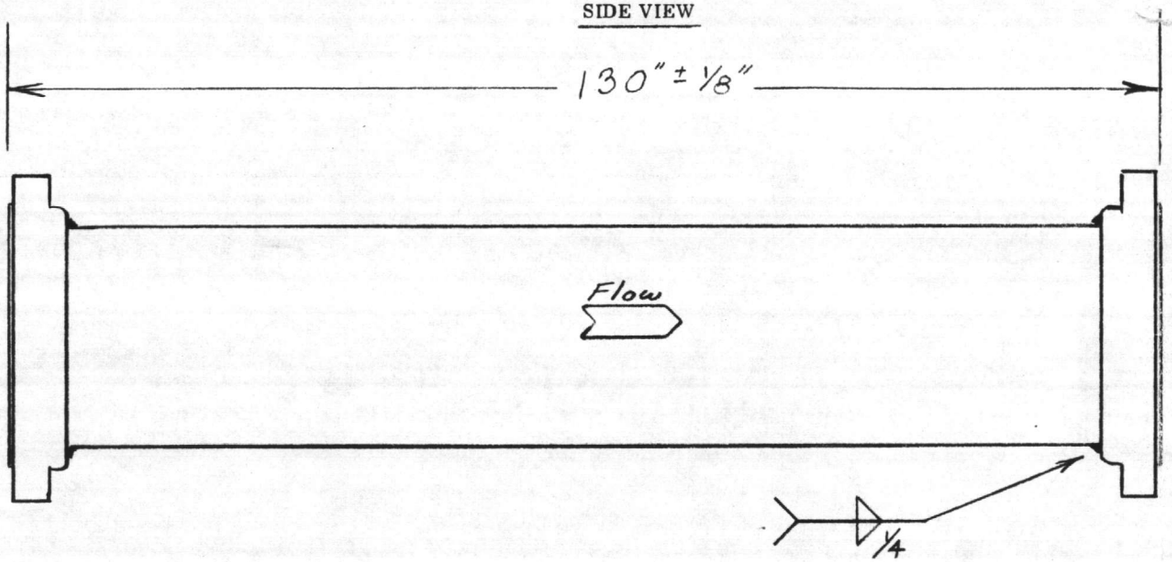
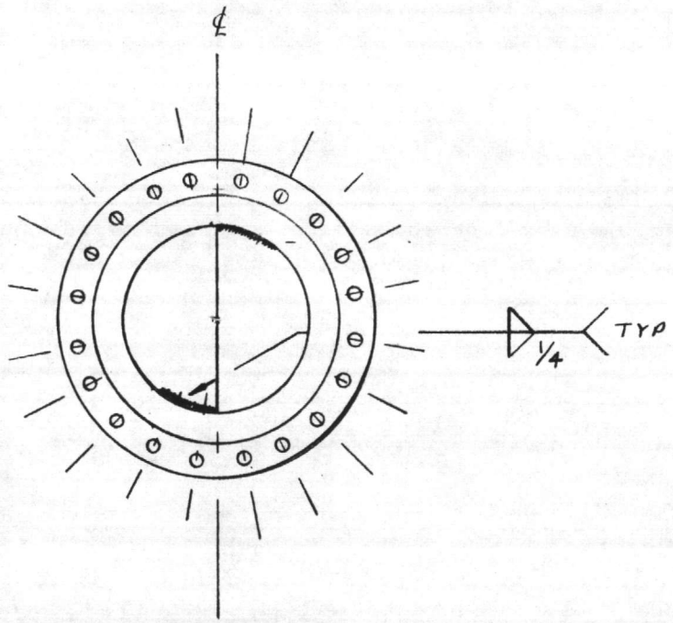
Item #6

Item #6

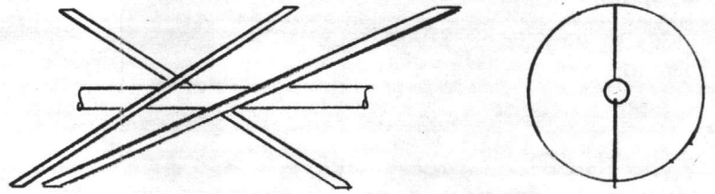
SIDE VIEW



END VIEW



Interior Mixing Section



INTERIOR MOTIONLESS MIXER

Number of Stages 4 non-removable

Material of Construction 316SS 1/4" thick Plate

HOUSING

Material of Construction 316 SS

Pipe 24" 1/4" thick 316SS welded ASTM A 312

End Connections 24" # 150 RF SO, ANSI B 16.5, ASTM A 182 Grade F316

Weight of Complete Mixer 1550 lbs

stata-tube Motionless Mixer U.S. Patent No. 4,093,188		TAH Industries, Inc. P.O. Box 176, Imlaystown, N.J. 08526 Call 609-259-9222
SCALE:	APPROVED BY:	DRAWN BY TAH
DATE: 5/26/85		REVISED
Camp Lejeune Holcomb Blvd Water Treatment Pl.		
P/N 24-D23-D42		DRAWING NUMBER

CONTRACTOR'S SUBMITTAL TRANSMITTAL
LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO.	TRANSMITTAL NO.	DATE
81-C-1644	55	6-5-85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

[X] Contractor Approved [ ] OICC Approval [ ] Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
11336		WATER TREATMENT EQUIPMENT			
1	6.3	Manufacturer's Data and Shop Drawings on Chlorine cylinder scales	4	RA	
2	6.5 b	Manufacturer's Data on Transfer Pump	4	RA	
3	6.5 c.x	Manufacturer's Data on Platform Scales	4		
4	6.5 d	Manufacturer's Data on Metering Pumps	4	RA	
5	6.5 e	Manufacturer's Data and Shop Drawings on PH Controls	4	RA/C	
6	6.5 f	Manufacturer's Data on In-line mixer	4	RA	

CONTRACTOR'S COMMENTS

NOTE: A/E Item # 5 Please verify quantity and type.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Reese

DATE RECEIVED BY REVIEWER: 6/6/85

FROM (Reviewer): J. Robert Benson, Jr. P.E.

TO

[ ] Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

[ ] Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS "Minor corrections were made by the reviewer. The contractor is requested to update his copies of this submittal, acknowledge corrections below, and forward this submittal to the ROICC.

PH Controls appear to be proper type. Have supplier verify that sensor is suitable for installation in pipeline as shown on the drawings.

CORRECTIONS ACKNOWLEDGE:

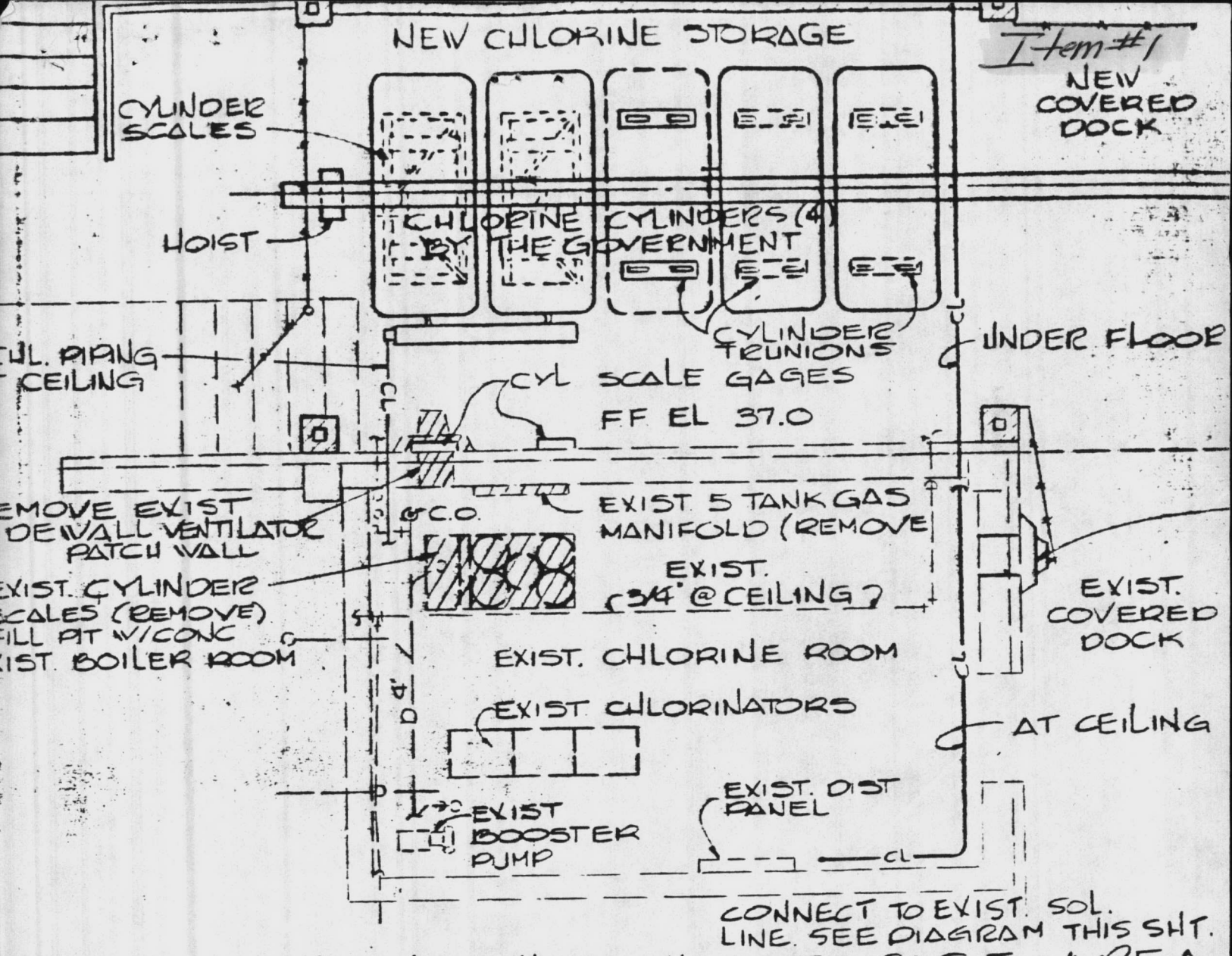
Signature _____ Date _____

COPIES TO:
ROICC (2)
LANTDIV (1)
A-E (1)

DATE: 6/10/85

SIGNATURE: J. Robert Benson Jr.

8242-715



Two (2) Sets of Chlor-Scale Model 12D40 to weigh the two ton cylinders shown above. The scale for each scale shall be 0 to 4000 pounds and shall be 12" in diameter. A/E VERIFY

Three (3) Sets of trunnions, a total of 6, to hold in storage the three ton cylinders shown above. Trunnions to be by Chlorine Specialties, Inc. Model C-256

Chlorine Scale Submittal
Holcomb Blvd. Water Treatment Plant
Camp LeJeune, North Carolina
Harry Pepper & Associates, Inc.
Purchase Order No. 642-0011
Contract No. N62470-81-C-1644

"It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut(s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

X Approved for use.

_____ Submitted for Government approval.

_____ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Reese DATE 6-5-85

Bulletin 307

PLEASE ROUTE TO:

- ☐ Plant Superintendent
- ☐ Engineering Dept.
- ☐ Purchasing Dept.
- ☐ Maintenance Dept.

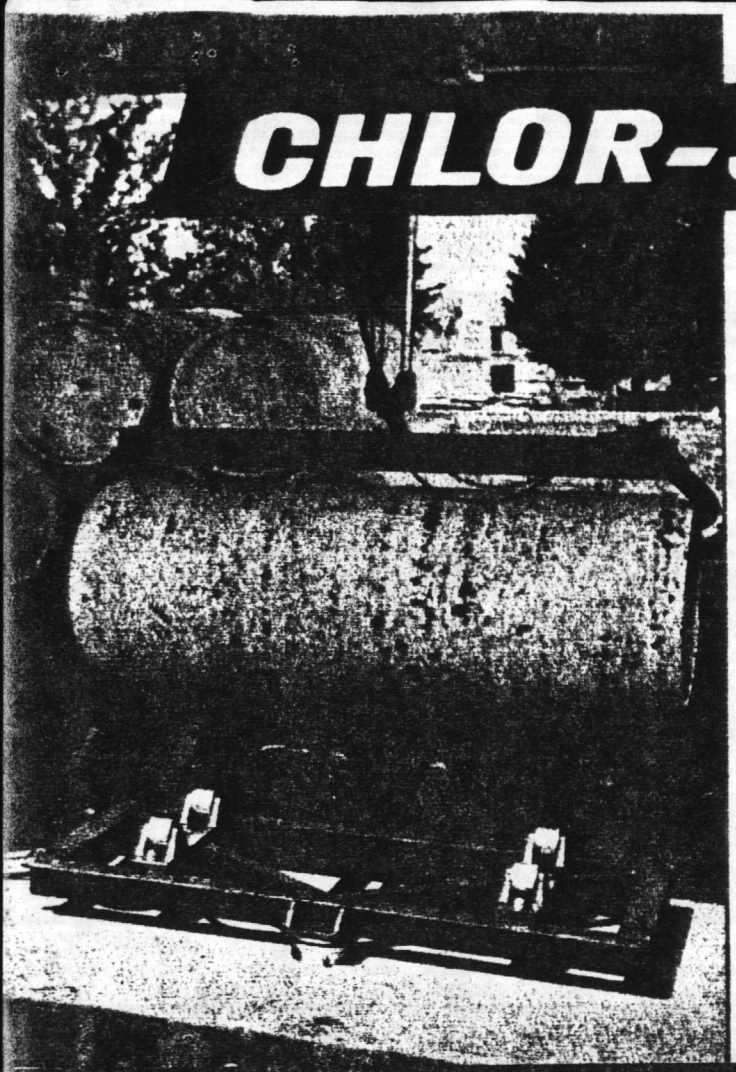
CHLOR-SCALE®

HYDRAULIC-LOAD CELL SCALE

WEIGH TON CHLORINE CYLINDERS WITH EASE

FORCE FLOW

CHLOR-SCALE

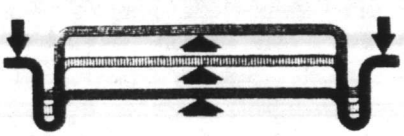


Eliminates Hazards and Errors

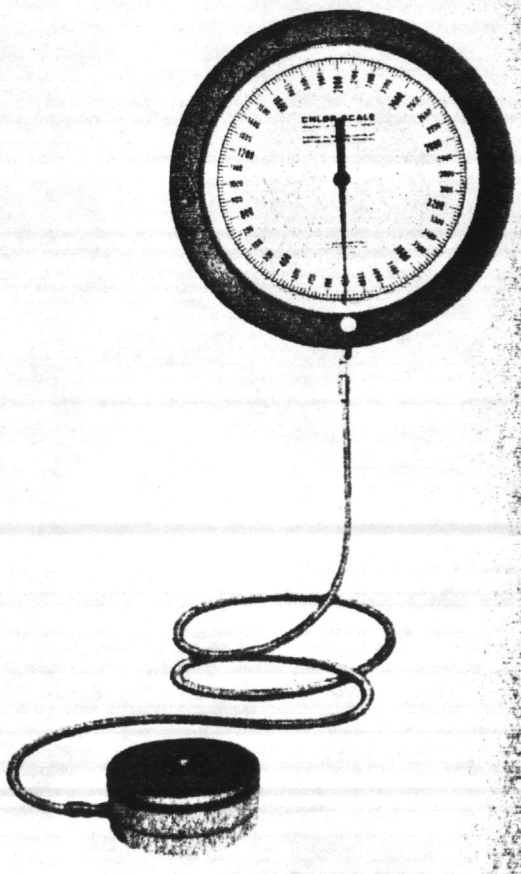
The Force Flow CHLOR-SCALE was developed to fill an increasing need for weighing ton chlorine cylinders in municipal water treatment and sewage treatment plants. The plant operator can tell by glancing at the dial the amount of chlorine left in the cylinder. This allows a more accurate control of the chlorine used. Also, by knowing exactly the amount remaining, the operator may leave the plant and know that it will not run empty during his absence.

The dial can be remotely mounted out of the weather and away from corrosive chlorine fumes. For convenient reading some installations have dials mounted in the operator's control room. Installation is extremely simple, no pit or special installation personnel. Lag bolts secure the scale to the floor. Special heavy duty bushed trunnions allow the operator to easily position the cylinder outlet valve.

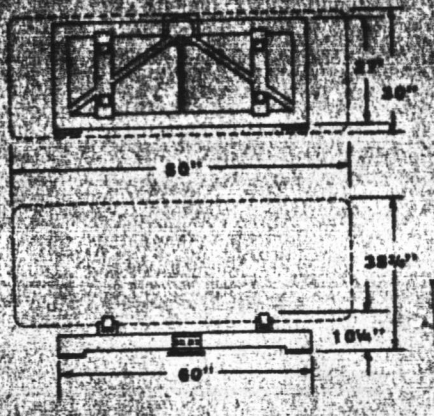
The heart of the scale is the rugged Hydraulic Load Cell System, consisting of a patented diaphragm sensing element filled with hydraulic oil, and a dial readout connected by a flexible hose. A built-in pressure snubber dampens shock loading thereby preventing damage to the dial. The accuracy of the load cell system is better than 1/2 of 1%.



The mobile self aligning diaphragm develops a piston-like stroke which provides temperature stability of the system. It is engineered so that one component cannot rub against another, eliminating friction and wear problems.

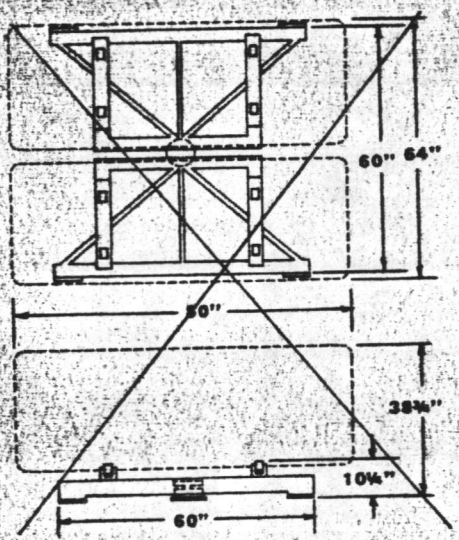


MODELS AND ORDERING INFORMATION



SCALES FOR ONE CYLINDER

MODEL*	DIAL DIAMETER (Inches)	DIAL CAPACITY (lbs)
~~6D40A~~	~~6~~	~~0-4000~~
~~8D40A~~	~~8½~~	~~0-4000~~
12D40A	12	0-4000



SCALES FOR TWO CYLINDERS

MODEL*	DIAL DIAMETER (inches)	DIAL CAPACITY (lbs)
~~6D80~~	~~6~~	~~0-8000~~
~~8D80~~	~~8½~~	~~0-8000~~
~~12D80~~	12	~~0-8000~~

*Standard models are sized to accept standard ton chlorine cylinders; 2,000 lbs. chlorine and aproximately 1,600 lbs. tare. Scales come complete with ~~75~~ ft. of hose. Specify special lengths up to 50 ft., for lengths over 50 ft., or recorders, controllers and alarms, please refer to Factory.

25' Hose

TYPICAL SPECIFICATION FOR CHLORINE SCALE

Chlorine scales shall be of the hydraulic cell type. Scale frame will be epoxy finished and sized to accept (1) or (2) 3,600 pound chlorine cylinders. It shall have required number of heavy duty bushed bearing trunnions installed for each cylinder to allow easy cylinder rotation. Frame shall tilt up for easy cleaning. Scale shall be of such a size that it is within the dimensions of the tank or tanks it supports.

Cell shall be of the temperature stable, rolling diaphragm type. Load plate shall be able to tilt to 4° without affecting accuracy to allow easy installation. Flexible hose shall lead from the cell to allow easy remote installation of the dial and shall be 25 feet in length.

Dial diameter shall be 12" inches and read zero to 4000 pounds with provision for tare adjustment. Dial shall be temperature stable with damper installed to prevent shock damage. Dial accuracy shall be better than ½ of 1%.

Scale shall be Chlor-Scale Model 12D40A as manufactured by Force Flow Equipment - 3467 Golden Gate, Lafayette, California, or equal.

