.W. 398500 kg/h M.W. 38057 kg/h Staam 18 M.W. kg/h 18 M.W. 90 kg/h Non-Condensable M.W. kg/h kg/h 18 M.W. 90 kg/h Density 993 4 kg/m of 37 c kg/m of c Viccoiry 0.695 cp. of 37 c kg/m of c Bailing Point 7 c kcal/kg/c of c Ther. Conductivity 0.536 kcal/m cot c Density 0.536 kcal/m cot c Develope Cond. Kcal/kg/c of c Specific Heat 0.783 kcal/m cot c Develope Cond. M.W. kg/h M.W. kg/m of 1/4 c Specific Heat 0.844 Kacl/m cot c Develope Cond. M.W. kg/h M.W. kg/m cot c Ther. Conductivity kcal/kg/c of c 0.829 kcal/kg/c //4 c Specific Heat 0.844 Kacl/m cot c Develope Cond. M.W. kg/h M.W. kg/m cot c Specific Heat Kacl/kg of c c 0.829 kcal/kg/c //4 c Specific Heat Kacl/kg of c c 0.829 kcal/kg/c //4 c Specific Heat Kacl/kg of c c kcal/kg/c c //4 c Specific Heat Kacl/kg of c c kcal/kg/c c //4 c Specific Heat Kacl/kg of c c kcal/kg/c c //4 c Specific Heat Kacl/kg of c c kcal/kg/c c //4 c Specific Heat Kacl/kg/c of c c kcal/kg/c c //4 c Specific Heat Kacl/kg/c of c c kcal/kg/c c //4 c Specific Heat Kacl/kg/c of c kcal/kg/c c //4 c Specific Heat Kacl/kg/c of c kcal/kg/c c //4 c Specific Heat Kacl/kg/c of c kcal/kg/c c //4 c Specific Heat Kacl/kg/c of c kcal/kg/c c //4 c Specific Heat Kacl/kg/c of c kcal/kg/c c //4 c Specific Heat Kacl/kg/c of c kcal/kg/c c //4 c Specific Heat Kacl/kg/c of c kcal/kg/c of c kcal/kg/c of c	Fluid Circulated	Fluid Circulated	Ë	ego.dilo#		Code HOTAL				30	
Total	Total	Total	Total		hid Crean	lated						
Sistem	Stand	Stand	Bound				/8 MW	898500		8.69 M.W.		
Steam	Steam	State	State	H				·····				
Density	Density	Density	Density		Staom		18 M.W		kg/h	18 M.W.		kg/h
Specific Heat	Specific Heat	Nicosity	Nicosity	┝				• • • • • • • • • • • • • • • • • • • •		8.67 M.W.		
Ther. Conductivity	Boiling Point C	Bolling Point C	Boiling Point C	亨			0.69	у <u>с</u> ер. (st 37 °c		ερ.	
Density	Density	Density	Density	ŝ			D. 97		3/ 5			O7 C
Viscosity Cp. at ' C O. 0/87 Cp. at 1/14 Cc Specific Heat Keal/kg'cat ' C O. 829 Keal/kg' Cc 1/4 Cc	Viscosity	Viscosity Cp. at ' C D, 0/87 Cp. at 1/4 Cc Dww Point Ther. Conductivity Kcal/Mn't cot ' C P, 2/9 kcal/Mn't cot ' C P, 2/34 kcal/Mn't cot ' P, 2/34 kcal/Mn't cot ' C P, 2/34 kcal/Mn't cot ' P,	Viscosity Cp. at ' C D, 0/87 Cp. at 1/4 Cc Dww Point Ther. Conductivity Kcal/Mn't cot ' C P, 2/9 kcal/Mn't cot ' C P, 2/34 kcal/Mn't cot ' P, 2/34 kcal/Mn't cot ' C P, 2/34 kcal/Mn't cot ' P,		•		0.53					
Dew Point	Dew Point	Dew Point	Dew Point	١				cp.	a) *c			
Ther. Conductivity	Ther. Conductivity	Ther. Conductivity	Ther. Conductivity	Š,					et °c		y kcol/kg·c ر	114
Steam Candensed	Steam Condensed	Steam Condensed	Steam Condensed	L	Ther. C	anductivity		kcal/mh*c				
Lotent Heart Language Langu	Lotent Hard	Lotent Heat	Lotent Heat	_								
Operating Press. 12: 5.5 kg/cm² G 1m: 175 kg/cm² G	Departing Press. 1/2	Operating Press. 172	Operating Press. Im	l	alent Heat			kcal/kg	al °c		kcal/kg	at c
No. of Pass & Velocity DIVIDED &	No. of Pass & Velocity D1 V 10 ED &	No. of Pais & Velocity	No. of Pass & Velocity									
Sensible Heat Real/h Rea	Sensible Heat Sensible Hea	Sensible Heat	Sensible Heat					٤ .		2	&	
Total Heat Duty	Total Heat Duty	Total Heat Duty	Total Hear Duty 4.85 × 106 kcal/h Fouling Factor Spec. 0.0006 m²h²c/kcal Film Coefficient Coveroll Trans. Coeff. Land Coeff. Land Coeff. Clean: Coveroll Trans. Coeff. Clean: Construction Pressure Design Temparature Tobe No. per Shell: Size: Channel Channel: Cross Baffle: Thick: Type: Tube Support: Thick: Type: Tube Support: Thick: Type: Thick: Type: Corrasion Allowance Thick: Type: Thick:	-			Spec. D. 7	kg/cm coic.p.o		3pec.: 0, 33	ky em Care. D.	kcal/
Fouling Factor Space D. 0.006	Fouling Factor Space D. 0.006	Fouling Factor Spac. D. 0.006	Fouling Factor Spec. D. 0006				1.25	× 106		1 °C V	106	
Overall Trans. Coeff. Clean:	Overall Trans. Coeff. Clean:	Overall Trans. Coeff. Clean: kcal/m²h c Fouled kcal/m²h c Designed 464 kcai/m²h c	Overall Trans. Coeff. Clean: kcal/m² h c Fouled kcal/m²h c Designed 464 kcai/m² h c	F	ouling Fac	chor		6	m² h •c/kcal			m² h ¹c/kcal
LMTD	LMTD	LMTD Construction LMTD (Corrected) LS. 4 Construction	LMTD	-			Clean:			kcal/m²h*c De	signed 464	
Pressure Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² C Desin kg/cm² G Test kg/cm² C Desin kg/cm² G Test kg/cm² C Lest Lest <th< td=""><td>Pressure Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² C Desin kg/cm² G Test kg/cm² C Desin kg/cm² G Test kg/cm² C Desin kg/cm² C Test kg/cm² C Desin kg/cm² C Test kg/cm² C Desin kg/cm² C Test C C C C Desin kg/cm² C Inkck (min, ave.) Pich Desin Desin Desin Pick (min, ave.) Pich Desin Desin Desin Pick (min, ave.) Pich Desin Desin</td></th<> <td>Pressure Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² C Desin kg/cm² G Test kg/cm² C Test Thick (min, ave.) Pich Pich A Channel Other Shell Channel Cover: Channel Cover: Channel Cover: Channel Cover: Gasket: Floating Head: Gasket: Floating Head: Gasket: Thick: Type: No: Cut: Space: Tube Support. Thick: Type: Type: No: Space: Thick: Type: Space: Space: Space:</td> <td>Pressure Desin kg/cm² G Fest kg/cm² G Desin kg/cm² G Test Lg Test Lg Test Lg Lg</td> <td></td> <td>.MTD</td> <td></td> <td></td> <td></td> <td>1c</td> <td></td> <td></td> <td></td>	Pressure Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² C Desin kg/cm² G Test kg/cm² C Desin kg/cm² G Test kg/cm² C Desin kg/cm² C Test kg/cm² C Desin kg/cm² C Test kg/cm² C Desin kg/cm² C Test C C C C Desin kg/cm² C Inkck (min, ave.) Pich Desin Desin Desin Pick (min, ave.) Pich Desin Desin Desin Pick (min, ave.) Pich Desin	Pressure Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² G Desin kg/cm² G Test kg/cm² C Desin kg/cm² G Test kg/cm² C Test Thick (min, ave.) Pich Pich A Channel Other Shell Channel Cover: Channel Cover: Channel Cover: Channel Cover: Gasket: Floating Head: Gasket: Floating Head: Gasket: Thick: Type: No: Cut: Space: Tube Support. Thick: Type: Type: No: Space: Thick: Type: Space: Space: Space:	Pressure Desin kg/cm² G Fest kg/cm² G Desin kg/cm² G Test Lg Test Lg Test Lg		.MTD				1 c			
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Material & Other	Material & Other	Material & Other	Material & Other	-		paroture			00 ×		-t /-i 1 pi	
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Weight per Unit	Weight per Unit Empty: kg Tube Bundle: kg Full of Water: kg Nozzle Size & Rating (Shell Side) Size & Rating (Tube Side) Remarks Inlet Outlet Outlet Drain Outlet Outlet	Weight per Unit	Weight per Unit				No ,			Radiograph: N		%
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Drain	Drain	Drain	Drain		nlet	312 G AG	ing (snen side)	Jize a Kanny	(:004 3/46)	Kemarks		
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TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET	TUBULAR HEAT EXCHANGER DATA SHEET		MITSUBISHI	HEAVY INDUSTRIES, LYD		٢			
Plant IRAQ EXP N/H UNIT	Pain	Pain	Pain								
Density Dens	Custome	Custom	Coulone M.O. X	Pl					Check		
Type	Type	Type	Denoting	Cu	stomer M. D. I .		1			COO/ F	
Shell 1D. 1290 Tube tength 6000 Surface per Unit 550 m²	Shall 1.0. 1290 Lube Large 6.00 Surface part Unit 5.50 m²	Shall 1.0. 1290 Lube Length 6000 Surface part Unit 550 m²	Shell 1.0	$\overline{}$			No. Reg'd			_(DD&E)	
Regulation	Regulation	Regulation	Regulation			BJS Tube length 6000			550		m²
Titole Circulated A/R	Shell Side Tube Tube Side Tube Side Tube Tube Side Tube Tube Tube Side Tube	Shell Side	Shell Side Tube	Re	egulation				550		<u>m²</u>
Total	Total	Total	Total			Shell Side			·		
Liquid M. W. Lig/h M. W. 28,320 Lig/h		Liquid M. W. Kg/h M.W. 28,320 Kg/h	Use M.W. Lig/h M.W. Lig/h M.W. Lig/h Steam 18 M.W. J.3.06 kg/h 18 M.W. J.3.33.00 kg/h 18 M.W. J.3.33.00 kg/h 18 M.W. J.3.33.00 kg/h M.W.			28.45M.W. 43606	kg/h		M.W. 28		
Seam	Steam	Steam	Shoom	-		M.W.				23300	
Density	Density	Density	Density		Steam	18 M.W. /306			M.W.		
Specific Heat	Specific Heat	Specific Heat	Specific Heat	H			at °c			g√m³ et	
Boiling Foot	Boiling Foint C	Boiling Forit C	Boiling Foint Text Conductivity Conductivit	<u>19</u>				-	0.695	p. at	
Density	Dennity	Density	Dennity	tiq	Boiling Point	*c				c	
Specific Heat	Viscosity		Viscosity	-							
Ther. Conductivity	Ther. Conductivity	Ther. Conductivity	Ther. Canductivity	ō	Viscosity	0.0211 cp.	o! 105 °C				
Steam Condensed	Sieom Condensed	Sieon Condensed	Fibr Vap. or Cond. M.W. kg/h M.W. kg/h M.W. kg/h Lotent Heat kcal/kg of 'c lin 34.6 'c Out 40 'c Special No. of Poss & Velocity DIVIDED & m's 4.8 m's 4.8 m's M.M. kcal/h kcal/m'h'c kc	\ qp	Specific Heat Dew Paint	•c				c	
Steam Condensed 18 M.W. 187 kg/h M.W. kg/h kcal/kg at c ln 34 6 c Ovi: 40 c c kcal/kg at c C Operating Press. List. 1.5 kg/cm² G 10.34 6 c Ovi: 40 c c C Operating Press. List. 1.5 kg/cm² G 10.34 6 c Ovi: 40 c c C Operating Press. List. 1.5 kg/cm² G 10.34 6 c Ovi: 40 c c C Operating Press. List. 1.5 kg/cm² G 10.34 6 c Ovi: 40 c c C Operating Press view Drop Spec.: 0.76 kg/cm² Calc.: 0.759 kg/cm² Spec.: 0.7 kg/cm² Calc.: 0.223 kg/cm² Spec.: 0.76 kg/cm² Calc.: 0.223 kg/cm² Spec.: 0.7 kg/cm² Calc.: 0.223 kg/cm² Spec.: 0.70 kcal/h Lotant Heat kcal/h kcal/m h c kcal/m	Steam Condensed 18 M.W. 18 7 kg/h M.W. kg/h Latert Heat kcal/kg at 'c kcal/kg at 'c Temp. In. & Cust In: 17 4, 4 'c Cout: 43 'c Coperating Press. In: 1.5 kg/cm G 10: 5.5 kg/cm G No. of Pass & Velacity DIVIDED & m/s 4.	Steam Condensed 18 M.W. 18 7	Steam Condensed 18 M.W. 18 7 kg/h kcal/kg at ' c kcal/kg at '	-	4	0.0268 kcal/mh*c	at 105°c	ļ		ccal/mh 'c at	
Temp. In & Out	Temp. In. & Out	Temp. In. & Out	Temp. In & Out	Sı	team Condensed	18 M.W. 18	7 kg/h		M.W.		kg/h
Description Pressure Desir Reg/cm² Spec.	Description Press. Im. 1.5 kg/cm² G Im.	Description Press Description Descri	No. of Pass & Velacity				43 °c	In: 3			
Pressure Dos Spec. 0.76 kg/cm² Colo.: 0.759 kg/cm² Spec. 0.7 kg/cm² Colo.: 0.223 kg/cm² Spec. 0.7 kg/cm² Spec. Spec. 0.7 kg/cm² Spec. Spec. 0.7 kg/cm² Spec. Sp	Pressure Drop Spec.: 0.16 kg/cm² Calc.: 0,159 kg/cm² Spec.: 0,7 kg/cm² Calc.: 0.223 kg cr Sensible Heat kcal/h kcal/h kcal/h Iotal Heat Duty 1,53 x 106 kcal/h 1,53 x 106 kcal/h Fouling Factor Spec.: 0,000 m² h²c/kcal Spec.: 0,0006 m² h²c/kcal Folling Factor Spec.: 0,000 m² h²c/kcal Spec.: 0,0006 m² h²c/kcal Film Coefficient kcal/m² h²c Coenic kcal/m² h²c Coenic kcal/m² h²c Coenic Co	Pressure Drop Spec. 0.16 kg/cm² Calc.: 0.159 kg/cm² Spec.: 0.7 kg/cm² Calc.: 0.223 kg/cm² Spec.: 0.2006 m² h²c/kcol Spec.: 0.2006 Spec.: Sp	Pressure Drop Spec.: 0.16 kg/cm² Calc.: 0,159 kg/cm² Spec.: 0,7 kg/cm² Calc.: 0.223 kg cr Sensible Heat kcal/h kcal/h kcal/h Iotal Heat Duty 1,53 x 106 kcal/h 1,53 x 106 kcal/h Fouling Factor Spec.: 0,000 m² h²c/kcal Spec.: 0,0006 m² h²c/kcal Folling Factor Spec.: 0,000 m² h²c/kcal Spec.: 0,0006 m² h²c/kcal Film Coefficient kcal/m² h²c Coenic kcal/m² h²c Coenic kcal/m² h²c Coenic Co	C	Operating Press.	Ini 1.5	kg/cm²G	ln:		5.5	kg 'cm² G
Design Feature Design	Latent Heat Real/h Real/h Real/h Total Heat Duty 1,53 x 10.6 Real/h 1,53 x 10.6 Real/h Real	Lotent Heat Real/h Real/h Real/h Total Heat Duty 1,53 x 10.6 Real/h 1,53 x 10.6 Real/h Real	Lotant Heat		· · · — · · · · · · · · · · · · · · · ·	- Liliu-1				·	23 kg er
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Film Coefficient	Film Coefficient	Film Coefficient	Film Coefficient	Te	oral Heat Duty		kcal/h	—			
Construction Cons	LMTD	LMTD	LMTD			Spec.: 0.0002		Spec .:	0.000	. k	cal/m² h 'c
Construction Pressure	Construction Pressure	Construction Pressure	Pressure			Clean: kcal/m²h*c					
Design Temperature C	Dasign Temperature	Design Temperature C	Design Temperature C				ruction	·			
Tube	Tube	Tube	Tube				kg/cm² G	Desin		Test	kg /cm²
Channel: Gasket: Channel Caver Shell Caver: Gasket: Floating Head: Gasket: Floating Head: Gasket: Tube Sheet: Stationary: Thick.: Floating: Thick.: Floating: Thick.: Type: No: Cut: Space: Long Baffle: Thick.: Type: No: Cut: Space: Long Baffle: Thick.: Type: No: Tube Support: Thick.: Type: No: Tube Support: Thick.: Type: Space: Space:	Channel:	Channel:	Channel: Gasket: Channel Caver: Shell Cover: Gosket: Floating Head: Gasket: Tube Sheet: Stationary: Thick: Floating. Thick.: Cross Baffle: Thick: Type: No: Cut: Space: Long baffle: Thick: Type: No: Tube Space: Tube Support: Thick: Type: Space: Carrosion Allowance mm mm mm Stress Relief No Yes Radiograph: No Yes % Weight per Unit £mpty: kg Tube Bundle: kg Full of Water: kg Nozzle Size & Rating (Shell Side) Size & Roting (Tube Side) Ramarks Ramarks Inlet Drain Page (Shell Side) Very Counter Page (Shell Side) Very Counter Page (Shell Side) No zero Page (Shell Side) No zero No zero <td>3</td> <td>ube</td> <td>No. per Shell: Size:</td> <td>O.D. X</td> <td></td> <td>Thick.(min</td> <td></td> <td>۷.</td>	3	ube	No. per Shell: Size:	O.D. X		Thick.(min		۷.
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Carrosian Allowance	Carration Allowance	Carration Allowance	Corrosion Allowance	E	Shell Cover: Tube Sheet: Stationa Cross Baffle:	ry: Thick.: Thick.:		Floating. No:	Cut:		
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Inlet Cutlet Drain	Inlet Outlet Drain	Inlet Outlet Drain	Inlet Cullet Drain Vant	0	Shell Caver: Tube Sheet: Stationa Cross Baffle: tong Baffle: Tube Support: orrosion Allowance	ry: Thick.: Thick.: Thick.: Thick.: Yhick.: mm	Гуре:	Floating. No: No:		Space: Space: mm	9/.
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	TUBULAR	HEAT EXCH	ANG	ER DATA	SHEET		Rev. Date		
P	on IRAO FX	P. NH. L	1117		Item No.		Check	1	
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	rder				Service		-306		
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	ala Circulatea	1 A ! B		43440	_ 	COOL		WAIER_	
- 10	Vopor	28.52 M.V		43419	ka/h	ļ ———		3222.00	kg/h
					kg/h		M.W.		kg."
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	Density	L		kg/m³ a	rt °c		993.4	kg/m³ (37
ا و.	Visc osity	L		cp. c		1	0.695		at 37
iquid	Specific Heat			kcal/kg c a	ı 'c		0.998	kcol/kg c	01 37
-	Boiling Point			*c				*c	
[Ther. Conductivity			keal/min *ca	ıt 'c		0.536	keal/min *c	1 37
	Density	4.	557	kg/m³ c	1 1/0 °C				ot ·
_	Viscosity		213		1 110°C				01 1
Vapo	Specific Heat		2431	kcal/kg*c a		†		keal/kg *c	
۶	Dew Point		-4-2!	*c	110			*c	•
- 1	Ther. Conductivity	0.0	268	kcal/mh *c c	nt // D *c	 		kcal/mh*c o	
Fb	uid Vap. or Cond.	M.W		Redi/iiii e c	kg/h		M.W.	Kca/mh c	
	om Condensed	/8 M.W		1-1	kg/h	ļ 			kg h
	tent Heat	//		656		 	<u>M.W.</u>		kg. h
	mp. In. & Out.	In: 169 4		kcal/kg a	<u></u>	ļ		keal kg e	
	perating Press.		<u>'</u> c		43 °c		. 6 'c		40
	of Pass & Velocity	ln:		4.6	kg/cm ⁷ G]n:	 -	5.5	kg/cm² G
	essure Drap	DIVIDED		<u> </u>	m/s	4		<u>&</u>	m/s
	nsible Heat	Spec.: 0.15	kg/cm	Calc. O.	/2 kg/cm²	Spec. O.	7 kg/cm	1 ² Calc.: 0, 6	
		<u> </u>			kcai/h				kco!'
	tent Heat				kcol/h			•	keel/i
	tal Heat Duty		4 x 1		kcal/h		1.74-x	106	kce
	uling Factor	Spec.: O.	0002		h *c/kcal	Spec .:	0.0006		n² h °c, kcal
	m Coefficient				cal/m²h·c	<u>. </u>			kcal/m² h 'c
	erall Trans. Coeff.	Clean:	kca	ıl/m³h⁺c Fı	oulad 📉.	kcal/m²h°c	Designed	120	kcal/m² h ta
LM	ITD				٠.	LMTD (Core	rectea, -	28.9	• 6
	·	· · · · · · · · · · · · · · · · · · ·		Construc	fion				
	essura	Desa k	g/cm, G	Test	kg/cm²G	Des'n	kg/ [€] m³G	Test	kg /cm
	sign Temperature	•	c				*c		
Tu		No. per Shell:		Size:	O.D. ×	ι×		n, ave.) Pitc	h &
	terial & Other	Tube:		Shell:		(Shell I.D.:		ick.:	
	Channel:			Gasker:		Channel Cove	r:		
	Shell Cover:			Gasket:		Floating Head		Gasket:	
	Tube Sheet: Stationary	,:		Thick .:		Flagting:		Thick.	
	Cross Boffle:		Thick.	:	Type:	No:	Cut:	Space:	
_	long Baffle:		Thick.		Type:	No:			
	Tube Support:		Thick.		Type:			Space:	
	rosion Ailowance			mm	.,,,,.	I		mm space:	
	ess Kelief	No		Yes		Radiograph			
	ight per Unit		· · ·	Tube Bundle	•	·		Yes	<u>%</u>
		ing (Shell Side)		& Rating (T		Remarks	Full of Wat	er:	kg_
Inle			312	- a samg(1	104 3104)	Kemarks			
Out			 						
Dro		·				· .			
Ver			 -			ł	_		
YD	<u>'</u>		I			I	•		

🚣 жизивияны	HEAVY INDUSTRI	ES, LTD.	,	ł			1	/
					Rev.	T		
TUBULAR	HEAT EXCHANGE	R DATA	SHEET		Date			
					Check			
	P. NH. UNIT		ltern No.	£ . 3.	~ ~			
Customer M.O.I.	IRAQ		l	<i>E</i> − 30				
Order	Indoor Out	~~~~	No. Regid	D STAGE		COOLE	<u> </u>	
27.2	BES	1000	Shells per l	Init	'			
Type Shell I.D. 18/0	Tube length '60	~~	Surface per		250			
She'll I.D. 8/0 Regulation	Code ASME TEMA		Surface per		250			
Kegolalion	Cool HOVE TOWN		e of One Unit		200			
	Shell	Side	1		Tube	5 ide		
Fluid Circulated	AIR			600	LING	WA	TER	
Total	28.78 M.W.	42763	kg/h		I.W.	2778		kg/
Vapor	M.W.	+4107	kg/h		.W.			kg/l
Liquid	M.W.		kg/h		.w.	27780	20	kg/l
Moet 2	18 M.W.	463	kg/h	18 M	.W.	_ , , , ,		kg/
Non-Condensable	28.97 M.W.	42300	kg/h		.w.			kg/
Density	20.77		it c		973.4	kg/m³	ot	37 .
Viscosity			, · c		0.695	cp.	c!	37
Secretary West		kcol/kg 'c o	и с		0.998	kcal/kg	'c al	37
Boiling Point		'c				*c		
Ther. Conductivity		kcal/mh *c	ot °c		2.536	kcal/mh	'c at	37
Density	11.46		of //O'c			kg/m³	at	
Viscosity	0.0216		al //0 c			cp.	σ١	•
Specific Heat	0.24.14	keal/kg 'c				kcal/kg	*c	
S Dew Point	V. = 1:- =	*c				٠,		
Ther, Conductivity	- 0.0272	kcal/mh *c	of //0 °c			kcal/mh	°c at	•
Fixid Vap. or Cond.	M.W.		kg/h	٨	\.W.			kg/
Steam Condensed	18 M.W.		80 kg/h	٨	\.W.			kg/
latent Heat		kcol/kg (at 'c			keal, kg	al	•
Temp. In. & Out.	In: /70 °c	Out:	43 ' .	In: 34.	6 .0	Out:	40	
Operating Press.	101/	2.3	kg/cm²G	190		5.5		kg/cm ²
No. of Pass & Velocity	1	å .	m/s			8.		m/
Pressure Drop	Spec.: 0.25 kg/cm	n2 Calc.: O.	241 kg/cm²	Spec.: 0.7	kg/c	m² Calc ∴), <u>22</u>	
Sensible Heat	<u> </u>		kcal/h	L				kcol
Latent Heal	<u> </u>	,	kcal/h	ļ				kcal
Total Heat Duty	1.50 x 1		kcal/h	L	1.50			kcal,
Fouring Factor	Spec : 0.0002		n'h *c/keal	Spec .: /	200	6		h *c/kcc
Film Coefficient	L		kcal/m²h *c	L		1 101		al/m²h' al/m²h'
Overall Trans. Coeff.	Clean: kc	al/m³h·c i	Fouled	kcal/m²h¹c LMTD (Corre		4 /8/		
UMTD	1	Constru	*c	EWID (Colle	1601	33.2	-	
Pressure	Desin kg/cm² G		kg/cm² G	Des'n	kg/ ^c m²(= Test		kg/cr
Pressure Design Temperature	Desn kg/cm ² C	1 1431	kg/cm·G	(A83 II	*E	5 1 1EM		Ng /Cr
Tube	No. per Shell:	Size:	O.D. X	ι _×		nin, ave.) 1	Pitch	
Material & Other	Tube:	Shell:		(Shelf I.D.:		hick.:	-	<u> </u>
Channel:	1 1000.	Gasket:		Channel Cover				
Shell Cover:	,	Gasket:		Floating Head:		Gask	et:	
Tube Sheet: Stationa	ry:	Thick .:		Floating:		Thic		
Cross Baffle:	Thick		Type:	No:	Cut:	Spac		
Long Baffle:	Thick		Type:	No:				
Tube Support:	Thick		Type:			Spac	: e:	
Carrasian Allowance	1	mm		1		mm		

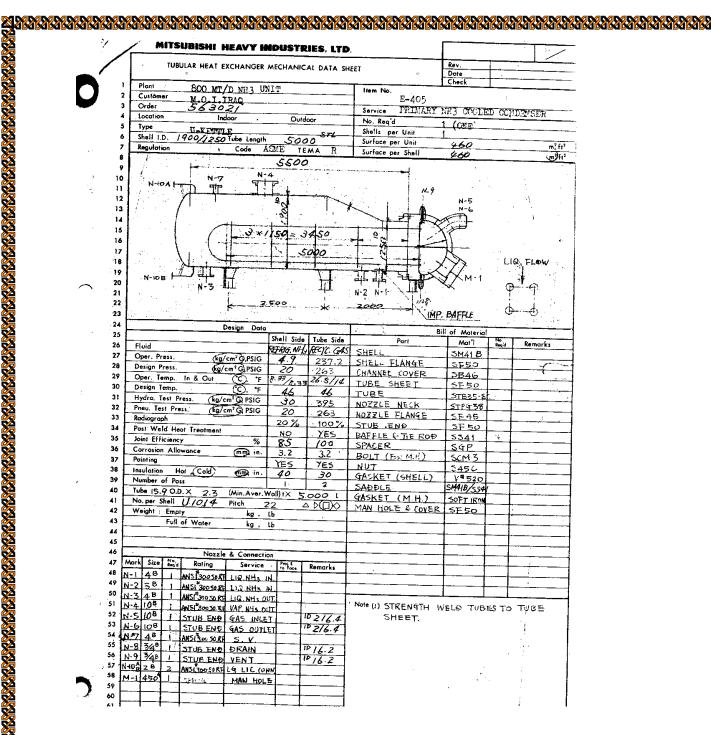
_	& MITS	SUCISMI I	HEAVY	INDU	STRE	ES. LTZ). D.	1			
		UBULAR					·		Rev. Date		
 -	lont	IRAO A	CV A		, ,,,	117	Item No.	·	Check	!	
	ustomer	M. O. I		RA O	1-L/A	<i>LL!</i>		F	308		
	order			Z/3103			Service A		PASS	COOLER	
ī	ecation		ndoor		Que	600	No. Reg d				
T	ype		BE	IJ		C -/	Shells per	Unit	-, /		
	hell I.D.	620	Tube	lengih	400	0	Surface p	er Unit	80.0	,	m,
R	egulation				TEMA		Surface p	er Sheil	.80.0		m ²
						Performa	ince of One Ur	vit			
		·			Shell	Side			Tube	5₁de	
Lf	luid Circu	lared	C00	LING	W	ATER		NATL	IRAL	GAS	
L	otal		L	M.W		53600	kg/h	21.50) M.W.	14000	kę 'h
_	Vapor			M.W	·		kg/h		M.W.		kg/h
L.	Liquid		ļ <u>-</u>	M.W		53600	kg/h		M.W.		kg,'1-
L	Steam		1	8 M.W			kg/h		M.W.		kg h
L		ondensable		M.W			kg/h	21.50	M.W.	14000	kg 5
	Density		ļ	. 99.		kg/m³	al 37 °c			kg/m³	ol 'c_
ق	Visc os		<u> </u>	0.6		¢ρ.	at 37 'c	1		cp.	at c
l ŝ		ic Heat		0.9	98	kcal/kg c	: at 37 'c	<u> </u>		keal/kg c	at 'c
1 -5		Point				* c		1		*:	
L		Conductivity		0.5		kcal/mh·	cal 37 °c			kcal/mh *c	al 'c
Γ	Density					kg/m³	at *c		11.22	kg/m³	an 95 °c
1 =	Viscos	ity				cp.	at °c	l	0.0/27	cp.	at 95 c
1 8	Specif	ic Heat				kcal/kg '	cat °c		0.5436	kcal/kg c	
> ا	Dew P	oint				•c		i		*c	
	Ther, C	Conductivity		•		kcal/mh •	cot 'c		0.0317	kcal/mh*c	at 95 'c
F	luid Vap.	or Cand.		M.W			kg/h		M.W.		kg-h
S	team Cone	densed		M.W			kg/h	1	M.W.		kg/h
T	atent Heat					kcal/kg	of c	1		kcal/kg	at 'c
T	emp. In. &	Out.	In:	34.6	٠.	Out:	40 'c	In:	152.4	c Out:	43 :
	Operating I	Press.	12			5.5	kg/cm² G	110:		15	kg/cm² G
T.	la. of Pass	& Valocity		7		8.	m/s	T	2	8.	. m/s
F	ressure Dr	op	Spec .: (7. 7	kg/cm	Celc.:0	.443 kg/cm	Spec. O.	5 kg/	cm? Calc.O.	235 kg c
S	ensible He	eal					kcol/h	1			kcel/h
Γ	atent Heat	·					kcol/h	T		,	kcal/h
T	ctal Heat	Duty		0.	83 x	106	kcal/h	1	0.83	X 106	kcai/h
F	outing Fac	Clor	Spec.:	0.00			m² h *c/kcal	Spec .: (0.0002		m² h *c/kea!
F	ilm Coeffi	cient	-				keceVm²h *c	T			keal/m²h *c
C	on I flored	ns. Coeff.	Cleon:		kca	1/m² h • c	Fouled	kcol/m³h*	c Design	ed 286	kcol/m²h 'c
	MTD						٠.	LMTD!Co	rrected:	36.3	*c
						Const	ruction				
F	ressure		Des'n	kę	g/cm²G	Test	kg/cm1 G	Des'n	kg/ [€] m²	G Test	kg/cm²
3	esign Tem	peratura		٠,				1	• e		
	u be		No. per	Shell:		Size:	O,D, X	τ _×	Thick.(min, ave.) Pil	kh ۵.
N	laterial &	Other	Tube:			Shell:		(Shell I.D.:		Thick)
	Channel:					Gosket:		Channel Co	ver		
	Shell Co					Gasket:		Floating Hea		Gasket	:
	Tube Sh	eet: Stationar	y:			Thick.:		Floating:		Thick.	
	Cross Ba				Thick.		Туре:	No:	Cut	Space	
L	long Ba	ffle:			Thick.	:	Type:	No:			
	Tube Su	pport:			Thick.	:	Type:			Space	:
[]	orrasion A	llowance				mm		T		mm	
[5	trass Kelie	f	No			Yes		Radiograp	h. No	, Yes	36
["	/eight per		Empty:		٠, و٠	Tube Bu	ndle:	kg ,	Full of V	/ater:	kg
	Nozzle	Size & Ro	ing (Shell	Side)	Siz	e & Rating	g (Tube Side)	Remarks			
[i	nlet						·			,	
C	Jutlet	1			1			7			
C	rain	I			1			1			
1					t			⊣			

#	TO STARES	BUREAU I	BEAVY LAD	22 5 12 6 5	25, LTD.					
	τ.	IIRIII AR	HEAT EXCH	LANGE	R DATA	SHEET		Re≠.		
	•	OBOLAN	HEAT EACH	MINGE	n DAIR	JULLI		Date Check		
P	lant	TRAD E	XP. NHs	11111		item No.		- Check		
	stomer	MATE	IBAQ	.UNI		1 140.	E-	102		
	rder	11.00.1.1				Samue	BFW		rrii .	-
-~	cation		Indoor	Out	1775	No. Regid	DF VO		<u> </u>	
	pe		- TUBE	000		Shells per	المحدد المسترا			
!	/pa		Tube length	. 10	57L -	Surface pe		290		
- 5:	eculation	1100	Code ASM	7511		Surface pe		. 290		
	eguidaen		CodeFJS117	TEMA				. 270	<u>, </u>	m²
			r	Shell		e of One Uni	<u>'</u>		····	
	uid Circu	Land		W	Side			Tube	Side	
- <u>-</u> -!	uie Circu	:olea	P. 7.				CONVER	$LQ_{i}=\delta$	GAS	
- 10	otul Vepor		M.V	:	12200	kg/h kg/h	11.2	# M.W.	<i>174952</i>	kg/h
<u> </u>	Liquid					kg/n kg/h				kg/h
			M.\		12200					kg/h
	Sleam		18 M.V			kg/h		M.W.		kg/h
		ondensable	·			kg/h		4 M.W.	74952	kg/h
	Density		8			190°C	ļ		kg√m` ot	
70	Viscos		<u> </u>	<i>!5</i>	cp. a	1.90 -			EP. at	
è		ic Heat	L	065	keal/kg e a	190 -			kcal/kg *c al	'.
-		Point	 		*c				*c	
		Conductivity		5.76	kcal/mh *c c	1190 0			kcal/mh*cat	
	Densit		ļ		· •	ot 'c		4.8.5L	kg/m¹ at	270
ō	Viscos		ļ			ıl °c		0.0219	Cp. qt	220.0
Vopor		ic Heat	ļ		kcal/kg*c c	o) * c		2.73	kcol/kg *c	2700
	Dew P		 		<u>, c</u>				*c	
		Enductivity	ļ		kcal/mh 'c c			0.134-	kcal/mh*c at	
	luid Vap.		M.V			kg/h	*************************	M.W.		kg/h
	eam Con		M.V			kg/h		M.W.		kạ-n
	lent Heat				kcal/kg a		ļ		kcel/kg at	· c
	mp. la. &		lo: /25.	<u> </u>	Out 26		In: 33	6		5 <u>. 7. </u>
	peroling !		.121:		88	kg/cm² G	131		217.6	
		& Velocity	2		8	. m/s	2		<u> </u>	m/s
	estate Dr		-spec.: 0.8_	kg/cm	² Colc.: 0. /		Spec.: /.	40 kg/c	л: Colc.:/. 22	9 kg cm
	nsible Ho	~-~	·			kcal/h				kcol/5
	iteni Heal		· ·			kcol/h			Z	keal/h
	nel Heo!			61 X		kco!/h	- <u></u>	6.61 X		kcal/h
	outing Fac		Spec.:	0.000		n° h •c/kcal	Spec .:	0.00		h *c/kcoi
	m Coeffi		<u> </u>			calím³h *c	L			ol/m² h *c
	rerall Tra	ns. Coett.	Clean:	kco	l/m²h•c F		kcol/m²h*			
ιΛ	CTN		<u> </u>			¹c	EMTD (Cei	rected	78.5	· c
	ressure		I pust	, , , - ;	Construc					
	ressure esign Tem			g/cm² G	Test	kg/cm² G	Desin	kg 'cm'C	Test	kg√cm² G
	ipe isidu reu	heidine		<u>c</u>	r ==		I	· · · · · · · · · · · · · · · · · · ·		
		<u> </u>	No. per Shell:		Size:	O.D. X	ίχ		in. ave.) Pitch	4
	Channel:		Tube:		Shell:		Shell ID.:		hick.:	
	Shell Co				Gosker:		Channel Car			
		ver: cet: Stationar			Thick .:		Floating Hea	o:	Gasket:	
	Cross Bo	tile signonar	7 .	Thick.			Floating:		Thick.:	
	Long Bo	# le ·		Thick.		Type:	No:	Cut:	Space:	
	Tube Su			Thick.		Type:	Pio:			
~~	prosion A		!	ITISCK.	mm	Type:			Space:	
	ress Kelie		No .		Yes		0-1:			
	eight per		Empty:	1	Tube Bund		Radiograp!	Full of Wo	Yes	
	Nozzle		ing (Shell Side)	kg .	e & Rating (Remarks	run or Wo	aret.	kg
_	let	JILE & KCI	8 (3 Jule 1 3 Jule)	3121	e a r.cling (ivoe size:	Kemarks			
	rtlet	 -		 						
_	ain			 		·				
	ini			1						
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Po	inling	······								
			 							

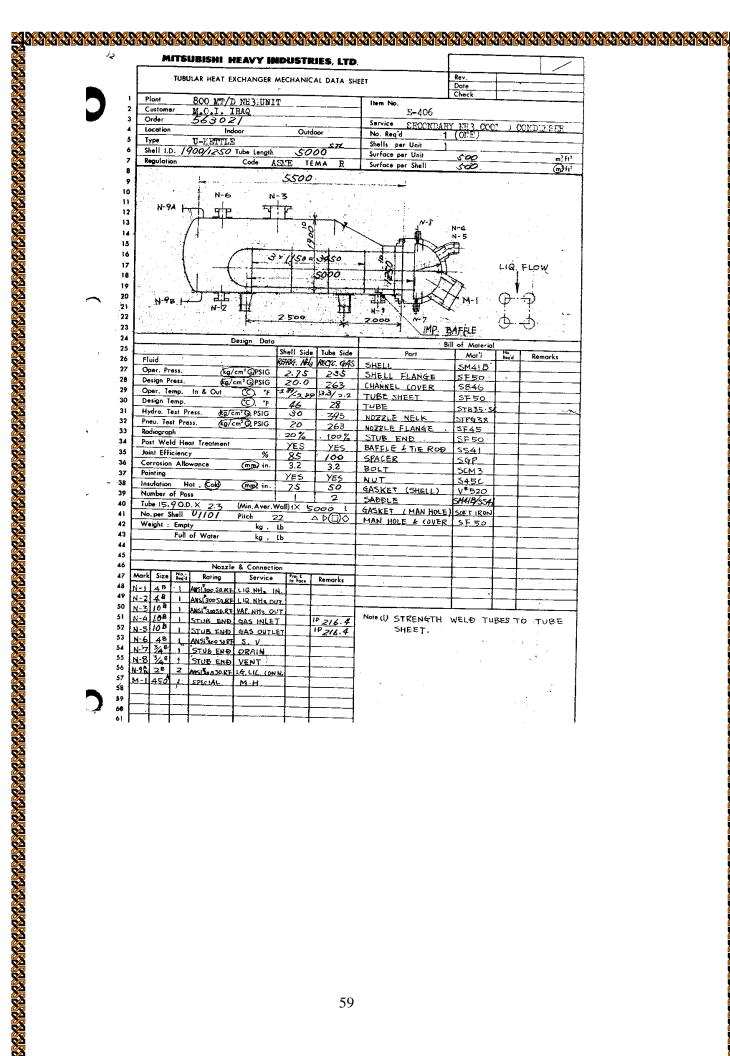
ŀ	TUBULAR	HEAT EXCHANGER DATA SHEET	Rev Date Check
		P. NH3 UNIT liem No.	-404 AB
3	Order	Service WATE	ER COULED CONSEILER
5	Туре	Indoor (Ouldoo) No Reg'd U-TUBE Shells per Unit	
,	Shell I.D. 1250	Tube Length 8000 Surface per Un Code ASME TENIA R Surface per Sh	
8		Performance of One Unit	
10	Fluid Circulated	COOLING WATER CO	ONVERTED SYN. GAS
11 12	Total Vapor	M.W. /300000 W kg/h kg/h	11.24 MW. 174.952 kg/h 17.03 M.W. 45554 kg/h
13	Liquid Steam	M.W. /300000 € kg/h	M.W. kg/h
15	Non-Condensable	M.W. kg/h	10.04 M.W. 129398 Lah
16	Density Viscosity	0.709 cp. at 36 c	cp. at c
18	Specific Heat Boiling Point	0.998 kcol/kg 'c ot 36 °c	kcal/kg 'c as 'c 'c
20 21	Ther, Conductivity Density	0.535 kcol/mh cor 36 c kg/m² or 'c	kcol/m5 *cot *c 79.30 kg/m² or 68 *c
22	Viscosity	cp. at *c	0.0157 (p. 01 68 'c
23 24	Specific Heat Dew Point	kcal/kg 'c at 'c	. 0.75 kcol/kg*c 68 'c
25 26	Ther. Conductivity Fluid Vap. or Cond.		0.0982 kcal/mh*cat 68 *c 17.03 M.W. /1748 kg/h
27 26	Steam Condensed	M.W. kg/h kcal/kg ut 'c	M.W. kg/h kcal/kg at c
29	Temp. In & Out.	In: 34.6 'c Out: 42.8 'C In	101.7 c Cot 41 'c
30	Operating Press, No. of Poss & Velocity)n: 5,5 kg/cm² G la	2 & kg/cm²G
32 33	Pressure Drop Sensible Heat	Spec.: / . / kg/cm² Calc.: 0.68 kg/cm² Si kccl/h	pec. 0.84 kg/cm ² Calc.: 0.63/ kg/c- ² kcal/h
34	Latent Heat	kcol/h	kcol/t.
35 36	Total Heat Duty Fouling Factor		10.61 × 10 ⁶ kcol/h pec.: 0.0002 m² h *c/kcol
37 38	Film Coefficient Overall Trans. Coeff.		.: kcal/m²h²c cal/m²h²c Designed:1099 kcal/m²h²c
39 40	LMTD		MTD (Corrected 16.09 c
41	Pressura	Des'n kg/cm² G Test kg/cm² G D	es'n kg °m≐G Test kg√cm≐G
42	Design Temperature Tube	No. per Sheli: Size: O.D.X	°c LX Thick (min, ove.) Pitch △
42	Materio! & Other Channel:	4	ell LD.: Thick:) muel Cover:
46	Shell Cover: Tube Sheet: Stationar		ating Head Gosket: Sting: Thick.:
48	Cross Baffle: Long Baffle:	Thick.: Type:	No: Cet Space:
50	Tube Support:	Thick,: Type:	Na: Space:
51 52	Corrosion Allowance Stress Kelief	No , Yes R	adiograph: No , Yes %
53 54	Weight per Unit Nozzle Size & Ro	Empty: kg , Tube Bundle: kg sting (Shell Side) Size & Rating (Tube Side) R	Fall of Woter kg
55 56	Inlet Outlet		
57	Drain		
58 59	Vent		•
60 61	Painting Insulation	No Hot, Cald Thick, mm	
i	-		

TUBULAR HEAT EXCHANGER DATA SHEET	Pressure Pressure	1 Phant IRAQ EX 2 Customer M.OI 3 Order 4 location 5 Type 6 Shell I.D. /250 7 Regulation 8 9 10 Fluid Circulated 11 Ictal 12 Yapor 13 Liquid 14 Steam	Indoor Oudcop Service WATE Indoor Oudcop NG Regid U-TUBE Soo 57L Shells per Unit Shell Side Surface per Shells Shell Side COOLING WATER M.W. 1300000 D Regin	Date Check
Page IRRO CXP INT Item No.	Part IRAG CXP M/1 MINT Item No.	Custoner M.O., I Order Income M.O., I Order Income	IRAO Service WATE U-TUBE Tube Length 8000 STL Code ASME TEMA R Surface per Unit Shell Side COOLING WATER M.W. 1300000 D kg/h	- 404 AB FR COSCED CONCESSER - 2 - 1
		Torder Condens Cond	Indoor Outdoo Service WATE U-TUBE Tube Length 8000 Shells per Unit Code ASME TEMA: R Surface per Shell Shell Side	ER COSLED CONFEILSER
Specific Heart 17 17 18 18 18 18 18 18	Specific Heart 17 17 18 18 18 18 18 18	5 Type 6 Shell I.D. 1/250 7 Regulation 8 9 10 Fluid Circulated 11 Tatal 12 Yapor 13 Liquid 14 Steam	U-TUBE Shells per Unit Tube length 8000 STL Surface per Unit Code ASME TEMA R Surface per Sh Performance of One Unit Shell Side COOLING WATER M.W. 1300000 D kg/h	. 600 m
7 Regulation Code ASME Tenn. R Surfee per Skill G O 8 Performance of One Unit 9 Skill Side	7 Regulation Code ASME Tenn. R Surfee per Skill G O 8 Performance of One Unit 9 Skill Side	7 Regulation 8 9 10 Fluid Circulated 11 Tatel 12 Vapor 13 liquid 14 Strom	Code ASME TEMA R Surface per Sh Performance of One Unit Shall Side COCLING WATER M.W. 13000000 D kg/h	600 m
Shell Side	Shell Side	9 10 Fluid Circulated 11 Tatal 12 Yapar 13 Liquid 14 Stram	Shell Side COQLING WATER CO	
		11 Tetal 12 Vapor 13 Liquid 14 Steam	M.W. /300000 & kg/h	
14 Streem 18 M.W. 16 M.W. 1	14 Strom 15 M.W. 16 M.W. 16	13 Liquid 14 Steam	1	11.24 M.W. 174952 kg/h
Non-Condensable	15		M.W. /300000 \$\frac{1}{200000} \kg/h	M.W. ke h
			M.W. kg/h	
		17 Viscosity	0.709 cp. at 36 c	cp. at c
Density Kg/m² or c	Density	I .⊻	0.998 kcol/kg c ot 36 c	
Viscosity Cp. of C. Q. (7/5.7 Cp. of) Specific Heat				
Dew Point C Dew Point Dew Point C Dew Point	Dew Point C C C C C C C C C		cp. at 'c	0.0/57 cp. of 68 c
	Steam Condensed	24 > Dew Point	*c	
Committee Comm	Latent Heat	26 Fluid Vap. or Cand.	M.W. kg/h /	7.03 MW //748 kg h
10 10 10 10 10 10 10 10	1	28 Latent Heat	keat/kg at a c	kcal/kg at 'c
Pressure Design Spec / kg/cm² Calc 0.68 kg/cm² Spec 24 kg/cm² Calc 0.60 kco²/h	Pressure Design Pressure Design Region Region	30 Operating Press.	In: 5.5 kg/cm ² G la	.: 214.6 kg/cm ² G
		32 Pressure Drop	Spec.: 1.1 kg/cm² Calc.: 0.68 kg/cm² Sp	
Fouling Factor Spec	Fouling Factor Spec D. D. D. M' h 't / kcal Spec D. D. D. M' h 't / kcal Spec D. D. D. D. M' h 't / kcal Spec D. D. D. D. D. M' h 't / kcal Spec D. D. D. D. D. D. M' h 't / kcal Spec D. D. D. D. D. M' h 't / kcal / m' h 't / kcal / m' h 't Spec D. D. D. D. D. Spec D. D. D. D. Spec D. D. D. D. D.	34 Intent Heat	kcol/h	
Tilm Coefficient	State	36 Fouling Factor		
Construction Cons	MID Construction Constructio		kco/m²h c	, kcal/m²h c
Pressure	Pressure Desin kg/cm² G Test kg/cm² G Desin kg m² G Test kg/cm² G		'c (M	
Tube	Tube		Desin kg/cm² G Test kg/cm² G De	es'n kg ^C mi G Test kg /cmi G
Channel: Garket: Channel Cover:	Channel: Goske: Channel Cover	43 Tube	No. per Sheli: Size: Q.D.X	
Tube Sheet: Statemary:	Tube Sheet: Stationary: Thick: Floating: Thick: Type: No: Cut Space:	45 Channel:	Gosket: Chon	nel Cover:
Long Baffle: Thick: Type: No:	Long Baffle: Thick: Type: No:	47 Tube Sheet: Stational	y: Thick : Floati	ing: Thick.:
Corrosion Allowance	Corrosion Allowance	49 Long Baffle:	Thick.; Type:	No:
Size & Rating (Shell Side) Size & Rating (Tube Side) Cemarks	Size & Roting (Shell Side) Size & Roting (Tube Side) Size &	51 Corrosion Allowance	TOTA .	mm
55 inlet 56 Outlet 57 Drain 58 Vent 59 60 Pointing	55 Inlet 56 Curiet 57 Drain 58 Vent 59 60 Painting	53 Weight per Unit	Empty: kg , Tube Bundle: kg	, Full of Water kg
57 Drain	57 Drain	55 inlet	ing (Shell Side) Size & Roling (Tube Side) Rer	mark s
SP Painting	SS Pointing	5.7 Drain		
60 Painting	80 Pointing	59		
		Painting	No. 10 Village	
			55	

Part TRAO EXP NH3 UNIT Item No E - 405	Phase TRAO EXP. NH3 UNIT.				HEAT EXCHANG		ET	Rev.		
Content	Content			L					<u> </u>	
Secret Indicator Indicat	Secretary Indicate			- 1 - 2 - 7 . 0 . 1	IRAQ		E-40	5		
Shell D. Pack Pack Soo Tube tength Soo Shell pack Pack Soo Tube Tube Soo Tube Tube Soo Tube Tube Tube Soo Tube Tub	System			- Loice:		Servi	* PRILLARY M	4. 000/5	D CONDE	ÑER.
Republish	Surface per Unit 460 m 1 1 1 1 1 1 1 1 1			5 Type . U	-KETTLE	Shell	per Unit	· · · · · //		
Performence of One Unit Performence of O	Performence of One Unit		:	7 Regulation	50 Tube Length 50.	00 Surfa	ce per Unit			m ⁷
Fluid Circulated REFRIEGRANT Mrs. Not. Not. Not. REFRIEGRANT Mrs. REFRIEGRANT Mrs. REFRIEGRANT Mrs. REFRIEGRANT Mrs. REFRIEGRANT Not. REFRIEGRANT Not. REFRIEGRANT Not. REFRIEGRANT Not. REFRIEGRANT Not. REFRIEGRANT Not. REFRIEGRANT REFRIEGRA	Style Crevibled			·			e Unit	4	60	m
17.03 M.W. 47027 10/h 17.03 M.W. 1	17,02 M.W. 47027 40/h 70,7 M.W. 77,02 M.W. 77,03 M.W. 49/15 46/h 77,03 M.W.		10	O Fluid Circulated						
13	13			the same of the sa	17.03 M.W.	67027 to				
18 M.W. 19/h 7/2 7/4 19/h 16 M.W. 19/h 7/2 7/4 19/h 16 M.W. 19/h 7/2 7/4 19/h 16 M.W. 19/h 7/2 7/4 19/h 17/4 18/h 7/2 7/4 19/h 17/4 18/h 7/2 18/h 18/h 7/2 18/h 18/h 7/2 18/h 1	15 Non-Condensable M.W. 19 h 18 M.W. 19 h 10 16 16 17 18 18 18 18 18 18 18		13	3 Liquid	17.03 M.W.	4915 kg	1h	3 M.W.	19826	
Density	Despir				18 M.W.			3 M.W.	1294-1	
			16	Density				3 M.W.		
				Viscosity Specific Heat	0.15	CP. of p 2 3 3				
The Conductivity	Density Density Reg/m cr 233 c Reg/m reg c 2 2 2 2 2 2 2 2 2		19	Boiling Point	1.12	kcal/kg c at 8.33	c		kcal/kg *c .	
Vincesty C. C. C. C. C. C. C. C	Vincesty Cp. of C 0,014.5 Cp. of 20 c				0.428	kcol/mh *col 8.33 *				
Second S	Second S		22	Viscosity					kg/m' c	
There Conductivity	The Conductivity Keal/mh·col 'c 0.098/ Keal/mh·col 20 C			0 1		kca!/kg·c at				
Fluid Vap or Cand.	26 Flord Verp or Cond.		25	Ther. Conductivity					'c	
					17.03 M.W. /	5642 to	17.0			
Semple Sout	Semple Sout			iotent Heat		the second of th	1			kg/h
1	10				In: 8.33 °c	Out: 8,33	In: 26	5.5		<u> </u>
				No. of Pasi & Velocity					236,9	
Latent Heat March	Latent Heat Stationary: Thick: Type: No: Curronian Ailowance Thick: Type: No: Curronian Ailowance No. Thick: Type: No. No. Thick: No. Thick: No. Thick: Type: No. No. Thick: No. Thick: No. Thick: No. Thick: No. Thick: Type: No. Thick: No. Thick: No. Thick: Type: No. Curronian Ailowance No. Thick: Type: No. Curronian Ailowance No. Thick: Type: No. Thick: No. Thick: Type: No. Thick: No. Thick: Type: Thick:				Spec .: 0.0/4-/ kg/cm/	Calc.; — kg/	m' Spec O.	84' kg/		#710 cm
	10									kca!/h
Frim Coefficient	Film Coefficient Clean: Clean: kcol/m²h²c kcol/m²h²c kcol/m²h²c kcol/m²h²c kcol/m²h²c Clean: kcol/m²h²c Fouled kcol/m²h²c Designed 6.9.5 kcol/m²h²c Construction Constr				3.16 × 10	6 kcal/l	3.7	6_X 10	5	
				Film Coefficient					m.	h "c/kcol
Construction Cons	Construction Cons				Clean: 5 kcal/	m ² h · c Fouled			ر د وي چ ، لاد	al/mih *c al/mih *c
Design Temperature Common	Design Temperature Cartesian Kg/cm² G Design Kg/cm² G Tesian Kg/cm² G Tesian Kg/cm² G Tube Cartesian Kg/cm² G Tube Cartesian Kg/cm² G Tube Cartesian Kg/cm² G Cartesian			Practical		Construction	LMID (Cor	rected; ·	10.81	·-·
Material & Other Tube: Size: O.D. × X Thick. (min. ave.) Flich O.S.	Tube		42			Test kg/cm²	G Des'n		Test	kg/cm² G
Shell Shell Shell Shell Shell I.D. Thick:	Shell Shel				No. per Shell:		- 1		in ove il sitch	A 5-
Shell Cover: Gasket: Floating Head: Gasket:	Shell Cover. Garket: Floating Head: Garket:		45	Channel:				Ti		
All Cross Boffle: Thick.: Type: No: Cut Space:	All					Gasket:			Gasker	
Long baffle: Thick: Type: No.	Long baffle: Thick: Type: No: Cut Space:			Cross Baffle:					Thick	
Sizes Corrosion Allowance	Space							Cut	Space:	
Yes Radiograph No	Yes Radiograph No Yes %		H	Tube Support:	T1 · 1		No:			
Nozzle Size & Rating (Shell Side) Size & Rating (Jube Side) Remarks	Nozzle Size & Roting (Shell Side) Size & Roting (Jube Side) Remarks		50 51	Corrosion Allowance			<u>No:</u>			
56 Outlet 57 Drain 58 Yent 59 Pointing 61 Insulation No. 14 C. 14	56 Outlet 57 Drown 58 Vent 59 60 Peneting 61 Insulation No. Use City		50 51 52	Stress Kelief	No Y	Tes			mm .	
58 Yent 59 60 Pointing 61 Insulation No. Her C.H. The C.H	58 Vent 59 60 Pointing 61 Insulction No. Her City The Cit		50 51 52 53 54	Corrosion Allowance Stress Relief Weight per Unit Nozzle Size & Ratio	No Y Emply: kg Tu	nm Yes ube Bundle:	Radiograph:		mm Yes	
59 60 Pointing 61 Insulation No. Use 6 II	59 60 Pointing 61 Insulation No. Hay City		50 51 52 53 54 55	Corrasion Allowance Stress Relief Weight per Unit Nozzle Size & Ratir Inter	No Y Emply: kg Tu	nm Yes ube Bundle:	Radiograph:		mm Yes	
61 Insulction No. Lea C.U.	61 Insulction No. Use C.U.		50 51 52 53 54 55 56 57	Corrosion Alfowance Stress Relief Weight per Unit Nozzle Size & Ratir Inies Outlet Drain	No Y Emply: kg Tu	nm Yes ube Bundle:	Radiograph:		mm Yes	
Hol, Cold Thick. mm	Hot, Cold Thick. mm		50 51 52 53 54 55 56 57 58	Corrosion Alfowance Stress Kelief Weight per Unit Nozzle Size & Rott Inlet Outlet Drain Vant	No Y Emply: kg Tu	nm Yes ube Bundle:	Radiograph:		mm Yes	
		2	50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Jube Side)	Radiograph:		mm Yes	
			50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
			50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
			50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
			50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
			50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
		?	50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
		•	50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
		?	50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
		<i>}</i>	50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
		3	50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
		3	50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
		รั	50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
		3	50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
		<i>ने</i>	50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
		?	50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	nm Yes ube Bundle: & Rating (Tube Side)	Radiograph:		mm Yes	
			50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	Thes use Bundle: k Rating (Tube Side) Thick. mm	Radiograph:		mm Yes	
56	56		50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	Thes use Bundle: k Rating (Tube Side) Thick. mm	Radiograph:		mm Yes	
56	56		50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	Thes use Bundle: k Rating (Tube Side) Thick. mm	Radiograph:		mm Yes	
56	56		50 51 52 53 54 55 56 57 58 59	Corrosion Alfowence Stress Kelief Weight per Unit Nozzle Size & Rotin Inlet Outlet Drean Vent Pointing	No Y Emply: kg Tu g (Shell Side) Size &	Thes use Bundle: k Rating (Tube Side) Thick. mm	Radiograph:		mm Yes	



A Kiyeubishi			.				1/
TUBULAR	HEAT EXCH	ANGER DA	TA SHEET	}	Rev. Date Chick	ļ	
Plant IRAQ E	XP. NH.	UNIT	Item No.	I			
Customer M.O.I.	TRAD			E-40	6		
Order			Service .CA	CONDARY		FO COM	DENISER
Location	Indoor	(Outdoor)	No Regid		المانية المحدث الثانية ا		
Ivos · //	-KETTIF		Shells per	Unit	. '/		
Shell ID. 1900/125	O Tube Length	5000 574	Surface pe		50		m²
Regulation	Code ASM	E TEMA . R	Surface pe		500		
			ance of One Un				- 41
	I	Shell Side		I	Tube	Side	
Fluid Circulated	REFRIGERA			RECYC	LE	GAS	
Total	17.03 M.Y			10.44	M.W.	195897	kg/5
Vapor		22.81		17.03	M.W.	1.7537	kg/f
Liquid	17.03 4.4	1. 19104	kg/h	17.03	M.W.	15230	kg/h
Steam	18 M.W	<u></u>	kg/h	17.03	M.W.	1220	kg/h
Non-Cordensoble	M.V		kg/h	 		13000	kg !
Density	64			9.68		63095 kg/m³	
Viscority	1		01 -4 'c	}			
Specific Heat	0.1	-		 			ot
Specific Hear			cal -4. c	 		kcol/kg *c	<u> </u>
Bailing Point		*c		 		<u>`c</u>	
Ther, Conductivity		45 kcol/mh	'c 01 - 4 'c			kcal/mh 'c	٥١ .
Density		kg/m³	at °c	ļ	87.36		ot 8 .
Viscosity	ļ. <u></u>	co.	at °c	l	0.014.5	cp.	ot 8 *
Specific Heat	L	kea!/kg	'cal 'c		D. 76	kcal/kg *c	8
Dew Point	L	¹c		L		٠,	
Ther, Conductivity		kcat/mh	*c ol *e	7	2.0952	kcal/mh*c	ot 8 .
Fluid Vap. or Cond.	17.03 M.W	12684		17.03	M.W.	5471	
Sleam Condensed		·::	kg/h	1	M.W.		kg / l
totent Heat		ksa!/ka	al c	i		keal/kg	o:
Temp. In. & Out.	In: -3 84	Cout -	-3,29 .	In: />	. 3 . ' c	Out	, , , , ,
Operating Fress.	1	2.75	kg/cm² G	12:			kg cm C
No. of Pass & Velocity		<i>≦1.</i> ⊃ 8	m/s	2			m/s
Pressure Drop	Spec : 0. 0/4/		— kg/cm²		a tale	& Calc (C	
Sonsible Heat	1 2527 10 10141	Agreni Cole.;	keal/h	Spec 0, 8	y kg cm	Calc .: 0,	
Latent Heat	<u> </u>			 			kcal/
Tatal Heat Duty	 	17 V	kca!/h	ł		6	
	ļ. <u> 3</u> .	17 x 106	keal/h	ļ. <u>.</u> 	3.17.X	IΩ	kce!'
Fouling Factor	Spec .: 0,	000Z	m. u.c. xcsi	3pec .:	0.000	2	m² h *c/kca!
Film Coefficient	ļ		k ca V m² h ·c	1			keal/milite
Overall Trans. Coeff.	Clean:	kcal/m² h • c			Designed		
LMTD	<u> </u>		• c	LMTD/Corr	ected)	//./3	٠,
			truction			T	
Pressure		g/cm ² G Test	kg/cm²G	Des'n	kg/ ^c m²G	Test	kg cm
Design Temperature		c		l	· 'c		
Tube	No. per Shelt:	Size:	O,D. X	ιχ	Thick, (mir		h &
Material & Other	Tube:	Shell:		(Shell I.D.,		ick.:)
Channel		Gosket:		Channel Cove			
Shelf Cover:		Gosket:		Floating Head		Gasker:	
Take Chara Contains	y:	Thick.:		Floating:		Thick.:	
		Thick	Type:	No:	Cut:	Space:	
Cross Boffle:		Thick.:	Type:	No:			
Crass Baffle: Lang Baffle:			·			Space:	
Cross Baffle:			Type:				
Cross Boffle: Long Boffle: Tube Support:	1	Thick:	Type:	1	:	mm	
Cross Boffle: Long Boffle: Tube Support:	No	Thick::	Type:	Radioaranh	No.	mm	0/,
Cross Boffle: Long tiaffle: Tube Support: Corrosion Allawance Stress Relief		Thick.: mm Yes		Radiograph:	No ,	mm Yes	% ke
Cross Boffle: Long Boffle: Tube Support: Corrosion Allawance Stress Kelief Weight per Unit	Empty:	Thick.: mm Yes kg , Tube Bu	ndle:	kg ,	No Full of Wat	mm Yes	% kg
Cross Boffle: Long Boffle: Tube Support: Corrosion Allawance Stress Kelief Weight per Unit		Thick.: mm Yes kg , Tube Bu		Radiograph: kg . Remarks	No Full of Wat	mm Yes	
Cross Boffle Long Boffle: Tube Support: Corrosion Allowance Stress Relief Weight per Unit Nozzle Size & Roi Inles	Empty:	Thick.: mm Yes kg , Tube Bu	ndle:	kg ,	No , Full of Wat	mm Yes	
Cross Boffle Long Boffle Tube Support: Corrosion Allowance Stress Relief Weight per Unit Nozzle Size & Roi Notet Outlet	Empty:	Thick.: mm Yes kg , Tube Bu	ndle:	kg ,	No , Full of Wat	mm Yes	
Cross Boffle Long Boffle: Tube Support: Corrosion Allowance Stress Relief Weight per Unit Nozzle Size & Roi Inles	Empty:	Thick.: mm Yes kg , Tube Bu	ndle:	kg ,	No . Full of Wat	mm Yes	



MITSHOESHI	neavy com	usyriec, lyd	> .	Γ		
TUBULAR HEA	AT EXCHANGE	R DATA SHEET.	-	-	Rev Date	
Plant IRAQ EXP	NH2 STOK	RAGE UNIT	Item No.		Check	
Customer M.O.I		114- 211.7	1		460	
Order			Service F	RODUCT	AMMONIA .	HEATER:
	Indoor	(Outto)	No Rea'd	*** ***** i	1	
Type HORIZON		TUBE BEU			· / / · · · · · · · · · · · · · · · · ·	
Shell I.D. · 480	Tuke Length	3000574	Surface pe	e: Unit	35.0	m.
Regulation	Codir	TEMA · R	Surface E		35.0	m
			nce of One Un			
.	34000	Shall Side			Tube Sid	
Fluid Circulated	VAPORIZE	D AMMON		LIQUI		
Total	17.03 41			17.03		
Voper	17.03 M				A.W.	
Liquid Steam	L.M.		kg h	17.03		
Non-Condensel le	18 M.A		ka h	12		ke l
Densilv	4	and the second s	kg-h	A company of the comp	ww.	kg/l
Viscous """	58		of 40 c	6 5 2	kg m:	01 9
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0./			0.2	cp.	o1 -9
Berling Point	1 / :	94 kestikare	01 40 C	1.09	'S keal/k	e, c'oi - 2,
Ther. Conductivity	1	· • · · · · · · · · · · · · · · · · · ·		سور س- ا		
Density Density	0.42			0.46		
Viscosity		kg/m\	ol .c		ķē.u.,	<u></u>
Specific Heat		ςρ.			ср.	
Dew Point	1	kcal, kg 'c	e' E		kcol k	3,6
Ther. Conductivity	40	kcolimbic	1			
Fluid Same Cond.	17.03 M.V				kcal/m	in c of
Steam Condensed	77.00		S	ļ	(W	<u>.</u> \$40
totent Heur	262.8		kg/h	} ~ · · ^	A.W	
Temp in & Out.	15 40		40	1-2 - 2 3	kcal 'k	
Operating From	70	14.85	φ.G c.m·G		on.	_ /\$
No of Pass & Velocity	·	.77.03				*green s
Pressure Diop	See	ig om Calo:	— ki cm	Special 0.7	r i e ka Cala	0.027/
Sensible most	- 17 - 17		kce' n	\$ \$550 O.7	1260,000	10.02
coleni Heat		260,000	i.co	1		kan'.
Total Heat Duty		260000	ker! t		260,000	kee
Fouling Factor			milhic keel	Spec.:	0.0002	m to kea
film Coefficient	1		keat in his	i	•	kentlem has
Overall Trans. Coeff.	Claco	keal/m² h te		keel min'e	Designed 80	S ken m F's
LMID			• • • • •	LMTD Corre	ted, 44	.8
		Const	it'on .			
Pressura	Desir	g cm ² G Test	kg.cm³G	Desin	kg ^C n. G Test	kg (m
Design Temperature	1	`c		1	<u>'c</u>	
Tube	No. per Shell:	Size:	O.D. ×	ıı _X	Thick min. ave :	Pitch
Moterial & Other	Tube:	Shell:		(Shell I.D.:	Thick:	
Channel		Gasket:		Channel Cover		
Shell Cover		Gasker:		Flooting Head.		iket:
Tube Sheet: Stationar	<u>'y</u> :	Thick.:		Fignting:		ck.:
Cross Baffie:		Thick.:	Type:	No:	Cut. Spo	ce:
Long Baffle:		Thick	Тура	No:		
Tube Support:	.,	Thick.:	Type	y		oce:
Coirosion Allowance		· · · · · · · · · · · · · · · · · ·		1	mm	
Carrest D. J. J.	No Empty:	Yes		Radiograph:	No , Yes	
Stress Relief		kg , Tube Burn		kg , F Remarks	netoW to the	<u> </u>
Weight per Unit						
Weight per Unit Nozzie Sica & Ro	Ing (Shell Side)	Size & Rating	(Tube Said)	Kemarks		
Weight per Unit Nozzie Sica & Ro Inlet			(Tube \$de)	Kemarks		
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Weight per Unit Nozzle Siza & Ro Inlet Outlet Orein			(Tube \$del	Kémarks		
Weight per Unit Nozzie Siza & Ro Inlet Outlet			(Tube \$.de)	Kėmarks		

TUBULAR HEAT EXCHANGER DATA SHEET Final IRAG EXP. NH3 STORAGE UNIT Item No. E-46	m' m' Ny kg/h
Plant IRAQ EXP. NH3 STORAGE UNIT Iran No. C. somer M.O.I. IRAQ C. stormer M.O.I. IRAQ Service AMMONIA VAPORIZER No. Rea'd Type U-TUBE KETILE BKU Shells per Unit Shell I.D. 700/400 Tube tength 3000572 Surface per Unit 23.0 Regulation Cace IEMA R Surface per Unit 23.0 Ferformance of One Unit Shell Side Fund Circulated LIQUID AMMONIA LOW PRESS. STEAN Total 17.03 MW 4794.5 ig.h M.W. 2/96.3 Vapor MW 4794.5 ig.h M.W. 2/96.3 Steam IR.M.N. 4794.5 ig.h M.W. Steam IR.M.N. Loyin IE M.W. 2/96.3 Non-Condensate M.W. Ligh M.W. Density 58/ ig.m at 40 c 926.5 ig.h M.W. Density 58/ ig.m at 40 c 926.5 ig.h M.W. Viccosity 0.19 cp at 40 c 926.5 ig.h M.W. Viccosity 0.19 cp at 40 c 926.5 ig.h M.W. Viccosity 0.19 cp at 40 c 926.5 ig.h M.W.	
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Liud Circulated LIQUID AMMONIA LOW PRESS. STEAN Total 17.03 M.W. 4794.5 ig.h 18 M.W. 2/96.3 19.6 M.W. 2/96.3 19	M/ kg/h kg/h
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Steam 18 M.N. 4799.5 5 h M.W.	
Non-Condensate N.W. Igh M.W. Densty 58/ Igm' at 40 c 926.5 .2 m' m/s Viccoity 0.19 cp of 40 c 0.20 cp. of /3	kg/h
5 Squade dont	kg/h
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Density kg/m' of 'c /, 60 kg/m' c1/9	9.10
1 of Specific Heat 1 keel/heisent is 1 0 602 took to 1/2	9.1 c
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reserved 262.85 toolite of 40°c keeltha et	٠.
14.85 to m'G 2.5 to	<i>2</i> ' c ; cm G
No. of Park & Molecity / & mos Z & Section Color — kgrown Special Region Color — kgrown Special Region Color —	m's kg. cm
South Heat keal/h 132500	keel h
1260,000	kcal/h
1 300 of Factor Sect. 0.0002 militaria Spec. 0.0002 militaria	c/kcal
Overall Izara Coeff. Clean. keal/mihic Fouled real-mihic Designed 558 keal	ms²h 'c
Construction c (MTD Corrected) 98.2	· c
Design Temporature	kg√cm² G
Tube No. per Shell: Size: O.D.X 1X Thick (min. ave.) Pitch	4.0
Mutural & Other Tube: Shell: (Shell I.D.: Thick: Channel: Gasket: Channel Cover:)
Shell Cover: Cosket: Flooting Head: Gasket:	
Cross Battle: Thick.: Type: No: Cut Space:	
Lorg Boffle: Thick: Type: No: Tube Support: Thick: Type: Space:	
Correr on Allewence mm mm	6/
Worght per Unit Empty: kg , Tube Bundle. kg , full of Water:	% kg
Nozzle Size & Roting Shell Side; Size & Roting (Tube Side) Remarks	
Outlet Drain	
Veni	
Pointing	
Insulation No Hot Cold Thick, mm	