Distributed By

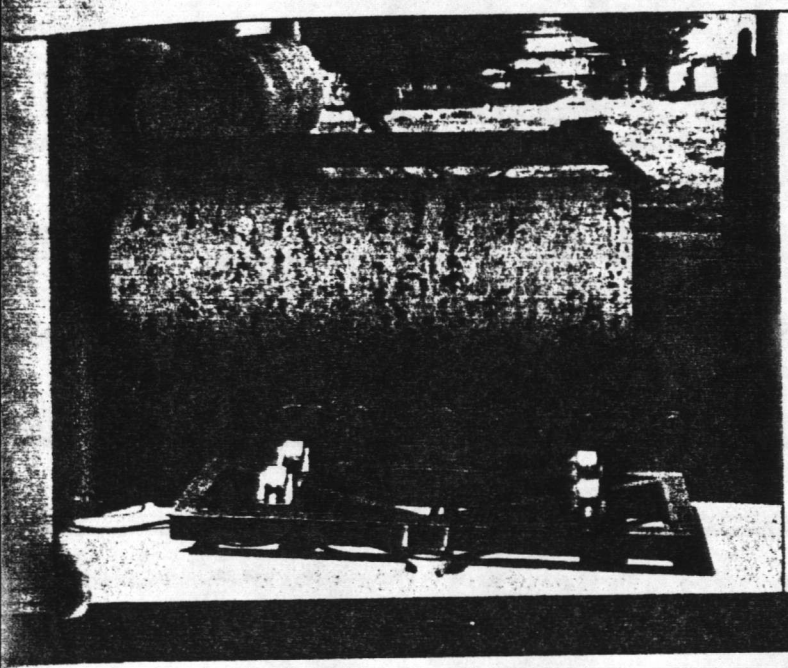
FORCE FLOW EQUIPMENT
3467 GOLDEN GATE, LAFAYETTE, CALIFORNIA 94549
(415) 284-2200

Litho in U.S.A.
473-5

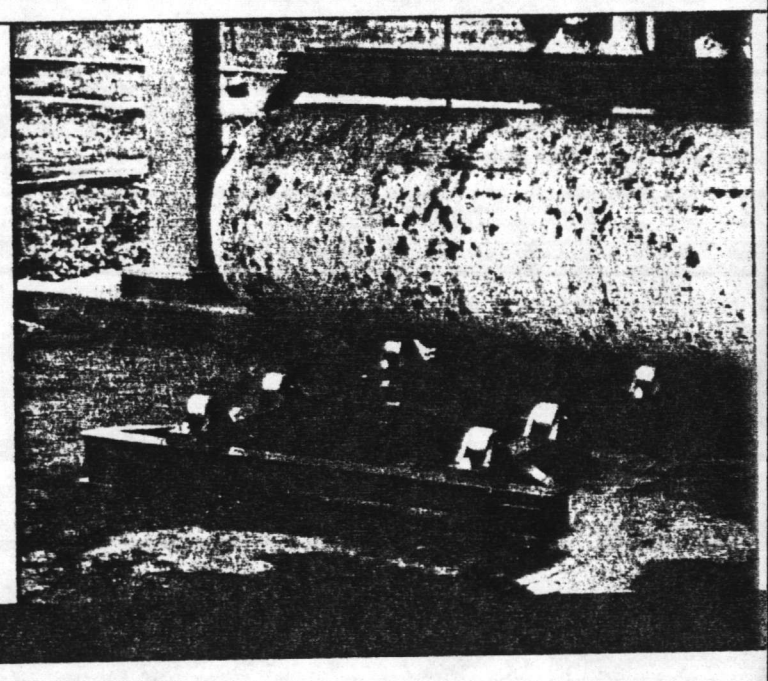
6 STANDARD MODELS AVAILABLE

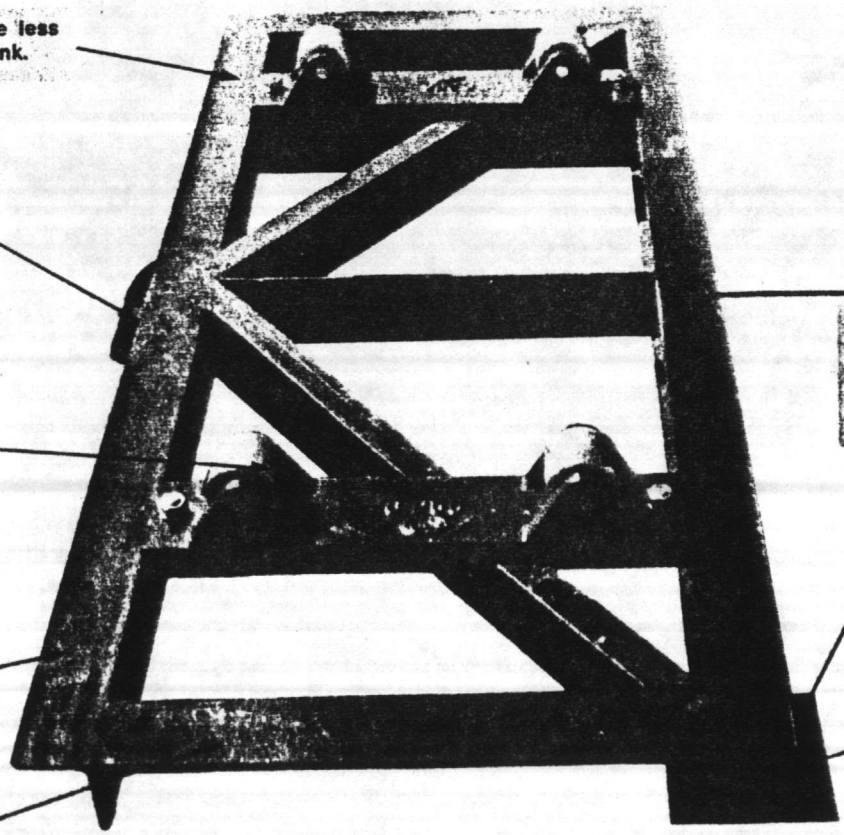
Depending on plant chlorine usage, scales are available to accommodate one or two 2,000 pound cylinders. Dial read-out on multiple tank units shows total weight of all tanks on scale. Each scale size available with 6, 8½, or 12 inch diameter dial.

ONE TANK MODEL



TWO TANK MODEL





Scale sized to take less floor space than tank.

Rugged load cell has few moving parts, no sensitive adjustments, no external power needed.

Heavy duty plated trunnions included on scale.

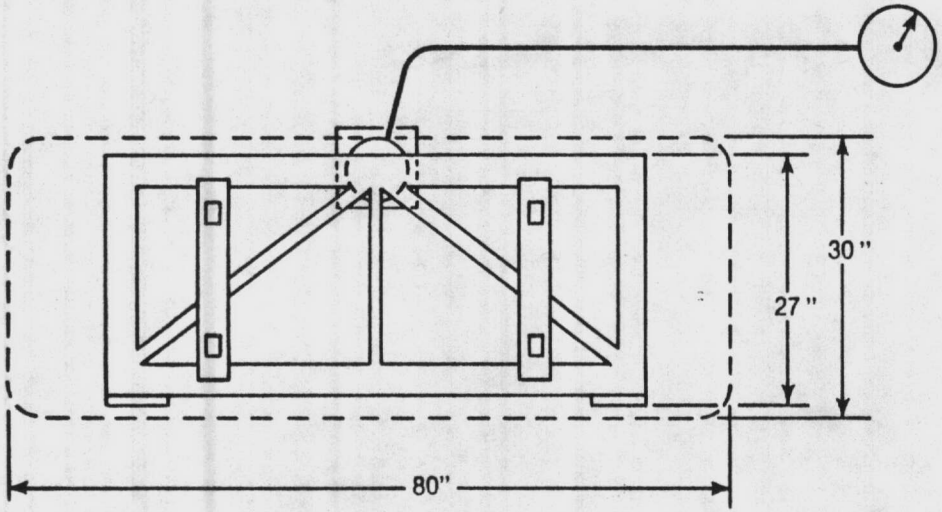
Minimum loss of monorail crane headroom.

Finished with chemical resistant epoxy paint.

Remote installation protects dial from weather and corrosive fumes. Convenient tare adjustment at dial.

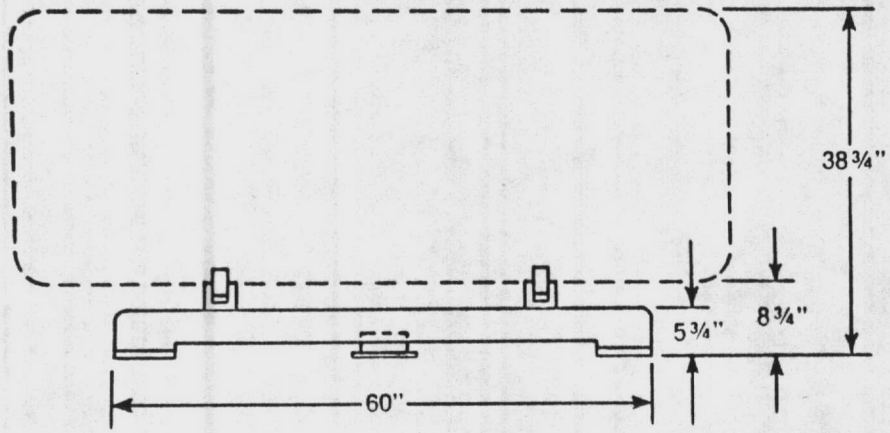
Easily installed with leg bolts. No pit required.

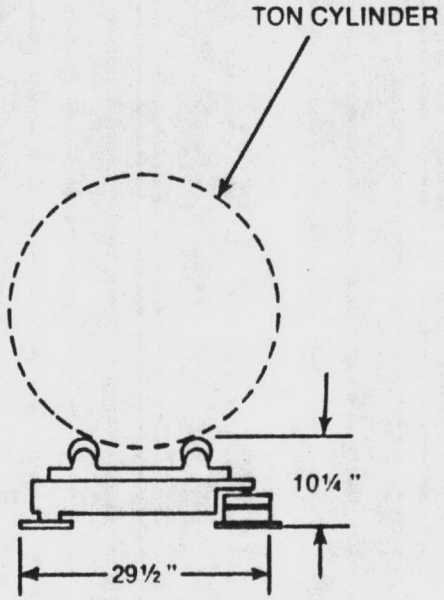
Tilts for easy cleaning or inspection.



12" INCHES, DIAL DIA.

25' FEET OF HOSE





FORCE FLOW EQUIPMENT
3487 GOLDEN GATE, LAFAYETTE, CALIFORNIA 94549

MODELS 6D40A, 8D40A, 12D40A
4000 LB. CHLOR-SCALES

DRAWN BY	N.D.
DATE	9-16-67
REVISED	6-14-74
SCALE	NONE

DRAWING NUMBER
DWG 28517

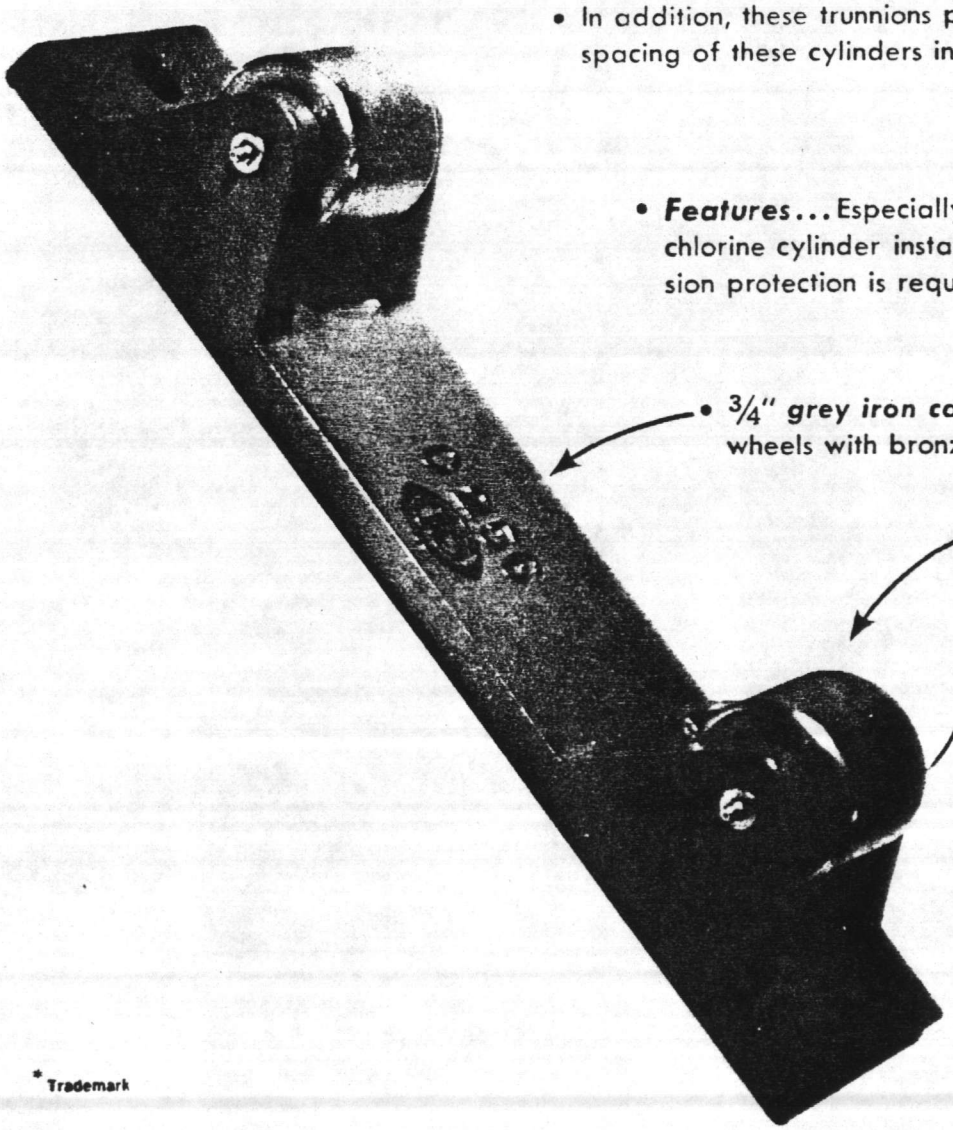
PROVIDE THREE SETS (TOTAL OF SIX)

CHLORINE SPECIALTIES INC

C-256 Chlorine Cylinder Trunnions

Simplify chlorine handling by using chlorine cylinder trunnions. Enables the operator to easily position correctly the outlet valves of chlorine, ammonia and sulpher dioxide cylinders.

- In addition, these trunnions provide support for and establish spacing of these cylinders in the storage room.



- ***Features...*** Especially designed and constructed for chlorine cylinder installations where maximum corrosion protection is required.
- ¾" ***grey iron casting*** ...cadmium plated steel wheels with bronze bushings.
- Hollow slotted steel shaft, cadmium plated with alemite fitting for lubrication.

*Trademark

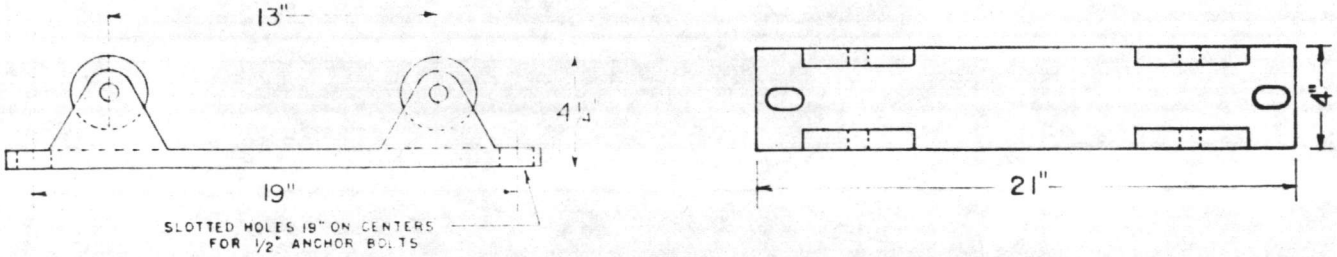
Service... Chlorine Specialties Inc. carries these trunnions in stock.

Specifications... Simply specify TON CYLINDER TRUNNIONS • C-256

CHLORINE SPECIALTIES INC

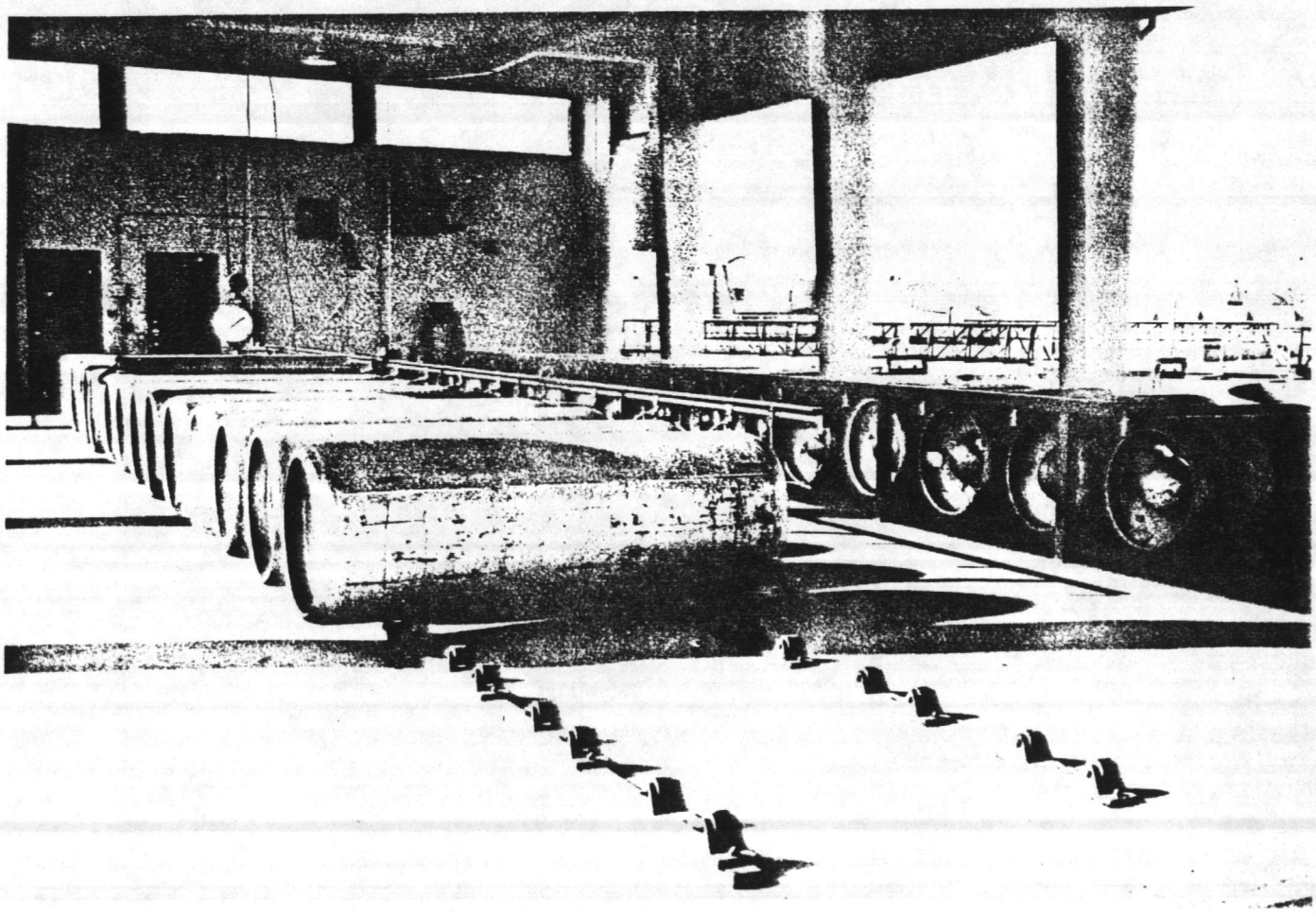
123 HOLLOWAY AVENUE • SAN FRANCISCO, CA. 94112 • (415) 333-4822

Dimensions



TON CYLINDER TRUNNIONS • C-256

Typical Installation



CHLORINE SPECIALTIES INC

123 HOLLOWAY AVENUE • SAN FRANCISCO, CA. 94112 • (415) 333-4822

DORR-OLIVER

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

SPECIFICATIONS

REFERENCE No.	DESCRIPTION	DATE	SUPERSEDES
	PUMPS - ~~#1½~~ #2 & ~~#3~~ ODS DIAPHRAGM	5-12-78	2-15-71
	WITH SPRING ASSIST		

GENERAL DESCRIPTION

The Dorr-Oliver ODS Pump with Spring Assist is an air actuated diaphragm pump. A compression spring mounted on the cover pulls the diaphragm up on the suction stroke, allowing operation on a negative suction lift of up to 10 ft. of water. Compressed air above the diaphragm forces the pumped liquid out on the discharge stroke, balancing the pressure on the diaphragm for up to 80 psi discharge pressure. During the discharge stroke the spring is compressed to provide the upward force to be used on the suction stroke. The positive action of the diaphragm increases the pump's capacity above that of the standard ODS pump. The #2B pump is the same as the #2, except it has a 3" suction valve for increased capacity.

CONSTRUCTION

CASING AND WETTED PARTS 316 SS.

The body, base tee, spacers and check valves are cast iron, either unlined or lined, and are also available in 316 stainless steel. The cover, which is on the air side of the diaphragm, is always cast iron, unlined. The compression spring and operating rod are mounted vertically on the cover, enclosed by a pipe column with end cap. The operating rod is attached to the diaphragm by means of clamp plates. The standard diaphragm is Hypalon/Neoprene, with Neoprene, Nordel and Viton available.

CHECK VALVES

Furnished as Type Q quick-opening ball check with replaceable seat in 2" and 3" sizes only. When Type Q check valves are used on the #1½ pump, 2" valves, base tee and spacers are supplied, together with a 2" x 1½" reducer for the pump body. Type B in-line ball check valves are also available. Standard ball is the heavy ball at 2.3 SG, with a light ball 1.5 SG available. Type Q valves are lined or unlined; Type B are always lined. Type F flap check valves are furnished unlined in cast iron or 316 stainless steel.

TIMER

Standard Timer is the Magnet, which is a solid state electronic timer. Fill and discharge time are adjusted independently by means of 2 separate control knobs. Fill time is adjustable up to 10 seconds, while discharge time is adjustable up to 5 seconds. The enclosure is of Nema 4 rating.

SPECIAL OPTIONAL TIMERS ARE TABULATED ON PAGE 215.

AIR HEADER

Consists of a 3-way solenoid air valve with internal pilot and indicating light, air regulator, pressure-vacuum gage, air strainer and exhaust air muffler, also pipe and fittings as required to make a complete assembly.

ENGINEERING DATA

PUMP SIZE NUMBER	~~1½~~	2	~~2B~~	~~3~~	~~4~~
Max. Capacity (Nominal) GPM	15	35	~~42~~	120	150
Suction Valve Size	~~1½~~	2	3	~~3~~	~~4~~
Discharge Valve Size	~~1½~~	2	2	~~3~~	~~4~~
Displacement per Stroke (nominal), Gal.	~~.4~~	1.1	~~1.1~~	~~3.8~~	~~3.8~~
Max. Cycles per min. (No. of strokes)	~~38~~	32	~~38~~	~~32~~	~~40~~
Max. Suction Lift, Ft. Water	10				
Max. Operating Air Pressure, PSI	100				
Air Header & 3-way Air Valve Size, In.	3/8		3/4		

NOTE: For additional data and information refer to reference drawings, lithos, bulletins, etc..... listed in the Sales Tool Index Book.

Acid Transfer Pump Submittal
Dorr-Oliver, Inc.
Holcomb Blvd. WTP
Camp LeJeune Water Treatment Plant
Harry Pepper & Associates, Inc.
Purchase Order No. 642-0011
Contract No. N62470-81-C-1644
Page 11336-8 thru 11336-10, paragraph b.

Item #2

STANDARD SPECIFICATION SHEET

ODS PUMPS

ORDER NO.	ITEM	QUANTITY
HARRY PEPPER	01	001

SERIAL NUMBER(S)

PRODUCT CODE: 2091 1

SPECIFICATION CODE: 012 (CODE A) Q20 (CODE B) 10 (CODE C)

SEE TABLES BELOW

CUSTOMER (USER)	
HOLCOMB BLVD WTP	
SHIPPING DATE	TO ASSEMBLY DATE

MATERIAL

	NOMINAL SIZE	STANDARD	WITH SPRING ASSIST	WITH CYLINDER ASSIST
~~0 CAST IRON~~	~~½~~	00	10	
9 316 STN. ST.	2	~~01~~	11	
	~~2½~~	02	12	
~~A LINED~~	~~3~~	03	15	13
	4	04	16	14

CODE A - BASIC PUMP

0 LINING	1 DIAPHRAGM	2 TYPE
0 OMIT	1 STD. HYPALON	0 WITHOUT DIAPHRAGM STOP
1 HYPALON	2	1 WITH DIAPHRAGM STOP
2	3 NORDEL	2 WITH SPRING ASSIST
3 NORDEL	4 VITON A	3 WITH CYLINDER ASSIST WITHOUT HINGE
		4 WITH CYLINDER ASSIST WITH HINGE

CODE B - CHECK VALVE ASSEMBLY *

P TYPE	2 MATERIAL/LINING CHECK VALVE	0 BALLS		
		HEAVY STANDARD	LIGHT OPTIONAL	MATERIAL
0 OMIT	0 OMIT	0 OMIT	0	
B IN LINE BALL CHECK	1 CAST IRON	1	A	HYPALON
F FLAP CHECK	2 316 STN. ST.	2	B	
Q QUICK OPENING	3 HYPALON	3	C	NORDEL
	4	X FOR FLAP CHECK VALVE ONLY		
	5 NORDEL			

CODE C - AIR HEADER ASSEMBLY

1 SOLENOID VALVE			8 TIMER SELECTION
SIZE	NEMA 4	EXPLOSION PROOF	
OMIT	0	0	0 OMIT STANDARD 1 REGENT SOLID STATE NEMA 4 ENCL. (FILL 10S. DISCH. 3S)
~~⅜ STANDARD FOR 1½-2" PUMPS~~	1	A	STANDARD - ALTERNATIVES A REGENT SOLID STATE NEMA 4 ENCL. (FILL 5M. DISCH. 2S)
¾ STANDARD FOR 2B, 3" AND 4" PUMPS OPTIONAL FOR 2" PUMPS	2	B	2 ELECTRO-MECH (TIME-O-MATIC) NEMA 4 ENCLOSURE. 4 PACER SOLID STATE (UCEC) NEMA 1 ENCL. 5 PACER SOLID STATE (A.B.C.) NEMA 4 ENCL.
~~1¼" OPTIONAL FOR 3" AND 4" PUMPS~~	3	C	X SPECIAL (ROUTE TO ENGINEERING)
~~COMPLETE AIR 1" HEADER FOR CYLINDER ASSIST~~	4		USE OMIT FOR TIMER SELECTION WHEN SELECTING A CYLINDER ASSIST PUMP.

NOTE *

SIZE 2B PUMP HAS 2" DISCHARGE AND 3" SUCTION CHECK VALVES

B IN-LINE BALL CHECK VALVES HAVE CAST IRON BODY WITH HYPALON OR NORDEL LININGS ONLY. FOR UNLINED PUMPS IN-LINE CHECK VALVE FURNISHED WITH HYPALON LINING

F FLAP CHECK VALVES ARE CAST IRON OR STAINLESS STEEL UNLINED ONLY

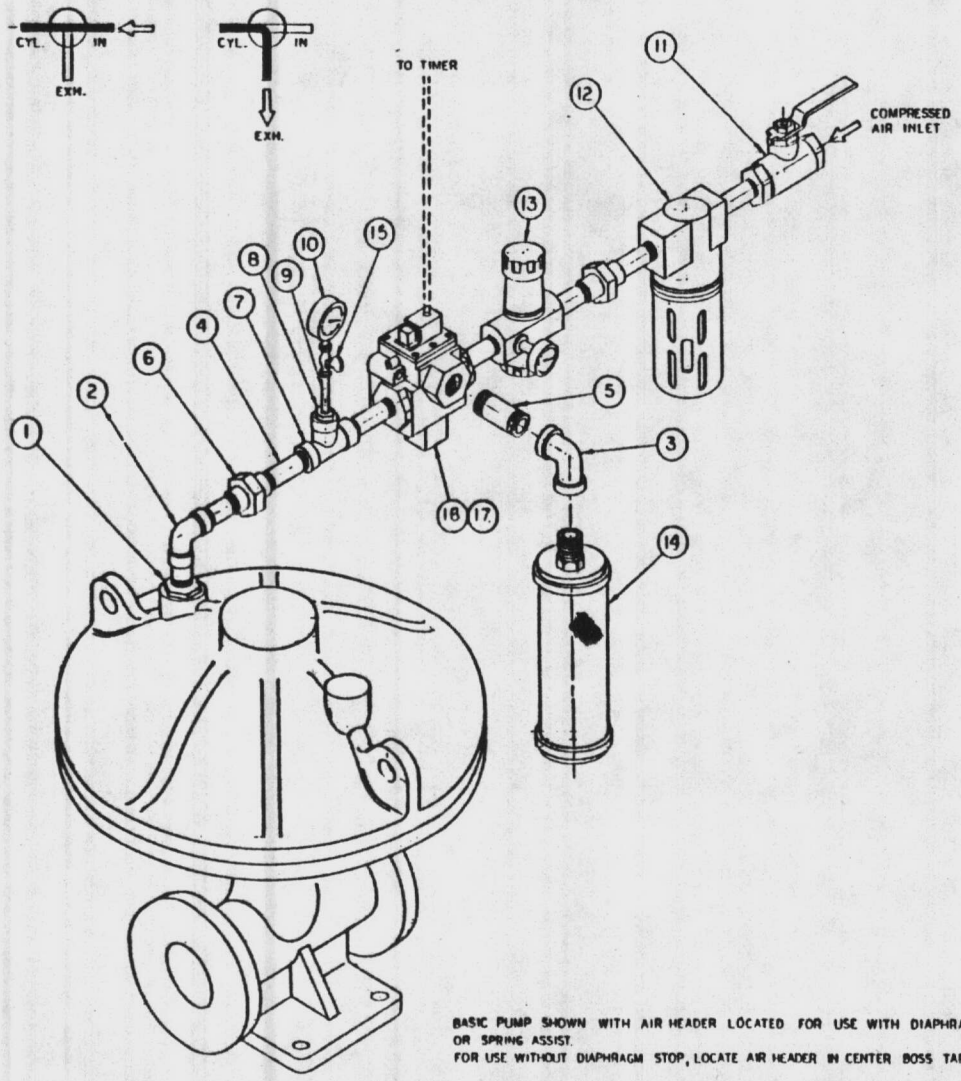
Q QUICK OPENING BALL CHECK VALVES AVAILABLE LINED OR UNLINED

SEE REVERSE SIDE FOR ADDITIONS/ALTERNATIVES AND REMARKS

F104

SOLENOID VALVE

ENERGIZED DE ENERGIZED



ITEM NO	QTY	3/8" AIR HEADER LESS SOL. VALVE ITEMS 1-15 P/N 20063-98A	PART NO	3/4" AIR HEADER LESS SOL. VALVE ITEMS 1-15 P/N 20063-97A	PART NO	1/4" AIR HEADER LESS SOL. VALVE ITEMS 1-15 P/N 20063-96A	PART NO
1	1	3/4 x 3/8 REDUCING BUSHING	2521-018	1/2 x 3/4 REDUCING BUSHING	2523-024	1/2 x 1/4 HEXAGON HEAD REDUCING BUSHING	2523-004
2	1	3/8 x 90° ELBOW	2526-044	3/4 x 90° ELBOW	2526-048	1 1/4 x 90° ELBOW	2526-046
3	1	1/2 x 3/8 x 90° REDUCING ELBOW	2526-112	1 x 3/4 x 90° REDUCING ELBOW	2526-410	1 1/2 x 1 1/4 x 90° REDUCING ELBOW	2526-414
4	6	3/8 x 3" LG. NIPPLE	2541-072	3/4 x 3" LG. NIPPLE	2541-100	1/4 x 3" LG. NIPPLE	2541-090
5	1	1/2 x 3" LG. NIPPLE	2541-226	1 x 3" LG. NIPPLE	2541-112	1 1/2 x 3" LG. NIPPLE	2541-196
6	2	3/8" GROUND JOINT UNION	2524-020	3/4" GROUND JOINT UNION	2524-008	1/4" GROUND JOINT UNION	2524-010
7	1	3/8" STRAIGHT TEE	2530-004	3/4" STRAIGHT TEE	2530-008	1 1/4" STRAIGHT TEE	2530-012
8	1	3/8 x 1/4 HEXAGON HEAD REDUC. BUSHING	2523-062	3/4 x 1/4 HEXAGON HEAD REDUC. BUSHING	2523-016	1/4 x 1/4 HEXAGON HEAD REDUCING BUSHING	2523-044
9	1	1/4 x 1 1/2 LG. NIPPLE	2541-082	1/4 x 1 1/2 LG. NIPPLE	2541-082	1/4 x 1 1/2 LG. NIPPLE	2541-092
10	1	0-100 PSI PRESSURE GAUGE/COCK	X23-1025	0-100 PSI PRESSURE GAUGE/COCK	X23-1025	0-100 PSI PRESSURE GAUGE/COCK	X23-1025
11	1	3/8" BALL VALVE	2420-122	3/4" BALL VALVE	2420-124	1 1/4" BALL VALVE	2420-126
12	1	3/8" AIR FILTER	2471-062	3/4" AIR FILTER	2471-060	1 1/4" AIR FILTER	2471-058
13	1	3/8" AIR REGULATOR	2440-042	3/4" AIR REGULATOR	2440-040	1 1/4" AIR REGULATOR	2440-038
14	1	3/8" AIR MUFFLER	DMS684-01	3/4" AIR MUFFLER	DMS685-01	1 1/4" AIR MUFFLER	DMS2750
15	1	1/4" FEMALE COCK BRZ.	2421-018	1/4" FEMALE COCK BRZ.	2421-018	1/4" FEMALE COCK BRZ.	2421-018
16	1	3/8" SOLENOID VALVE	2444-052	3/4" SOLENOID VALVE	2444-052	1/4" SOLENOID VALVE	2444-052
17	1	3" EXPLOSION PROOF SOLENOID VALVE	X95-1048	3" EXPLOSION PROOF SOLENOID VALVE	X95-1048	1/4 EXPLOSION PROOF SOLENOID VALVE	2444-029

1- THE 3/8" AIR HEADER IS STANDARD WITH NOS. 1/2 PUMPS (20 SCFM MAX.)

2- THE 3/4" AIR HEADER IS STANDARD WITH NOS. 2" AND 28 PUMPS (65 SCFM MAX.)

3- ~~THE 1" AIR HEADER IS STANDARD WITH NOS. 3" AND 4" PUMPS (250 SCFM MAX.)~~

4- ALL PIPING COMPONENTS ARE OF MALLEABLE IRON CLASS 150 BLACK FINISH

THIS DRAWING SUPERSEDES DRAWING NOS. 01C1669 AND 01C1670

BASIC PUMP SHOWN WITH AIR HEADER LOCATED FOR USE WITH DIAPHRAGM STOP OR SPRING ASSIST.
FOR USE WITHOUT DIAPHRAGM STOP, LOCATE AIR HEADER IN CENTER BOSS TAPPED HOLE.

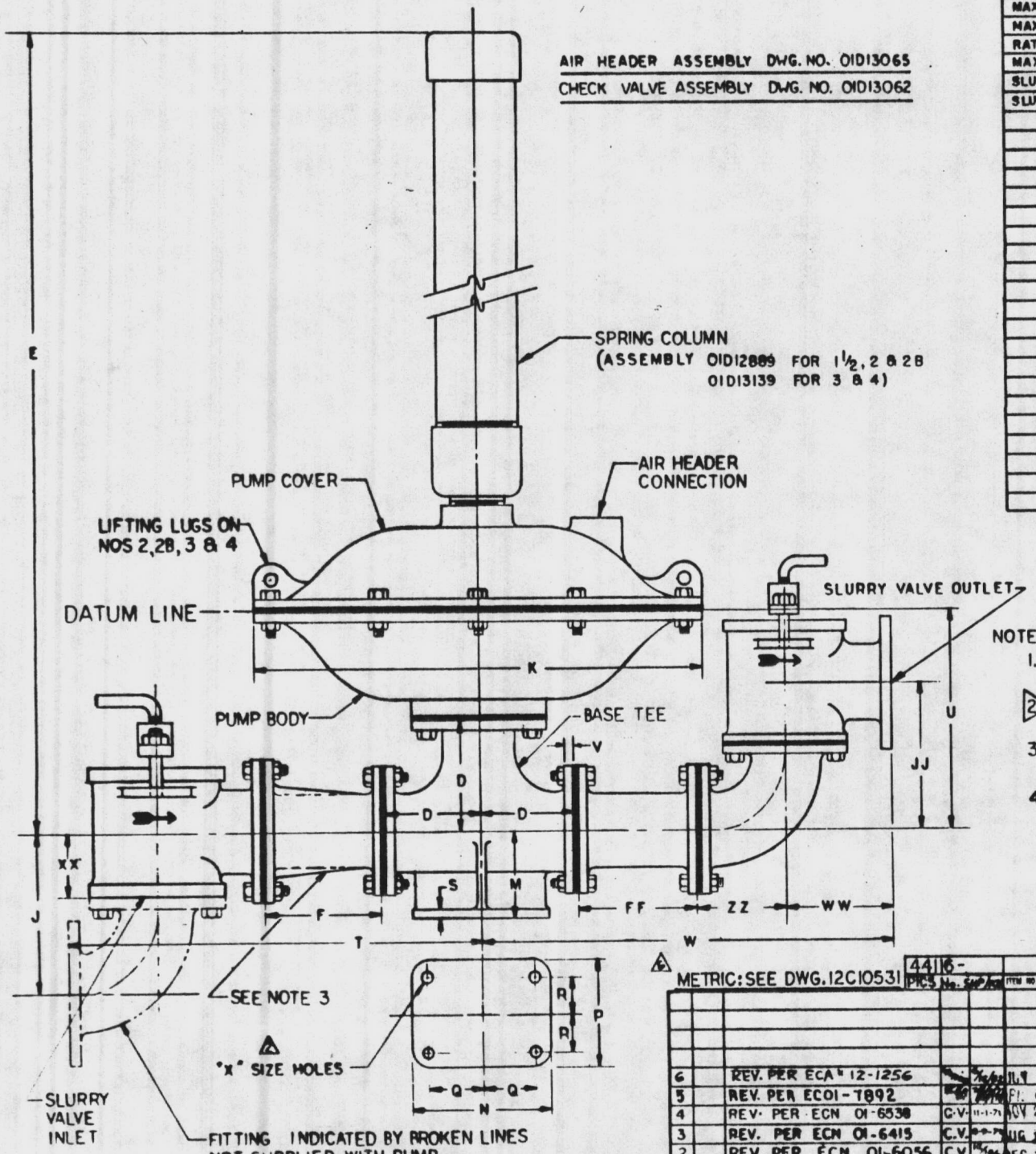
REDRAWN 3-15-84

		ECA 12-15					

DORR-OLIVER INC.

AIR HEADER ARRGT FOR GRAVITY FILL AND SPRING ASSIST ODS PUMP

01D13065



PUMP SIZE	NO. 1½	NO. 2			
MAX. CAPACITY PER STROKE	0.4	1.1	1.1	3.8	3.8
MAX. STROKES PER MINUTE	38	32	38	32	40
RATED G.P.M. MAX.	15	35	42	120	152
MAX. SUCTION LIFT IN FEET	10	10	10	8	8
SLURRY VALVE - INLET	AVAILABLE ONLY AS SPECIAL NO. 1½ PUMP WITH 2" VALVE. SEE DWG. 01C12187	2	3	3	4
SLURRY VALVE - OUTLET		2	2	3	4
D		4 11/16	4 11/16	5 11/16	6 11/16
E (APPROX.)		59	59	70	70
F		3 1/4	3 1/8	7 1/2	6"
FF		3 1/4	3 1/4	7 1/2	6"
J		7 3/8	8 1/8	8 1/8	10 1/8
JJ		7 3/8	7 3/8	8 1/8	10 1/8
K		16 1/2	16 1/2	24 1/2	24 1/2
M		4 1/8	4 1/8	4 1/8	5 1/2
N		6 1/2	6 1/2	8	8
P		4 1/2	4 1/2	6	10
Q		2 3/8	2 3/8	3 1/8	5
R		1 1/2	1 1/2	2 1/8	4
S		5/8	5/8	3/4	7/8
T (MIN.)		16 7/8	19 7/8	23 7/8	23 3/4
U		9 1/4	9 1/4	12	12 3/8
V		7/8	7/8	1	
W (MIN.)		16 7/8	16 7/8	23 7/8	23 3/4
X		3/4	3/4	3/4	7/8
WW		4 1/2	—	5 1/2	6 1/2
XX		2 3/4	—	3 1/4	3 5/8
ZZ		4 5/8	—	5 5/8	6 5/8

NOTES:

1. ALL FLANGED CONNECTIONS ARE AMERICAN STANDARD 125 LBS. HOLES STRADDLE CENTER LINES.
2. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
3. 2x3 REDUCER SUPPLIED BY DORR OLIVER ON 2B PUMP ONLY. SPACER SUPPLIED WITH OTHER PUMPS.
4. RATED CAPACITIES ARE FIGURED AT 10 P.S.I. DISCHARGE HEAD AT DATUM LINE WHEN HANDLING WATER, AT SUCTION LIFT SHOWN IN TABLE.