12	m ⁷ m ⁷ m ⁸ 2/h 2/h 2/h 2/h 2 c 2 c
Order	y/h p/h p/h p/h c
Shell I.D. 1270 Tube length 1280 Surface per Unit 1270	y/h p/h p/h p/h c
Regulation A.D. HERROLATER Code	y/h p/h p/h p/h c
Performance of One Unit	g/h g/h g/h g/h c c
Fluid Circuloted 26 pra STEAM UPER SOLUTION	g/h g/h g/h g/h c c
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14 Steam 18 M.W. kg/h 18 M.W. kg/m² ot 19 Viscosity cp. ot c cc. cc. ot 19 Spacific Heat kcal/kg*c at c cc. cc.	g/h c c
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Viscosity CP. OI C CP. OI	
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	g/h g/h
28 Lotent Heat k col/kg of 'c k col/kg of 'c k col/kg of 'c 29 Temp. In. & Out. In: 225 'c Out. 225 'c In: /85 'c Out. 270 In: /85 'c Out. 270	· c
30 Operating Press. 25 kg/cm²G /50 kg/cn	n' G
32 Pressure Drop Spec.: kg/cm² Colc.: kg/cm² Spec.: kg/cm² Colc.: kj	n,'s g'cm
33 Sensible Heat kccl/h kcc	al/h
35 Total Heat Duty kcol/h kco	ol/h
36 Fouling Factor Spec .: m² h °c/kc Spec .: m² h °c/k 37 Film Coefficient k col/m² h °c k col/m² h °c k col/m² h °c	
38 Overall Trans. Coeff. Clean: kcai/m²h*c Fouled kcal/m²h*c Designed kcai/m²h	h *c
40 Construction	· c
41 Pressure Desin 28 kg/cm ² G Test kg/cm ² G Desin /65 kg/ ^c m ² G Test kg / 42 Design Temperature 'c 225 'c	cm' G
43 Tube No. per Shell: /56/ Size: 25.4 O.D. × 6820 × 2.7 Thick (min, ave.) Pitch 33.5	O
44 Moterial & Other Tube: 99.57, 7; Shell: C.S. (Shell I.D.: Thick.:) 45 Channel: C.S. 99.5% 7; LIMMS Gasket: Channel Cover: C.S. + 99.5% 7; LIMMS	
46 Shell Cover: Gosko: Floating Head: Goske: 47 Tube Sheet: Stationary: C.3+99.5*77 Limits Thick.: Floating: Thick.:	
48 Cross Baffle: Thick: Type: No: Cut: Space:	
49 Long Baffle: Thick: Typa: No: 50 Tube Support: Thick: Type: Space:	
51 Corrosion Allowance mm mm 52 Stress Relief No , Yes Radiograph: No , Yes %	
53 Weight per Unit Empty: kg , Tube Bundle: kg , Full of Water: k	
54 Nozzle Size & Rating (Shall Side) Size & Rating (Tube Side) Remarks 55 Inlet	
56 Outlet	ŀ
57 Droin 58 Vent	
59 Painting	
61 Insulation No Hot, Cold Thick. mm	
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TUBULAR HEAT EXCHANGER MECHANICAL DATA SHEET 1	TUBULAR HEAT SXCHANGER MECHANICAL DATA SHEET Pleas	TUBULAR HEAT EXCHANGER MECHANICAL CATA SHEET Plane	5/ À atteueism mi	avy modestries, ltd.			2/2
Plant	Plant	Plant	TUBULAR HEAT	FEXCHANGER MECHANIC	AL DATA SHEET 📑)ate	
Secretary Description De	Service March Ma	Service Indiger Controlly Make Mak	,		Item No		
Special Co. 200 Toke Length 5000 Surface per l'una 27.9 ml	Special Co. 12/20 Tools testing 5000 Surface per Unit 27,9 ml	Second	3 Order	·			PMPOSER
		Requisition A Since 722 Code E.M.A. R. Surface are Skell 2.7.7 ml	5 Type FIXED TO	UBE SHEET	Sheils per Unit	/	
### ### ### ### ### ### ### ### ### ##		### ### ### ### #### #################	7 Regulation ASME 72	Code TEMA R	Surface per Shell Z	79	
12		### ### ##############################	· •	N-3	. [~-/ N-4	
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36 Corrosson Allowance inm, 28 3.2 (Min. 2)	36 Corrosson Allowance inm, see 3.2 (Min. 2) 37 Painting insuration (Fo), Cold inm, see 7.27 institute insuration (Fo), Cold inm, see insuration (Fo), Cold inm, see insuration (Fo), Cold inm, see insuration insur	36 Corrosson Allowance inm, 28 3.2 (Min. 2)	34 Post Weid Heat Treatment		FERRULE	525 216	
138 insuration (Fo), Cold mm, m. 197 Mor. 39 Number of Posts / 40 Tuber 35 / O.D. Y. / 6 Min.Avar. Vinit. X 5000 41 No. per Sheil 436 Picc. 4.3 42 Weight Emply 43 44	138 insuration (Fo), Cold mm, m. 1997 Mor. 39	138 insuration (Fo), Cold mm, m. 197 Mor. 39 Number of Posts / 40 Tuber 35 / O.D. Y. / 6 Min.Avar. Vinit. X 5000 41 No. per Sheil 436 Picc. 4.3 42 Weight Emply 43 44	36 Corrosion Allowance				
40 Tupe 38. / C.D. Y. 6 Min. Aver While X 5000 1 41 No. per Sheel 436. Pinch 43 42 42 Weight: Emply ig ib 44	40	40	38 Insulation (Hal), Cold	mm, ±. POT HOT.			
10	42 Weight Emply kg tb 33 Full of Water kg tb 44 45 46 Nozzła & Connaction 47 Minrs Size Stand Rating Service Stand Remarks 48 Nr. 68 7 AMSI * SCORF COND. / MIST 49 Nr. 53 7 7 COND. CONTEST 50 Nr. 4 1 DRAIN 1 CARBON CONTENT OF ALL SUBSIS 51 Nr. 4 1 DRAIN 1 CARBON CONTENT OF ALL SUBSIS 53 MATERIAL TOBE LESS THAN 0.06 %.	42 Weight Empty ig ib 43 Full of Water ig ib 44 45 46 Nozzla & Sannacison 47 Mars Size 3 Rating Service 3 Servi	40 Tube 38. / C.D. × /. 6				
14	14	14	42 Weight : Empty	kg , ίδ			
No.	No. No.	Note	44	.,,			
18	18	A8	46 Nozzla				
50 N-3 1 7 PEY SOME NOIS 51 N-4 1 DRAIN 1. CARBON CONTENT OF ALL SUSSIS 52 NATERIAL TOBE LESS THAN 0.06%. 53 NATERIAL TOBE LESS THAN 0.06%.	50 N-3 1 " P-Y COM! Note 51 N-4 1 DRAIN I CARBON CONTENT OF ALL SUSSIS 52 NATERIAL TOBE LESS THAN 0.06%. 53 NATERIAL TOBE LESS THAN 0.06%.	50 N-3	48 N-1. 68. / AMSI "300 RF	CONO. INLET			-
52 53 54 55 56 57 57 58	52 53 54 55 56 57 58	52 53 54 55 56 57 58	50 //-3 / "	PEY CONN.	Note	WF 05 A// 5//	15.316
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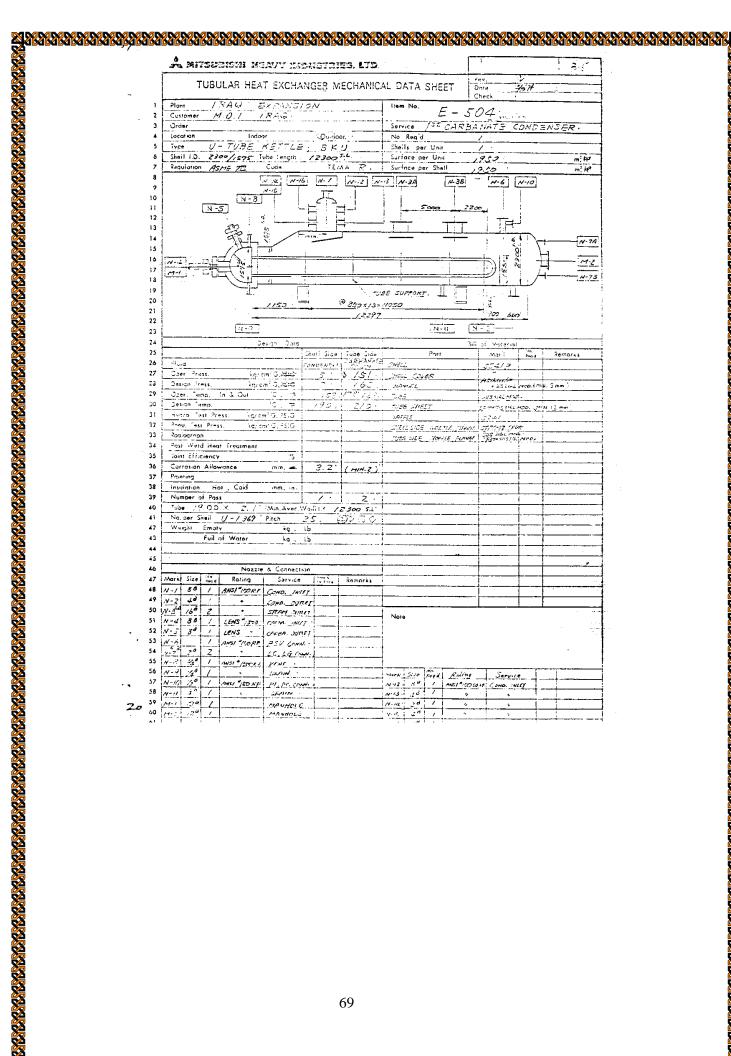
MITSUBIS	HEAVY MOUSTS	SES, LTD.			1.3
TUBULAR	HEAT EXCHANGER DAT	A SHEET		ore \$/474	
Plant IRAC	Q EXPENSION .	Item No.	E-50		
2 Customer	/, /x84G+,	Service		HATE CONCENS	EF.
Orae:		oidan No. Ren a			
iyan 1/-7	URE KEITIE , BK	O		50	
Requisition ASME	7Ⅲ Code TEM	A · R · Surtace i		50	
	Sheil	Single Stricture of Stricture of		Tube Side	
Fluid Circulated	CONDENSATE		CAPBAHA	TE BOLW .	. T k; E
Total	78 M.W	<u>&2020 ·kg/h</u> kg/h	M.\	v.	×9. 7
Liquid	M. W.	52020 - sg/h	18 M.		•9 7
Steam Non-Condensal	la M.W.	kg/h	MA	v	kg/n
Density	909	kg m at /#2 c		kg m s cp. s	1 2
Viscosity		co. 01 √€% · c		kaai/kg ta	
2 Serling Paint	/58			te Acairmate	
Ther Conducti Density	vity	kg.m or 15		kg, m	ot
Viscosity		CD. 31 C		ep. Real/kg/s): C
Specific Heat		keal (g 'c are		`c	
Ther Connects		kear min te at		keal mhiic W	at C
Fue (GD) 2-2000 Strom Condensed	/8 · 4 · W · M.W.	<u> </u>		·	
in-om Condensed Menr Heat		\$601 KG 11 S	100	keni/kg Out:	<u>ه (۲</u>
Jemn in a Dut Dunnating Imss.		c Our /68 c \q. cm G		\$ 757	<u> </u>
7vo 31 Pass 4 Vet		3 - 3	2	ig. rm* Calc	
Prossure Drap Sensible Heat	Saec = = 2.7	*C5 h			, sc 3
(atuet meat		keai/h			*CS!
Fauling Factor	Spec : 0-000	kcolin Z milito kosi			m n'c kco
Film Coefficient		k covimin ic	cal/m/h*c	Designed	keal min's
Overall Trans. Cos	if. Clean	kcoriminic Fouled			
)	Desin 7 - kg cm	Construction	G Cash 165	agi am G Test	kg rem
Presture 2 Design femperatu	(40)		210	´c	cn 25 C
3 Tube	No. per Shell: U-13	367 Size: 19 0.0.	(12300 2.1 Shell I.D.	Thick.	ch <u> </u>
44 Material & Other 45 Channel # 6.	S + SIS TIAL MOD .	Gusket	Channel Cover:	* C.S + SUS 316 L Garke	
6 Shell Cover:	C.S sus 3/64 /	Gusket:	Floating Head:	Thick	
B Cross Baille:	Th	1996:		Cul: Space	
o Tube Support		hick: Type: hick: Type:		Space	
I Corresion Allower	3.2		Radiograph:	No Yes	3%
2 Stress Retief 3 Weight per Unit	No Émuly: kg	Yes Tune Bundle:	ka . F	ull of Water:	kg
ia Pinzzle Siz	e & Roung Shall Side	Size & Raing Tube Side	Remarks	L HOD: SEE ATTRO	HED SPECIFIC
56 Quilet 7	LE SKELETIN DWG	SEE SPECETON DWG.			
57 Drain)			
58 Vent /					
60 Printing	No. (3)	Core Thickm			
61 mulation				D	bite

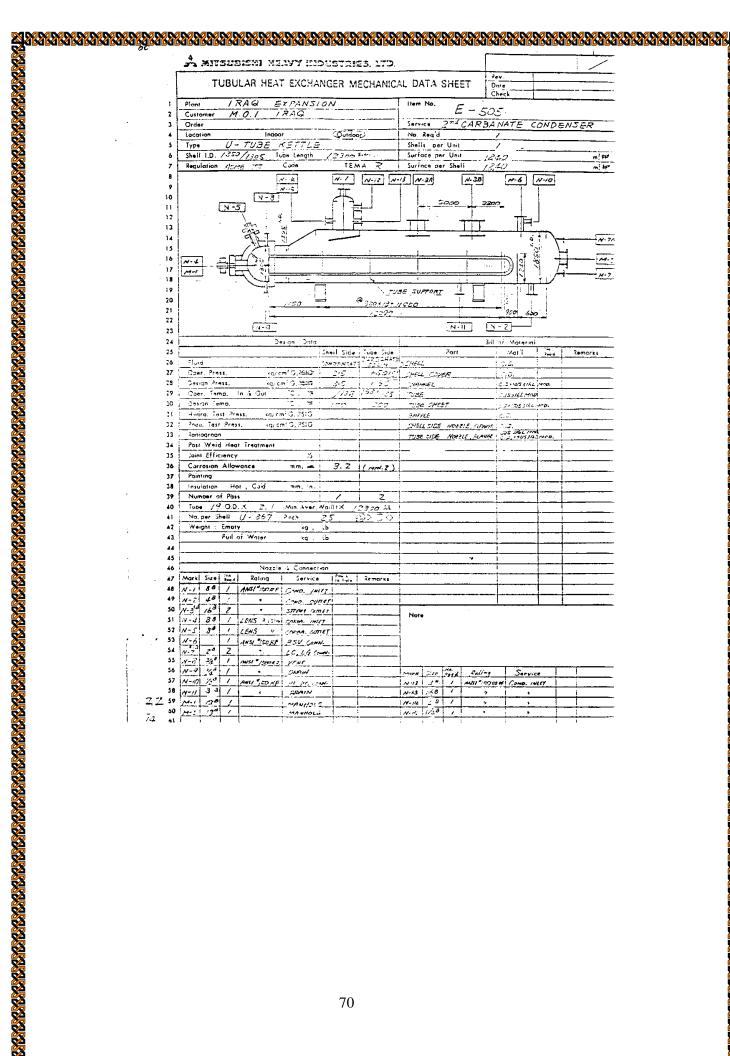
# mitsuaish	HEAVY INDUSTRIES, LID.			1.3
TUBULAR +	EAT EXCHANGER DATA SHEET		Rns D Date Syd74 Check	
Plant IRAG	EXPANSION	7 No. E-5		
2 Customer M.O./ 3 Order	Ser .	vice 1st CARE	SMATE CONCENS	F.F.
4 teculion 5 Type U-TO		Reg d Fils per Unit	<u>/</u>	
6 Shell ID. 2300// 7 Regulation ASME	575 Tube length /2300 54.		950	m'
8	Performance of			
9 10 Fluid Circulated	Shell Side		Tube Side ATE SOLW	
11 Total 12 Vapor	12 M.W 62020 ·		.w. //2,884	* ;
13 tiquid	M.W. 52020-	ig.h A	i.w	13 7 kg A
14 Steam 15 Non-Condensabl	M.W	kg/h A	l.W.	ig, i
16 Density 17 Viscosity	909 kg/m at /5; ca. at /6;	8 . c	kg m gr cp. gr	
18 Specific Heat		ж. с	keal/kg fe pi	
20 Ther, Conductiv	/58 ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	3.2	xcai/mn 'ca	
21 Density 22 Viscosity	kg, im at cp. at	· c	kg/m s cp. s	
23 Special Hent	kedirky 'e si	, c	kealskg te	
24 Sew Point 25 Ther Conductive	ty keas má te at		ic keel mhic a	t c
26 For (10)	/8 M.W. 30000,	kg/ h	CW	
27 Segan Condensed 28 Commission	kear kg 37		kcal/kg a	
19 Temp in Silfat 30 Dunkating Press.	158 to Out 158 to	'c in. //s cm 5	3/57	62 ::::::::::::::::::::::::::::::::::::
il 3-2, 31 3518 & Zeloc	irv	7.1.	sg. om: Ca.c	
32 Pressure Drop 33 Sensible Heat	Spec. — kg/om/ Cales —	ra amili Species	Ng. C.F. Cd.C	xca
34 Latent Heat 35 Total Heat Duty		cai/h		kesi'n
36 Fauling Factor	Spec 0-0002 . m'h'c	kest Spec		n'in to kesi cesi/ mt n te
37 Film Coefficient 38 Overall Trans, Coeff	Clean kearliminic Fouled	•cullimihic	Designed	calimihic
up LMID	Construction	'c (MID.Corre	cied.	**
, 41 Pressura	Desir 7 - kg/cm/G[[est] -	261 Fied Desig	kg/ ^C m G ∫ fest	kg cm ¹ 3
42 Design Temperature 43 Tube	/90 ' C No. per Shell: U-/369 Size: /9'	<i>Z/O</i> 2.1 × ^{1.2} 006	Thick, Lmin. ave. Pitch	25.0=
44 Material & Other	Tube 215 316 L MOD. Shell: C.S + 51/5 316 L MOD. Gasket	Shell I.D.	* C.S + SUS 3/64 A	
46 Sheil Cover: C.	g, Giskan	Floating Head:	Grisket: Thick	
47 Tube Sheet: Sta 48 Cross Baifle:		Type: No:	Cul: Space:	
47 Long Baifle: 50 Tube Support:		Type: No:	Space:	
51 Carrosion Aliawance	3.2	316L MID (M		7/4
52 Stress Retief 53 Weight per Unit	No Yes Empty: kg , Tube Bundle:		No , Yes Full of Water:	kg
54 Piozzie Size	& Roling (Snell Side) Size & Roling (Tube	Saie) Remarks	L NOD: SEE ATTRCHE	D SPECIFICATION
56 Outlet , See	SKELETIN DWG SCE STELETON &	3		
57 Crain 58 Vent				
59 Painting				
19 -3 61 Insulation	No (For Cold Thick	mm		·

1	1110135555	Stauchi vare	ies, LTD.				3
,	TUBULAR HEA!	EXCHANGER DAT	A SHEET	6		D 11674	
	Plant IRAQ	EX-ENSION	-	Item No.	E-504		1
2	Customer M.O./	7. 6.4 6 ·		Service	1st CARBAMATE	CONDENSER	
3	tocusion in		udaor :	No. Read			
5	Type (/-TURS	KEITIE , SK	<u>U</u>	Smells per U Surface per			m .
,	Shell 10. 2300/1575 Regulation ASME 77		A - R	Surface per	Sholi 1950.		ms .
8		Snell	Performano Side	e of One Unit	Tune	Side	
10	Fluid Circulated	_CONDENSATE.			CARBANIATE SO	112.884 .	-27
11	Total Vapor	/8 W.W.	62030 <u>+</u>	kg/h	M.W.	7/2,004	kg *
13]	Liquid	м. w	52020	kg/h	M.W		- 1
14	Steam Non-Condensable	18 M.W.		kg/h	M.W.		kg/a
10	Sacuty	909	ca.	1 /52 ° c		kg m ai cp. ai	` :
17 18	Viscosity Specific Heat		icui kg c	1 758 · c		keairka taur	, ,
. 7	Boiling Point	/58				rc x cair mn 'c at	
20 21	Ther, Conductivity Density		kg, m	ol /53 . c		kg/m st	
22	Viscosily		cp.	at c		cp. or kealskg te	
23 24	Specific Heat	ļ		31 <u>C</u>		٠.	
24	Ther Conductivity	1	kea mn re		M,W	keel mhi'e at	C
26 27	Sprom Condensed	/8 · 44 W		4.9 14			
78	trent Hent		.coa	53	7/72	Real/kg at Out: 768	
;9	Cerno in Silitati Connoting Trass.		<u></u>	153 :	n. /78 5	7	g (m - 1)
.30 .31	No or Pass & Velocity					n Calc	
32 33	Sensible Heat	Spec 54	i mili Çalçı i ±	= - eq gew equal h			
34	Catalog Heat			icai/h			1051 " (CS) 1
35	Torral Heat Duty	Sper 0.000		minite kesi	Snec	m' b	c sec.
36 37	Film Coefficient			k cav minic	cultiment Designs		iti milin its jiti milih its
38 39	Overail Trans. Coeff.	Clean:	kco: m' 1 'c	Fouled	LMID Correctes		:
40				kg cm/G	Dasin 165 kg/5m3	- Liest	kg cm
41 42		Jesis 7 - 19 cc			210 '		
43	Tube	No. per Shell U- /	367 Size:	19:00.1	2300 - 2 / Thick.in	Sick.	25. ()
44			Gasket:	<u>c.s.</u>	Channel Caver C.S+	SUS 316 L MO	D. ·
46	Shail Caver: C.S.	ory * C.S. + SUS 3/6L	Guskon:		Floating Head:	Gaskot: Thick	
47		[hick.	Ĩγρe:	No: Cut:	Space:	
47			hick.	Type:	No:	Space:	
50 51		.8. 3.2	, , , , , , , , ,		3161 Min (Nim 2)	mm Yes	24
52	2 Stress Rehalf	No	Yes Tube Bu	ndle.	Radiograph: No kg , Full of W		kg
- 53 54		Roing (Shall Side)		c:Tube Skie)	Remarks # 305 316 L 1400:		· pec/Edca
5		KELETINI DWG	70E 7251	TON DWG	# 505 316 Z MOU!	JEE MITTHE	42
56					_		
51			/				
9-3	0 Painting		Cora Ta				
7 -3 6	I insulation	No (total				ল ৭০ - তিবাৰ	

🚣 mitsubishi heavy imdustries, LTD DATA SHEET /R/10 M.O. I. ilem No. E-504 EXPANSION Plant IRAG Customer 2 CARBAMATE CONDENSER Order Indoor No. Regid Location N-3 10 11 12 13 14 15 16 17 18 MIN. 124 19 20 21 75 1000° WITH TEFLON GASKET 22 23 A 24 KASKET ANNEALED ALMINUM 99.5% PHE BRINNEL HARDNESS 30 MAX. 25 27 23 <u>CHO</u>NNEL 29 30 31 32 8009 33 34 N-3 A.B. 35 DETAIL 36 37 28 39 I STRONGTH WELD TUSE TO TUBE SHEET . 40 Z. OVERLAY FOR TUSE SHEET SHALL NOT BE LESS THAN 12 mm AND TUBE SHEET 41 HOLES SHALL BE MACHINED WITH ONE ADDITION GROOVE IN THE OVERLAY 42 43 MATERIAL. 44 . 3 PROVIDE SCLUTION ANNEALD OF TUBE AFTER BEHANG. 45 46 47 4 IN MECHANICAL CALCULATION STAINLESS THIC FOR CLAD. LIMME & DVERLAY 48 SHALL BE CONSIDERED AS CORROSION ALLOWANCE CHLY. 49 S. ALL TUBES SHALL BE ULTRASONIC TESTED. 50 TELL-TALE HOLES SHALL BE CARRY OUT WITH STAINLESS STEEL 316L MOD. PIPE PROJECTING 20 mm OVER THE INSULATION. 52 Rating Service Mark Q'ty Size 54 Size Rating Service Mark 55 56 57 58

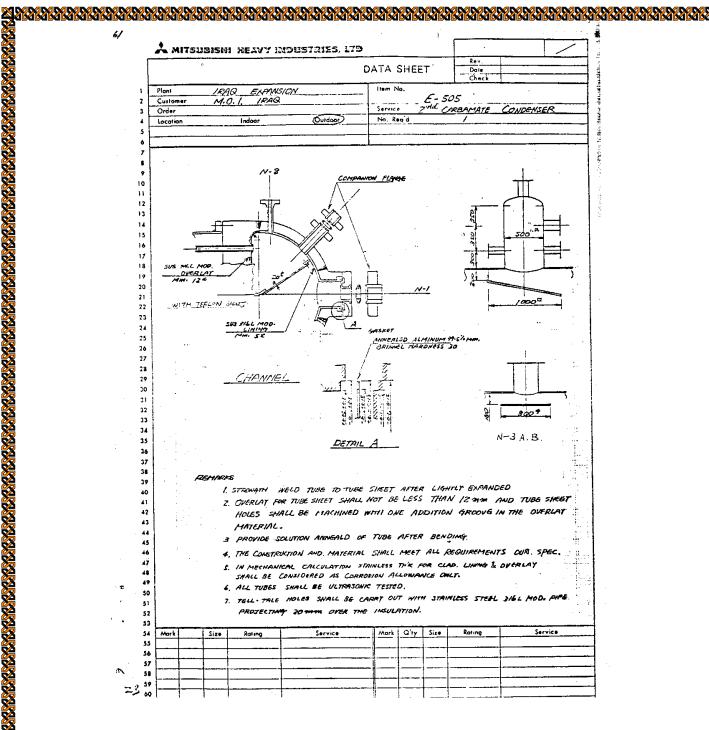
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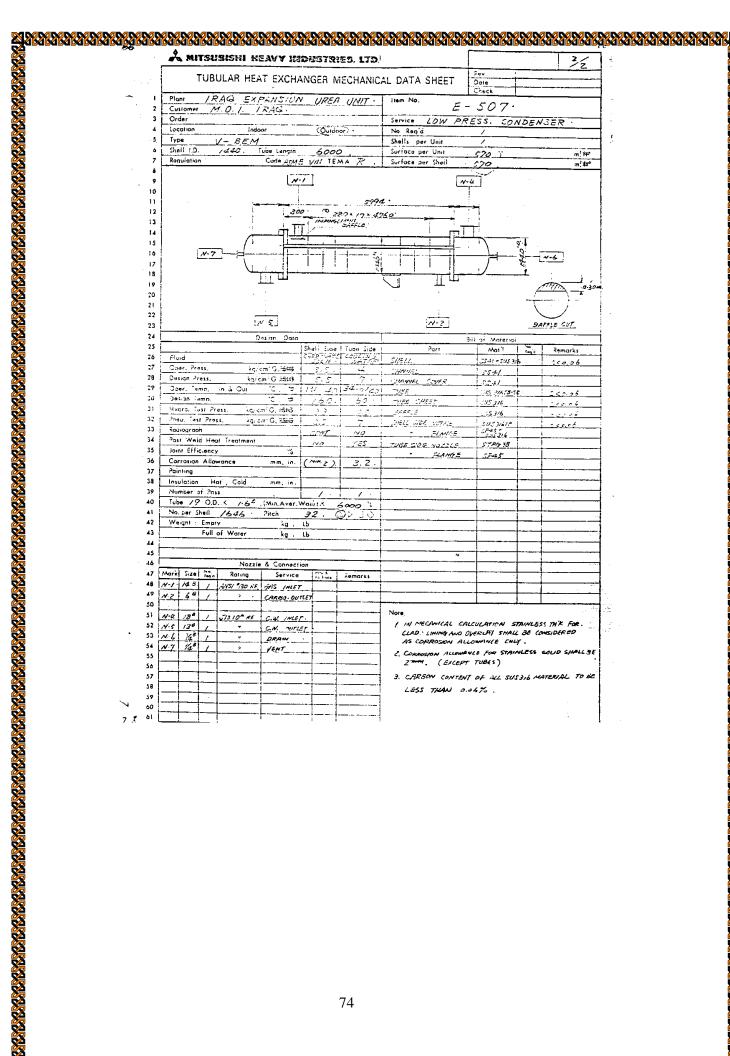




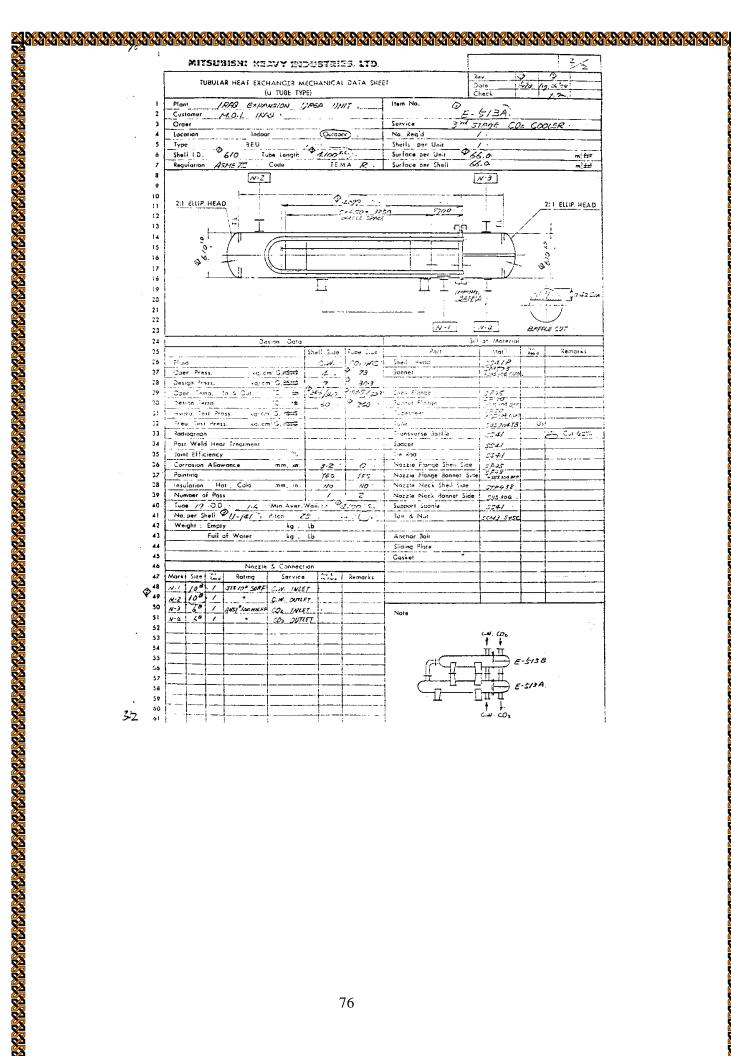
MITSUBISM	reavy modes	stries, lt	3 ,			1/
TUBULAR HSA	T EXCHANGER O	DATA SHEET		Rev Dote		
	T EXCITATOR C	JATA GIREET		Chec		
Plani /RAG	EXPANSION		Item No.	- /		
Customer M.O.1	IRAQ ·			£ - 505		
Order	71		Servica	ZMD CAFBAI	MATE CONE	SMISS
to tuno .	110001	Outdoor) .	No Read	/ '		
1ype U- 701	BE KETTLE,	BKU	Shells per	Unit		
Shali I.D. 1850 / 13	os Tupe Length	123005.4.	Surface be	r Unit 1240		" ,
Regulation ASME 77	Code	TEMA R	Surface pe	r Shell 1240'		m
	,		ance of One Un			
	51	hell Sice			uba Side	
Fluid Circulated	CONGENSAT	r e ,	<u></u>	CARBAMA	TE SOLW.	
Totai	_M.W.	40.5	78 kg/h	M.W.	112,88	94 49.5
Vapor	M.W.		kg/h	M.W.		rq h
Liquid	M.W.	405	78 - kg/h	M.W		kg. 5
Steam	18 M.W.		kg/h	18 M.W.		kg. h
Non-Condensable	M, W.		kg/h	.M.W.		89.5
Density	728 .	kg/m"	1 /38°c i	: 	kg m'	a: 's
Viscosity	ļ	co.	at /38°c+		εp.	of c
31 Specific Heat		kear kg	ر ع 85/ اد ۲		keal/kg	cat c
Sorting Point	/38 .	****		i	۹	
(Ser. Conductivity		keai, ma	`ta: /38` s		ksar mn	eci c
Density					kg/m	at 'c
Viscosity	1			<u> </u>	¢p.	at 'c
🧎 Specific Heat	1	ked kg	2 31 4		keni kgʻ	'c'c
Jaw Point		's			<u>'c</u>	
Ther Conductivity	1	kerit, me 1			kcal/mh	
- 1 (Vi)	W.W	20583	3 <u></u>	.w.w		- kg/5
Nour Contensed			ACT II	, 51.5V.		47. h
topel less.	1	, ca g		1 4	kcai/kg	
Temp. Inc. 1. Out.	/38	c Out			C Our:	/55
Operating Press.	<i>\$;\$</i> .	:	<u> </u>	<u> </u>	<i>.</i> /	ks ta 3
°-o. of Poss & Veincily	ļ.,					
Promise Oros		ka/cm² Caic		3pac.: <	g/ cm ² Cale ::	
Consider ideas	ļ		kcai }			*cc
Islant heat			Keal/ h	ļ		
atal Heal Duty			kcai/h			keanth.
Fouring Factor	Soec : 0-000		n' 1 'c/keal	Spec.		m' + 'c. kca!
Film Coefficient			kcall milh te	1		scal min c
Overall Trans. Coeff.	Clear	*cditalptc	round	kcai/m·h*c Des	: gnea	Acal mit to
fwin	1			LMTD Corrected.		
	132		Proction		15.15	
Pressure Onsign Temperature	1753 1 3.3. kg/	-m O 1 1831		0+sn /65 · kg/C	m 13 1081	kŋ√cm'
Lube	No per Shell //	8/7 500	40 00 V 15	1 200 . c 300 ^{3.L} × 2./ . Thick	(/min = 1 1 6	ikis 25 O
Tube Material & Other	Tube For Sur	100/ 1120.	7 5 5 5 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 8 6 7 8 8 6 8 8 6 8 8 8 8	Shed LO:	Inick.	<u> </u>
Channel Free . c	term that a name	Gasket:	c.o	Channel Cover: C.S.	A Com Total	400 -
Shell Cover: C.S.	W. 2/61 MOD,	Gasker:		Floating Head:	+ 305 3164 Gaske	,-00, -
Tube Sheet. Stationar	W. C SA SUS 3/1			rtaating:	Thick	
· Cross Batfle:		Thicks:	Туре:		un Space	
Long Baltle		Thick:	Тура	No:		
Tube Support: C.S.		Theca.:	Type:		Space	
Corresion Ailowence	3.2			(Min 2)		
Carrasian Allawance Strass Relief	No.	Yos		Radiograph: No	Yes	%
Weight per Unit	Empty kg	Tube Su	indle:	ig Full of		łq
	ring (Shell Side)		g (Tube Side)	Remarks		···
Iniet)				1 *		
Outlet See See	ISTON DOM	SEE SEELETON	J DWG .	* SUR 216L MOD : 56	e AFTACHED S	PECIFICATION
Drmin						
1 5111111	CELUM DIST	.212_1540-24				
Vant						
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$\mathcal{L}_{\mathbf{L}}$ witsubise	NEAVY HIDUSTRIES, LTD.			14
TUBULAR	HEAT EXCHANGER DATA	SHEET	Rev. Dote Chack	
Plant /AVIG EX	SPANSION USER UNIT	Irem No.		
Custamer 14.2.1.		1	E- 507	
Order		Service	LOW PRESS. CONDENSER	·
location	Indoor (Outdoor)	No. Regid	/ •	
Type FIXED	TUES GIGT . (VERTICAL) BEY	Sheus per l		
shell I.D. /440	Tube Langin 6000 .	Surface per		m²
Regulation	Code IEMA P -	Surface pe		m ⁱ
		a of Cha Uni		
	Shell Side		Tube Side	
Fluid Circuiated	COREDMATE SOUTHON		COOLING WATER	
Total	M.W.	kg/h	M.W. /320 000	kg/h
Уарэг	M.W.	kg/h	M.W.	kg/h
Liquid	M,'W.	kg/h	M.W. /320 700	kg/h
Steam	18 /A.W.	kg/h	18 M.W.	kg≀h
Non-Condensable	w.w.	kg/h	M.W.	kg/h
Density		11 ° C	<i>993</i> . kg/m³ ot.	97. ; ; c
'Visc asity		17 ° C	0-69/ cp. at	37.3 C
Specific Heat	kcai/kg 'd d	ıt 'c	kcal/kg te at چربور و	27.3 · ·
- Joiling Paint			*c	
Ther, Conductivity	coai min tag	at 'c	0.536 Vool/mn to al	37.3 °C
1 Density	kg, m¹	at c	kg∕m³ at	
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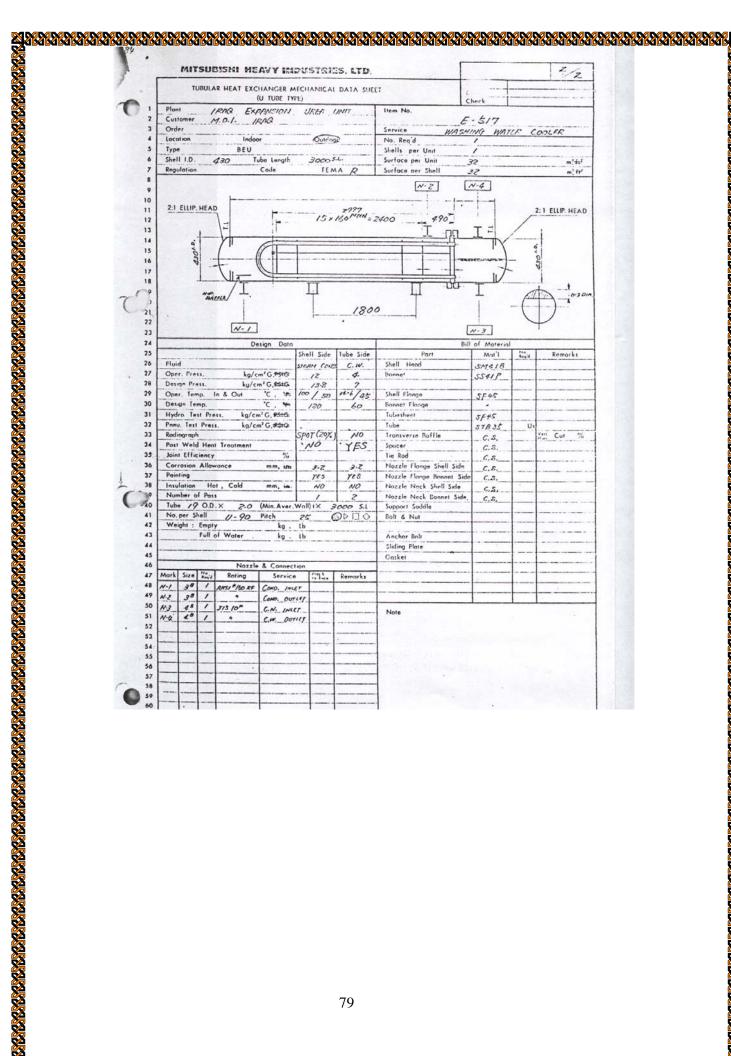
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1 1 1 1 1 1 1 1 1 1	1	1	1	1	1	1 1 1 1 1 1 1 1 1 1	The Corrovan Al ce			Type:	SEGMENTAL NO: 16	Cul: 30 % 500ce:
Lang Ball This Type: 3.2 mm Tube Tup: 3.2 mm Radiograph: No Yes Corrosion Al ce 3.2 mm Radiograph: No Yes	Long Bail This Type	Long Basi	Lang Bati	Lang Boar This Type 3-2 mm 3-2 mm 10 10 10 10 10 10 10	Lang Borf This Type 3-2 mm	Lang Bari	Tude Suprison Alice 3-2 mm Radiograph: No Yes Radiograph: No Yes Reflect to Suprison Alice 4-3-2 mm Radiograph: No Yes Radiogra	48 Cross Balt)ypa:	No:	Space:
53 Tube suprised 3-2 mm Radiograph: No . Yes 51 Carronion Al ce (as kg Full of Water)	Tube Voltage Ce 3-2 mm Radiograph: No Yes	Tube Suprison A Ce 3.2 mm Radiograph: No Yes	Tube Suprison A Ce 3.2 mm Radingrobh: No Yes	1 Corrosion A Ce	Tube Supplement Tube Suppl	1	Si Corrovan Al ce 3-2 m Raa ogroph. No . Yes Si Corrovan Al ce 3-2		- Thu.		3.2	
Polici kg Foli of Mala	21 21 22 23 24 24 25 24 25 25 25 25	Siress Relief	Sirest Relea Sire	<u> </u>	3.5		Paguagmah: N	5 · Yes				
Si Siress Autor	5: Very Cert 6: Ve	Sy North Day 10 & Romm Sold 2 Sonny Lon Sold	Sy North Cer (0 & Robert Sole)	St. North Der 10 & Robert St.	St. North Day 10 & Robert St.	Sy North Car 10 & Romm Sold 3 & Song 10 m Sold 1	Veright per to a Retain and sides a Sate of the Sides that the Sid			Toe Bung'er		91 4417104
Sy Veight per Side	Note	14 Model 15 Mast 15 10 RF 4 15 10 20 Mast 15 Mas	14 Notice Anst all 10 10 10 10 10 10 10	1 Model Art 1/2 10 RF 4 1/3 20 XF 4 1/3 20 XF	1 Model Art 1/5 50 RF 4 1/5 10 10 10 10 10 10 10 1	14 Notice Arst all 50 RF	1 1 1 1 1 1 1 1 1 1	5? Veight per		& Romaniture Side)	- izmais	
11 101210 ANSI 9 15 TO RE 4 175 10 20 AF	55 Date: A41 450 4 17 Drain 58 Vent	50 Dullet Avail 150 " 17 Drain 58 Vent 50 January 40 40 30 30 30 30 Designed by Sal	20 Delight Avail 120 A	53 Dullet AVSL 150 " 17 Drain 58 Vect 50 Januarion No do see and av Designed by Sale	50 Dullet AVSI 150 " 17 Drain 58 Vect 50 Januarion 40 40 50 50 30 Designed by	55	Design Available of the second and the second are second as the second	Sa Nozzia	4051 # 15 50 RF 4	1/3 105 SORF		
The state of the s	17 () 7 (a) () () () () () () () () () () () () ()	17 Drain 58 Vent 50 20 danting 40 40 at the atm atm 21 Designed by Cal	17 Drain 58 Vent 59 20 daining	17 Drain 58 Vent 59 50 dainting 50 do: 50 Std Std atm 59 Designed by Cale	17 Drain 58 Vent 59 50 danting 50 do do do do atm 50 arm 50 danting 50 dantin	17 Drain 58 Vent 59 50 dainting 50 day do do do and	Vent So Vent So Vent So S					
	50)	20 dainting to do or Size aim 21 amounts to do or Size aim	do do se see aim o o o o o o o o o o o o o o o o o o o	59 Juniting To do set this aim Sylvanian Sylva	59 Juniting To 40 Set Ses aim Supering To 40 Set Ses aim Supering To 30 Juniqued Ey Cole	30 dainting to do out the aim of Designed by Call	dunting to to the second of th					
		20 Fainting No do and high min ay Designed by Col	20 dainting No do and the air ay Designed by Call	20 Cambring No 40 and Mark attraction by Designed By Care	20 Calefung No 40 and 100 arm	20 Counting No do and high min	amustion to the second of the					
and districting		amornoo	amornoo e	amount of the state of the stat	amount of the state of the stat	amount of the state of the stat	The state of the s	· · · · · · · · · · · · · · · · · · ·		1945		- Jan
amaton	S and an area of the second of		11/3/	1/1/3/	W. J. South	W.J			<u>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</u>		_ ξ . ay De	(Course
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EJECTOR CONDENSER DATA	5 (12) 21	NO. RE	EQUP. N		SERAIL NO.	REV	DATE	BY	REV.	DATE	B
SHEET	MAIN	1	E-316		-	0			C		
	AUX.					A			D		
	TOTAL	1				В			E		
CUSTOMER: MCEC.					PLANT NAME:						
ORDER /TTEM: 352434	4,674001				SERVICE: FOR			CON	TINUOU	IS	
	The state of			OPE	RATING CONDITIO	NC					
OF COMMISSION OF THE		ELL SIDE					T	UBE SID)E		
FLUID EJECTOR	STEAM 24.				FLUID		CONDENS		200		
INLET CONDITION	0.205Kg/cm	1^2Abs 61					Max. 60t/h		1		
	INTER		AFTER		FLOW		MIN. 27.5 T	/HR			
INLET TEMP.		C		C	INLET TEMP.	(50		C		
OUTLET TEMP.		C		C	OUTLET TEMP.				C		
WORK PRESS.		cm^2g	1.0 Kg/cm^2	g	INLET PRESS.		3.5			/cm^2g	
DRIVE STEAM	10.0 Kg/hr		10.0 Kg/hr		PRESS LOSS		ALLOW	0.5		z/cm^2	
HEAT LOAD		ıl/HR	Kcal/HR			1	Max.		Kε	z/cm^2	
STEAM CONDITION	NOR. 10.0F	(g/cm^2g*	C		MAX. 13.5 Kg/CM	1^2G *	C				
					SPECIFICATION						
TYPE	SINGLE	TWO ST.	AGE		CODE	1	HEI .				
		ELL SIDE	1				T	UBE SID	E		
DESIGN PRESS.	0.5 Kg/cm^2	G & FULI	VAC.		DESIGN PRESS.			Kg/	cm^2G		
DESIGN TEMP.	250	C			DESIGN TEMP.	8	30	C			
SURFACE	7.68	M^2			TUBE SIZE						
NO. OF PASSES	1			1	NO. OF PASSES		!				
CORRO. ALLOW	10	MM	escativa con		CORRO, ALLOV	V 1	0	MM	FOR C	HANNEL	
FOULING FACTOR			H C/Kcal		FOULING FACT	OR		M^2	2H C/Kca	d	
INLET	3" ANSI JIS	\$150 RF			INLET & OUTLE	ET 4	" ANSI	7016			
DRAIN (INTER)	1 1/2" ANSI	JIS 150 RF			VENT	3	" PT *	1 PIECE			
DRAIN AFTER)	1 1/2" ANSI	JIS 150 RF			DRAIN	3	4" PT *	1 PIECE			
VENT	2"				7-12-1						
BURNING LONG					MATERIAL						
	SH	ELL SIDE					T	UBE SID	E		
SHELL	SS41				TUBE		SUS304TB				
SHELL COVER	SS41				TUBE SHEET		US304				
SHELL FLANGE	SS41				CHANNEL		SS41				
EXPANSION JOINT					CHANNEL COV		SS41				
GASKET	V#1500 (NO	CARBON)		GASKET		V#1500 (NO	CARBO	ON)		
NOZZLE	STPG38-2	"-SCH40	1 1/3" SCH40		NOZZEL		GP				
NOZZLE FLANGE	S25C				NOZZLE FLANC	GE S	S41	7			
BOLT & NUT	SS41				BOLT & NUT		S41				
BAFFLE PLATE	SS41						V				
The second second					CHANNEL FLAN	NGE S	S41				
ESIL EVA					EJECTOR						
STEAM CHEST	S25C				DIFFUSER	1.5	S41				
NOZZLE	SUS304				STRAINER		US304				
		LY OF ME	R				SPARE P	ARTS (S	EE)	
COOLER	YES				GASKET	1	SET/IU				
FOUDATION BOLT &					TUBE		/ I UNIT				
SLIDE PLATE	YES				NOZZLE		SET				
TEST RING	NO				DIRECTION OF	NOZZLE					
TOOLS	YES (SPECI	IAL ONLY)	1.	OIL IN & OUT		OWN & U	P			
SPARE PARTS	YES				AIR STM		IDE				
EJECTOR	YES										
STRAINER	YES										
					TEST						
HYDRO TEST PRESS	SHELL	1.5 Kg/cm	1^2	TUBE	E 10.5 Kg/cm^2						
LEAK. TEST PRESS.	SHELL (0.5 Kg/cm			E NO Kg/cm^	2					
X RAY	SHELL	* N			UBE NO						
STRES RELIVED	SHELL	NO)		UBE NO						
WITNESS	*MHI				TERIAL CERF.		*Y	ES	NO		
TEST REPORT	*REQUIRE	D			XING			OMESTI		XPORT	
					ATING			RIMARY		INISH	
COPPER & COPPER AL	LOY SHALL	NOT BE US	SED	-						0852-031	
									555	224 421	
	O.			DW	G. NO. :						
MHI SPEC. NO.					R : SEO KOATSU I	KOGYO CO).				
CUSTOMER'S SPEC. N MHI SPEC. NO.	0,					кодуо со).				

EQU EQU	P. NO.	SERAIL NO.			DATE	BY		DATE	BY
E-320	0		0)			C		
		-	Α				D		
			B				E		
		PLANT NAME							-
		SERVICE: 80	00T/D	NH3	UNIT		CO	JOUNITA	JS
	OPER	ATING CONDIT							
E					TU	BE SII	DE		
-		FLUID		Tcc	OLING	TOWE	R WATI	ER	
KCAL/	HR	1.20.0		-					
AIR 150 K		FLOW		25				T/HR	
C	D 111	INLET TEMP.		1				C	_
C		OUTLET TEM	p	40	1			C	_
mm, Ag	0	INLET PRESS.		5.5				Kg/cm^2	0
min, A	6	PRESS LOSS	-		LOW			Kg/cm^2	
		TRESS EGGS		Ma		0.5		Kg/cm^2	
				1.5		0.5		m/s	_
	21	DECIFICATION		1,5	0	_		1103	_
	5	PECIFICATION		1 341	of etd				_
- F		CODE		M	ni std	DE CU	DE		_
DE .		DEGLOS I PROC	10	104		BE SII		2	_
Kg/cm^2G		DESIGN PRES		8.5			g/cm^20	J	_
C		DESIGN TEM	Ρ.	80		C			_
//2(APPROΣ	(.)	TUBE SIZE	-	16		- 1			_
		NO. OF PASSI		4					100
4M		CORRO. ALLO		10				CHANN	EL
M^2H C/Kca	1	FOULING FAC			0006		4^2H C/	Keal	
		IN & OUT CO	NN		JIS10K				
		VENT			PT • 1				
		DRAIN		1/2	PT * 1	PIEC	E		
A CHILD		500 Kcal/m	^2 hc						
		MATERIAL							
DE					TU	JBE SI	DE		
		TUBE		BS	TF		1		
		TUBE SHEET		NI	BSP				
		CHANNEL		ST	PT38				
		CHANNEL CO	OVER	SE	142				
BON)		GASKET			1500 (N	O CAR	(BON)		
		NOZZEL		_	PG38				
		NOZZLE FLA	NGE	SS					
		BOLT & NUT		SS					- 5
		2001 00.101		100					_
10		CHANNEL FL	ANGE	SS	41				_
		CHANNELFL	- NOE	100					_
MF/R		_			SDA	RE PA	RTS		_
*14 / 18		GASKET		119	ET 1 U	scientificación de electrical			_
		TUBE			6 I UNIT				_
			ATE	37	o I UNII				_
		SAERFIAL PL		771 5		_	_		_
NIL MO		DIRECTION (Jr NOZ	LALE				-	_
NLY)		-		+					_
		-		+					_
									_
		TEST							_
g/cm^2g		TUBE 12.75 F							_
Kg/cm ² g			Kg/cm^						_
* NO		TUBE	*NO						
* NO		TUBE	*NO						
	M	ATERIAL CERF.			YE				
10.72	BC	XING						*EXPOR	T
	CC	DATING			PR	IMAR'		*FINISH	
T BE USED								35-0852-0	31
							11.00		
	T BE USED	T BE USED	BOXING COATING T BE USED DWG. NO.: 730-4	BOXING COATING T BE USED DWG. NO.: 730-40314	BOXING COATING T BE USED DWG. NO.: 730-40314	BOXING DC COATING PR	BOXING DOMEST COATING PRIMAR T BE USED DWG. NO.: 730-40314	BOXING DOMESTIC COATING PRIMARY T BE USED 5:	BOXING DOMESTIC *EXPOR

COOLER DATA SHEET		NO. REQ.	CUSTOMER EQUP. NO.	SERAIL NO.	REV.	DATE	BY	REV.	DATE	В
	MAIN	1	E-324A		0			C		-
	AUX.	1	E-324B		G			D		\vdash
	TOTAL	2	-		В					\vdash
CUSTOMER: MCI	EC/IRAQ			PLANT NAME : II		D		E		
ORDER /ITEM: 352	434 . 674001			SERVICE : K-303	CAUEA	P.				
			OPE	RATING CONDITION	& K-40)1	-	CONTIN	IUOUS	
Black - Comment	SHE	LL SIDE	OFE	KATING CONDITION						
FLUID	JIS K2213 N			FLUID	1.0		BE SID			
HEAT LOAD	245000		KCAL/HR	FLUID	C	OOLING	TOWE	R WATE	R	
FLOW	751		/M	FLOW	-					
INLET TEMP.	58.4		2	INLET TEMP.	61				T/HR	
OUTLET TEMP.	45	(OUTLET TEMP.	34				C	
INLET PRESS.	8		\g/cm^2g	INLET PRESS.	38				C	
PRESS LOSS	ALLOW		Kg/cm^2g		4.5				Kg/cm^2g	3
	Max. 1.0			PRESS LOSS		LOW			Kg/cm^2g	g
	iviax. 1.0		Kg/cm^2g		Ma	ax. 1	.0		Kg/cm^2g	z
TYPE	FIVED TUD	E OTTORNE DE		SPECIFICATION						
		E SHEET TY	PE	CODE	TE	MA CLA	SS "R	***		
DESIGN PRESS		LL SIDE		194		TU	BE SID	E		
DESIGN PRESS. DESIGN TEMP.	10	Kg/cm'	2G	DESIGN PRESS.	7		Ke	/cm^2G		
SURFACE	80	C		DESIGN TEMP.	50		C			_
	76	M^2(A)	PROX.)	TUBE SIZE		42 L *19 (6t		_
NO. OF PASSES	1			NO. OF PASSES	6		1.			-
CORRO. ALLOW	3.2	MM		CORRO. ALLOW	3.2		M	M FOP	CHANNE	71
FOULING FACTOR		M^2H (C/Kcal	FOULING FACTOR		0006		2H C/K		aL.
VENT	3/4" SW *1	PIECE		VENT		PT * 2	DIECE	ZH C/K	Call	_
DRAIN	3/4" SW *1	PIECE		DRAIN	3/,11	PT *2	DIECE	_		_
					/4	11 2	TECE	_		_
			7	MATERIAL						
	SHEL	L SIDE		MATERIAL		777.11	D OID			
SHELL	SM41			TUBE	Len		BE SIDI	5		
SHELL COVER	SM41			TUBE SHEET		S304TB				
SHELL FLANGE	SM41			CHANNEL	SM					
					SM					
GASKET	V#1500 (NO	CARRONI		CHANNEL COVER						
NOZZLE	STPG38 - 2"	SCHAO	L/2 CCTION	GASKET		1500 (NO	CARB	ON)		
NOZZLE FLANGE	S25C	-3CH40 , I	72 SCH80	NOZZEL		G38				
BOLT & NUT	S35C / S25C			NOZZLE FLANGE	SS4					
BAFFLE PLATE	SS41			BOLT & NUT	S35	C / S25C				
DATECTEATE	3341									
				CHANNEL FLANG	E SM	41				
	GI IDE:	ABIT								
COOLER		OF MF/R			SPAR	E PARTS	(SEE 7	35-9916	43)	
	YES							23,710		
OUDATION BOLT	YES									_
SLIDE PLATE	YES									-
TEST RING	NO			DIRECTION OF NO	ZZLE					_
OOLS	YES (SPECIA	L ONLY)		OIL IN & OUT		HT HAN	O VIEW	V FROM	4	_
SPARE PARTS	YES					ANNEL E		· rkon	1	_
				WATER IN & OUT		THAND				_
					LUCE	TIMIND				_
and the second				TEST						_
IYDRO TEST PRESS	SHELL 15	Kg/cm^2 g	Т	TUBE 11 Kg/cm^2s	v .			100516		_
EAK. TEST PRESS.	SHELL 10			UBE 7 Kg/cm^2s						
RAY	SHELL	NO		TUBE NO	5					
TRES RELIVED	SHELL	NO		110						
	MHI	110	MAT	TUBE NO ERIAL CERF.		Lave				
/ITNESS				ING		NO				
	REQUIRED					DOM	CUPIE	27.5	PORT	
VITNESS EST REPORT	REQUIRED									_
EST REPORT		NOT DE UE	COA	TING		PRIM		FI	VISH	
		NOT BE US	COA					FI		
EST REPORT	LLOY SHALL	NOT BE US	ED					FI	VISH	

EJECTOR FOR LEAKAGE	RAPITY WON	SCREW: ISGNETRIC ISGNETRIC WITT WORTH	/7
STEAM CONDENSER DATA SHEET CUSTOMER: _MCE ORDER/ITEM: 6- DRIVING STEAM VACUUM OF EJECTOR AMOUNT OF EJECTOR AMOUNT OF EJECTOR AMOUNT OF RESSUR EXHAUST PRESSUR DESIGN JEMPERA INLET CONNECTION	AUX. TOTAL 15-AT PLANT SERVING CONDI MAX. TEMPERATURE MAX. QUANTITY R D AIR STEAM JRE SPECIFICATION SITURE TURE	NAME: 8007/6) (CE 110N 13.0 NOR. 10.0 2AT NOR. 5AT 120.0 F/g 120.0 F/g 170 170 170 170 170 170 170 170 170 170	7-3(LS) C C C C C C C C C C C C C C C C C C C
DIFFUSER	MATERIAL	C	
TOOLS NO			T D SETS/UNIT
HYDRO, TEST PRES PIRIORMANCE TEST WITHESS TIST REPORT	M HIII SO RECO HATERIAL BOXING	URED CUSTOMER	D NO (3) EAPORT (3) FUNSH

	TENERE SEE		32B2B2B2B2B2B2B2B2B2B2B2B2B2B2B2B2B2B2B			BABABABABABABABA
7		Part 3. E	FAM LYP. F-231	ISOMETRIC	Page 306	1
_		1		ALL-ACTIVE AND PERSONS AND STATE AND	MEN DATE BY HEV DATE BY	
.]		LEAKAGE STEAM CO	CHDENSER MAIN / SAT 5	531	0 70-7-25 C	
-		CUSTOMER : N	MCEC / IRAQ	PLANT NAME: 130	191 [1]	
		OHDEN TTEM		CONDITION	CONTINUOUS	
-		FLUID	STEAM AND AIR	Lraid	TO WER WATER	
J.		FLOW	23.6 × 10 4 Kcal/Hr STEAM 390 × 1/Hr AIR 150 × 1/Hr	FLOW	35 T Hr	
		OUTLET TEMP	-c	OUTLET TEMP	74.6 °C 41.4 °C	
1	- 1	I INLET PHESS	- 200 mm. Ag 50 cmts	PRESS LOSS	5.5 Kg em ¹ G	
1-0	- 1	4		COCLUIS WASIE ASSOCIA	MAX. 0.5 Kg cm²	
1-3		S TYPE	SPECIF	CODE	TEMA GLASS G MHI STD,	
		DESIGN PRESS	1.0 Kg cm ² G	DESIGN PRESS	8.5 ×3/c=+Cr	
]	21	SUHFACE	100 °C	DESIGN TEMP	1100 Cirt Kitt (
	21	COMPOSION ALLW	Sia Die mm	COMMOSION ALLOW	C: M: C: .	
1		FOUL ING FACTOR		FOULTING FACTOR	4. 8 ANSE 115 10 F RF (F)	
		DRAIN	CI-B PY SW X PIECE	VENT	LAND PT. X PIECE	
1	21	DRAIN	1/2 3 ANS I 150 # 2.			
-	21	OVERALL HE	AT TRANSFER RATE MATE	RIAL	D Keel/int H.C	
1 3			SHELL SIDE	TUBE	SIDC	
	13	SHELL COVER	Giren Setter	TURE SHEET	XNBSP (SMI) XSSI SMI WITHCONING	
1	25	GASKET	S511 15M11 TSTPG: M584Z	the property of the party of th	XSSII SMII WITHWATEN	
	87		STACH IN SCHOOL I'D SCHOOL	NOZZLE	LISCP XSTPGII	
	. 11	BOLT & NUT	XSSII LSOMI SIIC LSIIC SIC	BOLT & NUT	Xssn I snc Xssn I snc snc	
1 7	. 0			CHANNEL FLANCE	KSSII I-SMII I-SIIG	
]]	4			SATELLIKIAL PLATES	13 INC PLATE	
	44	SUPPLY CONTAINSTR	OF MY'R		ARC PARTS	
1	41	SLIDE PLATE		TUBE	XISET JUNIT SETS WHIT	
3		TEST RING	TES (SPECIAL ONLY)		OF MOZZLE	
H		SPARE PARTS	D ISPECIAL CHLY)		AIR STEAM	7 8
-71	2 4	-				
ृत्य			SHELL 1.5 Ke cm's	108E 12.75	Ky cm'y	
n	67	- serverences and	SHELL KNO TIYES &	TUBE NO	Kg om'g	
1 1		STRESS AC LIEVED	SMHT L'CUSTOMER	TUBE (10)	XYES NO	
.0	. 61		Energuiaco	COATING	PHIMARY XEINISH	
1	62				M. C. I Kad	7
:3		LI COPPER & CO	SPPER ALLOY SHALL NOT BE USE	D FOR		
-13	63	CUSTOMER'S SPEC	: NO	ME'S WATER,	100	
-	2					
			84			

E-712A~C OIL COOLER

ITEM	NAME OF PART	MATERIAL	QTY.	REMARK
1	SHELL	STPG38	1	8B SCH30
2	BONNET	FC20	2	
3	TUBE SHEET	SS41P	2	
4	FLANGE	SS41P	2	
5	COOLING TUBE	SUS304	152	10 *0.8t
6	BAFFLE	SS41	35	1.6t
7	TIEROD	SS41B	4	7
8	COLLAR	SS41B-D		10 *1t
9	COLLAR LOCK NUT	SS41B	8	M7
10	OIL INLET & OUTLET SOCKET	SGP	2	2"
11	OIL INLET & OUTLET FLANGE	SS41P	2	JIS10*FLANGE
12	OIL DRAIN SOCKET	SS41B	1	PT 3/8
13	OIL DRAIN PLUG	FCMB	1	PT 3/8
14	WATER DRAIN PLUG	FCMB	1	PT 3/8
15	THERMOMETER SOCKET	SS41B	2	PT 3/8
16	THERMOMETER PLUG	FCMB	3	PT 3/8
17	PLUG	FCMB	3	PT 3/8
18	ZINC CORROSION	ZNB	36	13 *40 L
19	STAND STAND	SS41	9t	
20	"O" RING	NBR	2	Jisw1516-71
21	GASKET (A)	ASB	1	1.5t
22	GASKET (B)	ASB	1	1.5t
23	BOLT WITH S.M	S20C-D	8	M16*65L
24	BOLT WITH SW	S20C-D	4	M16*90L
25	BOLT WITH SW	S20C-D	8	M16*75L
26	BOLT WITH SW	S20C-D	4	M16*100L
27	LINER	SS41P	1	

TEST PRESS.

OIL SIDE 10Kg/cm^2 G WATER SIDE 15Kg/cm^2G

E-802ABC OIL COOLER SPEC.

NAME OF PURCHASER / MCEC LOCATION / M.O.I. IRAQ PURCHASER'S ITEM NO. / E-802 ABC SERVICE / K-801ABCT OIL COOLER

UNIT/3

1- PARTICULARS

2- TYPE / OC-52

SURFACE AREA	M^2		5
	78	SHELL SIDE	TUBE SIDE
FLUID MATERIAL		OIL	C.T.W
QUANTITY & OPERATING PRES	S. M^3/H*KG/C	MG 3.3*2	20*MAX.7 NOR.5
INLET TEMP.	C	51.5	34.6
OUTLET TEMP.	C	45	35.1
NO. OF PASS		1	2
HYDRO'C TEST PASSES	KG/CM^20	G 5	10.5
	T DIA. /8"	THICK. 1.6MM	PITCH 21MM
WEIGHT DRY.	APPROX. 270KG	FULL WATER	APPROX. 340KG
FOULING FACTOR 0.0006 N	M^2HC/KCAL		

3-NOZZLES AND CONNECTION

- * C.W. INLET & OUTLET * OIL INLET & OUTLET

/ JIS 10K -3" FF

/ ANSI150LB - 1 1/2" RF

AC5 PLUG (PF3/4)

- 4-ACCESSORIES FOR / UNIT

 ACI VALVE WITH CAP(1/2", SW, 800LB)

 AC2 VALVE WITH CAP(1/2", SW, 800LB)

 AC3 VALVE WITH CAP(1/2", SW, 800LB)
 - AC6 PLUG (PF 3/4) AC7 PLUG (PT 1/2) AC4 THERMOMETER (0-100C, PF3/4, L=100) 2 AC8 VALVE WITH CAP(1/2", SW ,800LB)

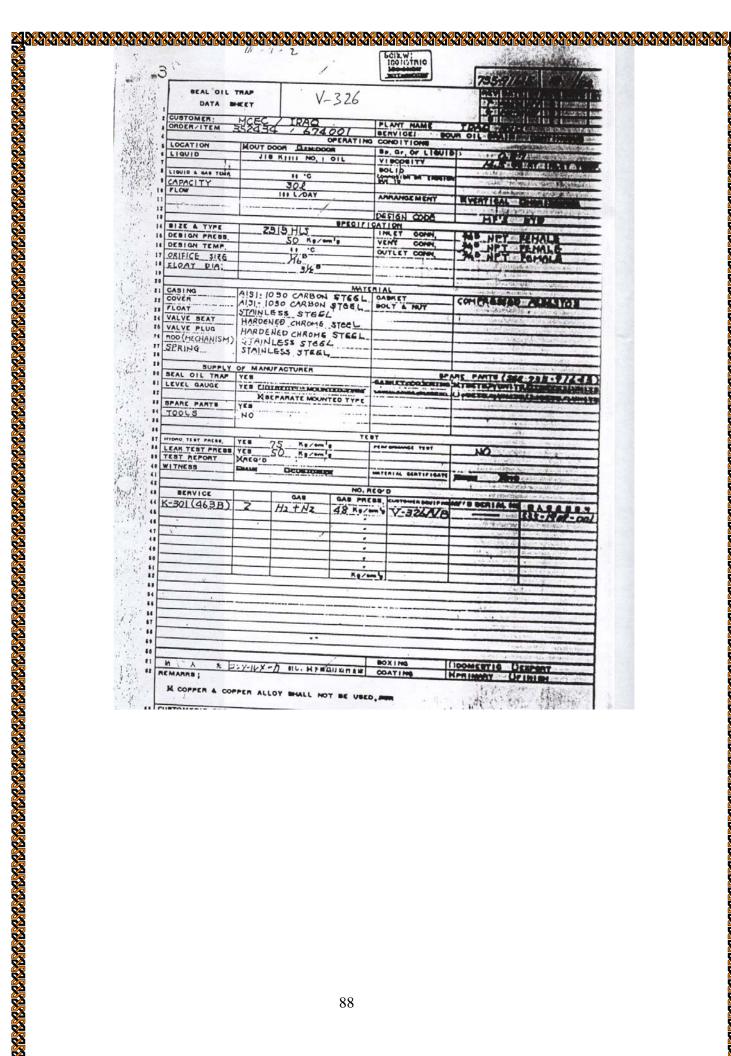
5-SPARE PART FOR UNIT

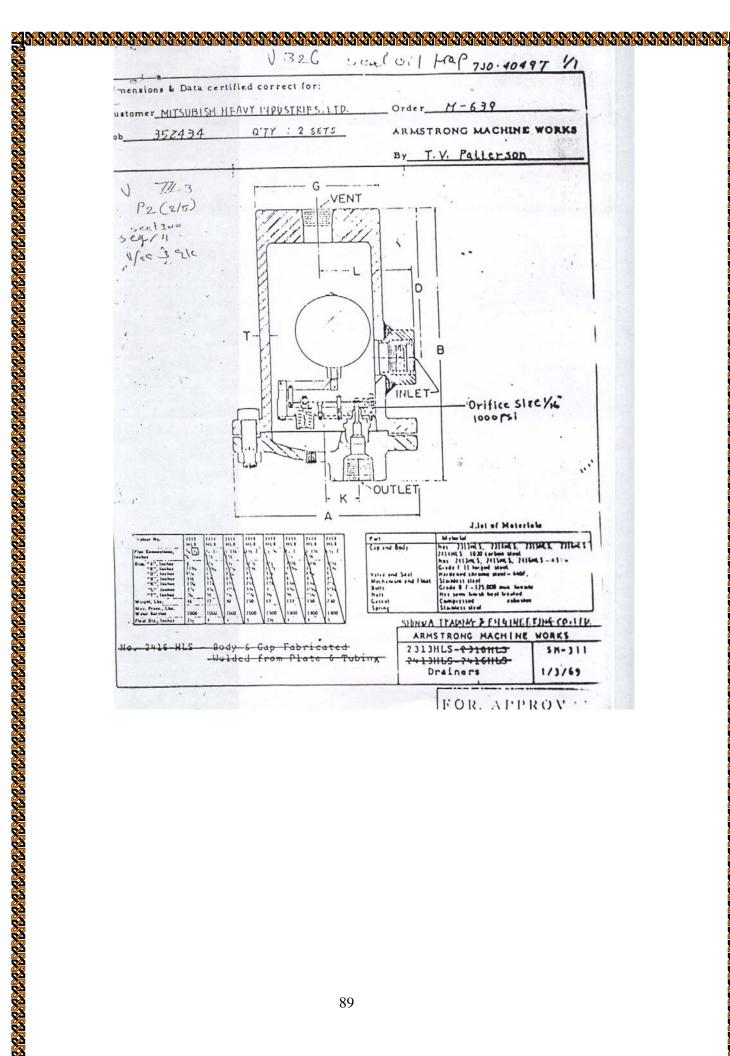
refer to the spare parts list .

6-SPECIAL TOOLS FOR UNIT /

V-119 NG. COMP. SUCTION SEPARATOR

SEQ.	ITEM	SPECIFICATION
SEQ.	LIFTING LUG	SM41B
2	DEMISTER	YORK# 421 OR EQ. (SUS304)
3	INTERNAL BAFFLE	SS41
4	ANCHOR BOLT & NUT	SS41
5	NOZZLE FLANGE	SF45
6	NOZZLE NECK	STPG38
7	MANHOLE GASKET	V#520 OR EQ.
8	MANHOLE BOLT & NUT	SNB7 S45C
9	MANHOLE COVER	SF45
10	MANHOLE FLANGE	SF45
11	MANHOLE NECK	SB42
12	LEG	SS41
13	HEAD	SB42
14	SHELL	SB42
15	INSULATION	NO
16	PAINTING	2COAT (C-2)
17	CORROSION ALLOWANCE	MM
18	JOINT EFFICIENCY	85 %
19	RADIOGRAPH	SPOT
20	POST WELD HEAT TREATMENT	NO
21	PNEUM'C TEST PRESS.	17 Kg/cm^2G
22	HYDRO'C TEST PRESS.	25.5 Kg/cm^2 G
23	OPERATING TEMP.	43 C
24	OPERATING PRESS.	10 Kg/cm^2G
25	DESIGN TEMP.	60 C
26	DESIGN PRESS.	17 Kg/cm^2 G
27	FLUID	NATURAL GAS





SEAL OIL TRA DATA SHEET	P					REV	DATE	BY	REV	DATE	BY
DATA SHEET	2					O G	14/1/75	NY	C		+
						В	14/1//5	NY	D E		+
CUSTOMER:	MCEC /I	RAO			DI AN	-	Æ : IRAQ	EVD	E		
ORDER /ITEM			001				OUR OIL E		-	ONTINUO	MICE
OTTO DICTION	352131	, 0/40		PERATI	ING CONI			KAIN		ONTINUC	1001
LOCATION		T	OUT DOOR	DICITION OF THE PARTY OF THE PA	SP. GR. (0	.87	_
LIQUID		JI	S K2213 NO. 1	OII.	VISCOSI		OID	14		INLET TE	MD
	CA LU	1		0115	SOLID			14.	JOSAI	HALLI IL	IVII .
LIQUID A GAS	ТЕМР.		60 C			IN ON	EMOSION			*A	
CAPACITY	134		30L								
FLOW FOR VA	LVE		500L/DAY MA	X.							
SELECTION					DESIGN	CODE				H PRESS.	
				SPEC	CIFICATIO	ON					-
SIZE & TYPE	E-150	CYL	INDRICAL VES		INLET C	Print Selection Section Section 1		I" AN	VSI2500#	RTJ * 1	_
DESIGN PRESS		240	Kg/cm^2 G		VENT CO				NS12500#		
DESIGN TEMP.		60 (OUTLET				NS12500#		
INSIDE DIA.			MM		LEVEL C	_				# RTJ * 2	
WALL THICKN	ESS	36M	М		LEVEL T					# RTJ * 2	
		_		M	ATERIAL						_
CASING(SHELI	.)	STPT	T49S		GASKET				V#4409	S OR EO.	
COVER(END PI	ATE)	SM50	0B		BOLT &					& S45C	
FLOAT									OCITE	W 545C	
VALVE SEAT	330							_			
VALVE PLUG											_
ROD(MECHAN	ISM)										
FLANGE		SF50	* S25C								
NOZZLE		SF50									
SUP	PLY OF N	ANUF	ACTURER								
SEAL OIL TRAI		YES			de como en						
LEVEL GAUGE		YES	*SEPARATE								
		MOU	NTED TYPE								
SPARE PARTS		NO									
TOOLS	NE .	NO									
					TEST						
HYDRO TEST P		YES	360 Kg/cm^2	G	PERFOR	MANCI	ETEST		N	10	
LEAK TEST PR	ESS.	YES	240 Kg/cm^2	G							
TEST REPORT	6347	*REC									
WITNESS		*MH	I		MATERA	ILS CE	RTIFICATI	В	Y	ES	
					D. REQ'D						
SERVICE			GAS	GA	S PRESS.		STOMER	MF'S S	ERAIL		
W 201 (5							UIP. NO	N	0		
K-301 (272BR)	2		H2+N2	225	Kg/cm^2 G	V	-328A/B	,			
					=						
					=	-					
					=						
					=			-			
					=						
Market Market				-	m						
cono i i			8	Kg	/cm^2 G						
(SEC. VIII)											
*A / STRENGTI	CALCU	LATIO	N SHALL BE P	ER ASM	IE NON-FI	RE PRE	SS. VESEL	FORMU	LA. FAB	RICATION	1
PROCEDURE SI	TALL BE	PER M	HI STANDARE	& "AS						0.00	
						XING	DOMES			ORT	
					COA	TING	*PRIMA	DV	EIM	ICII	

ACCUMULATOR				REV	DATE	BY	REV	DATE	BY
DATA SHEET				F	13/12/74	NY	C		
				G	14/1/75	NY	D		
				В		100	E		
CUSTOMER: MCEC/IF				PLANT NAM	ME: IRAQ	EXP.			
ORDER/ITEM 352434	, 674001			SERVICE:	GOV. OIL I	LINE	(CONTINUO	US
				CONDITION					
LOCATION	OUT DOOR			TIAL CHAR		N2 G			
FLUID	JIS K22.5 N	O. 1 OIL		TIAL CHARGESS.	GE GAS	1.8 Kg	y/cm^2	G	
FLUID TEMP.	30~60 C						-		
MAX, WORKING PRESS	5.5 Kg/cm^2	G							
MIN WORKING PRESS.	2.5 Kg/cm^2		DES	SIGN CODE		MF'R	STAN	DARD	
WORKING CAPACITY	9.6 L								
		SPE	CIFIC	CATION					-
SIZE & TYPE	MD 210-40	0.12		JID SIDE CO	NN.	2" AN	SI150#	RF	
	210 10			ARGE GAS			STANI		
DESIGN TEMP.	70 C								
CAPACITY	39 L								
			-		_				
		N	1ATE	RIAL					
BODY	STH80			3102-011					
BLADDER	NBR								
SUPPLY OF M ACCUMULATOR TOOLS	YES YES (SPECI								
TOOLS	ONLY)	AL TOOLS							
SPARE PARTS	YES								
GAS CHARGING TOOL	YES								
III/DBO TECT PRESS	1000 161		TES	The second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second residence in the second residence is a second residence in the second resid	mmam				
HYDRO TEST PRESS.		Kg/cm^2 G		ORKING CAP	TEST	_	_	YES	
TEST REPORT MATERIAL	*REQUIREI	,	WI	TNESS		_		*MHI	
CERTIFICATE	125								
CERTIFICATE	-		+			-		YES	
		N	NO. RE	CO'D				LO	
SERVICE	NO. REQ.	DESIGN PRI			ER EQUIP.	MF' SERAII			
K-301	1	10 Kg/cm^2	2 G		329	OLKAII.	2110	535-0852-0	34
K-303 /K-401	1	=			356				35
K-302	1	=		V-:		-			36
		=		1.		_		-039(TC	
								-037(10	763
				BOXING	DOMES	STIC	EX	KPORT	
				COATING	*PRIMA	ARY	FI	INISH	

CUSTOMER: MCCE/IRAQ	ACCUMULATOR DATA SHEAT SUCTION REV DATE BY BY BY BY BY BY BY B	BOXING DOMESTIC EXPORT	ACCUMULATOR DATA SHEET	FOR PLUNGER (HP 50) POSUCTION	UMP REV DATE O	BY REV DATE F
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH			G 14/1/75 B	NY D E
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	CUSTOMER: MCEO ORDER/ITEM 3524	C/IRAQ 34 , 674001	PLANT NAME : IRAQ SERVICE : K-301 SYN.	EXP. GAS CONTINUOUS
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	LOCATION	OUT DOOR	RATING CONDITION	N2 GAS
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	FLUID	JIS K22.5 NO. 1 OIL	INITIAL CHARGE GAS PRESS.	5.4 Kg/cm^2 G
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	FLUID TEMP. MAX. WORKING	30~60 C 8 Kg/cm^2G		
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	PRESS	SE V-/	DEGICAL CODE	MEID CEANE AND
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	WORKING CAPACIT	Y L	DESIGN CODE	MF R STANDARD
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH			SPECIFICATION	
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	SIZE & TYPE	MD 210-1	FLUID SIDE CONN.	PS3/4 WITH SW CONN. ADAPTOR
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	DESIGN TEMP	70 C	CHARGE GAS CONN.	MF'S STANDARD
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	CAPACITY	11		
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH				1
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	BODY	S38C	MATERIAL	
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	BLADDER	NBR		
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH				
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	SUPPLY O	F MANUFACTURER	SPARE PAR	TS (SEE 735-91643)
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	ACCUMULATOR TOOLS	YES YES (SPECIAL TOOLS	3	
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	SPARE PARTS	ONLY) VES		
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	GAS CHARGING TOO	DL YES		
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH			TEST	
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	HYDRO TEST PRESS TEST REPORT	YES 15 Kg/cm^2 G *REQUIRED	WORKING CAP TEST WITNESS	YES *MHI
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	MATERIAL CERTIFICATE	YES		
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH			NO DEOLD	YES
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	SERVICE	NO. REQ. DESIGN	PRESS. CUSTOMER EQUIP.	MF'S
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	HP SO PUMP SUCTIO	DN 2 10 Kg/o	NO cm^2 G V-330A/B	SERAIL NO 535-0852-037
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH				
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH				
BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH				
BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	COATING *PRIMARY FINISH				
BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	BOXING DOMESTIC EXPORT COATING *PRIMARY FINISH	COATING *PRIMARY FINISH				
COATING *PRIMARY FINISH	COATING *PRIMARY FINISH				BOXING DOMES	TIC EXPORT
		92			COATING *PRIMA	RY FINISH
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	REV	DATE	BY	REV	DATE	BY
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				E		_
AQ	PLANT NAM	ME : IRAQ	EXP.	- 0	ON INTERNITION	VIIC
674001	SERVICE:	K-301 SYN	. GAS		ONTINUC	JUS
2 (TWO)		(HP S	O PUMP I	DISCH.)		_
V-332A/B						
OPERATIN	G CONDITION	N	_			_
JIS K2213 NO. 1 OIL (EQUIVALENT TO SAE10)	With the					
236 Kg/cm^2G			_			
MAX. 60 C / MIN 30 C					-	
201 L/Min						
N2 GAS	TETE					
165Kg/cm^2G						
140-200 C/S				To be to		
SPECI	FICATION					
275 Kg/cm^2G						
80 C						
200 RJ						
1 1/2" ANSI2500# RTJ						
	T LINE					
FORGED STEEL						
			-			_
			_			
NEOPLANE						
ALLOY STEEL & FORGED STEEL						
YES (SPECIAL ONLY)						
	TC (CEF 735 0)	1643)				
SPARE PAR	13 (SEE /35.9)	1043)				
	TEST					
VES 412 V =/am/2 G	1EG1					
YES 413 Kg/cm^2 G YES DAMPING EFFECT						
TES DAMPING EFFECT						
TO PULSATION SHALL BE CHECKED			_			
					VEC	
BE CHECKED					YES	
BE CHECKED	BOXIN	o Inc.	MESTIC		YES	
	OPERATIN JIS K2213 NO. 1 OIL (EQUIVALENT TO SAE10) 236 Kg/cm^2G MAX. 60 C / MIN 30 C 201 L/Min N2 GAS 165 Kg/cm^2G 140-200 C/S SPECI 275 Kg/cm^2G 80 C 200 RJ 1 ½" ANS12500# RTJ 1 ½" ANS12500# RTJ 1 ½" ANS12500# RTJ ALL HAVE THE ENOUGH EFFI MA FORGED STEEL NEOPLANE FORGED STEEL NEOPLANE ALLOY STEEL ALLOY STEEL MANUFACTURER YES YES (SPECIAL ONLY) YES SPARE PAR	O G H	O 14/1/75 G 14/1/75 H 21/4/75 H 21/4/7 H 21/4/7	O	O	O

OIL FLITER	NO. REQ.	CUSTOMER	SERAIL F	EV. I	DATE 1	BY	REV.	DATE	BY
(SEAL OIL)	MAIN 1	F-307A	NO. ()	7.1		С		
	AUX. 1 TOTAL 2	F-307B	- (3			D E		
CUSTOMER: MCEC	C/IRAQ		PLANT NAME : IRA	Q EXP.				W.C.	
ORDER /ITEM: 3524	34 , 674001 O	PERATING C	ONDITION (HP SEA	YN. GA	AS .)		CONTI	NUOUS	5
LOCATION	*OUTDOOR		SP.GR. AT INLET TE	MP.	0.87	°C A1	r 60	C	
INLET TEMP	45 C		SOILD		14.5	%	00	-	
INLET PRESS. PRESS, LOSS.	236 Kg/cm^2G NOR 0.35 Kg/cm^2G /	AT 114 L/M						_	
CARACITY	MAX. 1.75 Kg/cm^2G								
CAPACITY	DESIGN 201 L/M			-					
		8	PECIFICATION						
SIZE &TYPE	7D3-F	- 3	INLET CONN.	2" A	NS12500	RTJ	n en en		
DESIGN PRESS. DESIGN TEMP.	275 Kg/cm^2	2G	OUTLET CONN. VENT	2" /	ANSI2500 T FEMAL	0 RTJ LE WIT	H PLU	3	10
CORRO. ALLOW	16 MM		DRAIN (INLET SIDI	E) 3/41	PT FEMA	LE WI	TH PLU	JG	
FILTRATION	10								
			MATERIAL						
TOP FLANGE	S25C S25C		GASKET ELEMENT	V#5	50S				
BOLTS & NUTS	SCM3, S45C		antotoreld ()	(10) U78-0	CI			
NOZZLE FLANGE NOZZLE PIPE	S25C STPT42-SCHXXS	1,40		-					
BOTTOM PLATE	S25C								
		1 2 2 2							
FILTER	SUPPLY OF MF/R (NOT)	E)		SPARE	E PARTS	S (SEE	735-991	643)	
FOUDATION	NO								
BOLT & NUT SHIM	NO								
TOOLS	NO VEG								
SPAKE PARTS	115								
			TEST						
HYDRO TEST PRESS	YES 413 Kg/cm^2G	BY OIL	X RAY INSPECTION	YE	S 100%	6			
LEAK. TEST PRESS.	YES 275 Kg/cm^2G		STRESS RELEVE	YES	S				
TEST REPORT	REQUIRED		MATERIAL CERE	VE	9				
	14411		MATERIAL CERF.	TES	3				
				-					
				-					
			BOXING COATING	DO	MESTIC	E	APORT		
		SED	COATING	-PR	MMAKY		INISH -0852-0	05	
	ALLOY SHALL NOT BE US								
COPPER & COPPER		In	VG. NO.: 730-40315						
			VG. NO.: 730-40315 P'R:						
COPPER & COPPER A				-				- 6	
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COPPER & COPPER A		M	*R:						

OIL FLITER DATA SHEET		NO. REQ.	CUSTOMER EQUP. NO.	SERAIL NO.	RE	V.	DATE	BY	REV.	DATE	By
(GOV. OIL)	MAIN	1	F-308		0				C		
	AUX.			-	· G				D	1000	
	TOTAL	1	-		В				E		
CUSTOMER: MCEC		Real Property		PLANT NAMI	E: IRAQ	EXI	,				
ORDER /ITEM: 35243	34,674001			SERVICE: K	-301 SY	N. G	AS		CONT	INUOUS	5
			OPE	RATING CONDIT							
LOCATION	*OUTDOO)R		SP.GR. AT IN		ΔP.	0.87				
FLUID	JIS K2213			VIS. AT INLE	T TEMP.	7	14.5	CS	AT 60	C	
INLET TEMP	65 C			SOILD				%			
INLET PRESS.	8	Kg/cm^2G									
PRESS. LOSS.	NOR. 0.	3 Kg/cm^2									
Addition to the state of the	MAX. 0	.5Kg/cm^2					1				
CAPACITY	NOR. 60	L/M								_	
	DESIGN	270 L/M									
		THE PERSON NAMED IN									
				SPECIFICATION							
SIZE &TYPE				INLET CONN		3"	ANSI15	ORF			
DESIGN PRESS.	10	Kg/cm	^2G	OUTLET CON	IN.		ANSI15				
DESIGN TEMP.	70	C		VENT			PT FEM.				
CORRO. ALLOW	16	MM		DRAIN(INLE	T SIDE)	3/	4PT FEM	IALE V	VITH PI	LUG	
FILTRATION	100 MESH										
			0.6								
				MATERIAL							
CASE	STPG38			GASKET		V4	1500				
TOP FLANGE	S1PG38 S25C			ELEMENT			IS304				_
BOLTS & NUTS	S25C			ELEMENT		30	13304				_
NOZZLE FLANGE	S25C										_
NOZZLE PLANGE NOZZLE PIPE	STPG38										_
BOTTOM PLATE	S25C			+			_	_			
BOTTOMPLATE	3230										
		LY OF MF/R			5	SPA	RE PAR	TS (SE	E 735-9	1643)	
FILTER	YES										
FOUDATION	NO										
BOLT & NUT											
SHIM	NO										
TOOLS	NO										
SPARE PARTS	YES	14									
SAFETY VALVE	NO										
	1			TEST							
HYDRO TEST PRESS	YES 15	Kg/cm^2G	BY OIL	X RAY INSPE	ECTION	N	0			W	
LEAK. TEST PRESS.	NO	Kg/cm^2G		STRESS RELI	EVE	NO)				
TEST REPORT	REQUIRE	D		1							
WITNESS	MHI			MATERIAL C	CERF.	NO)				
				BOXING		DO	OMESTI	C	EXPOR	T	
and the same				COATING		*P	RIMAR	Y	FINISH	ł	
COPPER & COPPER /	ALLOY SHA	ALL NOT BE	USED	-				5	35-0852-	-007	
CUSTOMER'S SPEC.	NO		Lo	WG. NO.: 730-40	0215	-					_
	110,		L	110.110 /30-40	4513						

OIL FLITER DATA SHEET		NO. REQ.	CUSTOMER EQUP. NO.	SERAIL NO.	REV	. DATE	BY	REV.	DATE	B
(GOV. OIL)	MAIN	1	F-316	-	0			C		
	AUX.		120		G	1		D		
	TOTAL	1			В			E	1/2	
CUSTOMER: MCE				PLANT NAM	E: IRAQ E	XP.				_
ORDER /ITEM: 3524	134,674001			SERVICE: F	C-302 AIR		CON	OUNITI	US	
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	OPE	RATING CONDI	TION	J- 07				
LOCATION	*OUTDOO	R		SP.GR. AT IN		0.87				
FLUID	JIS K2213	NO.1 OIL		VIS. AT INLE	T TEMP.	14.5	CS	AT 60	C	_
INLET TEMP	60 C			SOILD			%			
INLET PRESS.	8	Kg/cm^2G								
PRESS. LOSS.		3 Kg/cm^2								
		5Kg/cm ²								
CAPACITY		0 L/M								
	DESIGN	360 L/M			= 116					
	5.000	HAROLINE L. MA								
				SPECIFICATION	N					
SIZE &TYPE	1-			INLET CONN		3" AN	VSI1501	RF		
DESIGN PRESS.	10	Kg/cm	^2G	OUTLET CON	VN.		VSI150			
DESIGN TEMP.	70	C	Digit in the	VENT					H PLUG	
CORRO. ALLOW	16	MM		DRAIN(INLE	T SIDE)				TH PLUG	
FILTRATION	100 MESH									
										_
				MATERIAL						_
CASE	STPG38			GASKET	1	/#1500				
TOP FLANGE	S25C			ELEMENT	S	US304				
BOLTS & NUTS	S25C									
NOZZLE FLANGE	S25C									
NOZZLE PIPE	STPG38									
BOTTOM PLATE	S25C									
	- CLUBER									
FILTER		Y OF MF/R			SP/	RE PAR	TS (SE	E 735-91	643)	
FOUDATION	YES NO									
BOLT & NUT	NO									
SHIM	NO									
TOOLS	NO									
SPARE PARTS	YES			_						
SAFETY VALVE	NO NO			_						
STATE OF THE PERSON OF THE PER	110				-					_
HVDPO TEST BREES	VEC 15	V-1126	nu ou	TEST						
HYDRO TEST PRESS		Kg/cm^2G	BY OIL	X RAY INSPE	CTION	10				
LEAK. TEST PRESS.		Kg/cm^2G		STRESS RELE	EVE N	0			/	
TEST REPORT	REQUIRED	)								
WITNESS	MHI			MATERIAL C	ERF. N	0				
					*					
				BOXING		OMESTIC		EXPORT		
CODDED & CODDED	LLOVer	LNOTPE	IODD	COATING		PRIMARY		FINISH		
COPPER & COPPER A	LLUY SHAI	LL NOT BE (	SED				53:	5-0852-0	09	
CUSTOMER'S SPEC.	NO.		In	WG. NO. :						_
MHI SPEC. NO.				F'R:						_
or men inch			IV.	r K.						