△2 METRIC: SEE DWG. 12C10531

REV.	DESCRIPTION	BY	DATE
6	REV. PER ECA # 12-1256		
5	REV. PER ECO1-7892		
4	REV. PER ECN 01-6538	C.V.	11-1-71
3	REV. PER ECN 01-6415	C.V.	
2	REV. PER ECN 01-6056	C.V.	
1	REVISED DATA ECN 01-5783	RAS	6-2-70

4416-

UNLESS OTHERWISE SPECIFIED

DORR-OLIVER

4-2-70 E.R.S.

NOS 1½, 2, 2B, 3 & 4 O.D.S. PUMP
SPRING ASSIST
TYPE "Q" BALL CHECK VALVE
OUTLINES & DIMENSIONS

01-5687

01C12118

G10

PUMP SIZE	PART NO, KIT ASSY	DIMENSIONS A	B	C	D	E	REMARKS
1"	12C10553-01	6¼	5½	2"	⅞	2¼	
2 (2B	12C10552-01	8⅜	7¼	2½	1"	3¼	
3 & 4"	12C10551-01	10⅜	9½	3	1¼	5½	

A. COMPONENTS INCLUDED IN THE STROKE INDICATOR KIT

A SENSOR TRANSPARENT TUBE SCREWED TO THE SPRING COLUMN TUBE CAP AND A STROKE INDICATOR ROD.

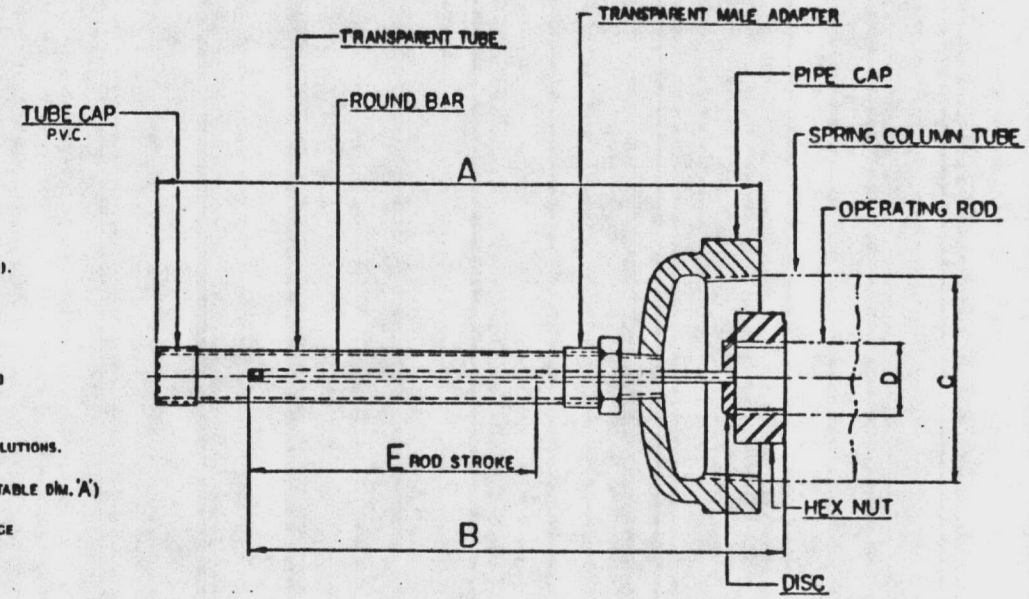
3 & 4, PART NUMBER 12C10551-01

2 & 2B PART NUMBER 12C10552-01

1) PART NUMBER 12C10553-01

B. INSTALLATION INSTRUCTIONS

1. REMOVE THE SPRING COLUMN TUBE CAP AND DISCARD.
2. REMOVE THE SPRING COLUMN TUBE. THIS MAY NOT BE NECESSARY DEPENDING ON THE TYPE OF TOOLS AVAILABLE TO GET ACCESS TO THE STROKE INDICATOR NUT.
3. VERIFY THAT ALL EXPOSED PARTS ARE IN GOOD WORKING ORDER.
4. ADD GREASE TO THE SPRING AS REQUIRED (SEE YOUR INSTRUCTION MANUAL UNDER LUBRICATION).
5. INSTALL THE STROKE INDICATOR ON TOP OF THE OPERATING ROD, FASTEN UNTIL YOU ARE REASONABLY SURE THAT THE HEX. NUT HAS BOTTOMED OUT ON THE OPERATING ROD.
6. REPLACE THE SPRING COLUMN TUBE AND SCREW INTO THE ADAPTER, HAND TIGHTEN PLUS TWO (2) REVOLUTIONS, OR SAME AS YOU HAD BEFORE.
7. INSTALL THE NEW CAP WITH ITS TRANSPARENT INDICATOR TUBE, HAND TIGHTEN PLUS TWO (2) REVOLUTIONS.
8. TURN PUMP ON AND CHECK THAT YOUR PUMP STROKES THE FULL REQUIRED STROKE (SEE ABOVE TABLE DIM. 'A')
9. IF PUMP DOESN'T OPERATE CORRECTLY, CHECK: AIR PRESSURE SETTING, SUCTION AND DISCHARGE TIMER SETTING, SPRING PRELOAD SETTING, PROCESS FLOW CONDITIONS, EXHAUST MUFFLER CONDITIONS, ETC...(CONSULT YOUR INSTALLATION, OPERATION AND MAINTENANCE MANUAL FOR ALL THESE ADJUSTMENTS)



PROVIDED ON EACH PUMP

SPRING ASSIST O.D.S. PUMP STROKE INDICATOR KIT CUSTOMER INSTRUCTION

12D10560

G102.4

12D10541

INSTALLATION INSTRUCTIONS

1. WHEN DISASSEMBLING PUMPS, THE FOLLOWING PRECAUTIONS MUST BE OBSERVED TO PREVENT INJURY:

   AIR PRESSURE MUST BE VENTED COMPLETELY FROM THE COVER BEFORE REMOVING.

   DISCONNECT THE ELECTRICAL SUPPLY WHICH WILL DE-ENERGIZE THE 3-WAY SOLENOID. THIS WILL SHUT OFF THE AIR SUPPLY AND ALLOW TRAPPED AIR IN THE COVER TO ESCAPE.

   PUMPS AND CHECK VALVES MUST BE ISOLATED FROM THE REST OF THE SYSTEM AND BE EMPTIED.

2. REMOVE OLD PUMP COVER AND DIAPHRAGM. TRANSFER NAMEPLATE FROM OLD COVER TO NEW COVER.
   DISCARD OLD COVER AND DIAPHRAGM.

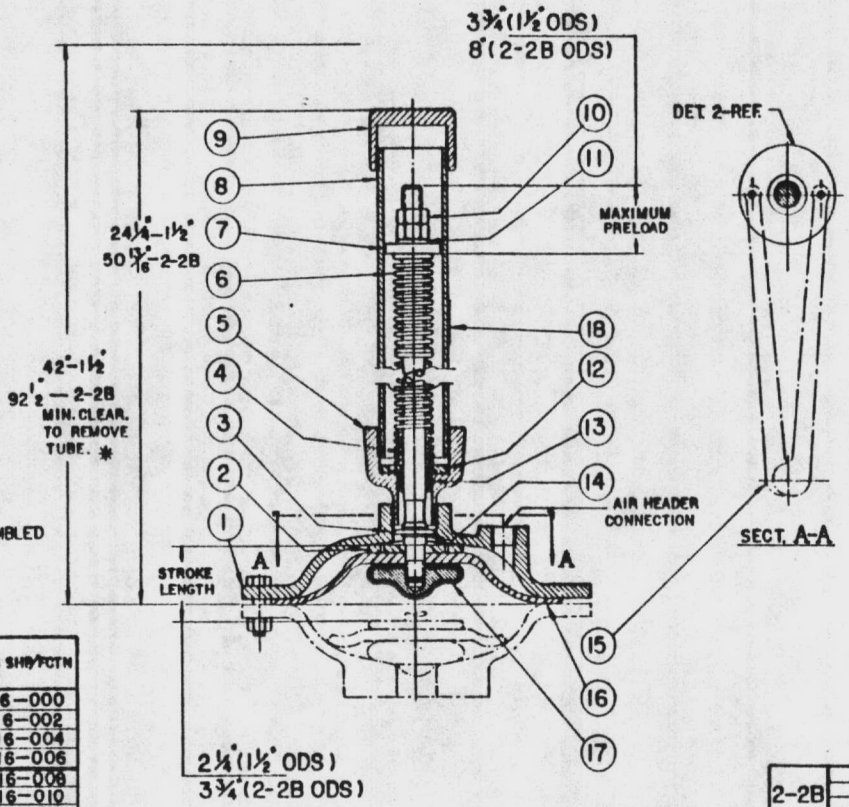
3. CLEAN AND INSPECT INTERIOR OF PUMP BODY.

4. ASSEMBLE SPRING ASSIST KIT (AS RECEIVED) TO PUMP BODY. TIGHTEN FLANGE BOLTS IN AN ALTERNATE SEQUENCE TO EVENLY CLAMP THE PERIPHERY OF THE DIAPHRAGM. REFER TO INSTRUCTION MANUAL PM-002 FOR SPRING ADJUSTMENT PROCEDURE.

5. USE PROPER START-UP PROCEDURE PER INSTRUCTION MANUAL PM-002.

6. FOR ALL FUTURE USE, REFER TO INSTRUCTION MANUAL PM-002 AND DISCARD THE OLD MANUAL.

* 92½" AND 42" ARE REQUIRED WHEN PUMP IS FULLY ASSEMBLED TO REMOVE THE SPRING COLUMN TO ITEM 8
52" AND 26" ARE REQUIRED TO REMOVE SPRING ASSEMBLY AND COVER PUMP ℄



ITEM	QUANTITY	PARTS LIST PART/PIC NO. 1½"	PART/PIC NO. 2 AND 2B	DESCRIPTION
1	1	01D13349-01	01D13390-01	COVER
2	1	01B12039-01	01B12017-01	UPPER CLAMP
3	1	01A15322-01	01A15323-01	STOP COLLAR
4	1	01B12192-01	01B12193-01	OPERATING ROD
5	1	01B12051-01	01B12056-01	SPRING COLUMN ADAPTER
6	2	01A15060-01		SPRING
	4		01A15060-02	
7	1	01B12044-01	01B12044-02	ROD GUIDE
8	1	01A15049-01	01A15049-02	SPRING COLUMN TUBE
9		2672-012	2672-018	PIPE CAP
10	2	2163-056	2163-068	JAM NUT
11	1	2001-166	2001-169	WASHER-STD-ROD GUIDE
12	1	NOT REQ'D.	01A15050-01	SPRING SEAT
13	1	01A15045-01	01A15041-01	ROD GUIDE BUSHING
14	2	01A15324-01	2041-050	RETAINING RING
15	1	01A15450-01	01A15450-01	SPANNER WRENCH
16		01B12188-[ ] HYP NEO-02 NEOPRENE-03	01B12189-[ ] NORDEL-04 VITON-05	-DIAPHRAGM- MAT'L-AS SPECIFIED
17		01B12052-[ ] HYPALON-02 NEOPRENE-03	01B12053-[ ] NORDEL-04 VITON-05	-LOWER CLAMP- MAT'L-CAST IRON AND AS SPECIFIED
18	1	B-609-1	B-609-1	LABEL-WARNING

⚠ USE ONLY WHEN CONVERTING FROM OTHER ODS TYPES TO SPRING ASSIST.

NOTE:
1-SPRINGS MUST BE THOROUGHLY COATED WITH GREASE. GREASE RECOMMENDED IS DORR-OLIVER PICS NO. 1080-002 OR 1080-202. (MOBILPLEX 47 OR EQUIVILANT)

TABLE I

NOMINAL PUMP SIZE	PRODUCT CODE	SPEC. CODE SPRING ASSIST KIT	DIAPHRAGM AND LOWER CLAMP		PICS SHP/PCTN
1½"	20D10	P20138—	01A	HYPALON	44116—000
			02A	NEOPRENE	44116—002
			03A	NORDEL	44116—004
			04A	VITON	44116—006
2"	20D11	P20138—	05A	HYPALON	44116—008
			06A	NEOPRENE	44116—010
2B	20D12		07A	NORDEL	44116—012
			08A	VITON	44116—014

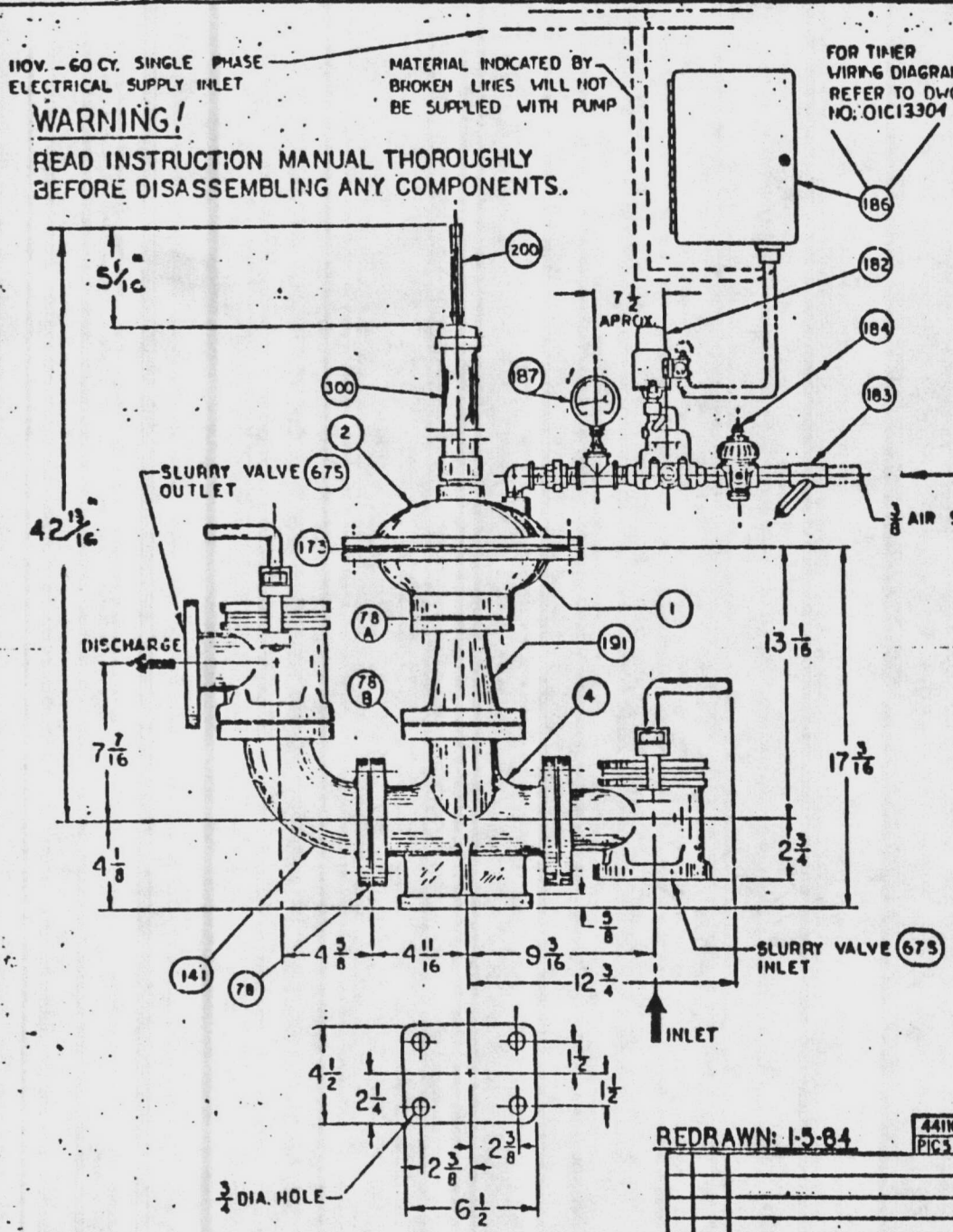
EXAMPLE:
2" VITON KIT WOULD BE SPECIFIED THUS;

20D11 P20138—08A
PRODUCT CODE — SPEC. CODE — DIAPHRAGM LWR. CLAMP

2-2B				
			VITON	P20138—08A
			NORDEL	P20138—07A
			NEOPRENE	P20138—06A
			HYPALON	P20138—05A
1½"			VITON	P20138—04A
			NORDEL	P20138—03A
			NEOPRENE	P20138—02A
			HYPALON	P20138—01A

SPRING ASSIST KIT
1½, 2 AND 2B ODS PUMP
DORR-OLIVER
4-27-81
12D10541
ECA 12-1301
ECA 12-1181
ECA 12-1187

G102.2



ITEM NO.	DESCRIPTION
1	CASING (BODY)
2	COVER
4	BASE TEE
675	QUICK OPENING BALL CHECK VALVE
78A 78B	GASKET (WITH UNLINED SYSTEM ONLY)
141	ELBOW
173	DIAPHRAGM
182	SOLENOID VALVE
183	AIR STRAINER
184	REDUCING VALVE
186	ELECTRIC TIMER
187	PRESSURE VACUUM GAGE
191	REDUCER
300	SPRING ASSIST ASSY. (01D12889)
200	STROKE INDICATOR (12D10580)

NOTES:

1-ALL FLANGED CONNECTIONS ARE AMERICAN STD. 125 LBS. HOLES STRADLE ℄.

2-RATED CAPACITIES OF PUMPS ARE FIGURED AT 10FT. SUCTION LIFT AND 10 FT.. DISCHARGE HEAD AT DATUM LINE WHEN HANDLING WATER.

3 ALL DIM. ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

CAPACITY PER STROKE ____ .4 GAL.
MAX. STROKES PER MIN. ____ 38
RATED G.P.M. _____ MAX. 15

NOTE: WHEN ORDERING PARTS SPECIFY "LINED" OR "UNLINED" PUMP

AIR HEADER ASSEMBLY DWG. NO. 01D13065
CHECK VALVE ASSEMBLY . DWG. NO. 01D13062

REDRAWN: 1-5-84

44116 PICS SHP/ECTN	ITEM NO	MATERIAL	SPECIFICATION	PART NUMBER

UNLESS OTHERWISE SPECIFIED

DORR-OLIVER

DRAWN	1-5-84	KESSLER
CHECKED	1-9-84	

OUTLINE & PARTS LIST FOR LINED & UNLINED NO 1½ ODS PUMP WITH 2" QUICK-OPENING CHECK VALVES

01C12127

DRAWING NO. 01C12127

G1060

NOTES:

AIR HEADER ASSEMBLY DWG. NO. 01D13065

CHECK VALVE ASSEMBLY DWG. NO. 01D13062

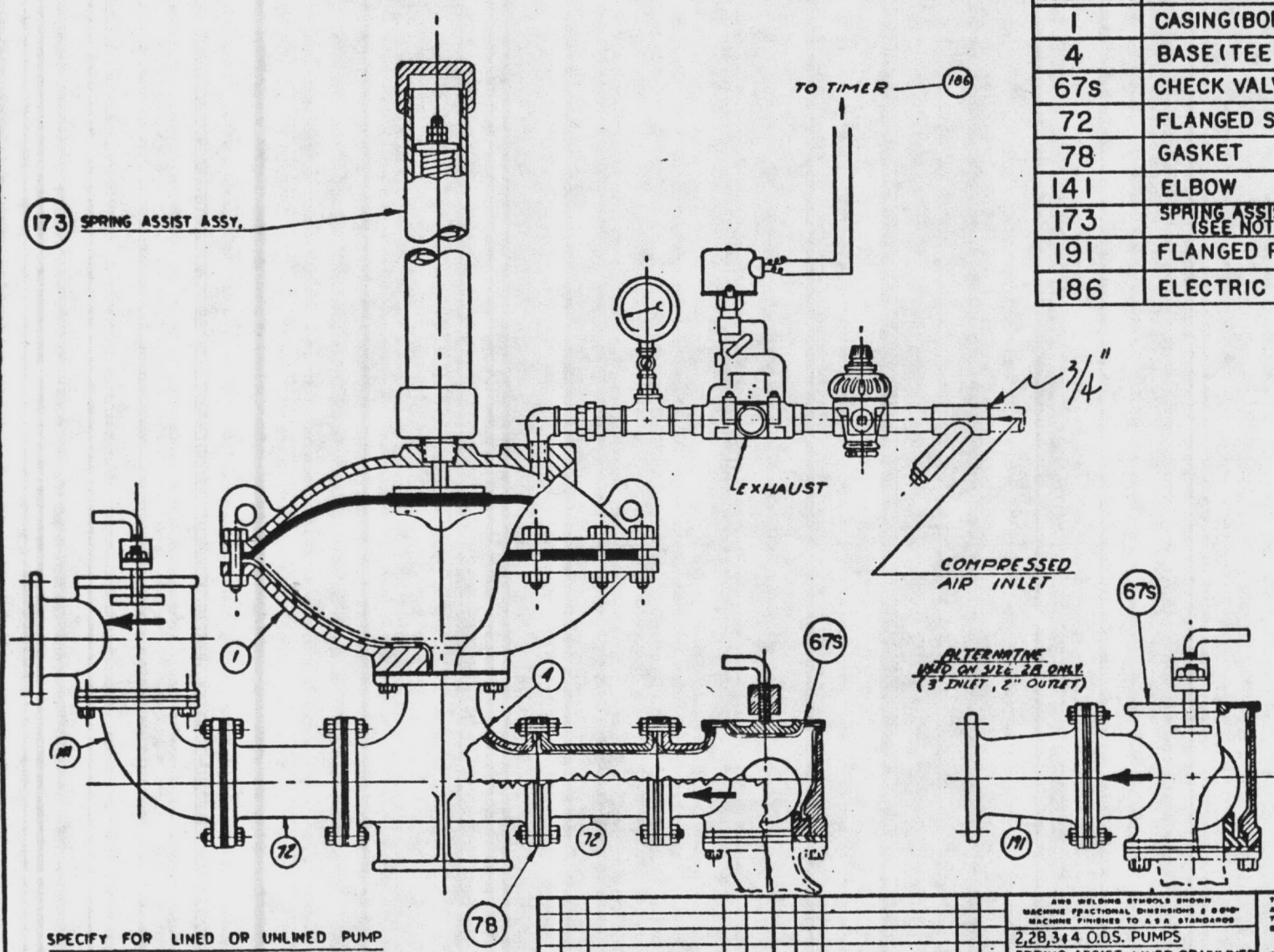
2 & 2B SPRING ASSIST ASSEMBLY DWG. NO. 01D12889

3 & 4 SPRING ASSIST ASSEMBLY DWG. NO. 01D13139

DRAWING NO. 01C12183

PARTS LIST

ITEM NO.	DESCRIPTION
1	CASING (BODY)
4	BASE (TEE)
67S	CHECK VALVE ASSEMBLY
72	FLANGED SPACER
78	GASKET
141	ELBOW
173	SPRING ASSIST ASSEMBLY (SEE NOTES)
191	FLANGED REDUCER
186	ELECTRIC TIMER



SPECIFY FOR LINED OR UNLINED PUMP

REVISIONS	BY	DATE
4 ECA 12-1217	JD	
3 ECN 01-6538	C.V.	
2 ECN 01-6415	C.V.	
1 ECN 01-6262	C.V.	

ANSI WELDING SYMBOLS SHOWN. MACHINE FRACTIONAL DIMENSIONS ± 0.030" MACHINE FINISHES TO A.S.A. STANDARDS

2,2B,3 & 4 O.D.S. PUMPS
SPRING ASSIST - LINED OR UNLINED
QUICK OPENING CHECK VALVE
CROSS SECTION & PARTS LIST

DRAWN 6-25-70 BY C.V. SCALE -0-
CHECKED BY
APPROVED 7-28-70 BY

THIS PRINT IS SUBJECT TO RETURN UPON DEMAND AND IS LOANED UPON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTERESTS OF

DORR-OLIVER INCORPORATED
STAMFORD, CONNECTICUT, U.S.A.

ISSUED
CODED
DRAWING NO. 01C12183

APR 5 1971
NOV 22 1971
AUG 13 1971
MAY 3 1971
MICROFILMED
AUG 3 1970

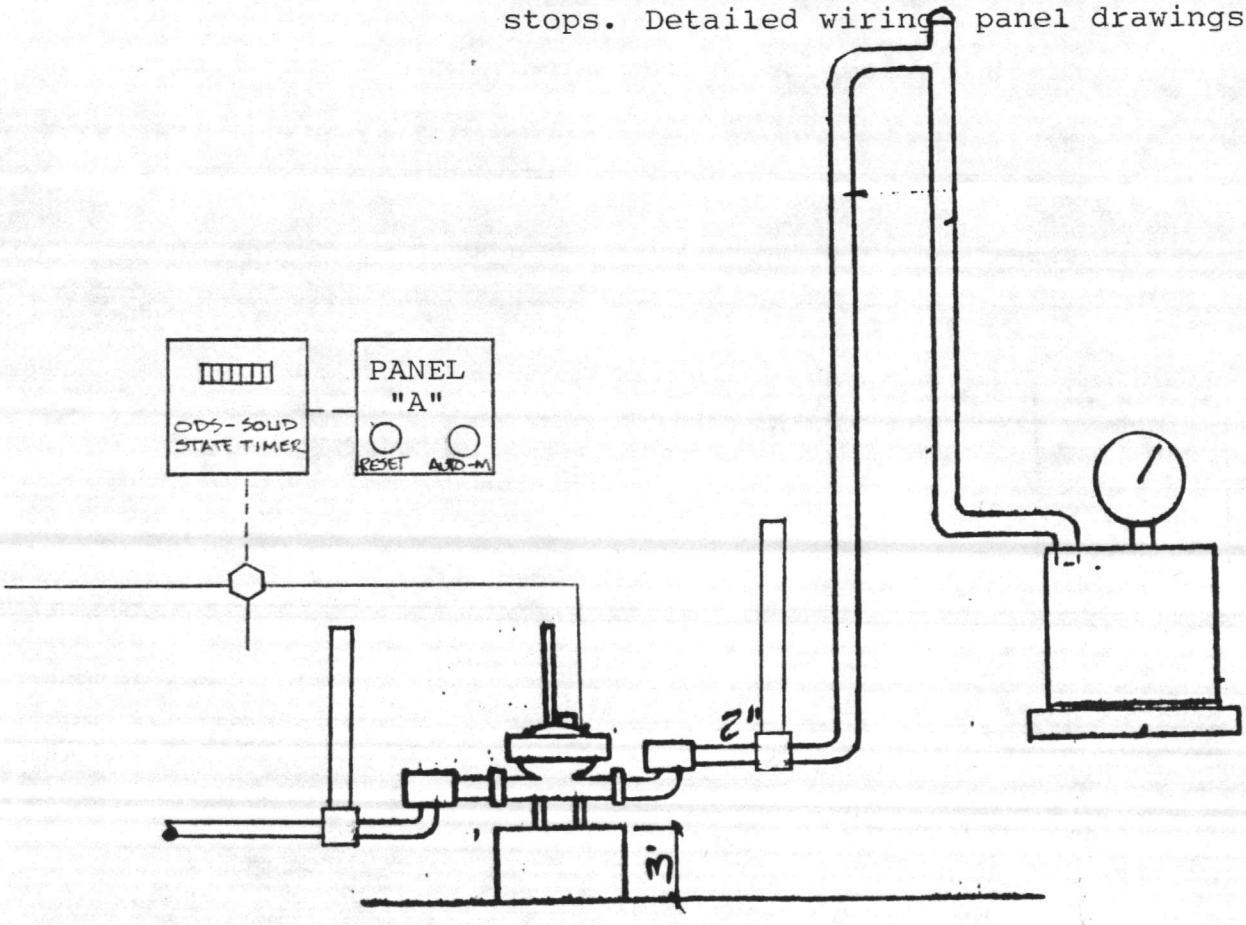
G107

DAY TANK FILL SYSTEM

IN THE MANUAL MODE, the operator can simply turn on the pump let it run until he receives the desired volume.

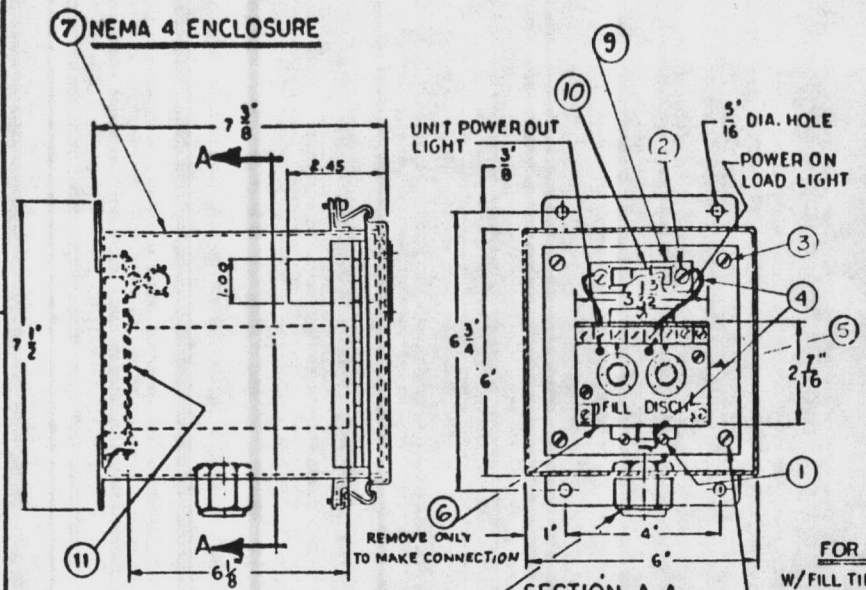
IN THE AUTO MODE, the operator will simply push the reset switch to obtain a fixed volume of acid to be delivered to the day tank.

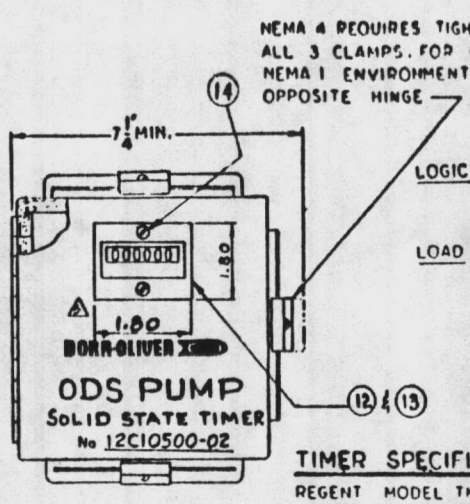
The Dorr-Oliver ODS pump delivers 1.1 gallons with each stroke of the pump. Let's assume the operator never wants to overfill the tank so he sets the predetermining counter in panel a for 100 strokes. When the level in the acid tank gets low, the operator would have the switch on Panel "A" switched into Auto Mode and push the reset putton. The pump would deliver 100 strokes, (110 gallons) to the day tank and quit. Next time the operator sees the tank level low, he repeats the process by pushing the reset button. The predetermining counter will allow the owner to adjust the volume automatically pumped by adjusting the predetermining counter to the number of strokes desired before the pump stops. Detailed wiring & panel drawings to follow.

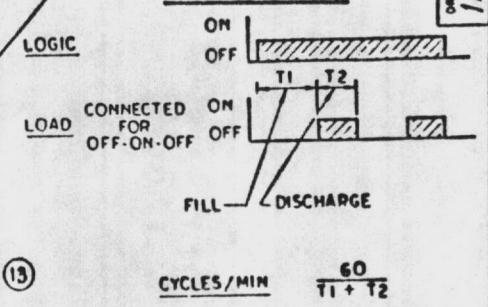


TIMER ASSEMBLY TO CONTROL PUMP

DRAWING NO. 12C10500







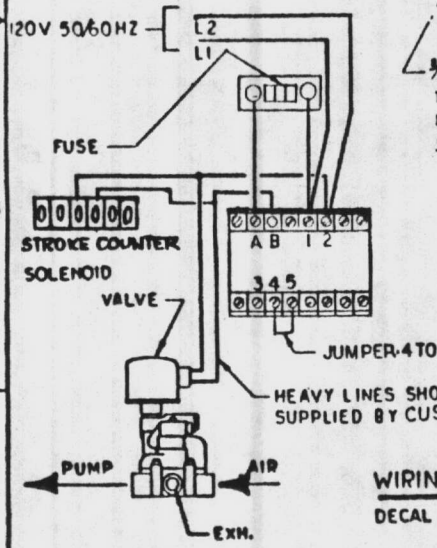
FOR STANDARD ASSEMBLIES
W/FILL TIME (T1) & DISCHARGE TIME (T_2)
.05 – 10.0 SEC. .05 – 5.0 SEC.
SEE DWG. 01C13304

TIMER SPECIFICATIONS

REGENT MODEL TM101U SEE TABLE BELOW
100% SOLID STATE, EPOXIED AND ENCASED
INPUT VOLTAGE: 120 V.AC, 50/60 HZ, VOLTAGE ± 20%
LOAD RATING: INDUCTIVE OR RESISTIVE 2AMP CONTINUOUS, 10 AMPS INRUSH
REPEAT ACCURACY: ±0.5% OF DIAL SETTING
CALIBRATION ACCURACY: ± 5% OF TIMING RANGE W/1% SETTABILITY
FILL TIME-T1 & DISCHARGE TIME-T2 — SEE TABLE BELOW—

NOTE:
CHASSIS GROUNDING, RESPONSABILITY FOR GROUNDING WITH CUSTOMER

¾" UNISEAL HUB (APPLETON #78) TO BE SUPPLIED BY CUSTOMER AND LOCATED TO SUIT BUT NOT IN TOP OF BOX.



WIRING DIAGRAM
DECAL ON INSIDE COVER

ITEM	QTY.	DESCRIPTION	PART No.
1	3	# 6-32 x 3/8 LG. - THD. CTG - STEEL - CAD. PLATED - RD. HD. SCREW	2075-030
2	2	# 8-32 x 1/16 LG. SLOTTED RD. HEAD WASHER BASE MACHINE SCREW - BRASS	2125-478
3	4	# 10-32 x 1/8 LG. - THD CTG. STEEL - CAD. PLATED - RD. HD. SCREW.	2075-032
4	TO SUIT	WIRE #18 GA. STRANDED-TINNED-YELLOW PLASTIC COATED HOOKUP WIRE - ALPHA # 1955	1102-000
5	1	REGENT TIMER # TM 101UD 300/2S PICS No. 8755-034	12C10500-01
6	1	PLEXIGLAS TERMINAL COVER ONLY PART No. 12A10507-01 PICS No. 49627-000 WITH (2) # 8-32 x 3/8 LG. R.H. PICS No. 2125-250	
7	1	ENCLOSURE BOX (SPECIAL) PICS No. 49105-002	12C10506-01
9	1	FUSE HOLDER	2745-002
⚠ 10	1+1	SEMI-CONDUCTOR FUSE BUSSMAN KAAI (1AMP)	2744-002
11	1	SUB-PANEL PICS # 35470-028	01B13091-01
12	1	ELECTRIC COUNTER 6 DIGITS (DURANT # 6Y-41340-406-HE)	2934-004
13	1	GASKET 1/16 (NEOPRENE) FOR STROKE COUNTER	12A10505-01
14	2	# 8-32 x 1/8 LG. FLAT HD. SCR. " " "	

PICS No.	FILL TIME (T1)	DISCHARGE TIME (T2)	SPECIFICATION	PART NO.
49353-000	0.5 TO 300 SEC.	0.05 TO 2.0 SEC.	COMPLETE ASSEMBLY ITEM: 1 THRU 14	12C10500-02
	0.5 TO 300 SEC.	0.05 TO 2.0 SEC.	TIMER "REGENT" + TERMINAL COVER ITEM 5 & 6	12C10500-01

NOTES:

1 SPARE FUSE FURNISHED, TAPED INSIDE BOX.

REPLACEMENT PROCEDURE.
SCREW TIMER 12C10500-01 TO ENCLOSURE 01C13304-03
CONNECT LEADS AS PER WIRING DIAGRAM. (SPECIAL CARE SHOULD BE TAKEN THAT JUMPER IS CONNECTED FROM 4 TO 5)

(REPLACES 01C13304-02)

3	ECA 12-1134		66
2	ECA 12-1078		497
1	ECA 12-1066		

UNLESS OTHERWISE SPECIFIED

DRAWN 1-27-78 J.V.B.
CHECKED
APPROVED 8-31-78 M.G.
NONE
MAY 22-1978 ECA-12-1002

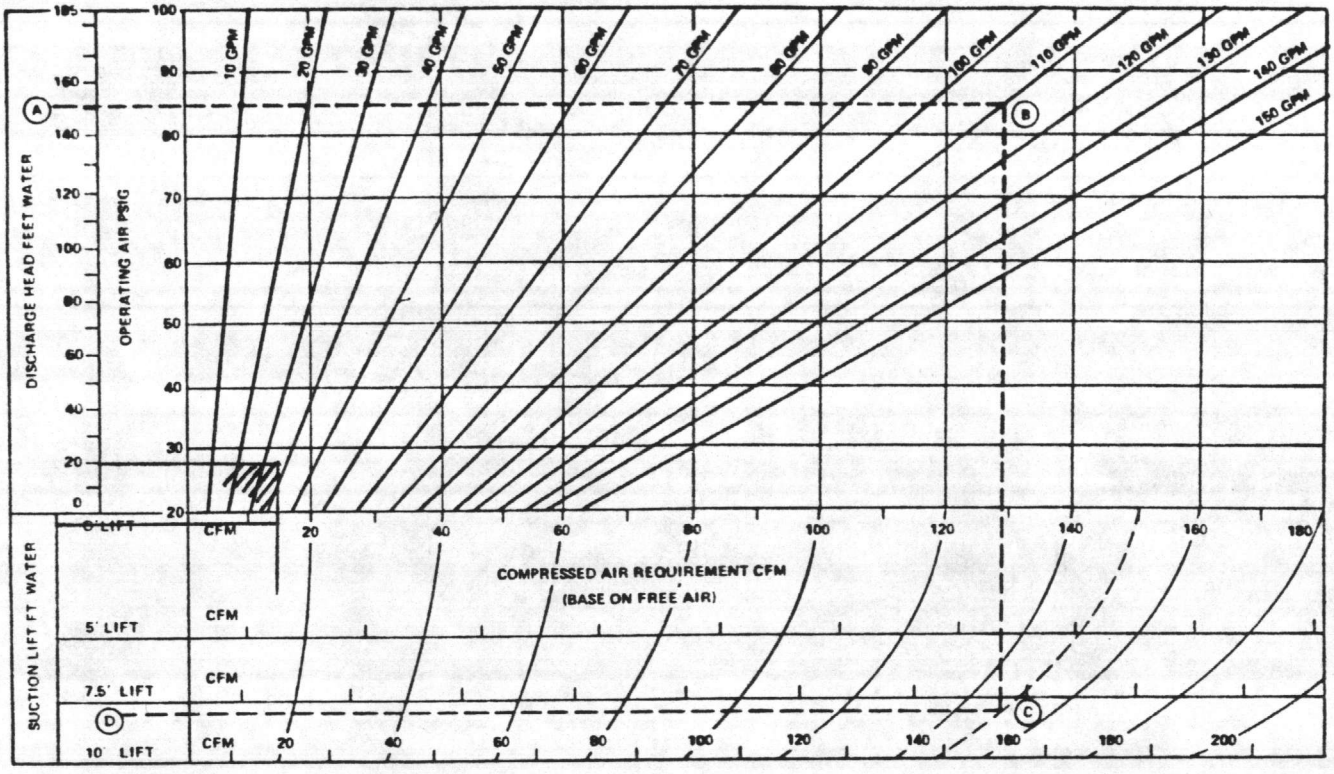
DORR-OLIVER

SPECIAL
"REGENT" SOLID STATE TIMER
GRAVITY FILL OR SPRING ASSIST
ODS PUMP

12C10500

FIG 1.1

COMPRESSED AIR REQUIREMENTS

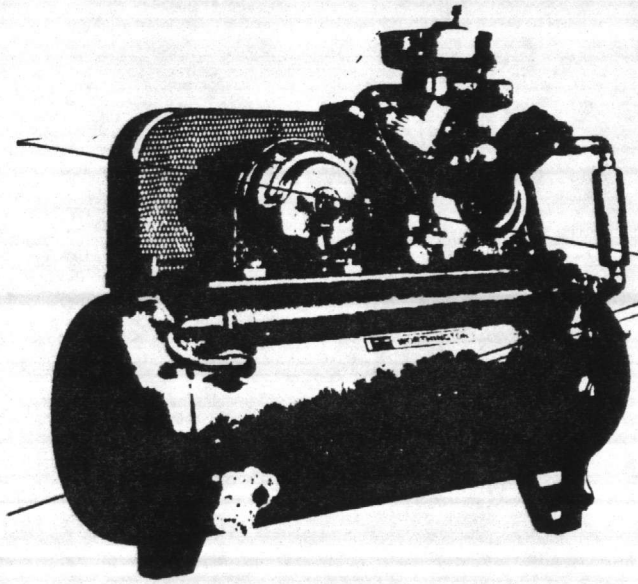


ENTER CURVE FROM A TO B, DROP DOWN TO C AT INTERSECTION OF REQUIRED SUCTION LIFT D READ CFM'S ON CURVED LINE. INTERPOLATE IF NECESSARY.
CALCULATE COMPRESSOR HP AS 1 HP PER 4 CFM

AT 32gpm, AIR CONSUMPTION ± 15SCFM @ 60psi

RATED CAPACITIES OF ODS PUMPS CONNECTIONS

MODEL	MAX. GPM	INLET	DISCHARGE	MAX. SUCTION
~~1½S~~	~~15~~	~~1½"~~	~~1½"~~	~~10'~~
2S	35	2"	2"	10'
~~2BS~~	~~42~~	~~2"~~	~~2"~~	~~10'~~
~~3S~~	~~120~~	~~3"~~	~~3"~~	~~8'~~
~~4S~~	~~152~~	~~4"~~	~~4"~~	~~8'~~



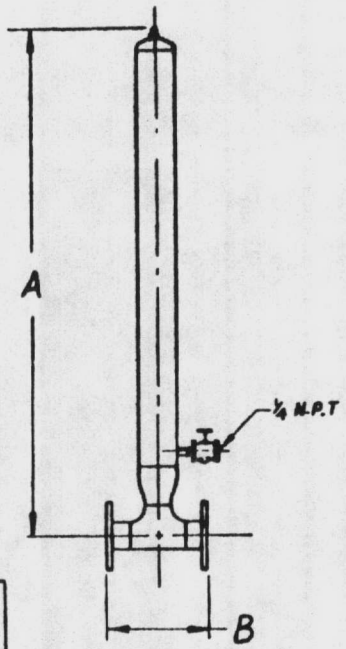
Two-stage tank-mounted unit with water-cooled aftercooler and belt guard.