OIL FLITER DATA SHEET (LUBE OIL)  CUSTOMER: MCECORDER /ITEM: 3524:  LOCATION FLUID INLET TEMP INLET PRESS, PRESS, LOSS.  CAPACITY  SIZE &TYPE DESIGN PRESS, DESIGN TEMP. CORRO. ALLOW FILTRATION  CASE TOP FLANGE BOLTS & NUTS NOZZLE FLANGE NOZZLE FLANGE NOZZLE PIPE BOTTOM PLATE  FILTER FOUNDATION BOLT & NUT SHIM TOOLS SPARE PARTS SAFETY VALVE  HYDRO TEST PRESS.  LEAK, TEST PRESS.	MAIN AUX. TOTAL		EQUP. NO.	NO.	REV.	DATE				Ві
CUSTOMER: MCECORDER //TEM: 3524: LOCATION FLUID INLET TEMP INLET PRESS.	Z/IRAO	1	F-325A F-325B	-	G			D F		
LOCATION FLUID INLET TEMP INLET PRESS.	34 . 674001	4		PLANT NAME SERVICE : K	: IRAQ EXF	P. 1	-	ONTINI	JOUS	
FLUID INLET TEMP INLET PRESS.	*OUTDOO!	R	OPE	SP.GR. AT INL	ION ET TEMP.	0.87				
INLET PRESS.	JIS K2213 N 45 C	NO.1 OIL		VIS. AT INLET SOILD	TEMP.	14.5	CS A	T 60 C		
PRESS. LOSS.	NOR. 0.3	Kg/cm^2G 5 Kg/cm^2G	AT 626L/M							
CAPACITY	NOR. 6	526 L/M 77 L/M								
	0.00101110	1010,000000		SPECIFICATION						
SIZE &TYPE DESIGN PRESS.	18D3-F 10	Kg/cm	i^2G	OUTLET CON	N.	3" AN 3" AN	ISI150R ISI150 F	F RF		
CORRO. ALLOW	16	MM		DRAIN(INLET	r SIDE)	3/4PT	FEMAL	E WITH	PLUG I PLUG	
FILTRATION	23			DRAIN (INCE	SIDE)	3/411	FEMA	JE WITH	FLOG	
				MATERIAL						
TOP FLANGE	SM41 S25C	0		GASKET ELEMENT		V#150 U78-F	9 (25	)		
NOZZLE FLANGE NOZZLE PIPE	SCM3, S43 S25C STPG38	C								
BOTTOM PLATE	SM41									
EH TEN	SUPPLY O	F MF/R (NO	TE)		SPAI	RE PAR	TS (SEI	735-916	(43)	
FOUNDATION BOLT & NUT	NO YES									
SHIM TOOLS	NO NO									
SPARE PARTS SAFETY VALVE	YES NO									
HYDRO TEST PRESS	VFS 15	Kalem^2G	BY OIL	TEST X RAV INSPE	CTION	I NO				_
LEAK. TEST PRESS.	NO	Kg/cm^2G	D1 012	STRESS RELE	VE	NO				
TEST REPORT WITNESS	REQUIRED MHI	)		MATERIAL C	ERF.	NO				
			V.							
				BOXING		DOM	ESTIC	EXI	PORT	
COPPER & COPPER /	ALLOY SHA	LL NOT BE	USED	COATING		*PRIN	MARY		IISH 852-002	
CUSTOMER'S SPEC. MHI SPEC. NO.	NO.			WG. NO. :						
100	į.		1.6	lligit -			ATTENDED IN			

OIL FLITER		NO. REQ.	CUSTOMER	SERAIL	REV.	DATE B	Y REV	/. DATE	BY
OIL FLITER DATA SHEET (SEAL OIL)  CUSTOMER: MCEC ORDER /TTEM: 35243  LOCATION FLUID INLET TEMP INLET PRESS. PRESS. LOSS.  CAPACITY  SIZE &TYPE DESIGN PRESS. DESIGN TEMP. CORRO. ALLOW FILTRATION  CASE TOP FLANGE BOLTS & NUTS NOZZLE FLANGE NOZZLE FLANGE NOZZLE PIPE BOTTOM PLATE  FILTER FOUDATION BOLT & NUT SHIM TOOLS SPARE PARTS SAFETY VALVE  HYDRO TEST PRESS. TEST REPORT WITNESS	MAIN AUX.	1	F-326A F-326B	-	O G		C		
CUSTOMER: MCEC	TOTAL /	2	-	PLANT NAME :	B RAQ EXP		Е		
ORDER /ITEM: 35243	34 , 674001		OPER	SERVICE: K-30 ATING CONDITION	13 & K-401	T 0 05	CONT	INUOUS	
LOCATION FLUID	JIS K2213 N	O.1 OIL		VIS. AT INLET T	EMP.	14.5 CS	AT 6	0_C	
INLET TEMP INLET PRESS.	32 NOR 0.21	Kg/cm^2	G AT 511 /M	SOILD			70		
CAPACITY	MAX. 1.7:	5 Kg/cm^2G	TT STEAT						
Cru nen r	DESIGN I	02 L/M							
SIZE &TYPE	6D2-F		S	INLET CONN.		1 1/2" AN	ISI300RF		
DESIGN PRESS. DESIGN TEMP.	36 60	Kg/cn C	1^2G	VENT CONN.	NDE)	½ PT FE	MALE W	ITH PLUC	G IG
FILTRATION	16	MM		DRAIN(INLET:	SIDE)	3/4P1 F1	SWIALE V	VIII FLU	JG
CASE	STPG38			MATERIAL GASKET		V#596			
TOP FLANGE BOLTS & NUTS	S25C SCM3 , S45	iC		ELEMENT		(10_)	U78-C1		
NOZZLE FLANGE NOZZLE PIPE	S25C STPG38								
BOTTOM PLATE	S25C								
EII TED	SUPPL	Y OF MF/F	<u> </u>	<del>                                     </del>	SPA	RE PARTS	(SEE 735	-91643)	
FOUDATION BOLT & NUT	NO								
SHIM TOOLS	NO NO								
SPARE PARTS SAFETY VALVE	YES NO								
HVDDO TEST BRESS	VEC 64	Valom^2C	BY OII	TEST V PAV INSPEC	TION	T VES 10	10%		
LEAK, TEST PRESS.	NO 36	Kg/cm^2G	B1 OIL	STRESS RELEV	E	YES			
TEST REPORT WITNESS	REQUIREI MHI	)		MATERIAL CE	RF.	YES			
AND THE SAME SAME SAME SAME SAME SAME SAME SAM		<del>_</del>				ļ			
				BOXING		DOMES		EXPORT	
COPPER & COPPER A	ALLOY SHA	LL NOT BE	USED	COATING		*PRIMA	RY	FINISH 35-0852-0	
CUSTOMER'S SPEC.				WG. NO. :					-
MHI SPEC. NO.			N	ſF'R:					
			98						
			98						

OIL FLITER
CUSTOMER: MCEC/IRAQ
ORDER/ITEM; 352434, 674001   SERVICE; K-303 & K-401   CONTINUOUS
LOCATION
INLET TEMP
PRESS. LOSS.   NOR.   0.3 Kg/cm^2
SPECIFICATION   DESIGN 360 L/M
SPECIFICATION
SIZE & TYPE
DESIGN TEMP.   70
CORROL ALLOW   16
MATERIAL
MATERIAL
CASE
BOLTS & NUTS   S25C   S05304
NOZZLE PIPE   STPG38
SUPPLY OF MF/R   SPARE PARTS (SEE 735-91643)
SUPPLY OF MF/R   SPARE PARTS (SEE 735-91643)
FOUDATION NO BOLT & NUT  SHIM NO TOOLS NO SPARE PARTS YES SAFETY VALVE NO  TEST
SHIM NO TOOLS NO SPARE PARTS YES SAFETY VALVE NO TEST
SPARE PARTS YES SAFETY VALVE NO TEST
SAFETY VALVE NO TEST
TEST
HYDRO TEST PRESS YES 15 Kg/cm ² G BY OIL X RAY INSPECTION INO
LEAK, TEST PRESS. NO Kg/cm^2G STDFSS DELEVE NO
TEST REPORT REQUIRED
MATERIAL CERT. NO
BOXING DOMESTIC EXPORT
COPPER & COPPER ALLOY SHALL NOT BE USED  COATING  PRIMARY  FINISH  535-0852-008
CUSTOMER'S SPEC. NO. DWG. NO.
MHI SPEC. NO. MF'R:

							REV	/ DA	TE	BY	REV	D	ATE	BY
RANSFER	ļ						O	1 15/1	<u></u>	Ť-	C	$\top$		
ARRIER ATA SHEET							G	14/	1/75	NY	D	$\Box$		<u> </u>
A I A SHEET	ì						В			$\Box$	E	ш.		<u> 1</u>
USTOMER: N	MCEC /	/IRAO				PL	ANT N	AME:	IRAQ I	EXP.				
ORDER /ITEM	352434	67	74001			SE	RVICE	: K-30	3 & K-4	101	C	ITMC	NUOU	<u>s</u>
KDEK III EIII		, ,		OPE	RATI	VC CO	NDITI	ON						
OCATION		OI	UT DO	OOR			t, OR El	ROSION	DUE					
					+	TO				+				
LUID				13 NO. 1 OIL		ADDE	NGEM	ENIT		*VI	ERTICAL			
LUID TEMP.			C	100		AKKE	INGEN	ENI						
FLUID PRESS.		_		Kg/cm^2G		DESIG	GN COI	ne.						
WORKING CAP	ACITY	- 52	2 L			DEGI	01100.							
					SPEC	IFICA	TION							
SIZE & TYPE		Т	В 39-3		<u> </u>		CONN.				FER LIN			
DESIGN PRESS				m^2 G			гом с	NNC.		RE	FER LIN	E NO	. 45~4′	
DESIGN TEMP.			0 C											
CAPACITY			8 L							+				
						<u> </u>								
					M.	ATERI						NBI		
BODY		_	TH67			"O"R				+		\$25		
BLADDER			IBR			FLA	NGE_					رعر		
VALVE SEAT			25C							+				
VALVE PLUG		S	35C			<del></del>				+-				
				CELLDED		+		SPAT	RE PAR	ETS (SI	EE 735-9	1643)		
				CTURER		+ -		DI I'II		1				
TRANSFER BA	KRIER		YES_			1 —				$\neg$				
VENT PLUG		$+\frac{1}{2}$	VES (S	SPECIAL ONL	Y)	+ -								
TOOLS SPARE PARTS			YES	A DOLLE ONE	-,-	1								
STAKE FARTS														
						TES						CIV 17	OB ZZ	ic
HYDRO TEST	PRESS			STD Kg/cm^2 (	3	PER	FORM	ANCE T	EST				ORKII CITY	NO
		(		BODY)		<del> </del>	- N TO CO					*M		
HYDRO TEST	PRESS			STD Kg/cm^2 (	<u>G</u>	WIT	NESS			-+		IAT	111	
=			YES S			1,400	TEDIA	CEDT	EICAT	E		YE	ES -	
=			YES S	TD =	COD 4.1		D TYP	CERT	ITICAL	<u> </u>				
<u> </u>	<b>D D C</b> · C ·		on 1	DESIGN TEM			ECTION		H	YDRO.	TEST	W	ORKIN	G
TYPE	DESIG	N PRE	.55.	DESIGN TEM			berion BOTT			RESS.			PACI	ΓY
TB 39-30	45 Kg/c	cm^2 (		70 C			SI 300#		68	Kg/cm	^2 G	32	L	
10 39-30	42 V.R/(	- A - C	-											
<del>                                     </del>			$\dashv$		- +									
<u> </u>						NO. RE				— т			,—-	
SERVICE		N	10.	TYPE		UTION			STOME		MF"			
		R	EQ.		I	N FLU	ID	EQ	UIP. N	u	SERAIL	, NU		
			,	1	1								<u> </u>	
K-303 NG (1M	(7)		6	TB 39-30	С	H4+C2	H6		354A~				535-1	0852-0
K-401 NH3 (2)			6	TB 39-30		NH3			414A~				<u> </u>	-0
K-401 NH3 (2)			6	TB 39-30	L	NH3		V-	415A~	F				-0
12 401 111.5 (2.		+											₩-	
					Ľ			L			L			
							DOI	ZINIC	LDON	IESTIC		FXI	PORT	
								KING		MARY			ISH	
						1	LUA	TING	T. LKI	IATA'I		, 11,		

SEAL OIL TRAP				RI	EV	DAT	Έ	BY	REV	DATE	BY
DATA SHEET				F					С		
				G				NY	D		↓
				В					E		<u> L.                                    </u>
CUSTOMER: MCEC/	IRAQ			PLANT:	NAM	Œ ; i	RAQ EX	Р.			
ORDER /ITEM 352434		i		SERVIC	E:	SOUR	OIL DR	AIN	C	UNITHO	IOUS
		OPE	RATING	CONDIT	ION						
LOCATION	OUTE			GR. OF		JID				87	
LIGUID	JIS K2	213 NO. 1 OIL	VIS	SCOSITY				14.7 C	S AT INL	ET TEM	P.
				LID							
LIQUID & GAS TEMP.	60 C			RR. OR			TO				
FLOW	100 L/.	DAY		RENGE		T			ZENTOL		_
				SIGN CO				MF'R	STANDA	ARD	
			SPECIFIC								
SIZE & TYPE	TS-46		IN	LET CON	N.				FEMAL		
DESIGN PRESS.		cm^2 G	VE	ENT CON	N.				FEMAL		
DESIGN TEMP.	60 C		PU	TLET CO	ИИС			¾" P1	FEMAL	E	
	T										
			MATE	RIAL							
CASING	SC49			ASKET						OR EQ.	
COVER	SC49		BC	DLT & N	UT				SCM3	& \$45C	
FLOAT	SUS30							L			
VALVE SEAT	SUS42	20 WITH STELI	LITE								
VALVE PLUG	SUS3	)4									
ROD	SUS3	)4									
SUPPLY OF	MANUE	ACTURER			S	PARE	PARTS	S (SEE	73 <u>5-9164</u>	3)	
SEAL OIL TRAP	YES										
LEVEL GAUAGE	YES	*DIRECT						1			
	MOU	NTED TYPE									
								<u> </u>			
SPARE PARTS	YES										
TOOLS	NO							l			
				EST							
HYDRO TEST PRESS.	YES	60 Kg/cm^2 G	P1	ERFORM	IANC	E TE	ST	YI	S AT	45 Kg/cn	1^2 G
LEAK TEST PREES.		44 Kg/cm^2 G						ļ			
TEST REPORT	*REC										
WITNESS	*MH			IATERIA	L CE	RTIF	ICATE	1		/ES	
				REQ'D						T	
SERVICE	NO.	GAS	GAS PR	RESS.	٠		OMER		MF'S		
	REQ.				İ	EQUI	P. NO	SE	RAIL NO	'	
			İ					1			
K-303 (1M7)	2	CH4+C2H6	21 Kg/ci	m^2 G		V-35	5A/B		-	535-0	354-001
K-401 (2M8.5)	2	NH3	17.6				6A/B		-	$\top$	-002
K-401 (2M 10.8)	2	NH3	17.6				7A/B		-		-003
12 101 (2111 1010)	†	177.5	1770								
<u> </u>	· · · · · · · · · · · · · · · · · · ·				_			_			
	<del> </del>				<del>                                     </del>					T	
	<del> </del>	<del></del>			†					<del>                                     </del>	
	1	1			-					1	
				BOX	KINC	; [	OMES'	ΓIC	EX	PORT	
					TIN		PRIMA		FI	NISH	
				L COA	LIN	o L	RIMA	IX I	L1:	11011	

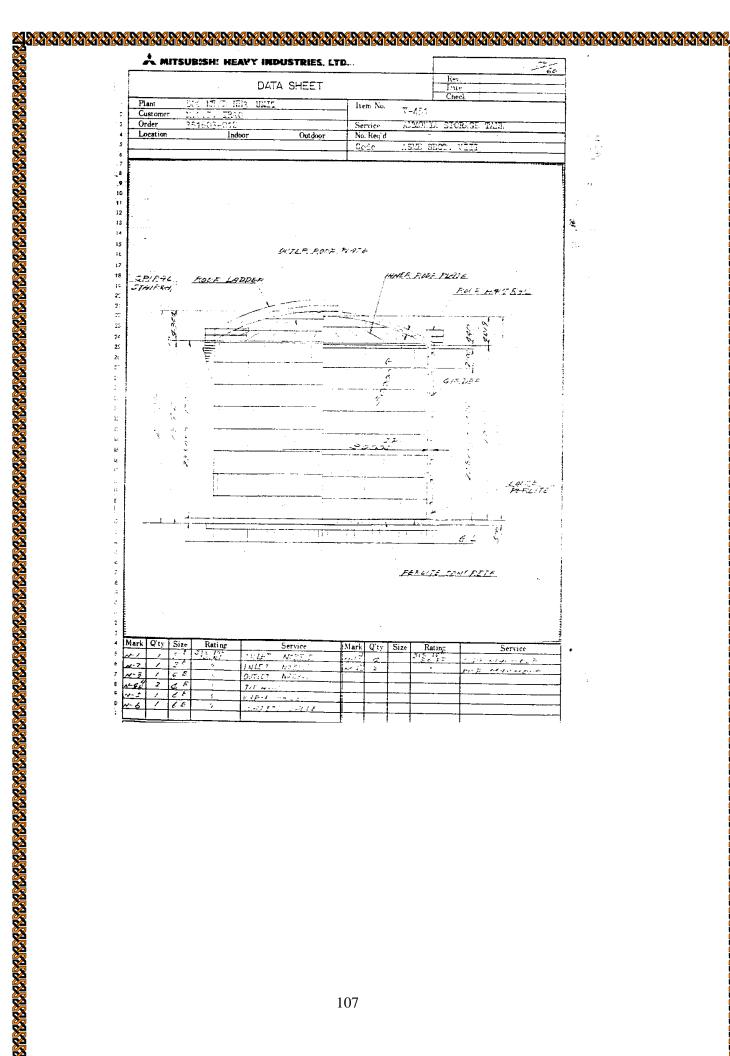
				REV	DATE	,—	ВУ	REV	DATE	BY
CCUMULATOR				F	13/12/		NY	C	1	
DATA SHEET				G	14/1/7		NY	D	+	
				B -	17777			E	1	
			PI	ANT NAM	ΛΕ · IR	AO EX	P.	J		
CUSTOMER: MCEC/IR	674001		SI	ERVICE:	GOV. C	IL LIN	ΙE	C	UNITAC	OUS
ORDER /ITEM 352434 ,	674001	OPERATI	VC CC	NDITION	<u> </u>					
	OUT DOOR	OFERAIN	INITI	AL CHAR	GE GAS	3	N2 G	AS		
LOCATION	JIS K223 NO.	1 011		AL CHAR			1.8 K	g/cm^2 C	ì	
LIQUID	JIS K223 NO.	OLL	PRES				`			
FLUID TEMP.	30~60 C						l			
MAX. WORKING	5.5 Kg/cm^2G									
PRESS		į								
MIN WORKING PRESS.	2.5 Kg/cm^2		DESI	GN CODE			MF'R	STANE	DARD	
WORKING CAPACITY	9.6 L									
II Oldanio di							L			
		SPEC		TION			1	*******		
SIZE & TYPE	MD 210-40			ID SIDE CO				VSI150#		
			CHA	RGE GAS	CONN.		MF'S	STANE	AKD	
DESIGN TEMP.	70 C						-			
CAPACITY	39 L		<u> </u>				<b>↓</b> —			
			l				<del>  -</del>			
			L				<u> </u>			
		M	ATER	IAL						
BODY	STH80		<del> </del>							
BLADDER	NBR		-				<del> </del>			
			ļ				-			
	<u> </u>						<del> </del>			
	<u> </u>		<del>  -</del>							
	MANUFACTUE	ER								
ACCUMULATOR	YES	TOOLS	<del> </del>				+			
TOOLS	YES (SPECIA	AL TOOLS					ì			
	ONLY) YES		┼				+-			
SPARE PARTS	YES		+-				<u> </u>			
GAS CHARGING TOOL	YES		Щ.							
			TES	т —						
VIVIDAO TEGT DRESS	YES 15 K	g/cm^2 G		RKING CA	P TEST	ř			YES	
HYDRO TEST PRESS. TEST REPORT	*REQUIRE			TNESS	11 120		1		*MHI	
MATERIAL	YES		+***	I TILLOO						
CERTIFICATE	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1									
CERTIFICATE	·		-						YES	
		N	io. Ri	EQ'D						
SERVICE	NO. REQ.	DESIGN PRI		CUSTON	MER EC	UIP.		F'S		
	1	ı			NO		SER/	IL NO		
K-301	i	10 Kg/cm^2	2 G		/-329			-	535-08:	
K-303 /K-401	1	=			V-356			<u>-                                      </u>	ļ <u>.</u>	-035
K-302	1	=		\	V-342		L	<u>-</u>	<u> </u>	-036
		=					<u> </u>		-039	(TOOLS
							<u> </u>		ļ <u> </u>	
	T						1		<b>└</b>	
							L .		<u>L</u>	
				BOXIN		OMES			XPORT	
				COATIN	√G   *	PRIMA	<b>ARY</b>		FINISH	

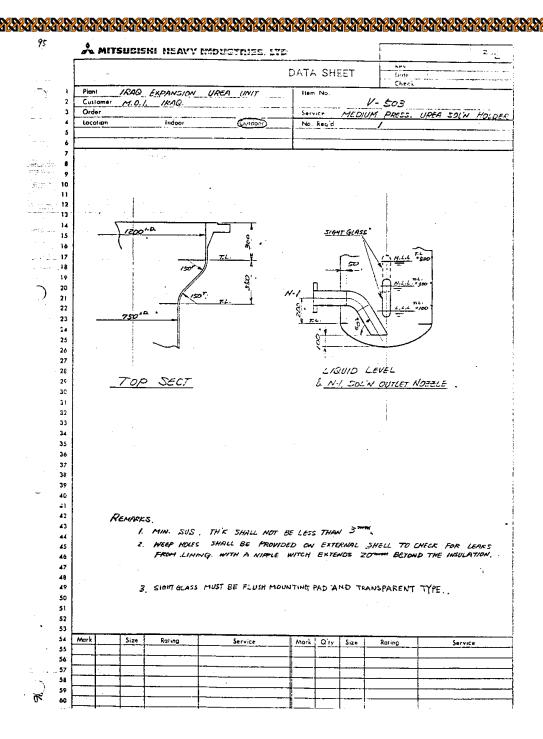
inmi IRAG EXPENSION UPLS UNIT tion No.  Customer M.O.I. IKAG Service CAPBAMATE KECYCLE EJECTOP  Locotion Indoor Custom No. heal of BYTAGANG I SPARE D TOTAL I  DPERATING CONDITION B DRIVING FLUTD LIQUID AMMONIA  TEMP 22's  10 SPEC GRAVITY 598 9/m3	
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7			Condition	
8		Snell Side	tacket/Coil Side	Weight
9	Flord	CARBAMATE CO. E. NIIIs	ļ	Emply KG
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11	* Temp.	200 (	`c	Operating: kg
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13	Vac. Design	(No) Yes	No, Yes	Pointing
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	Stress Relief	No. Yes	No. Yes	Accessorie:
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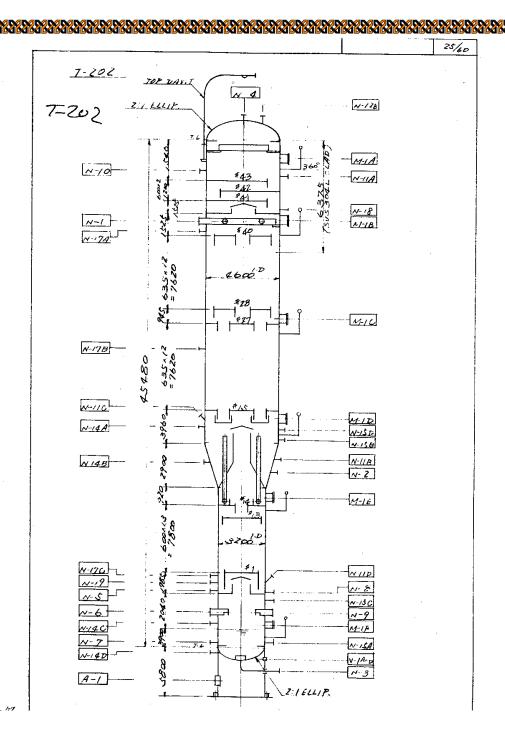
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Rema Mark N-/ N-2	0/1Y / / / / / / / / / / / / / / / / / /	Goset   100   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   11	RE NET  Reting  ANSI TSO SE R	SUS EN CEME THE SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND	MANUELLE	MED STRIN	SUS 2.5 SUS SUS SUS SUS SUS SUS SUS SUS SUS SU	31 <u>61</u> m² 2161	Rating		V-504
Rema Mark N-/ N-2	0/1Y / / / / / / / / / / / / / / / / / /	Goset   100   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   11	RE NET  Reting  ANSI TSO SE R	SUS EN CEME THE SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND	MANUELLE	MED STRIN	SUS 2.5 SUS SUS SUS SUS SUS SUS SUS SUS SUS SU	3/6 <u>1</u>	Rating		V-504
Rema Mark N-/ N-2	0/1Y / / / / / / / / / / / / / / / / / /	Goset   100   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   11	RE NET	SUS EN CEME THE SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND	MANUELLE	Men DISTRIA	SUS 2.5.	3/64 5/64 Size	Rating		V-504
Rema Mark N-/ N-2	O'TY / / Z Z /	Size 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 10 ⁶ 1	RE NET  Reting  ANSI TSO SE R	SUS EN CEME THE SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND	MANUELLE	MED STRIN	SUS 2.5.	3/64 5/64 Size	Rating		V-504
Rema Mark N-/ N-2	O'TY / / Z Z /	Goset   100   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   11	RE NET  Reting  ANSI TSO SE R	SUS EN CEME THE SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND	MANUELLE	OISTRIC	SUE 2.5. SUE SUE SUE SUE SUE SUE SUE SUE SUE SUE	3/64 5/64 Size	Rating		V-504
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	osion Allow.		Mw. 2' SUS 50610 ) mm	1			mm		Platform	YE5
Mote	erials Shell		164.70 SUS 316L MODIFIED	LINING					Lodder	YES
	Head		ILGITO SUS 316 L MODIFIED						Sight Gloss	NO.
	Nozz		SUS 316L MODIFIED .	L					Agitator	_NO
	Flanc		50 + SUS 316L MODIFIED							
L.	Gask									
Inter	or Support		SUS 3/6L MODIFIED .	1				1		
1.0										
Remo	orks									
Remo	orks									
Remo	orks									
Remo	Q'TY Size	Roling	Service	Mark	Q.1X	Size	Rating		Servic	
	Q'TY Size	LENS . 1500	NH3 INLET	Mark M-1	Q.1X	Size	Rating		Servic	
Mork	G'TY Size / 88	LENS . 1500	NH3 INLET		1		Rating			
Mark N-1 N-2 N-3	Q'TY Size / 88 / 88	LENS 1500	NH3 INLET .  CO2 INLET .  UREA SOL'M OUTLET.	M-1	1		Rating			
Mork N-1 N-2 N-3	Q'TY Size / 88 / 88	LENS 1500	NH3 INLET  CO2 INLET  UREA SOL'M OUTLET  TI CONN. SEE ATT. PMG	M-1	1		Rating			•
Mark N-1 N-2 N-3	Q'TY Size / 88 / 88	LENS 1500	NH3 INLET .  CO2 INLET .  UREA SOL'M OUTLET.	M-1	1		Rating			8
Mork N-1 N-2 N-3 N-4	Q'TY Size / 88 / 88	LENS 1500	NH3 INLET  CO2 INLET  UREA SOL'M OUTLET  TI CONN. SEE ATT. PMG	M-1	1		Rating			8
Mork N-1 N-2 N-3 N-4	G'TY Size  / 88  / 88  / 88  / 88	LENS 1500	NH3 INLET  CO2 INLET  UREA SOL'M OUTLET  TI CONN. SEE ATT. PMG	M-1	1		Rating			
Mork N-1 N-2 N-3 N-4	Q'TY Size / 88 / 88	LENS 1500	NH3 INLET  CO2 INLET  UREA SOL'M OUTLET  TI CONN. SEE ATT. PMG	M-1	1		Rating			
Mork N-1 N-2 N-3 N-4	G'TY Size  / 88  / 88  / 88  / 88  / REMARKS	LENS 1500	NHS IMLET  COS INLET  UREN SOLW CUTLET  TI COMM. SEE NT. PMG  TI COMM	M-1		500°	3		MW HOLE	
Mork N-1 N-2 N-3 N-4	O'TY Size  '	LENS 1500 LENS COUPLING	NHS IMLET COS (NLET OUTLET)  THE SOL'M OUTLET  THE COMM. SEE ATT. PMG  THE COMM	M-1	HELL 7	500 CHEC	K FOR L	!. GAKS	MW HOLE	
Mork N-1 N-2 N-3 N-4	O'TY Size  1 88  1 88  3 YZE  1 1 9  REMARKS	LENS 1500 LENS . COUPLING . P HOLES SILA	NHS IMET .  COS INCET .  UREN SOL'M OUTLET.  TI COMM. SEE NT. PMG.  TI COMM	M-I	HELL 7	D CHECK	K FOR L	LEAKS	MM HOLE	ZNAL
Mork N-1 N-2 N-3 N-4	O'TY Size  1 88  1 88  3 YZE  1 1 9  REMARKS	LENS 1500 LENS . COUPLING . P HOLES SILA	NHS IMLET COS (NLET OUTLET)  THE SOL'M OUTLET  THE COMM. SEE ATT. PMG  THE COMM	M-I	HELL 7	D CHECK	K FOR L	LEAKS	MM HOLE	ZNAL
Mork N-1 N-2 N-3 N-4	O'TY Sice 1. 88 1. 66 1. 88 2. 3. YZE 1	LENS 1500  LENS  LENS  COUPLING  P HOLES SHALL  HOLES SHALL	NHS IMET .  COS (NEET .  UREN SOLW OUTLET.  TI CONN. SEE ATT. PMG  TI CONN	M-I	HELL TEYOND PLES	THE INS	K FOR L ULATION	LEAKS MAL	MAN HOLE: FROM INTER LINING TEMP	ZNAL
Mork N-1 N-2 N-3 N-4	O'TY Sice 1. 88 1. 66 1. 88 2. 3. YZE 1	LENS 1500  LENS  LENS  COUPLING  P HOLES SHALL  HOLES SHALL	NHS IMET .  COS INCET .  UREN SOL'M OUTLET.  TI COMM. SEE NT. PMG.  TI COMM	M-I	HELL TEYOND PLES	THE INS	K FOR L ULATION	LEAKS MAL	MAN HOLE: FROM INTER LINING TEMP	ZNAL
Mork N-1 N-2 N-3 N-4	O'TY Sice  1. 88  1. 88  2. 3 YZE  1  REMARKS  1. WEE  LIM  2. 3  3. ALL	LENS 1500 LENS LENS COUPLING P HOLES SHALL HOLES SHALL L PARTS CON	NHS IMET  COS (NUET)  UREN SOLW OUTLET  TI COMM. SEE ATT. PMG  TI COMM. "  OUL BE PROVIDED ON EXTENDS 2  L BE PROVIDED FOR THE  NYTHICTING UREN SOLUTION	M-1	HELL 7 EYOND PLES	TO CHECK	K FOR L ULATION CK WITER	LEAKS WAL	MAN HOLE: FROM INTER LINING TEMP	ZNAL
Mork N-1 N-2 N-3 N-4 N-5	O'TY Sice  1. 88  1. 88  2. 3 YZE  1  REMARKS  1. WEE  LIM  2. 3  3. ALL	LENS 1500 LENS LENS COUPLING P HOLES SHALL HOLES SHALL L PARTS CON	NHS IMET .  COS (NEET .  UREN SOLW OUTLET.  TI CONN. SEE ATT. PMG  TI CONN	M-1	HELL 7 EYOND PLES	TO CHECK	K FOR L ULATION CK WITER	LEAKS WAL	MAN HOLE: FROM INTER LINING TEMP	ZNAL
Mork N-1 N-2 N-3 N-4 N-5	O'TY Size  1. 88  1. 68  1. 88  1. 72  1  REMARKS  1. WEE,  LIM.  2. 3  3. Au.	LENS 1500 LENS LOUPLING PHOLES SHALL HOLES SHALL L PARTS COL	NHS INLET :  COS (NLET :  UREN SOLW OUTLET :  TI CONN. SEE ATT. DIEG :  TI CONN. SEE ATT. DIEG :  TI CONN. SEE ATT. DIEG :  TI CONN. SEE ATT. DIEG :  TI CONN. SEE ATT. DIEG :  TI CONN. SEE ATT. DIEG :  LE BE PROVIDED ON EXTENDS 2.  LE BE PROVIDED FOR THE :  NTRCTING UREN SOLUTION :  POSIT MUST BE LIMITED T	M-1	PLES L BE	TO CHEO	K FOR L ULATION CK WITER BIGL MO	MAL DOIFIE	MAN HOLE: FROM INTER LINING TEMP	ZNAL
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Mork N-1 N-2 N-3 N-4 N-5	C'TY Sice 1 . 88 . 1 . 68 . 1 . 88 . 1	LENS 1500 LENS LENS LENS LOUPLING P HOLES SHALL HOLES SHALL L PARTS COL L PARTS COL L PARTS COL L PEROVABLE	NHS INLET :  COS MALET :  LOS MALET :  LOS MALET :  LOS MALET :  LOS MALET :  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE	M-I	HELL 7 EYOUD PLES L BE	TO CHECK	K FOR L ULATION CK WITER BIGL MO	MAL DOIFIE	MAN HOLE: FROM INTER LINING TEMP	ZNAL
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Mork N-1 N-2 N-3 N-4 N-5	O'TY Sice  1. 88  1. 66  1. 88  1. 72  1. 72  2. 3  3. ALL  4. ALL  5. ALL  6. PL	LENS 1500 LENS LENS  COUPLING  P HOLES SHALL L PARTS COL  OF WELD DE	NHS IMET  COS INLET  LOS INLET  UREN SOLW OUTLET  TI COMN. SEE ATT. PMG  TI COMN. SEE ATT. PMG  TI COMN. "  OUL BE PROVIDED ON EXTEN  INTPLE WHICH EXTENDS 2  LE BE PROVIDED FOR THE  WYACTING UREN SOLUTION  POSIT MUST BE LIMITED THE  INTERNALS SHALL PAR  UNIT SHALL LOCATE ON IN	M-I	HELL 7 FYND PLES L BE MINITE OUGH 2 TOP	TO CHECKTHE INSTACTOR CHE	K FOR L ULATION CK WTER BIGL MO ECESSAR	LEAKS MAL OUFFE	MAN HOLE FROM INTER LINING TEMP D LINING.	ZNAL
Mork N-1 N-2 N-3 N-4 N-5	O'TY Sice  1. 88  1. 66  1. 88  1. 72  1  REMARKS  1. WEE  1  2. 3  3. ALL  5. ALL  6. PL	LENS 1500 LENS LENS LOUPLING P HOLES SHALL ING WITH A HOLES SHALL L PARTS COL LOY WELD DO. L REMOVABLE ATFORM & DE.	NHS INLET :  COS MALET :  LOS MALET :  LOS MALET :  LOS MALET :  LOS MALET :  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TI COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE ATT. DEG  TO COMM. SEE	M-I	HELL 7 FYND PLES L BE MINICH TOP	TO CHEOTHE INSTOCKE	K FOR L ULATION CK WTER BIGL MA ECESSAR MANHOL	LEAKS WAL DOIFIE	MAN HOLE  FROM INTER  LINING TEMP  D LINING.	ZNAL.

## ANNEX NO.3

## **Piping and Fittings**

- 1-The piping and Fittings required for the rehabilitation are listed in the following attachments
- 2- The bidder shall take in consideration that there is nothing available at the site for Urea Unit shall estimate the piping and Fittings for Unit.
- 3- All piping and fittings for the new packages such as R/O unit, Instrument Air package, Nitrogen generation unit, etc shall be included in these packages.
- 4- The scope of supply in the attached tables are concerning the followings:
  - 4-1 Piping
  - 4-2 Fittings
  - 4-3 Studs, Bolts & Nuts
  - 4-4 Ammonia valves
  - 4-5 Urea valves
  - 4-6 Polisher Piping
  - 4-7 Safety valves
  - 4-8 Expansion joints
  - 4-9 Spring hungers
  - 4-10 Boiler valves
  - 4-11 Dematerialized water piping
  - 4-12 Steam traps
  - 4-13 Gaskets

SIZE         MAT         QTY           3/8"         STPG38-SCH80         23           1/2"         STPG38-SCH80         1462           1/2"         SGP-3.2MM         79           1/2"         SUS304-SCH40         347           1/2"         STPT38-SCH80         117           1/2"         STPT38-SCH80         117           1/2"         SUS304TP-SCH160         30.20           1/2"         STPT42-SCH160         110.90           1/2"         STPT42-SCH80         70           1/2"         STPA12-SCH80         30           1/2"         STPA12-SCH80         30           3/4"         STPG38-SCH80         2129           3/4"         SUS304-SCH80         20           3/4"         SUS304-SCH80         50           3/4"         SUS304-SCH80         50           3/4"         SUS304-SCH80         50           3/4"         SUS304-SCH80         190           3/4"         STPA12-SCH80         190           3/4"         STPC3-SMM         95           3/4"         SUS304TP-SCH160         10.40           3/4"         SGP-2.8MM         95           3/4"	SIZE	MAT	QTY		
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	3/8"	STPG38-SCH80	23		
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	/2"	STPG38-SCH80	1462		
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	/2"	SGP-3.2MM	79		
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	/2"	SUS304-SCH40	347		
1"       SGP-3.2MM       785         1"       STPG38-SCH80       1796         1"       SUS304-SCH40       128         1"       STPT38-SCH80       246         1"       STPA12-SCH80       69         1"       STPT38-SCH100       4         1"       SUS304TP-3.5MM       14         1"       SUS304TP-SCH160       13.75         1"       SUS304TP-SCH80       12.80         1"       STPT42-SCH160       78         1"       STPL 39-S-SCH80       189.5         1"       STPT42-SCH80       30         1"       STPG38-SCH40       739	1/2"	STPT38-SCH80	117		
1"       SGP-3.2MM       785         1"       STPG38-SCH80       1796         1"       SUS304-SCH40       128         1"       STPT38-SCH80       246         1"       STPA12-SCH80       69         1"       STPT38-SCH100       4         1"       SUS304TP-3.5MM       14         1"       SUS304TP-SCH160       13.75         1"       SUS304TP-SCH80       12.80         1"       STPT42-SCH160       78         1"       STPL 39-S-SCH80       189.5         1"       STPT42-SCH80       30         11/2"       STPG38-SCH40       739	1/2"	SGP GALV2.8MM	202		
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	/2"	SUS304TP-SCH160	30.20		
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	/2"	STPT42-SCH160	110.90		
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	/2"	STPT42-SCH80	70		
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	/2"	STPA12-SCH80	30		
1"       SGP-3.2MM       785         1"       STPG38-SCH80       1796         1"       SUS304-SCH40       128         1"       STPT38-SCH80       246         1"       STPA12-SCH80       69         1"       STPT38-SCH100       4         1"       SUS304TP-3.5MM       14         1"       SUS304TP-SCH160       13.75         1"       SUS304TP-SCH80       12.80         1"       STPT42-SCH160       198         1"       SUS304TP-SCH60       78         1"       STPL 39-S-SCH80       189.5         1"       STPT42-SCH80       30         1"       STPG38-SCH40       739	1/2"	SUS304-SCH80	20	7	
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	3/4"	STPG38-SCH80	2129	7	
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	3/4"	SUS304-SCH40	467	7	
I"       SGP-3.2MM       785         I"       STPG38-SCH80       1796         I"       SUS304-SCH40       128         I"       STPT38-SCH80       246         I"       STPA12-SCH80       69         I"       SUS304TP-3.5MM       14         I"       SUS304TP-SCH160       13.75         I"       SUS304TP-SCH80       12.80         I"       STPT42-SCH160       78         I"       STPL 39-S-SCH80       189.5         I"       STPT42-SCH80       30         I"       STPG38-SCH40       739	3/4"	SUS304-SCH80	50	7	
1"       SGP-3.2MM       785         1"       STPG38-SCH80       1796         1"       SUS304-SCH40       128         1"       STPT38-SCH80       246         1"       STPA12-SCH80       69         1"       STPT38-SCH100       4         1"       SUS304TP-3.5MM       14         1"       SUS304TP-SCH160       13.75         1"       SUS304TP-SCH80       12.80         1"       STPT42-SCH160       78         1"       STPL 39-S-SCH80       189.5         1"       STPT42-SCH80       30         1"       STPG38-SCH40       739	3/4"	FCMB GALV.	24	7	
1"       SGP-3.2MM       785         1"       STPG38-SCH80       1796         1"       SUS304-SCH40       128         1"       STPT38-SCH80       246         1"       STPA12-SCH80       69         1"       STPT38-SCH100       4         1"       SUS304TP-3.5MM       14         1"       SUS304TP-SCH160       13.75         1"       SUS304TP-SCH80       12.80         1"       STPT42-SCH160       78         1"       STPL 39-S-SCH80       189.5         1"       STPT42-SCH80       30         1"       STPG38-SCH40       739	3/4"	SGP-2.3MM	140	7	
1"       SGP-3.2MM       785         1"       STPG38-SCH80       1796         1"       SUS304-SCH40       128         1"       STPT38-SCH80       246         1"       STPA12-SCH80       69         1"       STPT38-SCH100       4         1"       SUS304TP-3.5MM       14         1"       SUS304TP-SCH160       13.75         1"       SUS304TP-SCH80       12.80         1"       STPT42-SCH160       78         1"       STPL 39-S-SCH80       189.5         1"       STPT42-SCH80       30         1"       STPG38-SCH40       739	3/4"	STPA12-SCH80	190		
1"       SGP-3.2MM       785         1"       STPG38-SCH80       1796         1"       SUS304-SCH40       128         1"       STPT38-SCH80       246         1"       STPA12-SCH80       69         1"       STPT38-SCH100       4         1"       SUS304TP-3.5MM       14         1"       SUS304TP-SCH160       13.75         1"       SUS304TP-SCH80       12.80         1"       STPT42-SCH160       78         1"       STPL 39-S-SCH80       189.5         1"       STPT42-SCH80       30         11/2"       STPG38-SCH40       739	3/4"	STPT42-SCH160	56.5		
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	3/4"	SUS304TP-SCH160	10.40		
I"       SGP-3.2MM       785         I"       STPG38-SCH80       1796         I"       SUS304-SCH40       128         I"       STPT38-SCH80       246         I"       STPA12-SCH80       69         I"       SUS304TP-3.5MM       14         I"       SUS304TP-SCH160       13.75         I"       SUS304TP-SCH80       12.80         I"       STPT42-SCH160       78         I"       STPL 39-S-SCH80       189.5         I"       STPT42-SCH80       30         I"       STPG38-SCH40       739	3/4"	SGP-2.8MM	95		
I"       SGP-3.2MM       785         I"       STPG38-SCH80       1796         I"       SUS304-SCH40       128         I"       STPT38-SCH80       246         I"       STPA12-SCH80       69         I"       SUS304TP-3.5MM       14         I"       SUS304TP-SCH160       13.75         I"       SUS304TP-SCH80       12.80         I"       STPT42-SCH160       78         I"       STPL 39-S-SCH80       189.5         I"       STPT42-SCH80       30         I"       STPG38-SCH40       739	3/4"	SGP-2.8MM/TYPE WELDED	750		
I"       SGP-3.2MM       785         I"       STPG38-SCH80       1796         I"       SUS304-SCH40       128         I"       STPT38-SCH80       246         I"       STPA12-SCH80       69         I"       SUS304TP-3.5MM       14         I"       SUS304TP-SCH160       13.75         I"       SUS304TP-SCH80       12.80         I"       STPT42-SCH160       78         I"       STPL 39-S-SCH80       189.5         I"       STPT42-SCH80       30         I"       STPG38-SCH40       739	3/4"	SGP GALV2.8MM/CLASS NO.BA1	160		
1"       SGP-3.2MM       785         1"       STPG38-SCH80       1796         1"       SUS304-SCH40       128         1"       STPT38-SCH80       246         1"       STPA12-SCH80       69         1"       STPT38-SCH100       4         1"       SUS304TP-3.5MM       14         1"       SUS304TP-SCH160       13.75         1"       SUS304TP-SCH80       12.80         1"       STPT42-SCH160       198         1"       SUS304TP-SCH60       78         1"       STPL 39-S-SCH80       189.5         1"       STPT42-SCH80       30         1"       STPG38-SCH40       739	3/4"	STPT38-SCH80	350		
" SGP-3.2MM       785         " STPG38-SCH80       1796         " SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739	,,	STPG38-SCH40	22		
I"       STPG38-SCH80       1796         I"       SUS304-SCH40       128         I"       STPT38-SCH80       246         I"       STPA12-SCH80       69         I"       STPT38-SCH100       4         I"       SUS304TP-3.5MM       14         I"       SUS304TP-SCH160       13.75         I"       SUS304TP-SCH80       12.80         I"       STPT42-SCH160       78         I"       STPL 39-S-SCH80       189.5         I"       STPT42-SCH80       30         I"       STPG38-SCH40       739	,,	SGP-3.2MM	785		
" SUS304-SCH40       128         " STPT38-SCH80       246         " STPA12-SCH80       69         " STPT38-SCH100       4         " SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739			-		
1"       STPT38-SCH80       246         1"       STPA12-SCH80       69         1"       STPT38-SCH100       4         1"       SUS304TP-3.5MM       14         1"       SUS304TP-SCH160       13.75         1"       SUS304TP-SCH80       12.80         1"       STPT42-SCH160       198         1"       SUS304TP-SCH60       78         1"       STPL 39-S-SCH80       189.5         1"       STPT42-SCH80       30         1 1/2"       STPG38-SCH40       739					
I"       STPA12-SCH80       69         I"       STPT38-SCH100       4         I"       SUS304TP-3.5MM       14         I"       SUS304TP-SCH160       13.75         I"       SUS304TP-SCH80       12.80         I"       STPT42-SCH160       78         I"       SUS304TP-SCH60       78         I"       STPL 39-S-SCH80       189.5         I"       STPT42-SCH80       30         I 1/2"       STPG38-SCH40       739			-		
" STPT38-SCH100 4 " SUS304TP-3.5MM 14 " SUS304TP-SCH160 13.75 " SUS304TP-SCH80 12.80 " STPT42-SCH160 198 " SUS304TP-SCH60 78 " SUS304TP-SCH60 78 " STPL 39-S-SCH80 189.5 " STPT42-SCH80 30 1/2" STPG38-SCH40 739				7	
" SUS304TP-3.5MM       14         " SUS304TP-SCH160       13.75         " SUS304TP-SCH80       12.80         " STPT42-SCH160       198         " SUS304TP-SCH60       78         " STPL 39-S-SCH80       189.5         " STPT42-SCH80       30         1/2" STPG38-SCH40       739			-	7	
" SUS304TP-SCH160 13.75 " SUS304TP-SCH80 12.80 " STPT42-SCH160 198 " SUS304TP-SCH60 78 " STPL 39-S-SCH80 189.5 " STPT42-SCH80 30 1/2" STPG38-SCH40 739				7	
" SUS304TP-SCH80 12.80 " STPT42-SCH160 198 " SUS304TP-SCH60 78 " STPL 39-S-SCH80 189.5 " STPT42-SCH80 30 1/2" STPG38-SCH40 739				7	
" STPT42-SCH160 198 " SUS304TP-SCH60 78 " STPL 39-S-SCH80 189.5 " STPT42-SCH80 30 11/2" STPG38-SCH40 739			+	$\dashv$	
" SUS304TP-SCH60 78 " STPL 39-S-SCH80 189.5 " STPT42-SCH80 30 11/2" STPG38-SCH40 739				7	
" STPL 39-S-SCH80 189.5 " STPT42-SCH80 30 1/2" STPG38-SCH40 739			-	$\dashv$	
1" STPT42-SCH80 30 1 1/2" STPG38-SCH40 739			1	_	
1/2" STPG38-SCH40 739			-	_	
			-	_	
1/2"   STPG38-SCH120   12	1/2"	STPG38-SCH120	12	$\dashv$	
1 1/2" SGP-3.5MM 1111				_	
1/2   501 5.51/11/1   1111	1/4	DOI 0.0141141	1111	_	

1 1/2"	STPT38-SCH40	65	
1 1/2"	SUS304TP-SCH160	41	
1 1/2"	SUS304TP-SCH10S	87.2	
1 1/2"	STPG38-SCH80	88	
1 1/2"	STPT42-SCH160	18	
1 1/2"	SUS304TP-XXS	20	
1 1/2"	SUS304TP-SCH20S	75	
1 1/2"	SUS304TP-SCH60	30	
1 1/2"	STPA24-S-21MM	3	
1 1/2"	STPL 39-SCH80	38	
1 1/2"	STPT38-SCH80	170	
1 1/2"	STPL 39-SCH40	48.5	
2"	STPG38-SCH40	1313	
2"	STPG38-SCH80	150	
2"	STPT38-SCH40 SUS304TP-SCH160 SUS304TP-SCH10S STPG38-SCH80 STPT42-SCH160 SUS304TP-XXS SUS304TP-XXS SUS304TP-SCH20S SUS304TP-SCH60 STPA24-S-21MM STPL 39-SCH80 STPT38-SCH80 STPC38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH80 SGP-3.8MM SUS304-3.5MM SUS304-3.5MM STPT38-SCH40 STPT38-SCH60 STPT38-SCH60 STPT42-SCH60 SUS304TP-SCH160 SUS304TP-SCH160 SUS304TP-SCH10S STPT42-XXS SUS304TP-XXS	584	
2"	SUS304-3.5MM	3	
2"	SUS304L-3.5MM	25	
2"	STPT38-SCH40	69	
2"	STPA12-SCH80	70	
2"	SGP GALV3.5MM	34	
2"	STPT38-SCH80	106	
2"	STPT42-SCH160	27	
2"	SUS304TP-SCH160	72	
2"	SUS304TP-SCH80	40	
2"	SUS304TP-SCH10S	114.8	
2"	STPT42-XXS	20	
2"	SUS304TP-XXS	30	
2"	SUS304TP-SCH20S	20	
2"	STPL 39-S-SCH40	15.5	
2"	HITEN 55-S-7MM	40	
2"	HITEN 55-S-20MM	4	
2"	SUS304-3MM	60	
2"	AS-2-7MM	57	
2 1/2"	STPG38-SCH80	15	
2 1/2"	STPG38-SCH40	108	
2 1/2"	SUS304-3MM	12	
2 1/2"	STPL 39-S-SCH40	16	
3"	STPG38-SCH40	1207	
3"	SGP-4.2MM	97	
3"	SUS304-4MM	3	
3"	SUS304L-4MM	27	
3"	SUS304-3MM	218	
3"	AS-2-6.5MM	10	
		115	

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3"	STPT38-SCH40	167
3"	SUS304TP-SCH160	55
3"	STPT42-XXS	10
3"	HITEN 55-S-8.5MM	0.8
3"	HITEN 55-S-9.5MM	7.1
3"	STPL 39-S-SCH40	114.5
3"	SGP GALV./CLASS NO. BA4	260
3"	STPG38-SCH80	10
4"	STPT38-SCH80	25
4"	STPA12-SCH40	100
4"	STPT38-SCH40	134
4"	STPG38-SCH40	857
4"	STPA12-S-SCH80	85
4"	SGP-4.5MM	478
4"	SUS304L-3MM	25
4"	SUS304TP-3.5MM	69
4"	SUS304TP-SCH10S	15
4"	STPL 39-S-SCH40	391
4"	STPG38-SCH60	3.6
6"	STPG38-SCH40	695
6"	STPT38-S-SCH120	97
6"	SUS304L-5MM	48
6"	SUS304-3.5MM	70
6"	SGP-5MM	237
6"	SUS304-15MM	25
6"	AS-2-10.5MM	120
6"	STPG38-SCH80	10
6"	SUS304-7MM	10
6"	STPT38-SCH40	28
6"	HITEN 55-S-16.5MM	2
6"	STPA24-S-21MM	26
6"	STPL39-S-SCH40	109
6"	STPG38-SCH120	15
6"	AS-S-16.5MM	58
6"	SGP GALV. –C/S-6MM	380
6"	STPA12-SCH80	68
8"	SGP-5.8MM	396
8"	STPA12-S-SCH20	45
8"	STPG38-SCH40	469
8"	STPT38-SCH40	212
8"	SUS304L-4MM	15
8"	SUS304L-4WW SUS304L-6.5MM	10
8"	SUS304L-0.5MM	10
0	3U33U4L-3.3MM	10

8"	STPG38-SCH80 SUS304-6.5MM AS-2-21.5MM SUS304-4MM STPG38-SCH20 STPL39-S-SCH20 STPT38-SCH80 STPT38-SCH120 STPG38-SCH120 STPG38-SCH120 SUS304-4MM SUS304L-4.5MM SUS304L-4.5MM SUS304L-4MM AS-2-25.5MM STPA12-SCH40 STPT38-SCH40 STPT38-SCH20 HITEN 55-S-25.5MM STPA24-S-33.6MM STPT38-SCH120 STPG38-SCH20 STPG38-SCH20 STPG38-SCH20 STPG38-SCH20 STPG38-SCH20 STPG38-SCH20 STPA24-S-33.6MM STPT38-SCH120 STPG38-SCH20 STPA24-S-33.6MM STPT38-SCH120 STPG38-SCH20 STPA12-14MM STPA24-S-39.5MM	83	
8"	SUS304-6.5MM	15	
8"	AS-2-21.5MM	66	
3"	SUS304-4MM	5	
8"	STPG38-SCH20	83	
8"	STPL39-S-SCH20	42.6	
8"	STPT38-SCH80	30.5	
8"	STPT38-SCH120	15	
10"	STPG38-SCH40	360	
10"	SGP-6.6MM	120	
10"	STPG38-SCH120	10	
10"	SUS304-4MM	415	
10"	SUS304L-4.5MM	10	
10"	SUS304L-4MM	15	
10"	AS-2-25.5MM	70	
10"	STPA12-SCH40	15	
10"	STPT38-SCH40	4	
10"	STPG38-SCH20	149	
10"	HITEN 55-S-25.5MM	26	
10"	STPA24-S-33.6MM	12.8	
10"	STPT38-SCH120	30.5	
10"	STPG38-SCH80	45	
0"	STPA12-14MM	50	
0"	STPA24-S-SCH80	15	
0"	STPA12-SCH20	25.5	
10"	STPA24-S-39.5MM	15	
12"	SGP-6.9MM	197	
12"	STPG38-SCH40	216	
12"	SUS304L-6.5MM	10	
12"	STPA12-16MM	50	
12"	STPT38-SCH40	60	
12"	STPG38-SCH20	92	
12"	AS-2-30MM	30.5	
12"	STPA24-S-39.5MM	12	
12"	HITEN 55-S-30MM	15	
12"	STPG38-SCH20	25	
14"	SGP-7.9MM	114	
14"	STPG38-SCH40	212	
14"	SUS304L-8MM	11	
14"	SUS304L-4.5MM	30	
14"	SUS304-4.5MM	10	
14"	STPG38-SCH20	30	
14"	STPL39-S-SCH40	19	
<u>. 1</u>	DILLO D DOLLTO	17	
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14"	SGP-9MM	15		
16"	STPA12-20MM	36		
16"	SM41B-9.5MM	79		
16"	SM41B-7.9MM	85		
16"	SUS304L-6.5MM	3.5		
16"	SM41B-9MM	42		
16"	SUS304L-9MM	3		
16"	SUS304L-6MM	11		
16"	SUS304-6MM	20		
16"	STPY41-7.9MM	42		
16"	STPA12-9.5MM	58		
16"	SM41B-6MM	27.5		
18"	SM41B-11.21MM	97		
18"	SGP-7.9MM	6		
18"	SM41B-12MM	40		
18"	SUS304L-9MM	56		
18"	SM41B-7.9MM	40		
18"	SUS304L-6MM	5		
18"	STPG38-7.9MM	20		
18"	SM41B-6MM	65		
18"	STPA12-22.5MM	37		
18"	STPT41-7.9MM	16.5		
20"	STPA12-10MM	43		
20"	SGP-7.9MM	46		
20"	SM41B-12MM	1		
20"	STPG38-SCH20	5		
20"	SM41B-6MM	27.5		
20"	STPY41-7.9MM	87.5		
24"	SGP-7.9MM	36		
24"	SUS304-6MM	8		
24"	SM41B-7.9MM	10		
24"	SM41B-7MM	22		
28"	STPY41-6MM	30		
30"	SUS304-6MM	10		
30"	SM41B-7.9MM	82		
36"	SM41B-8MM	5		
36"	STPY41-7.9MM	15		
48"	SM41B-11MM	45		

SIZE	MAT	QTY
25MM	TU37-O-2.3MM	100
32MM	A33-4.85MM	130
40MM	A33-5.08MM	120
50MM	C/S-A33-3.91MM	3
50MM	TU37-O-2.9MM	30
50.8MM	A213 GR T22	25
60MM	TU37-O-3.2MM	2
65MM	C/S-API-SL A33-	290
	5.16MM	
65MM	TU37-O-2.9MM	20
80MM	TU37-O-3.2MM	30
100MM	TU37-O-3.6MM	40
165.2MM	A106 GRA	15
216.3MM	A106GRA	12
216.3MM	A335 GR P22-	8
	12.7MM	
250MM	C/S-TU37-O-6.3MM	40

ITEM	SIZE	MAT	QTY	
	(INCH)			
ITEM  ELBOW/90LR  ELBOW/90LR  ELBOW/90LR  ELBOW/90SR  ELBOW/90SR  ELBOW/90SR  ELBOW/90SR  ELBOW/90SR  ELBOW/90SR	3/8	STPG38-SCH80	2	
ELBOW	1/2	STPT38-SCH80	4	
ELBOW/90LR	1/2	SGP-2.8MM	5	
ELBOW/90LR	1/2	STPG38-SCH80	117	
ELBOW/90LR	1/2	FCMB-2.8MM	26	
ELBOW/90SR	1/2	STPG38-SCH80-SW	24	
ELBOW/90SR	1/2	STPT42-SCH80-BW	23	
ELBOW/90SR	1/2	SUS304TP-SCH160-BW	6	
ELBOW/90SR	1/2	SUS304TP-SCH40-SW	18	
ELBOW/90LR	1/2	STPT42-SCH160-BW	23	
ELBOW/45LR	1/2	STPG38-SCH80	14	
ELBOW/90LR	1/2	S25C-SCH80-SW-FORGED	208	
ELBOW/90LR	1/2	STPA12-ACH80	12	
ELBOW/90LR	1/2	STPT38-SCH80	16	
ELBOW/90LR	1/2	SUS304-SCH80	32	
ELBOW/90LR	3/4	STPG38-SCH80	51	
ELBOW/90LR	3/4	STPG38-SCH40	11	
ELBOW/90LR	3/4	SUS304-SCH40	47	
ELBOW/90LR	3/4	SUS304-SCH80	12	
ELBOW/90LR	3/4	FCMB GALV2.8MM	137	
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ELBOW/90LR	3/4	S25C-SCH80		
ELBOW/90LR	3/4	A182LF-SCH80	5	
ELBOW/90LR	3/4	S25C-SW-SCH160	16	
ELBOW/90LR	3/4	FCMB-2.8MM-SCR'D	85	
ELBOW/90LR	3/4	A182F1-SCH80-SW-FORGED	33	
ELBOW/90LR	3/4	S25C-SCH80-SW-FORGED	40	
ELBOW/90LR	3/4	FCMB-JIS10K-SCR'D	45	
ELBOW/90LR	3/4	\$25C-SCH80  A182LF-SCH80  \$25C-SW-SCH160  FCMB-2.8MM-SCR'D  A182F1-SCH80-SW-FORGED  \$25C-SCH80-SW-FORGED  FCMB-JIS10K-SCR'D  \$TPA12-SCH80  \$11-SCH80  \$25C-SCH80  \$11-SCH80  \$25C-SCH80  \$11-SCH80  \$25C-SCH80  \$11-SCH80   10		
FLBOW/901 R	3/4	F11-SCH80	20	
FI ROW/45	3/,	S25C-SCH80	4	
FI ROW	1	STDT/2-SCH80	4	
ELBOW	<u>'</u> 1	STDT20 SCH00	4	
ELBOW	1	S1F130-3CH00	20	
ELBOW/90LR	1	505304-SCH40	230	
ELBOW/90LR	1	\$25C-SCH80	2	
	<u> </u>	7110221 001100	77	
ELBOW/90LR	1	S25C-SCH160-BW	68	
ELBOW/90LR	1	STPG38-SCH40-SW	17	
ELBOW/90LR	1	A350LF1-SCH80	45	
ELBOW/90LR	1	SGP-3.2MM	75	
ELBOW/90LR	1	STPG38-SCH80	66	
ELBOW/90LR	1	FCMB-3.2MM-SCR'D		
ELBOW/90LR	1	S25C-SCH80-SW-FORGED	12	
ELBOW/90LR	1 1/2	STPG38-SCH80	28	
		121		

LBOW/90LR	1 1/2	STPG38-SCH40	250	
ELBOW/90LR	1 1/2	STPG38-SCH40  STPG38-SCH120  SUS304L-3MM  SGP-3.5MM  STPT38-SCH40  FCMB-GALV.  SUS304TP-SCH40  SUS304TP-SCH160-BW  S25C-SCH160-SW  STPT38-SCH80  STPT42-SCH160-BW  STPT42-SCH160-BW  STPT42-SCH160-BW  STPA24-S-21MM  A350LF-SCH40  STPL39-S-SCH20  FCMB-3.5MM-SCR'D	6	
ELBOW/90LR	1 1/2	SUS304L-3MM	15	
ELBOW/90LR	1 1/2	SGP-3.5MM	110	
ELBOW/90LR	1 1/2	STPT38-SCH40	36	
EL BOW/90L B	1 1/2	FCMR-GALV	12	
EL BOW/OOL B	1 1/2	SUSSOATE SCHAO	13	
LBOW/90LK	1 1/2	5053041Р-5СП40	6	
ELBOW/90LR	1 1/2	SUS304TP-SCH160-BW	7	
ELBOW/90LR	1 1/2	S25C-SCH160-SW	36	
ELBOW/90LR	1 1/2	STPT38-SCH80	14	
ELBOW/90LR	1 1/2	STPT42-SCH160-BW	2	
ELBOW/90LR	1 1/2	STPA24-S-21MM	2	
ELBOW/90LR	1 1/2	A350LF-SCH40	23	
ELBOW/90LR	1 1/2	STPL39-S-SCH20	12	
ELBOW/90LR	1 1/2	FCMB-3.5MM-SCR'D	45	
ELBOW/90LR	1 1/2	STPL39-SCH40	7	
ELBOW/90LR	2	SGP-3.8MM	112	
ELBOW/90LR	2	SUS304L-3.5MM	8	
ELBOW/90LR	2	STPA12-SCH80	34	
ELBOW/90LR	2	STPT38-SCH40	89	
			222	
ELBOW/90LR	2	STPG38-SCH40	3	
ELBOW/90LR	2	FCMB-GALV.	29	
ELBOW	2	STPT38-SCH80-BW		
		122		

ELBOW/90LR	2	STPT42-SCH160-BW		
ELBOW/90LR	2	SUS304TP-SCH160	25	
ELBOW/90LR	2	SUS304TP-SCH105	7	
ELBOW/90LR	2	STPL39-S-SCH40	4	
ELBOW/90LR	2	HITEN 55-S-7MM	23	
ELBOW/90LR	2	HITEN 55-S-20MM	10	
ELBOW/90LR	2	SUS304-3MM-BW-WELDED	18	
ELBOW/90LR	2	AS-2-7MM-BW-SEAMLESS	10	
ELBOW	2 1/2	STPT42-SCH160-BW  SUS304TP-SCH160  SUS304TP-SCH105  STPL39-S-SCH40  HITEN 55-S-7MM  HITEN 55-S-20MM  SUS304-3MM-BW-WELDED  AS-2-7MM-BW-SEAMLESS  STPG38-SCH40  SUS304-3MM  STPG38-SCH40  SUS304-3MM  SUS304-3MM  SUS304-3MM	4	
ELBOW	2 1/2	SUS304-3MM	6	
ELBOW/90LR	3	STPG38-SCH40	256	
ELBOW/90LR	3	SUS304-4MM	3	
ELBOW/90LR	3	SUS304-3.5MM	1	
ELBOW/90LR	3	SGP-4.2MM	45	
ELBOW/90LR	3	SUS304-3MM	30	
ELBOW/90LR	3	AS-2-6.5MM	5	
ELBOW/90LR	3	SUS304-SCH10	8	
ELBOW/90LR	3	STPT38-SCH40	10	
ELBOW/90LR	3	SUS304TP-SCH160	12	
ELBOW	3	SUS304TP-SCH105	11	
ELBOW/90LR	3	HITEN 55-S-8.5MM	2	
			2	
ELBOW/45LR	3	HITEN 55-S-2.5MM	4	
ELBOW/90LR	3	HITEN 55-S-9.5MM		

ELBOW/90LR	3	STPL39-S-SCH40		
ELBOW/90LR	3	STPL39-S-SCH40 STPT38-SCH40-BW-SEAMLESS SUS304-3MM-BW-WELDED STPG38-SCH40 STPA12-SCH80 STPG38-SCH80 SUS304L-3MM STPG38-SCH40 STPT38-SCH40 STPT38-SCH40 STPT38-SCH40 STPT38-SCH40 STPT38-SCH40 STPT38-SCH40 STPT38-SCH40 STPT38-SCH40	10	
ELBOW/90LR	3	SUS304-3MM-BW-WELDED	10	
ELBOW/90LR	3	STPG38-SCH40	4	
ELBOW/90LR	4	STPA12-SCH80	12	
ELBOW	4	STPG38-SCH80	6	
ELBOW/90LR	4	SUS304L-3MM	15	
ELBOW/45	4	STPG38-SCH40	5	
ELBOW/45	4	STPT38-SCH40	3	
ELBOW/90LR	4	STPT38-SCH40	30	
ELBOW/90LR	4	SGP-4.5MM	80	
ELBOW/90LR	4	STPG38-SCH40	189	
ELBOW/90LR	4	SUS304TP-SCH105-BW	9	
ELBOW/90LR	4	STPL39-S-SCH40	45	
ELBOW/45LR	4	SGP-4.5MM-BW	10	
ELBOW/90LR	4	STPL39-SCH40-BW- SEAMLESS	8	
ELBOW/90	4	STPA12-SCH80	20	
ELBOW/90LR	5	SUS304L-3.5MM	2	
ELBOW/90LR	6	STPG38-SCH40	140	
ELBOW/45LR	6	STPG38-SCH40	6	
ELBOW/90LR	6	SUS304-3.5MM	15	
ELBOW/90LR	6	SUS304-15MM	12	
		124		

ELBOW/90LR	6	SUS304-7MM		
ELBOW/90LR	6	STPG38-SCH80	16	
ELBOW/90LR	6	SGP-5MM	90	
ELBOW/90LR	6	STPL39-SCH40	10	
ELBOW/90LR	6	STPT38-SCH120	35	
ELBOW/90LR	6	STPA24-S-21MM	4	
ELBOW/90LR	6	STPT38-SCH40-BW- SEAMLESS	17	
ELBOW/90LR	6	STPT38-SCH120-SEAMLESS	7	
ELBOW/90LR	6	SUS304-7MM  STPG38-SCH80  SGP-5MM  STPL39-SCH40  STPT38-SCH120  STPA24-S-21MM  STPT38-SCH40-BW-SEAMLESS  STPT38-SCH120-SEAMLESS  AS-2-16.5MM-BW-SEAMLESS  SGP-5MM-BW  STPA12-SCH80-BW-SEAMLESS  SUS304L-5MM-BW-WELDED  STPG38-SCH40	18	
ELBOW/45LR	6	SGP-5MM-BW	7	
ELBOW/90LR	6	STPA12-SCH80-BW- SEAMLESS	5	
ELBOW/90LR	6	SUS304L-5MM-BW-WELDED	3	
LBOW/90LR	8	STPG38-SCH40	135	
ELBOW/45	8	STPG38-SCH40	21	
ELBOW/90LR	8	SUS304L-4MM	4	
ELBOW/90LR	8	SUS304L-6.5MM	4	
ELBOW/90LR	8	SGP-5.8MM	54	
ELBOW/90LR	8	SUS304-6.5MM	8	
ELBOW/90LR	8	STPT38-SCH40	15	
ELBOW/90LR	8	STPA12-SCH20	35	
ELBOW/90LR	8	STPA12-SCH80	21	
LDC 44/30LK	0	STEATZ-SURIOU		

ELBOW/90LR	8	STPG38-SCH80	
ELBOW/90LR	8	AS-2-21.5MM	8
ELBOW/90LR	8	STPG38-SCH20-BW	13
ELBOW/45LR	8	SGP-5.8MM	4
ELBOW/90LR	8	STPL39-SCH20	24
ELBOW/90LR	8	STPG38-SCH80  AS-2-21.5MM  STPG38-SCH20-BW  SGP-5.8MM  STPL39-SCH20  STPT38-SCH120-BW- SEAMLESS  SS41-5.8MM-BW  SUS304L-4MM  SUS304-4MM  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40	3
ELBOW/90LR	8	SS41-5.8MM-BW	6
ELBOW/45	10	SUS304L-4MM	2
ELBOW/90LR	10	SUS304-4MM	55
ELBOW/90LR	10	STPG38-SCH40	194
ELBOW/45LR	10	STPG38-SCH40	4
ELBOW/90LR	10	STPA24-SCH80	5
ELBOW/90LR	10	SGP-6.6MM	9
ELBOW/90LR	10	STPT38-SCH120	7
ELBOW/90LR	10	AS-2-25.5MM	16
ELBOW/90LR	10	STPA12-SCH80-14MM	10
ELBOW/90LR	10	STPT38-SCH40	2
ELBOW/90LR	10	STPG38-SCH20-BW	20
ELBOW/90LR	10	STPA24-33.6MM	9
ELBOW/90LR	10	HITEN55-S-25.5MM	14
ELBOW/45LR	10	HITEN55-S-25.5MM	5
ELBOW/90LR	10	STPG38-SCH80-BW- SEAMLESS	5
		126	