AIR COMPRESSOR SELECTION
60 - 100 PSIG OPERATION

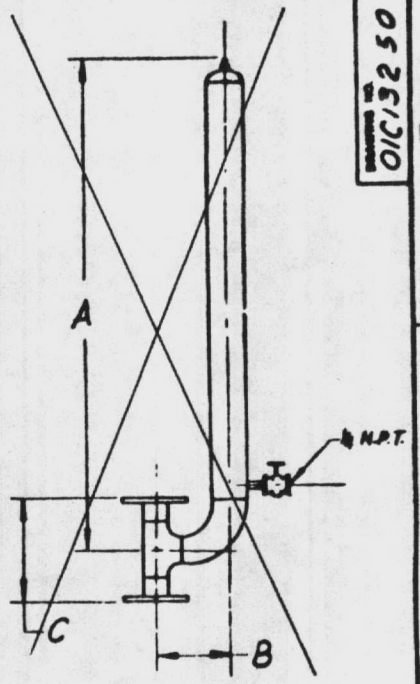
MODEL	HP	CFM
5ED8R	5	21.4
10EU12R	10	42.2
15BN12R	15	67.5
20BN24R	20	84.5
25BN24R	25	98.0

AIR CHAMBER PART NUMBERS

PUMP SIZE		HORIZONTAL UNIT		VERTICAL UNIT	
		STEEL	STAINLESS	STEEL	STAINLESS
1½"	SUCTION / DISCHARGE	01B12916-01	01B12918-01	01B12915-01	01B12917-01
(2")	SUCTION / DISCHARGE	01B12916-02	(01B12918-02)	01B12915-02	(01B12917-02)
2"B	SUCTION	01B12916-03	01B12918-03	01B12915-03	01B12917-03
	DISCHARGE	01B12916-02	01B12918-02	01B12915-02	01B12917-02
3"	SUCTION / DISCHARGE	01B12916-04	01B12918-04	01B12915-04	01B12917-04
4"	SUCTION / DISCHARGE	01B12916-05	01B12918-05	01B12915-05	01B12917-05



HORIZONTAL



VERTICAL

DRAWING NO. 01C13250

AIR CHAMBER DIMENSIONS

PUMP SIZE		HORIZONTAL UNIT				VERTICAL UNIT						APPROX. WEIGHT IN lbs	
		STEEL		STAINLESS		STEEL			STAINLESS STL.			STEEL	S.S.
		A	B	A	B	A	B	C	A	B	C		
~~1½~~	~~SUCTION~~ / ~~DISCHARGE~~	~~45~~	~~8 7/8~~	~~44¼~~	~~8½~~	~~45¾~~	~~8 7/8~~	~~6¾~~	~~44¾~~	~~8½~~	~~4½~~	~~36~~	~~23~~
(2")	SUCTION	~~45¼~~	~~9⅛~~	(46)	(10)	~~45¾~~	~~9⅜~~	~~8½~~	~~45½~~	~~10~~	~~5½~~	~~53~~	(33)
	DISCHARGE												
~~2"B~~	~~SUCTION~~	~~47⅛~~	~~11¼~~	~~46⅞~~	~~1¾~~	~~45¾~~	~~11¼~~	~~9⅜~~	~~49~~	~~11¾~~	~~7⅞~~	~~63~~	~~41~~
	~~DISCHARGE~~	~~46⅛~~	~~9⅜~~	~~46~~	~~10~~	~~45¾~~	~~9⅜~~	~~8½~~	~~46½~~	~~10~~	~~5½~~	~~53~~	~~33~~
~~3~~	~~SUCTION~~ / ~~DISCHARGE~~	~~61⅝~~	~~11¼~~	~~61½~~	~~11¾~~	~~61¾~~	~~11¼~~	~~12⅜~~	~~62½~~	~~11¾~~	~~8⅝~~	~~103~~	~~68~~
~~4~~	~~SUCTION~~ / ~~DISCHARGE~~	~~62⅜~~	~~12⅜~~	~~62¼~~	~~14¼~~	~~61¾~~	~~12¾~~	~~13⅛~~	~~64~~	~~14¼~~	~~10⅛~~	~~117~~	~~80~~

NOTES:
6. FOR PARTICULAR DETAILS AND PART NUMBERS SEE ASS'Y DRAWINGS.
7. A SUCTION TYPE AIR CHAMBER IS USED WHEN WE HAVE EXTENSIVE LIQUID HEAD ABOVE THE PUMP. IT PROLONGS THE DIAPHRAGM LIFE AND MINIMIZES LIQUID HAMMER.
8. A DISCHARGE TYPE AIR CHAMBER IS USED TO MINIMIZE LIQUID HAMMER AND PROLONG DIAPHRAGM LIFE.
9. FOR A PIPING SCHEMATIC OF CHECK VALVES AND AIR CHAMBER ARRANGEMENTS SEE DRAWING DIC 11787.

NOTES,
1. FOR 1½" ODS PUMP WITH TYPE Q VALVES USE 2 AIR CHAMBERS.
2. 2"B ODS PUMP USES 3" ON INLET AND 2" ON DISCHARGE.
3. FLANGES ON S/S UNITS ARE STD 150 LB DRILLING LAP JOINT.
4. FLANGES ON STEEL UNITS ARE STD 150LB DRILLING FLAT FACE, HOLES STRADDLE ℄
5. WEIGHTS IN TABLE ARE MAX. SHIPPING WEIGHTS FOR EITHER VERTICAL OR HORIZONTAL UNITS.

ITEM NO	MATERIAL	SPECIFICATION	PART NUMBER
	UNLESS OTHERWISE SPECIFIED		

DORR-OLIVER

DRAWN	12-17-76	C K BELL
CHECKED	1-18-77	RT
APPD	1-19-77	MC
SCALE	NONE.	SIZE CD
	FEB 24 1977	D 358

AIR CHAMBERS
OUTLINE DIMENSIONS
UNLINED STEEL AND
STAINLESS STEEL

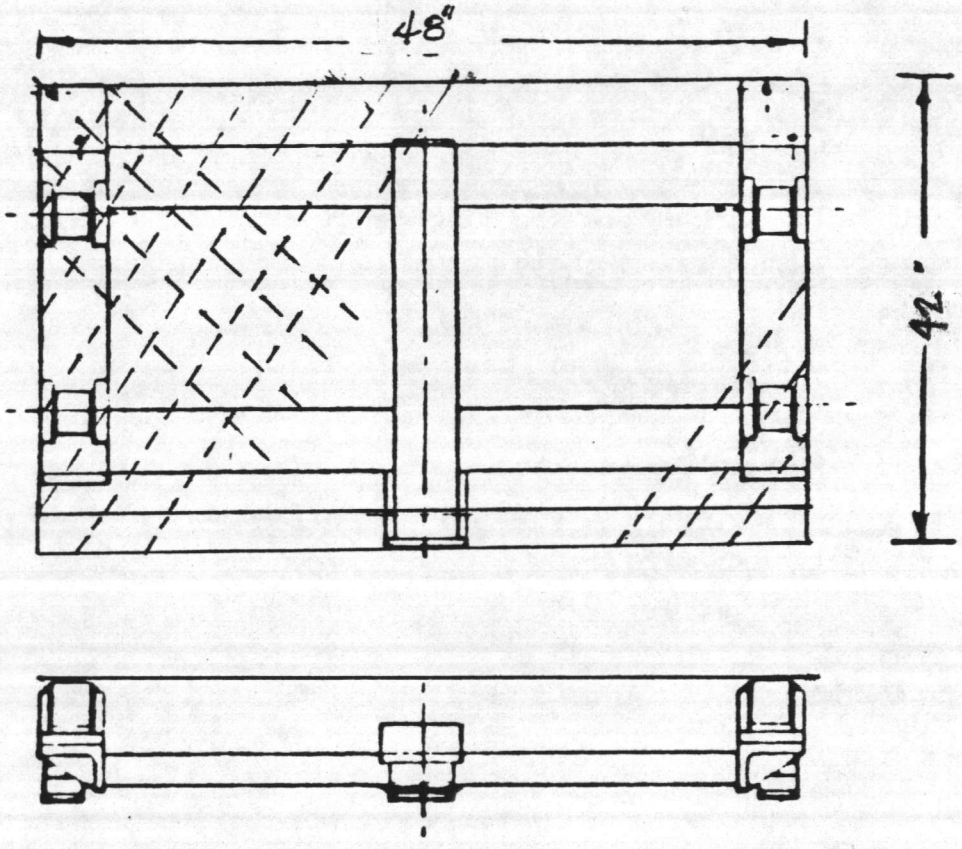
DIC13250

F 104.1

Item #3

PLATFORM SCALES TO WEIGH THE 200 GALLON DAY TANK

A reinforced 1/4" plate steel platform as shown below shall be mounted over a fixed support hydraulic load cell type scale to weigh up to 4000 pounds and indicate on a 12" diameter dial type indicator which can be wall mounted up to 25 feet away from the tank. Scales similar to the type proposed for weighing the ton cylinder of chlorine. Scales to be Emery Type 711-4-12.

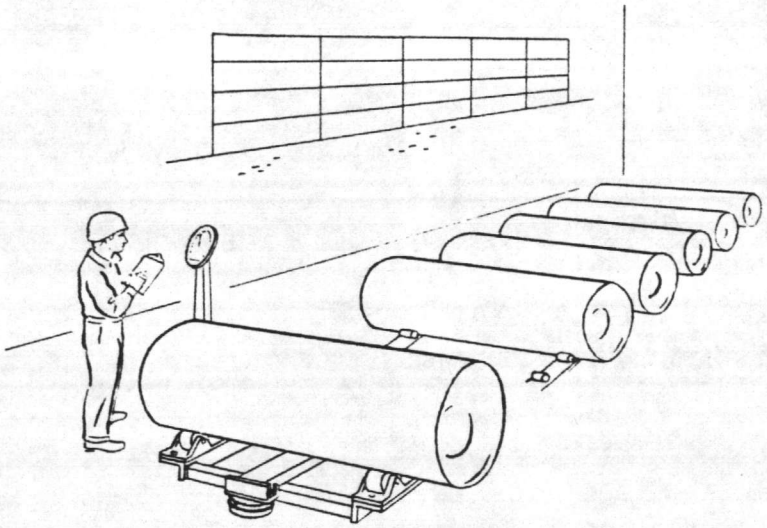


Contract No. N62470-81-C-1644
Holcomb Blvd. Water Treatment Plant
Camp LeJeune, N. C.
Harry Pepper & Associates, Inc.
Purchase Order No. 642-0011
Page 11336-10, Paragraph c.

Emery

CHLORINE CYLINDER SCALE

4000 lbs. & 8000 lbs. **Series 711**



These scales monitor the use of chlorine in municipal water treatment and sewage plants. The dial indicates the weight of chlorine left in the cylinder at any time, allowing the operator to schedule replacement cylinders when needed. At the same time, the scale provides an accurate control of chlorine usage. Features of this scale are described below:

SUPER RUGGED CONSTRUCTION — high sustained accuracy, sensitivity, and stability under severe conditions of shock, vibration, moisture, corrosion, and dust because of the famous Emery hydraulic load cell, heart of its weighing system.

WEAR-FREE OPERATION — no knife edges or bearings to wear, corrode, or replace; scale keeps its initial sensitivity indefinitely.

WASH OR STEAM IT DOWN — without hurting it; the scale is practically impervious to environmental hazards; it can be abrasive-cleaned, too.

IMMUNE TO POWER FAILURE — this is a completely self-contained hydraulic weighing system when used with the analog dial . . . no electrical components.

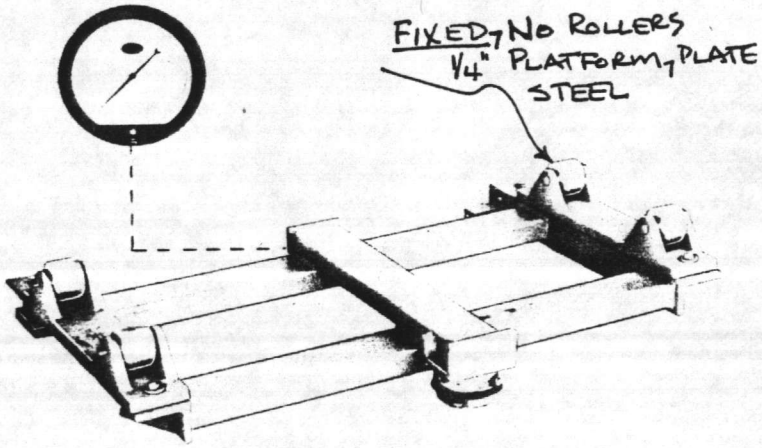
¼ OF 1% ACCURACY — of full scale reading, sustained indefinitely.

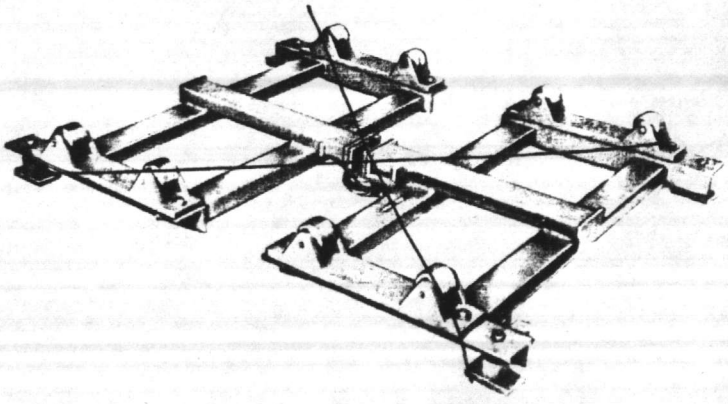
REMOTE DIAL LOCATION — adaptable for wall, panel, or pedestal mounting remote from the weighing site (up to 100').

VIRTUALLY SERVICE-FREE — no moving parts in the scale . . . very little can go wrong.

EASY INSTALLATION — scale comes completely fabricated, ready to set into place.

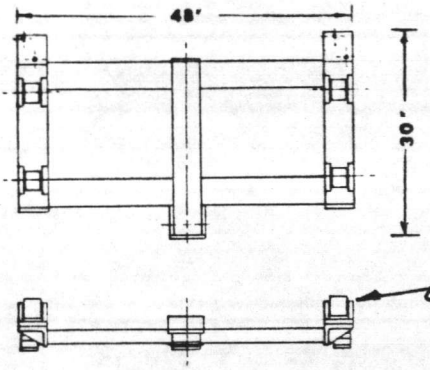
OPTIONS — low level alarm; dial pedestal; digital indicator; rate-of-usage recorders; extra-length tubing.





SPECIFICATIONS AND DIMENSIONS

Emery



FIXED
NO ROLLERS
SEE ATTACHED

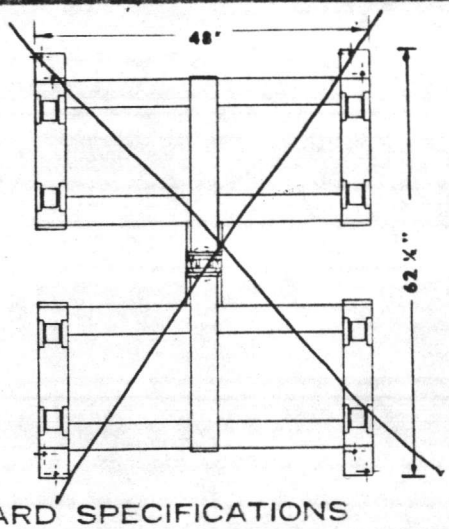


TABLE OF MODELS AND CAPACITIES

Model Number	Dial Diameter	Dial Capacity (lbs.) (*)
SCALE FOR ONE CYLINDER		
~~711-4-8~~	~~8½"~~	~~4000 X 10~~
711-4-12	12"	4000 X 10
~~711-4-16~~	~~16"~~	~~4000 X 5~~
~~711-4-20~~	~~20"~~	~~4000 X 5~~
~~**SCALES FOR TWO CYLINDERS**~~		
~~711-8-8~~	~~8½"~~	~~8000 X 20~~
711-8-12	12"	8000 X 20
711-8-16	16"	8000 X 10
~~711-8-20~~	20"	~~8000 X 10~~

* Dials available in metric units.

DESCRIPTION OF SCALE

FRAME — fabricated from high strength tubular steel members; designed for maximum rigidity to prevent flexing.

SUPPORTING ~~**TRUNNIONS**~~ FRAME — for easy cylinder positioning; designed especially for a chlorine atmosphere environment.

THREE-POINT SUSPENSION — two ball-type pivots and an Emery hydraulic load cell make up the weight sensing system. Pivots and load cells are totally enclosed and virtually unaffected by environmental hazards. Scales for two cylinders have a five-point suspension; each scale has two ball-type pivots, with the weight sensing for both being done by a common load cell.

DIAL — with white face and black numerals; temperature compensated; tare adjustment; tubing and fittings furnished for location up to 25' from the scale (or further if required).

FINISH — all metal surfaces are coated with corrosion-resistant finish at the factory.

STANDARD SPECIFICATIONS FOR AN EMERY CHLORINE SCALE

The chlorine scale shall be designed to accept one or two 4000 pound chlorine cylinders, sized within the dimensions of the tank or tanks it supports.

The scale shall be pivoted on totally enclosed ball pivots and a diaphragm type hydraulic load cell, capable of sustaining shock loads of 300% of indicator capacity.

The dial indicator size shall be 12" inches, with a capacity of 4000 ~~or 8000~~ pounds with a 50% tare adjustment capability. The dial indicator shall be temperature stable, with an accuracy of ¼ of 1%.