ELBOW/90LR 12 HITEN55-S-30MM-BW 1 HITEN55-S-30MM-BW 3	3	STPA12-SCH20-BW-SEAMLESS  STPA12-39.5MM  2  STPA12-39.5MM  1	10	ELBOW/90LR
ELBOW/90LR 12 HITEN55-S-30MM-BW 3 ELBOW/45LR 12 HITEN55-S-30MM-BW 3	3	STPA12-39.5MM 2		
ELBOW/90LR 12 HITEN55-S-30MM-BW 3 ELBOW/45LR 12 HITEN55-S-30MM-BW 3	3	STD 442 20 5MM	10	ELBOW/90LR
ELBOW/90LR 12 HITEN55-S-30MM-BW 3 ELBOW/45LR 12 HITEN55-S-30MM-BW 3	3	51PA12-39.5IVIIVI	10	ELBOW/45LR
ELBOW/90LR 12 HITEN55-S-30MM-BW 3 ELBOW/45LR 12 HITEN55-S-30MM-BW 3	3	<b>SUS304L-6.5MM</b> 5	12	ELBOW/90LR
ELBOW/90LR 12 HITEN55-S-30MM-BW 3 ELBOW/45LR 12 HITEN55-S-30MM-BW 3		<b>STPG38-SCH40</b> 53	12	ELBOW/90LR
ELBOW/90LR 12 HITEN55-S-30MM-BW 3 ELBOW/45LR 12 HITEN55-S-30MM-BW 3		STPG38-SCH40 4	12	ELBOW/45LR
ELBOW/90LR 12 HITEN55-S-30MM-BW 3 ELBOW/45LR 12 HITEN55-S-30MM-BW 3	9	<b>SGP-6.9MM</b> 29	12	ELBOW/90LR
ELBOW/90LR         12         HITEN55-S-30MM-BW         3           ELBOW/45LR         12         HITEN55-S-30MM-BW         1           3         3		<b>SGP-6.9MM</b> ⁶	12	ELBOW/45LR
ELBOW/90LR         12         HITEN55-S-30MM-BW         3           ELBOW/45LR         12         HITEN55-S-30MM-BW         1           3         3		STPA12-16MM-BW- SEAMLESS	12	ELBOW/90LR
ELBOW/90LR 12 HITEN55-S-30MM-BW 3 ELBOW/45LR 12 HITEN55-S-30MM-BW 3	4	STPG38-SCH20-BW-WELDED	12	ELBOW/90LR
ELBOW/90LR 12 HITEN55-S-30MM-BW 3 ELBOW/45LR 12 HITEN55-S-30MM-BW 3		AS-2-30MM-SEAMLESS	12	ELBOW/90LR
ELBOW/90LR         12         HITEN55-S-30MM-BW         3           ELBOW/45LR         12         HITEN55-S-30MM-BW         1           3         3		STPA12-39.5MM ³	12	ELBOW/90LR
ELBOW/45LR 12 HITEN55-S-30MM-BW 3		3		
ELBOW/90LR 14 SUS304L-8MM 3			12	ELBOW/45LR
		SUS304L-8MM	14	ELBOW/90LR
ELBOW/90LR 14 SUS304L-4.5MM 8			14	ELBOW/90LR
ELBOW/45LR 14 SUS304L-4.5MM 2		SUS304L-4.5MM 2	14	ELBOW/45LR
ELBOW/90LR 14 STPG38-SCH40 55	5	STPG38-SCH40 55	14	ELBOW/90LR
ELBOW/45 14 STPG38-SCH40 6			14	ELBOW/45
ELBOW/90LR 14 SUS304-4.5MM 6			14	ELBOW/90LR
		<u> </u>		

ELBOW/90LR 14 SGP-7	.9MM
ELBOW/90LR 14 STPG38-S	CH20 3
ELBOW/90LR 14 STPL39-S	<b>CH40</b> 3
ELBOW/90LR 16 SM41B-9	. <b>5MM</b> 10
ELBOW/45 16 SM41B-9	. <b>5MM</b> 4
ELBOW/90LR 16 SM41B-7	<b>7.9MM</b> 13
ELBOW/45LR 16 SUS304L	- <b>6MM</b> 3
ELBOW/90LR 16 SUS304	-6MM 3
ELBOW/90LR 14 SGP-7 ELBOW/90LR 14 STPG38-S ELBOW/90LR 14 STPL39-S ELBOW/90LR 16 SM41B-9 ELBOW/45 16 SM41B-7 ELBOW/90LR 16 SUS304L ELBOW/90LR 16 SUS304L ELBOW/90LR 16 SUS304 ELBOW/90LR 16 SUS304 ELBOW/90LR 16 SUS304 ELBOW/90LR 16 SM41B-2 ELBOW/90LR 16 STPT12 ELBOW/90LR 16 SM41B-2 ELBOW/90LR 16 SM41B-2 ELBOW/90LR 16 SM41B-2 ELBOW/90LR 16 SM41B-2 ELBOW/90LR 16 SM41B-2 ELBOW/90LR 16 SM41B-2 ELBOW/90LR 16 SM41B-2	- <b>6MM</b> 2
ELBOW/90LR 16 SM41B-2	<b>25MM</b> 21
ELBOW/90LR 16 STPT12	-8MM 7
ELBOW/90LR 16 SM41B-2	28MM 1
ELBOW/90LR 16 SM41R	-6MM 6
ELBOW/45 16 SM41R	-6MM 5
ELBOW/90LR 16 STPA12-9	5MM 11
ELBOW/90LR 16 SGP-7	6
ELBOW/90LR 16 SM41B-6MM-BW-WEI	7
	5
	4
ELBOW/45LR 16 SM41B-6MM-BW-WEI	9
ELBOW/90LR 18 SM41B-1	5
ELBOW/45 18 SM41B-1	12
ELBOW/90LR 18 SUS304L	2
ELBOW/45LR 18 SM41B	

LDOW/JULIN	18	SM41B-7.9MM	
ELBOW/90LR	18	SM41B-28MM	10
ELBOW/90LR	18	SM41B-12.5MM	6
ELBOW/90LR	18	SM41B-11.1MM	15
ELBOW/90LR	18	SS41-7.9MM	4
ELBOW/90LR	18	STPG38-SCH40	6
LBOW/90LR	18	SM41B-6MM	17
ELBOW/45	18	SM41B-11.1MM	1
ELBOW/90LR	18	SM41B-7.9MM  SM41B-12.5MM  SM41B-11.1MM  SS41-7.9MM  STPG38-SCH40  SM41B-6MM  SM41B-11.1MM  STPA12-22.5MM-BW-SEAMLESS  SM41B-12MM  STPA12-10MM  STPA12-10MM  SGP-7.9MM  SM41B-6MM-BW-WELDED  SS41-7.9MM-BW	5
ELBOW/90LR	20	SM41B-12MM	1
ELBOW	20	STPA12-10MM	16
ELBOW/90LR	20	SGP-7.9MM	13
ELBOW/90LR	20	SM41B-6MM-BW-WELDED	6
ELBOW/90LR	20	SS41-7.9MM-BW	13
ELBOW/90LR	24	SGP-7.9MM	4
ELBOW/90LR	24	SM41B-7MM-BW-WELDED	2
ELBOW/90LR	30	SM41B-7.9MM	6
ELBOW/90LR	30	SM41B-6MM	3
ELBOW/90LR	36	SM41B-8MM	2
ELBOW/45	36	STPY41-7.9MM	2
ELBOW/90LR	48	SM41B-11MM	6
ELBOW	32	A33	30
	32	A33	

EL	BOW	40		A33		
EL	BOW	50	 C/S-	A33	1	
EL	BOW	50	TU3	87-A	14	
EL	BOW	65	C/S-API-SL-	A33	4	
ELBOW/ ELBOW/ ELBOW/ ELBOW/ ELBOW/	BOW	65	C/S-API-SL-	A33	12	
EL	BOW	65	TU3	87-A	3	
EL	BOW	80	TU3	87-A	1	
EL	BOW	80	TU3	87-A	10	
EL	BOW	100	TU3	87-A	12	
ELBOW/	90LR	165.2	A106-0	SRA	3	
ELBOW/	90LR	216.3	A106-0	SRA	2	
ELBOW/	90LR	216.3	A335-GR-	P22	1	
EL	BOW	250	TU3	87-A	4	
ITEM		SIZE	MAT	QTY	7	
		(INCH)				
TEE		10*10*4	TU37-A	10		
TEE		10*10*10	TU37-A	8		
TEE		8*10*10	TU37-A	9		
TEE		8*8*6	TU37-A	10		
TEE		6*6*4	TU37-A	12		
TEE		4*4*2	TU37-A	14		
TEE		12*12*10	TU37-A	6		
TEE		12*12*8	TU37-A	5		
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ICC	216MM*16	A106-GRA-12.7*1		
TEE	6*6	STPT38-SCH120	20	
TEE	6*4	STPT38-SCH120	10	
TEE	3/4*3/4	A182F1-SCH80	6	
TEE	3/4*3/4	F11-SCH80	6	
TEE	4*4	STPA12-SCH80	4	
TEE	1*1/2	FCMB	6	
TEE	8*8	STPT38-SCH40	1	
TEE	12*12	A106-GRA-12.7*1 STPT38-SCH120 STPT38-SCH120 A182F1-SCH80 F11-SCH80 STPA12-SCH80 STPA12-SCH80 STPA12-16MM STPA12-SCH80 STPA12-SCH80 STPA12-SCH80 STPA12-SCH80 STPA12-SCH80 STPA12-SCH80 STPA12-SCH80 STPA12-SCH80 STPA12-SCH80 STPA12-SCH80 STPA12-SCH80 STPA12-SCH80 STPA12-SCH80	2	
TEE	12*8	STPA12-SCH80	1	
TEE	8*8	STPA12-SCH80	2	
TEE	4*4	STPA12-SCH80	1	
TEE	8*6	STPT38-SCH120	4	
TFF	8*8	STPG38-SCH20	1	
TEE	12*12	STPG38-SCH20	1	
TEE	8*4	SGP-5MM	1	
		SUS304-SCH80	6	
TEE	3/4*3/4	SUS304-SCH40	6	
TEE	1/2		31	
TEE	1/2	STPG38-SCH80	1	
TEE	1/2*3/4	FCMB GALV.	13	
TEE	1/2	S25C-SCH80-SW	19	
TEE	3/4	SUS304-SCH40	6	
TEE	3/4	FCMB GALV2.8MM		

IEE	3/4	STPG38-SCH80		_
TEE	3/4*1/2	STPG38-SCH80	4	
TEE	3/4	S25C-SCH80	29	
TEE	3/4	A182LF-SW-SCH80	1	1
TEE	3/4*1/2	SUS304TP-SCH105-SW	6	-
TEE	3/4	SGP-2.8MM	6	
TEE	3/4	STPG38-SCH80 S25C-SCH80 A182LF-SW-SCH80 SUS304TP-SCH105-SW SGP-2.8MM S25C-SCH80-SW-FORGED SGP-4.2MM-BW FCMB GALVSCR'D STPG38-SCH80 STPG38-SCH80 STPG38-SCH80 STPG38-SCH40 SGP-3.2MM S25C-SCH80	5	
TEE	3/4*3	SGP-4.2MM-BW	21	1
TEE	3/4*1/2	FCMB GALVSCR'D	4	†
TEE	1	STPG38-SCH80	29	1
TEE	1*1/2	STPG38-SCH80	6	-
TEE	1*1/2	STPG38-SCH40	1	-
TEE	1	SGP-3.2MM	11	-
TEE	1*3/4	S25C-SCH80	5	1
TEE	1	S25C-SW-SCH80	15	-
TEE	1*2	STPT38-BW-SCH40	1	-
TEE	1	FCMB-3.2MM	2	-
TEE	1*2	FCMB GALV3.8MM	1	-
TEE	1*1/2	S25C-SCH80-SW	12	1
TEE	1*1 1/2	STPG38-SCH40-BW	6	-
TEE	1*3/4	STPG38-SCH40-BW	1	-
			6	1
TEE	1	STPL39-SCH80		

TEE	4 40 10	1		
	1*3/8	STPG38-SCH80	1	
TEE	1*3/4	STPG38-SCH80	12	
TEE	1*3/4	SGP-3.2MM	6	
TEE	2	STPG38-SCH80	3	
TEE	2	STPG38-SCH40	45	
TEE	2*1	SGP-3.8MM	1	
TEE	2*1 1/2	STPG38-SCH40	17	
TEE	2*1	STPG38-SCH40	13	
TEE	2	SUS304L-3.5MM	4	
TEE	2*2	FCMB-3.2MM  STPG38-SCH80  SGP-3.2MM  STPG38-SCH80  STPG38-SCH80  STPG38-SCH40  SGP-3.8MM  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  SUS304L-3.5MM  STPT38-SCH40  STPT38-SCH40  SGP-3.8MM  FCMBGALV3.8MM	12	
TEE		STPT38-SCH40	6	
TFF	2*1 1/2	SGP-3 8MM	16	
TEE	2*3/4	FCMBGALV -3.8MM	4	
TEE	2 3/4	SUS304TP-SCH160-BW	3	
TEE	2	SUS304TP-SCH80-BW	4	
TEE	2	SUS304TP-SCH00-BW	6	
			4	
TEE	2*3/4	STPG38-SCH40-BW	1	
TEE	2*4/2	STPL 30 SCH00	2	
TEE	2*1/2	STPL39-SCH80	2	
TEE	2*1	STPG38-SCH80	8	
TEE	2*2*1	STPG38-SCH40	11	
TEE	2*2*1	SGP-3.8MM-BW		

TEE	TEE 11	SGP-3.5MM	
TEE     2 1/2*3     STPG38-SCH80     57       TEE     3     STPG38-SCH40     32       TEE     3*2     STPG38-SCH40     1       TEE     3*1 1/2     STPG38-SCH40     1       TEE     3*2 1/2     STPG38-SCH40     22	TEE 1 1	STPG38-SCH40	7
TEE       2 1/2*3       STPG38-SCH80       57         TEE       3       STPG38-SCH40       32         TEE       3*1 1/2       STPG38-SCH40       1         TEE       3*2 1/2       STPG38-SCH40       22         TEE       3*2 1/2       STPG38-SCH40       11	TEE 11	SUS304L-3MM	6
TEE     2 1/2*3     STPG38-SCH80     57       TEE     3     STPG38-SCH40     32       TEE     3*2     STPG38-SCH40     1       TEE     3*1 1/2     STPG38-SCH40     1       TEE     3*2 1/2     STPG38-SCH40     22	TEE 1 1/2	1 STPG38-SCH40	10
TEE     2 1/2*3     STPG38-SCH80     57       TEE     3     STPG38-SCH40     32       TEE     3*2     STPG38-SCH40     1       TEE     3*1 1/2     STPG38-SCH40     1       TEE     3*2 1/2     STPG38-SCH40     22	TEE 1 1/2	1 SGP-3.5MM	6
TEE     2 1/2*3     STPG38-SCH80     10       TEE     3     STPG38-SCH40     57       TEE     3*2     STPG38-SCH40     32       TEE     3*1 1/2     STPG38-SCH40     1       TEE     3*2 1/2     STPG38-SCH40     22       11     11	TEE 1 1/2	1 STPT38-SCH40	8
TEE       2 1/2*3       STPG38-SCH80       10         TEE       3       STPG38-SCH40       57         TEE       3*2       STPG38-SCH40       32         TEE       3*1 1/2       STPG38-SCH40       1         TEE       3*2 1/2       STPG38-SCH40       22         11       11	TEE 1 1/2	FCMB GALV.	6
TEE       2 1/2*3       STPG38-SCH80       10         TEE       3       STPG38-SCH40       57         TEE       3*2       STPG38-SCH40       32         TEE       3*1 1/2       STPG38-SCH40       1         TEE       3*2 1/2       STPG38-SCH40       22         11       11	TEE 1 1/2	1 FCMB GALV3.5MM	3
TEE       2 1/2*3       STPG38-SCH80       10         TEE       3       STPG38-SCH40       57         TEE       3*2       STPG38-SCH40       32         TEE       3*1 1/2       STPG38-SCH40       1         TEE       3*2 1/2       STPG38-SCH40       22         11       11	TEE 11	2 SUS304TP-SCH105-BW	4
TEE     2 1/2*3     STPG38-SCH80     57       TEE     3     STPG38-SCH40     32       TEE     3*2     STPG38-SCH40     1       TEE     3*1 1/2     STPG38-SCH40     1       TEE     3*2 1/2     STPG38-SCH40     22	TEE 1 1/2	3 SUS304TP-SCH105-BW	3
TEE     2 1/2*3     STPG38-SCH80     57       TEE     3     STPG38-SCH40     32       TEE     3*2     STPG38-SCH40     1       TEE     3*1 1/2     STPG38-SCH40     1       TEE     3*2 1/2     STPG38-SCH40     22	TEE 1 1/2	STPG38-SCH80	4
TEE       2 1/2*3       STPG38-SCH80       10         TEE       3       STPG38-SCH40       57         TEE       3*2       STPG38-SCH40       32         TEE       3*1 1/2       STPG38-SCH40       1         TEE       3*2 1/2       STPG38-SCH40       22         11       11	TEE 11	2 FCMB GALV3.5MM-	10
TEE       2 1/2*3       STPG38-SCH80       10         TEE       3       STPG38-SCH40       57         TEE       3*2       STPG38-SCH40       32         TEE       3*1 1/2       STPG38-SCH40       1         TEE       3*2 1/2       STPG38-SCH40       22         11       11		SCR'D	3
TEE       2 1/2*3       STPG38-SCH80       57         TEE       3       STPG38-SCH40       32         TEE       3*1 1/2       STPG38-SCH40       1         TEE       3*2 1/2       STPG38-SCH40       22         TEE       3*2 1/2       STPG38-SCH40       11	TEE 1 1/2	1 FCMB-3.5MM-SCR'D	10
TEE       2 1/2*3       STPG38-SCH80       57         TEE       3       STPG38-SCH40       32         TEE       3*1 1/2       STPG38-SCH40       1         TEE       3*2 1/2       STPG38-SCH40       22         TEE       3*2 1/2       STPG38-SCH40       11	TEE 2 1/2	2 STPL39-S-SCH40	10
TEE       3       STPG38-SCH40         TEE       3*2       STPG38-SCH40         TEE       3*1 1/2       STPG38-SCH40         TEE       3*2 1/2       STPG38-SCH40         11       11			10
TEE 3*2 STPG38-SCH40  TEE 3*1 1/2 STPG38-SCH40  TEE 3*2 1/2 STPG38-SCH40  11	TEE	STPG38-SCH40	57
TEE 3*1 1/2 STPG38-SCH40  TEE 3*2 1/2 STPG38-SCH40  11	TEE 3	STPG38-SCH40	32
TEE 3*2 1/2 STPG38-SCH40	TEE 3*1 1	STPG38-SCH40	1
TEE 3 STPT38-BW-SCH40 11	TEE 3*2 1	STPG38-SCH40	22
	TEE	3 STPT38-BW-SCH40	11
TEE 3*2 STPT38-SCH40 5	TEE 3	2 STPT38-SCH40	5
TEE 3 SUS304TP-SCH160 3			3
	I		

TEE 3*1/2 STPG38-SCH80  TEE 3*3*2 SGP-4.2MM  TEE 3*3*1 SGP GALV4.2MM-BW-WELDED  TEE 4*4 SUS304-SCH40  TEE 4*3 STPG38-SCH40  TEE 4*3 STPG38-SCH40  TEE 4*3 SGP-4.2MM  TEE 4*3 SGP-4.2MM  TEE 4*3 SGP-4.2MM  TEE 4*3 SGP-4.2MM  TEE 4*3 STPT38-SCH40  TEE 4*3 STPT38-SCH40  TEE 4*3 STPG38-SCH40  TEE 4*3 STPT38-SCH40  TEE 4*3 STPT38-SCH40  TEE 4*5 STPT38-SCH40  TEE 4 STPT38-SCH40  TEE 4 STPT38-SCH40  TEE 4*2 STPT38-BW-SCH40	3*3*2 3*3*1 4*4 4*3	TEE TEE TEE TEE
TEE         3*3*2         STPG38-SCH40         3           TEE         3*3*1         SGP GALV4.2MM-BW-WELDED         17           TEE         4*4         SUS304-SCH40         9           TEE         4         SGP-4.5MM         6           TEE         4*3         STPG38-SCH40         27           TEE         4*3         SGP-4.2MM         11           TEE         4*2         SGP-4.2MM         9           TEE         4*3         STPT38-SCH40         10           TEE         4         STPG38-SCH40         3	3*3*2 3*3*1 4*4 4 4*3	TEE TEE TEE TEE
TEE       3*3*1       SGP GALV4.2MM-BW-WELDED       17         TEE       4*4       SUS304-SCH40       9         TEE       4       SGP-4.5MM       6         TEE       4*3       STPG38-SCH40       27         TEE       4       SUS304L-3MM       4         TEE       4*3       SGP-4.2MM       11         TEE       4*2       SGP-4.2MM       9         TEE       4*3       STPT38-SCH40       10         TEE       4       STPG38-SCH40       3	3*3*1 4*4 4 4*3	TEE TEE TEE
TEE 4*4 SUS304-SCH40 9  TEE 4 SGP-4.5MM 6  TEE 4*3 STPG38-SCH40 27  TEE 4 SUS304L-3MM 4  TEE 4*3 SGP-4.2MM 11  TEE 4*2 SGP-4.2MM 9  TEE 4*3 STPT38-SCH40 10  TEE 4 STPG38-SCH40 19	4*4 4 4*3	TEE TEE
TEE 4 SGP-4.5MM 6  TEE 4*3 STPG38-SCH40 4  TEE 4 SUS304L-3MM 4  TEE 4*3 SGP-4.2MM 9  TEE 4*3 STPT38-SCH40 10  TEE 4 STPG38-SCH40 19  TEE 4 STPG38-SCH40 3	4*3	TEE TEE
TEE       4*3       STPG38-SCH40       27         TEE       4       SUS304L-3MM       4         TEE       4*3       SGP-4.2MM       11         TEE       4*2       SGP-4.2MM       9         TEE       4*3       STPT38-SCH40       10         TEE       4       STPG38-SCH40       19	4*3	TEE
TEE       4       SUS304L-3MM       4         TEE       4*3       SGP-4.2MM       11         TEE       4*2       SGP-4.2MM       9         TEE       4*3       STPT38-SCH40       10         TEE       4       STPG38-SCH40       19         TEE       4       STPG38-SCH40       3	4	i
TEE         4*3         SGP-4.2MM         11           TEE         4*2         SGP-4.2MM         9           TEE         4*3         STPT38-SCH40         10           TEE         4         STPG38-SCH40         19           TEE         4         STPG38-SCH40         3		TEE
TEE         4*2         SGP-4.2MM         9           TEE         4*3         STPT38-SCH40         10           TEE         4         STPG38-SCH40         19	4*3	TEE
TEE         4*3         STPT38-SCH40         10           TEE         4         STPG38-SCH40         19	4*2	TEE
TEE 4 STPG38-SCH40 19	4*3	TEE
TEE	4	TEE
1EE 4 51P138-5CH40	4	TEE
TEE 4*2 STPT38-BW-SCH40 7	4*2	TEE
TEE 4*2 SUS304TP-SCH105-BW 4		
TEE 4*1 1/2 SUS304TP-SCH105-BW 3	4*1 1/2	TEE
TEE 4*3 SUS304TP-SCH105-BW 3	4*3	TEE
TEE 4 STPL39-S-SCH40 3	4	TEE
TEE 4*3 STPL39-SCH40 5	4*3	TEE
TEE 4*1 S25C-SCH80 2	4*1	TEE
TEE 6*3 STPG38-SCH40 2	6*3	TEE
TEE 6 STPG38-SCH40 10	6	TEE
		l

TEE	6	SM41B-6.9MM		
TEE	6*4	STPG38-SCH40	1	
TEE	6*3	AS-2-10.5MM*4.3MM	2	
TEE	6*3	STPG38-SCH80	8	
TEE	6	SGP-5MM	7	
TEE	6*4	SGP-5MM	4	
TEE	6*4	STPL39-S-SCH40	8	
TEE	6*6*2	STPT38-SCH120	3	
TEE	6*6*1	SM41B-6.9MM  STPG38-SCH40  AS-2-10.5MM*4.3MM  STPG38-SCH80  SGP-5MM  SGP-5MM  STPL39-S-SCH40  STPT38-SCH120  STPT38-SCH120-BW-SEAMLESS  STPT38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40	3	
TEE	6*8*8	STPT38-SCH40	2	
TEE	8	STPG38-SCH40	8	
TEE	8*6	STPG38-SCH40	3	
TEE	8*4	STPG38-SCH40	15	
TEE	8*8	STPA12-SCH20	8	
TEE	8*6	STPA12-SCH20*SCH40	4	
TEE	8*4	STPG38-SCH80	6	
TEE	8*3	STPG38-SCH40	5	
TEE	8*6	SGP-5MM	2	
TEE	8	STPL39-S-SCH20	2	
TEE	8*8*2	STPT38-SCH40	2	
TEE	8*8*3	STPT30-SCH40-BW- SEAMLESS	3	
TEE	10*16	STPA12-10MM	1	
		136		

TEE	10*6	SUS304-4MM*3.5MM		
TEE	10*10	SUS304-4MM	2	
TEE	10*10	STPG38-SCH20	2	
TEE	10*10	SGP-6.6MM	2	
TEE	10*10	STPA12-10MM	1	
TEE	12	SGP-6.9MM	10	
TEE	12	STPG38-SCH40	3	
TEE	12*8	STPG38-SCH40	4	
TEE	12*6*1	SS41-7.9MM	1	
TEE	14	SUS304-4MM*3.5MM SUS304-4MM STPG38-SCH20 SGP-6.6MM STPA12-10MM SGP-6.9MM STPG38-SCH40 STPG38-SCH40 SS41-7.9MM SGP-7.9MM STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40	1	
TEE	14*8	STPG38-SCH40	1	
TEE	14	STPG38-SCH40	1	
TEE	14*14	SGP-7.9MM*7.9MM	2	
TEE	16	SM41B-9.5MM	2	
TEE	16	SM41B-7.9MM	2	
TEE	16*16	STPY41-7.9MM*6.9MM	2	
TEE	16*8	STPT38-SCH40	1	
TEE	18*16	S25C-28MM*25MM	3	
TEE	18*14	SM41B-12.5MM	1	
TEE	18*14	SM41B-11.1MM	2	
TEE	18*12	SM41B-11.1MM	1	
TEE	18	S25C-28MM	2	
TEE	18	SM41B-6MM	9	
<del>-</del>				

TEE	20*19	STPA12-10MM	
TEE	20	STPA12-10MM SGP-7.9MM SM41B-7.9MM	1
TEE	20	01445 7 0144	1
IEE	30	SM41B-7.9MM	
		138	

I I E IVI	SIZE	MAT	
	(INCH)		
FLANGE	1/2	ANSI900-WN-RJ-S30C	3
FLANGE	1/2	ANSI150-SW-RF-SS41	52
FLANGE	1/2	ANSI400-WN-RF-S25C	6
FLANGE	1/2	ANSI1500-SO-FF-SS41	14
FI ANGE	1/2	ANSI300-SO-RF-S25C	31
FI ANGE	1/2	ANSI600-SW-S25C	20
EL ANGE	1/2	MAT  ANSI900-WN-RJ-S30C  ANSI150-SW-RF-SS41  ANSI400-WN-RF-S25C  ANSI1500-SO-FF-SS41  ANSI300-SO-RF-S25C  ANSI600-SW-S25C  JIS10K-FCMB  JIS10K-SO-FF-SS41  ANSI150-SO-RF-S25C  ANSI125-FF-S20C  ANSI125-FF-S20C  ANSI300-WN-RJ-S25C	6
FLANGE	1/2	JISTUK-FCIVIB	8
FLANGE	1/2	JIS10K-SO-FF-SS41	150
FLANGE	1/2	ANSI150-SO-RF-S25C	2
FLANGE	1/2	ANSI125-FF-S20C	2
FLANGE	1/2	ANSI800-SW-S25C	9
FLANGE	1/2	ANSI1500-WN-RJ-S25C	4
FLANGE	1/2	ANSI300-WN-RJ-S25C	27
FLANGE	1/2	ANSI600-WN-RF-S25C	62
FLANGE	1/2	ANSI2500-WN-RJ-S25C	8
FLANGE	1/2	ANSI150-SCR'D-FF-	16
FLANGE	1/2	FCMB GALV.	
FLANGE	1/2	ANSI300-SW-RF-S25C	27
FLANGE	3/4	ANSI900-WN-RJ-S30C	2
FLANGE	3/4	ANSI150-SW-RF-SS41	114
FLANGE	3/4	ANSI150-SO-RF-	30
	<b>3.</b> .	SUS304	

FLANGE	3/4	ANSI125-SW-RF-SS41		
FLANGE	3/4	ANSI125-SW-RF-SS41  ANSI150-LAP JOINT-SS41  ANSI150-SCR'D-FF-FCMB  ANSI300-SO-RF-S25C  ANSI400-WN-RF-S25C  ANSI600-SW-S25C  ANSI300-SO-RJ-S25C  ANSI300-SO-RJ-S25C  ANSI150-SO-RF-S25C  JIS10K-SO-FF-SS41  JIS10K-FCMB  ANSI600-WN-RF-S25C  ANSI125-FF-S20C  ANSI1500-WN-RJ-S25C	4	
FLANGE	3/4	ANSI150-SCR'D-FF- FCMB	74	
FLANGE	3/4	ANSI300-SO-RF-S25C	25	
FLANGE	3/4	ANSI400-WN-RF-S25C	66	-
FLANGE	3/4	ANSI600-SW-S25C	20	
FLANGE	3/4	ANSI900-SW-S25C	2	
FLANGE	3/4	ANSI300-SO-RJ-S25C	2	
FLANGE	3/4	ANSI150-SO-RF-S25C	166	
FLANGE	3/4	JIS10K-SO-FF-SS41	70	
FLANGE	3/4	JIS10K-FCMB	2	
FLANGE	3/4	ANSI600-WN-RF-S25C	16	
FLANGE	3/4	ANSI125-FF-S20C	2	
FLANGE	3/4	ANSI1500-WN-RJ-S25C	19	
FLANGE	3/4	ANSI600-WN-RJ-S25C	17	
FLANGE	3/4	ANSI300-WN-RF-S25C	4	
FLANGE	3/4	ANSI125-SO-FF-SS41	120	
FLANGE	3/4	ANSI900-WN-RJ- A182F1	53	
FLANGE	1	ANSI900-WN-RJ-S25C	8	
FLANGE	1	ANSI150-SO-RF-SS41	30	
FLANGE	1	ANSI125-SO-FF-SS41	34	
		140		

FLANGE	1	ANSI300-SO-RF-S25C		
FLANGE	1	ANSI150-SO-RF- SUS304L	10	
FLANGE	1	ANSI150-SO-RF-S25C	83	
FLANGE	1	ANSI600-SW-S25C	13	
FLANGE	1	ANSI600-WN-RF-S25C	39	
FLANGE	1	ANSI300-SW-RF-S25C	80	
FLANGE	1	ANSI300-SO-RF-S25C  ANSI150-SO-RF-S25C  ANSI600-SW-S25C  ANSI600-WN-RF-S25C  ANSI300-SW-RF-S25C  ANSI300-SW-RF-A350LF1  ANSI300-SO-FF-SS41  ANSI150-SW-RF-S251  ANSI150-SCR'D-FF-FCMBGALV.  ANSI300-SW-RF-S25C  ANSI300-SW-RF-S25C  ANSI300-SCR'D-FF-FCMBGALV.	20	
FLANGE	1	ANSI300-SO-FF-SS41	6	
FLANGE	1	ANSI150-SW-RF-SS41	67	
FLANGE	1	ANSI150-SO-FF-SS41	100	
FLANGE	1	ANSI150-SCR'D-FF- FCMBGALV.	14	
FLANGE	1 1/2	ANSI300-SW-RF-S25C	10	
FLANGE	1 1/2	ANSI900-WN-RJ-S25C	51	
FLANGE	1 1/2	ANSI150-SW-RF-SS41	63	
FLANGE	1 1/2	ANSI125-SW-RF-SS41	2	
FLANGE	1 1/2	ANSI300-SO-RF- SUS304L	6	
FLANGE	1 1/2	ANSI150-SW-RF-S25C	18	
FLANGE	1 1/2	JIS10K-SO-RF-SS41	12	
FLANGE	1 1/2	ANSI600-WN-RF-S25C	30	
FLANGE	1 1/2	ANSI150-SO-FF-SS41	54	
FLANGE	1 1/2	ANSI150-SO-RJ-S25C	4	
		141		

FLANGE	1 1/2	ANSI150-SO-RF-S25C		
FLANGE	1 1/2	ANSI300-SO-RF-S25C	5	
FLANGE	1 1/2	ANSI125-FF-S20C	2	
FLANGE	1 1/2	ANSI1500-WN-RJ-S25C	70	
FLANGE	1 1/2	ANSI1500-WN-RF- S25C-9.5MM	4	
FLANGE	1 1/2	ANSI300-SO- RFA350LF1	4	
FLANGE	1 1/2	JIS10K-SO-FF-SS41	21	
FLANGE	1 1/2	ANSI150-SO-RF-S25C  ANSI150-SO-RF-S25C  ANSI125-FF-S20C  ANSI1500-WN-RJ-S25C  ANSI1500-WN-RF-S25C-9.5MM  ANSI300-SO-RFA350LF1  JIS10K-SO-FF-SS41  ANSI150-SCR'D-FF-FCMB GALV.  ANSI600-WN-RF-S25C  ANSI150-LOOSE-SS41  ANSI900-WN-RJ-S25C  ANSI300-SO-RF-S25C  ANSI300-SO-RF-S25C	75	
FLANGE	2	ANSI600-WN-RF-S25C	30	
FLANGE	2	ANSI150-LOOSE-SS41	9	
FLANGE	2	ANSI900-WN-RJ-S25C	8	
FLANGE	2	ANSI300-SO-RF-S25C	78	
FLANGE	2	ANSI150-SO-RF-SS41	138	
FLANGE	2	ANSI300-LOOSE-S25C	4	
FLANGE	2	ANSI300-LAP JOINT- SUS304L	13	
FLANGE	2	JIS10K-SO-RF-SS41	7	
FLANGE	2	ANSI1500-WN-RJ-S25C	47	
FLANGE	2	ANSI1500-SO-RF-S20C	4	
FLANGE	2	ANSI400-WN-RF-S25C	11	
FLANGE	2	ANSI400-WN-RJ-S25C	6	
FLANGE	2	ANSI150-SO-RF-S25C	181	

FLANGE	2	ANSI125-SO-FF-S20C		
FLANGE	2	ANSI150-SO-RJ-S25C	12	
FLANGE	2	ANSI300-SO-RF- A350F1	7	
FLANGE	2	ANSI150-WN-RF-S25C- 7MM	1	
FLANGE	2	ANSI300-SO-RF- S25C/BLIND	1	
FLANGE	2	ANSI900-WN-RJ- A182F1	8	
FLANGE	2	ANSI125-SO-FF-S20C  ANSI150-SO-RJ-S25C  ANSI300-SO-RF-A350F1  ANSI150-WN-RF-S25C-7MM  ANSI300-SO-RF-S25C/BLIND  ANSI900-WN-RJ-A182F1  ANSI150-LAP JOINT-SS41+SUS304  JIS10K-SO-FF-SS41  ANSI2500-A182GRF11  ANSI125-SO-FF-SUS304  ANSI125-SO-FF-SS41	12	
FLANGE	2	JIS10K-SO-FF-SS41	28	
FLANGE	2 1/2	ANSI2500-A182GRF11	4	
FLANGE	2 1/2	ANSI125-SO-FF- SUS304	5	
FLANGE	2 1/2	ANSI125-SO-FF-SS41	6	
FLANGE	2 1/2	ANSI150-SO-RF-SS41	6	
FLANGE	2 1/2	ANSI600-WN-RF-S25C	5	
FLANGE	2 1/2	ANSI300-SO-RF-S25C	4	
FLANGE	3	ANSI150-SO-FF-SS41	61	
FLANGE	3	ANSI400-WN-RF-S25C	7	
FLANGE	3	ANSI300-SO-RF-S25C	67	
FLANGE	3	ANSI300-LOOSE- SUS304	1	
FLANGE	3	ANSI300-LOOSE-S25C	8	
,	,	143		

FLANGE	3	ANSI300-LAP JOINT- S25C		
FLANGE	3	ANSI150-LOOSE-SS41	29	
FLANGE	3	ANSI300-LAP JOINT- S25C  ANSI150-LOOSE-SS41  ANSI150-LAP JOINT0SUS304  ANSI150-SO-RF-SS41  JIS10K-SO-FF-SS41  ANSI150-SO-RF-S25C  ANSI600-WN-RF-S20C  ANSI400-WN-RF-S20C  ANSI400-WN-RJ-S20C  ANSI1500-WN-RJ-S25C  ANSI300-SO-RF- A350LF1  ANSI150-LAP JOINT- SS41+SUS304	31	
FLANGE	3	ANSI150-SO-RF-SS41	124	
FLANGE	3	JIS10K-SO-FF-SS41	8	
FLANGE	3	ANSI150-SO-RF-S25C	150	
FLANGE	3	ANSI600-WN-RF-S20C	2	
FLANGE	3	ANSI400-WN-RF-S20C	2	
FLANGE	3	ANSI400-WN-RJ-S20C	6	
FLANGE	3	ANSI1500-WN-RJ-S25C	19	
FLANGE	3	ANSI300-SO-RF- A350LF1	11	
FLANGE	3	ANSI150-LAP JOINT- SS41+SUS304	16	
FLANGE	4	ANSI1500-A182GRF11	6	
FLANGE	4	ANSI1500-WN-RJ- A182F11	12	
FLANGE	4	ANSI400-WN-RF-S25C	9	
FLANGE	4	ANSI150-SO-FF-SS41	57	
FLANGE	4	ANSI400-SO-FF-SS41	3	
FLANGE	4	ANSI600-WN-RJ-S25C	3	
FLANGE	4	ANSI300-SO-RF-SS41	3	
FLANGE	4	ANSI150-SO-RF-SS41	36	
		144		

FLANGE	4	ANSI300-LOOSE-S25C	
FLANGE	4	ANSI300-LAP JOINT- S25C	12
FLANGE	4	ANSI150-LOOSE-SS41	13
FLANGE	4	ANSI300-LAP JOINT- SS41	6
FLANGE	4	ANSI150-SO-RF-S25C	101
FLANGE	4	ANSI150-LAP JOINT- SUS304L	9
FLANGE	4	ANSI300-LAP JOINT- SUS304	3
FLANGE	4	ANSI600-WN-RF-S25C	3
FLANGE	4	ANSI300-SO-RF-S25C	67
FLANGE	4	ANSI300-SW-RF- A350F1	2
FLANGE	4	ANSI300-LOOSE-S25C  ANSI300-LAP JOINT-S25C  ANSI150-LOOSE-SS41  ANSI300-LAP JOINT-SS41  ANSI150-SO-RF-S25C  ANSI150-LAP JOINT-SUS304L  ANSI300-LAP JOINT-SUS304  ANSI600-WN-RF-S25C  ANSI300-SO-RF-S25C  ANSI300-SO-RF-A350F1  ANSI300-SO-RF-A350F1	35
FLANGE	4	ANSI150-WN-RF-S25C- 11.5MM	1
FLANGE	4	ANSI150-SO-RF- A350LF1	5
FLANGE	4	JIS10K-SO-FF-SS41	70
FLANGE	5	ANSI150-LOOSE-S25C	2
FLANGE	5	ANSI150-SO-RF-S25C	3
FLANGE	6	ANSI900-WN-RJ-S25C	21
FLANGE	6	ANSI300-WN-RF-S25C	14
FLANGE	6	ANSI150-SO-RF-SS41	46
		145	

FLANGE	6	ANSI400-WN-RF-S25C		
FLANGE	6	ANSI300-LOOSE-S25C	5	
FLANGE	6	ANSI300-LAP JOINT- SUS304L	5	
FLANGE	6	ANSI150-LOOSE-SS41	10	
FLANGE	6	ANSI400-WN-RF-S25C  ANSI300-LOOSE-S25C  ANSI300-LAP JOINT-SUS304L  ANSI150-LOOSE-SS41  ANSI150-LAP JOINT-SUS304  JIS10K-SO-RF-SS41  ANSI600-WN-RF-S25C  ANSI300-SO-RF-S25C  ANSI600-WN-RF-SUS304  JIS10K-SO-RF-SS41  ANSI600-WN-RF-S25C  ANSI600-WN-RF-SUS304  ANSI600-WN-RF-SUS304  ANSI600-WN-RF-SUS304	10	
FLANGE	6	JIS10K-SO-RF-SS41	9	
FLANGE	6	ANSI600-WN-RF-S25C	4	
FLANGE	6	ANSI300-SO-RF-S25C	15	
FLANGE	6	ANSI600-WN-RF- SUS304	6	
FLANGE	6	JIS10K-SO-RF-SS41	20	
FLANGE	6	ANSI150-SO-RF-S25C	28	
FLANGE	6	ANSI300-SO-RF- A350F1	24	
FLANGE	6	ANSI2500-WN-RJ- A182F22	1	
FLANGE	6	ANSI150-WN-RF-S25C- 16.5MM	4	
FLANGE	6	ANSI150-SO-FF-SS41	55	
FLANGE	6	ANSI900-WN-RJ- A182F1	2	
FLANGE	6	ANSI1500-WN-RJ-S25C	4	
FLANGE	8	ANSI900-WN-RJ-S25C	6	
FLANGE	8	ANSI400-WN-RF-S25C	2	
			_	

	8	ANSI900-WN-RJ-S30C	<u> </u>
FLANGE	8	ANSI300-SO-RF-S25C	29
FLANGE	8	ANSI150-SO-RF-SS41	25
FLANGE	8	ANSI400-SO-RF-SS41	2
FLANGE	8	ANSI150-LOOSE-S25C	8
FLANGE	8	ANSI150-LAP JOINT- SUS304L	8
FLANGE	8	ANSI150-SO-LOOSE- SS41	3
FLANGE	8	ANSI900-WN-RJ-S30C  ANSI300-SO-RF-S25C  ANSI150-SO-RF-SS41  ANSI400-SO-RF-SS41  ANSI150-LOOSE-S25C  ANSI150-LAP JOINT-SUS304L  ANSI150-SO-LOOSE-SS41  ANSI150-SO-LOOSE-SS41  ANSI150-SO-LAP JOINT-SUS304  ANSI300-LOOSE FLANGE-S25C	3
FLANGE	8	ANSI300-LOOSE FLANGE-S25C	4

ITEM	SIZE	MAT	× • •	
	(INCH)			
FLANGE	8	ANSI300-LAP JOINT- SUS304L	2	
FLANGE	8	ANSI2500-WN-RJ-S25C	8	
FLANGE	8	ANSI400-WN-RF- A182LF1	4	
FLANGE	8	ANSI300-WN-RF- A182LF1	2	
FLANGE	8	ANSI300-LAP JOINT-SUS304L  ANSI2500-WN-RJ-S25C  ANSI400-WN-RF-A182LF1  ANSI300-WN-RF-A182LF1  ANSI900-WN-RJ-A182LF1  ANSI1500-WN-RJ-S25C  ANSI600-WN-RF-S25C  JIS10K-SO-FF-SS41  ANSI150-SO-RF-S25C	10	
FLANGE	8	ANSI1500-WN-RJ-S25C	4	
FLANGE	8	ANSI600-WN-RF-S25C	12	
FLANGE	8	JIS10K-SO-FF-SS41	36	
FLANGE	8	ANSI150-SO-RF-S25C	22	
FLANGE	8	JIS10K-SO-FF-SS41	6	
FLANGE	8	ANSI150-SO-RF- A350LF1	8	
FLANGE	8	ANSI400-WN-RF-S25C	12	
FLANGE	8	ANSI150-SO-FF-SS41	18	
FLANGE	10	ANSI150-LOOSE-SS41	7	
FLANGE	10	ANSI150-SO-RF-SS41	52	
FLANGE	10	ANSI300-LOOSE-S25C	4	
FLANGE	10	ANSI300-LAP JOINT- SUS304L	4	
FLANGE	10	ANSI150-LAP JOINT-	4	
		148		

FLANGE	10	ANSI1500-WN-RJ-S25C	9	
FLANGE	10	ANSI300-SO-RF-S25C	20	
FLANGE	10	ANSI2500-WN-RJ-S25C	4	
FLANGE	10	ANSI150-SO-RF-S25C	16	
FLANGE	10	ANSI900-WN-RJ-S25C	1	
FLANGE	10	ANSI1500-WN-RJ-S25C  ANSI2500-WN-RJ-S25C  ANSI2500-WN-RJ-S25C  ANSI150-SO-RF-S25C  ANSI150-LAP JOINT-SS41+SUS304  ANSI600-WN-RF-S25C  ANSI300-WN-RF-A182F1  ANSI900-WN-RJ-A182F1  JIS10K-SO-FF-S20C  ANSI300-SO-RF-S25C  ANSI300-SO-RF-S25C	16	
FLANGE	10	ANSI600-WN-RF-S25C	2	
FLANGE	10	ANSI300-WN-RF- A182F1	2	
FLANGE	10	ANSI900-WN-RJ- A182F1	6	
FLANGE	10	JIS10K-SO-FF-S20C	8	
FLANGE	12	ANSI300-SO-RF-S25C	3	
FLANGE	12	ANSI150-SO-FF-SS41	18	
FLANGE	12	ANSI125-SO-FF-SS41	6	
FLANGE	12	ANSI900-WN-RF-S25C	3	
FLANGE	12	ANSI400-WN-RF-S25C	6	
FLANGE	12	ANSI300-LOOSE-S25C	8	
FLANGE	12	ANSI300-LAP JOINT- SUS304L	8	
FLANGE	12	ANSI150-SO-RF-SS41	16	
FLANGE	12	ANSI150-SO-RF-S25C	4	
FLANGE	12	ANSI900-WN-RJ-S25C	3	
,		149		

FLANGE	12	JIS10K-SO-FF-SS41	
FLANGE	12	ANSI300-SO-FF-SS41	2
FLANGE	12	ANSI1500-WN-RJ-S25C	2
FLANGE	12	ANSI900-WN-RJ- A182F1	4
FLANGE	14	ANSI300-SO-RF-SS41	9
FLANGE	14	JIS10K-SO-FF-SS41  ANSI300-SO-FF-SS41  ANSI1500-WN-RJ-S25C  ANSI900-WN-RJ-A182F1  ANSI300-SO-RF-SS41  ANSI300-LINING-SS41-SUS304L  ANSI150-LINING-SS41-SUS304L  ANSI300-SO-RF-S25C  ANSI150-SO-RF-S25C  ANSI150-LINING-SS41-SUS304  JIS10K-SO-FF-SS41	3
FLANGE	14	ANSI150-LINING-SS41- SUS304L	1
FLANGE	14	ANSI300-SO-RF-S25C	11
FLANGE	14	ANSI150-SO-RF-SS41	3
FLANGE	14	ANSI300-WN-RJ-S25C	2
FLANGE	14	ANSI150-LINING-SS41- SUS304	3
FLANGE	14	JIS10K-SO-FF-SS41	45
FLANGE	14	ANSI300-WN-RF-S25C	6
FLANGE	14	ANSI150-SO-RF-S25C	14
FLANGE	14	ANSI300-SO-RF- A350LF1	2
FLANGE	14	ANSI400-WN-RF-S25C	4
FLANGE	14	ANSI400-WN-RF- A182F1	3
FLANGE	14	JIS5K-SO-FF-SS41	6
FLANGE	16	ANSI900-WN-RF-S25C	3
FLANGE	16	ANSI600-WN-RF-S25C	20
		150	

FLANGE	16	ANSI300-WN-RF- A182F1		
FLANGE	16	ANSI300-SO-RF-S25C	13	
FLANGE	16	ANSI150-SO-RF-SS41	14	
FLANGE	16	ANSI300-WN-RF-S25C  ANSI300-SO-RF-S25C  ANSI300-LINING-S25C-SUS304L  ANSI300-LINING-SS41-SUS304L-  ANSI150-LINING-SS41-SUS304L-  ANSI150-LINING-SS41-SUS304  ANSI400-WN-RF-A182LF1  JIS10K-SO-FF-SS41  ANSI300-SO-RF-S25C  ANSI600-WN-RF-S25C	3	
FLANGE	16	ANSI300-LINING-SS41- SUS304L	3	
FLANGE	16	ANSI150-LINING-SS41- SUS304L-	4	
FLANGE	16	ANSI150-LINING-SS41- SUS304	5	
FLANGE	16	ANSI400-WN-RF- A182LF1	8	
FLANGE	16	JIS10K-SO-FF-SS41	6	
FLANGE	18	ANSI150-SO-RF-SS41	14	
FLANGE	18	ANSI300-SO-RF-S25C	19	
FLANGE	18	ANSI600-WN-RF-S25C	8	
FLANGE	18	ANSI300-LINING-S25C- SUS304L	4	
FLANGE	18	ANSI150-LINING-SS41- SUS304L	3	
FLANGE	18	ANSI150-SO-RF-S25C	2	
FLANGE	18	ANSI150-SO-FF-0S25C	6	
FLANGE	18	ANSI300- S25C+SUS304L-LINING	2	
FLANGE	18	ANSI900-WN-RJ- A182F1	1	
		151		

FLANGE	20	ANSI150-SO-RF-SS41		
FLANGE	20	ANSI300-WN-RF	6	
FLANGE	20	ANSI150-SO-RF-SS41  ANSI300-WN-RF  ANSI150-LINING-SS41-SUS304L  JIS10K-SO-FF-SS41  ANSI150-SO-FF-S25C  ANSI150-SO-FF-SS41  ANSI300-WN-RF-S25C  ANSI150-SO-RF-SS41  ANSI150-LINING-SS41-SUS304  ANSI150-SO-RF-S25C  ANSI150-SO-RF-S25C  ANSI150-SO-RF-SS41  ANSI150-SO-RF-SS41  ANSI150-SO-RF-SS41	1	
FLANGE	20	JIS10K-SO-FF-SS41	16	
FLANGE	20	ANSI150-SO-FF-S25C	2	
FLANGE	24	ANSI150-SO-FF-SS41	2	
FLANGE	24	ANSI300-WN-RF-S25C	1	
FLANGE	28	ANSI150-SO-RF-SS41	3	
FLANGE	30	ANSI150-LINING-SS41- SUS304	1	
FLANGE	30	ANSI150-SO-RF-S25C	3	
FLANGE	30	ANSI150-SO-RF-SS41	1	
FLANGE	36	ANSI150-SO-RF-S25C	2	
FLANGE	36	ANSI125-SO-RF-SS41	1	
САР	1 1/2	S25C-SCH80-SW	28	
CAP	1	S25C-SCH80-SW	29	
CAP	2	STPG38-SCH40-BW	21	
CAP	3	STPG38-SCH40-BW	12	
CAP	4	STPG38-SCH40-BW	24	
CUP	1 1/2	S25C-SCH80-SW	4	
CUP	1/2	S25C-SCH80-SW	8	
CUP	1/2	FCMB GALV	6	
CUP	3/4	FCMB GALV.	4	

ITEM	SIZE	MATERIAL  S25C SCH80 FCMB-3.2mm* 2.8mm, SCRD STPG38-SCH80 S25C-SW-SCH80 S25C-SW-SCH160 S25C-SW-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPT 42-SCH160 SUS304-SCH105 SUS304-SW-SCH160 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPG38-SCH40 STPT38-SCH80 SUS304-SCH105 SUS304-SCH105 SUS304-SCH105 SUS304-SCH106	QTY
	INCH		
REDUCER	1 * ½	S25C SCH80	8
REDUCER ER	1 * ½	FCMB-3.2mm* 2.8mm, SCRD	14
REDUCER CR	1* 3/4	STPG38-SCH80	2
REDUCER ER	1 * 3/4	S25C-SW-SCH80	3
REDUCER CR	1 * 3/4	S25C-SW-SCH160	31
REDUCER	1 * 3/4	S25C-SW-SCH80	9
KEDUCEK	1 * 3/4	S1PG38-SW-SCH40	11
KEDUCER CR	1 1/2 * 1	\$1PG38-SCH40	25
KEDUCER CR	1 ½ * 1	STPT 42 SCH160	14
KEDUCER CR	1 ½ * 1	S1P1 42-SCH160	3
REDUCER CR	1 ½ * 1	SUS304-SCH105	4
REDUCER CR	3/4 * 1/2 2 * 3/	SUS304-SW-SCH100	3
REDUCER ER	2 * 3/4	STPG38-SCH40	22
REDUCER ER	2 * 1 ½	STPG38-SCH40	12
REDUCER CR	2 * 1 ½	SCD 2 9mm*2 5mm	13
REDUCER ER	2 * 1 /2	SUP-3.3HIIII S.3HIIII	2
REDUCER ER	2 * 1 72	STP130-3CH40	0
REDUCER DEDITCED CD	2 * 1	S112304 SCH00	3
PEDUCER CR	2 * 1 72	SUS304-SCH105	23
REDUCER CR	$\frac{2 * 1 ? 2}{2 * 1 ! / 2}$	SUS304-SCH160	3
REDUCER CR	2 * 1	STPG38-SCH40	15
REDUCER CR	$\frac{2 + 1}{2 * 1 \frac{1}{2}}$	STPG38-SCH 60	1
REDUCER ER	2 * 1	STPG38-SCH40	15
REDUCER	1 1/2 * 1	STPT38-SCH80	10
REDUCER	$\frac{1}{1}$ $\frac{1}{2}$ * 1	FCMB	6
REDUCER ER	1 1/2 * 1	STPG38-SCH40	9
REDUCER ER	2 1/2 * 2	STPG38-SCH40	5
REDUCER CR	$\frac{2^{1/2}}{2^{1/2}} * 1$	STPG38-SCH40	3
REDUCER ER	2 ½ 1	STPG38-SCH40	8
REDUCER	3/4 * 1/2	SGP GALV.	4
REDUCER	3/8 * 1/2	S25C-SW-SCH80	15
REDUCER ER	3/4 * 1/2	S25C-SW-SCH80	5
REDUCER ER	3 * 2	STPT38-SCH40	8
REDUCER CR	3 * 2	STPG38-SCH40	8
REDUCER CR	3 * 1 ½	SUS304-SCH40	17
REDUCER CR	3 * 1	STPG38-SCH40	21

REDUCER ER	3 * 1/2	HITEN55-S-8.5mm	1
REDUCER ER	3/8 * 3/4	STPG38-SCH80	1
REDUCER ER	3 * 2	AS-2-6.5 mm*4.5mm	2
REDUCER CR	3 * 1/2	HITEN55-S-8.5mm	1
REDUCER	3 * 1 ½	STPG38-SCH40	2
REDUCER ER	3 * 2	SGP GALV4.2mm	5
REDUCER ER	3 * 1 ½	SGP-4.2 mm	2
REDUCER	3 * 2 ½	STPT38-SCH40	3
REDUCER	3 * 2	STPG38-SCH40	28
REDUCER	3 * 2 ½	SUS304-3 mm	5
REDUCER	4 * 2 ½	STPT38-SCH40	1
REDUCER ER	4 * 2	STPT38-SCH40	4
REDUCER CR	4 * 2 ½	STPG38-SCH40	3
REDUCER ER	4 * 3	HITEN55-S-8.5mm  STPG38-SCH80  AS-2-6.5 mm*4.5mm  HITEN55-S-8.5mm  STPG38-SCH40  SGP GALV4.2mm  SGP-4.2 mm  STPT38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG38-SCH40  STPG-SCH40  STPG-SCH40  STPG-SCH40  STPG-SCH40  STPG-SCH40  STPG-SCH40  STPG38-SCH40  STPG-SCH40  STPG-SCH40  STPG-SCH40  STPG-SCH40  STPG-SCH40  STPG-SCH40  STPG-SCH40  STPL39-SCH40  STPL39-SCH40  STPL39-SCH40  STPL39-SCH40  STPL39-SCH40  STPT38-SCH40  STPT38-SCH120  STPT38-SCH120	12
REDUCER CR	4 * 3	STPG38 –SCH40	5
REDUCER ER	4 * 2	STPG-SCH80	2
REDUCER CR	4 * 2	STPA12-SCH80	2
REDUCER ER	4 * 2	STPG38-SCH40	2
REDUCER CR	4 * 3	SUS304-SCH105	2
REDUCER CR	4 * 2	STPG-SCH40	6
REDUCER ER	4 * 2 ½	STPL39-SCH40	4
REDUCER ER	4 * 3	STPL39-SCH40	5
REDUCER CR	4 * 1	STPL39-SCH40	1
REDUCER	4* 3	SGP 2mm	2
REDUCER ER	4 * 3	STPT38-SCH40	8
REDUCER	6 * 4	STPT38-SCH120	12
REDUCER	6 * 5	STPT38-SCH120	4
REDUCER	6 * 4	SGP-5 mm	4
REDUCER	6 * 4	STPT38-SCH40	2
REDUCER ER	6 * 2	SGP-5mm*3.8mm	4
REDUCER ER	6 * 4	STPL39-SCH40	2
REDUCER ER	6 * 3	STPG38-SCH40	12
REDUCER ER	6 * 4	SUS304L-15 mm	1
REDUCER CR	6 * 4	STPG38-SCH40	26
REDUCER ER	6 * 5	STPG-SCH40	3
REDUCER	6 * 8	STPG38-SCH40	2
REDUCER	6 * 10	STPT38-SCH40	2
REDUCER ER	8 * 4	SGP-5.8 mm*4.5 mm	2
REDUCER	8 * 6	STPL39-SCH20	2
REDUCER	8 * 4	STPT38-SCH40	2
REDUCER	8 * 6	STPT38-SCH40	6
REDUCER	8 *5	SUS304L-4 mm	3
REDUCER ER	8 * 6	SUS304L-6.5mm*5mm	2
REDUCER ER	8 * 6	SUS304L-6.5mm*5mm	2

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REDUCER ER	8 * 6	STPG38-SCH80	2
REDUCER ER	8 * 4	STPG38-SCH40	11
REDUCER ER	8 * 6	STPG38-SCH40	2
REDUCER	10 * 6	SUS304-4mm*3mm	4
REDUCER	10 * 8	STPT38-SCH40	1
REDUCER ER	10 * 8	STPG38-SCH80	1
REDUCER ER	10 * 6	STPG38-SCH40	1
REDUCER ER	10 * 2	STPG38-SCH80	1
REDUCER	10 * 8	STPA12-SCH80	1
REDUCER	12 * 6	STPG38-SCH40	1
REDUCER CR	14 * 12	STPG38-SCH40	1
REDUCER	12 * 8	STPA12-6 mm	1
REDUCER ER	12 * 10	STPT38-SCH40	2
REDUCER ER	12 * 10	SGP-6.9 mm*6.6mm	3
REDUCER	12 * 8	STPT38-SCH40	1
REDUCER ER	12 * 10	STPG38-SCH40	3
REDUCER	14 * 12	STPG38-SCH80	3
REDUCER	14 * 8	SGP-7.9mm	3
REDUCER ER	14 * 12	SUS304L-8mm*6.5mm	1
REDUCER ER	14 * 10	STPA12-SCH 40	1
REDUCER	16 * 10	SM41B-25mm	3
REDUCER	16 * 6	SM41B-6 mm	1
REDUCER	16 * 14	STPA12-SCH20	3
REDUCER ER	16 * 12	SUS304L-9mm*6.5mm	4
REDUCER ER	16 * 10	SUS304L-9mm* 6.5mm	2
REDUCER	16 * 14	SM41B-6mm-SCH20	1
REDUCER ER	16 * 12	STPY41-7.9mm* 6.9mm	2
REDUCER ER	16 * 12	SGP-7.9mm*6.9mm	1
REDUCER	18 * 16	SGP-7.9mm	1
REDUCER	18 * 12	SM41B-11.1mm	1
REDUCER	18 * 12	SGP-7, 9mm	1
REDUCER CR	18 * 14	SUS304L-6mm*4.5mm	2
REDUCER	18 *14	SM41B-6mm-SCH20	1
REDUCER CR	20 * 18	SUS304L-6mm	1
REDUCER	20 * 12	SS41-7.9mm	1
REDUCER ER	24 * 10	SGP-7.9mm	1
REDUCER	24 * 16	SGP-7.9 mm	1
REDUCER	24 * 18	SGP-7.9 mm	1
REDUCER ER	30 * 24	SUS304-6mm	1
REDUCER	30 * 24	SM41B-6mm	1
REDUCER	40 * 24	SGP	1
REDUCER ER	48 * 36	SM41B-11mm	2
REDUCER	216.3*16	A106 GRA	1

# **EXPANSION JOINTS**

	DESCRIPTION	QTY	REMARK
1	EXPANSION JOINT, JAVICO SLIP ON TYPE	1	D38
	COUPLING STYLE: $101-60$ , OD = $1524$		
	WITH		
	SLEEVE, MATERIAL JIS SS41	1	
	FLANGE, = =	2	
	RUBBER RING NBR	2	
	BOLTS NUTS, SS41	2	
2	EXPANSION JOINT, JAVICO SLIP ON TYPE	1	037
	COUPLING STYLE: 101-30", OD= 762		
	TP: 10 Kg/cm2		
	WITH		
	SLEEVE, MATERIAL SS41	1	
	FLANGE = =	2	
	RUBBER RINGS NBR	2	
	BOLTS NUTS JIS SS41 (M16 X 260 mm)	16	
3	EXPANSION JOINT, JAVICO SLIP ON TYPE	1	DWG.J74-037
	COUPLING STYLE: 101-36", OD= 914.4		

Bababa	8 <mark>484696969696969</mark> 59 <mark>696</mark>	abababababa	isaisaisaisaisaisaisaisaisaisaisaisaisai
	WITH		
	SLEEVE MATERIAL SS41	1	
	FLANGE = =	2	
	RUBBER RING NBR	$\frac{1}{2}$	
	BOLTS NUTS JIS SS41 (M16 X 260 mm)	18	
	,		
4	EXPANSION JOINT, EXJ-MA TYPE	1	DWG.SS-431120-
	NOMINAL DIA=18", ASSEMBLY L=430 mm		159
	SET L=430 mm, DESIGN PRESS= 600 mmHg		
	DESIGN TEMP. = 70~120 C,		
	COMRESSION=20 mm		
	WITH		
	FLANGE, ANSI 150-RF-SO-SS41	2	
	END PIPE, STPG 38,SCH 30 18"	2	
	INNER SLEEVE SS41	1	
	BELLOWS, SUS304 70x 2	1	
	SET FITTING SS41	8	
	SETTING BOLTS SS41 (M16 X 410 mm)	4 SET	
	DECODIDE	OT)/	DEMARK
	DESCRIPTION	QTY	REMARK
5		QIT	
5	EXPANSION JOINT – TYPE EXJ-RA	QIT	DWG.KE-1395
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE	QIY	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP	QIY	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN	QIY	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE	QIY	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE	QIY	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE RETAINING RING: SS41		
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE RETAINING RING: SS41 FOR SIZE = 6"	2	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE RETAINING RING: SS41 FOR SIZE = 6" 8"	2 6	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE RETAINING RING: SS41 FOR SIZE = 6" 8" 10"	2 6 10	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE RETAINING RING: SS41 FOR SIZE = 6" 8" 10" 12"	2 6 10 4	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE RETAINING RING: SS41 FOR SIZE = 6" 8" 10" 12" 14"	2 6 10 4 12	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE RETAINING RING: SS41 FOR SIZE = 6"  8" 10" 12" 14" 16"	2 6 10 4 12 5	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE RETAINING RING: SS41 FOR SIZE = 6"  8" 10" 12" 14" 16" 18"	2 6 10 4 12 5 8	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE RETAINING RING: SS41 FOR SIZE = 6" 8" 10" 12" 14" 16" 18" 20"	2 6 10 4 12 5 8	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE RETAINING RING: SS41 FOR SIZE = 6"  8" 10" 12" 14" 16" 18" 20" 24"	2 6 10 4 12 5 8	
5	EXPANSION JOINT – TYPE EXJ-RA RUBBER EXPANSION JOINT Z ARCH TYPE INSIDE COVER RUBBER MATERIAL: NEOP REINFORCING DUCK: VINYLAN REIN FORCING WIRE: WIRE ROPE OUT SIDE COVER RUBBER: NEOPRENE RETAINING RING: SS41 FOR SIZE = 6" 8" 10" 12" 14" 16" 18" 20"	2 6 10 4 12 5 8 8 6	

#### Gasket

SEQ.	Description	QTY
1	GASKET (SHEETS)	(PC'S)
1	ASBESTOS (ANTI CORROSIVE) 1600MM *1600MM 3.2 TH'K	250
	ASBESTOS (ANTI CORROSIVE) 1000MM *1000MM = 3.2 TH K ASBESTOS (ANTI CORROSIVE) 1600MM *1600MM = 1.6 TH'K	180
	ASBESTOS (ANTI CORROSIVE) 1000MM *1000MM 1.0 TH K ASBESTOS (ANTI CORROSIVE) 1000MM *1000MM 3.2 TH'K	420
	Asbestos (anti corrosive) 1000mm *1000mm 5.2 1H K  Asbestos (anti corrosive) 1000mm *1000mm 1.6 th'k	120
	ASBESTOS (ANTI CORROSIVE) 1000MM *1000MM 1 TH'K	100
	· · · · · · · · · · · · · · · · · · ·	
		150 150
	REINFORCED EPT SUBBER 1000MM *1000MM 1.6 TH'K WHITE TEFLON 1600MM *1000MM 3.2 TH'K	100
		50
	WHITE TEFLON 1000MM *1000MM 1.6 TH'K	50
2	OCT. RING ANSI1500 SOFT STEEL VALQUA 550SEQ.	
	8"	26
	6"	128
	4"	56
	3"	124
	2"	136
	1"	142
	3/4"	235
	1/2"	220
	1 1/2"	68
	10"	51
	20"	20
3	OCT. RING ANSI 900 SOFT STEEL VALQUA 550SEQ.	
	1/2"	240
	3/4"	190
	1"	200
	1 1/2"	264
	2"	177
	3"	52
	4"	80
	6"	102
	8"	100
	10"	68
	12"	72
	14"	68
4	OCT. RING ANSI 2500 SCR- 1/2 MO VALQUA 554SEQ.	
	1/2"	50
	1"	50
	6"	44
	10"	52
	12"	26

OCT. RING ANSI 2500 SOFT STEEL VALQUA 550SEQ.  1/2" 2 1/2" 3" 6" 8" SPIRAL WOUND GASKET  SBESTOS WITH SUS304 VALOUA 596SEO. SP-WD ANSI 600	150 12 80
1/2" 2 1/2" 3" 6" 8" SPIRAL WOUND GASKET SPESTOS WITH SUS304 VALOUA 596SEO. SP-WD ANSL 600	150 12 80
2 1/2 3" 6" 8" SPIRAL WOUND GASKET SPESTOS WITH SUS304 VALOUA 596SEO. SP-WD ANSI 600	80
6" 8" SPIRAL WOUND GASKET SPESTOS WITH SUS304 VALOUA 596SEO. SP-WD ANSI 600	
8" SPIRAL WOUND GASKET SBESTOS WITH SUS304 VALOUA 596SEO, SP-WD ANSI 600	30
SPIRAL WOUND GASKET SPESTOS WITH SUS304 VALOUA 596SEO, SP-WD ANSI 600	30
SBESTOS WITH SUS304 VALOUA 596SEO SP-WD ANSI 600	
1/2"	670
1/2" 3/A"	270
1"	180
1 1/2"	158
2"	100
3"	18
4" «"	126
υ 8"	120
10"	26
16"	236
18"	14
PIRAL WOUND GASKET WITH SUS304 HOOPS WITH ASBESTOS FILLER VALQUA596	
1/A"	286
1/2"	2730
3/4"	2440
1"	474
1 1/2"	1324
2"	316
5 Д"	422 385
<del>6</del> "	344
8"	372
10"	126
12"	164
14"	163
10" 18"	92 74
10 20"	80
20	1 00
	Description  DCT. RING ANSI 2500 SOFT STEEL VALQUA 550SEQ.  1/2" 2 1/2" 3" 6" 8" SPIRAL WOUND GASKET  SSBESTOS WITH SUS304 VALQUA 596SEQ. SP-WD ANSI 600  1/2" 3/4" 1" 1 1/2" 2" 3" 4" 6" 8" HO" 16' 18"  PIRAL WOUND GASKET WITH SUS304 HOOPS WITH ASBESTOS FILLER VALQUA596  NISI 400  1/4" 1/2" 3/4" 1" 1 1/2" 2" 3/4" 1" 1 1/2" 3/4" 1" 1 1/2" 2" 3" 4" 6" 6" 8" 10" 10" 11/4" 1/2" 1/4" 1/4" 1/4" 1/4" 1/4" 1/4" 1/4" 1/4

_		(PC'S)
	SPIRAL WOUND GASKET WITH SUS304 HOOPS, FILLER ASBESTOS VALQUA596 ANSI 300	
	3/4"	
	1/2"	54
	1"	200
	2"	200
	2 1/2"	200
	3"	40
	6"	139
	8"	80
	12"	68
	24"	25
	LENS GASKET	10
	NOTES	
	MATERIAL ASTM A182F 316L MODIFIED OR JIS 316L	
	MODIFIED (CL=0.03)	
	HARDNESS =NO. 160MAX. (BRINELL HARDDNESS)	
	MARKING= NOMINAL SIZE(EX. 3/4" OR 6" ETC)	
	DESIGN CONDITION:	
	300KG/CM ² AT 75 C	
	260 KG/CM ² AT 200 C	
	166 KG/CM ² AT 200 C	
	1/4"	
	1/4 1/2"	
	3/4"	300
	1"	120
	2"	50
	_	5
	3" 4"	30
		42
	6" 8"	36
	8	21
		33

NAME	SIZE		QTY
GATE	1/2	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	55
GATE	3	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	325
GATE	1	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	280
GATE	1 1/2	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	75
GATE	1/2	ANSI(150/125)-FCMB-13CR-UB-ISRS-SCR'D	342
GATE	3/4	ANSI(150/125)-FCMB-13CR-UB-ISRS-SCR'D	63
GATE	[1	ANSI(150/125)-FCMB-13CR-UB-ISRS-SCR'D	50
GATE	1 1/2	ANSI(150/125)-FCMB-13CR-UB-ISRS-SCR'D	30
GATE	2	ANSI(150/125)-FC20-13CR/FC20-BB/OS & Y-FF	5
GATE	4	ANSI(150/125)-FC20-13CR/FC20-BB/OS & Y-FF	3
GATE	2	JIS10K-FC20-13CR/FC20-BB/OS & Y -FF	121
GATE	1/2	JIS10K-FC20-13CR/FC20-BB/OS & Y -FF	36
GATE	3	JIS10K-FC20-13CR/FC20-BB/OS&Y-FF	75
GATE	4	JIS10K-FC20-13CR/FC20-BB/OS&Y-FF	26
GATE	6	JIS10K-FC20-13CR/FC20-BB/OS&Y-FF	80
GATE	8	JIS10K-FC20-13CR/FC20-BB/OS&Y-FF	30
GATE	10	JIS10K-FC20-13CR/FC20-BB/OS&Y-FF	30
GATE	12	JIS10K-FC20-13CR/FC20-BB/OS&Y-FF	6
GATE	14	JIS10K-FC20-13CR/FC20-BB/OS&Y-FF	40
GATE	16	JIS10K-FC20-13CR/FC20-BB/OS&Y-FF	20
BUTTER FLY	4	JIS10K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	15
BUTTER FLY	6	JIS10K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	12
BUTTER FLY	8	JIS10K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	12
BUTTER FLY	10	JIS10K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	20
BUTTER FLY	12	JIS10K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	12
BUTTER FLY	14	JIS10K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	15
BUTTER FLY	16	JIS10K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	11
BUTTER FLY	20	JIS10K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	30
BUTTER FLY	24	JIS10K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	14
BUTTER FLY	30	JIS10K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	10
BUTTER FLY	28	JIS10K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	6
BUTTER FLY	28	JIS5K-FC20-FCD RUBBER-F FOR FLANGELESS-FF	6
GLOBE	1/2	JIS10K-FCMB-13CR-UB/ISRS-SCR'D	325
GLOBE	3/4	JIS10K-FCMB-13CR-UN/ISRS-SCR'D	570
GLOBE	1	JIS10K-FCMB-13CR-UB/ISRS-SCR'D	148
GLOBE	1 1/2	JIS10K-FCMB-13CR-UB/ISRS-SCR'D	118
CHECK	4	JIS10K-FC20-13CR/FC20-BC/SWING-FF	15
CHECK	6	JIS10K-FC20-13CR/FC20-BC/SWING-FF	17
CHECK	10	JIS10K-FC20-13CR/FC20-BC/SWING-FF	12
GLOBE	1/2	ANSI(150/125)-FCMB-13CR-UB/ISRS-SCR'D	250
GLOBE	3/4	ANSI(150/125)-FCMB-13CR-UB/ISRS-SCR'D	50
GLOBE	1	ANSI(150/125)-FCMB-13CR-UB/ISRS-SCR'D	50
GLOBE	1.		50
GLOBE	4	JIS10K-FC20-13CR/FC20-BB/OS & Y-FF	26
GLOBE	1/4	API800-S25C-13CR-BB/OS&Y-SW	200
GLOBE	1/2	API800-S25C-13CR-BB/OS&Y-SW	850
GLOBE	3/4	API800-S25C-13CR-BB/OS&Y-SW	165

P1

NAME	750 572 850 80 600
GLOBE 11/2 API800-S25C-13CR-BB/OS&Y-SW GATE 1/2 API800-S25C-13CR-BB/OS&Y-SW GATE 1/4 API800-S25C-13CR-BB/OS&Y-SW GATE 3/4 API800-S25C-13CR-BB/OS&Y-SW GATE 1 API800-S25C-13CR-BB/OS&Y-SW GATE 1 1/2 API800-S25C-13CR-BB/OS&Y-SW GATE 1 1/2 API800-S25C-13CR-BB/OS&Y-SW GATE 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 3/4 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S25C-13CR/HFS-BB/OS&Y-SW GATE 3/4 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S20C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	572 850 80
GATE 1/2 API800-S25C-13CR-BB/OS&Y-SW GATE 3/4 API800-S25C-13CR-BB/OS&Y-SW GATE 1 API800-S25C-13CR-BB/OS&Y-SW GATE 1 API800-S25C-13CR-BB/OS&Y-SW GATE 1 1/2 API800-S25C-13CR-BB/OS&Y-SW GATE 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	850 80
GATE 3/4 API800-S25C-13CR-BB/OS&Y-SW GATE 1 API800-S25C-13CR-BB/OS&Y-SW GATE 1 1/2 API800-S25C-13CR-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 3/4 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S20C-13CR/HFS-BB/OS&Y-SW GATE 2 ANSI900-S20C-13CR/HFS-BB/OS&Y-BW(RJ) GATE 3 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	80
GATE 1/2 API800-S25C-13CR-BB/OS&Y-SW GATE 1 1/2 API800-S25C-13CR-BB/OS&Y-SW GATE 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW JPI600N-S25C-13CR/HFS-BB/OS&Y-SW JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	
GATE 1 1/2 API800-S25C-13CR-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 3/4 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW JPI600N-S25C-13CR/HFS-BB/OS&Y-SW JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 3 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 4 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	1000
GATE 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW JPI600N-S25C-13CR/HFS-BB/OS&Y-SW JPI600N-S25C-13CR/HFS-BB/OS&Y-SW JPI600N-S25C-13CR/HFS-BB/OS&Y-SW JPI600N-S25C-13CR/HFS-BB/OS&Y-SW JPI600N-S25C-13CR/HFS-BB/OS&Y-SW JPI600N-S25C-13CR/HFS-BB/OS&Y-SW JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 3 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	375
GATE 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 3/4 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 3 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 3 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	375
GATE 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 JPI600N-S25C-13CR/HFS-BB/OS&Y-SW GATE 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 3/4 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 3 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	88
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GATE 1/2 ANSi900-S30C-13CR/HFS-BB/OS&Y-SW GATE 3/4 ANSi900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 ANSi900-S30C-13CR/HFS-BB/OS&Y-SW GATE 1 1/2 ANSi900-S30C-13CR/HFS-BB/OS&Y-SW GATE 2 ANSi900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 3 ANSi900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSi900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSi900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 2 ANSi900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 4 ANSi900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSi900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	41
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GATE 1 1/2 ANSI900-S30C-13CR/HFS-BB/OS&Y-SW GATE 2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 3 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	28
GATE 2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 3 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 6 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 4 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	152
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GATE 6   ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)   10   ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)   GLOBE   2   ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)   GLOBE   10   ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)   10   ANSI900-SCPH2-13CR/HFS-BB/MATANA   ANSI900-SCPH2-13CR/HFS-BB/MATANA   ANSI900-SCPH2-13CR/HFS-BB/MATANA   ANSI900-SCPH2-13CR/HFS-BB/MATANA   ANSI900-SCPH2-13CR/HFS-BB/MATANA   ANSI900-SCPH2-13CR/HFS-BB/MATANA   ANSI900-SCPH	16
GATE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 4 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	32
GLOBE 2 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) GLOBE 4 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	10
GLOBE 4 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ) 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	34
GLOBE 10 ANSI900-SCPH2-13CR/HFS-BB/OS&Y-BW(RJ)	5
	18
	14
GLOBE 3 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	62
GLOBE 4 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	65
GATE 2 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	77
GATE 3 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	52
GATE 4 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	38
GATE 6 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	50
GATE 8 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	37
GATE 10 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	20
GATE 12 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	15
GATE 14 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	10
GATE 16 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	8
GATE 18 ANSI300-SCPH2-13CR/HFS-BB/OS&Y-RF(BW)	14
CHECK  2  ANSI300-SCPH2-13CR-BC/SWING-RF(BW)	42
CHECK 3 ANSI300-SCPH2-13CR-BC/SWING-RF(BW)	22
CHECK 6 ANSI300-SCPH2-13CR-BC/SWING-RF(BW)	28
CHECK 8 ANSI300-SCPH2-13CR-BC/SWING-RF(BW)	13
CHECK 10 ANSI300-SCPH2-13CR-BC/SWING-RF(BW)	5
CHECK 14 ANSI300-SCPH2-13CR-BC/SWING-RF(BW)	6
CHECK 16 ANSI300-SCPH2-13CR-BC/SWING-RF(BW)	9
CHECK 18 ANSI300-SCPH2-13CR-BC/SWING-RF(BW)	4
GATE  2  ANSI150-SCPH2-13CR-BB/OS&Y-RF	, 'I
GATE 1/2 ANSI150-SCPH2-13CR-BB/OS&Y-RF	144
GATE 3 ANSI150-SCPH2-13CR-BB/OS&Y-RF	
GATE 6 ANSI150-SCPH2-13CR-BB/OS&Y-RF P2	144 40 115

NAME	SIZE	MAT	QTY
GATE	8	ANSI150-SCPH2-13CR-BB/OS&Y-RF	29
GATE	10	ANSI150-SCPH2-13CR-BB/OS&Y-RF	65
GATE	12	ANSI150-SCPH2-13CR-BB/OS&Y-RF	19
GATE	4	ANSI150-SCPH2-13CR-BB/OS&Y-RF	128
GATE	16	ANSI150-SCPH2-13CR-BB/OS&Y-RF	20
GATE	18	ANSI150-SCPH2-13CR-BB/OS&Y-RF	17
CHECK	2	ANSI600-SCPH2-13CR-BC/SWING-BW(RF)	19
CHECK	3	ANSI600-SCPH2-13CR-BC/SWING-BW(RF)	30
CHECK	6	ANSI600-SCPH2-13CR-BC/SWING-BW(RF)	33
CHECK	10	ANSI600-SCPH2-13CR-BC/SWING-BW(RF)	10
CHECK	16	ANSI600-SCPH2-13CR-BC/SWING-BW(RF)	14
CHECK	3	ANSI400-SCPH2-13CR-BC/SWING-BW(RF)	12
CHECK	6	ANSI400-SCPH2-13CR-BC/SWING-BW(RF)	5
CHECK	12	ANSIA00-SCPH2-13CR-BC/SWING-BW(RF)	10
BUTTER FLY	6	JANSISOU-SUPHZ-TSUK-FLANGELESS	12
BUITERFLY	14	JANGISOO GODIIS 4900 ELANGELESS	6
BUTTER FLY	18	IANGIGUU-GUPTIZ-TIGUK-FLANGELESS	4
BULLEK FLY	4/0	ANDIZOU-AZT/YYCG-SUSSU4-FLANGELESS	15
GLOBE	1/2	ANGIARO ASENIEA CHESOACT PRICES CAN	44 50
GLODE	3/4	ANGHEOLASEOLET POUGUSET DE LOCAS POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRINCE POUS PRIN	50
CLOBE	1/2	ANGISTON A489E99 GIRGGAGT ANRIGGSV.CIM	27
GLOBE	1112	ANSI2500-A1021 22-50-50-451-ND/OS&Y-SW	30
GLOBE	1 1/2	ANSI2500-A162F22-50030431-ND/OSXY-SW	50
GATE	10	ANSI2500-A1021 22-00000401-11B/0001-011	10
GATE	12	ANSI2500-A217WCG/SCPH2-SUS304ST -PSR/OS&Y-RW(R.I)	7
GLOBE	2	ANSI300-SCPI 1-13CR/HES-BB/OS&Y-RE	30
GLOBE	3	IANSI300-SCPI 1-13CR/HES-BB/OS&Y-RE	26
GLOBE	4	ANSI300-SCPL1-13CR/HFS-BB/OS&Y-RF	30
GATE	2	ANSI300-SCS13-SUS304-BB/OS&Y-RF	55
GATE	3	MAT  ANSI150-SCPH2-13CR-BB/OS&Y-RF  ANSI150-SCPH2-13CR-BB/OS&Y-RF  ANSI150-SCPH2-13CR-BB/OS&Y-RF  ANSI150-SCPH2-13CR-BB/OS&Y-RF  ANSI150-SCPH2-13CR-BB/OS&Y-RF  ANSI150-SCPH2-13CR-BB/OS&Y-RF  ANSI150-SCPH2-13CR-BB/OS&Y-RF  ANSI600-SCPH2-13CR-BC/SWING-BW(RF)  ANSI600-SCPH2-13CR-BC/SWING-BW(RF)  ANSI600-SCPH2-13CR-BC/SWING-BW(RF)  ANSI600-SCPH2-13CR-BC/SWING-BW(RF)  ANSI600-SCPH2-13CR-BC/SWING-BW(RF)  ANSI600-SCPH2-13CR-BC/SWING-BW(RF)  ANSI600-SCPH2-13CR-BC/SWING-BW(RF)  ANSI600-SCPH2-13CR-BC/SWING-BW(RF)  ANSI600-SCPH2-13CR-BC/SWING-BW(RF)  ANSI600-SCPH2-13CR-BC/SWING-BW(RF)  ANSI600-SCPH2-13CR-BC/SWING-BW(RF)  ANSI600-SCPH2-13CR-FLANGELESS  ANSI300-SCPH2-13CR-FLANGELESS  ANSI300-SCPH2-13CR-FLANGELESS  ANSI300-SCPH2-13CR-FLANGELESS  ANSI1500-A250LF1-SUS304-FLANGELESS  ANSI1500-A250LF1-SUS304-FLANGELESS  ANSI1500-A250LF1-SUS304-FLANGELESS  ANSI1500-A250LF1-SUS304-FLANGELESS  ANSI2500-A217WCG-SUS304-FLANGELESS  ANSI2500-A217WCG-SUS304-FLANGELESS  ANSI2500-A182F22-SUS304-FLANGELESS  ANSI2500-A182F22-SUS304-FLANGELESS  ANSI2500-A217WCG/SCPH2-SUS304-FLANGELESS  ANSI2500-A217WCG/SCPH2-SUS304-FLANGELESS  ANSI300-SCPL1-13CR/HFS-BB/OS&Y-RF  ANSI300-SCPL1-13CR/HFS-BB/OS&Y-RF  ANSI300-SCS13-SUS304-BB/OS&Y-RF	25
GATE	4	ANSI300-SCS13-SUS304-BB/OS&Y-RF	15
GLOBE	2	ANSI300-SCS13-SUS304-BB/OS&Y-RF	33
GLOBE	3	ANSI300-SCS13-SUS304-BB/OS&Y-RF	25
GATE	2	ANSi150-SCS13-SUS304-BB/OS&Y-RF	75
GATE	3	ANSI150-SCS13-SUS304-BB/OS&Y-RF	80
GATE	4	ANSI150-SCS13-SUS304-BB/OS&Y-RF	30
GATE	6	ANSI150-SCS13-SUS304-BB/OS&Y-RF	26
GATE	8	ANSI150-SCS13-SUS304-BB/OS&Y-RF	26
GATE	10	ANSI150-SCS13-SUS304-BB/OS&Y-RF	27
GATE	14	ANSI150-SCS13-SUS304-BB/OS&Y-RF	5
GLOBE	1/2	ANSI150-SUS304-BB/OS&Y-SW	280
GLOBE	3/4	ANSI150-SUS304-BB/OS&Y-SW	90
GLOBE	1	ANSI150-SUS304-BB/OS&Y-SW	82
GLOBE	1 1/2	ANSI150-SUS304-BB/OS&Y-SW	42
GLOBE	1/2	JPI600N-S25C-13CR/HFS-BB/OS&Y-SW	85
GLOBE	3/4	JPI600N-S25C-13CR/HFS-BB/OS&Y-SW	250
P3			
		164	

NAME	SIZE		QTY
GLOBE	1	JPI600N-S25C-13CR/HFS-BB/OS&Y-SW	5
GLOBE	1 1/2	1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1	20
GLOBE	1/2	API800-A350LF1-13CR-BB/OS&Y-SW	60
GLOBE	3/4	API800-A350LF1-13CR-BB/OS&Y-SW	90
GLOBE	1	API800-A350LF1-13CR-BB/OS&Y-SW	100
GLOBE	1 1/2	API800-A350LF1-13CR-BB/OS&Y-SW	3
GATE	1/2	API800-A350LF1-13CR-BB/OS&Y-SW	66
GATE	1	API800-A350LF1-13CR-BB/OS&Y-SW	55
GATE	1 1/2	API800-A350LF1-13CR-BB/OS&Y-SW	18
GATE	2	ANSI300-SCPL1-13CR/HFS-BB/OS&Y-RF	33
GATE	3	ANSI300-SCPL1-13CR/HFS-BB/OS&Y-RF	30
GATE	4	ANSI300-SCPL1-13CR/HFS-BB/OS&Y-RF	30
GATE	6	ANSI300-SCPL1-13CR/HFS-BB/OS&Y-RF	4
GATE	14	ANSI300-SCPL1-13CR/HFS-BB/OS&Y-RF	17
GLOBE	1/2	ANSI1500-S30C-SUS304STNB/OS&Y-SW	50
GLOBE	3/4	ANSI1500-S30C-SUS304STNB/OS&Y-SW	95
GLOBE	1	ANSI1500-S30C-SUS304STNB/OS&Y-SW	50
GLOBE	1 1/2	ANSI1500-S30C-SUS304STNB/OS&Y-SW	28
CHECK	3	ANSI300-SCS13-SUS304-BB/OS&Y-RF	30
GATE	2	ANSI300-SCPH11-13CR/HFS-RF	30
GATE	8	ANSI300-SCPH11-13CR/HFS-RF	10
GATE	12	ANSI300-SCPH11-13CR/HFS-RF	
GLOBE	1/2	JPI600N-A182F1-13CR/HFS-BB/OS&Y-SW	60
GLOBE	3/4	JPI600N-A182F1-13CR/HFS-BB/OS&Y-SW	60
GLOBE	1	JPI600N-A182F1-13CR/HFS-BB/OS&Y-SW	20
GLOBE	1 1/2	JPI600N-A182F1-13CR/HFS-BB/OS&Y-SW	10
GATE	1/2	JPI600N-A182F1-13CR/HFS-BB/OS&Y-SW	60
GATE	3/4	JPI600N-A182F1-13CR/HFS-BB/OS&Y-SW	50
GATE	1 1/2	JPI600N-A182F1-13CR/HFS-BB/OS&Y-SW	
CHECK	3/4	ANSI300-SUS304-BC LIFT-SW	50
CHECK	1	ANSI300-SUS304-BC LIFT-SW	25
CHECK	1 1/2	ANSI300-SUS304-BC LIFT-SW	33
CHECK	4	ANSI300-SCPL1-13CR-BC SWING-RF	44
GLOBE	3	ANSI1500-A352LCB-SUS304STBB/OS&Y-SW	40
GLOBE	2	ANSI1500-A352LCB-SUS304STBB/OS&Y-SW	30
GLOBE	4	ANSI1500-A352LCB-SUS304STBB/OS&Y-SW	8
GATE	2	ANSI1500-A352LCB-SUS304STBB/OS&Y-BW(RJ)	27
GATE	3	ANSI1500-A352LCB-SUS304STBB/OS&Y-BW(RJ)	16
BATE	4	ANSI1500-A352LCB-SUS304STBB/OS&Y-BW(RJ)	10
SATE	6	ANSI1500-A352LCB-SUS304STBB/OS&Y-BW(RJ)	17
SATE	8	ANSI1500-A352LCB-SUS304STBB/OS&Y-BW(RJ)	15
IEEDLE	STATE OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY	ANSI900-S30C-SUS304-BB/OS&Y-BW(RJ)	10
IEEDLE	The State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the S	ANSI900-S30C-SUS304-BB/OS&Y-BW(RJ)	25
IEEDLE	1 1/2	ANSIGNO-SOC-SUSSOA PROGRAM DIAGO	44
GATE	2	ANSI900-S30C-SUS304-BB/OS&Y-BW(RJ) ANSI150-SCPL1-13CR-BB/OS&Y-RF	25
ATE	3	ANSI150-SCPL1-13CR-BB/OS&Y-RF	25
ATE		ANSI150-90FL1-130R-BB/008Y-RF	6
4		ANSI150-SCPL1-13CR-BB/OS&Y-RF	5

## AMMONIA VALVES

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NAME	SIZE	MAT	QTY
GATE	6	ANSI150-SCPL1-13CR-BB/OS&Y-RF	22
GATE	8	ANSI150-SCPL1-13CR-BB/OS&Y-RF	12
BUTTER FLY	2	ANSI150-SCS13-SUS304-FLANGELESS	28
BUTTER FLY	3	ANSI150-SCS13-SUS304-FLANGELESS	30
BUTTER FLY	10	ANSI150-SCS13-SUS304-FLANGELESS	7
GLOBE	4	ANSI150-SCPL1-13CR-BB/OS&Y-RF	14
GLOBE	1/2	ANSI300-SUS304-SUS304-BB/OS&Y-SW	89
GLOBE	3/4	ANSI300-SUS304-SUS304-BB/OS&Y-SW	58
GLOBE	1	ANSi300-SUS304-SUS304-BB/OS&Y-SW	30
GLOBE	1 1/2	ANSI300-SUS304-SUS304-BB/OS&Y-SW	50
GATE	1/2	ANSI300-SCS13-SUS304-BB/OS&Y-RF	55
GATE	3/4	ANSI300-SCS13-SUS304-BB/OS&Y-RF	58
GATE	1	ANSI300-SCS13-SUS304-BB/OS&Y-RF	30
GATE	1 1/2	ANSI300-SCS13-SUS304-BB/QS&Y-RF	57
GATE	1/2	ANSI150-SUS304-SUS304-BB/OS&Y-SW	60
GATE	3/4	ANSI150-SUS304-SUS304-BB/OS&Y-SW	180
GATE	1	ANSI150-SUS304-SUS304-BB/OS&Y-SW	77
GATE	1 1/2	ANSI150-SUS304-SUS304-BB/OS&Y-SW	48
CHECK	2	ANSI150-SCS13-SUS304-BC SWING-RF	13
CHECK	3	ANSI150-SCS13-SUS304-BC SWING-RF	46
CHECK	8	ANSI150-SCS13-SUS304-BC SWING-RF	20
CHECK	16	ANSI150-SCS13-SUS304-BC SWING-RF	20
CHECK	10	ANSI150-SCS13-SUS304-BC SWING-RF	18
GLOBE	2	ANSI150-SCS13-SUS304-BB/OS&Y-RF	12
GLOBE	1	ANSI150-SCS13-SUS304-BB/OS&Y-RF	5
GLOBE	3	ANSI150-SCS13-SUS304-BB/OS&Y-RF	26
GLOBE	1/4	ANSI150-SCS13-SUS304-BB/OS&Y-RF	52
GLOBE	1/2	ANSI150-SCS13-SUS304-BB/OS&Y-RF	26
BALL	1/4	ANSI150-SUS304/SCS13-SEAT P.T.F.E-RF(FF)	80
BALL	1/2	ANSI150-SUS304/SCS13-SEAT P.T.F.E-RF(FF)	77
BALL	3/4	ANSI150-SUS304/SCS13-SEAT P.T.F.E-RF(FF)	80
BALL	1	ANSI150-SUS304/SCS13-SEAT P.T.F.E-RF(FF)	50
BALL	1 1/2	ANSI150-SUS304/SCS13-SEAT P.T.F.E-RF(FF)	69
BALL	2	ANSI150-SUS304/SCS13-SEAT P.T.F.E-RF(FF)	44
BALL	3	ANSI150-SUS304/SCS13-SEAT P.T.F.E-RF(FF)	50
BALL	6	ANSI150-SUS304/SCS13-SEAT P.T.F.E-RF(FF)	50
GLOBE	2	ANSI150-SCPH2-13CR-BB/OS&Y-RF	30
GLOBE	3	ANSI150-SCPH2-13CR-BB/OS&Y-RF	39
GLOBE	4	ANSI150-SCPH2-13CR-BB/OS&Y-RF	36
GLOBE	12	IANSI150-SCPH2-13CR-BB/OS&Y-RF	11
GLOBE	1/2	ANSI600-SUS304-SUS304STBB/OS&Y-SW	200
GLOBE	3/4	ANSI600-SUS304-SUS304STBB/OS&Y-SW	21
GLOBE	1	ANSI600-SUS304-SUS304STBB/OS&Y-SW	88
IGLOBE	1/2	IJP1600N-A182F22-SUS304STBB/OS&Y-SW	45
GLOBE	3/4	JPI600N-A182F22-SUS304STBB/OS&Y-SW	1
GLOBE	1	JPI600N-A182F22-SUS304STBB/OS&Y-SW	77
GATE	1/2		67
UAIL	11/2	ANSI600-SUS304-SUS304STBB/OS&Y-SW	66

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NAME	SIZE	MAT	QTY
	3/4	ANSI600-SUS304-SUS304STBB/OS&Y-SW	55
GATE	•	ANSI600-SUS304-SUS304STBB/OS&Y-SW	45
GATE	1		33
NEEDLE	1	ANSI900-A182F1-13CRSTBB/OS&Y-SW	, ,
GLOBE	2	JPI600N-S25C-13CR/HFS-BB/OS&Y-SW	20
GLOBE	4	JPI600N-S25C-13CR/HFS-BB/OS&Y-SW	11
GATE	2	ANSI600-SC49/SCPH2-13CR/HFS-BB/OS&Y-BW	5
GATE	16	ANSI600-SC49/SCPH2-13CR/HFS-BB/OS&Y-BW	22
GATE	4	ANSI900-SCPH11-13CR/HFS-BB/OS&Y	5
GATE	10	ANSI900-SCPH11-13CR/HFS-BB/OS&Y	50
GATE	12	ANSI900-SCPH11-13CR/HFS-BB/OS&Y	6
GATE	14	ANSI900-SCPH11-13CR/HFS-BB/OS&Y	5
GLOBE	1/2	SPECIAL-A182F21-SUS304STNB/OS&Y-SW	25
GLOBE	11	SPECIAL-A182F21-SUS304STNB/OS&Y-SW	22
BUTTER FLY	14	ANSI300-SCPH11-13CR/HFS-FLANGELESS	9
BUTTER FLY	20	ANSI300-SCPH11-13CR/HFS-FLANGELESS	1 7
GATE	2	ANSI400-SCPH2-13CR/HFS-NB/OS&Y-BW(RF)	25
GATE	3	ANSI400-SCPH2-13CR/HFS-NB/OS&Y-BW(RF)	45
GATE	4	ANSI400-SCPH2-13CR/HFS-NB/OS&Y-BW(RF)	41
GATE	6	ANSI400-SCPH2-13CR/HFS-NB/OS&Y-BW(RF)	40
GATE	8	ANSI400-SCPH2-13CR/HFS-NB/OS&Y-BW(RF)	15
i -	10	· · · · · · · · · · · · · · · · · · ·	16
GATE		ANSI400-SCPH2-13CR/HFS-NB/OS&Y-BW(RF)	4
GATE	12	ANSI400-SCPH2-13CR/HFS-NB/OS&Y-BW(RF)	20
CHECK	12	ANSI900-A182F1-13CR/HFS-BC LIFT-SW	4
CHECK	2 3	ANSI150-SCPH2-13CR-BC SWING-RF	46
CHECK		ANSI150-SCPH2-13CR-BC SWING-RF	19
CHECK	4	ANSI150-SCPH2-13CR-BC SWING-RF	36
CHECK	6	ANSI150-SCPH2-13CR-BC SWING-RF	10
CHECK	10	ANSI150-SCPH2-13CR-BC SWING-RF	50
CHECK	18	ANSI150-SCPH2-13CR-BC SWING-RF	13
CHECK	14	ANSI150-SCPH2-13CR-BC SWING-RF	6
GATE	2	ANSI300-SCPH11-13CR/HFS-BB/OS&Y-RF	10
GATE	8	ANSI300-SCPH11-13CR/HFS-BB/OS&Y-RF	6
GATE	12	ANSI900-SCPH11-13CR/HFS-BB/OS&Y-BW(RJ)	4
GATE	3/4	ANSI1500-S30C-SUS304ST,-NB/OS&Y-SW	20
GATE	1/2	ANSI1500-S30C-SUS304STNB/OS&Y-SW	5
GATE		ANSI1500-SCPH2-SUS304STPSB/OS&Y-BW(RJ)	5
GATE	2 3	ANSI1500-SCPH2-SUS304STPSB/OS&Y-BW(RJ)	5
GATE	6	ANSI1500-SCPH2-SUS304STPSB/OS&Y-BW(RJ)	11
GATE	10	ANSI1500-SCPH2-SUS304ST -PSB/OS&Y-BW(RJ)	5
CHECK	2	ANSI1500-SCPH2-SUS304STPSC SWING-BW(RJ)	20
CHECK	6	ANSI1500-SCPH2-SUS304STPSC SWING-BW(RJ)	13
CHECK	10	ANSI1500-SCPH2-SUS304STPSC SWING-BW(RJ)	49
1	- 1	ANSI150-SCS13-SUS304-BB/OS&Y-RF	
GLOBE	3		72
GLOBE	10	ANSI900-SCPH11-13CR/HFS-BB/PSB-BW(RJ)	50
GLOBE	3/4	ANSI1500-S30C-SUS304STNB/OS&Y-SW	30
GLOBE	1		20
GATE	8	ANSI900-SCPH11-13CR-BB/OS&Y-RF	4

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#### AMMONIA VALVES

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NAME		MAT	QTY
BUTTER FLY	8	ANSI900-SCPH2-13CR-FLANGELESS	6
GLOBE	1	ANSI900-S30C-13CR/HFS-BB/OS&Y-SW	15
GLOBE	3/4	ANSI900-S30C-13CR/HFS-BB/OS&Y-SW	20
BALL	1/2	S25C-13CR	384
GLOBE	1/2	ANSI900-A182F1-13CR/HFS-BB/NB/OS&Y-SW	72
GLOBE	3/4	ANSI900-A182F1-13CR/HFS-BB/NB/OS&Y-SW	25
GLOBE	1	ANSI900-A182F1-13CR/HFS-BB/NB/OS&Y-SW	21
GATE	1/2	ANSI2500-S30C-SUS304STNB/OS&Y-SW	34
GLOBE	1/2	ANSI2500-S30C-SUS304STNB/OS&Y-SW	55
GATE	4	ANSI150-SC49-13CR-FLANGELESS/RF	16
GATE	3	ANSI150-SC49-13CR-FLANGELESS/RF	29
GATE	2	ANSI150-SC49-13CR-FLANGELESS/RF	12
GATE	6	ANSI150-SC49-13CR-FLANGELESS/RF	4
GATE	2	ANSI300-SC49-13CR-FLANGELESS/RF	3
GATE	4	ANSI300-SC49-13CR-FLANGELESS/RF	1
GATE	3	ANSI300-SC49-13CR-FLANGELESS/RF	1
GATE	8	ANSI300-SC49-13CR-FLANGELESS/RF	1
GATE	2	ANSI150-SCPH2-13CR-FLANGELESS/RF	12
GATE	3	ANSI150-SCPH2-13CR-FLANGELESS/RF	16
GATE	4	ANSI150-SCPH2-13CR-FLANGELESS/RF	8
GATE	6	ANSI150-SCPH2-13CR-FLANGELESS/RF	3
GATE	8	ANSI150-SCPH2-13CR-FLANGELESS/RF	4
GATE	10	ANSI150-SCPH2-13CR-FLANGELESS/RF	2
WEDGE GATE	3	JIS10K~100-FC20-FC20-FF	6
WEDGE GATE	4 -	JJIS10K~100-FC20-FC20-FF	12
WEDGE GATE	r	Ji\$10K~300-FC20-FC20-FF	8
WEDGE GATE	1 1/2	ANSI800LB-S28C-SW	12
GLOBE	2	IANSI150-SC49-13CR-FLANGELESS/RF	2
GLOBE	3	MISTING COAS- INCH-FENINGELEGGIRF	1
GLOBE	2	  ANSI300-SC49-13CR-FLANGELESS/RF	
GATE	2		
GLOBE	3/4	ANSI600LB-SC49-13CR-FLANGELESS/RF	4
T '	1	ANSI600-SUS304-SUS304-SW	3
GLOBE	2	ANSI150LB-SCPH2-13CR-RF	8
GLOBE	3	ANDIOCOO DO AO DINOCOA BIAL	4
GLOBE	3	ANSI2500-SC49-SUS304-BW	2
GLOBE	1/2	ANSI2500-S25C-SUS304-SW	55
GLOBE	3/4		20
GLOBE	1		26
GLOBE	1 1/2	ANDIOTOS COMO DIVIGADA CIMI	10
GLOBE	2	ANSI2500-SC49-SUS304-SW	8
GLOBE	1/2	ANSI600-S28C-SW	235
GLOBE	3/4		119
GLOBE	1		35
GLOBE	1 1/2	1440450 0040 400B FLANGE FOR THE	16
SWING CHECK		ANSI150-SC49-13CR-FLANGELESS/RF	8
SWING CHECK	1	ANSI300-SC49-13CR-FLANGLESS/RF	2 7
SWING CHECK	4	ANSI150-SC49-13CR-FLANGELESS/RF	7

P7

AMMONIA VALVES  NAME SIZE MAT  SWING CHECK 2  SWING CHECK 4  SWING CHECK 4  ANSI2500-S25C-SUS304-BW  ANSI150-S26C-SUS304-SW  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 1  LIFT CHECK 2   ANSIBOD-S28C-SW  LIFT CHECK 1  LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2   LIFT CHECK 2    LIFT CHECK 2    LIFT CHECK 2    LIFT CHECK 2    LIFT CHECK 2    LIFT CHECK 2    LIFT CHECK 2	ULIT!
SWING CHECK   3 SWING CHECK   4 SWING CHECK   1 LIFT CHECK   1 LIFT CHECK   1 LIFT CHECK   1 LIFT CHECK   1 LIFT CHECK   1 P8	اد ا
SWING CHECK 4 SWING CHECK 1 LIFT CHECK 11 LIFT CHECK 1 LIFT CHECK 1 1 1/2 P8	4
SWING CHECK 2 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT	
LIFT CHECK 1 1 1/2 ANSI/1500-S25C-SUS304-SW LIFT CHECK 3/4 ANSI/600-S28C-SW LIFT CHECK 1 1 1/2 P8	]
LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT CHECK 1 LIFT	2
LIFT CHECK 1 1 1/2 ANSI600-S28C-SW LIFT CHECK 1 1 1/2 P8	2
LIFT CHECK 1 1/12 P8	3
LIFT CHECK 11/2 P8	1 1
P8	4
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BOILER VALVE

ITEM	SIZE	DESCR	IPODY.	TOM	OT/
GATEVALVE	2"		BODY	TRIM	QTY
GLOBE VALVE	1/2"	ANSI-900-BW(RJ) ANSI-900-SW	SCPH2	13CR HFS	6
			S30C	13CR HFS	5
GLOBE VALVE GATE VALVE	1/2" 2"	ANSI-900-SW	A182F1	13CR HFS	10
NEEDLE VALVE	2" 1"	ANSI-900-BW(RJ)		13CR HFS	4
	1.	ANSI-900-SW	A182F1	13CR ST	3
GLOBE VALVE	3/4"	ANSI-900-SW	A182F1	13CR HFS	20
GLOBE VALVE	1"	ANSI-900-SW	A182F1	13CR HFS	4
GATE VALVE	12"	ANSI-900-BW(RJ)	SCP H11	13CR HFS	21
GATE VALVE	6"	ANSI-900-BW(RJ)	SCP H11	13CR HFS	3
GATE VALVE	14"	ANSI-900-BW(RJ)	SCP H11	13CR HFS	2
GATE VALVE	10"	ANSI-900-BWW(RJ)	SCP H11	13CR HFS	2
GLOBE VALVE	2"	ANSI-900-BW(RJ)	SCP H11	13CR HFS	6
GATE VALVE	1/2"	ANSI-900-SW	A182F1	13CR HFS	4
GLOBE VALVE	1"	ANSI-900-SW	A182F1	13CR HFS	3
GATE VALVE	14"	ANSI-900-BW-(RJ)	SCP H11	13CR HFS	2
GATE VALVE	8"	ANSI-900-BW(RJ)	SCP H11	13CR HFS	2
GATE VALVE	2"	ANSI-300-RF	SCP H11	13CR HFS	4
GLOBE VALVE	3/4"	JPS-600-SW	A182F1	13CR HFS	6
CHECK VALVE	2"	ANSI-300-RF(BW)	SCP H2	13CR	3
GATE VALVE	2"	ANSI-300-RF (BW)	SCP H2	13CR	4
GATE VALVE	2"	ANSI-400-BW	SCP H11	13CR HFS	3
GLOBE VALVE	3/4"	ANSI-900-SW	S30C	13CR HFS	5
NEEDLE VALVE	1 1/2"	ANSI-900-SW	S30C	SUS304	4
GATE VALVE	3/4"	API-800-SW	S25C	13CR	10
GLOBE VALVE	3/4"	API-800-SW	S25C	13CR	27
GLOBE VALVE	1"	API-800-SW	S25C	13CR	20
GLOBE VALVE	1/2"	API-800-SW	S25C	13CR	37
GATE VALVE	10"	ANSI-150-RF	SCP H2	13CR	5
GATE VALVE	8"	ANSI-150-RF	SCP H2	13CR	4
GATE VALVE	10"	ANSI-400-BW(RF)	SCP H2	13CR HFS	2
GATE VALVE	3"	ANSI-400-BW(RF)	SCP H2	13CR HFS	10
GATE VALVE	12"	ANSI-150-RF	SCP H2	13CR	2
GATE VALVE	2"	ANSI-150-RF	SCP H2	13CR	10
GATE VALVE	1/2"	AP1-800	S25C	13CR	12
GATE VALVE	4 ⁿ	ANSI-150-RF	SCP H2		6
GATE VALVE	6"	ANSI-150-RF	SCP H2	13CR	4
GATE VALVE	16"	ANSI-150-RF	SCP H2	13CR	2
GATE VALVE	3"	ANSI-150-RF	SCP H2	13CR	8
GATE VALVE	1"	API-800-SW	S25C	13CR	10
GATE VALVE	1 1/2"	API-800-SW	S25C	13CR	10
GATE VALVE	2"	ANSI-400-BW(RF)	SCP H2	13CR	6
GLOBE VALVE	1/2"	JPI-600-SW	S25C	13CR HFS	4
GLOBE VALVE	3/4"	JPI-800-SW	S25C	13CR HFS	4
GLOBE VALVE	1"	JPI-800-SW	S25C	13CR HFS	4
GLOBE VALVE	1/2"	JPI-800-SW	S25C	13CR HFS	6
GATE VALVE	1/2"	JPI-800-SW	S25C		6
GATE VALVE	3/4"	JPI-800-SW	\$25C	_ 1	5
P1	<b>₩</b> (1	v. 1 444 411	<b>0200</b>	HOUR HES	<u>'                                    </u>

Urea Valve

NAME	SIZE	MAT	QTY
GATE	1/2	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	8
GATE	3/4	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	17
GATE	1	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	11
GATE	1 1/2	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	4
GLOBE	1/2	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	5
GLOBE	3/4	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	4
GLOBE	1	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	9
GLOBE	1 1/2	JIS10K-FCMB-13CR-UB-ISRS-SCR'D	4
GATE	2	JIS10K-FC20-13CR/FC20-BB/OS & Y-FF	9
GATE	4	JIS10K-FC20-13CR/FC20-BB/OS & Y -FF	4
GATE	6	JIS10K-FC20-13CR/FC20-BB/OS & Y -FF	2
GATE	12	JIS10K-FC20-13CR/FC20-BB/OS & Y -FF	1
CHECK	2	JIS10K-FC20-13CR/FC20-BC/SWING-FF	4
BUTTER FLY	10	JIS10K-FC20-FCD RUBBER-F FOR FLANGELSS	7
BUTTER FLY	12	JIS10K-FC20-FCD RUBBER-F FOR FLANGELSS	
BUTTER FLY	14	JIS10K-FC20-FCD RUBBER-F FOR FLANGELSS	2
BUTTER FLY	18	JIS10K-FC20-FCD RUBBER-F FOR FLANGELSS	2 2 2
GLOBE	1/2	ANSI(150/125)-FCMB-13CR-UB ISRS-SCR'D	22
GLOBE	1	ANSI(150/125)-FCMB-13CR-UB ISRS-SCR'D	5
GLOBE	1/4	API800(COMPACT)-S25C-13CR-BB OS&Y-SW	15
GLOBE	1/2	API800(COMPACT)-S25C-13CR-BB OS&Y-SW	87
GLOBE	3/4	API800(COMPACT)-S25C-13CR-BB OS&Y-SW	125
GLOBE	1	API800(COMPACT)-S25C-13CR-BB OS&Y-SW	25
GLOBE	1 1/2	API800(COMPACT)-S25C-13CR-BB OS&Y-SW	10
GATE	1/2	API800(COMPACT)-S25C-13CR-BB OS&Y-SW	35
GATE	3/4	API800(COMPACT)-S25C-13CR-BB OS&Y-SW	72
GATE	1	API800(COMPACT)-S25C-13CR-BB OS&Y-SW	11
GATE	l *	API800(COMPACT)-S25C-13CR-BB OS&Y-SW	13
GATE	2	ANSI300-SCPH2-13CR/HFS-BB OS & Y-RF(BW)	10
GATE	3	ANSI300-SCPH2-13CR/HFS-BB OS&Y-RF(BW)	10
GATE	4	ANSI300-SCPH2-13CR/HFS-BB OS&Y-RF(BW)	6
GATE	6	ANSI300-SCPH2-13CR/HFS-BB OS&Y-RF(BW)	11
GATE	8	ANSI300-SCPH2-13CR/HFS-BB OS&Y-RF(BW)	3
GATE	12	ANSI300-SCPH2-13CR/HFS-BB OS&Y-RF(BW)	1
GATE	2	ANSI150-SCPH2-13CR-BB OS&Y-RF	6
	اما		1 1
GATE GATE	3 4	ANSI150-SCPH2-13CR-BB OS&Y-RF ANSI150-SCPH2-13CR-BB OS&Y-RF	12
GATE	6	ANSI150-SCPH2-13CR-BB OS&Y-RF	9
GATE	8		2
GATE	18	ANSI150-SCPH2-13CR-BB OS&Y-RF	1
GLOBE	1	ANSI150-SCPH2-13CR-BB OS&Y-RF	2
GLOBE	2 3	API800(COMPACT)-S25C-13CR-BB OS &Y-RF	
GLOBE	1	API800(COMPACT)-S25C-13CR-BB QS&Y-RF	4
	2	ANSI300-SCPH2-13CR/HFS-BB OS &Y-RF(BW)	6
GLOBE	3	ANSI300-SCPH2-13CR/HFS-BB OS&Y-RF(BW)	1
GLOBE	4	ANSI300-SCPH2-13CR/HFS-BB OS &Y-RF(BW)	2
GATE	6	ANSI400-SCPH2-13CR/HFS-BB OS &Y- RF(BW)	1
CHECK	1/2	API800(COMPACT)-S25C-13CR-BC LIFT-SW	7

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Urea Valve	, .		<del>-,</del>
NAME	SIZE		QTY
CHECK	1 1/2	API800(COMPACT)-S25C-13CR-BC LIFT-SW	4
CHECK	2	ANSI300-SCPH2-13CR-BC SWING-RF(BW)	3
CHECK	4	ANSI300-SCPH2-13CR-BC SWING-RF(BW)	2
CHECK	6	ANSI300-SCPH2-13CR-BC SWING-RF(BW)	2
CHECK	8	ANSI300-SCPH2-13CR-BC SWING-RF(BW)	1
CHECK	1 1/2	ANSI300-SUS304-BC LIFT-SW	3
CHECK	2	ANSI1500-SCPH2-SUS304STPSC SWING-BW(RJ)	3
CHECK	6	ANSI1500-SCPH2-SUS304STPSC SWING-BW(RJ)	2
CHECK	2	ANSI300-SCS13-SUS304-BC SWING-RF	3
CHECK	3	ANSI300-SCS13-SUS304-BC SWING-RF	1
GATE	1/2	ANSI150-SUS304-BB OS & Y-SW	12
GATE	3/4	IANSI150-SUS304-BB OS & Y-SW	27
GATE	1	ANSI150-SUS304-BB OS &Y-SW	5
GATE	1.	ANSI150-SUS304-BB OS & Y-SW	5
GATE	1/2	ANSI300-SUS304-BB OS & Y-SW	5
GATE	3/4	ANSI300-SUS304-BB OS & Y-SW	10
GATE	1		
***	1	ANSI300-SUS304-BB OS & Y-SW	5
GATE	1 1/2	ANSI300-SUS304-BB OS & Y-SW	4
GLOBE	1/2	JPI600N-S25C-13CR/HFS-BB OS &Y-SW	5
GLOBE	3/4	JPI600N-S25C-13CR/HFS-BB OS &Y-SW	7
GLOBE	1/2	ANSI1500-S30C-SUS304STNB OS&Y-SW	16
GLOBE	3/4	ANSI1500-S30C-SUS304STNB OS&Y-SW	5
GLOBE	1	ANSI1500-S30C-SUS304STNB OS&Y-SW	3
GATE	1/2	ANSI1500-S30C-SUS304STNB OS&Y-SW	12
GATE	1	ANSI1500-S30C-SUS304STNB OS&Y-SW	6
GATE	3/4	ANSI1500-S30C-SUS304STNB OS&Y-SW	7
GATE	2	ANSI1500-SCPH2-SUS304STPSB OS&Y-BW(RJ)	2 2
GATE	3	ANSI1500-SCPH2-SUS304STPSB OS&Y-BW(RJ)	
GATE	6	ANSI1500-SCPH2-SUS304STPSB OS&Y-BW(RJ)	1
GATE	2	ANSI300-SCS13-SUS304-BB OS&Y-RF	4
GATE	3	ANSI300-SCS13-SUS304-BB OS&Y-RF	2
GATE	1/2	JPI600N-S25C-13CR/HFS-BB OS &Y-BW(RF)	4
GLOBE	1/2	ANSI300-SUS304-BB OS&Y-SW	11
GLOBE	1 1/2	ANSI300-SUS304-BB OS&Y-SW	3
GLOBE	3/4	ANSI300-SUS304-BB OS&Y-SW	5
GLOBE	2	ANSI300-SCS13-SUS304-BB OS&Y-RF	1 1
GLOBE	1/4	ANSI150-SUS304-BB OS &Y-SW	
GLOBE	1/2	ANSI150-SUS304-BB OS &Y-SW	3 7
GLOBE	1	ANSI150-SUS304-BB OS &Y-SW	
GLOBE	3/4	ANSI150-SUS304-BB OS &Y-SW	5 5
GLOBE	3/4	ANSI600-SUS304-BB OS&Y-SW	5
GLOBE	1	ANSi600-SUS304-BB OS&Y-SW	10
GATE	3/4	ANSI600-SUS304-BB OS&Y-SW	6
JOAN L	[3/4 	ANDIOUS COST CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL CONTROL C	١ ٢
GATE	1/2	ANSI2500-S30C-SUS304STBB OS&Y-SW	9
GLOBE	1/2	ANSI2500-S30C-SUS304STNB OS&Y-SW	16
GLOBE 180	1/4	SPECIAL-SUS316L-SUS316L/HFS-BW(LENS)	50
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Urea Valve			
NAME	SIZE	MAT	QTY
GLOBE 180	1/2	SPECIAL-SUS316L-SUS316L/HFS-BW(LENS)	10
GLOBE 180	2	SPECIAL-SUS316L-SUS316L/HFS-BW(LENS)	6
GLOBE 180	3	SPECIAL-SUS316L-SUS316L/HFS-BW(LENS)	5
GLOBE 180	4	SPECIAL-SUS316L-SUS316L/HFS-BW(LENS)	3
GLOBE 180	6	SPECIAL-SUS316L-SUS316L/HFS-BW(LENS)	2
GLOBE 180	8	SPECIAL-SUS316L-SUS316L/HFS-BW(LENS)	2
GLOBE 180	1 1/2	SPECIAL-SUS316L-SUS316L/HFS-BW(LENS)	
CHECK	1 1/2	SPECIAL-SUS316L-LIFT-BW(LENS)	5
CHECK	1/4	SPECIAL-SUS316L-LIFT-BW(LENS)	7
CHECK	3	SPECIAL-SUS316L-LIFT-BW(LENS)	3
CHECK	4	SPECIAL-SUS316L-LIFT-BW(LENS)	2
CHECK	6	SPECIAL-SUS316L-LIFT-BW(LENS)	1
CHECK	8	SPECIAL-SUS316L-LIFT-BW(LENS)	1
CHECK	14	SPECIAL-SUS316L-LIFT-BW(LENS)	2
GATE	1/2	ANSI300-SUS316L-BB OS&Y-SW	15
GATE	3/4	ANSI300-SUS316L-BB OS&Y-SW	8
GATE		ANSI300-SUS316L-BB OS&Y-SW	5
GLOBE	1/2	ANSI300-SUS316L-BB OS &Y-SW	10
GLOBE	1 1/2	ANSI300-SUS316L-BB OS &Y-SW	2
GLOBE	2	ANSI300-SCS16/ASTM CF3M-SUS316L-BB OS &Y-RF	2
GATE	1/2	ANSI150-SUS316L-BB OS&Y-SW	5
GATE	3/4	ANSI150-SUS316L-BB OS&Y-SW	5
GATE	1 1/2	ANSI150-SUS316L-BB OS&Y-SW	2
GLOBE	1/2	ANSI150-SUS316L-BB OS&Y-SW	4
GLOBE	3/4	ANSI150-SUS316L-BB OS&Y-SW	7
GLOBE	1	ANSI150-SUS316L-BB OS&Y-SW	2
GATE	4	ANSI150-SCS16/ASTM CF3M-SUS316L-BB OS &Y-RF	2
GATE	6	ANSI150-SCS16/ASTM CF3M-SUS316L-BB OS &Y-RF	1
CHECK		ANSI300-SCS316L/ASTM CF3M-SUS316L-BB OS &Y-RF	
GATE	2	ANSI300-SCS316L-ASTM CF3M-SUS316L-BB OS&Y-RF	3
GATE	3	ANSI300-SCS316L-ASTM CF3M-SUS316L-BB OS&Y-RF	2
GATE	4	ANSI300-SCS316L-ASTM CF3M-SUS316L-BB OS&Y-RF	1
GATE	8	ANSI300-SCS316L-ASTM CF3M-SUS316L-BB OS&Y-RF	3
GLOBE	2	ANSI300-SCS316L-ASTM CF3M-SUS316L-BB OS&Y-RF	1
GATE	3	ANSI2500-SC49-SUS304STPSB OS&Y-BW(RJ)	
GATE	6	ANSI2500-SC49-SUS304STPSB OS&Y-BW(RJ)	2
GATE	8	ANSI2500-SC49-SUS304STPSB OS&Y-BW(RJ)	1
GLOBE	3	ANSI2500-SC49-SUS304STPSB OS&Y-BW(RJ)	4
GLOBE	6	ANSI2500-SC49-SUS304STPSB OS&Y-BW(RJ)	2
CHECK	8	ANSI150-SCS13-SUS304-BC/SWING-RF	1
GLOBE	2	ANSI300-SCPL1-13CR/HFS-BB OS&Y-RF	1
GLOBE	3	ANSI300-SCPL1-13CR/HFS-BB OS&Y-RF	1 1
GLOBE	4	ANSI300-SCPL1-13CR/HFS-BB OS&Y-RF	2
l .	1 1/2	ANSI900-S30C-13CR/HFS-BB OS &Y-SW	2
GATE GATE	1/2	ANSI900-530C-13CR/HFS-BB OS &Y-SW	2 2 5 7
	3/4	ANSI900-A182F1-13CR/HFS-BB OS &Y-SW	
GATE GATE	ı	ANSI900-SCPH11-13CR/HFS-BB OS&Y-BW(RJ)	ا ا
1 -	2	ANSI300-SCPH11-13CR/HFS-BB OS&Y-RF	3 2 2 2
GATE	6		4
GATE	סן	ANSI900-SCPH11-13CR/HFS-BB OS &Y-BW(RJ)	1 2

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#### DEMI PIPE

DEMI PIPE	MATERIAL	loize	Tom/
ITEM	MATERIAL	SIZE	QTY
pipe	c/s,api,5l,lining hard rubber with a33	1"	45
pipe	c/s,api,5l,lining hard rubber a33	1 1/2"	30
pipe	c/s,api,5l,lining hard rubber a33	2"	200
pipe	c/s,api,5l,lining hard rubber a33	2 1/2"	25
pipe	c/s,api,5l,lining hard rubber a33	3"	100
pipe	c/s,api,5l,lining hard rubber a33	4"	450
pipe	c/s,api,5l,lining hard rubber a33	5"	3
pipe	c/s,api,5l,lining hard rubber a33	6"	150
pipe	c/s,api,51,lining hard rubber a33	8"	54
tee	c/s,api,5l,lining with hard rubber,flgd,a33-gard a	8"	3
tee	c/s,api,5l,lining with hard rubber,flgd,a33-grad a	2"	5
tee	c/s,api,5l,lining with hard rubber,flgd,a33-grad a	4"	5 2 3
tee	c/s,api,5l,lining with hard rubber,flgd,a33-grad a	4"*2"*2"	3
tee	c/s,api,5l,lining with hard rubber,flgd,a33-grad a	6"*8"*8"	2
manual valve	lining with 150ibs,a33-a polypropylene	1"	18
manuat valve	lining with 150ibs a33-a polypropylene	1 1/2"	2
manual valve	lining with 150ibs a33-a polypropylene	2"	30
manual valve	lining with 150ibs a33-a polypropylene	2 1/2"	3
manual valve	lining with 150ibs a33-a polypropylene	3"	3
manual valve	lining with 150ibs a33-a polypropylene	4"	19
manual valve	lining with 150ibs a33-a polypropylene	5"	1
manual valve	lining with 150ibs a33-a polypropylene	6"	12
manual valve	lining with 150ibs a33-a polypropylene	8"	6
check valve	lining with a33-a	4"	6
check valve	lining with a33-a	6"	4
flow indicator		4"	6
flow indicator		6"	4
pipe	c/s,apt 5l,sch40,seamless	1/2"	30
pipe	c/s,apt 5l,sch40,seamless	1"	28
pipe	c/s,apt 5l,sch40,seamless	1 1/2"	25
pipe	c/s,apt 5l,sch40,seamless	2"	70
pipe	c/s,apt 5l,sch40,seamless	3"	27
pipe	c/s,apt 5l,sch40,seamless	4"	73
pipe	c/s,apt 5l,sch40,seamless	6"	36
pipe	c/s,apt 5l,sch40,seamless	8"	78
elbow 90	c/s bw,sch40	1/2"	17
elbow 90	c/s bw,sch40	1"	13
elbow 90	c/s bw,sch40	1 1/2"	14
elbow 90	c/s bw,sch40	2"	27
elbow 90	c/s bw,sch40	3"	11
elbow 90	c/s bw.sch40	4"	15
elbow 90	c/s bw,sch40	6"	12
elbow 90	c/s bw.sch40	8"	14
coupling	c/s sw,300#	1/2"	20
flange	c/s wn,rf,150#	1/2"	7
flange	c/s wn,rf, 150#	1"	11
flange	c/s wn,rf, 150#	1 1/2"	9

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ITEM	MATERIAL	SIZE	QTY
	c/s wn,rf,150#	2"	21
1	• •	3"	9
	c/s wn,rf,150#	4"	15
1 - 1	c/s wn,rf,150#	6"	18
" "	c/s wn,rf,150#	1/2"	
flange	c/s,so,rf,150#	1"	12
flange	c/s,so,rf,150#	1.	7
flange	c/s,so,rf,150#	1 1/2"	8
flange	c/s,so,rf,150#	2"	9
flange	c/s,so,rf,150#	3"	8
flange	c/s,so,rf,150#	4"	32
flange	c/s,so,rf,150#	6"	12
flange	c/s,so,rf,150#	2 1/2"	6
pnumatic valve		2"	7
pnumatic valve		3"	5
pnumatic valve		4"	10
pnumatic valve		6"	9
manual valve		2"	6
manual valve		4"	12
manual valve		<b>3</b> ⁿ	5
manual valve		6"	12
check valve		2"	4
check valve		4"	6
flow indicator		2"	4
flow indicator		4"	6
con.red.	c/s,bw,sch40	8"*4"	3
con.red.	c/s,bw,sch40	6"*4"	8
con.red.	c/s,bw,sch40	4"*3"	3
con.red.	c/s,bw,sch40	4"* 2 1/2"	8
ecc.red.	c/s,bw,sch40	8"*4"	3
con.red.	c/s,lining with a33-a hard rubber	8"*6"	4
con.red.	c/s,lining with a33-a hard rubber	8"*5"	4
con.red.	c/s,lining with a33-a hard rubber	4"*2"	6
con.red.	c/s,lining with a33-a hard rubber	8"*3"	6
conred.	c/s,lining with a33-a hard rubber	3"*2 1/2"	4
con.red.	c/s,lining with a33-a hard rubber	4*2 1/2"	4
con.red.	c/s,lining with a33-a hard rubber	4"*6"	9
con.red.	c/s,lining with a33-a hard rubber	6"*5"	5
ecc.red.	c/s,lining with a33-a hard rubber	6***4	3
ecc.red.	c/s,lining with a33-a hard rubber	4"*2 1/2"	4
ecc.red.	c/s,lining with a33-a hard rubber	8"*4"	2
panumatic valve	lining with a33-a hard rubber	1"	2
panumatic valve	lining with a33-a hard rubber	1 1/2"	8
1'	lining with a33-a hard rubber	2"	6
1.	lining with a33-a hard rubber	2 1/2"	4
17	lining with a33-a hard rubber	3"	8
	lining with a33-a hard rubber	4"	50
	lining with a33-a polypropylene	6"	6
n?	<u> </u>		

EMI PIPE	akakabakababababababababababababa	acabacabababa
	MATERIAL	SIZE
numatic valve	lining with a33-a polypropylene	8"
oow 90	c/s,bw,lining with a33-a hard rubber	1 1/2"
	ata haraltata a satu a oo a baasa a sa sa	la

2		ABABABABABAB DEMI PIPE	28282828282828282828282828282828282828		
2	କ୍ରିଗ୍ରିଗ୍ରିଗ୍ରିଗ୍ରିଗ୍ରିଗ୍ରିଗ୍ରିଗ୍ରିଗ୍ରିଗ	ITEM	MATERIAL	SIZE	OTV
		panumatic valve	lining with a33-a polypropylene	8"	QTY 2
5	2	elbow 90	c/s,bw,lining with a33-a hard rubber	1 1/2"	11
2		elbow 90	c/s,bw,lining with a33-a hard rubber	2"	60
2	<u> </u>	elbow 90	c/s,bw,lining with a33-a hard rubber	2 1/2"	6
2	<b>2</b>	elbow 90	c/s,bw,lining with a33-a hard rubber	3"	25
5	2	elbow 90	c/s,bw,lining with a33-a hard rubber	4"	95
2	Ž	elbow 90	c/s,bw,lining with a33-a hard rubber	6"	120
2		elbow 90	c/s,bw,lining with a33-a hard rubber	8"	9
5		elbow 45	c/s,bw,lining with a33-a hard rubber	4"	15
Ž	Ž	flange	c/s wn,rf,150# lining with a33-a hard rubber	1/2"	12
2		flange	c/s,wn,rf,150# lining with a33-a hard rubber	1"	6
5	2	flange	c/s,wn,rf,150# lining with a33-a hard rubber	1 1/2"	12
2		flange	c/s,wn,rf,150# lining with a33-a hard rubber	2"	50
2		flange	c/s,wn,rf,150# lining with a33-a hard rubber	2 1/2"	6
2	<b>2</b>	flange	c/s,wn,rf,150#,lining with a33-a	3"	40
5	2	flange	c/s,wn,rf,150# lining with a33-a	4"	125
2	Ž	flange	c/s,wn,rf,150# lining with a33-a	6"	100
2	<u> </u>	flange	c/s,wn,rf,150# lining with a33-a	5"	6
5		flange	c/s,wn,rf,150# lining with a33-a	8"	16
2	Ž	flange	c/s,so,rf,150#,lining hard rubber with a33-a	1/2"	10
2		flange	c/s,so,rf,150# lining hard rubber with a33-a	1"	25
5	2	flange	c/s,so,rf,150# lining hard rubber with a33-a	1 1/2"	30
5	<u> </u>	flange	c/s,so,rf,150# lining hard rubber with a33-a	2"	130
2		flange	c/s,so,rf,150# lining hard rubber with a33-a	2 1/2"	20
5	2	flange	c/s,so,rf,150# lining hard rubber with a33-a	3"	60
2		flange	c/s,so,rf,150# lining hard rubber with a33-a	<b>4</b> "	375
2		flange	c/s,so,rf,150# lining hard rubber with a33-a	5"	4
5	2	flange	c/s,so,rf,150# lining hard rubber with a33-a	6"	160
5	2	flange	c/s,so,rf,150# lining hard rubber with a33-a	8"	20
2		tee	c/s,api,5l,lining with a33-a	6"*6"	25
2	<b>2</b>	tee	c/s,api,5l,lining with a33-a	1 1/2"*1 1/2	10
		tee	c/s,api,51,lining with a33-a	3"*2 1/2"	4
2	Ž	tee	c/s,api,5l,lining with a33-a	6"*3"	5
į	2	stud bolt with nut		1/2"*70	200
5	<u> </u>	stud bolt with nut		5/8"*105	5100
2	<u>X</u>	stud bolt with nut		3/4"*120	400
2		stud bolt with nut		3/4"*200	200
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PIPE FLANG ELBOW FLANG PIPE FLANG ELBOW	65 65 65 65 65 65	C/S API-5L A33 C/S API-SL A33 C/S API-SL A33 C/S API-SL A33 C/S API-SL A33	5.16	130	SLIPON 150 IBS
FLANG ELBOW FLANG PIPE FLANG ELBOW	65 65 65 65	C/S API-SL A33 C/S API-SL A33 C/S API-SL A33 C/S API-SL A33	-	11	SLIPON 150 IBS
ELBOW FLANG PIPE FLANG ELBOW	65 65 65 65	C/S API-SL A33 C/S API-SL A33 C/S API-SL A33	<u> -</u>	1	
FLANG PIPE FLANG ELBOW	65 65 65	C/S API-SL A33 C/S API-SL A33	1.	4	ANGLE 90
PIPE FLANG ELBOW	65 65	C/S API-SL A33		4	WELD NECK150IPS
ELANG ELBOW	65		5.16	160	-
ELBOW	1	C/S API-SL A33	_	11	SLIPON 150 IBS
	65	C/S API-SL A33	-	12	90
LANG	65	C/S API-SL A33	-	10	WELD NECK150IBS
PIPE	50	C/S A33	3.91	3	-
FLANG	50	C/S A33	-	1	WELD NECK150IPS
ELBOW	50	C/S A33	]_	1	90
PIPE	75	POLYPROPYLEME	6.8	180	-
FLANG	75	A42	_	4	150 IBS
ELBOW	75	POLYPROPYLEME	-	7	90
PIPE	250	TV37-A	6.3	40	-
LANG	250	TV37-A		5	SLIPON 150 IBS
LBOW	250	TV37-A	-	4	90
LANG	250	TV37-A	-	1	WELD NECK150IBS
PIPE	65	TV37-A	29	20	
LANG	65	TV37-A		1	SLIPON 150IRS
LBOW	65	TV37-A	_	3	90
PIPE	50	TV37-A	29	30	
LANG	50	TV37-A	-	4	SLIPON 150IBS
LANG	50	TV37-A	_	3	WEI D NECK
LBOW	50	TV37-A	_	14	90
PIPE	60	TV37-A	32	2	
LANG	80	TV37-A	-	1	SLIPON 150 IRS
LANG	80	TV37-A	[_	1	WELD NECKISHING
LBOW	80	TV37-A	_	ļ <u>.</u>	90
PIPE	80	TV37-A	32	30	-
LANG	80	TV37-A	15.2	18	SLIPON 150 IPS
LANG	80	TV37-A	1_	18	WELD MECKIENIDS
LBOW	80	TV37-A	[	10	IOU IAARED MECK 190109
IPE	100	TV37-A	3 6	An	90  -
LANG	100	TV37-A	-	16	SLIPON 150IBS
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					WELD NECK150IBS
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TYPE	SIZE	MAT	THIC	QTY	SPECIF
FLANG	25	TV37-A	-	30	SLIPON 150IBS
FLANG	25	TV37-A	-	20	WELD NECK150IBS
PIPE	12	PVC	2.3	120	<b> -</b>
FLANG	12	PVC		30	180IBS
ELBOW	12	PVC	-	46	90
PIPE	32	A33	4.85	130	-
FLANG	32	A33	-	30	SLIPON 150 IBS
FLANG	32	A33	-	26	WELD NECK150IBS
ELBOW	32	A33	-	30	90
PIPE	40	A33	5.08	120	- 
FLANG	40	A33	-	40	SLIPON 150 IBS
FLANG	40	A33	-	20	WELD NECK150IBS
ELBOW	40	A33	-	25	90
PIPE	6"	SGP LINING WITH POLYETH	-	1200	-
FLANGE	6"	SGP LINING WITH POLYETH	-	150	WELDED LINING
ELBOW	6"	SGP WITH POLYETHLEN	5	45	90
PIPE	14"	STPG-38	SCH2	20	SCH 20
FLANGE	14"	STPG-38	-	10	150 IBS S.O
ELBOW	14"	STPG 38	-	6	90
PIPE	1"	STPG 38	SCH	45	-
FLANGE	1"	STPG 38	-	22	150 IBS S.O
ELBOW	1"	STPG 38	-	40	90
PIPE	3/4	STPG 38	SCH	60	
FLANGE	3/4	STPG 38	-	34	150IBS S.O
ELBOW	3/4	STPG 38	-	4	90
PIPE	1 1/2	SGP GALV	SÇH4	180	-
FLNGE	1 1/2	SGP GALV	-	50	150 IBS S.O
ELBOW	1 1/2	SGP	-	27	ļ <b>-</b>
PIPE	10"	SUS 304	4	40	<b> -</b>
FLANGE	10"	SUS304	-	15	150IBS,S.O
ELBOW	10"	SUS304	-	12	*
PIPE	10"	STPG38	SCH	40M	j
FLANGE	10"	STPG38	-	6	150IBS,S.O
ELBOW	10"	STPG38	SCH2	6	<b> </b> -
REDUCER	<b> </b> *	TV-37-A	-	10	
REDUCER	<b> </b> *	TV-37-A	-	12	-
REDUCER	*	TV-37-A	-	14	-
REDUCER	*	TV-37-A	-	12	<u>-</u>
REDUCER	*	TV-37-A	-	6	-
REDUCER	<b> </b> *	TV-37-A	-	10	-
REDUCER	N .	TV-37-A	-	12	<b> -</b>
TEE	10"*10"*4"	TV-37-A	-	10	<b>[</b> -
TEE	10"*10"*10"	TV-37-A	-	8	<b></b>
TEE	8"*10"*10"	TV-37-A	<u> </u> -	9	<b>}</b> -
TEE	8"*8"*6"	TV-37-A	-	10	-  -
TEE	6"*6"*4"	TV-37-A	-	12	<b> </b> -
TEE	4"*4"*2"	TV-37-A	-	14	<b>]</b> -

P2

	DEMI PIPE ITEM	MATERIAL	SIZE	QTY
		lining with a33-a polypropylene	8"	2
	elbow 90	c/s,bw,lining with a33-a hard rubber	1 1/2"	11
	elbow 90	c/s,bw,lining with a33-a hard rubber	2"	60
1	elbow 90	c/s,bw,lining with a33-a hard rubber	2 1/2"	6
	elbow 90	c/s,bw,lining with a33-a hard rubber	3"	25
	elbow 90	c/s,bw,lining with a33-a hard rubber	4"	95
ł	elbow 90	c/s,bw,lining with a33-a hard rubber	6"	120
j	elbow 90	c/s,bw,lining with a33-a hard rubber	8"	9
	elbow 45	c/s,bw,lining with a33-a hard rubber	4"	15
[	flange	c/s wn,rf,150# lining with a33-a hard rubber	1/2"	12
[	flange	c/s,wn,rf,150# lining with a33-a hard rubber	1"	6
	flange flanss	c/s,wn,rf,150# lining with a33-a hard rubber	1 1/2"	12
	flange	c/s,wn,rf,150# lining with a33-a hard rubber	2"	50
	flange flance	c/s,wn,rf,150# lining with a33-a hard rubber	2 1/2"	6
1	flange flange	c/s,wn,rf,150#,lining with a33-a	3"	40
	flange	c/s,wn,rf,150# lining with a33-a	4"	125
ļ	flange	c/s,wn,rf,150# lining with a33-a c/s,wn,rf,150# lining with a33-a	6" 5"	100
ļ	flange	c/s,wn,rf,150# lining with a33-a	8"	6 16
į,	flange	c/s,so,rf,150#,lining hard rubber with a33-a	1/2"	10
	flange	c/s,so,rf,150# lining hard rubber with a33-a	1"	25
ŀ	flange	c/s,so,rf,150# lining hard rubber with a33-a	1 1/2"	30
ŀ	flange	c/s,so,rf,150# lining hard rubber with a33-a	2"	130
ŀ	flange	c/s,so,rf,150# lining hard rubber with a33-a	2 1/2"	20
İ	flange	c/s,so,rf,150# lining hard rubber with a33-a	3"	60
ľ	flange	c/s,so,rf,150# lining hard rubber with a33-a	<b>4</b> "	375
Į:	flange	c/s,so,rf,150# lining hard rubber with a33-a	5"	4
1	flange	c/s,so,rf,150# lining hard rubber with a33-a	6"	160
ľ	flange	c/s,so,rf,150# lining hard rubber with a33-a	8"	20
1	lee	c/s,api,5l,lining with a33-a	6"*6"	25
ľ	lee	c/s,api,5l,lining with a33-a	1 1/2"*1 1/2	
	t <del>ee</del>	c/s,api,5l,lining with a33-a	3"*2 1/2"	4
	tee stud bolt with nut	c/s,api,5/,lining with a33-a	6"*3"	5
	stud bolt with nut stud bolt with nut		1/2"*70	200
	stud boit with nut stud bolt with nut		5/8"*105	5100
	stud bolt with nut		3/4"*120 3/4"*200	400
	p3		J3/4 ZUU	200
	<del>-</del>			
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		179		
		179		

### POLISHER

TYPE	SIZE	MAT	THIC	QTY	SPECIF
TEE	12*12"*10"	TV-37-A	-	6	-
TEE	12"*12"*8"	TV-37-A	-	5	-
VALVE	1/2"	PVC		30	150IBS
VALVE	1/2"	A33	-	25	HV DIAPHRAM VALVE 150IBS
BALL VAL	3/4"	PVC	-	24	150IBS
VALVE	3/4"	A33	ļ <u>-</u>	30	DIAPHRAM 150IBS
VALVE	1"	A33	-	25	DIAPHRAM 150IBS
VALVE	1 1/2"	A33	-	20	DIAPHRAME VALVE 150IBS
VALVE	2"	A33	-	40	DIAPHRAME VALVE/150IBS
VALVE	2 1/2"	TV-37-A	-	25	DIAPHRAME VALVE/150IBS
VALVE	3"	TV-37-A	-	15	SIAPHRAME VALVE/150IBS
VALVE	4"	TV-37-A	-	20	DIAPHRAME VALVE/150IBS
VALVE	6"	TV-37-A	]-	23	DIAPHRAME VALVE/150IBS
VALVE	8"	TV-37-A	-	19	DIAPHRAME VALVE/150IBS
VALVE	10"	TV-37-A	-	18	DIAPHRAME VALVE/150IBS
VALVE	12"	TV-37-A	-	14	DIAPHRAME VALVE/150IBS
VALVE	8"	TV-37-A	-	6	BUTTER FLY VALVE/150IBS
VALVE	10"	TV-37-A	-	8	BUTTER FLY VALVE/150IBS
VALVE	12"	TV-37-A	-	10	BUTTER FLY VALVE/150IBS
VALVE	6"	TV-37-A		9	BUTTER FLY VALVE/150IBS
P3					

FLUID	χ. Ö	R G	R.G.	SYN. G.	ğ	ğ	STEAM	STEAM	STEAM	Ö Z
BODY MATER- IAL	SCPH2	SCPH2	SCPH2	SCPH2	SCPH2	SCPH2	SCPH2	SCPH2	SCPHZ	SCPH2
ORIFICE AREA (CALC./ SELEC.)	41.853	72.382	72.382	72.382	0.785	72.382	39.46 / 41.853	11.9 / 18.857	45.88	0.216/
ACC- MULA- TION %	10	0	20	0	5	0,	m	ю	ო	10
CLOS- ING PRESS. CMP2G	15.3	24.4	22.8	20.7	7.2	6.8				
BLOW DOWN PRESS							ო	0.18	4	3.9
BACK PRESS KG/ CM*2G	ATM	ATM	ATM	ATM	ATM	5.8	ATM	ATM	ATM	ATM
SET PRESS KG/ CM*2G	17	26.3	24.5	22.3	60	6.9	71.7	3.5/4.5	33.5 / 37.9 388 C.D.	31 / 39
OPER- ATING TEMP. C	32	365	320	310	g	76	286.38	280/310	373 / 425	152.4/ 152.4
REQ. CAPA- CITY-KG/H	112000/ 50440+87230	132907 <i>1</i> 79 <b>4</b> 20*2	132907/ 79420*2	39907/ 54570	250/520	22000/	126/800	2400	240000	490
SIZE MOL-WT/	21.58	16.21	16.21	හි ර	28	28	8.01	18.04	18.01	21.5
	6" ANSI150-RF	8" ANSI150-RF	8" ANSI150-RF	8" ANSI150-RF	1" ANSI150-RF	8" ANSI150-RF	B" ANSI150-RF	4" ANSI150-RF	10" ANSI900-RF	1" ANSI150-RF
REQ NET & RATING & RATI	FULL 4" BORE ANSI300-RF	FULL 6" BORE ANSIGOO-RF	FULL 6" BORE ANSIGOO-RF	FULL 6" BORE ANSIGOO-RF	FULL (3/4)" BORE ANSI150-RF	FULL 6" BORE ANSI150-RF	FULL 4" BORE ANSISCO-RF	FULL 3" BORE ANSI150-RF	FULL 6" BORE ANSISCO-RF	FULL (3/4)" BORE ANSI300-RF
LIFT	FULL	FULL BORE	FULL	FULL	FULL BORE	FULL BORE	FULL BORE	FULL BORE	OPEN FULL BORE	FULL
NO. BON- REQ NET									OPEN	
NE.	N	8	N	-	-	-	-	~	4	-

FLUID	STEAM	STEAM	BOILER F.W.	STEAM	STEAM	STEAM	STEAM	STEAM	STEAM	STEAM
BODY MATER- IAL	SCPH2	SCPH2	SCPH2	SCPHZ	SCPHZ	SCPH2	SCPH2	SCPH2	SCPH2	SCPH2
ORIFICE AREA (CALC./ SELEC.)	9.1/	39.44 45.364	1.05/	7.52	18.15	6.2	29.0	70.882	45.364	103.862
ACC- MULA- TION %	ю	m	25	ю		ю	ო	ო	ø	е
CLOS- ING PRESS. CM ^A 2G					0.22			/ "		
BLOW DOWN PRESS		0.28	2.1			27.0		4.	0.5	0.18
BACK PRESS KG/ CM*2G	ATM	ATM	ATM	ATM	ATM	ATM	ATM	ATM	ATM	ATM
SET PRESS KG/ CMM2G	3.87	3.84	4.1	5.5	5.5	5.5	5.5	33/	10/	3.57
OPER- ATING TEMP. C	260	260	257	288	302	302	302	370/ 450	183/ 370	260/ 370
REQ. CAPA- CITY-KG/H	3000	13		1700	4100	1400	1500	150.000°2= 300000	2000	35000
SIZE MOL-WT/	18.01	8.01	17/	18.02	18.02	18.02	18.02	18.02	18.02	18.02
OUTLET & RATI		6" ANSI150-RF	2" ANSH50-RF	3" ANSI150-RF	4" ANSI150-RF	3" ANSH 50-RF	3" ANSI150-RF	10" ANSI150-RF	6" ANSI150-RF	8" ANSI150-RF
BON- LIFT INLET SIZE NET & RATING TYPE	FULL 3" BORE ANSI150-RF	FULL 4" BORE ANSI150-RF	FULL (11/2)" BORE ANSI300-RF	FULL 2" BORE ANSI150-RF	FULL (2 1/2)" BORE ANSI150-RF	FULL 2" BORE ANSI150-RF	FULL 2" BORE ANSI150-RF	FULL 6" BORE ANSISCO-RF	FULL 6" BORE ANSI300-RF	FULL 6" BORE ANSI300-RF
LIFT	FULL	FULL BORE	FULL BORE	FULL	FULL BORE	FULL BORE	FULL BORE	OPEN FULL BORE	FULL BORE	FULL
NO. BON- REQ NET TYPE								OPEN		
LVE NO. ME REQ	-	-	-	-	τ-	-	-	4	۲-	7
ME E	25	SS.	8	õ	Ħ	й	Ø	a 0	¥Ω	B A

SP-GR   CITY-KG/H   ATING   PRESS   PRESS   DOWN   ING   MULA-   AREA   MATER-   RAC   SP-GR   SP-GR   CITY-KG/H   ATING   PRESS   DOWN   ING   MULA-   AREA   MATER-   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC   RAC	SCPHZ	-	ACID	SCPH2 N.G.	HZ WATER + N.G.	tz SYN.
AREA   MATER   BODY	SCPH			Ŧ	Į	4
AREA AREA (CALC./ SELEC.) CIM72G 103.869 103.369 .328/ 0.785				လွ	SCPH2	SCPH2
0 0 % 1	60.821 41.77 60.821			11.945	8.552	11.945
ACC- MULA- TION 3 % %	0	6	0,	10	0,	0
CLOS- ING ING PRESS. CM*2G				36.1	6. 6.	20.1
DOWN PRESS 0.18 0.18	-					
PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS PRESS	ATM	0.35	ATM	ATM	ATM	ATM
SET MG/ CMM2G 5 5 1.4/ 1.4/ 5 5 28.5	20.84 23	44.0	1.45	<b>6</b> 6	~	22.3
ATING TEMP. C 370 372 125.5/ 275 125.5/ 385.2/	365.2 79.4/ 79.4	2.2 <i>l</i> AMB	102.2/ 175	232	160	135.7
SEQ. CAPA- CITY-KG/H 35000 20600	39907	248.523	102.309	1745.2488	3414/	8363/
MOL-W7/ SP-GR 18.02	18/8	228.9	24/5	21.5	21.58	6.8
& RATING SP  & RATING SP  B" 18  ANSI150-RF  1" PT FEMALE  B"	P. 19.			4" ANS!150-RF	3" ANSI150-RF	4" ANSI150-RF
B. RATING  6" ANSI300-RF  6" ANSI300-RF  (3/4)" PT MALE  6"	BORE ANSIGORF FULL 6" BORE ANSIGORF	RAP- 2" TLIRE ANSI150-RF	12" ANSI-RF	3" Ansi300-rf	2" ANSI150-RF	FULL 3" BORE ANSI300-RE
LIFT FULL BORE FULL BORE FULL	BORE	RAP- TLIRE	RUP- TURE	FULL	FULL	FULL
NET TYPE	CLO- SED					
N N N P P N N P P N N P P N P P N P N P	-	N	N	_	+	-
VALVE NO. BON- NAME REQ NET TYPE C 167A.B. 3 176A.B. 3 C 1777 1	201	203 <b>A</b> ,B	202A,B	304	302	303
O - 0 6 4	r w	<b>ω</b>	^	ω	Ø	٥

FLUIE	SYN.C	WATE + SYN.	X H 3	N H 3	N EH EH EH	H3	E H	WATER SYN.G	MATER SYN.G	NH3 EH EH	
BODY MATER- IAL	SCPH2	SCPH2	SCPH2	SCPH2	SCPH2	SCPH2	SCPH2	SCPHZ	SCPH2 1	SCPH2	
ORIFICE AREA (CALC./ SELEC.)	4.62	72.382	5.309	18.857	18.857	28.274	2.01	41.853	28.274	41.853	
ACC- MULA- TION		10	10	0,	6	0	10	ő	5	5	
CLOS- ING PRESS. CM*2G		6.3	17.1	8	8	1.9	47	8	8	21.39	
BLOW DOWN PRESS											
BACK PRESS KG/ CM*2G		ATM	АТМ	ATM	ATM	ATM	2.75	ATM	ATM	ATM	
SET PRESS KG/ CM*2G	232.6	_	6	20	20	<b>6</b> 2	70	8	20	23	
OPER- ATING TEMP. C	8	120	ŗ,	51	S	181.8	170	2	25	4	
A MOL-W71/ REQ. CAPA- OPER- SET BACK BLOW CLOS- ACC- ORIFICE BODY FLUIES SP-GR CITY-KG/H ATING PRESS PRESS TION (ALC.) IAL CMY2G CMY2G CMY2G CMY2G CMY2G CMY2G CMY2G CMY2G CMY2G CMY2G CMY2G % SELEC.)	37.863	23650/	5480/ 6130	19538/	17.03	35170/ 41400	433/	35170/	23 <b>6</b> 29/ 27 <b>4</b> 70		
A MOL-WT/ SP-GR	9.98	11.24	17.03	17.03	15642/ 22860	17.03	0.56	17.03	10.97	10.98	
OF AMMONIA & UREA INLET SIZE OUTLET SIZE MOL-W77 & RATING & RATING SP-GR	3" ANS11500-RJ	8" ANSI150-RF	3" ANSI150-RF	6" ANSI150-RF	6" ANSI150-RF	6" ANS/150-RF	2" ANSI150-RF	6" ANSI150-RF	6" ANSI150-RF	6" ANSI150-RF	
OF AMMO INLET SIZE & RATING	2" ANS!1500-R.J	6" ANSi150-RF	2" ANSI300-RF	4" ANSI300-RF	4" ANSI300-RF	4" ANSI300-RF	1" ANSI300-RF	4" ANSI300-RF	4" ANSI300-RF	4" ANSI300-RF	
VES	FULL	FULL BORE	FULL	FULL	FULL BORE	FULL	FULL	FULL	FULL BORE	FULL BORE	
VAL BON- TYPE											
HECK REC	-	80	۳	-	<u></u>	+	-	N	τ-	N	
SAF	\$	406A/B	407	408	409	014	<del>1</del> <del>1</del> <del>1</del> <del>1</del> <del>1</del> <del>1</del> <del>1</del> <del>1</del> <del>1</del> <del>1</del>	412A,B	<b>4</b>	414A,B	
Q	4	<b>4</b>	43	4	<del>5</del>	δ	47	84	<del>Q</del>	<u></u> 8 क	· ' –
<u></u>	<u> </u>	•	*	184	4	4	4	₹	₩.	አ lib	

1 E	SYN	Z Z	N H	N H3	STEAMS CONDERS	STEARS CONDERS	STEAM +	STEA	GASE	GASE
BODY MATER- IAL	SCPH2	SCPH2	SCPHZ	SCPH2	SCPH2	SCPH2	scрнг	SCPH2	SCS13	SCS13
ORIFICE AREA (CALC./ SELEC.) CMY2G	5.309	5.309	3.97	0.35 (0.051N)^2	0.711	0.983	0.785	58.4	28.274	0.785
ACC- MULA- TION	0,	0	0	25	25		10	в	ō,	10
CLOS- ING PRESS. CM^2G	81	18							19.8	19.8
BLOW DOWN PRESS			0	2.7	1.3	0.7	7%	<u>,                                    </u>	2.2	0.55
BACK PRESS KG/ CM*2G	ATM	ATA	ATM	ATM	ATM	ATM	VENT	ATM	FLARE	FLARE
SET PRESS KG/ CM/2G	R	8	8	27	<del>د</del>	7	88	<b>8</b> 8	8	5.5
OPER- ATING TEMP. C	7.2	5	8	<del>1</del>	8	100	255	225	150	\$
A  MOL-WT/I REQ. CAPA- OPER- SET BACK BLOW CLOS- ACC- ORIFICE BODY FLUID S SP-GR CITY-KG/H ATING PRESS PRESS DOWN ING MULA- AREA MATER- S TEMP C KG/ KG/ PRESS PRESS TION (CALC./ IAL CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA	4458/ 5371	5480/ 6438	4.8	35.7/U.SGAL	101000	101000	NOMINAL -1060	68.5	31.6	18.98 90 40 5.5 FLARE 0.55 19.8 10 0.785 SCS13 GASE
A MOL-WT/ SP-GR	10.25	17.03	17.03	17.03	0.959	0.988	-	18.02	18.02	18.98
SAFTEY VALVES OF AMMONIA & UREA VALVE NO. BON- LIFT INLET SIZE OUTLET SIZE MOL-WTI NAME REQ NET REATING RATING SP-GR	3" ANSI150-RF	3" ANSH 50-RF	3" ANSI150-RF	1" ANSI150-RF	Z" ANSI150-RF	2" ANSI150-RF	1" ANSI150-RF	8" ANSI150-RF	6" ANSI150-RF	1" ANSI150-RF
DE AMMO	2" ANSI300-RF	2" Ansi300-rf	2" ANSI300-RF	(3/4)" ANSI300-RF	1" ANSI300-RF	1" ANSI150-RF	(3/4)" ANSI300-RF	6" ANSIGOO-RF	4" ANSI300-RF	(3/4)" ANSI150-RF
ÆS G	FULL BORE	FULL	FULL	FULL	SEME	SEME	FULL BORE	FULL BORE	FULL	FULL
VAL\ BON- NET										
TEY E NO.	-	-	Ψ-		-	τ-	-		-	-
SAF	415	416	954	457	535	536	519	531	503	512
O _Z	2	25	ß	**	8	8	21	85	50	8