The scale frame shall be constructed of high strength tubular steel for absolute rigidity, finished with a primer and two coats of corrosion-resistant epoxy paint.

The scale shall include no less than 25 ft. of flexible, polyethylene-coated, copper tubing to allow for easy remote location of the indicator.

The scale shall be an Emery Model 711-4-12 or approved equal.

ABOUT THE EMERY HYDRAULIC LOAD CELL

Heart of every Emery weighing system is the famous Emery Hydraulic Load Cell. This unique weight sensing device, virtually indestructible, approaches the ultimate in durability, sustained accuracy, sensitivity, and stability. The world's largest Universal Testing Machine at the National Bureau of Standards uses Emery Hydraulic Load Cells. The cell has design refinements that give it high accuracy capability and resistance to severe environmental conditions such as shock, vibration, corrosion, and moisture (it will even function under water). It will take up to 300% overload.

Emery

THE A. H. EMERY COMPANY
70 PINE ST. · P.O. BOX 608
NEW CANAAN, CONNECTICUT 06840
203-966-4551
CABLE ADDRESS: AHEMCO

YOUR REPRESENTATIVE IS:

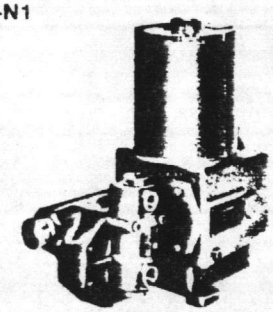
Printed in U.S.A. 681

Item #4

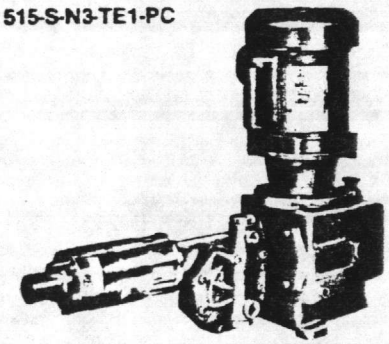
Neptune
CHEMICAL PUMP COMPANY
Division of R. A. Industries, Inc. Lansdale, PA 19446 • 215-699-8701 Telex: 84-6117

Neptune Series 500 and 500-A "dia-PUMPS" are products of innovative design and quality workmanship which offer long-term reliability.

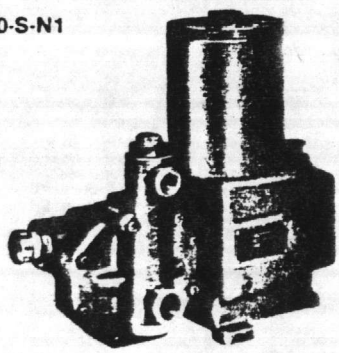
525-S-N1

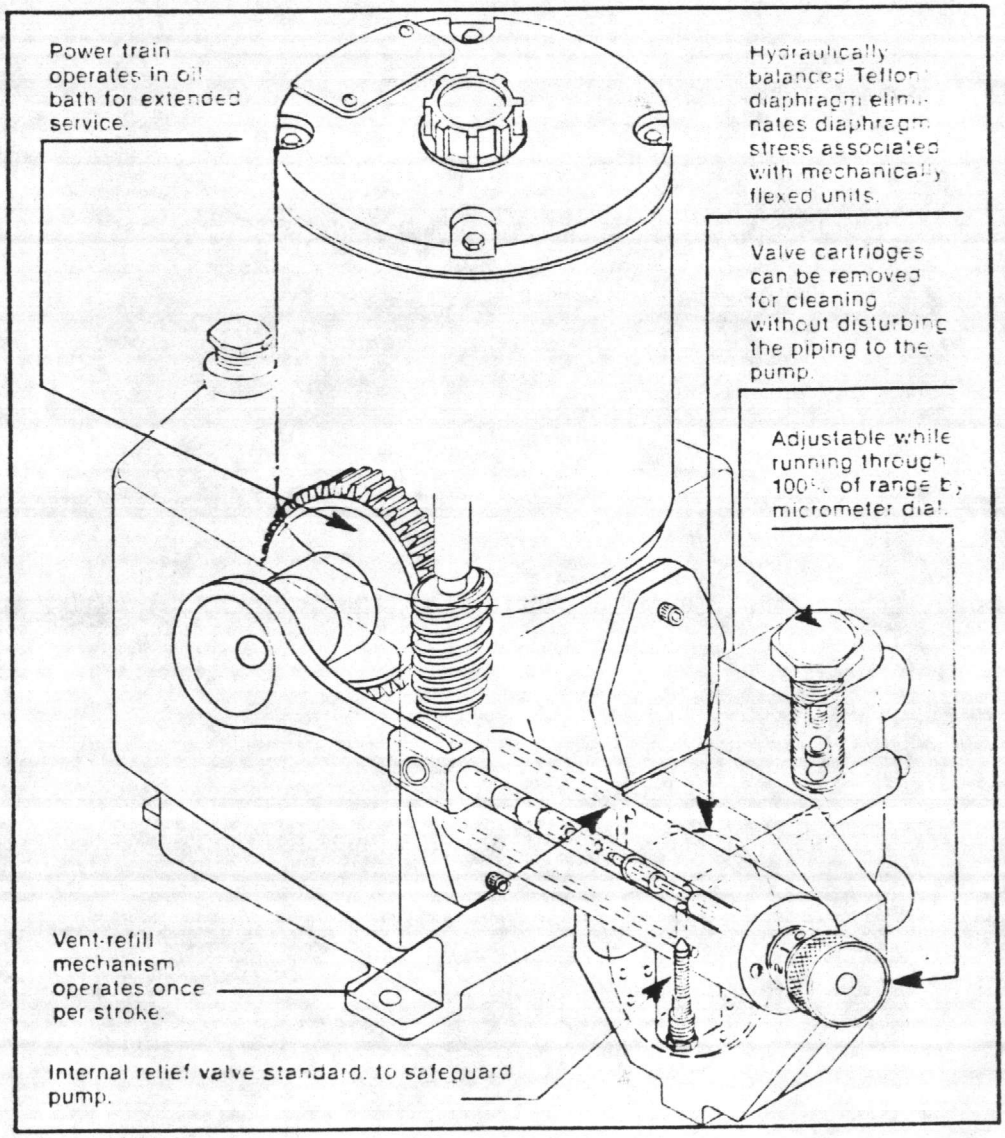


515-S-N3-TE1-PC



560-S-N1

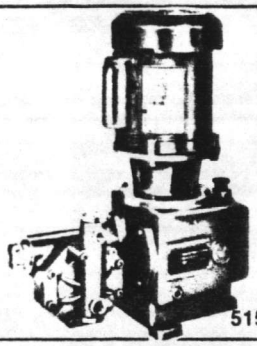




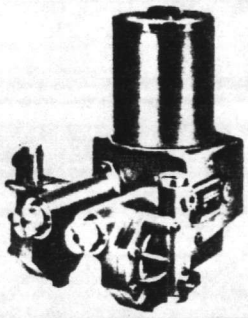
Two (2) Neptune Model 532-S-N3 metering pumps with stroke control to respond to the pH analyzers. Pumps to produce 11 gphr at 350 psi maximum, 72 strokes per hour, and be equiped with automatic stroke positioning capabilities. Motor to be 1/4 Hp 120 Volts/ 60Hz/ 1 phase.

ACID METERING PUMPS
Holcomb Blvd. WTP
Harry Pepper & Associates, Inc.
Contract No. N62470-81-C-1644
Purchase Order No. 642-0011

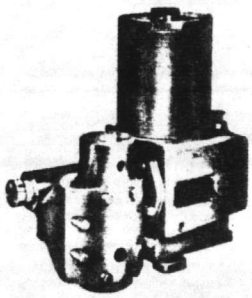
NEPTUNE SERIES 500 "dia-PUMP"



515-S-N3 TE3



510-D-N3



535-S-N5

NEPTUNE SERIES 500 "dia-PUMP" SELECTION CHART

Standard Motor 1/3HP-1ph-115v-60c-TENV

MODEL NUMBER	CAPACITY GPH AT 100 PSI	MATERIALS OF CONSTRUCTION	PRESSURE PSI	PISTON DIAMETER	STROKES PER MINUTE	STYLE	SHIPPING WEIGHT LBS.
500-S-N1 500-S-N3 500-S-N4 500-S-N5		Cast Iron 316SS C-20 PVC	1000 1000 1000 150	0.500	37	Simplex	60
510-S-N1* 510-S-N3* 510-S-N4* 510-S-N5*	1.0	Cast Iron 316SS C-20 PVC	700 700 700 150	0.500	37	Simplex	60
515-S-N1 515-S-N3 515-S-N4 515-S-N5	3.0	Cast Iron 316SS C-20 PVC	1100 1100 1100 400	0.500	117	Simplex	60
515-S-N3-HP 515-S-N4-HP	3.0 (2.0 at 1800 psi)	316SS C-20	1800 1800	0.500	117	Simplex	60
500-D-N1 500-D-N3 500-D-N4 500-D-N5	1.0 Ea. Head	Cast Iron 316SS C-20 PVC	1000 1000 1000 150	0.500	37	Duplex	80
510-D-N1* 510-D-N3* 510-D-N4* 510-D-N5*	1.0 Ea. Head	Cast Iron 316SS C-20 PVC	700 700 700 150	0.500	37	Duplex	80
515-D-N1 515-D-N3 515-D-N4 515-D-N5	3.0 Ea. Head	Cast Iron 316SS C-20 PVC	1100 1100 1100 400	0.500	117	Duplex	80
515-D-N3-HP 515-D-N4-HP	3.0 Ea. Head (2.0 at 1800 psi)	316SS C-20	1800 1800	0.500	117	Duplex	80
520-S-N1 520-S-N3 520-S-N4 520-S-N5	2.0	Cast Iron 316SS C-20 PVC	700 700 700 400	0.687	37	Simplex	60
525-S-N1 525-S-N3 525-S-N4 525-S-N5	7.0	Cast Iron 316SS C-20 PVC	900 900 900 400	0.687	117	Simplex	60
520-D-N1 520-D-N3 520-D-N4 520-D-N5	2.0 Ea. Head	Cast Iron 316SS C-20 PVC	700 700 700 400	0.687	37	Duplex	80
525-D-N1 525-D-N3 525-D-N4 525-D-N5	7.0 Ea. Head	Cast Iron 316SS C-20 PVC	900 900 900 400	0.687	117	Duplex	80
530-S-N1 530-S-N3 530-S-N4 530-S-N5	5.5	Cast Iron 316SS C-20 PVC	350 350 350 300	1.062	37	Simplex	60
532-S-N1 532-S-N3 532-S-N4 532-S-N5	11.0	Cast Iron 316SS C-20 PVC	350 350 350 300	1.062	72	Simplex	60
535-S-N1 535-S-N3 535-S-N4 535-S-N5	18.0	Cast Iron 316SS C-20 PVC	350 350 350 300	1.062	117	Simplex	60
538-S-N1 538-S-N3 538-S-N4 538-S-N5	26.5	Cast Iron 316SS C-20 PVC	350 350 350 300	1.062	175	Simplex	60

*(See Page 3)

NEPTUNE SERIES 500 "dia-PUMP" SELECTION CHART (Continued)

Standard Motor 1/3HP-1ph-115v-60c-TENV

MODEL NUMBER	CAPACITY GPH AT 100 PSI	MATERIALS OF CONSTRUCTION	PRESSURE PSI	PISTON DIAMETER	STROKES PER MINUTE	STYLE	SHIPPING WEIGHT LBS.
530-D-N1 530-D-N3 530-D-N4 530-D-N5	5.5 Ea. Head	Cast Iron 316SS C-20 PVC	350 350 350 300	1.062	37	Duplex	80
532-D-N1 532-D-N3 532-D-N4 532-D-N5	11.0 Ea. Head	Cast Iron 316SS C-20 PVC	350 350 350 300	1.062	72	Duplex	80
535-D-N1 535-D-N3 535-D-N4 535-D-N5	18.0 Ea. Head	Cast Iron 316SS C-20 PVC	350 350 350 300	1.062	117	Duplex	80
538-D-N1 538-D-N3 538-D-N4 538-D-N5	26.5 Ea. Head	Cast Iron 316SS C-20 PVC	350 350 350 300	1.062	175	Duplex	80
560-S-N1 560-S-N3 560-S-N4 560-S-N5	20.0	Cast Iron 316SS C-20 PVC	125 ± 125 ± 125 ± 125 ±	2.0	37	Simplex	75
562-S-N1 562-S-N3 562-S-N4 562-S-N5	40.0	Cast Iron 316SS C-20 PVC	125 ± 125 ± 125 ± 125 ±	2.0	72	Simplex	75
565-S-N1 565-S-N3 565-S-N4 565-S-N5	60.0	Cast Iron 316SS C-20 PVC	125 ± 125 ± 125 ± 125 ±	2.0	117	Simplex	75

*This model cannot be used for suction lift applications.
± 175 PSI models available, contact the factory.

NOTES TO SERIES 500 AND SERIES 500-A "dia-PUMP" SELECTION CHARTS

NOTE 1, Motors:

Series 500 "dia-PUMPS" are supplied with an integrally mounted 1/3HP-1-60c-115v-TENV motor as standard. This motor is provided with automatic thermal overload protection.

Stock motor options available for Series 500 and Series 500-A as follows:

A. 1/4HP-3ph-60c-230/460-TENV – Add Suffix "3" to model number.

B. Explosion-Proof Motors (Class 1, Group D; Class II, Group E, F and G Hazardous locations):

1/4HP-1ph-60c-115/230-Explosion-Proof – Add Suffix "EX-1" to model number.

1/3HP-3ph-60c-230/460-Explosion-Proof – Add Suffix "EX-3" to model number.

C. Totally Enclosed Fan-Cooled Motors.

1/4HP-1ph-60c-115/230-TEFC – Add Suffix "TE-1" to model number.

1/4HP-3ph-60c-230/460-TEFC – Add Suffix "TE-3" to model number.

D. Other motors available, including units for 50 cycle operation and chemical duty service. Contact the factory.

NOTE 2, Capacity:

Capacity figures are listed at 100 PSI discharge pressure. Capacity will decrease by approx. 1.5% for each 100 PSI increase in pressure.

NOTE 3, PVC Head Pumps (N5)

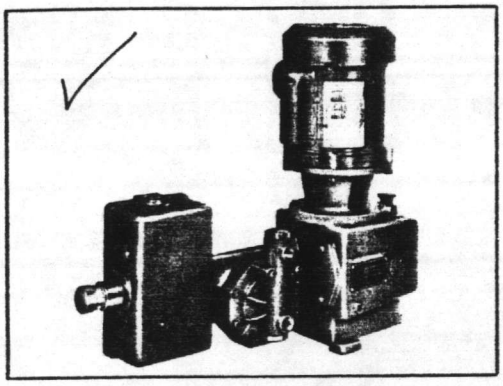
PVC head pumps satisfactory for temperatures to 125°F/52°C.

NEPTUNE AUTOMATIC CAPACITY CONTROL OPTIONS

ELECTRONIC CAPACITY CONTROL (PATENT PENDING)

Utilizing the Neptune Electronic Capacity Control, the flow rate of any Series 500 or Series 500-A "dia-PUMP" can be controlled automatically by a process instrument, or remotely from the control module.

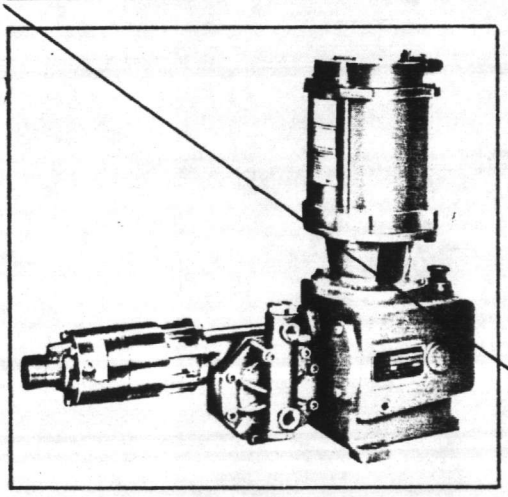
The Neptune Electronic Capacity Control consists of two elements; A) An Electric Control Rod Positioner mounted on the pump, and B) the Electronic Control Module, which may be located at the pump or remotely. (See Bulletin ECC for complete details, and ordering information.)



FEATURES:

- Unit follows analog signal or potentiometer.
- Adjustable ratio signal to stroke 0.3:1 or 1:0.3.
- Direct (forward) or indirect (reverse) response to changing signal.
- All units allow manual override in event of instrument signal or power loss, a unique feature.

PNEUMATIC STROKE CONTROL

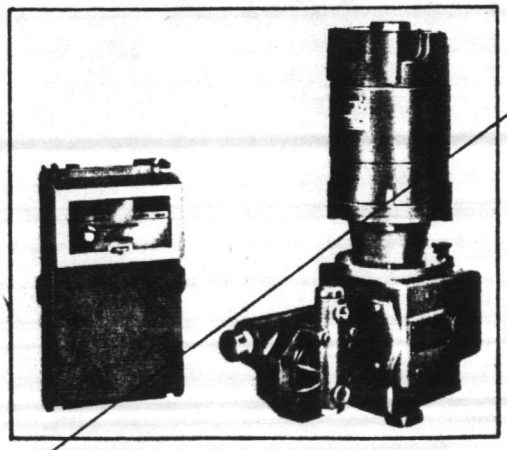


The flow rate of any Series 500 or Series 500-A "dia-PUMP" can be controlled by an instrument air signal when using the pneumatic stroke control.

The control will respond to a standard signal of 3 to 15 PSI; other signal ranges available. Positioning is controlled by the Moore Products Model 73 Valve Positioner. Forward (direct) response to signal change is standard. Reverse (indirect) response and local manual override options are available.

To order, add Suffix "PC" to Model No. of pump.

SCR MOTOR SPEED



The capacity of any Neptune Series 500 or Series 500-A "dia-PUMP" may be controlled by changing motor speed using the General Electric Full-Wave Statatrol Drive and Controller. (Contact factory for complete details and ordering information.)

FEATURES:

- Manual speed control by potentiometer.
- Automatic speed control in response to a 4 to 20 ma signal (other signal ranges available).
- Control range 30 to 1.
- Additional flow range combinations using full micrometer adjustment at all speeds.