FLUD	STEA	STEAM	NH3	GAS GAS	C02	GASES	3ASES	COND.	ÉT3 G	
BODY MATER- IAL	SCPH2	SCPH2	SCPH2	SCPH2		SCPH2	SCPH2 (	SCPHZ	SCS13	
ORIFICE AREA (CALC./	CMr2G 114.4	114.4	3.463	28.274	5.05	0.387	103.869	0.297	18.857	
ACC- MULA TION	* m	n	0,	5	6	6	9	25	0	
CLOS- ING PRESS.			9.8	18.6		,	6.3			
BLOW DOWN PRESS	0.24	0.24	2.2	0.07	0.07	0.07	0.7	0.7	2.2	
BACK PRESS KG/	ATM	ATM	FLARE	VENT	VENT	FLARE	FLARE	ATM	FLARE	
SET PRESS KG/	5/6	rt)	8	29	165	165/ 2.5	165/	^	8	
OPER- ATING TEMP. C	158	158	8	206/	180	155/ 150	155/ 150	\$	6	
IREA  SIZE MOL-WT/ REQ. CAPA- OPER- SET BACK BLOW CLOS- ACC- ORIFICE BODY FLUDES  IG SP-GR CITY-KG/H ATING PRESS DOWN ING MULA- AREA MATER-  TEMP C KG/ PRESS TION (CALC./ IAL EXAMPLE)  CAMPAG CHAPAG CHAPAG CHAPAG CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./ IAL EXAMPLES  CALC./	33000	33000	3150/4543	37200/ 44890	46000	1600	33000/ 41930	ო	22.1	
MOL-WT/ SP-GR	18.02	18.02	17.06	43.35	43.35	17.33	23.09/	-	17.03	
OF AMMONIA & UREA INLET SIZE OUTLET SIZE MOL-WT/ & RATING & RATING SP-GR	8" ANSI150-RF	4" ANSI150-RF	(2 1/2)" ANSI300-RF	6" ANSI150-RF	6" ANSI300-RF	1" ANSI300-RF	57 503 1 FULL 6" 8" 23.09V 33000V 155V 165V FLARE 0.7 6.3 10 103.869 SCPH2 GASES STATE	1" ANSI150-RF	6" ANSI150-RF	- k
OF AMMO INLET SIZE & RATING	6" ANSI300-RF	(2 1/2)" ANSI150-RF	(1 1/2)" ANSI300-RF	4" ANSI300-RF	FULL 2" BOREANSI1500-RJ	(3/4)" SPECIAL LENES GASGET	6" ANSI150-RF	(3/4)" ANSH150-RF	4" ANSI300-RF	
VES	FULL	FULL	FULL BORE	FULL		FULL BORE	FULL	SEMI	FULL	
VAL BON- TYPE				CLO- SED	CLO- SED					
Z S S S S S S S S S S S S S S S S S S S	-	-	N	-	τ-	۲	-	-	-	
SAFTEY VALVES VALVE NO BON- LIFT NAME REQ NET TYPE	532A	532B	516.A/B	517	518	501	503	533	513	
O 2	6	28	8	8	જ	8	23	28	28	7

Z	Ξ	STE	STEA		
BODY MATER- IAL	SCPH2	SCPH2	SCPH2		
ORIFICE AREA (CALC./ SELEC.)	0.785	5.003/	2.38/ 4.523		
ACC- MULA- TION %	10	m	ო		
CLOS- ING PRESS. CMP2G					
BLOW DOWN PRESS	2.5	22.0	0.22		
BACK PRESS KG/ CM ² G	FLARE	ATM	ATM		
SET PRESS KG/ CM^2G		4/5.5	4/5.5		
OPER- ATING TEMP. C	£.	306	305		
ZE MOL-WT/ REQ. CAPA- OPER- SET BACK BLOW CLOS- ACC- ORIFICE BODY FLUES SP-GR CITY-KG/H ATING PRESS PRESS DOWN ING MULA- AREA MATER- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA- CAPA-	1.2	1200	571		
MOL-WT/ SP-GR	17.03	18.02	18.02		,
RATING & RATING SP-GR	1" ANSI150-RF	(2 1/2)" ANSI150-RF	2" ANSI150-RF		:
INLET SIZE & RATING	FULL (1/2)" BORE ANSI300-RF	2" ANSI150-RF	(1 1/2)" ANS(150-RF		
LIFT	FULL	FULL BORE	FULL BORE		
BON- NET TYPE					
REQ.	-	F-	-		
NO VALVE (NO. BON- LIFT NAME REQ NET TYPE	508	537	538		
O Z	6	7	7.2		

#30 E	32	35	35	6		
			_	<b></b>	i	
Y SE	4	4	4	ι <b>ດ</b>		
CAPACIT (KG/H)	32748	32748	23015	4456		4
TEMP- ERAT- URE	299	299	470	250		
CLOSING PRESS KG/ CMP2G	79.05	79.05	68.82	9.4		
SET PRESS KG/ CM/2G	88	82	47	ιO		
OPERA- TION PRESS (KG/	2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2 John 2	52	7.	ო		
FLUID	SATURATED STEAM	SATURATED STEAM	SUPER HEATED STEAM	SUPER HEATED STEAM		
MATERIAL (BODY/TRIM)	WCB/SUS	WCB/SUS	WC8/SUS	SCPH2/ SUS		
VALVE NO. TYPE NOMINAL NOMINAL NAME REQ (MM) PRESS. DIAMETER (PC'S) (B)	7	N	a	65		
NOMINAL PRESS. (PC'S)	1500	1500	1500	150		
TYPE (MMM)	FULL BORE 7.9	FULL BORE 7.9	FULL BORE 7.9	FULL BORE 10.9		
SEO -	4	4 m	4	- 4	:	
NO VALVE NO.	801A,B C,D	802A,B C,D	803A,B C,D	805A		
02	<u>-</u>	α	m m	4	<u>ග</u>	

## PIPE & FITTING FOR BOILER

ITEM	SIZE	SCH	MAT	DESCRIPTION	QTY
PIPE	1 1/2"	1MM	SGP		70
PIPE	1 1/2"	SCH80	STPG38		25
PIPE	1"	SCH80	STPT38		30
PIPE	1"	SCH80	STPG38		35
PIPE	1"	SCH40	SUS304		10
PIPE	1"	SCH80	STPT42		30
PIPE	1/2"	SCH80	STPT38		40
PIPE	1/2"	SCH80	STPG38		60
PIPE	1/2"	SCH80	STPT42		70
PIPE	1/2"	SCH80	SGP		40
PIPE	12"	16MM	STPA12		20
PIPE	12"	SCH20	STPG38		25
PIPE	12"	7.9MM	SGP		20
PIPE	12"	SCH20	STPG38		25
PIPE	14"	9MM	SGP		15
PIPE	14"	7.9MM	SGP		40
PIPE	2"	1.5MM	SGP		20
PIPE	3"	SCH40	STPG38		40
PIPE	3"	SCH80	STPG38		10
PIPE	3/4"	SCH40	SUS304		35
PIPE	4"	SCH80	STPA12		80
PIPE	4"	SCH40	STPG38		75
PIPE	4"	4MM	SGP		40
PIPE	6"	SCH40	STPG38		30
PIPE	6"	SCH40	STPT38		20
PIPE	6"	SCH120	STPT38		20
PIPE	6"	4MM	SGP		20
PIPE	8"	SCH80	STPA12		30
PIPE	8"	SCH120	STPT38		15
PIPE	8"	SCH40	STPG38		20
FLANGE	1"		-	ANSI-900-WN-RJ-S30C	2
FLANGE	1/2"		<u> </u>	ANSI-900-WN-RJ-S30C	3
FLANGE	12"		1_	ANSI-900-WN-RJ-A182F1	2
FLANGE	3"			ANSI-300-SO-RF-S25C	1 5
FLANGE	3/4"	<u> </u>	1.	ANSI-150-SO-RF-SUS304	1 2
FLANGE	3/4"		<del> </del> -	ANSI-900-WN-RJ-S30C	2 2 2
FLANGE	4"	<u> </u>	-	ANSI(125/150)-SO-FF-SS41 OR S25C	2
FLANGE	6"		-	ANSI-400-WN-RF-S25C	2
FLANGE	8"	_		ANSI-900-WN-RJ-S25C	6
FLANGE	8"	_	1_	ANSI-900-WN-RJ-A182F1	1
FLANGE	8"	<u> </u>	<del> </del>	ANSI-400-WN-RF-S25C	2
TEE	1 1/2"	1.5MM	SGP, GALV.	-	2
TEE	1/2"*1/2"	SCH80	STPG38		1
TEE	12"*12"	7MM	SGP		2
TEE	12"*12"	16MM	STPA12		2
TEE	12"*12"	SCH20	STPG38		1
TEE	12"*8"	SCH20	STPA12		1
TEE	3"*3"	SCH40	STPG38		4
TEE	3/4"*1/2"	SCH#0	STPG38		2
TEE	3/4"*3/4"	SCH80	SUS304		6
TEE	4"*2"	4MM	SGP		3
	4"*4"	7MM	SGP		2
TEE	14 4	TUNIN	اعود	<u> -</u>	

TEE	4"*4"	3MM	SGP	,-	1
TEE	4"*4"	SCH80	STPA12	-	1
TEE	6"*6"	4MM	SGP	-	2
TEE	6"*6"	SCH40	STPG38	-	4
TEE	8"*4"	5MM	SGP	-	1
TEE	8"*6"	SCH120	STPT38	-	4
TEE	8"*8"	SCH40	STPT38	•	1
TEE	8"*8"	SCH80	STPA12	-	_ 2
TEE	8"*8"	SCH20	STPG38	-	1
ELBOW	1 1/2"	SCH80	STPG38	-	4
ELBOW	1 1/2"	1.5MM	SGP.GLV.	-	6
ELBOW	1"	SCH80	STPG38	-	4
ELBOW	1"	SCH20	SGP	•	2
ELBOW	1"	SCH80	STPT42	-	4
ELBOW	1"	SCH80	STPT38	-	4
ELBOW	1/2"	SCH80	STPG38	-	6
ELBOW	1/2"	SCH20	SGP	-	2
ELBOW	1/2"	SCH80	STPT42	-	4
ELBOW	1/2"	SCH80	STPT38	-	4
REDUCER	10"*8"	SCH80	STPA12	-	1
ELBOW	12"	7MM	SGP	-	4
ELBOW	12"	16MM	STPA12	-	2
ELBOW	12"	SCH20	STPG38	-	3
REDUCER	12"*8"	6MM	STPA12	-	1
ELBOW	18"	SCH20	STPG38	_	3
ELBOW	2"	1.5MM	SGP	-	8
ELBOW	3/4"	SCH80	STPG38	-	2
ELBOW	3/4"	SCH80	SUS304	-	3
ELBOW	4"	3MM	SGP	-	1
ELBOW	4"	SCH40	STPA12	-	10
ELBOW	4"	4MM	SGP	-	2
REDUCER	4"*3"	2MM	SGP	-	2
REDUCER	4"*8"	4MM	SGP	-	1
ELBOW	6"	SCH40	STPT38	-	2
ELBOW	6"	4MM	SGP	-	4
ELBOW	6"	SCH120	STPT38	-	2
ELBOW	6"	SCH40	STPG38	-	5
REDUCER	6"*14"	4MM	SGP	-	2
REDUCER	6"*4"	SCH120	STPT38	-	2
ELBOW	8"	STPT38	SCH40	-	2
ELBOW	8"	SCH80	STPA12	-	8
FLBOW	8"	5MM	SGP	-	2

IPING & FITTING FOR POLISHER

TYPE	SIZE	MAT	THICK (mm)	YTO	SPECIF
BALL VALVE	3/4"	PVC			150IBS
ELBOW	1 1/2	SGP	,	27	
ELBOW	1"	STPG 38			90
ELBOW	10"	SUS304			
ELBOW	10"	STPG38	SCH20	6	
ELBOW	100	TV37-A	+	2	90
ELBOW	100	PVC			
ELBOW	12	PVC	-		90
ELBOW	14"	STPG 38	*		90
ELBOW	250	TV37-A	-		90
ELBOW	3/4	STPG 38	_	4	90
ELBOW	32	A33	-	30	06
ELBOW	40	PVC	-		
ELBOW	40	A33	_		90
ELBOW	50	C/S A33	-	1	06
ELBOW	50	TV37-A	-	14	90
ELBOW	50	PVC	-	12	<b>*</b>
ELBOW	O,	SGP WITH POLYETHLEN	_	45	06
ELBOW	65	C/S API-SL A33	-	4	ANGLE 90
ELBOW	65	C/S API-SL A33	-	12	90
ELBOW	65	TV37-A	-	3	90
ELBOW	75	POLYPROPYLEME	-	7	90
ELBOW	80	TV37-A	•	1	90
ELBOW	80	TV37-A	-	10	90
FLANGE	1	STPG 38		22	150 IBS S.O
FLANGE	10"	SUS304	•	15	150IBS,S.O
FLANGE	10"	STPG38	-	6	150IBS,S.O
FLANGE	100	TV37-A	-	16	SLIPON 150IBS
FLANGE	100	TV37-A		14	WELD NECK150IBS
FLANGE	100	PVC		16	IBS150
FLANGE	12	IPVC		30	180/BS

					ļ														38															
	S S.O	N 150IBS	NECK150IBS	N 150 IBS	WELD NECK150IBS	8.5.0	SLIPON 150 IBS	WELD NECK1501BS	00	SLIPON 150 IBS	WELD NECK ISSUES	WELD NECK BOIL S	WEIDNECK	Q	WELDED LINING	SLIPON 150 IBS	WELD NECK150IPS	SLIPON 150 IBS	WELD NECK150IBS	SLIPON 150IBS	150 IBS	SCIPCIN 130 IBS	SLIDON 150 IBS	WELD NECK 150 IBS	150 IBS S.O									
<b>!</b>	150 IB	SLIPO	WELD	SLIPO	אברם	150IBS S.O	SLIPC	WELL	IPS 150	SLIPC	WELL	WELL P	WE!	<b>IBS15</b>	WELL	SLIPC	WELL	SLIPC	WELL	SLIPC	201 001	MEIN		WEI	150 IE	_		,			<u>.</u>	<u>.   .</u>	100	D T
	10	30	20	5	1	34	30	26	20	40	20	- 5		14	150	11	4	11	10	_	4	-	70	18	50	2m	180m	45m	40m	40M	40m	80m	12011	
												:								:						2	SCH40	SCH80		SCH20	9	æ c	0 0	SCH20
	1	1	-	-	<u> </u>	_	_	-	-	+	+	+	+	+	<u> </u>	,	<u> </u>	-	,	4	+	<u>,  </u>	+	+	<del>  ,</del>	3.2	SC	SC	4	š	3.6	χ. 2. α	2	<u>x</u>
	œ		TV37-A			STPG 38	A33	A33	PVC	A33	A33	C/S A33	1V3/-A	1V3/-Y	SGP INING WITH POLYETHIEN	-	C/S API-SL A33	C/S API-SL A33	C/S API-SL A33	TV37-A	A42	TV37-A	1V3/-A	TV3/-A	N3/-74	80 TV37-A	SGP GALV	STPG 38	SUS 304	STPG38	TV37-A	PVC	PVC	ISTPG-38
																									1 1 2	7/1	11/2		](		00	g		L.
	14"	25	25	25.	251	3/4	32	32	40	40	4	20	2 2	200	3 8	955	9	65	65	65	75	8	<u></u>	8 8	4	-	-	1.	10	10.	100	100	12	7
	FLANGE	FLANGE	FLANGE	FI ANGE	FI ANGE	FLANGE	FLANGE	FLANGE	FLANGE	FLANGE	FLANGE	FLANGE	FLANGE	FLANGE	EL ANGE	FI ANGE	FLANGE	FLANGE	FLANGE	FLANGE	FLANGE	FLANGE	FLANGE	FLANGE	FLANGE	PIPF	PIPE	PIPE	PIPE	PIPE	PIPE	PIPE	PIPE	PIPF
															19:																			

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		TV37-A	2.3	100m	
		TV37-A		40m	-
		STPG 38	30	e0m	
		A33	4.85	130m	_
		PVC	9	100m	1
		A33	5.08	120m	-
		C/S A33	3.91	3 m	=
PIPE	20	TV37-A		30m	-
		PVC	5	100m	-
		SGP LINING WITH POLYETHLEN	-	1200m	_
		C/S API-5L A33	5.16	130 m	
		C/S API-SL A33	3	160 m	-
	65	TV37-A		20m	_
	75	POLYPROPYLEME	6.8	180m	-
	80	TV37-A		30m	
	100*200		-	9	_
REDUCER	125*100		ı	12	
	150*250		1	12	1
	200*100		-	12	
	300*200		-	10	
	65*80		_	14	-
UCER	75*100	_	-	10	-
	10"*10"*10"	_	•	8	-
	10"*10"*4"	<u>.                                    </u>	-	10	
	12"*12"*8"	_	-	5	-
1EE	12*12"*10"	TV-37-A	-	9	-
	4"*4"*2"	TV-37-A	-	14	-
	6"*6"*4"	TV-37-A	1	12	_
	8"*10"*10"	TV-37-A	-	- 6	-
	88		-	10	_
		A33	-	20	DIAPHRAME VALVE 150IBS
VALVE		A33	-	25	DIAPHRAM 150IBS
VALVE		PVC	-	30	150IBS
VALVE	2"	A33	=	25	HV DIAPHRAM VALVE 150IBS
VALVE	10"	TV-37-A	-		DIAPHRAME VALVE/150IBS
VALVE	10"	TV-37-A	-	8	BUTTER FLY VALVE/150IBS

TV-37-A	14	4 5		DIAPHRAME VALVE/1501BS
- IV-3/-A	_		01	BUILER FLT VALVE/190163
TV-37-A	_		25	DIAPHRAME VALVE/150IBS
A33	-1		40	DIAPHRAME VALVE/150IBS
TV-37-A	-		15	SIAPHRAME VALVE/150IBS
- A33	-		30	DIAPHRAM 150IBS
TV-37-A			20	DIAPHRAME VALVE/150IBS
TV-37-A			[23	DIAPHRAME VALVE/150IBS
TV-37-A	_		6	BUTTER FLY VALVE/150IBS
TV-37-A			19	DIAPHRAME VALVE/150IBS
T ( ) T			9	001/14/14/14/10 CI V 1/A 1/A 1/A 1/A 1/A 1/A 1/A 1/A 1/A 1/A

1) Screw end steam trap	1"	600 Ib	SUS416	15
•	3/4"	600 Ib	-	50
	1/2"	300 lb	=	30
	1/4"	300 Ib	=	30
	3/4"	150 Tb	SUS410	50
	1-1/2"	600 Ib	C.S	12
	max. 5"	150 Tb	=	5
	3"	150lb	=	8
2) Socket end steam trap	2"	300 Ib	SUS416	25
	3/4"	300 Ib	=	20
3) Flg.& screw end steam trap	3/4"	SS41	AISI-416	25
	1/2"	SS41	=	15
4) Flg.steam trap	1/2"	150 Ib	SUS416	15
•	4"	900 Rj	C.S	12
	1"	600 Ib	==	7
	2"	300 Ib	=	10
	3/4"	300 Ib	=	60
	1"	150 Ib	=	15
5) Flor Steam tran	2"	150 Th	CS	٥

## ANNEX NO.4 PUMPS FOR AMMONIA UNIT

	TAG.NO.	SERVCE	NO.
			REQ.
1	P-101 AB	HIGH PRESS. B.F.W. PUMP	2
2	P-101 AT	HIGH PRESS. B.F.W. TURBINE	1
3	P-102ABC	B.C.W.PUMP	3
4	P-102ABT	B.C.W.PUMP TURBINE	2
5	P-104 AB	L.P.B.F.W.PUMPE	2
6	P-105	HYDRAZINE FEED PUMP	1
7	P-106	L.P.W.H.B. PHOSPHATE FEED PUMP	1
8	P-107 AB	TURBINE CONDENSATE RETURNE	2
		PUMP	
9	P-108	AMMONIA FEED PUMP	1
10	P-109	HIGH PRESS. W.H.B PHOSPHATE	1
		FEED PUMP	
11	P-110	AMMONIA & HYDRAZINE FEED	1
		SPARE PUMP	
12	P-111	P-101 AT AUX. L.O. PUMP	1
13	P-112	P-101 B AUX. L.O. PUMP	1
14	P-201AB	SEMI – LEAN SOLUTION PUMP	1
15	P-201HT	HYDRAULIC TURBINE	1
16	P-201AT	SEMI – LEAN SOLUTION PUMP	1
		TURBINE	
17	P-202AB	LEAN SOLUTION PUMP	1
18	P-203AB	REFLUX PUMP	1
19	P-204	SOLVENT TRANSFER	1
20	P-205	ANTIFOAM INJECTION PUMP	1
21	P-206AB	CONDENSATE INJECTION PUMP	1
22	P-207AB	STEAM CONDENSATE RECOVERY	1
		PUMP	
23	P-208AB	P – 201A, B AUX. L.O. PUMP	1

## PUMPS FOR UREA UNIT

	Item No,	Services	No.	New	Repair
			REQ'D	Supply	
1-	P-501AB	Ammonia Feed	2		
		Pump			
2-	P-502AB	H.P.Carbamate	2		
		Solution Pump			
3-	P-503AB	M.P.Carbamate	2		
		Solution Pump			
4-	P-504AB	Stripping Tower	2		
		Feed Pump			
5-	P-505AB	Ammonia	2		
		Booster Pump			
6-	P-506AB	Steam	2		
		Condensate			
		Pump			
7-	P-508	H.P.Washing	1		
		Pump			
8-	P-509AB	Carbamate	2		
		Booster Pump			
9-	P-530AB	K-501	2		
		Condensate			
		Retur1n Pump			
10-	P-531AB	K-501 Lube Oil	2		
		Pump			
11-	P-532AB	K-501 Seal Oil	2		
		Pump			
12-	P-531AT	P-531A Turbine	1		
13-	P-532AT	P-532A	1		
		Turbine			

## PUMPS FOR UTILITIES

	Item No.	Service	No.
			Req'd
1	P-711ABC	Cooling Water Circulating pump	3
2	P-712EDR	Fire Water pump Diesel engine	1
3	P-713AB	Corrosion Inhibitor Feed pump	2
4	P-718AB.	PH Control Chemical Feed pump	1.
5	P-714	Biocide Inhibitor & Sodium Hypo chloride Feed pump	1
6	P-719 AB	P-711 Turbine Aux. L.O. pump	2
7	P-721ABC	Aluminum Sulphate Feed pump	3
8	P-722AB	Lean Solution Feed pump	2
9	P-731AbcD	Filtrated Water pump	4
10	P-732AB	Sulphuric Acid Dosing pump for Cation	2
11	P-733A	Caustic Soda Dosing pump for Anion	1
12	P-734AB	Sulphuric Acid Dosing pump for Mixed Bed	2
13	P-735AB	Caustic Soda Dosing pump for Mixed Bed	2
14	P-736AB	Deminerlized Water Transfer pump	2
15	P-737B	Caustic Soda Dissolving Circulation pump	1
16	P-738B	Neutralized Effluent pump	1
17	P-740AB	Effluent pump	2
18	P-761B	Condensate Feed pump	1
19	P-765AB	Deionized Water pump	2
20	P-801ABC	K-801 Turbine aux.l.o. Pump	3
21	P-715	Waste Water pump	1

	e mils	DRISH	HEA	AA IMD	USTRIES,	LTD.					
	CE	NTRIE	LIGAL	PILMP	DATA SH	FET			Rev.		
-	O.		OGAL	. 02011	טאואָ טוו				Date Check	<del>                                     </del>	
ı	Plant	TRAQ	EXP PI	ROJECT	· · · · · · · · · · · · · · · · · · ·		Item No.			ــــــــــــــــــــــــــــــــــــــ	
2 [	Customer	M.O.1	IRAQ				Ĺ	P -10			
3	Order	5630	21				Service	HIGH PRE	SS: B.F.W.P	UMP	
4	Location		Indoor		Outdoor /	<i>,</i> .	No. Regio	d Wor	king I Sp	ore j	Total 2
5	Regulation						Code	·			
١						Proces	* Data				
7	Liquid	BOILE		ED WATER							
,	Capacity Pump Temp.	Nor.	378 125.5	m³/h *c	-New Poin				Point 2) 480		
۲,	Sp. Gr. at Pu	T	939	kg/m³	Disch, Press,	2.3			NPSH Avoil	11,5	m
,	Vap. Press. of				Diff. Head	87.4		kg/cm²G	NPSH Regid 8.	5 (at Pint2	)) m
2	Vis. at Pump		_	ср.	Diff. Head	930	*880	m G			
3 ;	Corr. or Soli		_	- 1	Max Suct. Pre		<del></del>		Duty 2	24	h/day
4		······································				. Design	···	<u> </u>			, oay
5	Type HOR12	ONTAL I	MULTI-S	STAGE PUM	P./		Drive Typ	• A-STE	AM TURBINE.	B - MO	TOR
١	No. \$lage	6					Design Pr	051		116	kg/cm²G
7	Impeller Dio	, M	AX ₃₅₅ )	mm Ty	CLOSED		Hydro. Tas	st Press. 17	4(CASING)		ET) kg/cm²G
•		TWEEN	BEARIN		it VERTICAL		Seal Syste		Gland)	Mech, S	eal
,	R.P.M.		970				Mech. Sea		Single	Double	
20	Hydraulic HI		. 11	· · · · · ·	101	kw	<b> </b>		Balance	Unbalan	
11	Litraranc)	Nor / 78	'	79	2) 79	%			Self Flush	Externa	l Flush
22	B. H. P. Control System	1215 EOD	CED OII	1270	1368	kw	<u> </u>	· · · · · · · · · · · · · · · · · · ·		····	
24	Control Syst		CED OIL	STSIEM					- · · · · · -		· · · · · · · · · · · · · · · · · · ·
25	fooi scaling (		ind: C	TW 34	.6 °c		5.0 kg/d	cm ² G	1.14 m³/h	0.0006	21.9 /I I
26	Cooling Wat	er	land:		Pocking Bo					0,0006 lush Cooler:	m²h°c/kcal NO
27	Nozzle	Orient.	Size	Rating	Flush	Req'		m³/h	Test	Reg'd	Witness
28	înlet	TOP	88	ANSTINE	Cage Ring	1			Hydrostotic	1, 100	NO
29	Outlet	TOP	6 B	ANS   16	Throat Bush	!!			Bolancing		NO
30					Wear Ring	> NO		T	Performance	YES	YES
31					Gland '				Running		YES
32					Mech. Seal	IJ			NPSH	J	YES
33						Mote	rials		Overhaut	YES	YES
34	Case		STEEL		Mech. Seal		NO				
35	Impeller		STEEL.		Cage Ring		NO NO		Tie Bolt SCA		
36	Shaft		,flo,∨,≲		Case Gasket	B.	ASBESTO		Gland Stud SUS	3 420 J ₂	
37 38	Shaft Sleeve Gland Packi		SESTOS		Case Wearing	<u>.</u>			Bearing		
39	GIONG POCKI	ng ASE	153103	<del>/</del>	imp. iv adi ing	Mo	14 Cr . ST	IEEL			,
40	Type.No.560	LINDUCTA	ON MO	TOR	Volt.	1110	6600	v I	Drive Type [	DIRECT D	RIVE
41	Rated Outpu		510	kw	Phase		3		Speed Reducer	NO	11174
47	Cycle		50	Hz	Pole		2		Rotation (from P	UMP)	(w)) w)
43						Acces	sories				
44	Common Bo			}	V-Pulley		NO		Press. Guage .		
45	Anchor Bolt			YES	Drain Value	2 -	YES		Piping for C.W		YES
46 47	GEAR COU Coupling Co			<del> •</del>	Tool		YE:	5	Lube oil Syster	m J	
47 48	Cooping Co	7-01		<del></del>	L	Cra	Bests /D-4	r to spare p			
49	Impeller				Case Gasket	ه اعام	rum (Refe		irts list ) Case Wearing R	ina	
50	Shaft				Rubber for C	ořa		+	Care treating 8	w.W	
51	Bearing				Gland Packing						
52	Mech. Seal	1			Imp. Ring	<del></del> -	·		<del></del>		
53					• • • • • • • • • • • • • • • • • • •	Infor	mation				
54	Manufactur	er TORISE	IIMA PL	JMP MFG (	0.,LJ0.		Model N	o, HDBS	- 150/6		
55	Weight F	ump & Ba	se : B)	3170	ka , Mo	tor:	11,000	kı		الع	14,170 kg
56	Painting		A)	2920	kg , Tu	rbine +	Geor 1/2	80 k	Total:	- 14	14.200 NS
57	Remarks										
58	1.	# marked		f. Head S		прре	rformance c	urve (MCE	C'S reg'd hea	d is 850 m	).
59 46	2.	Slow furn	ing of p	ump rotor is	avallable.						
60 61	}	<del></del>							- <del></del>		
ψ,										٧	

Continue	Plant Customer Order	ENTRIF	UGAI	PILIMP		per per repe			Rev.	and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of th		
Pont   PAQ EXP   PROJECT	2 Customer 3 Order			_ I OWIT	DATA SHI	EEI			-			
Content	Order	IPAQ EXI	P PRO	JECT		T	Item No.					-
		M.O.1 IR/	AQ					P-1	04 A.B			
		563021			613	_				-		
			Indoor		(Outdoor)			l W	forking	Spare		otal 2
Concepts	6 Regulation					Process				-		
	7 Liquid	BOILE	R FE	D WATER								
20   Sp. Cr. of Pump F.   93.9   kg/m²   Suet. Press.   2.3   2.3 kg/m²   Cop.   Pump T.   2.4035 kg/m²   A   Diff. Head   3.7   13.0 kg/m²   Cop.   Diff. Head   13.7   13.0 kg/m²   Cop.   Diff. Head   13.7   13.0 kg/m²   Duty   2.4   h/doy   A   Diff. Head   13.7   13.0 kg/m²   Duty   2.4   h/doy   A   Diff. Head   13.7   Roy   Duty   Diff. Head   13.7   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Diff. Head   Roy   Duty   Du			-		Nor Point	30.3			1	3 m3/h		
Vis. at Pump T. 2,4035 kg/cm² A   Diff. Head   13.7   13.0 kg/cm² G											-	
Vis. of Pump T.   Cp.   Diff. Head   M6.0   I38,0 % %	Annual Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the	The second second second	-	THE RESERVE OF THE PERSON NAMED IN							4.6	m
Design Date   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Desig	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon				Diff. Head	46.0						
Type HORIZONTAL MULTI-STAGE PUMP   Drive Type   MOTOR DRIVEN		lid	NONE		Max. Suct. Pre			g/cm ² G	Duty	24		h/day
No. Single   S		TONTAL	MUT	OTA CE DI	· /·	Design						
Impeller Dia.   Max   Between   Bear Ing   Spile   VERTICAL   Seal System   Gland)   Mech. Seal   Mech. Seal   Single   Double		ZONTAL		-STAGE PL	JWP.	-			MOTOR DRIVE	-	5	ka/cm²G
Axia   Between   Bearing   Solit   VERTICAL   Sool   System   Glond   Mech. Sool   Double		a. (M		mm Ty	Pe CLOSED				23.000			
Hydroulic HP	Axis [		Bearin	g Si			Seal Syste	m	Gland	Med	h. Sec	
Efficiency Nor   S7   13 63   23 64 %   Self Flush   Externol Flush	-	100	2960	)			Mech. Sea	1			-	
B.H.P.   16.5   17.9   18.3 kw		17	, [11	/3	[2]	-			-		-	
Control System					07	-			Seit Flush	Exte	rnal	riush
Lubricating Oil System	-			. 1.1	10.3	vw I						
Nozzle	Lubricating		-									
Nozzle	Cooling W	ater										m²h°c /kcal
Inlet		1	1	1	1				1	-	. 1	117
Wear Ring			-	ANSI DE	Cage Ring	Ked o	Fluid	mº/h		Rec	d	-
Wear Ring		_		ANSI 15	Throat Bush				<u> </u>			
Mech. Seal NO Canaceting Balt. SCM 3 Impeller FC 20 Mech. Seal NO Canaceting Balt. SCM 3 Impeller FC 20 Cage Ring NO Canaceting Balt. SCM 3 Impeller FC 20 Cage Ring NO Canaceting Balt. SCM 3 Impeller FC 20 Cage Ring NO Canaceting Balt. SCM 3 Impeller FC 20 Cage Ring NO Gald Stud SUS 420 J₂ Shaft Sleeve SUS 420 J₂ Case Wearing Ring FC 20 Bearing NU 207 K + H207/Cs Gland Packing ASBESTOS Imp. Wearing Ring NO  Motor  Type NO.200L-INDUCTION MOTOR Volt. 380 V Drive Type DIRECT DRIVE Rated Output 22 kw Phase 3 Speed Reducer Cycle 50 Hz Pole 2 Rotation (from driver) cw Ccw Cycle 50 Hz Pole 2 Rotation (from driver) cw Ccw Accessories  Accessories  V-Pulley NO By-Pass Orifice (Flanged Type) ₹1 Flex. Coupling Cover Plping for C.W  Spare Parts (Refer to Spare parts list)  Impeller Case Gasket Case Gasket Case Wearing Ring Mech. Seal Imp. Ring Montor: 275 kg, Total: 469 kg Painting Remarks I. All pump capacities include by-pass orifice (i.thp be welded of ANSI 300 PRF.  2 #1 marked flanges of by-pass orifice. (i.thp be welded of ANSI 300 PRF.  3 #2 marked Diff, Head shows on pump performance curve (MCEC'S regán head is 135.4 m)  (MCEC'S regán head is 135.4 m)						> NO			Performance	Y	ES	YES
Materials Overhaul YES YES  Case FC 20 Mech. Seal NO Canaecting Bolt. SC M 3  Impeller FC 20 Cage Ring NO Canaecting Bolt. SC M 3  Shaft S 35 C Case Gasket ASBESTOS Gland Stud SUS 420 Jz  Shaft Sleave SUS 420 Jz Case Wearing Ring FC 20 Bearing NU 207 K + H207/Cy  Gland Packing ASBESTOS Imp. Wearing Ring NO  Type NO 200L INDUCTION MOTOR Volt. 380 V Drive Type DIRECT DRIVE  Rated Output 22 kw Phase 3 Speed Reducer  Cycle 50 Hz Pole 2 Robation (from driverth cw Case Sories)  Accessories  Accessories  V-Pulley NO By-Pass Orlfice (Flanged Type) **1  Anchor Bolt YES Air & Drain Cock-Valve YES. Companion Flange YES  FResh Coupling Tool (Discharge & Suction)  Pulling Cover Piping for C.W  Spare Parts (Refer to Spare parts list)  Impeller Case Gasket Case Wearing Ring  Mech. Seal Imp. Ring  Mech. Seal Imp. Ring  Manufacturer TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  Weight Pump & Base: 194 kg , Motor: 275 kg, Total: 469 kg  Piming  Remarks I. All pump capacities include by - pass orlfice. (Sto be. welded of ANSI 300 lb RF.  3												
Case   FC 20					Mech. Seal	11-1-				- 1	-	
Impeller   FC 20		FC	20		Mech Seal	Water						YES
Shaft Sleeve   SUS 420 J2   Case Wearing Ring   FC 20   Bearing   NU 207K + H207/Cy										5011. 30	IVI 3	
Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Motor   Moto	Shaft	\$3	55 C		Case Gasket		ASBEST	os	Gland Stud	SUS 420	J2	
Type NO.200L INDUCTION MOTOR Volt. 380 V Drive Type DIRECT DRIVE  Rated Output 22 kw Phase 3 Speed Reducer  Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw PUMP  Accessories  Common Base V-Pulley NO By-Pass Orifice (Flanged Type) *1  Anchor Bolt YES Air & Drain Cock-Valve YES. Companion Flange YES  Flex. Caupling Tool (Discharge & Suction)  Coupling Cover Plping for C.W  Spare Parts (Refer to Spare parts list)  Impeller Case Gasket Case Wearing Ring  Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Information  Manufacturer TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  Weight Pump & Base: 194 kg , Motor: 275 kg, Total: 469 kg  Painting  Remarks 1. All pump capacities include by - pass flow of 4.5 m³/H.  2. #1 marked flanges of by - pass orifice. (1.212 be . welded of ANSI 300 lb RF.  3. #2 marked Diff. Head shows on pump performance curve (MCEC'S req'd head is 135.4 m)	-								Bearing	NU 207 K	+ H 2	07/c3/
Type NO.200L INDUCTION MOTOR Volt. 380 V Drive Type DIRECT DRIVE Rated Output 22 kw Phase 3 Speed Reducer Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 2 Rotation (from driver) cw (cw) Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Pole 7 Cw Cycle 50 Hz Companion (From driver) Cw Cycle 50 Hz Companion (From driver) Cw Cycle 50 Hz Companion (From driver) Cw Companion Flange 7 Cw Companion Flange 7 Cw Companion Flange 7 Cw Companion Flange 7 Cw Companion Flange 7 Cw Companion Flange 7 Cw Companion Flange 7 Cw Companion Flange 7 Cw Companion Flange 7 Cw Companion Flange	0.0.0	cing ASI	BESTO	S	Imp. Wearing							
Rated Output  22 kw Phase 3 Speed Reducer  Cycle 50 Hz Pole 2 Rotation (from driver) cw Cw  Accessories  Common Base  V-Pulley NO By-Pass Orifice (Flanged Type) *1  Anchor Bolt YES Air & Drain Cock-Valve YES. Companion Flange YES  Flex. Coupling Tool (Discharge & Suction)  Coupling Cover Plping for C.W  Spare Parts (Refer to Spare parts list)  Impeller Case Gasket Case Wearing Ring  Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Imp. Ring  Information  Manufacturer TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  Weight Pump & Base: 194 kg , Motor: 275 kg, Total: 469 kg  Painting  Remarks I. All pump capacities include by pass flow of 4.5 m³/H.  2. #1 marked flanges of by pass orifice. (And be welded of ANSI 300 lb RF.)  3. #2 marked Diff, Head shows on pump performance curve (MCEC'S req'd head is 135.4 m)		OOL-INDUC	CTION	MOTOR	Volt.			V	Drive Type	DIRECT	DR	VE
Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  V-Pulley  NO  By-Pass Orifice (Flanged Type)  *1  Anchor Bolt  YES  Air & Drain Cock-Valve  YES  Flex. Coupling  Coupling Cover  Piping for C.W  Spare Parts (Refer to Spare parts list)  Impeller  Case Gasket  Case Wearing Ring  Shaft  Rubber for Cpt'g  Bearing  Gland Packing  Mech. Seal  Imp. Ring  Information  Manufacturer  TORI SHIMA PUMP MFG CO., LTD.  Model No. WL - 50/5  Weight  Pump & Base: 194 kg , Motor: 275 kg, Total: 469 kg  Painting  Remarks I. All pump capacities include by-pass flow of 4.5 m³/H.  2. #1 marked flanges of by-pass orifice. (Ata be welded of ANSI 300 PRF.  3. #2 marked  Diff. Head shows on pump performance curve (MCEC'S req'd head is 135.4 m)	-	-										
Common Base  V-Pulley  NO  By-Pass Orifice (Flanged Type)  Flex. Coupling  Coupling Cover  Piping for C.W  Spare Parts (Refer to Spare parts list)  Impeller  Case Gasket  Rubber for Cpt'g  Bearing  Mech. Seal  Imp. Ring  Mech. Seal  Imp. Ring  Monufacturer  TORI SHIMA PUMP MFG CO., LTD.  Weight Pump & Base: 194 kg, Motor: 275 kg, Total: 469 kg  Painting  Remarks I. All pump capacities include by-pass flow of 4.5 m3/H.  2. #1 marked flanges of by-pass orifice. (At be. Welded of ANSI 300 lb RF.  3. #2 marked Diff, Head shows on pump performance curve (MCEC'S req'd head is 135.4 m)				50 Hz	Pole				Rotation (from	driver)	cv	v (ccw
Anchor Bolt YES Air & Drain Cock-Valve YES. Companion Flange YES  Flex. Coupling Tool (Discharge & Suction)  Coupling Cover Plping for C.W  Spare Parts (Refer to Spare parts list)  Impeller Case Gasket Case Wearing Ring  Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Information  Monufacturer TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  Weight Pump & Base: 194 kg , Motor: 275 kg, Total: 469 kg  Painting  Remarks I. All pump capacities include by - pass flow of 4.5 m3/H.  2. #1 marked flanges of by - pass orlfice. (Ato be welded of ANSI 300 lb RF.  3. #2 marked Diff. Head shows on pump performance curve (MCEC'S req'd head is 135.4 m)					Lusii	Access		-				
Flex. Coupling  Flex. Coupling  Coupling Cover  Piping for C.W  Spare Parts (Refer to Spare parts list)  Impeller  Case Gasket  Rubber for Cptg  Bearing  Gland Packing  Imp. Ring  Information  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  Weight Pump & Base: 194 kg , Motor: 275 kg, Total: 469 kg  Painting  Remarks  1. All pump capacities include by pass flow of 4.5 m3/H.  2. #1 marked flanges of by pass orlfice. As a welded of ANSI 300 flows.  MCEC'S req'd head is 135.4 m)  Coupling (Discharge & Suction)  Case Gasket  Case Wearing Ring  Case Wearing Ring  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Case Wearing Ring  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Case Wearing Ring  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Case Wearing Ring  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Case Wearing Ring  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Case Wearing Ring  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Case Wearing Ring  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Case Wearing Ring  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Case Wearing Ring  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Case Wearing Ring  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Case Wearing Ring  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Manufacturer  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Manufacturer  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Manufacturer  Manufacturer  Manufacturer  Manufacturer  TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  kg, Total: 469 kg  Manufacturer  Manufacturer  M				VEC		Cock V				-	Туре	***************************************
Coupling Cover   Piping for C.W   Spare Parts (Refer to Spare parts list)			-	IES		V(	100					TES
Impeller   Case Gasket   Case Wearing Ring				)			)					
Shaft Rubber for Cpl'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Information  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  Weight Pump & Base: 194 kg , Motor: 275 kg, Total: 469 kg  Painting  Remarks I. All pump capacities include by - pass flow of 4.5 ms/H.  2. \$1 marked flanges of by - pass orifice. (Ab be . welded of ANSI 300 PRF.  3. \$2 marked Diff. Head shows on pump performance curve (MCEC'S req'd head is 135.4 m)	-				_	Spare	Ports (Re	fer to Sp	_			
Bearing Gland Packing  Mech. Seal Imp. Ring  Information  Monufacturer TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  Weight Pump & Base: 194 kg , Motor: 275 kg, Total: 469 kg  Painting  Remarks 1. All pump capacities include by - pass flow of 4.5 ms/H.  2. #1 marked flanges of by - pass orifice. (tab be . welded of ANSI 300 PRF.  3. #2 marked Diff. Head shows on pump performance curve (MCEC'S reqd head is 135.4 m)	-				and the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of the last of th	- V			Case Wearing	Ring		
Mech. Seal Imp. Ring  Information  Manufacturer TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  Weight Pump & Base: 194 kg , Motor: 275 kg, Total: 469 kg  Painting  Remarks 1. All pump capacities include by - pass flow of 4.5 m3/H.  2. #1 marked flanges of by - pass orifice. (Ab be welded of ANSI 300 B.F.  3. #2 marked Diff. Head shows on pump performance curve (MCEC'S req'd head is 135.4 m)												
Information  Manufacturer TORI SHIMA PUMP MFG CO., LTD. Model No. WL - 50/5  Weight Pump & Base: 194 kg , Motor: 275 kg, Total: 469 kg  Painting  Remarks 1. All pump capacities include by - pass flow of 4.5 m3/H.  2. #1 marked flanges of by - pass orifice. (Ab be welded of ANSI 300 B.F.  3. #2 marked Diff. Head shows on pump performance curve (MCEC'S req'd head is 135.4 m)		al										
Weight Pump & Base: 194 kg , Motor: 275 kg, Total: 469 kg Painting  Remarks 1. All pump capacities include by pass flow of 4.5 m ³ /H.  2. #1 marked flanges of by pass orifice. (to be welded of ANSI 300 lb RF.  3. #2 marked Diff. Head shows on pump performance curve (MCEC'S regá head is 135.4 m)						Inform	nation				-	
Painting Remarks 1. All pump capacities include by pass flow of 4.5 m ³ /H.  2. #1 marked flanges of by pass orifice. (to be welded of ANSI 300 b RF.  3. #2 marked Diff. Head shows on pump performance curve (MCEC'S regid head is 135.4 m)	-							o. W				
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2. #1 marked flanges of by-pass orifice. (i.to be. welded of ANSI 300 Ib RF.  3. #2 marked Diff. Head shows on pump performance curve (MCEC'S regá head is 135.4 m)		I All au	mp eac	ncities les	luda hu sc	e fla	w of A s f	n3,				
3. \$2 marked Diff. Head shows on pump performance curve (MCEC'S regá head is 135.4 m)									of ANSI 300 It	RF		
											135	.4 m)
9	) .											Victoria de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición del
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Ci	1111111111	-UGAL	- PUMP	DATA SH	EEI			Dote			
Plant	IRAQ	EVP	PROJECT			I tem 1	la.	Check			
Customer	M. O. I	IRA				l rem /	P -	107 A.B	1		
Order		56302				Servic	. TURR	COND. RETURN	DIMP	for U.D	DEWD
Location		Indoor		Outdoor	-	No. R			Spore		Total
Regulation						Code	-40 ,	TOTKING 1	3 por e	-	10101
					Proces	s Dota					
Liquid											
Capacity	Min.		m³/h	Nor.	11.5	m ³ /	h Ma	x. 13.34	1 m ³ /	h	
Pump Temp.		60	*c	Disch. Press.		3.5	kg/cm ² G	NPSH Avail		2.5	
Sp. Gr. at Pu		983	kg/m³	Suct. Press.		-0.8	kg/cm ² G	NPSH Req'd		1.2	
Vop. Press. o	t Pump T	. 0.203	kg/cm² A	Diff. Head		4.3	kg/cm ² G				
Vis. at Pump	-		cp.	Diff. Head		43.9	m				
Corr. or Sol	id	NONE		Max. Suct. Pre	SS.	1.0	kg/cm ² G	Duty		24	h/
					Design	n Data					
Type HOR	IZONTA		J.LE .			Drive		MOTOR	DRIVE		
No. Stage		Max				Design				6	kg/ci
Impeller Dia		^{Max} 209)		Pe CLOSED	ughter.	-	Test Press.		8.	-	kg/c
	verhang			II VERTICAL		Seal S		Gland		ech. Sec	0
R.P.M.			950			Mech.	Seal	(Single)		ouble	
Hydraulic HI Efficiency		_		4.44	kw 0/			Balance		balance	
B. H. P.		-		.44	%			Self Flush	Ex	ternal	Flush
Control Syst	em.			3.6	kw						
Lubricating (	***************************************	. 0	IL BATH								-
	T	(ind :	IL DATH	*c		1	g/cm ² G	— m ³ /			21.0 /
Cooling Wat	er —	Bearing :	NO	Packing Bo		NO ·	Pedestal:		Flush Co	-	m²h°c /
Nozzle	Orient.	1	Rating	Flush	Reg			NO Test		-	NO
Inlet	END	2/2 B	ANST ID	Cage Ring	7	1101	111/11	Hydrostotic	, K	eq'd	With
Outlet	TOP	2 B	ANSI 25 FF	Throat Bush	L NO		-	Balancing			NO
0.000			120 FF	Wear Ring	NO	-		Performance	-1	YES	2 140
		1		Glond	-			Running		120	YE
				Mech. Seal	YES	SEL	F	NPSH	-		1.
					Mate			Overhaul	<b>—</b>	YES	YE
Case	F	C 25		Mech. Seal	STELI	LITEXC	SUS 316				
Impeller	F	C 25		Coge Ring .		-		Case Stud	\$450		
Shaft	S	45 C		Case Gasket		ASBEST	os	Gland Stud	Sus	304	777
Shaft Sleeve	SI	JS 316.	Her Plating			FC 2	25	Bearing	No. 6	305 C	3/
Gland Packi	ng -	_		Imp. Wearing	Ring				New York Control		*
					Мо						
Type No.132				Volt.		380	) V	Drive Type	DIRECT	DRIN	/E
Rated Outpu		5.5	kw	Phase		3	na liura de avanta	Speed Reduce			
Cycle		50	Hz	Pole		2		Rotation (from	PUMP	cv	v (
Common Bo	se )			V_Dull	Acces	sories		To			
Anchor Bolt		YES		V-Pulley Air & Drain	Cook V	NO	/FC	Companion F		YE	S
Flex. Couplin	-	123		Tool	COCK V	YES	YES I	(Discharge &	Suction)		
Coupling Co				1001		1 63					
					Spare	Ports (D	efor to S	pare parts lis	+1		
Impeller				Case Gasket	-,		0101 10 3	Case Wearing			
Shaft	3-7-11-12-12-12-12-12-12-12-12-12-12-12-12-			Rubber for C	pľo	-		1			
Bearing				Gland Packing	-						
Mech. Seal				Imp. Ring				<del> </del>		3 6 T S - S - S	
					Inform	mation					
Monufacture	TORI:	SHIMA F	PUMP MFG	CO., LTD.		Model	No. CPK	- G 40-20		-	
Weight P	ump & Bo		124	kg , Mot	or:	100		kg, Total :	224		
Painting											
STATE OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY											
Remarks					il trib surfa					-	

CENTRIFUGAL PUMP DATA SHEET
19 Impeller Case Gasket Case Wearing Ring
Shaft Rubber for Cpl'g
51         Bearing         Gland Packing           52         Mech. Seal         Imp. Ring
Information
64         Manufacturer TORISHIMA PUMP MFG CO., LTD.         Model No.         125-4KM           55         Weight Pump & Base: 2760 kg , Motor: 3000 kg, Total: 5760
Pointing 1. BFW for external flushing is fed to the vendor from MH at 125.5°C
57 Remarks and IO kg/cm ² G.
59
60

	CENTRIFUGAL PUN	MP DATA SHEET	•	Rev. Date		
1	ant IRAQ EXP. PROJECT		Item No.	Check		
1	stomer M.O.I , IRAQ		1P	- 203 A.B		
1	rder 563021	Outdoor	Service REFLI	Vorking I Sr	ore I Io	atal 2
E	gulation	Culcon	Code	, orking		7101 2
	: CONDENSATE	Proc	ess Data			
1	apacity Min.	m³/h Nor. 42	.6 m³/h Ma	x. 51	m³/h	
L	mp Temp. 50	°c Disch. Press.	6.7 kg/cm ² G	NPSH Avail	9,0	O m
H	on Press at Pump T. 98'8 kg/s	m³ Suct. Press,	0 kg/cm²G	NPSH Req'd	2.	5 m
١,	is. at Pump T.	cp. Diff. Head	67.8 m			
_	orr. or Solid NONE	Max Suct. Press,	2.0 kg/cm ² G	Duty	24	h/day
	VDE HORIZONTAL VOLUTE	. Des	Drive Type	MOTOR DE	IVEN	
	o, Stage		Design Press.		9.0	kg/cm ² G
	ipeller Dia. (MAX 260) mm	Type CLOSED	Hydro. Test Press.	Chad	13.5	kg/cm ² C
	P.M. 2960	Spin VERTICAL	Mech. Seal	Single	Double	
	CENTRIFUGAL PUN  TRAQ EXP. PROJECT  Indoor  Stormer M. O. I. IRAQ  reder 563021  Contain Indoor  Sigulation  Quid CONDENSATE  Spacity Min.  Jump Temp. 50  D. Gr. at Pump T. 988 kg/r  Sis. at Pump T. O. 13 kg/cm²  is. at	MAX == kw		Balance	Unbalance	1.1
	H.P. INOT 50	55 %	·	Self Flush	External F	lush
	ontrol System	., xw				
F	ubricating Oil System OIL B	ATH	ha/a=20			2L*- /ll
1	ooling Water Bearing :	NO Packing Box:	NO Pedestal:	NO NO	Flush Cooler:	NO NO
L	lozzle Orient. Size Ratio	ng Flush Re	oq'd Fluid m³/h	Test	Req'd	Witness
F	elet END 4 B ANSI I	FF Cage Ring	NO	Hydrostatic	) VES	NO
H	Juliet 10P 272B 125	Wear Ring	NO	Performance	11.0	1
		Gland	YES SELF	Running		YES
F		Mech. Seal	NO L	NPSH Overhau I	YES	YES
	cose FC Z5	Mech. Seal	NO			
-	mpeller SCS 13	Coge Ring	NO	Case Stud	S45C	
H	that Sleeve 515304	Case Gasker	ng Fc 25	Bearing	NO. 6307 C	3
F	Sland Packing ASBESTOS	Imp. Wearing Ring	NO			
H	Type NO2001 INDUCTION MOTOR	Volt.	Aotor 380 V	Drive Type	DIRECT DRI	VE
t	Rated Output 22	kw Phase	. 3	Speed Reducer		
-	Lycle 50	Hz Pole	2	Rotation (from	<del>driver</del> ) cw PUMP	(ccv
H	Common Base )	V-Pulley	NO -			
F	Anchor Bolt YES	-Air & Drain -Coc	· Valve			
1	Flex. Coupling Coupling Cover	Tool	J YES			
t		Spo	are Parts (Refer to	spare parts list	)	
1	Impeller	Case Gasket		Case Wearing	Ring	
1	Shaft Bearing	Rubber for Cpt'g Gland Packing				
I	Mech. Seal	Imp. Ring				
1	Monufacturer TORISHIMA PUM		ormation Model No. C F	°K · G 65 - 2	6	
1	Weight   Pump & Base : 29			kg, Total:	: 61	2 k
1	Painting					
-	Remarks					
1						
0	3		9			
1						

CE	NTRIF	UGAL	PUMP	DATA SH	EET			Rev. Date		
								Check		
-		EXP. P	ROJECT			Item No.	P - 2	04		
	M.O.1	IRAQ								7
Order	56	3021						T TRANSFER	PUMP	
Location		Indoor		Outdoor		No. Req	d W	orking I Spai	re O	Total
Regulation						Code				
					Proces	s Data				
Liquid	CATAC	ARB	SOLUTION	1						
Capacity	Min.		m³/h	Nor.		m³/h	Max	. 50	m³/h	
Pump Temp.	Nor 30	MAX		Disch. Press.		2.7 . 1	kg/cm ² G	NPSH Avail		
Sp. Gr. at Pui		1270	kg/m³	Suct. Press.		0 1	kg/cm ² G	NPSH Req'd		3.0
Vap. Press. at		. MAXI.O	kg/cm² A	Diff. Head			kg/cm ² G			
Vis. at Pump			cp.	Diff. Head		21,3	m			
Corr. or Soli	d			Max. Suct. Pre			kg/cm ² G	Duty INTER	MITENT	h/do
					Design					
Туре	VERTI	CAL \	OLUTE			Drive Typ		MOTOTOR D	RIVEN	
No. Stage		- 1				Design Pr	ess.		3.62	kg/cm ²
Impeller Dio.	()	MAX 260)		CLOSED		Hydro. Tes			5.5	kg/cm²
Axis			Sp	HORIZON	TAL		MONE me	Gland	Mech. Se	al
R.P.M.			1450			Mech. Sea	1	Single	Double	
Hydraulic HF	•				kw			Balance	Unbaland	
Efficiency				52	%			Self Flush	External	Flush
B. H. P.				7.07	kw					
Control Syste	em									
Lubricating C	Dil System	n	GREASE	- Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Comm						
Cooling Wat	er	Kind:		*c			cm ² G	— m ³ /h		m2h°c/kc
Cooling wa		Bearing:	NO	Packing Bo	x:	NO P	edestal:	NO F	ush Cooler:	NO
Nozzle	Orient.	Size	Roting	Flush	Req	d Fluid	m³/h	Test	Req'd	Witnes
Inlet	вотто			Cage Ring	1			Hydrostatic	1	} NO
Outlet	TOP	21/2 B	ANSI 16 150 RF	Throat Bush	NO			Balancing	YES	1
				Wear Ring	1			Performance		13
				Gland Metal	YES	3	0.6	Running		) YES
				Mech. Seal	NO		Contraction Con-	NPSH	NO	NO
					Mate	rials		Overhaul	YES	YES
Case	FC	20		Mech. Seal		NO	OVALL C			
Impeller	FC	20		Cage Ring	41-04/04	NO		Case Stud SU	IS 304	
Shaft	5 3	35 C		Case Gasket	(Packir	g) VITON	-B	Gland Stud		
Shaft Sleeve	SUS30	4 STELLI	TE COAT.	Case Weari	ng Ring	2% NI	- FC	Bearing N	0. 6309	
Gland Packi	ng	NO		Imp. Wearing	Ring	NO		Metal 2	% NI – FC	
					Mo	tor				
Type No.L5	-160L II	NDCTION	MOTOR	Volt.		38	80 V	Drive Type D	IRECT DI	RIVE
Rated Outpu	it		11 kw	Phase		3	3	Speed Reducer		
Cycle			50 Hz	Pole			1	Rotation (from de		w @
		- 11			Acce	ssories		Pί	JMP	
Common Ba	ise 1			V-Pulley		NO	- No.	Flushing pipin	g with valve	, YES
Anchor Bolt		YES		Air & Drain	Cock	NO	1			
Flex. Couplin	ng )			Tool		YES	-			
Coupling Co	over	NO								
					Spare	Parts (R	efer to s	spare parts list)		
Impeller	-			Case Gaskét				Case Wearing Ri	ng	
Shaft	S			Rubber for	Cplg		un margin de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de la constitución de		out or political	
Bearing				Gland Packin	סי					
Mech. Sea	ı			Imp. Ring	No.	n near the second an				
					Infor	mation				
Manufactur	er TOR	SHIMA	PUMP MF	G CO., LTD.		Model N	lo. 65 -	cvs		
Weight I	Pump & E	Base: 5	550		otor:	180	T. Transactions		730	
			- Michigan III					[M] A		
Painting	₩ - mar	ked ten	perature n	neans mecha	nical				1 1	
								= 11112=	8 +	
	design	temper	ature. Ma	x. gygilabe	115.0	7				
	design			x. availabe on is 85°C		Z	A LWL			,
	design					W W	1 A FMF		2 18 2 15 4 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	

CENTRIFUGAL PUMP	DATA SHEET	Rev. Date	
Plant . IRAQ EXP. PROJECT	Item No.	Check	
Customer M.O.I IRAQ Order 563021	Service CO	P - 206 A.B	TION PILMP
Location Indoor	(Outdoor) No. Req'd		pare 1 Total 2
Regulation	Process Data		
Liquid CONDENSATE			
Capacity Min. m³/h Pump Temp. 133.3 °c		Mox. 13.6	m³/h 20 m
Sp. Gr. at Pump T. 931 kg/m³	Suct. Press. 21.1 kg/d	cm ² G NPSH Req'd	20 m 2,4 m
Vap. Press. at Pump T. 3.04 kg/cm ² A  Vis. at Pump T. cp.	Diff. Head         7.8         kg/c           Diff. Head         83.8         m	cm²G	
Corr. or Solid CO2 DISSOLUED	Max. Suct. Press. 24.5 kg/c	cm²G Duty	24 h/day
Type HORIZONTAL VOLUTE	. Design Data . Drive Type	MOTOR DR	DIVEN
No. Stage	Design Press	32.5 (for CASE)	kg/cm²G
	pe CLOSED Hydro. Test P dit VERTICAL Seal System	Gland Gland	(Mech. Sea)
R.P.M. 2960	Mech-Seal	(Single)	Double
Hydraulic HP Efficiency	32 % *	(Balance)	Unbalance External Flush
B. H. P.	9.02 kw	* 1(3et)   10sh)	Faretiret Linzu
Control System Lubricating Oil System OIL BA	\TH		
	4.6 °c 5.0 kg/cm²	G 1.44 m³/h	0.0006 m2h*c/kcol
Bearing: NO	Packing Box : YES.O.24 M3 Pede		Flush Cooler: YES 1.2 m3
Inlet END 28 ANSI INRE	Flush Req'd Fluid	m ³ /h Test Hydrostatic	Req'd Witness
Cutlet TOP 1/2 B ANS 30 BRF	Throat Bush NO	Balancing	l J
	Wear Ring Gland	Performance Running	YES
	Mech. Seal YES SELF	NPSH	YES
Case SCS 13	Materials	Over hau!	YES YES
Case SCS 13 Impeller SCS 13	Mech. Seal WC x C SUS:		SUS 304
Shaft SUS 304	Case Gasket TEFLON	Gland Stud	SUS 304
Shaft Sleeve SUS 316 HCr. Gland Packing NO	Case Wearing Ring SUS316 Imp. Wearing Ring SUS316	Bearing	No. 64 09c3/7309DI
T. NO.	Motor		
Type 180M · INDUCTION MOTOR Rated Output 15 kw	Volt.         380           Phase         3	V Drive Type Speed Reducer	DIRECT DRIVE
Cycle 50 Hz	Pole 2	Rotation (from	PUMP CW CCW
Common Base	V-Pulley NO	Mini, Flow O	
Anchor Bolt YES	Air & Drain Cock Valve YES		System } YES
Flex. Coupling Coupling Cover	Tool YES	with Cool	ler )
	Spare Parts (Re fe		
Impeller	Case Gasket Rubber for Cpl'g	Case Wearing	Ring
Bearing	Gland Packing		
Mech. Seal	Imp. Ring		
Manufacturer TORISHIMA PUMP	Information MFG CO., LTD Model No.	CPK · C 40 - 26	
Weight Pump & Base: 237 Painting	kg , Motor: 230	kg, Total:	467 kg
Remorks 1. *1. Self-flushing is do	ne through the Cooler		
2. All pump Capacities Inc	clude by - pass flow of 2 myH.		
	9		
	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	endere de l'ares a competition de l'areste	

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CF	NTRIF	JGAL	PUMP	DATA SH	EET			Date	_			
OL.								Check			-	-
Pant IRA	Q EXP	PROJ	ECT			Item No	. 5		-			
Customer	M · O · I	***************************************			,		.17, 2	207 . A	. В			
Order	5630					Service	STEAM C	ONDENSATE	RECO	VERY	PUM	P
Location	0000	Indoor		(Outdoor)		No. Rec		orking (	Spare	1	Tota	
Regulation		1110001		COULOUS		Code		orking 1	opu.c		1010	
Keguidilon					Proces	s Data			-			
	CTEAN	00111	DENCATE		Proces	3 Daia			-			
Liquid	STEAM	CONI	DENSATE		16.7			10.4		1.0	MIC NA	10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to 10 to
Capacity	Min.		m³/h		16. 7	m³/h			_	m³/h	-	
Pump Temp.		141.1		Disch. Press.		5.04	kg/cm ² G	NPSH Avail	-		.5	
Sp. Gr. at Pu			5 kg/m³	Suct. Press.		3.04	kg/cm ² G	NPSH Req'd		2	.0	
Vap. Press. at	Pump T.	3.8	3 kg/cm² A	Diff. Head		2.0	kg/cm2G					
Vis. at Pump	T.		cp.	Diff. Head	2	21.6	m					
Corr. or Soli	d	NONE		Max. Suct. Pre		4.0	kg/cm2G	Duty		2	4	h/da
	Sant San				Design	n Data						
Туре	HORIZOI	NTAL	VOLUTE			Drive Ty	уре	MOTOR	DRIN	/EN		
No. Stage	0				-	Design I				6.33	k	g/cm²
Impeller Dia		×169)		pe CLOSED		-	est Press.			9.5		g/cm ²
				lit VERTICAL		Seal Sys		Gland		Mech. S	-	91 2111
Axis	Over	nang		VERTICAL		Mech. S			The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	Double	000	
R.P.M.			2950			Wecu. 2	eal ·		-		-	
Hydraulic HI			D.		kw	-		Bolonce		Unbakan	-	1
Efficiency	- 1vio	r. 47		48	%	-		Self Flush		Externa	Flus	h
B. H. P.		1.96	,	2.1	kw	1						
Control System												
Lubricating C	Oil System	0	IL BATH							,		
o 1: 1::	K	ind : C	CTW	34.6 °c	10,010,000	5.0 kg	g/cm²G	Q.18 m	/h 0.	0006	m²h	c/kc
Cooling Wat	er -	earing :	NO	Packing Bo	x: Y	ES	Pedestal:	NO	Flus	h Cooler:	N	0
Nozzle	Orient.	1	Rating	Flush	Reg		-	Test		Req'd	1	Witnes
Inlet	END	21/2B	ANSI TE	Cage Ring	1			Hydrostatic		)	17	NO
Outlet	TOP	2 B	ANSI IP	Throat Bush	NO	0	-	Balancing		YES	1	
Juliei	101	- 0	125 FF	Wear Ring	+ ("			Performanc		1.23	13	
	tion in the	-			+	-	-		-	-	+	YES
		-		Gland .	1	0 0515	-	Running	-	-	+	IES
				Mech. Seal	YE		1	NPSH		)	1	
						erials		Overhaul		YES		YES
Case		25		Mech. Seal	W	CXC S	SUS 316					
Impeller		25		Cage Ring		10		Case Stud	S	45C		
Shaft		45C		Case Gasket	Δ	SBESTOS	5	Gland Stud	51	US 304	1	
Mech, Sleeve	S	US 316	HCV.	Case Weari	ng Ring	FC 25	5	Bearing	NO. 6	305C3		V. Tr
Gland Packi				Imp. Wearing		NO			en ma comm			
						otor						
.Type NO.13	2 S INDI	CTION	MOTOR	Volt.		380	V	Drive Type	DIF	RECT I	RIV	E
Rated Outpu		3.7		Phase		3		Speed Redu				
Cycle		5.7		Pole	-	2		Rotation (fr		MP)	cw	(00
Сусів		30	HZ	Loie	A			T KOIGHON (1)	Om FOR	/		-
C				I v p."	Acce	ssories		T c	fless			ES
Common Ba				V-Pulley		NO		Companion				LO
Anchor Bolt	-	-5			Valve			(DISCHAR	ot 8	SUCTIO	N)	
Flex. Coupling				Tool		YES		4				
Coupling Co	ver		100	Piping for								
	•				Spare	e Parts (	Refer to s	pare parts	list)			
Impeller		TA CALL		Case Gasket		cow v-2 mbd		Case Wear	ing Ring	3		
Impener				Rubber for		To the second						
Shaft		= 18-35 18-35		Gland Packir								
Shaft		70 Table 100		Imp-Ring	-				MINE ZOO HIL			
Shaft Bearing			-	I mib- Kind	Info.	rmation.	-	4				
Shaft					IULOI							
Shaft Bearing Mech. Seal		JIMA C	HMD MES	CO ITD		44-1-1	AL- CON		<b>C</b>			
Shaft Bearing Mech. Seal Manufactur	er TORISI		UMP MFG		stor.		No. CPK	CONTRACTOR DESIGNATION OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE P	-		-	
Shaft Bearing Mech. Seal Manufacture Weight F			UMP MFG		otor:	Model 90	No. CPK	kg, Total	-	4		
Shaft Bearing Mech. Seal Manufactur	er TORISI				otor:		No. CPK	CONTRACTOR DESIGNATION OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE P	-	4		:

CENTRIFUGAL PUMP DATA SHEET
Shaft Rubber for Cpt's Ring  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 - 26
Shaft Case Gasket Case Wearing Ring  Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Case Gasket Case Wearing Ring Shaft Rubber for Cpt'g  Bearing Gland Packing Mech. Seal Imp. Ring  Information  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt's Ring  Bearing Gland Packing  Mech. Seal Imp. Ring  Information  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt's Ring  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt's Ring  Bearing Gland Packing  Mech. Seal Imp. Ring  Information  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 - 26
Shaft Rubber for Cpl'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26  Weight Russ Seal Rose Co., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpl'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26  Weight Russ Seal Rose Co., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
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Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Case Gasket Case Wearing Ring Shaft Rubber for Cpt'g  Bearing Gland Packing Mech. Seal Imp. Ring  Information  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt's Ring  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for CpYg  Bearing Gland Pocking  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt's Ring  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt's Ring  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 - 26
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Shaft Case Gasket Case Wearing Ring Shaft Rubber for Cpt'g  Bearing Gland Packing Mech. Seal Imp. Ring  Information  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Case Gasket Case Wearing Ring Shaft Rubber for Cpt'g  Bearing Gland Packing Mech. Seal Imp. Ring  Information  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Case Gasket Case Wearing Ring Shaft Rubber for Cpt'g  Bearing Gland Packing Mech. Seal Imp. Ring  Information  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpl'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt's Ring  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for CpYg  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
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Shaft Rubber for Cpt's Ring  Bearing Gland Packing  Mech. Seal Imp. Ring  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Shaft Rubber for Cpt'g  Bearing Gland Packing  Mech. Seal Imp. Ring  Information  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Bearing Gland Packing Mech. Seal Imp. Ring  Imp. Ring  Information  Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26  Weight Pump & Restrict Co.
Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 – 26
Manufacturer TORISHIMA PUMP MFG CO., LTD. Model No. CPK E 65 - 26
Weight Pump & Para: 047
kg [otal : 497
Painting
Remarks 1. *1. Seal cover of Mech. seal shall be usually quenched with dry air.

Pump & Base: 2513 kg , Motor: 2500 kg, Total: 5013 kg	Pump & Base: 2513 to Mode: 0.500
Imp. Ring   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   Information   In	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
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Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg, Total : 5013 kg	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
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Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISTIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
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Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISHIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
Pump & Bare : 2513 kg , Motor : 2500 kg , Total : 5013 kg   marks	TORISHIMA   PUMP MFG CO., LTD.   Model No.   400 - SPV
inifing 2000 kg, folial: 5013 kg	ing 2000 kg, total: 5013 kg
	Chapter L. In. 11
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Charlest by I on 11	I Charland L. I a. III

A MITS	SUBISH	u HE/	VY IND	USTRIES, L	TD.					-	10	/
	·NTD:	21041	DUAR	DATA C''	-,			Rev.	.]			
[∠] Ci	ENIKIF	UGAL	PUMP	DATA SHE	: E 1		•	Date	. J			
Plant 1	300 T/	O URI	EA PLAN	ıT.		tiem No.		Check	4_			
Customer	M. 0					110111 140.	P-5	03 A.B				
Order		5630				Service N	AP CAR	BAMATE SO	LUTU	ON PU	MP	
Location		Indoor	<del></del>	(Outdoor)		No. Reg'd			Spore	1	Total	2
Regulation						Code				·	10.0.	
					Proces	s Data						
Liquid	CARBA	MATE	SOLUTION									
Capacity	Min.		m³/h	Nor.	13.	5 m³/h	Max	. 16.0	) m	13/h		
Pump Temp.	3	0 ~ 50	• c	Disch. Press.	23.	0 k	g/cm²G	NPSH Avoit			5.0	m
Sp. Gr. at Pu		961	kg/m³	Suct. Press,	3.		g/cm²G	NPSH Req'd			2.5	m
Vap. Prest. c			kg/cm² A	Diff. Head	19.	5 k	g/cm ¹ G					
Vis. of Pump		2.2	ср.	Diff. Head	203		m					
Corr. or Sol	id	Corr	1	Max Suct. Pre			g/cm²G	Duty		24		h/day
					Design							
Type HOR	ZONTAL		STAGE			Drive Type		MOTOR DR	IVEN			
No. Stage	(Ma	5 '* \		010055		Design Pro	_			26.3		cm³G
impeller Dia	. (***	1 (80)	mm Ty	PO GLOSED		Hydro. Tes		CL-1		40		cm G
R.P.M.	Between		Sp	W VERIIGAL		Seal Syste Mech. Sea		Gland Single		Mech, Si Double	رلو:	
R.P.M. Hydraulic H		2960		-	kw	Mecn. Sea		Bakince		Unbalan	_	
Efficiency	r	Nor - 3	<i>c</i>	MAX 40	kw %	<u> </u>		Self Flush		External		
B. H. P.			0.2	21.2		ļ. <u></u>		2611 LI0311		Externor	Piosity	
Control Sys	ferm		.012	<u> </u>	kw							
Lubricating		. 0	L BATH									
		(ind : C		34.6 °c		5.0kg/s	m²G	0.36 m³/	hoo	1006	m²h*c	/kcol
Cooling Wa		Bearing :	YES	Pocking Bo	×:		destal:	NO NO	Flush	Cooler:	NO	
Nozzle	Orient.		Roting	Flush	Reg		m³/h	Test		Reg'd	Tw	itness
In let	TOP	2 ½ B	ANSI 16	Cage Ring	1		-	Hydrostatic		)	13 N	10
Outlet	TOP	2 B	ANSI 16 ANSI 16 300 RF	Throat Bush	NO	5		Balancing		YES	1	
				Wear Ring				Performance		1	1	
				Glond				Running		I	1 }	'ES
	<u> </u>			Mech. Seal		S BFW*	0.24	NPSH		,	11	
				<del>,</del>	Mote			Overhoul		YES		ES.
Case	SC			Mech. Seal	wcxw		8 316	Connecting	Bolt	SCM	3	
impelier	sc			Coge Ring		NO	·	Case Stud				
Shaft Mach.	St	JS 304		Case Gasket		BESTOS		Gland Stud		JS 304		
Shaff Sleav		NO 316	i	Case Wearin			<u> </u>	Bearing NO.	7307	ל / פסי	307	
Gland Pack	ing	NU		Imp. Wearing		N O		<u>.                                    </u>				
Type 1 N	DUCTION	MOTO	R NO.225-5	Volt.	Mo	380		Drive Type	DIE	ECT D	RIVE	
Rated Outpo		30	k NO. 225-3	Phase		380		Speed Reduce		<u> </u>	11 1 V E	
Cycle		50	Hz	Pole	,	2		Rotation (fro		+)	cw	€cw
<del></del>		<del></del>	114		Acce	ssories			PUM			
Common Bo	ise )			V-Pulley	-	NO		Ext. Flushing	Pipir	na )		
Anchor Bol	-	YES		Air & Drain	Cock		rES i	with Sight			YES	
Flex. Coupli	ng			Tool		YES		1				
Coupling Co	over /		•									
l					Spare	Ports (R	efer te		s lis	t )		
Impeller				Case Gasket				Case Wearin	g Ring			
Shaft				Rubber for C				<b></b>				
Bearing Mech. Sea	·	<del></del>		Gland Packing	9			<del> </del>				
месп. Зеа	<del>!</del>			Imp. Ring				L				
Manufact	TOP	10 11 11 1	PUMP M	FG CO., LT		mation						
	Pump & Bo		1510		D. Ior:	Model_N 275	o. 65	x 50 - 5 KI	17	0.6		
Painting	Comp or po		,310	kg , Mo				kg, Total;	17.	0.0		kg
Remarks												
	* 1. C	ondensat	e of 5 ~	- 10kg/cm²G,	5°00	s used for	external	flushing				
				signed to end								
	12	kg/cm²	G at pum	p - stop.								

				USTRIES,				Rev.			12	-
С	ENTR	IFŮGAL	. PUMP	DATA SH	EET			Date	+	—		
				1.00				Check				_
Plant	1300	T/p UR	EA PLA	NT		Hem No						
Customer	M.O.					1	P-5	05 A.B				
Order	<del></del>		3022			Service	AMMON	IA BOOSTER	PUN	40		
Location		Indoor		(Outdoor)		No. Req					<del></del>	_
Regulation		,,,,,,,,,,		(00,000)		Code	, v	orking (	Spare		Total	2
	····				Dress	Dota						
Liquid A	MMONI	Α			710001	• Дою	·	<u>-</u>				_
Capacity	Min		m³/l	Nor,	8 4			0.7				
Pump Temp.		28	*c			23	Mox		m³,			
Sp. Gr. at P		598		Disch. Press			kg/cm²G	NPSH Avail			1.0	
Vap. Press, o			kg/m³ kg/cm² A	Suct. Press.		16.4	kg/cm²G	NPSH Req'd		2	2.7	
				Diff. Head		6.6	kg/cm²G	<u>'</u>				
Vis. of Pump		0.20	04 ср.	Diff, Head		110.4	m					_
Corr. or So	М	NONE		Max. Suct. Pre		23	kg/cm²G	Duty		24	l h	/de
					Design	Doto						
Type	HORIZ	ONTAL	VOLUTE			Drive Ty		MOTOR	DRIVE	N		
No. Stage			·			Design P				30	kg/c	·m²
Impelier Dia		o× 320)		P CLOSED		Hydro. Te	st Press.			45	kg/c	
Axis	Overt	nang	Sp.	WERTICAL		Seal Syst	18 m	Gland	(W	ech Se	D	_
R.P.M.		2	960			Mech. Se	al	(Single)		ouble		
Hydraulic H	P				kw			(Balance)		nbolanc		
Efficiency		Nor 51	MAX 55		%	l		(Self Flush)		kternal		_
B.H. P.		30.2			kw			20.1. (10.11)	E		; iusn	_
Control Syst	tem			·	KW_	L						_
Lubricating		m O	IL BATH	<u> </u>								
		Kind :	·- BAIR	•c		1	/cm²G					-1
Cooling Wa	ter +-	Bearing:	NO	····				- m³/h			m²h°c /	
Nozzle	<del> </del>		,				Pedesial:	NO	Flush C		NC	
	Orient		Rating ANSI Is	Fiush	Req	d Fluid	m³/h	Test	1	leq'd	Wit	nes
Iniet	END	5 B	ANSI IN	Cage Ring				Hydrostatic			1	<b>О</b>
Outlet	TOP	38	ANSI IN	Throat Bush	l N	10		Balancing	-11		1	
	<b> </b>			Wear Ring	Ш.		1	Performance	}	YES		
	ļ			Gland .				Running			Y	ES
	<u> </u>		L	Mech. Seal	YES	SELF		NPSH			7	
					Mate	rials		Overhaut	Y	ES	Y	ES
Cose		SC 46		Mech. Seal	W	CX C . SU	15 316					
Impeller	3	CSI		Cage Ring	N			Case Stud	S450			
Shaft		545C		Case Gasket	A8	BESTOS	-	Gland Stud	SUS			
Shoft Sleeve			Hcr. Plating	Case Wearin			.12	Bearing	NO. 64	111 0	. /271	10
Gland Packi		NO		Imp. Wearing		NO NO	V.	2-5-7-9			9//31	w
				, . ,	Mot			L				
Type IND	UCTION	MOTOR	NO. 225M	Volt.	74101	380	v	Drive Type	Dina	CT -	-1	
Rated Outpu		37	kw	Phase			v		DIRE	.ui D	rive	
Cycle		50	Hz	Pole		3 2		Speed Reducer				_
-,	<del></del>		HZ	Loie	4			Rotation (from	driver)	ć.	w	(c
Common Ba				1 1/ 5 0	Acces				1011			
Anchor Bolt		VEC		V-Pulley		NO						
Flex. Couplin		YES		Air & Drain	<del>Lock</del> Valve		ES '					
				Tool		Y	ES					_
Coupling Co	ver '			L				L				
Impeller					Spare	Parts (R	efer to	spare parts	list }			
				Case Gasket				Case Wearing	Ring			
Shaft				Rubber for C								
Bearing				Gland Packing								
Mech. Seal				Imp. Ring								
					Inform	nation						_
	TOB	SHIMA	POMP	MFG CO.,L		Model N	lo GP	K · E 80 - 32				_
Manufacture	I OK											
		ose: 3										
				kg , Moi		375		kg, Total:				k

A MITS	UBISH	HEA	VY IND	USTRIES, LTD.				1		13	
רו	NTRIF	JGAI	PUMP	DATA SHEET				Rev.	-71		
Ų.		OUNE	. 1 01111	DAIA ONLE				Check	·		
Plant I	300 T/D	UR	EA PLA	NT	l tem	No.		20/20			
Customer	M.O. I	IRAC	)		1	1	, - 50	06 / A.B			
Order		5630	22		Service	. STEA	M CO	NDENSATE I	PUMP		
Location		Indoor		Outdood	No. R	eq'd	Wor	king   Sp	pare	Total	2
Regulation					Code						
				Proce	as Data					-	
Liquid	STEAM	CON	DENSATE						· · · · · · · · · · · · · · · · · · ·		
Capacity	Min,		m³/h	r ·	7 <u>m³/</u>		Max.	46.0	) m ¹ /h		
Pump Temp.		80∼ 1		Disch. Press.	30	kg/cn		NPSH Avoil		4.5	
Sp. Gr. at P	-	958	kg/m³	Suct. Press.	0	kg/cr		NP\$H Req'd	·	3,5	- FI
Vop. Press. o	<del></del>		kg/cm² A	Diff. Head	30	kg/cm	n³G				
Vis. of Pum		0.2	85 cp.	Diff. Head	313	m					
Corr. or* So	id	NO.		Mox. Suct. Press.	0.7	kg/cr	n²G	Duty		24	h/day
					gn Data						
Туре	HORIZO	ONTAL		STAGE PUMP	Drive		ľ	OTOR DRIV	/EN		
No. Stage	, w	OX 100	. 8 	01.005-	<del> </del>	n Press.			37.5	<del></del>	/cm²@
Impeller Dic		ax 185		pe CLOSED	<del></del>	. Test Pro		61 1)	56.2	·	/cm ² C
	etween B	<u> </u>	<del></del>	lit VERTICAL	· · · · · · · · · · · · · · · · · · ·	System		Glond)		ı, Şeal	
R.P.M.	n	2	2960		Mech	9601		Single Bolance	Doub		
Hydroulic H		. (2	1414 0	kw o/				Bolance Self Flu≤h	Unba		
Efficiency B. H. P.	No		MAX 6		+			אמוו בוחצע	CXIE	nal Flush	
		<u>51</u>	5	5. kw	1			· · · · · · · · · · · · · · · · · · ·			· · · · ·
Control Sys Lubricating			OIL BATH		-						
Tooricolaig			CTW	34.6 °c	<b>#</b> 0	kg/cm²G		0.06 m³/h		06 m²h*e	- /1
Cooling Wo	ter —			/ES Packing Box':	5,0	Pedest			Flush Cool		C / KCG
Nozzle	Orient.	Size	Roting		r'd Flu	· · · · · · · · · · · · · · · · · · ·	01 13/h	Test	Reg		/imess
inlet	SIDE	7.0	ANSI Ib	Coge Ring	10   11	,	<del></del>	Hydrostatic	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1	NO
Outlet	TOP	2 / B	ANS 15	1	NO -	-		Beloncing		<del> </del>	-110
OU/101	1.01	2.20	250 RF	Wear Ring	110	_		Performance	YE		
		<del> </del>		Glond				Running	<del></del>		YES
				Mech. Seal		+		NPSH			
		<del></del>	<del></del>	<del> </del>	terials		$\rightarrow$	Overhaul	YE	s	YES
Cuse	FC	20		Mech, Seal	NO			Connecting		M3	
impeller	FC	20	· · · · · · · · · · · · · · · · · · ·	Cage Ring	NO	-		Caso Stud			
Shoft		5 C		Case Gasket	ASBES	STOS		Gland Stud	SUS 420	J2	
Shaft Sleev	• SU	S 420	J2	Case Wearing Rin				Bearing NU 2	07K + H	207/C	
Gland Pack		BESTO		Imp. Wearing Ring	NO			·			
					lotor						
Type NO280	SINDUCT	ION MO	TOR	Volt.	380		٧	Drive Type	DIRECT	DRIVE	
Rated Outp	И	6	0 kw	Phose	3			Speed Reducer		١.	
Cycle		5	O Hz	Pole	2			Rotation (from	<del>djivar</del> )	cw	(cc)
				Acc	essories				PUMP		
Common B	se			V-Pulley	NO		E	By-Pass Orifice	(Flanged	Type)	۱ * ۱
Anchor Bo	1	Y	ES	-Air & Droin Cock	Valve	YE\$		Companion Fl			YE
Flex. Coupl	<del> </del>			Tool		YES		Discharge E	Suction	)	)
Coupling C	Over	1		Piping for C.W		YES					
	-				re Ports	(Refer	to	spore part			
Impeller				Case Gasket				Case Wearing	Ring		
Shaft				Rubber for Cpl'g							
Bearing				Gland Packing							
Mech. Sec	1 .			Imp-Ring			i				
<del></del>					rmetion					<u>-</u>	
	er TORIE		PUMP MI			No.		65/8			
	Pump & Ba	38 :	381	kg , Motor;	686	U		(g, Total	1061		, k
Pointing	A		1:1-	tantula bilin	4)	0 3		· · · · · · · · · · · · · · · · · · ·			
Remarks	I. All pu		apacities	include by-pass of by-pass orifi				11101 70-	b n-		
					c₃ t∧ h	e weide	•c1 D.T	ANSE SUU'	₽ RF.		
	2. <b>≭</b> i. m	aikea	franges	or by poss orni	0.2 10 0	C #0100					
	2. <b>1</b> ki. m	aikea	rronges	UI DY-POSS UITH	0.00	- 40100	5				

					Re	v I		14
	CENTRIF	UGAL PUMP	DATA SHEET		De			
	Plant 1300 T/D	UREA PLANT	<del> </del>	Item No. D		eck		
		IRAO		'''''''' P-	55! A	.В		
	Order	563022		Service CRYS		FEED	PUMP	
	Location Regulation	Indoor	(Quidoor)	No. Reg'd Code	Working	Spare	1	Total 2
_	N-90,5,1-1		Proces	<del>'</del>		<del></del> -		
		SOLUTION						
_	Capacity Min. Pump Temp.	65 ~ 90 °c	· · · · · · · · · · · · · · · · · · ·		AGX.		m³/h	
	Sp. Gr. at Pump T.	1175 kg/m ³	Suct. Press,	4.0 kg/cm ² ( 0 kg/cm ² (	-+		2	
	Vop. Press. at Pump T.		Diff. Head	4.0 kg/cm²(		·		
L	Vis. of Pump 1.	2,0 ср.	Diff. Head	34 m				
	Corr. or Solid	Corr.	Max. Suct. Press.	0.95 kg/cm²( n Dato	Duly		24	h/day
	Туре НО	ORIZONTAL VOL		Drive Type	MOTOR	DRIVEN	1	
	No. Stoge	1 0x>		Design Press.			5,3	kg/cm²G
	Axis Overhan	4047 17	Pe CLOSED  Sit VERTICAL	Hydro Test Press Seal System	(Glond)		8.0 Mech, Sec	kg/cm²G
ŀ	R.P.M.	!450	- 2TOME	Mech. Seal	Single	<del></del> -	Double	
	Hydraulic HP		kw		Balance		Unbolonce	
ŀ	Efficiency B. H. P.		66 % 34.4 kw		Self Flus	h <b>≰</b> j	External	Flush
ŀ	Control System		34.4 kw	L			· · · · · ·	
ļ	Lubricating Oil System			· · · · · · · · · · · · · · · · · · ·				
l	Cooking Water I	Kind :	*c	kg/cm²G		m ³ /h		m²h°c/kcol
ŀ	Nozzle Orient	Bearing: NO Size Rating	Packing Box:	NO Pedestal			h Cooler: Reg'd	NO Witness
ľ	Inlet END	8 8 ANSI 15 150 RF	Coge Ring ]	V (10.5 /)	Hydrostal		)	)
	Outlet TOP	6 B ANST IN	Throat Bush NO		Balancing			NO
ŀ		-	Wear Ring	Condonate	Performo	nce	YES	1
ŀ			Gland Packing YES Mech. Seal NO	Condensate o.1	Running NPSH			YES
			Mote	riols	Overhou	<u></u>	YES	YES
		CS 13	Mech, Seol	NO			`	
	· · · · · · · · · · · · · · · · · · ·	US 304	Case Gasket	TEFLON	Case Stur Gland Stu		S 304 S 304	
	/	USBIG Her. Plating	Case Wearing Ring	NO .	Bearing		6 4 II C3	
		ASBESTOS	Imp. Wearing Ring	NO				
	.Type NO.250M IND	ILCTION MOTOR	. Mo		I BO . T.	*	VD=07 0	
I	Rated Output	45 kw	Volt. Phase	380 <u>`</u>	Drive Typ		DIRECT D	RIVE
	Cycle	50 Hz	Pole	4		from drive		w (ccw)
	<u> </u>			sories	7	PUM	IP.	
	Common Base  Anchor Bolt	YES	V-Pulley Air & Drain Cock V	NO alve. YES				
	Flex. Coupling	1153	Tool	YES				
	Coupling Cover							
	impeller		T	Parts (Refer		Parts II		
	Shoft		Cose Gosket Rubber for CpYo		Case We	aring Ring		<del> </del>
	Bearing		Gland Packing		-			,,, . <del></del>
	Mech. Seal		Imp. Ring					
	Manufacturer TOR!	SHIMA PUMP M		motion	V C 181	- 40	<del></del>	
			FG CO., LTD. kg , Motor :	Model No. CI	kg Tolo	0 — 40 1: 104	0	kg
	Weight Pump & Bo		<del></del>					
	Painting							
	Painting	000°, 6ata Con	densate shall be	used for EXT	- Flushing,			
	Painting	OOC". 6ata Con	densate shall be	used for EXT	- Flushing,	-		
	Painting	OOC° 6ata Con	densate shall be	used for EXT	- Flushing,			1
	Painting	OOC", 6ata Con	densate shall be	used for EXT	- Flushing,			

l CF	NTRIF	UGAL	PUMP	DATA SH	EET			Rev. Dote		
	300 T/		EA PLANT	<del></del>	1	Hem No.		Check	• • • •	
Customer	M . O.	, 1 <del>R</del> .	AQ				P - 5			
Order		5630		Outdoor		Service No. Regid	MELT	UREA PUMP orking 2 Spore	0 1	Total 2
Regulation						Code				
Liquid MI	LT UF	REA +	UREA		Process RYST/		~ 40	% >		· · · · · · · · · · · · · · · · · · ·
Capacity	Min.		m³/	Nor.		m³/h	Max		m³/h	
Sp. Gr. at Pu		121	140 °c O kg/m³	Disch. Press. Suct. Press.		4.0 k	g/cm²G g/cm²G	NPSH Reg'd		5 m
Vap. Press. a			kg/cm² A	Diff. Head		4.0 k	g/cm²G			
Vis. at Pump Corr. or Sal		2,0 Solid 2		Diff. Head Max. Suct. Pre		33.1 0.6 k	m g/cm³G	Duly	24	4 h/day
COIT. OF SOI	a corr.,	JOHU Z	3 /8 340 /6	Wax. Sect. 110	Design		<b>3</b> ,			
	RIZONT	AL V	LUTE	;		Drive Type Design Pre		MOTOR DRIVE	N 12	kg/cm²G
No. Stage Impeller Dia	(Ma	1X 330	mm Ty	P OPENED				ASE. 18. JACKE		
Axis	Overhan	9	Sr.	dir VERTICA	L	Seal Syste		Gland	(Mech. Sec	D
R.P.M. Hydraulic H	<del></del>		470		kw	Mech. Sea	l .	(Single) Balance	Double (Unbolonce	e)
Efficiency				52	%		,,	<del>, ,</del>	r.(External	
B. H. P.				52,8	kw					
Control Syst		n C	IL BATH							····
Cooling Wa	er	Kind :	CTW	34,6 °c			m²G			m²h*c/kcal
		Bearing : Size	YES (0.	Packing Bo	x: Req′		m³/h	No Flu Test	sh Cooler: Reg'd	NO Witness
Nozzle Inlet	Orient. END	8 B	ANSI IB ISO RE INSI IB ISO RE		Ved (	, LIVIO	13)*/ B	Hydrostatic	noq o	) NO
Outlet	TOP	6 B	ANSI TIS		N	0		Balancing	V50	1
<u> </u>	-	<del> </del>		Wear Ring Gland	-		<b></b>	Performance Running	YES	YES
			İ	Mech. Seal	YES		0.18	NPSH	1	}
C		800	1.3	Mech. Seal	Mate W.C.	rials x W.C		Over houl	YES	YES
Case		SCS		Cage Ring	WC	NO NO		Case Stud SL	IS 304	
Shoft	_	SUS	304	Case Gasket		TEFLON			IS 304	7717 00
Shaft Sleav Gland Pack		SUS	315	Case Wearing		NO NO		Beating NO. 64	13 03 /	(313 DB
				•	Mo	tor				
Type IND Rated Output	UCTION	MOT(		Volt.		380		Speed Reducer		DRIVE
Cycle		5		Pole		4		Rotation (from dei	(4) c	w (ccw)
Campan Ba				V-Pulley	Acces	ssories NO		Piping for C.		
Anchor Bol		YES		Air-& Drain	<del>Cock</del> V	alve. YES		Steam & Ext		YES.
Flex. Coupli	<del></del>			Tool		YES		C.W		
Coupling C	ver /			<u> </u>	Spare	Ports / Re	efer to	spare parts	(ist)	
Impeller				Case Gasker		111		Case Wearing Rin		
Shoft Bearing				Rubber for Gland Packin						
Mech. Sea		,		Imp. Ring						
Manufactur	er TOP	SHIMA	PUMP	MFG CO.,L		motion Model N	n 200	x 150 - CSH.	3 (K)	<del></del>
	Pump & E		651		lor;	690	J. 2.00		341	ke
Painting Pamusks I		111	64 1 40	10C AL-11 1	1-1		***			
Remarks	and	1iguid stean						t of mech, sec ted to the bu		ch.
	sea l						······································			
<b> </b>					<del>- · · · · · · · · · · · · · · · · · · ·</del>					
1	<del></del>					T	Checked	by Designed 8	y Doi	le

	SUBISH						<del></del>	<del></del>	_		
С	ENTRIF	UGA	L PUMP	DATA SH	EFT			Rev.			
				D. (				Date Check			
Plont	IRAQ E	XP P	ROJECT			Item No					
Customer	M.O.I	, IRA	Q	,		1	P -	701 A.B			
Order		56302				Service	RIVER	WATER INT	AKE O	UMP	
Location		Indoo	r	(Quidoor)		No. Reg	'd v		Spare		Total 2
Regulation						Code			-10.4	<del></del>	Total 2
					Proces	s Data					
Liquid	RIVER	WAT	ER	· · · · · · · · · · · · · · · · · · ·				<del></del>			
Copocity	Min.		m3/1	Nor,		m³/h	Ma	×. 1380	m³/	· · · · · · · · · · · · · · · · · · ·	
Pump Temp		32		Disch. Press		3.6	kg/cm³G	NPSH Avail	41.7		.0
Sp. Gr. at P	ump T.	1 000	0 kg/m³	Suct. Press.		0	kg/cm ² G	NPSH Reg d			
Vop. Press. o		0.048	5 kg/cm² A	Diff. Heod			kg/cm³G				
Vis. at Pum			cp.	Diff. Head		36	m	<b>†</b>			
Corr. or Sa	lid SOME	SAND	INTAKING	Mox. Suct. Pre	55.		kg/cm²G	Duty		24	h/d
						n Dajta		,,			11/0
	ERTICAL	MIXE	FLOW			Drive Typ	pe .	MOTOR DR	VEN		
No. Stage			1.			Design P		, DI	5.4 .		kg/cm²
Impeller Dia	, (Max	(.592)	man. Ty	pe CLOSED		Hydro. Te			8.1		kg/cm
Axis			Sp	II HORIZONT	AL	Seal Syst		(Gland)		ach, Sec	
R.P.M.			970			Mech. Sec	al .	Single		uble	
Hydraulic H	P				kw			Balance		bolance	,
Efficiency				75	%			Self Flush		ernal	
B. H. P.				180	kw.						
Control Sys											
Lubricating (			REASE								
Cooling Wa	ner I—	ind :		•c			cm²G	m ³ /l	,		m²h°c /kc
	Ве	aring:	NO	Packing Bo	_		edestol:	NO	Flush Co		NO
Nozzle	Orient.	Size	Rating	Flush	Req'	d Fluid	m³/h	Test	Re	q'd	Witnes
Inlet	BOTTOM			Cage Ring				Hydrostalic	,		) NO
Outlet	SIDE	16B	JIS 5K FF	Throat Bush	NO			Balancing		YES	1
	<b> </b>	<b></b> _	<b> </b>	- Wear Ring	,	1		Performance			. )
	<del></del>	<del></del>	ļ	Gland Sparing	YE	710101	1.8	Running			YES
	ł		L	Mech. Seal	NO			NPSH		10	
Core	FC	20	· · ·		Mater			Overhaut		ES.	YES
Case Impeller	FC	20		Mech. Seal		NO					
Shaft	s 35			Cage Ring	<del></del>	NO		Case Stud	S 45C		
Shaft Sleeve		304		Case Gasket		SBESTOS		Gland Stud	SUS 3		
Gland Packi		SESTOS		Case Wearing				Bearing N	0. 7319	ВD	В
rucki	- AOD		<u>-</u>	imp. Wearing		NO					
Type NO, 400	3.1NDUC	TION	MOTOR	Volt.	Mot						
Rated Output			00 kw	Phose		660		Drive Type	DIREC	T D	RIVE
Cycle			50 Hz	Pole			6	Speed Reducer	1		·
				, 010	Access	sories	<u> </u>	Ratation (from	PUMP	cw	, Cc
Common Bas Betting Ancher Bolt	50	NO	<del></del>	V-Pulley		NO .					
Ancher Bolt		YES		Drain V	a.   vo	YES		Lub.water	piping	Y	ES.
Flex. Couplin		YES		Tool		YES		<del></del>			
Coupling Co		NO		Motor pedest	ha I	YES					
				5.5. pc 365		Parts ( R	efer to	o spare port	s list	,	··-
Impeller				Case Gasket				Case Wearing			
Shaft				Rubber for Cr	oł'o			See irearing	rrung.		
Bearing				Gland Packing	<u> </u>						<del></del>
Mech. Seal				Imp. Ring							
					Inform	ation	1				
Manufacture		AMINE	PUMP M	IFG CO., LT	D.	Model No	>_	400 - SPV			
	ump & Base	<b>)</b> :	2513	kg , Moto		250		kg, Total :		5013	3 k
							<del></del>	4, .301.	·	9013	<u>, k</u>
Painting				. ,			· <del></del>				
Painting Remarks											

Service   MATER   PUMP   Pump   Developer   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No.   No	TRAQ EXP. PROJECT	TRAQ EXP. PROJECT	IRAQ EXP. PROJECT	TRAQ EXP. PROJECT	Check	
	A				Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Value   Valu	_
		Service   MASTE   WATER   PUMP	Service   WASTE   WATER   PUMP	Variety   Secretion   Indian   Continues   Service   WASTE   WATER   PUMP	Order 563023 Service WASTE WATER PUMP occition Indoor Outdoor Na. Reg'd Working I Spare (egulation Process Data (iquid WASTE WATER PUMP)	
					Regulation Code Process Data	·
Process Date	Process   Date   Process   Date   Process   Date   Process   Date   Process   Date   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process   Process	Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Process Date   Proc	Process   Date   Process   Date   Process   Date   Process   Date   Process   Date   Process   Date   Process   Date   Process   Date   Process   Date   Process   Date   Date   Process   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Date   Da	Process   Date	Process Data	l Total 2
Main	Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Month   Mont	Mar.   Mole	Separation   Main			
D. Gr. of Pump T.   1000 kg/m²   Suct. Press.   O   kg/cm²   NPSH Req²d   — m   opp. Press. of Pump T. — kg/cm² A   Diff. Head   3.0 kg/cm²   G   NPSH Req²d   — m   opp. Press. of Pump T. — cp.   Diff. Head   3.0 m   orr. or Solid   NONE   Moxx. Suct. Press.   O.15   kg/cm²   Duty   2.4   h/day   Orr. or Solid   NONE   Moxx. Suct. Press.   O.15   kg/cm²   Duty   2.4   h/day   Orr. or Solid   NONE   Moxx. Suct. Press.   O.15   kg/cm²   Duty   2.4   h/day   Orr. or Solid   NONE   NONE   Design Press.   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty   Duty	C. Cr. of pump T.   1000   kg/m²   Suct. Press.   0   kg/cm²   NPSH Regid   — m   np. press. of Pump T. — kg/cm²   Diff. Head   3.0   kg/cm²   Suct. Pump T. — cp.   Diff. Head   3.0   m   np. press. of Pump T. — cp.   Diff. Head   3.0   m   np. press. of Pump T. — cp.   Diff. Head   3.0   m   np. press. of Pump T. — cp.   Diff. Head   3.0   m   np. press.   Diff. Head   3.0   m   np. press.   Diff. Head   3.0   m   np. press.   Diff. Head   3.0   m   np. press.   Diff. Head   3.0   m   np. press.   Diff. Head   3.0   m   np. press.   Diff. Head   3.0   m   np. press.   Diff. Head   3.0   m   np. press.   Diff. Head   3.0   m   Diff. Head   Diff. Press.   Diff. Head   Diff. Press.   Diff. Head   Diff. Press.   Diff. Head   Diff. Press.   Diff. Press.   Diff. Head   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Press.   Diff. Pre	p. Gr. of Pump T.   1000 kg/m²   Suct. Press   O kg/cm² C   MPSH Req² d	Decision   Pump T	Sp. Gr. of Pump T		m³/h
Design Press   Pump T.	Design   Prime   T.	Design   Pump   T.	Time   Pump   T.	Vis. of Pump T.		
Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   D	Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   D	Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   D	Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   Design   D	Corr. or Solid   NONE	Vop. Press, at Pump T kg/cm² A Diff. Heod 3.0 kg/cm² G	
			Vertical   Mixed   Flow   Drive   Type   Motor   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   No   Drive   Drive   No   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive   Drive	Type		24 h/day
	Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   September   Design Press   September   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   September   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design Press   Design	Design Press.   5   kg/cm²G   mpolier Dio.   (Max372) mm   Type CLOSED   Hydro-Test Press.   7.5   kg/cm²G   mpolier Dio.   (Max372) mm   Type CLOSED   Hydro-Test Press.   7.5   kg/cm²G   Mech. Seol   Single   Double   Mech. Seol   Single   Double   Mech. Seol   Single   Double   Mech. Seol   Single   Double   Mech. Seol   Single   Double   Mech. Seol   Mech. Seol   Single   Double   Mech. Seol   Mech. Seol   Single   Double   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   Mech. Seol   M	Design   Fresh   Design   Fresh   Sey/cm/G	No. Stage		RIVEN
Spit   MORIZONTAL   Seal System   Gend   Mech. Seal   Moch. Seal   Single   Double	Spit   MORIZONTAL   Seal System   Gend   Mech. Seal   Moch. Seal   Moch. Seal   Single   Double	Net	Akis	April	No. Stage I Design Press.	5 kg/cm/G
P.M.	P.M.	P.M.   1470	New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New   New	Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Neght   Negh	Impeller Dia. (Max 372) mm Type CLOSED Hydro Test Press.  Axis Split HORIZONTAL Seal System Gland	
H. P.   64,5 kw	Ficiency	H.P.   G.4.5 kw   Self Flush   External Flush   H.P.   G.4.5 kw   Self Flush   External Flush   H.P.   G.4.5 kw   Self Flush   External Flush   H.P.   G.4.5 kw   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush   Self Flush	Fickienery   7 2 %   Self Flush   External Flush   S. H. P.	Efficiency	R.P.M. 1470 Mech Seol Single	
Cooling   Water   March   Size   March   Size   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Flush   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Reging   Regi	Description   System   British   System   GREASE   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Se	Control System   System   GREASE	Conting   System   System   GREASE	Cooling Water   Cooling Water   Kind : 'c kg/cm'G m'h m'h'c/kcol		
System   GREASE   Coling Water   Kind :   C   kg/cm²G  m²/h   m²/h / kcol		Ubricating Oif   System   GREASE   Cooling   Water   Kind :	War   War   Wind   Wind   Wind   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   War   W			
Bearing   NO   Pocking Box   NO   Pedestal   NO   Flush Cooler   NO			Deciring   No	No	Lubricating Oil System GREASE	21. (1. 1
No   Durlet   SIDE   10 B   JIS   OKFF   Throat Buth   NO   Bolancing   YES   YES		No   No   No   No   No   No   No   No	No   No   No   No   No   No   No   No	Inlet	Cooling Water	
Dutlet   SIDE   10 B   JISIO ^K FF   Throat Bush   NO   Bolancing   YES   YES		SIDE   10 B   JIS10 ^K FF   Throat Bush   NO   Bolancing   YES   VES	Durket   SIDE   10 B   JIS10 ^K FF   Throat Buth   NO   Bolancing   YES   JYES   Outlet			
Gland   Running   NPSH   NO	Gland   Running   NPSH   NO	Gland   Running   J   J   J	Grand   Running   J   J   J   J   J   J   J   J   J	Gland   NPSH   NO	Outlet SIDE IOB JISIOKFF Throat Bush NO Balancing	
Mech. Seal   Moterials   Over haul   YES   YES	Mech. Seal   No   NPSH   NO	Mech. Seal   NPSH   NO	Mech. Seal   No   NPSH   NO	Mech. Seal   NPSH   NO		YES
Case   FC   20   Mech. Seal   NO   Case Stud   S 45C	Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description   Description	Case	Case	Case   FC 20   Mech. Seal   NO	Mech. Seal NPSH	
Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stand   Stan	Noft	Shaft S 35C   Case Gasket   ASBESTOS   Gland Stud   SUS   304   Shaft Sleeve   SUS   304   Case   Wearing Ring   N   FC   Bearing   N   N   73   5   ADB	Shaft   S 35C	Shaft		1 YES 1 YES
Substitute	Acessories  Incompose Bale NO V-Pulley NO Piping for grease YES  Incompose Coupling Cover NO Spare Parts (Refer to spare parts list)  Spare Parts (Refer to spare parts list)  Spare Parts (Refer to spare parts list)  Spare Parts (Refer to spare parts list)  Spare Parts (Refer to Spare Parts list)  Monor  Accessories  Spare Parts (Refer to Spare Parts list)  Spare Parts (Refer to Spare Parts list)  Monor  Spare Parts (Refer to Spare Parts list)  Monor  Spare Parts (Refer to Spare Parts list)  Monor  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts list)  Monor Spare Parts (Refer to Spare Parts	Shaft Sleeve	Shaft Sleeve	Shaft   Sleeve   SUS 304   Case   Wearing Ring   N   FC   Bearing   N   O   73   5   ADB		
Motor	Motor	Motor	Motor	Motor	Shaft Sleeve SUS 304 Case Wearing Ring N1 FC Bearing NO.	
Note	Accessories	No	Roted Output         75 kw         Phose         3         Speed Reducer           Cycle         50 Hz         Pole         4         Rotation (from driver)         cw         €cw           Accessories           Common Base         N O         V-Pulley         NO         Piping for grease         YES           Arit & Drain €eck         N O         Piping for grease         YES           Flex. Coupling         YES         Tool         YES           Coupling Cover         NO         NO           Spare Parts ( Refer to spare parts list)           Impeller         Case Gasket         Cose Wearing Ring           Shaft         Rubber for Cpl'g         Grease Seat           Bearing         Gland Pocking           Mech. Seal         Imp. Ring         Information           Monufacturer TORISHIMA PUMP MFG CO, LTD         Model No. 250 - SPV           Weight         Pump & Base: 1422         kg         Motor: 720         kg         Total: 2142         kg	Rated Output         75 kw         Phase         3         Speed Reducer           Cycle         50 Hz         Pole         4         Rotation (from driver)         cw         cw           Accessories           FOMP           Accessories           Accessories           Accessories           Accessories           YES           Air & Drain €eck         NO         Piping for grease         YES           Coupling YES         Tool         YES         YES           Coupling Cover         NO         Parts         [Ist )         Ist	Motor	
Cycle	Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  PUMP  Accessories  Accessories  PUMP  Accessories  Accessories  PUMP  Accessories  Accessories  Accessories  PUMP  Accessories  Accessories  PUMP  Accessories  Accessories  PUMP  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessories  Accessor	Copyright   SD   Hz   Pole   4   Rotation (from driver)   Cw   (Cw)	Cycle	Cycle         SD         Hz         Pole         4         Rotation (from driver)         cw         (cv)           Accessories           Common Base         N O         V-Pulley         NO         Piping for grease         YES           Serting Bolt         YES         Tool         YES           Coupling YES         Tool         YES           Coupling Cover         NO           Spare Parts ( Refer to spare parts list )           Impeller         Case Gasket           Case Gasket         Cose Wearing Ring           Shoft         Rubber for Cpl'g         Grease Seal           Bearing         Gland Pocking           Information           Mech. Seal         Imp. Ring           Information           Model No. 250 - SPV           Weight         Pump & Base: 1422         kg Motor: 720         kg, Total: 2142         kg           Painting	Period Colonia 75 1 Dhana 7 Consid Barburas	
NO   V-Pulley   NO   Piping for grease   YES	Common Base NO V-Pulley NO Piping for grease YES  Interest Bolt YES Air—& Drain Gook NO South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From South From	Common Base	Common Base	Common Base	Cycle 50 Hz Pole 4 Rotation (from this	cw (cw)
Spare Parts   February   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spare Parts   Spa	No.   YES	Spare Parts ( Refer to spare parts   list )	Air & Drain Cock   NO	Air - & Drain (	Common Base NO V-Pulley NO Piping for grea	
Spare Parts ( Refer to spare parts list )   Spare Parts ( Refer to spare parts list )	Spare Parts ( Refer to spare parts list )   Spare Parts ( Refer to spare parts list )	Spare Parts ( Refer to spare parts   list )	Spare Parts ( Refer to spare parts   list )	Coupling Cover NO	Anchor Bolt YES Air & Drain Cock ND	
			Impeller	Impeller	Coupling Cover NO	
Rubber for Cpl'g   Grease Seal	Rubber for Cpl'g   Grease Seal	Rubber for Cpt'g   Grease Seat	Rubber for Cpl'g   Grease Seal	Rubber for Cpt's   Grease Seal		
Mech. Seal         Imp. Ring           Information         Information           Manufacturer TORISHIMA PUMP MFG CO., LTD Model No. 250 - SPV           Weight Pump & Base: 1422 kg Motor: 720 kg, Total: 2142 kg           Pointing	Mech. Seal         Imp. Ring           Information         Information           Monufacturer TORISHIMA PUMP MFG CO., LTD Model No. 250 — SPV           Weight Pump & Base: 1422 kg Motor: 720 kg, Total: 2142 kg           Painting	Mech. Seal         Imp. Ring           Information           Manufacturer TORISHIMA PUMP MFG CO., LTD Model No. 250 - SPV           Weight Pump & Base: 1422 kg Motor: 720 kg, Total: 2142 kg           Pointing	Mech. Seal         Imp. Ring           Information           Manufacturer TORISHIMA PUMP MFG CO., LTD Model No. 250 - SPV           Weight Pump & Base: 1422 kg Motor: 720 kg, Total: 2142 kg           Pointing	Mech. Seal         Imp.Ring           Information           Monufacturer TORISHIMA PUMP MF6 CO, LTD Model No. 250 − SPV           Weight Pump & Base: 1422 kg Motor: 720 kg, Total: 2142 kg           Painting	Shafi Rubber for Cpl'a Grease Seal	
Manufacturer         TORISHIMA         PUMP         MFG         CO., LTD         Model No.         250 - SPV           Weight         Pump & Base:         1422         kg         Motor:         720         kg         Total:         2142         kg           Pointing	Monufacturer         TORISHIMA         PUMP         MFG         CO., LTD         Model No.         250 - SPV           Weight         Pump & Base:         1422         kg         Motor:         720         kg         Total:         2142         kg           Painting	Monufacturer         TORISHIMA         PUMP         MFG         CO., LTD         Model No.         250 - SPV           Weight         Pump & Base:         1422         kg.         Motor:         720         kg.         Total:         2142         kg.           Pointing         Painting         Pointing	Monufacturer         TORISHIMA         PUMP         MFG         CO., LTD         Model No.         250 - SPV           Weight         Pump & Base:         1422         kg , Motor:         720         kg , Total:         2142         kg           Painting	Monufacturer         TORISHIMA         PUMP         MFG         CO., LTD         Model No.         250 - SPV           Weight         Pump & Base:         1422         kg , Motor:         720         kg , Total:         2142         kg           Pointing	Mech. Seal Imp.Ring	
Weight         Pump & Base:         1422         kg         Motor:         720         kg         Total:         2142         kg           Painting         Painting<	Weight         Pump & Base:         1422         kg         Motor:         720         kg         Total:         2142         kg           Painting         Painting<	Weight Pump & Base: 1422 kg , Motor: 720 kg, Total: 2142 kg Painting	Weight         Pump & Base:         1422         kg         Motor:         720         kg         Total:         2142         kg           Painting         Painting<	Weight         Pump & Base:         1422         kg         Motor:         720         kg         Total:         2142         kg           Pointing         Pointing<		
					Weight Pump & Base: 1422 kg , Motor: 720 kg, Total: 21	42 kg
	7					
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216	216	216	216	216	216	
216	216	216	216	216	216	
216	216	216	216	216	216	

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	NTOI	-110 41	DUMD	DATA SH	CCT			Rev.			
, CΕ	M I WIL	OGAL	FUNIF	DATA SI	LL I	. ^		Check			
Plant JR	AQ E	XP. PR	OJECT	<del></del>		Item No	<del></del>				
Customer		I IRA				11.5411 1.44	, b	717 A.B			
Order		3023	<del>-</del>			Service	TURB	COND. RETU	JRN	PUMP	·-····································
Location		Indoor		(Ouldoor)		No. Rec			pare	1 1	Total 2
Regulation		- 110001		0,,,,,		Code					
Kegunion					Proces	3 Dolo	· · · · · · · · · · · · · · · · · · ·				
Liquid (	ONDE	NSATE						<del></del>			
Capacity	Min.		m³/h	Nor.		m³/h	Mo	. 29	7.6 m	3/h	
Pump Temp.		60	*c	Disch. Press,		4,0	kg/cm²G	NPSH Avail			.5 п
Sp. Gr. at Pu	mp T.	983	kg/m³	Suct. Press.		- 0.8	kg/cm²G	NPSH Req'd			.5 m
Vop. Press, of				Diff. Head		4.8	kg/cm ⁷ G				
Vis. at Pump			ср	Diff. Head		49	m		_		
Corr. or Soli				Max. Suct. Pre	53.	1.0	kg/cm³G	Duty		24	h/day
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		n Data	-7				
Type HORI	ZONTAL	VOL	UTE			Drive T	ype	MOTOR DR	IVEN	-	
No. Stage		1				Design				5.0	kg/cm²0
Impeller Dio	(Me	^{0X} 209)	mm Ty	pe CLOSED		Hydro. T	est Press.			7.5	kg/cm²C
Axis	Overt	<u> </u>	Sp		L	Seal Sy	stem	Gland		Mech. Sec	
R.P.M.			2960			Mech. \$	ea!	(Single)		Double	
Hydraulic HI	<del>-</del>		<del>- 1 - 7</del>		kw	-		Balance		Unbalanc	
Efficiency				51	%			(Self Flush)		External	Flush
B. H. P.				7.76	kw						
Control Syst									-		
Lubricating (		n 01	L BATH	ı							
		Kind:		*c		kç	g/cm²G	m³/h	1		m²h°c/kco
Cooling Wat	er	Bearing:	NO	Packing Bo	x:	NO	Pedestal :	NO	Flush	Cooler:	NO
Nozzle	Orient	. Size	Rating	Flush	Req	d Fluid	· m³/h	Test		Req'd	Witness
inlet	END	3 B	I25 FF	Cage Ring	)		T	Hydrostatic		1	NO
Outlet	TOP	2 B	ANSI TE	Throat Bush	N	0		Balancing			)
				Wear Ring			J	Performance		YES	1
				Gland ·	17			Running			YES
				Mech. Seal	YE	S SEL	F	NPSH		,	
						erials		Overhaul		YES	YES
Case		FC25		Mech. Seal	ST	ELLITE, x	C:SUS 316				
Impelier		FC 25		Cage Ring		NO	·	Case Stud	S 4	5C	
Shaft		545C		Case Gasket		ASBEST		Gland Stud		304	
Shaft Sleeve		SUS316 F	cr. Plating	Case Weari				Bearing	NO.	6305 _C	3
Gland Pocki	ng	NO	<u> </u>	Imp. Wearing		NO	<u> </u>	1			
					M	olor		7	5155	AZ 55:	
Type 168 L.				Volt.		380				CT DRI	VE.
Rated Outpu	<u> </u>			Phase		3		Speed Reduce Rotation (from			w (cc
Cycle	·	5	O Hz	Pale				Kolonon ( fron	PUN		·* (cc
			· · · · · · · · · · · · · · · · · · ·		Acce	ssories	NO.	1			
Common Bo		VEC		V-Pulley	6. 1			<del> </del>			
Anchor Boli		YES		Air & Droin	Cock	valve,	YES YES	- <del> </del>			
Flex.Coupli Coupling Co				Companion	Flees		YES				
Cooping Co				T combanion				Spare parts	list	. 1	
impeller				Case Gasket		- Fui(3	TE IBION	Case Wearing			
Shaft				Rubber for		<del></del>			g		
Bearing				Gland Packin				·			
Mech. Sea				Imp. Ring	·¥			<del> </del>			
Mec. 360	·			1 sub-king	Jn.5 -	rmation					
	• TO	PIGUIMA	DI IMP A	AFG CO., LT		Model	No. C	PK . G 50 - 2	20		
Manufactur		· · · · · · · · · · · · · · · · · · ·	163		ofor:	130		kg, Total;		293	
Manufactur Weight	Jump N. I			~B ' W	····			, 104,11,			
Weight	ump &										
Weight 1 Painting	omp &										· · · · · ·
Weight	omp &										

	SUBISI	# HEA	MA MID	USTRIES, I	LTD.					[	19
				•••		<del></del>		Rev.	$\neg$		
CF	ENTRI	UGAL	PUMP	DATA SHE	EET		•	Dote			
e,						· · · · · · · · · · · · · · · · · · ·	`	· Check	ىرلىك	<u>/</u>	
	AQ. EX		JECT			Item No.	Р	765 A.B			
	W.O. I	IRAQ	<del> </del>	<del>.</del>							
Order	56	3023		7				D WATER		MP.	
Location		Indoor		(Ouldoor)		No. Regid	W.	orking	Spare	<u> </u>	otal 2
Regulation					ليني	Code					
	LONGTER	144	ren		Process	s Data				· · · · · · · · · · · · · · · · · · ·	
	IONIZE	) WA		Nor.	770	) m³/h	Mox			1.1	
Capacity Pump Temp.	Min.	C.E.	m³/h *c	Disch. Press.	330			NPSH Avail	70	m³/h	
Sp. Gr. at Pu		<u>65</u> 980	kg/m³	Suct. Press.			g/cm²G g/cm²G	NPSH Reg'd			6.5 3.0
Vap. Press. a			kg/cm² A	Diff. Head			g/cm²G	141 SET KEY U	<del>.</del>		3.0
Vis. at Pump		. 0.255	cp.	Diff. Head	***	8.0 k	m G				
Carr. or Sol				Max. Suct. Pre			g/cm³G	Duty		24	h/de
					Design			30.,			11/ (30
Туре НОЯ	RIZONT	AL VO	UTE	<del></del>	1	Drive Type	. N	OTOR DRI	VEN		
No. Stage				· · · · · · · · · · · · · · · · · · ·	$\neg \uparrow$	Design Pro				9.3	kg/cm²
Impeller Dia	, (Max	505)	mm Ty	P CLOSED		Hydro. Tes		··		14.0	kg/cm²
Axis	Overhu	000,	Sp		$\neg \dashv$	Seal Syste		(Gland)		Mech, Sec	
R.P.M.			1460			Mech. Sea		Single		Double	
Hydraulic HI	P				kw			Balance		Unbalance	
Efficiency		Nor 62	<u> </u>	Max 66	%			Self Flush		External	
B. H. P.		116		122	kw		•				
Control Syst	ėm										
Lubricating (	Dil Systen	, (	DIL BA								
Cooling Wat	[	(ind :		·c		kg/c	:m²G	т			m²h*e∕kc
Cooling Wat	<u> </u>	Bearing:	NO	Packing Box	x :		destal:	NO.	Flus	h Cooler;	NO
Nozzie	Orient.	Size	Rating	Flush	Req'o	d Fluid	m³/h	Test		Req'd	Wilnes
Inlet	END	108	ANST Ib	Coge Ring	1_			Hydrostatic			) NO
Outlet	TOP	88	ANSI D	Throat Bush	NC			Balancing			)
				Wear Ring	<u> </u>			Performance	,	YES	)
		1		Gland Packing		S SELF		Running			YES
	L.,_	1	L	Mech. Seal	N C	<del>` ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '</del>	L	NPSH	_	[]	J
	-			· · · · · · · · · · · · · · · · · · ·	Mate			Over haut		YES.	YES
Case		20		Mech. Seai		NO					
Impeller		20		Cage Ring		NO	1,	Case Stud		45C	
		45 C		Case Gasket		SBESTOS		Gland Stud	s	US 304	
Shaft									· .		
Shaft Sleeve	• F	20		Case Wearin		FC 20		Bearing	NO.	6412¢	3
	• F	EBESTOS		Imp, Wearing	Ring	FC 20		Bearing	NO.	6412¢	3
Shaft Sleeve Gland Packi	ng AS	BESTOS		Imp, Wearing		FC 20 NO tor					
Shaft Sleeve Gland Pocki Type NO.3151	FO ng AS	BESTOS	OTOR	Imp, Wearing	Ring	FC 20 NO for 380	V	Drive Type	DIR		3 IVE
Shaft Sleeve Gland Packi Type NO.3151 Rated Outpu	FO ng AS	BESTOS CTION N 150	OTOR	Imp, Wearing  Volt.  Phase	Ring	FC 20 NO tor 380 3	V	Drive Type Speed Reduc	DIR	ECT DR	IVE
Shaft Sleeve Gland Pocki Type NO.3151	FO ng AS	BESTOS	OTOR	Imp, Wearing	Ring Mot	FC 20 NO for 380 3	٧	Drive Type	DIR er	ECT DR	IVE
Shaft Sleeve Gland Packi Type NO.3151 Rated Outpu	F( ng AS - INDU	BESTOS CTION N 150	OTOR	Volt. Phase Pole	Ring	FC 20 NO for 380 3 4 sories	V	Drive Type Speed Reduc Rotation (fro	DIR er om driv	ECT DR	IVE
Shaft Sleeve Gland Pocki Type NO.3151 Rated Outpu Cycle	FO nng AS - INDU- I	BESTOS CTION N 150	OTOR	Volt. Phase Pole V-Pulley	Ring Mot Acces	FC 20 NO lor 380 3 4 sories		Drive Type Speed Reduc Rotation (fro	DIR er er PU	ECT DR	IVE
Shaft Steeve Gland Packi Type NO.315k Rated Outpu Cycle Common Ba	FORMS AS	CTION N 150 50	OTOR	Volt. Phase Pole	Ring Mot Acces	FC 20 NO lor 380 3 4 sories		Drive Type Speed Reduc Rotation (fro	DIR er er PU	ECT DR	IVE • (c
Shaft Sieeve Gland Packi Type NO.315L Rated Outpu Cycle Cammon Ba Anchor Bolt	F (nng AS	CTION N 150 50	OTOR	Imp. Wearing  Volt.  Phase Pole  V-Pulley Air & Drain	Ring Mot Acces	FC 20 NO NO 380 3 4 sories NO alve YES		Drive Type Speed Reduc Rotation (fro	DIR er er PU	ECT DR	IVE • (c
Shaft Steeve Gland Packi Type NO.315L Rated Outpu Cycle Common Ba Anchor Bolt Flex. Couplin	F (nng AS	CTION N 150 50	OTOR	Imp. Wearing  Volt.  Phase Pole  V-Pulley Air & Drain	Ring Mo! Acces	FC 20 NO hor 380 3 4 sories NO alve YES		Drive Type Speed Reduc Rotation (fro Companion (Discharg	DIR er om driv PU Flange	ECT DR	IVE • (c
Shaft Steeve Gland Packi Type NO.315L Rated Outpu Cycle Common Ba Anchor Bolt Flex. Couplin	F (nng AS	CTION N 150 50	OTOR	Imp. Wearing  Volt.  Phase Pole  V-Pulley Air & Drain	Ring Mo! Acces	FC 20 NO hor 380 3 4 sories NO alve YES	1	Drive Type Speed Reduc Rotation (fro Companion (Discharg	DIR er pm driv PU Flange & S	ECT DR	IVE • (c
Shaft Sleeve Gland Packi Type NO.315L Rated Outpu Cycle Common Ba Anchor Bolt Flex. Coupling Co	F (nng AS	CTION N 150 50	OTOR	Imp. Wearing  Volt. Phase Pole  V-Pulley Air & Drain	Ring Mot Acces CockVo	FC 20 NO hor 380 3 4 sories NO alve YES	1	Drive Type Speed Reduct Rotation (fro Companion (Discharg	DIR er pm driv PU Flange & S	ECT DR	IVE • (c
Shaft Sleeve Gland Packi Type NO.315k Rated Outpu Cycle Common Ba Anchor Bolt Flex. Couplin Coupling Ca Impeller Shaft Bearing	F (nng AS	CTION N 150 50	OTOR	Imp. Wearing  Volt. Phase Pole  V-Pulley Air & Drain Tool	Ring Mot Acces  Cock Vo	FC 20 NO hor 380 3 4 sories NO alve YES	1	Drive Type Speed Reduct Rotation (fro Companion (Discharg	DIR er pm driv PU Flange & S	ECT DR	IVE • (c
Shaft Sleeve Gland Packi Type NO.315k Rated Outpu Cycle Common Ba Anchor Bolt Flex. Couplin Coupling Co Impeller Shaft	F (nng AS	CTION N 150 50	OTOR	Imp. Wearing  Volt. Phase Pole  V-Pulley Air & Droin Tool  Case Gasket Rubber for C	Ring Mot Acces  Cock Vo	FC 20 NO hor 380 3 4 sories NO alve YES	1	Drive Type Speed Reduct Rotation (fro Companion (Discharg	DIR er pm driv PU Flange & S	ECT DR	IVE • (c
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_	Impeller Dia	( Max	404)	non Typ	P CLOSED		Hydro. Tes					6		kg/cm²
_	Axis		7047	Spi		AL.	Seal Syste		Gland	<b>D</b>		Mech. S		e/ m
	R.P.M.	,	1 4	450			Mech. Sea		Single			Double		•
_	Hydraulic H	P				kw			Bolon	ice		Unbolon	Ce.	
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	B. H. P.				24	kw	l							
	Control Syst													
_	Lubricating (			ase Pack			<del></del>							- 4
	Cooling Wa	ner NO E	ind :		*c			m²G		m³/h	Fl. d			h"c /kcc
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-	Nozzle Inlet	Orient.	Size 6 B	Kating	Cage Ring	Req′ YES		m³/h 0.03	Huda	ostotic	+,	Reg'd YES	+	Witnes NO
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L	Impeller	sc			Cage Ring		FC 20					304		
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						Acces	ssories				PUM	ν		
L	Common Bo		NO		V-Pulley		NO		Lub	. woter p	l ping		YE	\$
L	Ancher Bol		YES		Air & Drain	Cock	NO							
ŀ	Flex. Coupli		YES		Tool		YES						<u> </u>	
H	Coupling Co	, , , , , , , , , , , , , , , , , , ,	NO		Motor Stand		YES		<u> </u>					
H	Impeller				Case Gasket	Spore	Parts Re	efer to		re parts Wearing		151		
ŀ	Shaft			<del></del>	Rubber for C	nta.	······································			, reding	V.III.A	<del></del>		
ŀ	Bearing				Gland Packing				<b></b>					
ļ.	Mech. Sea	, .			Imp. Ring	7			٠					
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ŀ	Monufactur	er TOR	ISHIMA	PUMP	MFG CO., LT		Model No	0. 12	5 -	CVS (K)				
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# <u>ANNEX NO. 5</u>

Therefore completely a new system with a treated water capacity of 600 m3/hr permeate water is planned to be built. This new system is also considered to be executed by bidder.

- 2- The Reverse Osmosis shall be designed according to the following data:
  - 2-1 Treated Water at plant Battery limits
    - 2-1-1 Qualities

# **Analysis Results of Raw Water**

			Raw	Water	Filtered	Water
S	Item	Sample	Limit	Result	Limit	Result
				S		S
			Value		Value	
1	PH at 25 C		8.1	7.35		
2	E.C (/an)			6700		
3	Temperature (C)		32	29 C		
4	Turbidity (pip as	kaolin)	150 Max.	33.3	< 1.0	
5	Total Hardness (	ppm as CaCO3)	720	829		
6	Ca - Hardness (	ppm as CaCO3)	374	357		
7	P- Alkalinity (ppn	n as CaCO3)				
8	m- Alkalinity (ppr	n as CaCO3)	193	144		
9	CI lons (ppm as	CaCO3)	772	1500		
10	SO4 Radicals (p	om as CaCO3)	317	600		
11	Silica (ppm as Si	O2)	24 Max.	5.5	24	
12	Iron (ppm as Fe	)	2	1.12	0.5	
13	C.O.D (ppm as C	))	10	3.2	7	
14	Suspended solid	s (mg/L)	300	90	4	
15	T.D.S (mg/L)		1603	4000		
16	Na+ Ions (ppm a	s CaCO3)	562			
17	Oil content (ppm	)		0.1		

Pressure kg/cm²g 2 Min

Flow m³/hr to be defined by bidder

2-2 Reverse Osmosis Design Data

Production water capacity 600 m3/hr

Conversion Rate to be defined by bidder

Temperature - Design 25 C - Minimum 15 C

Quality of produced water to be defined by bidder

Any modification, option to give better economic and performance for the plant will be considered.

- The bidder scope of supply shall cover all materials (all equipment and material) except for the civil works.

#### **Cooling Tower**

1- The old cooling tower has been demolished a new cooling tower with eight cells is under construction now.

The new design has been adopted by SIDCCO, which is differing from the old one by their dimension.

2- Basis of Design and performance data.

- Cold water flow (Circulation Water 22648 m3/h(

- Cooling Tower Design

Hot water temperature
 Cold water temperature
 Wet bulb temperature
 Dry bulb temperature
 46 C
 34.3 C
 31.4 C
 45 C

Type of construction: One block of 8 cells

Outlet dimension:

Height (ground level = 0.0: basin bottom - 1.5 meter

Basin curb +0.5 meter Cells +14.2 meter

Fan stacks +16.7

Type of operation: Induced fan

Design flow: 24000 m³/h Normal flow: 22000 m³/h

Thermal conditions: see point 2 above

Wind velocity: 3.0 m/sec

- 3- Design Criteria Notes
  - 4-1 Process Material

The cooling water is the clean water concentrated two times with 5% side Filtration.

- 4-2 Main Materials of Construction
  - 4-2-1 Cooling Tower
    - Basin: Concrete
    - Structure: =
    - Fan stack: =
    - Shell: =
    - Filling: polypropylene
    - Drift eliminator:
    - Fan: glass reinforced polyester blades
- 4- The bidder shall under take the technical evaluation of the above preliminary design mentioned above in order to insure reliable design and performance

- materials, water distribution pipe, which shall be approved by SIDDCO.
  - 5- The bidder shall supply all the equipment and materials with the quantities and specification result in point (5) above.
  - 6- The bidder shall guarantee the performance of the cooling tower.

# **Extent of Delivery Condition**

The equipment and material relevant to each cooling tower unit shall be delivered with the following main parts:

- Structures, internal parts, filling.
- Electric motors
- Reduction gears
- Fans
- Local control panels

#### ANNEX NO. 7

# Urea storage, handling, bagging and ship loading system

1- These systems have also been heavily damaged during the war. No works has started yet. It is considered relatively less important compared to the other parts of plant.

Bidder is considered to supply equipments, materials, conveyor and their relative accessories, bagging machines, reclaimer, ship loader etc as mentioned in the attached specification.

- 2- An option for repairing the existing reclaimer and ship loader shall be submitted.
- 3- Any other option will be considered.
- 4- All instrumentation and control system for this system to be included in the offer.
- 5- All electrical requirement to be included in the offer.
- 6-The bidder scope of supply shall cover all materials except for the civil works.

1- Urea handling equipment, like small hoppers, vibrating feeders, screens, crusher, bagging machines and loaders shall generally delivered as complete unit.

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Other equipment such as belt conveyors, scraper shall be delivered as follows:

- a- Scraper
- Mechanical components (drives, boogies, winches, etc.) shall be shop assembled.
- Power and control boards fully pre assembled and internally wired.
- Other electrical wiring to be carried on in field.
- Structural steel (portal frame, boom structures, heads, etc.) in pre assembled element (with respect to shipping requirements) to be connected in field by means of bolted junctions.
- Connecting chutes in pre assembled elements, site junctions shall be bolted.
- b- Belt Conveyor
- Head, tail and take-up frames, partially pre assembled.
- Pulleys complete with bearings, ready to be positioned on head, tail and take-up frame.
- Drive unit (motor-coupling-speed reducer) mounted on a common basement. The connection with drive pulley to be carried on in field.
- Stringers and posts in loose elements ready to be assembled with bolted joints
- Idlers and rollers, loose to be positioned in field.
- Rubber belts in reels to be cut and vulcanized in field.
- Chutes and hood: shop pre assembled in elements to be connected by means of bolted junctions.
- Instruments: loose to be bolted in field.

#### Urea Handling, Storage and Packing

	Item No.	Item Name	Qt'y	Material	Capacity T/Hr	Length Mm	Width
1	C 552 A D	Camayy	4	Туре			mm
1-	C-552AD	Screw	4	Urea	16.2	A&C=4.8	-
		Conveyor		Crystal		B&D=5.7	
2-	C-553	Prilling	1				
		Belt					
		Conveyor					
3-	C-554	Urea Belt	1	=	2	14.2	400
		Conveyor					
4-	C-555	Product	1		65	13.5	650
		Belt					
		Conveyor					
5-	C-557	Product	1	=	65	16	500
5	0 337	Bucket	1	_	05	10	500
		Elevator					
6-	C-558	Product	1	=	65	19	650
0-	C-336	Transfer	1	_	03	19	050
7	C-602AB	Conveyor	2		65	100 5	650
7-	C-002Ab	Pile up	2	=	65	189.5	650
0	G 602	Conveyor	1		200	100	1000
8-	C-603	Take out	1	=	200	190	1000
	~	Conveyor			• • • •	100 -	1000
9-	C-604	Prilled Urea	1	=	200	100.5	1000
		Transfer					
		Conveyor					
10-	C-605	Conveyor	1		200	16	-
		Hopper					
		Feed					
11-	C-606A/H	No.1 Slat	8	Urea Bags	800	9.5	600
		Conveyor			Bags		
12-	C-607	Prilled Urea	1	=	200	15	1000
		Reclaimer					
13-	C-608A/H	Reverse	8	=	800	1	1100
		Conveyor			Bags		
14-	C-609A/H	No.2 Slat	8	=	800	6.8	600
		Conveyor	-		Bags		
15-	C-610AB	No.2	2	=	3200	A=19	300
10		Transfer	_	_	Bags	B=34,5	200
		Conveyor			2000		
16-	C-611A/H	No.1	8	=	800	6	300
10-		Transfer		_	Bags		500
		Conveyor			Dags		
17-	C-612AB		2	_	3200	20.6	300
1/-	C-012AB	No.3		=		20.0	300
		Transfer			Bags		
		Conveyor					

		Conveyor			Rage			
19-	C-614A/H	Roller	8	Urea Bags	800 Pags	1.2	800	
		Conveyor			Dags			
				Urea Bags				
				227				

#### **ANNEX NO. 8**

#### **Instrument Air Package**

#### 1-General

This package shall supply instrument air to the Ammonia / Urea and utilities units at Abu-Al Khasib fertilizer plant. The main instrument air is normally supplied by the main air compressor in the ammonia unit and the emergency air system comes into operation at the failure of the main system. This package is to supply 1600 Nm3/H clean, oil free, dry instrument air.

#### 2-Design Basis

Production rate (normal) 1600 Nm3/H Dew point -25 C

Supply pressure at B.L 7kg / cm2 g Design capacity 1600 Nm3/H

#### **3-Process Description**

One set of centrifugal air compressor driven by an electric motor. With capacity of 1600 Nm3/H has been foreseen to meet the above required quantity and quality. Air shall be drawn from atmosphere through the pre-filter, which removes solid particles. The filtered air shall be compressed in centrifugal compressor to above 8-kg/cm2 g. The compressed air shall be cooled by water in the after cooler and passed through the Air K.O. Drum which shall function as a holder instrument air shall pass through a dryer to produce air with a dew point of (-25C) at 7kg/cm2 g filters shall be used to eliminate the particles of absorbent matter before the air passes to the instrument Air Drum. The Air Drum capacity shall be 10 minutes at 6-kg/cm2 g.

The air from the instrument Air Drum will be fed to the instrument air distribution system. The plant air (service air) of capacity 600 Nm3/hr shall be divided at the instrument air K.O Drum fed to service air distribution system.

- 4- the scope of work for this package shall cover the Engineering; supply all equipment and materials, supervision during civil works, erection and commissioning.
- 6- any other option will be considered

#### ANNEX. 9

**ELECTRICAL** 

#### 7. Introduction

7.1The main principle of the present is to provide advanced and reliable electrical equipment and material to meet the operation and safety requirements of this plant. In the mean time, the existing electrical equipment and facilities are to be fully used, and the original design to be applied as far as possible. The sole purpose of all these is to reduce the investment.

According to and the above principle and the actual condition, it is our suggestion that the high tension part of the main substation and also the ammonia substation shall remain as they are, i.e. the 11 kv and 6.6 kv switchgears are not going to be added, We can use the existing high tension equipment to meet the power requirement.

According to the plot plan arrangement and the new facilities, the scope of power supply of each substation is shown below.

- 1- The main and ammonia substations: the ammonia unit, the boiler, the emergency instrument air facility, the condensate polishing facility, the 110 VDC control power for this substation, and the instruments.
- 2- The urea substation: the urea unit, the N2 generating facility, the reliquification compressor, the ammonia storage unit, the air conditioning equipment for the prilled urea store.
- 3- Cooling tower substation: the cooling water facility.
- 4- R.O. Substation: the R.O. facility and new water treatment facility.
- 5- Water treatment substation: the water treatment facility and the bagging facility.
- 6- Front-end substation (new): maintenance workshop, administration building and others.

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# **Specification**

- SF6 or vacuum SWG, indoor type
- Rating voltage 7.2 kv
- Short circuit level for 1 second 350 MVA
- Short circuit current 31.5 KA
- Control voltage 110 VDC
- 3-phase,50HZ, 3wire
- IP 31 Min.
- Design temp. 40 C

#### **UREA SUBSTATION SWG.**

The SWG. Shall be comprise the following cubicles:

- 1 off incoming 1250 A having the following protection and metering:
- Over current relay.
- Grounding over current relay.
- Wattmeter.
- Watt hour meter.
- Ampere meter with selector switch.
- Voltmeter with selector switch.
- Under voltage relay.
- 10 off outgoing 630A as shown bellow
- -3 transformers 1000 KVA feeder, complete with O/C & grounding O/C protection, ampere meter with selector switch.
- -1 TRANSFORMER 500 KVA feeder, complete with O/C & grounding O/C protection, ampere meter with selector switch.
- -2 Motor 230 KW feeder complete with the following protection: Thermal O/L, S/C & earth fault protection with remote and local facilities, ampere meter with selector switch.
- -2 Motor 770 KW feeder complete with the following protection: Thermal O/L, S/C & earth fault protection, ampere meter with selector switch, local & remote facilities.
- -1 spare cubicle for 1000 KVA transformers, complete as mentioned above.

#### COOLING TOWER SUBSTATION SWG.

- •The SWG shall be comprise the following cubicles:
- •"1" off incoming 1250 A, having the following protection and metering.
- Over current relay.
- Grounding O/C relay.
- Under voltage relay.
- Wattmeter.
- Watt hour meter.
- Ampere meter with selector switch.
- Voltmeter with selector switch.
  - •13 off outgoing 630 A as shown below.
- 1Transformer 500 KVA feeder, compete with O/C & grounding O/C protection, ampere meter with selector switch.
- 3 motor 800 KW feeder complete with the following protection: Thermal O/L, S/C & earth fault protection, ampere meter with selector switch, local and remote facilities.
- -8 motor 220 KW feeders complete with the following thermal O/L, S/C & earth fault protection, ampere meter with selector switch, local and remote facilities.
- 1 spare cubicle for 220 KW motor complete, as mentioned above.

Emergency Diesel Generator (EDG)

- -Diesel generator 1400 KW 3-phase 4-pole 6.6KV 50 Hz p.f=0.8
- -Switchgear panel containing all protection relays and measuring instruments and synchronizing system.
- -Design temp. 50 C.
- -IP 31 Min.

Also another option:

#### **DESK BOARD**

The desk board containing anunciator, which have all alarm, and tripping signals for main substation (150 signal) and also containing the following measuring instruments:

9

- 1- Three frequency meter 45-55 HZ
- 2- Three power factor meter
- 3- Three phase sequence volt meter
- 4- Three watt meter
- 5- Three watt meter

#### NOTE:

- •CT ratio 600/5
- •PT ratio 11 KV/110 V
- •Annuncitor must have buzzer alarm

#### PROTECTION RELAY

- 1-Differential protection relay "87 T" 3
- 2- CT 500/5
- 3- CT 1000/5
- 4- under voltage relay 110 v " 27 " 3

#### NOTE:

- All meters shall be digital type.
- All protection relays shall be electronic type.

THE COMPNENTS OF MCC'S OF AMMONIA AND UREA UNIT

	<u> </u>	APARATAPARA	zakarakarakarakara
S.			
NO	2 mala NED 900 A	10	
$\frac{1}{2}$	3-pole NFB 800A	12	
2 3	3-pole NFB 400A	13 23	
4	3-pole NFB 225A 3-pole NFB 125A	15	
5	*	52	
6	3-pole NFB 100A 3-pole NFB 75A	14	
7	3-pole NFB 50A	30	
8	3-pole NFB 30A	9	
9	3-pole NFB 15A	47	
10	*	9	
11	Thermal O/C relay TH 300 Thermal O/C relay TH 150	15	Rating 80~330A
12	Thermal O/C relay TH 100	20	Rating 80~190A
13	Thermal O/C relay TH 100 Thermal O/C relay TH 50	20 22	Rating 41~130A
14	Thermal O/C relay TH 35	19	Rating 15~67A
15	Thermal O/C relay TH 18	46	Rating 7.5~34A
16	Magnetic Contactor AC3 200hp	9	Rating 0.32~18A
17	Magnetic Contactor AC3 120hp	15	Ruting 0.32 1011
18	Magnetic Contactor 100hp	20	
19	Magnetic Contactor 70hp	12	
20	Magnetic Contactor 50hp	11	
21	Magnetic Contactor 30hp	18	
22	Magnetic Contactor 15hp	20	
23	Magnetic Contactor 7.5hp	46	
24	Current Transformer 300/1	12	
25	Current Transformer 200/1	6	
26	Current Transformer 150/1	4	
27	Current Transformer 75/1	7	
28	Current Transformer 50/1	4	
29	Current Transformer 30/1	4	
30	Current Transformer 10/1	6	
31	Current Transformer 750/5	24	
32	Potential Transformer 15VA 440/110V	12	
33	Transformer 1.5KVA 380/110V	1	
34	Transformer 20 KVA 380/110V	1	
35	Aux. Relay 220V 50HZ '2NO+2NC	234	
36	Aux. Relay 220V 50HZ '4NO	6	
	,		

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S.		Q11	
NO.			
	Contactor 110VDC	2	
37		21	
38	Timer 6min `220V 50 HZ	3	
39	Earth leakage relay 51G 220V 50HZ	125	
40	Push button (red)	125	
41	Push button (black)	125	
42	Signaling lamp (red)	125	
43	Signaling lamp (green)	125	
44	Signaling lamp (orange)	8	
45	Fuse 5A (with base) 500V	134	
46	Fuse 10A (with base) 500V	36	
47	Fuse 1A (with base) 500V	36	
48	Fuse 1A (with base) 110V	36	
49	Single pole MCB 1A	1	
50	Double pole MCB 15A	21	
51	Single pole MCB 15A	12	
52	Ampere meter selector	12	
53	Volt meter selector	12	
54	Ampere meter (0~750) 750/1	12	
55	Volt meter (0~500V) 110V	3	
56	Series Terminal 400mm2	9	
57	Series Terminal 200mm2	21	
58	Series Terminal 150mm2	9	
59	Series Terminal 120mm2	36	
60	Series Terminal 100mm2	36	
61	Series Terminal 80mm2	3	
62	Series Terminal 60mm2	12	
63	Series Terminal 50mm2	163	
64	Series Terminal 38mm2	39	
65	Series Terminal 30mm2	21	
66	Series Terminal 22mm2	63	
67	Series Terminal 14mm2	54	
68	Series Terminal 8mm2	18	
69	Series Terminal 5.5mm2	162	
70	Series Terminal 3.5mm2	5000	
71	Series Terminal 2.5mm2		

Remark: NO of MCC are 259 122 for Ammonia 137 for urea

### THE SPECIFICATION

6.6 kv cross-linked polyethylene insulated p.v.c sheathed cable '6.6 kv' armored cable

S.	CABLE SIZE (MM ² )	QTY (M)
1	3 ^C *50	1600
2	3 ^C *60	100

#### **POWER CABLE**

#### THE SPECIFICATION

600v special heat resistance pvc insulation 'kh-100', THESE CABLES estimated by jis THEREFORE ANY equivalent size of cables in any standard that will be USED.

se	cable size	QTY
r.	(mm ² )	(m)
1	6° *3.5	500
2	2° *3.5	5000
3	5° *3.5	500
4	4° *3.5	3000
5	3° *3.5	11000
6	1°*3.5	1350
7	3°*1.6	500
8	3 ° *2	500
9	3 ° *2.6	500
10	2 ° *5.5	2000
11	3 ° *5.5	2000
12	4 ° *5.5	2900
13	5 ° *5.5	500
14	2 ° *8	1000

indicated beloated beloated beloated	
3 0	2300
4 ° *8	2500
2 ° *14	1000
3 ° *14	2500
2 ° *30	500
3 ° *30	2000
3 ° *38	2000
4 ° *38	6000
3 ° *80	3250
1 ° *100	500
2 ° *100	1000
1 ° *200	750
3 ° *300	150
1 ° *400	1250
3° * 120/70	500
	2 ° *14 3 ° *14 2 ° *30 3 ° *30 3 ° *38 4 ° *38 3 ° *80 1 ° *100 2 ° *100 1 ° *200 3 ° *300 1 ° *400

# **Control cables**

#### THE SPECIFICATION

600V SHIELDED POLYVINY CHLORIDE INSULATED & SHEATHED (CVV-S). THESE CABLES ESTIMATED BY JIS, THEREFORE ANY EQUIVALENT SIZE OF CABLE IN ANY STANDARD THAT WILL BE USED.

Ser	CABLES SIZE (MM ² )	QTY (M)
1	12 ^C *2	1000
2	10 [°] *2	4000
3	8 ^C *2	11000
4	6 ^C *2	2500
5	4 ^C *2	3200
6	2 ^C *2	2250

TERMINAL SHOES OF CABLES 'COPPER MADE'

arararara		<u>श्चारवादवादवादवादवादवादवादवादवादवादवादवादवादव</u>
	$(MM^2)$	
1	400	60
2	300	12
3	200	60
4	100	72
5	80	145
6	38	400
7	36	156
8	14	112
9	8	200
10	5.5	140
11	3.5	575
12	50	46
13	60	53
14	22	92

# HIGE TENSION CABLE TERMINATIONS & JOINTS

SER.	SPECIFICATION	SIZE (MM ² )	UNIT	QTY
1	HIGH TENSION CABLE TERMINATION 12	300	KIT	16
	KV			
2	HIGH TENSION CABLE JOINT 12 KV	300	=	3
3	HIGH TENSION CABLE TERMINATION 7.2	300	=	45
	KV			
4	HIGH TENSION CABLE JOINT 7.2 KV	300	=	5
5	HIGH TENSION CABLE TERMINATION 7.2	95	=	30
	KV			
6	HIGH TENSION CABLE JOINT 7.2 KV	95	=	3
7	HIGH TENSION CABLE TERMINATION 7.2	70	=	20
	KV			
8	HIGH TENSION CABLE JOINT 7.2 KV	70	=	2
9	HIGH TENSION CABLE TERMINATION 7.2	50	=	33
	KV			
10	HIGH TENSION CABLE JOINT 7.2 KV	50	=	3

GAS IGNITOR FOR BOILERS

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SPECIFICATIONS AS BELLOW: -

- FUEL / NATURAL GAS

- FUEL TEMP. / NORMAL TEMP. & HIGH TEMP. 32C

- FUEL CAP. / 16 NM³/hr - FUEL PRESS. / 0.6 K g/cm²

PRIMARY AIR PRESS. / 25~60 MM H2O

- SECONDARY AIR PRESS. / P 25~60 MM H2O - SECONDARY TEMP. / MAX. 284C

- POWER SOURCE / 220V, 50 HZ

- IGNITOR TRANSFORMER / 6000V, 150VA - IGNITOR LENGTH / APPROX. 1680MM

- CONTROL CABINET / EXPLOSION PROOF TYPE

QUNTITY TO BE DELIVERED IS FOUR SETS & SPARE PARTS FOR ONE SET.

#### SPECIFICATION OF PUSH BUTTON STATION

			P.B. S	S.L	СТ	C.O.S	VOLTAGE	
1	PUSH BUTTON STATION	OD-W- D2G4	ON- OFF	R-G	-	OFF-EM	220 VAC	8
2	PUSH BUTTON STATION	OD-S.S.CR2	=	R-G	-	MAN- AUTO	=	4
3	PUSH BUTTON STATION	OD-S.S- D2G2	=	R-G	-	=	=	14
4	PUSH BUTTON STATION	OD-S.S.CR2	=	R-G	-	MAN- AUTO/ OFF-EM	=	6
5	PUSH BUTTON STATION	OD-W-CR2	=	R-G	-	OFF- INT	=	2
6	PUSH BUTTON STATION	OD-S.S- CR2	=	R-G	300/	MAN- AUTO/ OFF-EM	=	2
7	PUSH BUTTON STATION	OD-S.S- D2G4	=	R-G	-	MAN- AUTO/ OFF-EM	=	10
8	PUSH BUTTON STATION	OD-S.S- CR2	=	R-G	50/1	-	=	4
9	PUSH BUTTON STATION	OD-S.S- CR2	=	R-G	300/	-	=	4
10	PUSH BUTTON STATION	OD-S.S- CR2	=	R-G	75/1	-	=	4
11	PUSH BUTTON STATION	OD-S.S- CR2	=	R-G	200/	OFF- INT	=	4
12	PUSH BUTTON STATION	OD-S.S- D2G4	ON- OFF	R-G	-	OFF-EM	=	3
13	PUSH BUTTON STATION	OD-S.S- CR2	ON- OFF	R-G	-	-	=	22
14	PUSH BUTTON	OD-S.S- CR2	=	R-G	-	MAN- AUTO	=	1

15	PUSH	OD-S.S-	ON-	R-G	150/	_		2
13	BUTTON STATION	CR2	OFF	K-U	130/	_	_	
16	PUSH	OD-S.S-	ON-	R-G	_	OFF-EM		4
10	BUTTON STATION	CR2	OFF	K-G	_	OTT-EW		7
17	PUSH	OD-S.S-	=	R-G	_	OFF-	=	10
1,	BUTTON STATION	CR2		IK G		INT		
18	PUSH	OD-S.S-	=	R-G	_	-	=	12
	BUTTON STATION	D2G4						
19	PUSH	OD-S.S-	=	R-G	-	OFF-EM	=	2
	BUTTON STATION	D2G4						
20	PUSH BUTTON STATION	OD-S.S- CR2	=	R-G	-	OFF-EM	=	2
S.	EQUIP.	TYPE	DEVI	CE EQ	UIPPE	ED .	CONTROL VOLTAGE	Q' Y
			P.B. S	S.L	СТ	C.O.S	, «21110 <u>2</u>	
21	PUSH	OD-S.S-	ON-	R-G	-	OFF-	=	2
	BUTTON STATION	CR2	OFF			INT		
22	PUSH	OD-S.S-	ON-	R-G	300/	AUTO-	=	2
	BUTTON STATION	CR2	OFF		1	MAN/ OFF-EM		
23	PUSH	OD-S.S-	=	R-G	-	AUTO-	=	10
	BUTTON STATION	D2G4				MAN/ OFF-EM		
24	PUSH	OD-S.S-	ON-	R-G	30/1	-	=	1
	BUTTON STATION	CR2	OFF					
25	PUSH	OD-S.S-	ON-	R-G	75/1	-	=	1
	BUTTON STATION	CR2	OFF					
26	PUSH	OD-S.S-	ON-	R-G	10/1	OFF-	=	6
	BUTTON STATION	CR2	OFF			INT		
27	PUSH	OD-S.S-	ON-	R-G	150/	-	=	2
	BUTTON	CR2	OFF		1			
	STATION							
28	PUSH	OD-S.S-	ON-	R-G	40/5	-	110V	7

STATION	ABA <mark>EAFAEABABABABABA</mark>						
PUSH	OD-S.S-	ON-	R-G	300/	_	220V AC	1
BUTTON	CR2	OFF		1			
STATION							
PUSH	OD-S.S-	ON-	R-G	200/	-	=	
BUTTON	CR2	OFF		1			
PUSH	OD-S.S-	ON-	R-G	300/	MAN-	=	
BUTTON	CR2	OFF		1	AUTO		
STATION							
	OD-S.S-	ON-	R-G	40/5	OFF-EM	110V	
	CR2	OFF					
PUSH	OD-S.S-	ON-	R-G	40/5	R-L		
BUTTON	D2G4	OFF					
STATION							
PUSH	OD-S.S-	ON-	R-G	150/	R-L	=	
BUTTON	CR2	OFF		5			
	OD-S.S-	ON-	R-G	150/	MAN-	=	
STATION	·						
PUSH	OD-S.S-	ON-	R-G	40/5	MAN-		
BUTTON	D2G4	OFF			AUTO		
STATION							
PUSH	OD-S.S-	ON-	R-G	300/	_	220V AC	1
				-			
PUSH	OD-S.S-	ON-	R-G	50/1	_		
	CR2						
PUSH	OD-S.S-	ON-	R-G	75/1	-	=	
	OD-S.S-	ON-	R-G	200/	OFF-	=	
				1			
STATION							
	OD-S.S-	ON-	R-G	30/1	_	=	
BUTTON	CR2	OFF					
STATION							
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          PUSH BUTTON STATION         OD-S.S- CR2         ON- OFF         R-G         200/ 1         -           PUSH BUTTON STATION         OD-S.S- CR2         ON- OFF         R-G         300/ 1         MAN- AUTO           PUSH BUTTON STATION         OD-S.S- OFF         ON- OFF         R-G         40/5         OFF-EM           PUSH BUTTON STATION         OD-S.S- OFF         ON- OFF         R-G         40/5         R-L           PUSH BUTTON STATION         OD-S.S- OFF         ON- OFF         R-G         150/ STATION         R-L           PUSH BUTTON STATION         OD-S.S- OFF         ON- OFF         R-G         150/ STATION         MAN- AUTO           PUSH BUTTON STATION         OD-S.S- OP- CR2         ON- OFF         R-G         40/5         MAN- AUTO           PUSH BUTTON STATION         OD-S.S- OP- OFF         ON- OFF         R-G         50/1         -           PUSH BUTTON STATION         OD-S.S- OP- OFF         ON- OFF         R-G         50/1         -           PUSH BUTTON STATION         OD-S.S- OP- OFF         ON- OFF         R-G         75/1         -           PUSH BUTTON STATION         OD-S.S- OP- OFF	PUSH BUTTON STATION         OD-S.S- CR2         ON- OFF         R-G 1         300/ 200/ 300/ 300/ 300/ 300/ 300/ 300/

OD= OUT DOOR LAMP

R=RED LAMP

S.L =SIGNAL

G=GREEN LAMP

W = WALL

**C.O.S=CHANGE OVER SWITCH** 

P.B.S=PUSH BUTTON SWITCH

S.S=SELF STANDING

**NOTE** 

ALL PUSH BUTTON STATIONS SHALL HAVE TWO CABLE ENTRIES SUITABLE FOR CONDUIT SIZE.
ALL PUSH BUTTON STATIONS SHOULD BE WEATHER PROOF PROTECTED (IP 54 MIN)

#### **LIGHTING FIXTURE & LAMPS**

S.	SPECIFICATION OF LIGHTING FIXTURE	QTY
1	MERCURY TYPE 400W-220VAC-STAND TYPE –OUTDOOR	25
	EXPLOSION PROOF (5M) HEIGHT OF STAND	
	LAMPS FOR ABOVE	38
2	MERCURY TYPE 400W-220VAC-BRACKET TYPE –OUTDOOR	36
	EXPLOSION PROOF	
	LAMPS FOR ABOVE	54

	EXPLOSION PROOF LAMPS FOR ABOVE	33
4	MERCURY TYPE 150W-220VAC-BRACKET TYPE –OUTDOOR	100
4	EXPLOSION PROOF	100
	LAMPS FOR ABOVE	150
5	INCANDESCENT TYPE 150W-220VAC-CEILING TYPE –OUTDOOR	220
5	EXPLOSION PROOF	220
	LAMPS FOR ABOVE	330
6	INCANDESCENT TYPE 150W-220VAC-STAND TYPE –OUTDOOR	350
U	EXPLOSION PROOF (1.8M) HEIGHT OF STAND	330
	LAMPS FOR ABOVE	525
7	INCANDESCENT TYPE 100W-110VDC-CEILING TYPE -OUTDOOR	8
,	EXPLOSION PROOF	0
	LAMPS FOR ABOVE	12
8	INCANDESCENT TYPE 100W-110VDC-CEILING TYPE –INDOOR	8
U	LAMPS FOR ABOVE	$\begin{vmatrix} 3 \\ 12 \end{vmatrix}$
9	MERCURY TYPE 200W-220VAC-CEILING TYPE –INDOOR	6
,	LAMPS FOR ABOVE	9
10	INCANDESCENT TYPE 150W-220VAC-BRACKET TYPE –INDOOR	6
10	LAMPS FOR ABOVE	9
11	MERCURY TYPE 400W-220VAC-CEILING TYPE –OUTDOOR	50
11	EXPLOSION PROOF	30
	LAMPS FOR ABOVE	75
12	INCANDESCENT TYPE 100W-110VDC-BRACKET TYPE -OUTDOOR	4
12	EXPLOSION PROOF	4
	LAMPS FOR ABOVE	6
13	FLOURESCENT TYPE 1*40W- 220VAC-INDOOR	18
13	TUBES FOR ABOVE	27
14	FLOURESCENT TYPE 2*40W- 220VAC-INDOOR	350
14	TUBES FOR ABOVE	100
15	FLOURESCENT TYPE 2*60W- 110VDC-INDOOR	15
13	TUBES FOR ABOVE	23
S.	SPECIFICATION OF LIGHTING FIXTURE	QT
<u>3.</u> 16	MERCURA TYPE 200W-220VAC-BRACKET TYPE –OUTDOOR	4
10	EXPLOSION PROOF	+
	LAMPS FOR ABOVE	6
17	INCANDESCENT TYPE 100W-110VDC-STAND TYPE-OUTDOOR	5
1/	EXPLOSION PROOF (1.8M)	
	LAMPS FOR ABOVE	8
18	MERCURY TYPE 200W-220VAC-STAND TYPE-OUTDOOR	4
10	EXPLOSION PROOF (1.8M)	+
	LAMPS FOR ABOVE	6
19	MERCURY TYPE 400W-220VAC-YARD TYPE (5M)-OUTDOOR	48
17	EXPLOSION PROOF	40
	LAI LOSION FROOF	
	243	

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Ī	20	FLOOD LIGHTING 1000W-220VAC-OUTDOOR	15
		LAMPS FOR ABOVE	23
Ī	21	STREET LIGHTING (8M) –400W-220VAC	40
		LAMPS FOR ABOVE	60
	22	OBSTRUCTION LIGHT (COMPLETE WITH ALL CONTROL CIRCUIT)	8
		LAMPS FOR ABOVE	12

ALL OUTDOOR LIGHTING FIXTURES SHALL BE SUITABLE FOR HAZARD AREA, (EXD, GAS GROUP IIA, AND TEMP. CLASS T1). ENCLOSURE PROTECTION TO BE IP 54 MIN. FOR OUTDOOR & IP 31 MIN. FOR INDOOR.

ALL OUTDOOR LIGHTING FIXTURES SUPPLIED WITH SUITABLE GLAND FOR TWO HUBS.

# **CONDUIT PIPE**

ER	SPECIFICATION	QTY
1	CONDUIT PIPE 82MM	200M
2	CONDUIT PIPE 70MM	90M
3	CONDUIT PIPE 54MM	30M
4	CONDUIT PIPE 42MM	690M
5	CONDUIT PIPE 36MM	480M
6	CONDUIT PIPE 28MM	2700M
7	CONDUIT PIPE 22MM	8400M
8	CONDUIT PIPE 16MM	1860M
9	BENDING PIPE 82MM 90	50PC'S
10	BENDING PIPE 70MM =	38PC'S
11	BENDING PIPE 54MM =	50PC'S
12	BENDING PIPE 42MM =	100PC'S
13	BENDING PIPE 36MM =	100PC'S

15	RENDING PIPE 22MM -	360PC'S	
16	RENDING PIPE 16MM -	50PC'S	
17	SOCKET PIPE 82MM	150PC'S	
18	SOCKET PIPE 70MM	100PC'S	
19	SOCKET PIPE 54MM	100PC'S	
20	SOCKET PIPE 42MM	150PC'S	
21	SOCKET PIPE 36MM	200PC'S	
22.	SOCKET PIPE 28MM	500PC'S	
<del>22</del>	SOCKET PIPE 22MM	1400PC'S	
<del>2</del> 4	SOCKET PIPE 16MM	500PC'S	
25	BUSHING 82MM	100PC'S	
26	BUSHING 70MM	100PC'S	
27	BUSHING 54MM	100PC'S	
28	BUSHING 42MM	170PC'S	
29	BUSHING 36MM	200PC'S	
30	BUSHING 28MM	800PC'S	
31	BUSHING 22MM	750PC'S	
32	BUSHING 16 MM	500PC'S	
33	CABLE GLAND 82MM,EXD. IIA, T1	20PC'S	
34	CABLE GLAND 70MM,EXD. IIA, T1	25PC'S	
35	CABLE GLAND 54MM,EXD. IIA, T1	50PC'S	
36	CABLE GLAND 42MM,EXD. IIA, T1	120PC'S	
37	CABLE GLAND 36MM,EXD. IIA, T1	150PC'S	
38	CABLE GLAND 28MM,EXD. IIA, T1	200PC'S	
39	CABLE GLAND 22MM,EXD. IIA, T1	250PC'S	
	BENDING PIPE 22MM =  BENDING PIPE 16MM =  SOCKET PIPE 82MM  SOCKET PIPE 70MM  SOCKET PIPE 54MM  SOCKET PIPE 42MM  SOCKET PIPE 36MM  SOCKET PIPE 28MM  SOCKET PIPE 28MM  SOCKET PIPE 16MM  BUSHING 82MM  BUSHING 70MM  BUSHING 54MM  BUSHING 54MM  BUSHING 36MM  BUSHING 22MM  BUSHING 22MM  BUSHING 16 MM  CABLE GLAND 82MM,EXD. IIA, T1  CABLE GLAND 54MM,EXD. IIA, T1  CABLE GLAND 42MM,EXD. IIA, T1  CABLE GLAND 36MM,EXD. IIA, T1  CABLE GLAND 28MM,EXD. IIA, T1	2507 0 5	

40	CABLE GLAND 16MM,EXD. IIA, T1	200	
41	CABLE GLAND 16MM,EXD. IIA, T1 HANGER SADDLE 42MM HANGER SADDLE 36MM HANGER SADDLE 28MM HANGER SADDLE 22MM HANGER SADDLE 16MM HANGER SADDLE 16MM HANGER CHANNEL 100*50*5 UNION 82MM UNION 70MM UNION 54MM UNION 42MM UNION 28MM UNION 28MM UNION 22MM ELBOW 42MM ELBOW 36MM ELBOW 28MM ELBOW 28MM TEE 28MM TEE 28MM TEE 28MM TEE 16MM UNION 16MM NIPPLE 28MM NIPPLE 28MM HUB-ADAPTOR 28 MM – 22 MM HUB-ADAPTOR 22 MM – 16 MM	50PC'S	
42	HANGER SADDLE 36MM	70PC'S	
43	HANGER SADDLE 28MM	400PC'S	
44	HANGER SADDLE 22MM	1700PC'S	
45	HANGER SADDLE 16MM	750PC'S	
46	HANGER CHANNEL 100*50*5	350PC'S	
47	UNION 82MM	20PC'S	
48	UNION 70MM	20PC'S	
49	UNION 54MM	20 PC'S	
50	UNION 42MM	150 PC'S	
51	UNION 36MM	250PC'S	
52	UNION 28MM	300PC'S	
53	UNION 22MM	250 PC'S	
54	ELBOW 42MM	75PC'S	
55	ELBOW 36MM	35PC'S	
56	ELBOW 28MM 90	250PC'S	
57	ELBOW 22MM	600PC'S	
58	ELBOW 16MM	250PC'S	
59	TEE 28MM	250PC'S	
60	TEE 22MM	300PC'S	
61	TEE 16MM	75PC'S	
62	UNION 16MM	50PC'S	
63	NIPPLE 28MM	125PC'S	
64	NIPPLE 22MM	150PC'S	
65	HUB-ADAPTOR 28 MM – 22 MM	100	
66	HUB-ADAPTOR 22 MM – 16 MM	100	
67	SOCKET REDUCER 28 – 22 MM	100	
68	SOCKET REDUCER 22 – 16 MM	100	
69	VINYIL TUBE 70MM	800M	
70	VINYIL TUBE 22MM	750M	
71	VINYIL TUBE 16MM	700M	
72	U-BOLT WITH NUT 16MM	300PC'S	
73	U-BOLT WITH NUT 22MM	500PC'S	
74	U-BOLT WITH NUT 28MM	400PC'S	
75	U-BOLT WITH NUT 36MM	100PC'S	
76	U-BPLT WITH NUT 42MM	350PC'S	
77	TEE ELBOW 28MM	50PC'S	
78	TEE ELBOW 22MM	75PC'S	
79	PIPE CLIP 42MM	50PC'S	
R	SPECIFICATION	QTY	
80	PIPE CLIP 36MM	50 PC'S	
81	PIPE CLIP 28MM	75PC'S	

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	83	HUNGER BOLT M75	50PC'S

# **JUNCTION BOX**

SER	JUNCTION BOX TYPE	QTY (PC'S)		
	" EXD, II A, T1 "			
1	FLAME PROOF JUNCTION BOX WITH FLAT COVER			
	ADAPTABLE CONDUIT (HUB SIZE 16MM) AS BELLOW HUB			
	STYLE: -	75		
	- ONE –HUB	75		
	- TWO –HUB IN LINE	75		
	- TWO –HUB IN RIGHT ANGLE	100		
	- THREE –HUB	100		
	- FOUR –HUB			
2	FLAME PROOF JUNCTION BOX WITH FLAT COVER			
	ADAPTABLE CONDUIT (HUB SIZE 22MM) AS BELLOW HUB			
	STYLE: -	250		
	- ONE –HUB	250		
	- TWO –HUB IN LINE	250		
	- TWO –HUB IN RIGHT ANGLE	300		
	- THREE –HUB	300		
	- FOUR –HUB			
3	FLAME PROOF JUNCTION BOX WITH FLAT COVER			
	ADAPTABLE CONDUIT (HUB SIZE 28MM) AS BELLOW HUB			
	STYLE: -	125		
	- ONE –HUB	125		
	- TWO -HUB IN LINE	125		
	- TWO –HUB IN RIGHT ANGLE	150		
	- THREE -HUB	150		
	- FOUR –HUB			

ALL JUNCTION BOXES SUPPLIED WITH SUITABLE GLAND.

# IGHTING DISTRIBUTION PANELS & WELDING DISTRIBUTION PANELS

BEAR SE	୲ୡ <mark>ୣଌୡୣୠୡୣୠୡୠୡୠୡୠୡଌୡୢଌୡୣୠୠୡୣୠୡୣୠୡୣୠୡ</mark> ୣୠୡୡୡୡୡଌଌଌଌଌଌଌଌଌଌଌଌଌଌଌଌଌ	BEARARARES	RACARACARARARARARARARARARARARARARARARAR
S LIT	TWIND OF EQUIPMENT	(SET)	COTTINI
1	LIGHTING DISTRIBUTION PANEL	5	1-NFB 100AF/100AT,
	FLAME PROOF, OUTDOOR		8-NFB 30AF/30AT
2	LIGHTING DISTRIBUTION PANEL	2	1-NFB 100AF/100AT,
	FLAME PROOF, OUTDOOR		10-NFB 30AF/30AT
3	LIGHTING DISTRIBUTION PANEL	1	1-NFB 100AF/100AT,
	WALL HANGING, INDOOR		10-NFB 30AF/30AT
4	LIGHTING DISTRIBUTION PANEL	1	1-NFB 100AF/100AT,
	WALL HANGING, INDOOR		8-NFB 30AF/30AT
5	LIGHTING DISTRIBUTION PANEL	1	1-NFB 100AF/100AT,
	WALL HANGING, INDOOR		9-NFB 30AF/30AT
			1-NFB 50AF/30AT
6	LIGHTING DISTRIBUTION PANEL	1	1-NFB 100AF/100AT
	WALL HANGING, INDOOR		
7	LIGHTING DISTRIBUTION PANEL	4	1-NFB 100AF/100AT,
	WALL HANGING, OUTDOOR		7-NFB 30AF/30AT,
			2-NFB 50AF/30AT
8	LIGHTING DISTRIBUTION PANEL	2	2-NFB 50AF/30AT,
	WALL HANGING, OUTDOOR		6-NFB 30AF/30AT
9	LIGHTING DISTRIBUTION PANEL	1	1-NFB 100AF/100AT,
	WALL HANGING, OUTDOOR		2-NFB 50AF/30AT,
			6-NFB 30AF/30AT
10	LIGHTING DISTRIBUTION PANEL	1	1-NFB 100AF/100AT,
	WALL HANGING, INDOOR		6-NFB 50AF/30AT,
			4-NFB 30AF/30AT
11	DISTRIBUTION PANEL FOR WELDING	11	3-NFB 100AF/100AT
	& MAINTENANCE WALL HANGING		
	OUTDOOR		
12	LIGHTING REMOTE CONTROL PANEL,	1	4-CONTROL
	WALL HANGING, INDOOR		SWITCH FOR
			STREET LIGHTING,
			1-EMERGENCY OFF
			SWITCH FOR ALL
			LIGHTING

# Note

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1) All outdoor lighting panels shall be controlled by photocell.All lighting distribution panels and welding panels supplied with suitable gland

#### ANNEX. 10

**Instrumentation Control Works** 

1. Introduction

The instrumentation and control system of the plant to be replaced by DCS.

Approximately fifteen percent (15%) of the required field instruments have already been obtained from plants. Bidder is considered to supply the

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The requirement includes two parts, namely: the rehabilitation / reconstruction part and the upgrading plant. For the instrument and control unit, the reconstruction is to be the basis of the present quotation, which includes all the instruments, and DCS covered in the following sections and specific control items.

- 1- Any modification or option to give better solution and performance for the plants will be considered.
  - The bidder scope of supply shall cover all materials except for the civil works.
  - The B.O.Q is attached here within
- 2- Extent of Delivery Condition
- 2.1 Local instruments, transmitters, control valves, shall be supplied as a complete unit.
- 2.2 DCS system and control board shall be supplied as complete unit (Receiver instrument and removable internals shall be delivered separately)
- 2.3 Bulk materials shall be delivered in loose pieces. Cable and wires shall be delivered as per standards.

Cable racks, ducts and accessories shall be supplied in the state of commercial raw material.

#### INSTRUMENT FOR WATER TREATMENT

1-ALL INSTRUMENT TO BE WEATHER PROOF IP-54. 2-INSTRUMENT FOR RAW WATER & DEMI, WATER.

#### • PANEL INSTRUMENT

- PLC PROGRAMABLE LOGIC CONTROLLER WITH 2 CPU PENTIUM 133 OR HIGH

2 MONITOR 2 HARDDISK 2 FLOPPY DISK DRIVE INKJET OR LAZER PRINTER

AND ALL OTHER ACCESSORIER LIKE POWER SUPPLY & COMMUNICATION INTERFACE CARD.

FOR RAW WATER & LINK CABLES

-DIGITAL INPUT 224 POINTS -DIGITAL OUTPUT 96 POINTS -ANALOG INPUT 8 POINTS

#### FOR DEMI, WATER

- DIGITAL INPUT 160 POINTS
- DIGITAL OUTPUT 128 POINTS -ANALOG OUTPUT 8 POINTS

#### - FOR RAW WATER

- 1 RECORDER INPUT 4~20MA WITH ALARM 2SPDT CONTACT
- 2 INDICATOR INPUT 4~20MA
- 1 COUNTER 0~1500 M3/H INPUT 4~20MA
- 1 SET OF ALARM ANNUCIATOR 60 POINTS FOR RAW WATER

#### - FOR DEML_WATER

- FLOW RECORDER INPUT 4-20MA (3 CHANNEL) WITH ALARM
-CONDUCTIVITY RECORDER (6 CHANNEL) INDICATOR & ALARM
-SILICA RECORDER (6 CHANNEL) INDICATOR & ALARM
-PH INDICATOR WITH ALARM
-SET OF ALARM ANNUNCIATOR 60 POINTS

#### • CONTROL PANAL MISCELLANEOUS EQUIPMENT.

#### -RAW WATER

#### 1 EMERGENCY SHUTDOWN SYSTEM CONTENTS THE FOLLOWING ITEMS:

PUSH BUTTON SWITCH - RED 59
PUSH BUTTON SWITCH - GREEN 59
LAMP FOR STATUS RUN/STOP WHITE 44
LAMP FOR STATUS RUN/STOP RED 35
LAMP FOR STSTUS COMMON ALARM -GREEN 35
CHANGEOVER SWITCHS 2 POSITION 18
CHANGEOVER SWITCHS 3 POSITION 3
RELAY 4 SPDT CONTACTS 260
SET OF POINTS TERMINAL
1 SET POWER SUPPLY

#### -DEMI. WATER

#### 1 EMERGENCY SHUTDOWN SYSTEM CONTENTS THE FOLLORING ITEMS

PUSH BUTTON SWITCH RED 88
PUSH BUTTON SWITCH GREEN 88
LAMPS FOR STSTUS RUN/STOP WHITE 88
LAMPS FOR STATUS RUN/STOP RED 20
LAMPS FOR STATUS COMMON ALARM - GREEN 20
CHANGEOVER SWITCH 2 POSITION 27
RELAY 4 SPDT CONTACTS 280
1 SET OF POINTS TERMINAL
1 SET OF POWER SUPPLY

#### LOCAL INSTRUMENT

-FOR RAW WATER

DESCRIPTION	OTY
SMART TRANSMITTER DEFFERINTIAL PRESSURE WITH 3 VALVE-	2
MANIFOLD CONNECTION 1/2" PT -OUTPUT 4~20MA -INTERNAL SUPPLY	1
24VDC-BODY C.STEEL -DIAGPHRAM SUS316	
PRESSURE GAUGE CONNECTION 1/2"-BOURDUN TUBE SUS316	8
VACUMM GAUGE PANEL MOUNTING WITH CONTACT	6
LEVEL SWITCH	15
LOCAL PANEL MOUNTING SOLENOID VALVE 3 WAY -1/4 NPT CONNECTION FOR IBSTRUMMENT AIR	21
SOLENOID VALVE -1/4NPT -4WAY	1
SOLENOID VALVE 1/2 NPT-3 WAY	4
OPEN/CLOSE/AUTO SELECTOR SWITCH FOR S.V. LOCAL PANEL	30
MOUNTING	
CABLE 3C*2 ^{SQ}	1300M
CABLE 2C*1.5SQ	300M
CABLE 4C*2SQ	300M
CABLE 16C*2SQ	300M
COMPLET SET OF CABLES & WIRE , ROUND TERMINAL, SCREW FOR	
TERMINAL	1
PNEUMATIC VALVE	20
TWO AIR FILTER REGULATOR FOR EACH LOCAL PANEL	4
COMPLET SET OF CHLORINATOR SYSTEM	<del>                                     </del>
LIMITE SWITCH	40
CABLE 24C*2SQ	300M
CABLE 10C*2SQ	300M
CANLE 3*8SO	500M

#### -FOR DEML WATER

DESCRIPTION	QTY
D/P CELL SMART TRANSMITTER WITH 3 VALVE MANIFOLD-PROCESS	5
CONNECTION 1/2"-OUTPUT 4~20MA-SUPPLY 24VDC -WITH ORIFICE	l
PH METER OUTPUT 4~20MA WITH SAMPLING UNIT	1 SET
CONDUCTIVITY METER WITH SAMPLING UNIT -OUTPUT 4~20MA	5 SET
SILICA METER WITH SAMPLING UNIT - OUTPUT 420MA	5 SET
PRESSURE GAUGE	25 SET
FLOW SWITCH WITH INDICATOR	2
LEVEL SWITCH	13
ROTAMETER (AREA FLOW METER)	3
ROTAMETER WITH INTEGRATED ORIFICE	3
TEMPRETURE SWITCH WITH SENSER	2
CABLE 24C*2SQ	500M
CABLE 2C*2SQ	1050M
PNEUMATIC VALVE	72
ROTAMETER (AREA FLOW METER) WITH ALARM	4
SOLENOID VALVE 1/4"- AIR PRESSURE 7KG/CM ² -4WAY	80
AUTO/CLOSE/OPEN CHANGEOVER SWITCH	72
TWO AIR FILTER REGULATOR FOR EACH LOCAL PANAL	4
COMPLET SET FOR DEMI. WATER WITH	
CABLES, TERMINAL, ACCESSORIES N.F.B. POWER SUPPLY ETC	i
CABLE 3*2SQ	4000M
CABLE 4*2SQ	120M
CABLE 5*2SQ	1850M
CABLE 2*1.58Q	130M
CABLE 3*1,5SQ	220M

R.O. UNIT (PAKAGE)

INSTRUMENT PANAL PLC OR DCS BASE CONTROLLER ELECTRONIC WITH CPU SMART ELECTRONIC TRANSMITTER

CONDENSATE POLISHER

DESCRIPTION	QTY
PRESSURE GAUGE	6
DIFFRENTIAL PRESSURE GAUGE WITH ALARM	2
AREA FLOWMETER	3
LEVEL SWITCH	4
TEMPRETURE SWITCH	1
PH METER WITH SAMPLING UNIT	ISET
INDICATOR WITH ALARM	1 SET
PANAL INDICATOR WITH CABLE, TERMINAL, CONDUIT PIPE & FITTING	
CONDUCTIVITY DOUBLE ELEMENT WITH SAMPLING UNIT	1 SET

#### COOING WATER

DESCRIPTION	QTY
PRESSURE GAUGE	2 2
DIFFRENTIAL PRESSURE GAUGE WITH ALARM	ī
AREA FLOW METER	5
LEVEL SWITCH	2
LOCAL PANAL FOR FILTERS 1,2,3,4,5 CONSIST FROM MASTER TIMER &	<del> -</del>
OTHER TIMER (FOR SERVICE & BACKWASH) NECCERAY RELATES & TWO	!
FILTER REQULATOR IN THE PANAL	1
SELONIED VALVE	20
PNEUMATIC VALVE 8" (200MM)	24
D/P CELL SMART TRANSMITTER 4~20MA WITH 3 VALVE MANIFOLD,	3
INDICATION WITH ALARMCONTACT IN DCS AMMONIA & UREA CCR OR IN	1
SEPARATE INDICATOR IN CCR	}
D/P CELL PNEUMATIC TRANSMITTER WITH 3 VALVE MANIFOLD WITH	3
LOCAL INDICATOR (WITH ANNUBAR TUBE)	1
AREA FLOW METER	2
D/P CELL PNEUMATIC TRANSMITTER WITH 3 VALVE MANIFOLD WITH	2
LOCAL INDICATOR WITH ORIFICE	-
ROTAMETER WITH TRANSMITTER OUTPUT 4~20MA (INDICATOR & ALARM	1
IN DCS OR IN SEPARATE INDICATOR IN CCR)	1
LEVEL ELECTRONIC TRANSMITTER BUBBLE TYPE (OUTPUT 4~20MA)	1
(CONTROLLER & ALARM UNIT IN DCS OR IN SEPARATE CONTROLLER IN	_
CCR)	
CONTROL VALVE BUTTERFLY 10" WITH ACCESSORIES	1
DISPLACER ELECTRONIC TRANSMITTER OUTPUT 4~20MA CONTROLLER &	1
ALARM SETTER IN DCS & DIGITAL OUTPUT TO INTERLOCK SYSTEM	l
CONTROL VALVE 2"	1
D/P CELL ELECTRONIC TRANSMITTER LEVEL MEASURMENT WITH	2
INDICATOR & ALARM IN DCS	
PITOT TUBE	2
LEVEL PROBE WITH LEVEL SWITCH FOR AUTO START P-740AB,P-	3
715AB, EFFLUENT PIT AND WASTE PANAL	ĺ
D/P CELL ELECTRONIC TRANSMITTER WITH 3 VALVE MANIFOLD	1
NDICATOR IN DCS WITH OUTPUT CONTACTS FOR INTERLOCK SYSTEM	Ĺ
PRESSURE ELECTRONIC TRANSMITTER (CONTROLLER & ALARM SYSTEM IN	1
DCS)	<u></u> .
CONTROL VALVE BUTTERFLY 18"	1
PRESSURE ELECTRONIC TRANSMITTER INDICATOR & ALARM IN DCS	1
PRESSURE GAUGE	20
THERMOCOUPLE WITH THERMOWELL (INDICATOR IN DCS)	2
TEMPRETURE GAUGE WITH THERMOWELL	10
PH TRANSMITTER WITH SAMPLING SYSTEM 0~14PH-4~20MA	4SET
OUTPUT(RECORDER & ALARM IN DCS ONE OUTPUT DIGITAL FOR	
NTERLOCK SYSTEM)	
CONDUCTIVITY TRANSMITTER WITH SAMPLING SYSTEM 0~200 ,4~20MADC	1
O/P (RECORDER AND ALARM IN DCS) COMPLETE SET WITH CABLE CONDUCT, MATERIAL FOR ERACTION	

5

### INSTRUMENT AIR COMPRESSOR

## OIL FREE DRY AIR DEW POINT -25C -PRESSURE 7KG/CM²

DESCRIPTION	QTY
ELECTRONIC PRESSURE TRANSMITTER (INDICATOR, CONTROLLER AND ALARM IN DCS/OUTPUT DIGITAL TO INTERLOCK SYSTEM	2
CONTROL VALVE	4
SOLEMOID VALVE	17-
PRESSURE GAUGE	6
PRESSURE GAUGE WITH ALARM	12-
MANUAL LOADER IN DCS TO VALVE	1-

AS WE ARE LOOKING FORWARD TO IMPROVE THE EFFECIENCT OF THE BOILERS BY ADDING TO THE CONTROL SYSTEM THE CONDUCTIVITY CONTROLLER TO BLOW OFF CONTROL & CONNECTING THE O2 ANALYIZER FOR AUTO ADJUSTING THE AIR /FUEL RATIO, WE WOULD LIKE YOU TO PROVIDE US WITH THE NECESSORY INFORMATION CONCERING THE A/M SUBJECT

-NO. OF BOILERS 4 SETS

-INSTRUMENT IN PANAL WEATHER PROOF

-INSTRUMENT IN LOCAL FLAME PROOF

-SEPARATE PANAL FOR EACH BOILER

PROGRAMABLE DIGITAL CONTROLLER, SELF TUNING HAVING AN ABANDANCE OF CONTROL & COMPUTATION FUNCTION IN ADDITION TO P/D CONTROLLER WITH COMMUNICATION INTERFACE CARD TO COMPUTER FOR FLOW MEASURMENT, TEMPERATURE AND PRESSURE COMBPENSATION AND SOURE ROOT TO BE USED

-INPUT &OUTPUT SIGNAL 4~20MA DC

-COMPACT POWER SUPPLY (LOOP VOLTAGE 24VDC)

-STAND BY MANUAL UNIT

-TWO SPDT CONTACT OUTPUT

#### FOR 4 BOILERS

### OR TO BE CONNECTED TO DCS SYSTEM OF UTILITY

- SET OF COMPUTER

- HARDDISK / ISET

- PRINTER /1 SET

FOR EACH (ONE) BOILER

-ONE SET OF ALARM SYSTEM	60 POINTS
-EMERGENCY LIGHT OFF,S/D SYSTEM,SAFTY SYSTEM	
RELAY & TIMERS	
DIGITAL INPUT	30 POINTS
DIGITAL OUTPUT TO LOCAL	32 POINTS
DIGITAL OUTPUT TO ALARM	46 POINTS
BUSH BUTTON & MAINTANCE SWITCH	10
-CONTROLLER 4~20MADC OUTPUT	16
CONTROLLER THERMOCOUPLE INPUT TYPE K	2
-LEVEL,FLOW,PRESSURE RECORDING	10 POINTS
ANALYIZERRECORDING (CONDUCTIVITY, PH, O2)	6 POINTS
TEMPERATURE RECORDING	6 POINTS
INDICATION	12 POINTS
INTEGRATOR	4 POINTS
-COMPLETE SET WITH CABLES	
, WIRES, TERMINALS, CALCULATION INSTRUMENT SAFTY	
BARRIER, ISOLATOR ETC	

#### THE FOLLOWING EQUIPMENT FOR 1 SET

ELECTRONIC INDICATOR	6
DRAFT GAUGE	5
ULTRAVIOLET AMPLIFIER WITH 2 OUTPUT	3
STATUS LAMP & PUSH BUTTON FOR INGLITON,	1 SET
PURGING, SHUTDOWN VALVES, STC	Ì

#### LOCAL INSTRUMENT (FOR 1 BOILER FLAME PROOF)

ULTRAVIOLET DETECTOR	3
ELECTRONIC TRANSMITTER SMART OUTPUT 4~20MADC POWER	
SUPPLY INTERNAL 24VDC	
LEVEL AND FLOW TRANSMITTER WITH 3 VALVE MAINFOLD	10
PRESSURE TRANSMITTER	6
LOCAL CONTROLLER PNEUMATIC 0.2~1.0KG/CM ² OUTPUT	2
PRESSURE GAUGE	24
REGULATING VALVE	1
U TYPE DRAFT GAUGE (DOUBLE)	1
CONTROL VALVE & SHUTDOWN VALVE (WITH POSITIONERS &	14
CONVERTORS)	
CONDENSATE POT	3
ORIFICE ASSY.	2
SOLENOID VALVE	8
THERMOCOUPLE & THERMOWELL	7
TEMPURATURE GAUGE AND THERMOWELL	15
DRIVE UNIT OF FORCED DRAFT FAN	2 FOR BOILER
BILLY BOWN ON TOROLD BILLY THE	A&D
	1 FOR BOILER
	C&B
OXYGEN ANALYZER WITH SAMPLING SYSTEM (OUTPUT	1SET
4~20MADC, RANGE 0~10%)	1001
PH ANALYZER WITH SAMPLING SYSTEM (OUTPUT 4~20MADC,	2 SET
RANGE 0~14PH)	2 SEI
CONDUCTIVITY ANALYZER WITH SAMPLING SYSTEM(OUTPUT	ISET
4~20MADC, RANGE 0~10)	1,01,1
CONDUCTIVITY ANALYZER WITH SAMPLING SYSTEM(OUTPUT	1SET
4-20MADC, RANGE 0-200 )	1521
SPEED TACHOMETER FOR FDF TURBINE	1 SET
LEVEL SWITCH FOR CHEMICAL TANK	1
LEVEL SWITCH FOR STEAM DRUM	†
LEVEL GAUGE FOR CHEMICAL TANK	+ <del>1</del>
LEVEL GAUGE FOR STEAM DRUM	1 2
SET OF SHEILDED CABLE & THERMOCOUPLE CABLE AND POWER	ABOUT 16000M
CABLE (DIFFERENCE SIZE)	ABOUT 10000IVI
CET OF CACKET BOLT & MILT TEDMINIAL COMPLETED DOCCEC	1
SET OF GASKET ,BOLT & NUT, TERMINAL, CONDUIT, PROCESS	
CONNECTION MATERIAL, PNEUMATIC CONNECTION FOR	
CONNECTION MATERIAL, PNEUMATIC CONNECTION FOR INSTRUMENT AND CONTROL VALVE, INSULATION MATERIALS	10770
CONNECTION MATERIAL, PNEUMATIC CONNECTION FOR	1SET

WE ARE LOOKING TO USE MODERN INSTRUMENT IN AMMONIA, UREA AND UTILITY PLANTS BY USING DISTRIBUTED CONTROL SYSTEM (DCS) OR PROGRAMABLE DIGITAL CONTROLLERS WITH COMMUNICATION INTERFACE CARDS TO COMPLUTER. BOTH SYSTEM FOR CONTROLLING, RECORDING, INDICATING AND ALARM INDICATION.

DCS CONSIST	AMMONIA	UREA	UTILITY
OPERATING STATION WITH FLOPPY DISK	3SET	3SET	3SET
HARD DISK DRIVE	1	1	1
VIDEO COPER AND LOGGING PRINTER	1	1	1
ENGINEERING STATION	1	1	1

WITH SUITABLE UPS SYSTEM AND ALKALINE BATTERIES FANICTION OF OPERATING STATION: TREND RECORDER

TAG LIST (SUMMARY LIST) CONTROL PANEL ALARM PANEL SEQUENC

CONTROLLING IN DCS OR PROGRAMABLE DIGIT CONTROLLER TO BE, SELF TUNING PID & COMPUTATION FUNCTION.

FOR FLOW MEASURMENT TEMPERATURE & PRESSURE COMPENSATION & SQUARE ROOTING (LINEARIZATION) TO BE USED TO CORRECT THE FLOW MEASURMENT VALUES . PANEL INSTRUMENT WEATHER PROOF IP54

LOCAL INSTRUMENT & PANEL EXPLOSION PROOF INTRINSIC SAFETY IN AMMONIA PLANT WEATHER PROOF SUITABLE FOR UREA GRADE IN UREA PLANT

NUMBER OF ANALOGE & DIGITAL INPUT & OUTPUT

FUNCTION	AMMONIA & NH3 TANK	UREA	COOLING WATER 1-A, OFFSITE (UTILITY)
NO.			
CONTROLLING A1/A0 4~20MADC	110	90	16
ANALOGE OUTPUT (A0)	16	30	
CONTROLLING A1/A0 (THERMOCUPLE TYPE K)	30	25	8
RECORDING 4~20MADC	90	70	16
RECORDING THERMOCUPLE INPUT TYPE K	60	50	16
COUNTONG	10	4	•
ANALOGE INPUT FOR ALARM 4-20MA	225	150	50
ANALOGE INPUT THERMOCUPLE	100	50	20
COMPUTING FUNCTION	32	16	8
INDICATING (4~20MA) INPUT	40	40	20
INDICATING THERMOCUPLE TYPE K INPUT	160	100	20
DIGITAL INPUT	50	20	8
DIGITAL OUTPUT	30	20	10

WE ARE LOOKING TO USE MODERN INSTRUMENT IN AMMONIA, UREA AND UTILITY PLANTS BY USING DISTRIBUTED CONTROL SYSTEM (DCS) OR PROGRAMABLE DIGITAL CONTROLLERS WITH COMMUNICATION INTERFACE CARDS TO COMPLUTER. BOTH SYSTEM FOR CONTROLLING, RECORDING, INDICATING AND ALARM INDICATION.

DCS CONSIST	AMMONIA	UREA	UTILITY
OPERATING STATION WITH FLOPPY DISK	3SET	3SET	3SET
HARD DISK DRIVE	1	1	1
VIDEO COPER AND LOGGING PRINTER	1	1	1
ENGINEERING STATION	1	1	1

WITH SUITABLE UPS SYSTEM AND ALKALINE BATTERIES FANICTION OF OPERATING STATION: TREND RECORDER

TAG LIST (SUMMARY LIST) CONTROL PANEL ALARM PANEL SEQUENC

CONTROLLING IN DCS OR PROGRAMABLE DIGIT CONTROLLER TO BE, SELF TUNING PID & COMPUTATION FUNCTION.

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LOCAL INSTRUMENT & PANEL EXPLOSION PROOF INTRINSIC SAFETY IN AMMONIA PLANT WEATHER PROOF SUITABLE FOR UREA GRADE IN UREA PLANT.

NUMBER OF ANALOGE & DIGITAL INPUT & OUTPUT

NUMBER OF ANALOGE & DIGITAL IF	NEUL & OUTFUL		
FUNCTION	AMMONIA & NH3 TANK	UREA	COOLING WATER 1-A, OFFSITE (UTILITY)
NO.			
CONTROLLING A1/A0 4~20MADC	110	90	16
ANALOGE OUTPUT (A0)	16	30	-
CONTROLLING A1/A0	30	25	8
(THERMOCUPLE TYPE K)	<u></u>	1	1
RECORDING 4-20MADC	90	70	16
RECORDING THERMOCUPLE INPUT	60	50	16
TYPE K	<u> </u>	1	!
COUNTONG	10	4	-
ANALOGE INPUT FOR ALARM	225	150	50
4~20MA		l	
ANALOGE INPUT THERMOCUPLE	100	50	20
COMPUTING FUNCTION	32	16	8
INDICATING (4~20MA) INPUT	40	40	20
INDICATING THERMOCUPLE TYPE	160	100	20
K INPUT			1
DIGITAL INPUT	50	20	8
DIGITAL OUTPUT	30	20	10

EMERGENCY SHUTDOWN & SAFETY SYSTEM:
COMPLETE SET RELAY TYPE WITH MAINTANCE (BY BASS SWITCH) STATUS LAMP,
CHANGE OVER SWITCH & PUSH BOTTON WITH SUITABLE POWER SUPPLY AND BELL

#### CAPACITY OF EMERGENCY SYSTEM:

FUNCTION	AMMONIA & NH3 TANK	UREA	UTILITY	
DIGITAL INPUT	125	60	30	
DIGITAL OUTPUT TO ALARM	130	70	25	
DIGITAL OUTPUT TO LOCAL INST. & ELECTRIC SYSTEM	110	40	40	
DIGITAL OUTPUT TO SWITCHES LAMP & PUSH BOTTON	50	30	15	
RELAIES, OFF DELAY & TIMERS	280	75	45	
CHANGE OVER SWITCH	26	15	5	

FOR IMPORTANT DATA FOLLOWING INSTRUMENT TO BE USED

FUNCTION	AMMONIA	UREA	UTILITY
RECORDER	5	3	1
INDICATOR	2	1	-

ALARM SYSTEM

FUNCTION	AMMONIA	UREA	UTILITY
ALARM SYSTEM	100 POINTS	50 POINTS	20 POINTS

- COMPLETE SET OF CABLES, WIRES, TERMINALS ..ETC FOR ERECTION OF INSTRUMENT IN CONTROL ROOM
- SET OF SAFETY BARRIERS FOR ANALOGE INPUT & OUTPUT & DIGITAL INPUT & OUTPUT TO HAZARDES AREA.

THE ELECTRONIC TRANSMITTER SMART TRANSMITTER INTERNAL VOLTAGE 24VDC OUTPUT 4~20MADC (2-WIRES) WITH OUTPUT LOCAL INDICATOR

• LOCAL INSTRUMENT EXPLOSION PROOF (INTRINSIC SAFETY)
DETAIL SPECIFICATION WILL BE GIVEN LATER.

QUANTITY OF LOCAL INSTRUMENT AS FOLLOW

QUANTITY OF LOCAL INSTRUMENT AS FOLLOW	
FLOW TRANSMITTER WITH 3 VALVE MANIFOLD	90
ELECTRONIC FLANGE TYPE CONNECTION LEVEL	18
TRANSMITTER	
ELECTRONIC PRESSURE TRANSMITTER	46
ORIFICE & ORIFICE PLANGE	30
PNEUMATIC TRANSMITTER (OUTPUT 0.2~1KG/CM²)	12
PNEUMATIC LOCAL CONTROLLER	6
CONDENSATE POT	40
CONTROL VALVE WITH ELECTRONIC POSITIONER	115
CONTROL VALVE WITH PNEUMATIC POSITIONER	6
ROTAMETERS & PURGE SETS	20
ROTAMETER WITH ELECTRONIC TRANSMITTER	5
LEVEL SWITCH	18
LOCAL PRESSURE SWITCH	50
PRESSURE GAUGE	350
TEMPERATURE GAUGE	140
THERMOCUPLE TYPE K	155
THERMOWELL FOR TEMP. GAUGE AND	268
THERMOCUPLE	
DISPLACER TYPE ELECTRONIC TRANSMITTER	14
DESUPER HEATER	2
ANNUBAR TUBE	1
TURBINE FLOW METER	2
TACHOMETER (SPEED INDICATOR FOR STEAM TURBINE)	10
THERMOSTAT	5
LEVELGAUGE	60
LIMIT SWITCH	5
PRESSURE REGULATOR	10
MECHANICAL LEVEL GAUGE	
	2 AMMONIA TANK BREATHING TANK
SOLEIOND VALVE	40
CONVERTER I/P & P/I	25
DIFFERINAL PRESS. LOCAL INDICATOR	10
TEMPARETURE SWITCH	4

H2(HYDROGEN), Ar , CH4 WITH SAMPLING UNIT & PROCESSOR

GAS	STREAMI	STREAM2
II2	0~100%	0~100%
Ar	0~1%	0~5%
CH4	0~2%	0`10%

OXYGEN NALYZER COMPLETE ONE SET WITH SAMPLING UNIT RANGE 0-5% FOR PRIMARY REFORMER FLUE

GAS ANALYZER FOR CH4 WITH SAMPLING UNIT TWO SETS FIRST RANGE 0~1%
SECOND RANGE 0~10%

GAS ANALYZER CO WITH SAMPLING UNIT ONE UNIT RANGE 0~1%

GAS ANALYZER CO2 WITH SAMPLING UNIT TWO SET FIRS'T RANGE 0~50PPM SECOND RANGE 0~0.5%

GAS ANALYSER H2 WITH SAMPLING UNIT ONE SET RANGE 55~85%

PH ANALYZER WITH SAMPLING UNIT 2 SETS RANGE 0~14PH

CONDUCTIVITY METER WITH SAMPLING UNIT 3 SETS

RANGE 0-200 /CM TWO SETS

RANGE 0-20 /CM ONE SET

DEARATOR DISOLVED OXYGEN IN DEARATED WATER WITH SAMPLING UNIT RANGE 0~10PPM

COMPLETE SET FOR ERECTION GASKETS BOLTS & NUTS CONDUITS PIPING & CONDUIT FITTING PROCESS CONNECTION PIPING & FITTINGS & CABLES (POWER, SHEIDED CABLE, COMPENSATING CABLES), GAUGE UNION & SYPHON, INSULATION MATERIALS... ETC

EQUIPMENT & INSTRUMENTS FOR TEST & CALBRATION OF PRESSURE ,FLOW ,LEVEL & TEMPURATURE INSTRUMENT LIKE

- -AVO, MEGER 100V & 500V
- -LOOP CALIBRATOR
- -TEMP. BATH CALIBRATOR
- -FREQUENCY GENERATOR
- -SPECIAL TOOL
- -SPECIAL INSTRUMENT & EQUIPMENT FOR PLC, DCS ,PROGRAMABLE , CONTROLLER TURBINE FLOW METER ...
- -DEAD WEIGHT TESTER FOR PRESSURE INSTRUMENT
- -POWER SUPPLY AND VOLTAGE REGULATOR
- -STANDARD AMPERE AND VOLTMETER
- -AMPERE AND VOLTAGE GENERATOR

LOCAL INSTRUMENT FOR UREA TO BE WEATHER PROOF, CORRISIVE PROOF SUITABLE FOR UREA PLANT (UREA GADE)

ALL ELECTRONIC TRANSMITT TO BE SMART TRANSMITTER OUTPUT 4~20MA, INTERNAL POWER SUPPLY 24VDC (2-WIRE TRANSMITTER) WITH OUTPUT LOCAL INDICATOR ACCERSSORRIES

FLOW TRANSMITTER WITH 3 VALVE MANIFOLD (ELECTRONIC)	36
ELECTRONIC FLANGE TYPE LEVEL TRANSMITTER	12
ELECTRONIC PRESSURE TRANSMITTER	36
PNEUMATIC TRANSMITTER (OUTPUT 0.2-1KG/CM2)	6
LOCAL CONTROLLER PNEUMATIC	6
ORIFICE & ORIFICE FLANGE	20
CONDENSATE POT	20
CONTROL VALVE WITH ELECTRONIC POSITIONER & OTHER	80
ACCESSORIES	
CONTROL VALVE WITH PNEUMATIC POSITIONER & OTHER	6
ACCESSORIES	
ROTAMETER AND PURGE SETS	66
ROTAMETER WITH ELECTRONIC TRANSMITTER	4
LEVEL SWITCH	5
LOCAL PRESSURE SWITCH	20
PRESSURE GAUGE	150
TEMPERATURE GAUGE	70
THERMOCUPLE TYPE K	80
THERMOWELL FOR TEMP. GAUGE & THERMOCUPLE	195
DISPLACER TYPE ELECTRONIC TRANSMITTER	10
TURBINE FLOW METER	1
LEVEL GAUGE	20
FLOW NOZZLE	2
SOLENOID VALVE	20
AMMONIA FEED TO REACTOR (EJECTOR)	1
SELF REGULATOR VALVE	3
DIFFERENTIAL PRESSURE LOCAL INDICATOR	10
I/P & P/I CONVERTER	15
TEMP. SWITCH	8

CONDUCTIVITY METER WITH SAMPLING UNIT ONE SET RANGE 0~200 /CM

OXYGEN ANALYZER COMPLETE SET WITH SAMPLING UNIT RANGE 0~1% (FOR CO2 COMP.)

CONVEYER WEIGHT MACHINE (GAMA RAY) DETECTOR, AMPLIFIER & INDICATOR FOR UREA RANGE 0-80 T/Hr WITH TEMPERATURE COMPENSATOR.
COMPLETE SET FOR ERECTION: GASKETS, BOLT & NUTS, CONDUIT PIPING AND CONDUIT FITTINGS, PROCESS CONNECTION PIPING AND FITTINGS, POWER & SHEILD CABLE, COMPENSATING CABLE, GAUGE UNION & SYPHON, INSULATION MATERIALS ...ETC

FOUR SETS OF LOCAL PANELS FOR TURBINE AND COMP.

1-K-301 SYN. COMPRESSOR

2-K-302 AIR COMPRESSOR

3-K-303 NG COMPRESSOR

K-401 REFREGURATION COMPRESSOR

4-K-501 CO2 COMPRESSOR

THE PANELS & LOCAL INSTRUMENTS TO BE EXPLOSION PROOF INTENISIC SAFETY . LOCAL PANEL CONTENT THE FOLLOWING

-ALARM SYSTEM ELECTRONIC TYPE WITH POWER SUPPLY AND PUSH BOTTON AND LAMPS :-

K-301 30POINTS K-302 16POINTS K-303 & K-401 40 POINTS K-501 25POINTS

-INTERLOCK (SAFETY DEVICE SYSTEM) WITH CHANGE OVER MAINTENANCE SWITCH PUSH BOTTON , POWER SUPPLY, RELAY, TIMERS 4SETS

-VIBRATION & AXIAL SYSTEM PROBES, POWER SUPPLY, DOUL INDICATION FOR VIBRATION AND SINGLE INDICATION FOR AXIAL , PROXIMATERS, EXTENSION CABLE, RACK AND MATERIAL FOR INSTALLATION

K-301	4 PROBES FOR AXIAL
	16 PROBES FOR VIBRATION
1	12 INDICATOR
K-302	5 PROBES FOR AXIAL
1	20 PROBES FOR VIBRATION
	15 INDICATOR
K-303	2 PROBES FOR AXIAL
	8 PROBES FOR AXIAL
	6 INDICATOR
K-401	3 PROBES FOR AXIAL
	12 PROBES FOR VIBRATION
	9 INDICATOR
K-501	4 PROBES FOR AXIAL
	20 PROBES FOR VIBRATION
	15 INDICATOR

SPEED DETECTOR, PICK UP COIL, AMMPLIFIER AND LOCAL PANEL INDICATOR

Г	K-301	RANGE 0~14000RPM	
Γ	K-302	RANGE 0~8000 RPM	٦
	K-303	RANGE 0~15000RPM	
Г	K-401	RANGE 0~14000RPM	
Γ	K-501	RANGE 0~10000RPM	

<mark>124242424242424242424242424242424242424</mark>	K-301	K-302	K-303	K-401	K-501
TEMPERATURE RECORDER WITH ALARM 6 POINTS	2	3	1	1	2
ELECTRONIC INDICATOR WITH 2 CONTROL	6	2	2	1	2
MANNAL LOADER ELECTRONIC WITH LOCAL REMOTE SWITCH	1	1	1	1	1
DIGITAL CONTROLER WITH 3 CONTACT OUTPUT	3	1	1	1	2
STATUS LAMP FOR PUMPS AND MOTORS	8	7	6	6	7
LOCAL MOUNTING & PRESSURE GAUGE	10	11	8	7	10
LOCAL PANEL MOUNTING PRESSURE SWITCH	2	2	2	2	3

#### LOCAL INSTURMENT FOR COMPRESSORS

	K-301	K-302	K-303	K-401	K-501
SMART ELECTRONIC TRANSMITTER DIFF.	12	2	4	2	6
PRESSURE WITH 3 VALVE MANIFOLD		1		1	<u> </u>
PNEUMATIC TRANSMITTER WITH 3	7	2	3	2	8
VALVE MANIFOLD					
PNEUMATIC LOCAL CONTROLLER	4	3	3	3	5
CONTROL VALVE WITH POSITIONER	11	3	5	3	8
REDUCING VALVE	1	1	1	l	2
REGULATOR FOR GOVERNOR	3	3	3	3	3
LEVEL SWITCH	2	2	2	2	2
PRESSURE SWITCH	7	6	7	5	6
THERMOCUPLE WITH THERMOWELL	5	11			
THERMOCUPLE	13	13	4	7	11
TEMP. GAUGE WITH THERMOWELL	8	8	8	3	8
DIFF. PRESSURE GAUGE	2	-	-	-	3
PRESSURE GAUGE WITH UNION	20	18	18	6	20
SOLENIOD VALVE	2	2	2	2	2

SET OF GASKET, BOLT & NUTS, TERMINALS, CONDUIT PIPINGS AND FITTINGS, PROCESS CONNECTION PIPING AND FITTINGS, POWER AND SIGNAL CABLES & WIRES, PNEUMATIC CONNECTION FOR INSTRUMENT AND CONTROL VALVE ,INSULLATION MATERIALS....ETC

NO.	Substanse	B-1	B-2	B-3	B-4	
	akararakararakararakarara	देवा <mark>देवादेवादेवादेवादेवादेवादेवादेवादेवादेवा</mark>	<u> </u>	268686868	<b>838383</b> 83	
<del>-</del>	Colour	- 1 25 0	4.50	-	-	
<u>%</u> '-	Temperature	Less than 35 °c	45° c			
<b>8</b> 5-	Suspended soilds	60	750			
<b>2</b>	PH	6-9.5	6-9.5			
- - -	Dissolved oxygen	-	-	-		
<b>%</b> -	B.O.D ₅	Less than 40	1000			
<b>2</b> -	CO.D.(Cr ₂ O ₇ )	Less than 100	-			
<b>8</b> -	Cyanide CN	0.05	0.5			
<b>2</b> -	Fluoride F	5.0	10			
<b>3</b> 0-	Free Chlorine	Trace	100			
 	Chlorides	<ul> <li>a) If the ratio of disposed water to the sourc water 1:1000 or less it is acceptable to increase the conc.by 1% of the natuoral conc. In the source before disposing.</li> <li>b) If the ratio of disposed water to the source water more than 1:1000, choroids conc.in the disposed water should be less than 600 mg/L</li> <li>c) If fluorides conc.in the source water less than 200 mg/l,each case should be studied separately by the ress ponsible about the</li> </ul>				
		system.				
<b>2</b> 2-	Phenol	0.01-0.05	5-10			<b>X</b>
	Sulphates SO ₄ ⁼	a)If the ratio of disposed water to the source water 1:1000 or less it is allowable to dispose the water to the source at a conc. and quantity creating an increment in the sulphate conc. of the source by 1% of natural source conc. before disposing. b) If the ratio of disposed water to source water more than 1:1000, Sulphates conc.in disposed water should not be more than 400 mg/l c)If sulphate conc. in the source water less than 200mg/l,each case should be studied separately by the responsible about the system.				
<b>2</b> O.	Substanse	B-1	B-2	B-3	B-4	
<b>2</b> 4-	Nitrate NO3	50	-			
<b>25</b> 5-	Phosphate PO ₄ ⁻³	3.0	-			
<b>2</b> 6-	Ammonium NH ₄ ⁺	-	-			
<b>2</b> 7-	DDTAntiseptic	0.0	-			
8-	Lead Pb	<b>0</b> 6b	0.1			
<b>29</b> -	Arsenic As	0.05	0.05			
0-	Copper Cu	0.2	-			

# Appendix No. (4)

**Inviromental Requirements and Standard** 

# 

#### **NOTE:**

B-1 to B-4 mean what is mentioned in the item of water classification which include also the restriction that should be followed by the responsible about disposal.

• It is possible to increase the allowable conic. At alimited ratio indicated in certain cases depending upon the influence of the required disposdal on the water source.

# Appendix No. (5)

Investment Law No. (13) of 2006

### **Unofficial translation**

## In the name of people

## **Presidency Counsel**

Pursuant to what was approved by the Council of Representatives in accordance with provisions of Para (first) of Article (61) of the constitution and elapse of the legal period given in Para 5/A of Article 138 of the constitution, the following law is promulgated

No. (13) of 2006 The Investment Law

## **Chapter One**

## **Definitions**

### Article (1)

The following terms, wherever mentioned in this Law, shall have the following specific meanings unless the context indicates otherwise:

A: The Council :the Council of Ministers

B: National Commission for Investment: the commission established in accordance with this law responsible for drawing up the national policy and laying out its guidelines and monitoring the implementation of these guidelines and instructions in investment. It shall specialize in investment projects of a federal nature exclusively.

C: Region's Commission: The investment commission of the region responsible for investment planning and granting investment licenses in the region.

D: Governorate Commission: The investment commission of the governorate not organized in a region responsible for investment planning and granting investment licenses in the governorate.

E: The commission: The National commission for Investment or the Region's commission or the Governorate Commission as the case.

F: Chairman of the Commission: the Chairman of the National Commission for Investment.

G: The Project: the economic activity subject to the provision of this law.

H: The Assets: the tools, apparatuses, equipments, machineries, transportation means and office furnishings and appliances to be used for the project exclusively and the furniture and appliances of the hotels, tourist cities, hospitals, schools and colleges.

case of real person, and is registered in a foreign country in the case of a juridical or legal person.

J: The Iraqi investor: is the investor who holds Iraqi Nationality in case of real person, and registered in Iraq in case of a juridical or legal person.

K: Taxes and duties: all kinds of taxes and duties imposed according to applicable laws.

L: The designed production capacity: is the production capacity designed within a specific unit of the time (hour, day....etc) in accordance to what is fixed in the documents incoming with the machine of the supplier and the feasibility study of the project.

M: Investment Portfolio: A collection of investments in shares and bonds.

N: Investment: is the investment of capital in any economic activity or project that results in a legitimate benefit for the country.

## **Goals and Means**

### Article(2)

This law aims at the following:-

**<u>First</u>**: To promote investment and transfer modern technologies in order to contribute to the process of the developing and enhancing Iraq, and expanding and diversifying its production and service base.

**Second:** To encourage the Iraqi and foreign private sector to invest in Iraq by providing the required facilities for establishing investment projects and enhancing its competitive capacities in the local and foreign markets for projects covered by this law.

<u>Third:</u> To develop human resources based on market demands and provide work opportunities for the Iraqis.

Fourth: To protect the rights and properties of investors.

<u>Fifth:</u> To expand exports and improve the balance of payments and balance of trade of Iraq.

## Article 3

The following means shall be adopted to realize the objectives of this law:

<u>First:</u> To grant projects covered by provision of this law the necessary privileges and guarantees for its continuation and development by providing support in a way that enhances the competitive capacities of these projects in the local and foreign markets.

<u>Second:</u> To grant projects that obtained an investment license from the Commission, additional facilities and exemptions from taxes and duties in accordance with the stipulations of this law.

### **Chapter Two**

The National Commission for Investment and the Investment Commission in the Regions and Governorates

### **Article 4**

<u>First:</u> A Commission shall be established and called the "The National Commission for Investment".it shall enjoy a juridical personality and shall be represented by the Chairman of the Commission or the person authorized by him. It shall be responsible for drawing up the national policies for investment and drawing up it's Plans, regulations as well as monitoring the implementation of these guidelines and instructions in investment. It shall specialize in strategic investment projects of a federal nature exclusively.

<u>Second:</u> The National Commission for Investment shall be managed by Board of Director comprised of nine member who must be competent, specialized, and hold a college degree that suits the specialty of the Commission. They must not have been sentenced for a felony or misdemeanor of moral turpitude or have declared their bankruptcy.

#### Third:

- A. Upon a request by the prime Minister, the Council of Ministers shall nominate a Chairman of the Commission at a grade of Minister and a Deputy Chairman at a grade of Deputy Ministry for a period of five years and present them to the Council of Representative for approval.
- B. The prime Minister shall appoint four member for a period of five years at a Grade of Director General.
- C. The Prime Minister shall select three members from the private sector for five years after their nomination by Chairman of the Commission and specifying their compensations according to the bylaws.
- D. At the conclusion of the membership of any member of the Commission referred to in Paragraph (A and B) of this Article in cases not involving dismissal and resignation, the Prime Minister shall assign them to any governmental entity at the same grade. Those mentioned in (A) of this article shall be retired on pension when not assigned to a government position equivalent to their grade.
- E. The Council of Representatives may directly dismiss the Chairman of the National Commission for Investment and his Deputy, or upon a request by the Prime Minister for compelling reasons.
- F. The Council of Ministers may dismiss or replace any member of the Commission or replace him with others in case he does not adhere to the standards and regulations of the Commission.
- G. The Board of Directors of the National Commission for Investment shall meet at the invitation of its Chairman. The quorum of convening and adopting resolutions

- work shall be organized by by- laws issued by the commission.
- H. The National commission for Investment shall be connected to the prime Minister.

I. The salary scale and entitlements of the Commissions employees shall be determined by a decision of the Prime Minister based on a proposal from the Chairman of the National Commission for Investment.

#### Fourth:

The Commissions headquarters shall be in Baghdad and it may appoint representatives in the regions and governorates.

#### Fifth:

The National Commission for investment shall draw up an overall national strategic policy for investment identifying the more important sectors and shall prepare a map of investment projects in Iraq in the light of the information it receives from the regions and governorates. It shall also prepare lists of investment opportunities in strategic and federal investment projects with initial information about these projects and making it available to those wishing to invest.

### **Article 5**

<u>First:</u> The regions and governorates not organized in a region may form investment commissions in their areas. The latter shall enjoy the powers of granting the investment licenses, investment planning ,promoting investment and opening branches in their areas within the provisions of this law in consultation with National Commission for Investment to guarantee the availability of the legal conditions.

<u>Second</u>: The Investment Commission of the regions and governorate shall be composed of at least seven members including the chairman and the vice chairman of at least seven years of experience and competence and with a university degree appropriate to the specialization of the commission and not convicted in a felony or a misdemeanor involving turpitude or has declared his bankruptcy.

<u>Third:</u> The regions and governorates not organized in a region shall establish a mechanism of forming the investment commission of the region and the governorate and dismissing the Commission member in case of not adherence to the Commission regulations and standards.

<u>Fourth:</u> The Investment Commissions of the regions and governorate shall coordinate their work with the National Commission for Investment, and shall coordinate and consult with local governments regarding investment plans and facilities.

<u>Fifth:</u> The regions and governorates Commissions shall draw up their investment plan in a way that dose not contradict with the federal investment policy and shall prepare list of the investment opportunities in the areas that are subject thereto, with initial data about these projects and offer it to those wishing to invest.

<u>Sixth:</u> The regions Commissions shall be connected to the prime Minister of the region and is subject to the scrutiny of the regions Council. The governorate commission shall be connected to the Governor and is subject to the scrutiny of the governorate council in a way that does not contradict with the provisions of this law.

<u>Seventh</u>: Regions and Governorates Commissions board of directors shall convene upon an invitation from their chairman. The quorum of convening and adopting resolutions and recommendations shall be determined by absolute majority. The conduct of work shall be organized by by - laws issued by the Commission.

#### AT ticle 0.

In addition to ordinary correspondence, the Commission may adopt electronic mail with the official entities connected with the work and activity of the Commission through local networks or the Internet according to guidelines set by the Commission.

#### Article 7:

- A- The Commission shall accept investment license requests for projects whose capital is not less than the minimum amount determined by the Council of Ministers or the Council of Ministers of region as the case, by a regulation issued based on a proposal by the Commission.
- B- The Commission must obtain the approval of the Council of Ministers before granting the license if the value of the investment project is more than two hundred and fifty million dollars.
- C- The Commission shall make its final decision concerning the requests of investment license within a period not exceeding (45) forty five days from the date of filing a request.
- D- The decisions of the Commission regarding the approved investments projects shall be obligatory for the purposes of this law.

### **Article 8:**

The Commission shall have an independent annual budget whose revenues shall be made up of its allocated amount in the State General Budget.

### Article 9:

The Commission shall promote investment through the following:-

<u>First:</u> Building confidence in the investment environment, identifying investment opportunities, and promoting and stimulating investment in them.

<u>Second:</u> Simplifying the procedures for registration, issuing of investment projects licenses, and following up existing projects and giving them priority in processing with the official entities. Completing the procedures of answering investor requests and obtaining the required approvals for the investor and the project.

<u>Third:</u> Establishing one window at the National Commission for investment and the Regions and Governorates Commissions, which includes authorized representatives from the ministries, and members nominated by the Councils of the regions and governorates as the case and the concerned authorities to undertake issuing licenses and obtain the approvals of other authorities in accordance with the law.

<u>Fourth:</u> Providing advice, information, and data to investors and issuing special manuals in this regard.

<u>Fifth:</u> Setting forth and implementing programs to promote investment in different areas of Iraq in order to attract investors.

<u>Sixth:</u> Facilitating the allocation of the needed lands and renting them out for establishing projects for a sum to be determined by the Commission in coordination with the concerned authorities.

Council of Ministers.

<u>Eighth:</u> Encouraging Iraqi investors through providing them with easy loans and financial facilities in coordination with the Ministry of Finance and with the assistance of Banking Institutions, provided that the investor obtaining the loan shall employ a number of unemployed Iraqis proportional with the volume of the loan.

Ninth: Any other tasks related to its work and assigned by the Council of Ministers.

### **Chapter Three**

### **Privileges and guarantees**

### **Article 10:**

The Investor irrespective of his /her nationality shall enjoy all privileges, facilitations and guarantees and shall be subject to the obligations stated in this law. The Iraqi and foreign investor shall have the right for the purposes of housing projects, the use of the land for a sum to be determined between him and the land owner without land speculation according to conditions set forth by the National Commission of investment and the approval of the Council of Ministers. The Commission shall facilitate the allocation of the required lands for the housing projects. The housing units shall be allocated for ownership by the Iraqis after the completion of the project.

## **Article 11:**

The investor shall enjoy the following benefits:-

<u>First:</u> the investor shall have the right to take out the capital he brought into Iraq and its proceeds in accordance with the provision of this law and pursuant to the instructions of the Central Bank of Iraq in an exchangeable currency after paying all his taxes and debts to the Iraqi Government and all other authorities.

**Second:** The foreign investor shall have the right to:

- A. Exchange shares and bonds listed in the Iraqi Stock Exchange
- B. Form investment portfolios in shares and bonds

<u>Third:</u> Renting or leasing land needed for the project for the term of the investment project, provided that it dose not exceed 50 years renewable with the agreement of the Commission, and provided that the nature of the project and its benefit for the national economy is taken into consideration when determining the period.

<u>Fifth:</u> Opening accounts in Iraqi or foreign currency or both at a bank inside or outside Iraq for the licensed project.

#### **Article 12:**

This law shall guarantee the following for the investor:-

First: The right to employ and use non-Iraqi workers in case it is not possible to employ an Iraqi with the required qualifications and capable of performing the same task in accordance with guidelines issued by the Commission.

Second: Granting the foreign investor and non –Iraqis working in the investment projects the right for residence in Iraq and facilitate inter and departure from Iraq.

Third: Non- seizure or nationalization of the investment project covered by the provisions of this law in whole or in part, except for projects on which a final judicial judgment was issued.

Fourth: Non Iraq technicians and administration employees working in any project shall have the right to transfer their salaries and compensations outside Iraq in accordance with the law after paying their dues and debts to the Iraqi government and all other entities.

#### **Article 13:**

Any amendment to this Law shall not have any retroactive affect regarding the guarantees, exemptions, and rights recognized by this Law.

### **Chapter four**

### **Investor Obligations**

## **Article 14:**

The Investor shall observe the following:-

<u>First:</u> To notify the National Commission for Investment, the Region or Governorate Commission in writing immediately after the installation and equipping of the fixed assets for the purposes of the project and the date of the beginning of commercial activity.

<u>Second</u>: To keep proper records audited by a certified accountant in Iraq in accordance with the law.

<u>Third</u>: To provide an economic and technical feasibility study for the project and any information, data or documents required by the Commission or other competent authorities regarding the budget of the project and the progress made in its execution.

<u>Fourth:</u> To keep records of the projects duty- free imported materials in accordance with the provisions of this Law and specifying the depreciation periods of these materials. <u>Fifth:</u> To protect the safety of the environment and to adhere to the valid quality control norms in Iraq and International regulations in this field also adhere to laws connected to security and health and to public order and Iraqi social ethics.

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<u>Seventh:</u> Commitment to the correspondence of the work progress schedule submitted by the investor with reality provided that the time difference shall not exceed six months, the National Commission for Investment shall set forth punitive conditions in case of exceeding the six –month period and the Commission shall have the right to withdraw the license.

<u>Eighth:</u> To train and rehabilitate its Iraqi employees as well as raising their efficiency, skill and capabilities. Priority in employment and recruitment shall be given to the Iraqis.

### **Chapter Five**

### **Exemptions**

#### **Article 15:**

First: The project that has obtained an investment license from the Commission shall enjoy exemption from taxes and duties for a period of (10) ten years as of the date of commencing commercial operations in accordance with the areas of development defined by the Council of Ministers at the suggestion of the National Commission for Investment based on the degree of economic development and the nature of the investment project.

Second: To Council of Ministers shall have the right to propose draft laws to extend or grant exemptions in addition to the exemptions stipulated in paragraph (First) of this Article, or provide incentives, guarantees or other benefits to any project or sector or region and for the periods and percentages it deems appropriate in accordance with the nature of the activity, its geographical location and its contribution to manpower employment and its effect on driving the economic development, for considerations of national interest.

Third: The National Commission for Investment has the right to increase the years of tax and duties exemption in a way directly proportional to the increase in the Iraqi Investor share in the project to reach fifteen years if the Iraqi Investor share in the project was more than 50%.

## Article 16:

In case the project is moved from one development area to another during the exemption period, the project – for the purpose of exemption stipulated in( First) of Article 15- shall be treated during the remaining term the treatment of the project in the development areas it is moving to, provided that the Commission is informed of such move.

## **Article 17:**

The project that obtains an investment license shall also enjoy the following:-

<u>First:</u> Assets imported for the purposes of the investment project shall be exempted from duties provided that their entry to Iraq is made within(3) three years from the date of granting the investment license.

<u>Second</u>: The imported assets required for the expansion, development or modernization of the project shall be exempted from duties in case they led to an increase in the designed

Commission of the expansion or development. Expansion, for the purposes of this law, shall mean adding fixed capital assets aimed at increasing the designed capacity of the project in commodities or services or materials by a percentage exceeding (15%)fifteen percent. Development, for the purposes of this law, shall mean replacing project machines with more developed ones, totally or partially or making a development on the standing devices and equipments of the project by adding new machines and devices or parts thereof with the aim of raising the productive efficiency or improving and developing the quality of the products and services.

<u>Third</u>: Spare parts imported for the purposes of the project shall be exempted from duties if the value of these parts does not exceeded(20%) twenty percent of the fixed assets value, provided that they are not be used for any other purpose.

<u>Fourth</u>: Hotels, tourist institutions, hospitals, health institutions, rehabilitation centers and educational and scientific organizations project shall be granted additional exemptions from duties and taxes on their imports of furniture, furnishings and requisites for renewing and updating purposes at least once every four years, provided that these items are brought into Iraq or used in the project within (3) three years from the date of the approval decision of the Commission on the import lists and their quantities, and provided that these items are not used for purposes other than the imported purposes.

#### **Article 18:**

In case it is found that the project assets totally or partially exempted from customs and duties, are sold, in contrary to the provisions at this law or used not for the project, or used not for the declared purpose then the investor must pay the taxes and fines incurred pursuant to the law.

## **Chapter Six**

### Procedures for Granting investment and project Establishment License

### Article 19:

<u>First:</u> The investor shall obtain the license in addition to obtaining the rest of the licenses for the purpose of enjoying the privileges and exemptions provided by the Commission.

<u>Second:</u> To Commission shall grant the license for investment or project establishment based on a request submitted by the investor according to conditions facilitated and prepared by the Commission. The request submitted by the investor shall include the following:-

- A- Filling a request form prepared by the Commission.
- B- Financial competency from an accredited bank.

D- Details of the project intended to invest in and its economic feasibility.

E- A timetable for completing the project.

### **Article 20:**

<u>First:</u> The Commission must issue the establishing license through establishing one window in the region or the governorate not organized in a region that includes authorized representatives of the ministries and relevant bodies. The Commission shall grant project establishment license and obtain approvals from the entities in accordance with the law.

<u>Second</u>: To Commission must help the investor to obtain licenses by approaching the competent authorities and exploring the opinions of the entities concerning the issuance of the establishment license. These entities must issue the decision to reject, approve or request amendment within 15 days from the date of being notified. The failure to reply from the entity from which the opinion is solicited shall be deemed as an approval and in case of a rejection there must be cause for it.

<u>Third</u>: In case of disagreement between the National Commission for Investment decision and the other entity related to granting establishment license other than the region commission the dispute shall be raised to prime Minister for settlement.

<u>Fourth:</u> In case the request for registration in rejected, the applicant may file a complaint to the Chairman of the region or the governorate Commission concerned within(15) fifteen days after receiving notification of the rejection decision. The Chairman of the Commission concerned shall take a decision concerning the complaint in question within a period of seven days. The petitioner may appeal the decision of the Chairman of the Commission concerned rejecting his complaint to the authority to which the Commission concerned is connected to within 15 days from the date the complaints rejection and its decision is deemed final.

### **Chapter Seven**

#### **General Provisions**

### **Article 21:**

The project capital subject to the provisions of this law shall be made up of the following:-

<u>First:</u> Cash transferred to Iraq through banks and financial companies or any other legal means with the aim of investing it for the purposes of this law.

<u>Second:</u> The in – kind assets and incorporeal rights imported to Iraq or purchased from the local markets by the cash transferred into Iraq:-

B- The machinery, tools, equipment, building, construction, transportation means, furniture and offices appliances required for establishing the project.

ୟୁଧ୍ୱ ବେଷ ସେଷ ସହ୍ୟାଧାର ବିଶ୍ୱର ପ୍ରତ୍ୟୁତ୍ୟ ପ୍ରତ୍ୟୁତ୍ୟ ବିଶ୍ୱର ପ୍ରତ୍ୟୁତ୍ୟ ବିଶ୍ୱର ପ୍ରତ୍ୟ କରେ ଅଟେ ଅଟେ ସେଷ ଅଟେ ଅଟେ ଅଟେ

C- The incorporeal rights that include patents, registered trade marks, technical know- how, engineering services, administrative and marketing services and the similar.

<u>Third</u>: Profits, proceeds and reserves resulting from the capital invested in Iraq in the project if the capital of such a project was increased or was invested in another project covered by the provisions of this law.

#### **Article 22:**

The foreign investor shall enjoy additional privileges in accordance with international agreements signed between Iraq and his country or multilateral international agreements which Iraq has joined.

### Article 23:

In case the property of the project during the exemption term is transferred to another investor the project shall continue to enjoy granted exemption facilities and guarantees until the end of that period provided that the new investor continue to work on the project in the same specialization or in another, with the approval of the Commission. The new investor must take the place of the former investor in the rights and obligations consequent to the provisions of this law.

### Article 24:

<u>First:</u> The investor, with the approval of the Commission, may sell exempted fixed assets or relinquish it to another investor benefiting from the provisions of this law, provided that he uses them in his project.

<u>Second</u>: The investor, after informing the Commission, may sell the exempted fixed assets to any person or other project not subject to the provisions of this law after paying the outstanding duties and taxes.

<u>Third:</u> The investor, with the approval of the Committee, may re-export the exempted fixed assets.

### **Article 25:**

In the event two or more companies or enterprises merge, the new company or entity resulting from the merger must set up separate accounts for each project before the merger in order to register and apply exemptions and facilitations stipulated in this law during the remaining period of the exemption.

### Article 26:

laws shall continue to benefit from all exemptions granted to it pursuant to that law and until the expiration of the exemption period and under the same terms.

#### **Article 27:**

Disputes arising between parties who are subject to the provisions of this law shall be subject to the Iraqi law unless otherwise agreed, save to the cases that are subject to the provisions of the Iraq law exclusively or the jurisdiction of Iraqi courts.

- 1- Disputes arising from the labor contract shall exclusively be subject to the provisions of the Iraqi law and the jurisdiction of the Iraq courts. Non —Iraqi labor shall be exempted if the work contract stipulated otherwise.
- 2- If parties to a dispute are non Iraqis and in disputes not arising from a crime, the opponents may agree on the law to be applied, the competent court or any other agreement to resolve their dispute.
- 3- In case of dispute between partners or between the owner of a project subjected to the provisions of this law, and others that result stoppage of work for a period of more than three months, the Commission may withdraw the license and ask the owners of the project to settle the dispute within a period not exceeding three months. If such period elapsed without settling the dispute between the partners or between the owner of the project and others, the Commission may take legal measures to liquidate the project and notify the owner of the project or one of the partners of such action. The liquidation money shall be deposited in one of the banks after paying the dues of the State or any other dues after final judgment of their entitlement is rendered.
- 4- If the parties to a dispute are subject to the provisions of this law, they may, at the time of signing the agreement, agree on a mechanism to resolve disputes including arbitration pursuant to the Iraqi law or any other internationally recognized entity.
- 5- Disputes arising between the Commission or any governmental entity and any of those subject to the provisions of this law on matters not related to violations of one of the provisions of this law shall be subject to Iraqi law and courts on civil matters. As for commercial disputes, parties may resort to arbitration provided that such an arrangement is stipulated in the contract organizing the relationship between parties.

### Article 28:

In case the investor violates any of the provisions of this law, the Commission shall have the right to warn the investor in writing to remove the violation within a specific period.

In case the investor dose not remove the violation within the specified period, the Commission shall summon the investor or who represent him to state his position and grant him other respite to settle the issue. Upon repeating or not removing the violation, the Commission shall have the right to withdraw the investors license it issued and order stoppage of work on the project and retain the state's right to deny the investor the granted exemptions and privileges from the date of the violation and allow other to retain their rights to demand compensation for the damage caused by this violation, without breaching any punishments or other compensations stipulated in the applicable laws.

## Article 29:

All fields of investments shall be subject to the provisions of this law except:-

Second: Investment in banks and insurance companies sectors.

#### **Article 30:**

The council of Ministers may.

First: Issue regulations to facilitate the implementation of the provisions of this law. Second: Issue bylaws defining the Commissions formations, divisions tasks, process

its work, its authorities, financial affairs, employee affairs and any others matters.

### **Article 31:**

of

The Committee may issue instructions to facilitate the implementation of regulations issued by the Council of Ministers pursuant to the provisions of this law.

### **Article 32:**

The Provisions of this law shall be applied to the existing and operating projects of the mixed and private sectors which have commenced before the issuance of this law and upon a request from its management and the approval of the Commission with no retroactive effect.

### **Article 33:**

No text shall be valid which contradicts the provisions of this law.

### Article 34:

The (dissolved) CPA Order No. 39 of 2003 shall be revoked.

## Article 35:

The Arab Investment law No(62) of 2002 issued by the dissolved Revolution Command Council shall be annulled.

## Article 36:

This law shall enter into force from the date of its publication in the Official Gazette.

### **Justifying Reasons**

For the purpose of driving the process of economic and social development and bringing technical and scientific experience and developing human resources, and for creating work opportunities for the Iraqis by encouraging investments and supporting the process of establishing investment projects in Iraq and their expansion and these projects, this law is legislated.