SERIES 500 AND SERIES 500-A "dia-PUMP" DIMENSIONS

FIG. 1 – DIMENSIONS SERIES 500 "dia-PUMP" WITH METAL HEAD (EXCEPT MODEL 560)

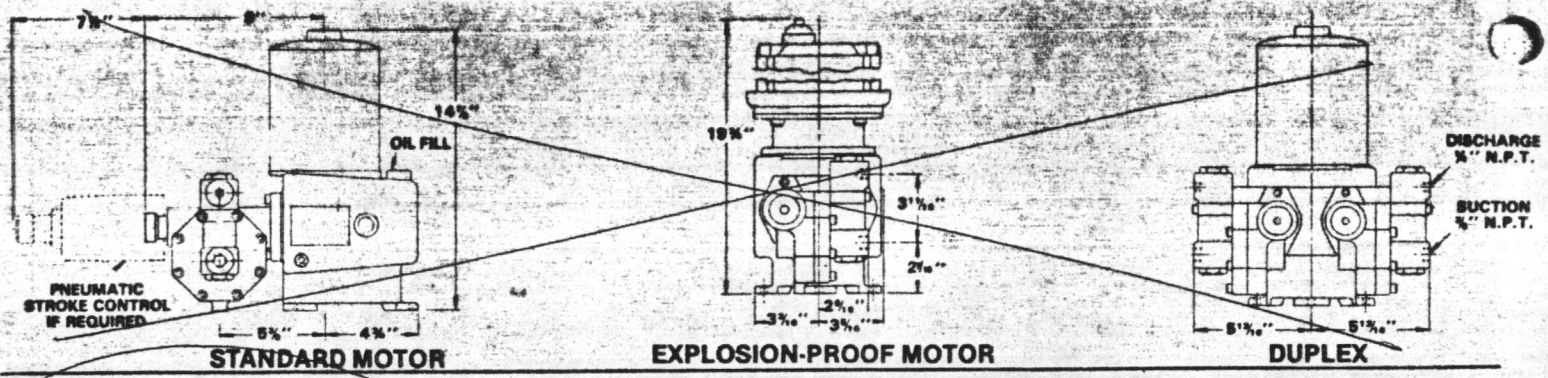


FIG. 2 – DIMENSIONS SERIES 500 "dia-PUMP" WITH PVC HEAD (EXCEPT MODEL 560)

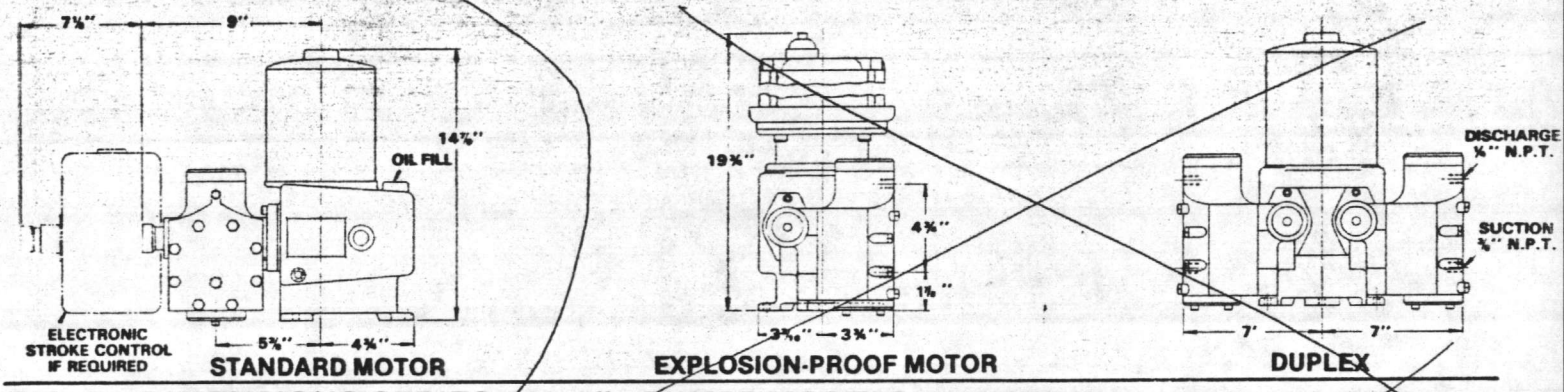


FIG. 3 – DIMENSIONS SERIES 500 "dia-PUMP" MODELS 560/562/565

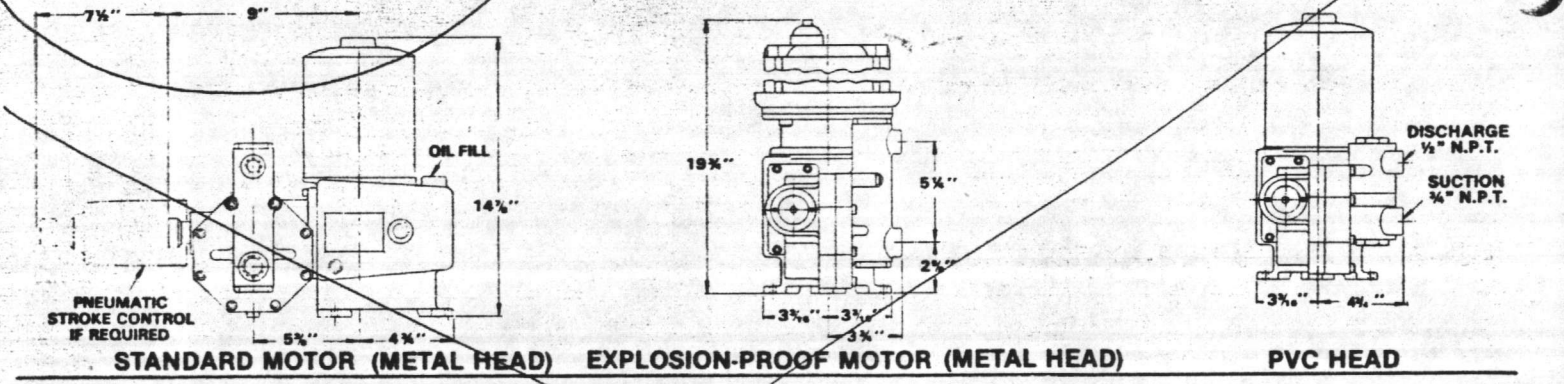
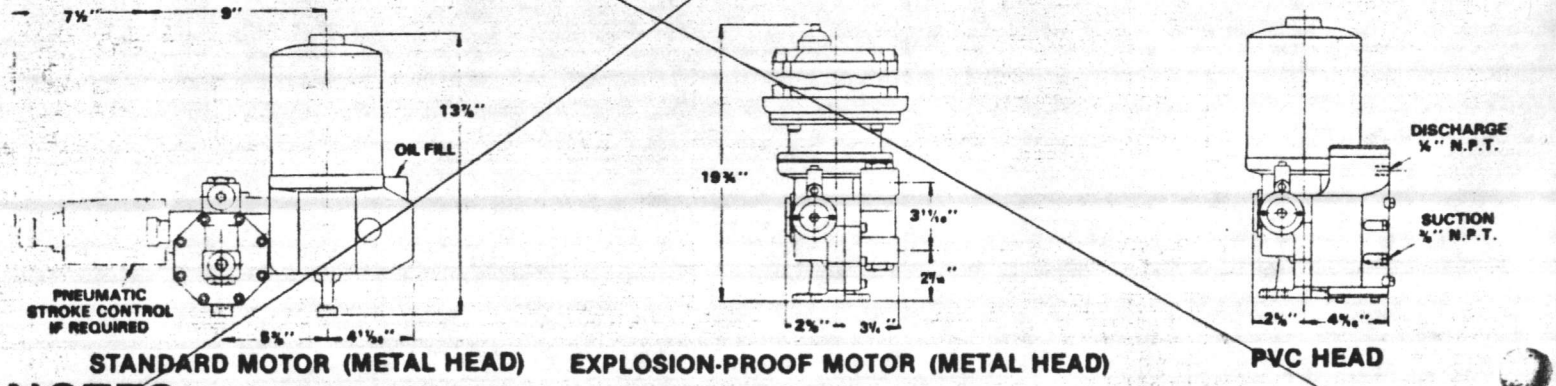


FIG. 4 – DIMENSIONS SERIES 500-A "dia-PUMP"



NOTES:

A. Dimensions shown are for cast iron-units. Dimensions will vary slightly for 316SS and C-20 models.

B. "dia-PUMP" with 1/4HP-1ph-115/230-Exp. Proof Motor (illustrated FIG. 1). Motor dimensions vary slightly with other motor models.

FISCHER & PORTER

Holcomb Blvd. WTP
Page 11336-11 paragraph e.
Two (2) pH analyzer-transmitter
Range of analyzers to be 2-12pH
4 to 20 ma output

SPECIFICATION
17PH 1000
File Section
17

Item #5

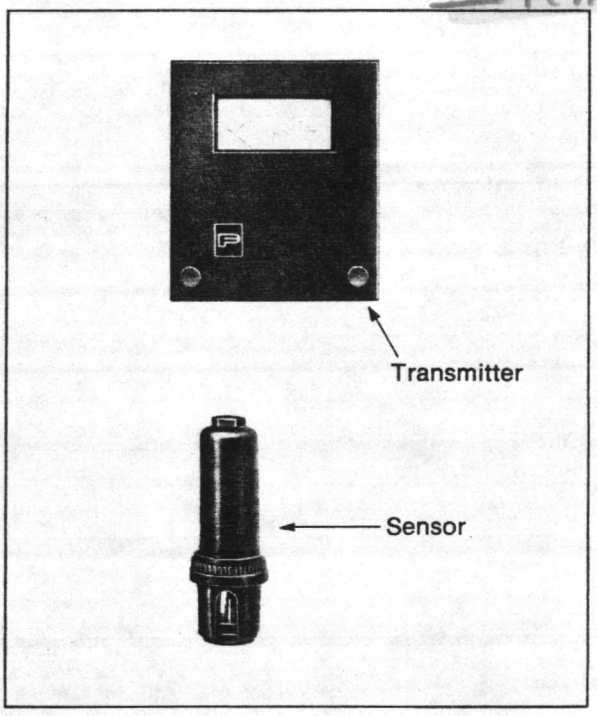
pH Transmitter System

Series 17PH1000

The Series 17PH1000 Transmitter System provides continuous measurement of the pH value of a process liquid. The system includes a pH Sensor assembly and an indicating pH Transmitter.

The Sensor houses the pH sensing probes (measuring and reference electrodes and temperature compensator) and a preamplifier which act to produce a current signal, automatically compensated for changes in process liquid temperature, which is representative of the pH value. The circuitry of the preamplifier is designed to permit measurements in either grounded or ungrounded solutions; and, includes input filtering to provide a signal which is highly immune to common mode or ground loop interferences.

The Transmitter functions to power the preamplifier and receive and convert the signal produced by the Sensor into a proportional 4-20 mA dc signal over any one of its manually selectable measurement ranges. The converted signal is applied to its self-contained indicator to show the pH value. Output terminals are provided for applying the signal to compatible secondary instrumentation for recording/controlling/indicating the pH of the process liquid.



DESIGN FEATURES

- **Input/Output Isolation:** Unique circuitry separates transmitter input stage from the output stage and power supply in order to avoid false signals due to noise or grounding problems.
- **Sensor Mounted Preamplifier:** Eliminates need for expensive shielded cable between Sensor and Transmitter. Interconnecting cable is standard unshielded, five-conductor, #18 AWG cable.
- **Field Mounting:** Weather-proof transmitter housing permits location near point of measurement with electronic transmission to remotely located instruments.
- **Convenience:** Continuous pH measurement frees operator for other duties by eliminating the need for frequent laboratory and field testing and allows automatic pH control.
- **Multiple Ranges:** Three switch selectable ranges.

ENGINEERING SPECIFICATIONS

Transmitter

Operating Ranges: 0-10, 2-12, or 4-14 pH (switch selective) with fixed 10 pH unit span

Meter Indication: 0-10, 2-12 (furnished as standard) or 4-14 pH on 5-1/2" (140 mm) scale

Output: 4-20 mA dc into 0-600 ohms max, isolated

Ambient Temperature Limits: -18 to 49°C (0-120°F). Performance is derated for -40 to 65°C (-40 to 150°F).

Enclosure Classification: NEMA 3 (IEC IP66), dust and raintight, suitable for outdoor mounting

Electrical Classification: Designed for Class I, Div. 2, Group C and D, locations.

Power Requirements: 120, 220/240 V ac ±10%, 50/60 Hz single phase, 10 Watts max.

Case Construction: Corrosion resistant fiberglass reinforced polyester

Mounting: Panel, surface or pipe is standard. Field mounted, integral with immersion sensor on rail mounting bracket and sensor support post is optional.

Sensitivity: 0.005 pH units

Accuracy: ± 0.5% of span at output terminals (± 0.05 pH) and ± 2% at meter (± 0.2pH)

Stability: ± 0.001 pH unit per week max.

Response Time:

Sensor Assembly - 0.5 seconds for 95% response
System - Approximately 20 seconds full scale.

System Shipping Weight: 35 lb (15,9 kg)

Sensor Assembly

Housing

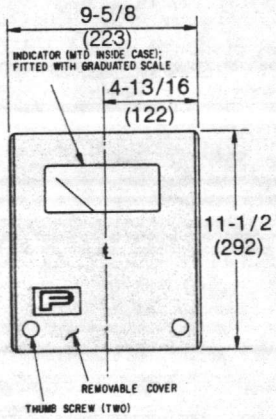
	Flow-thru (In-Line)	Immersion
Flow Chamber Volume	175 ml	—
Materials Cover and Connecting Ring Flow Chamber Guard O-Rings	Polypropylene Polypropylene — Viton A	Polypropylene — Polypropylene Viton A
Sample Flow Rate	15 gpm (0.95 L/s) max. Lower flow rate for viscous solutions, abrasives and high-purity water	—
Maximum Pressure and Temp.	100 psig (690 kPa), 60°C (140°F) 50 psig (345 kPa), 80°C (176°F)	
Immersion Depth	—	Up to 200 ft (60 m) in a non-pressurized vessel or chamber
Relative Humidity Limit	Usable at 100% relative humidity	

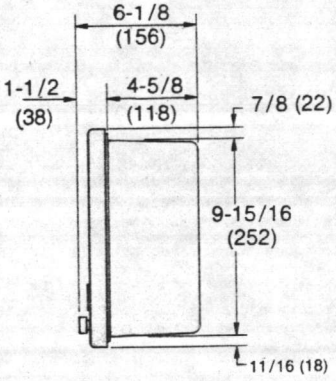
Electrodes

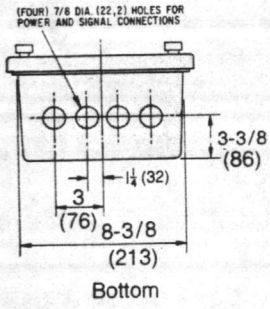
	pH Measuring Electrode		Reference Electrode	Temp. Compensation
Range	0-10 or 2-12	4-14	0-10, 2-12 or 4-14	0-10, 2-12 or 4-14
Operating Temp. Limit	-5 to 40°C (23 to 104°F)	10-80°C (50-176°F)	-5 to 80°C (23 to 176°F)	-5 to 80°C (23 to 176°F)
Internal Element	Silver-Silver Chloride		Silver-Silver Chloride	—
Material Body Tip	Glass Sensitive Glass		Epoxy Removable Ceramic Plug	Epoxy —
Electrolyte Supply	—		Non-flowing transparent (visible electrolyte supply) filled with long lasting KCl Slurry	—

DIMENSIONS

TRANSMITTER

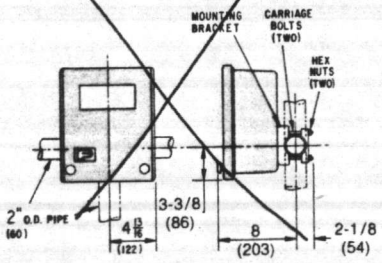




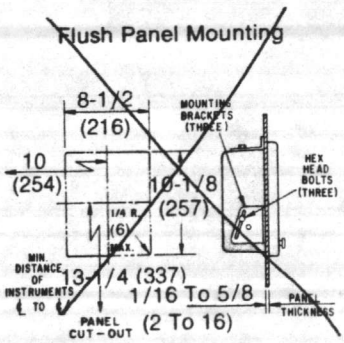


Bottom

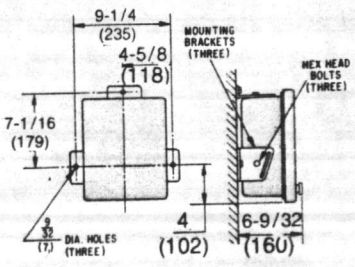
Pipe Mounting
(Horizontal or Vertical Pipe)



Flush Panel Mounting

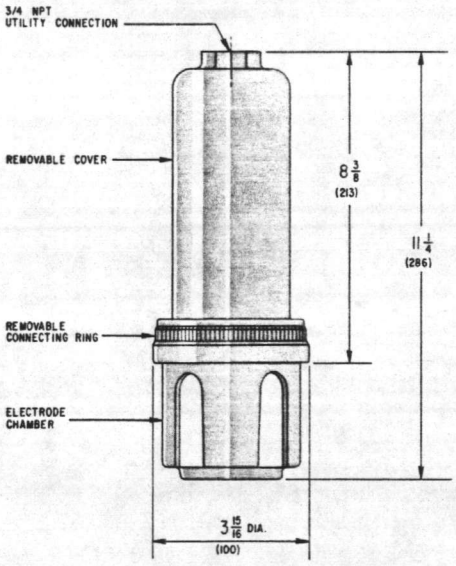


✓ **Surface Mounting**



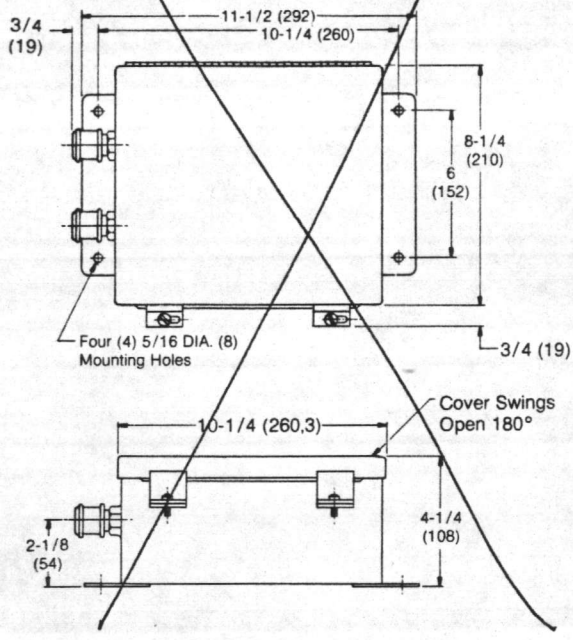
DIMENSIONS (continued)

IMMERSION SENSOR ASSEMBLY

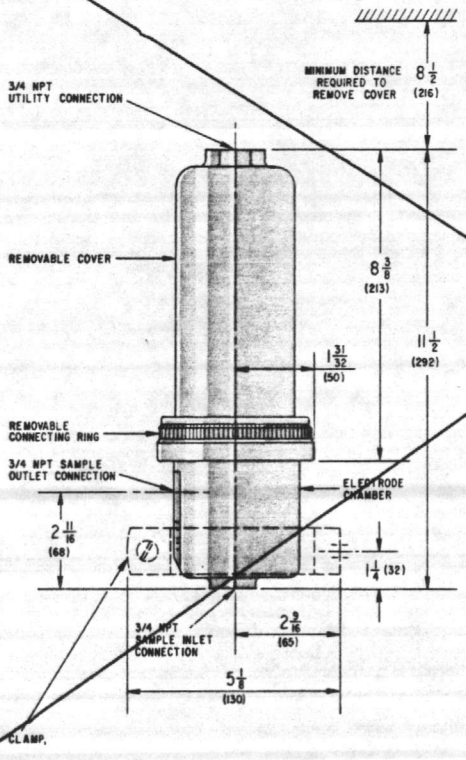


AE VERIFY

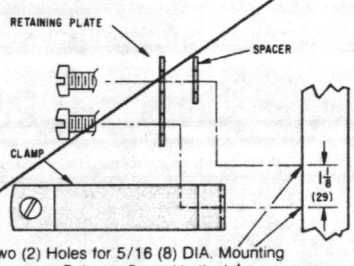
ULTRASONIC FREQUENCY GENERATOR . (OPTIONAL)



FLOW-THRU (IN-LINE) SENSOR ASSEMBLY



SURFACE MOUNTING



Two (2) Holes for 5/16 (8) DIA. Mounting Screws or Bolts on Same Vertical ℄.

Notes:

1. Dimensions are in inches, and (millimeters).
2. Dimensions provided for reference only.
3. Transmitter mounting hardware is furnished for the type of mounting specified at time of purchase.

FISCHER & PORTER

EQUIPMENT DESCRIPTION

The pH Transmitter System shall consist of a sensor assembly and an indicating transmitter. The system shall measure and indicate the pH value of the process liquid and transmit a 4-20 mA dc signal proportional to that of the measurement. The sensor assembly shall be available either as a flow-thru or immersion type cell. The sensor assembly shall consist of a fiberglass reinforced polypropylene body containing both reference and pH measuring electrodes (of suitable operating characteristics for the service); a temperature compensator and preamplifier; and be furnished with either a flow chamber for flow-thru service or protecting guard for immersion type application. Unshielded, five-conductor, #18 AWG cable shall be utilized for interconnection of the sensor assembly to the transmitter. The length of cable shall be as indicated on the plans but limited to 1000 ft (305 m) maximum.

The pH Transmitter shall be of all solid state electronic construction with integrated circuitry mounted on printed circuit boards. It shall measure the pH value over any of three switch selective ranges of ~~0-10~~, 2-12, or ~~4-14~~ pH. A 2-12 pH scale shall be furnished as standard. The transmitter housing shall be NEMA 3 (IEC IP 66) and suitable for (~~flush panel~~) (surface) (~~pipe~~) mounting. Ambient temperature range shall be -18 to 49°C (0 to 120°F). The transmitter shall transmit a 4-20 mA dc signal into a maximum load of 600 ohms. Input-output isolation shall be standard. Power Supply shall be (120) ~~(220/240)~~ V ac ±10%, 50/60 Hz. The pH transmitter system shall be Fischer & Porter Series 17PH1000.

Ultrasonic Electrode Cleaning Kit (optional)

The transducer and holder are 316 SS and are constructed for Class I Div. 2 Group C and D locations. The ultrasonic generator itself is housed in a sheet metal, NEMA 12 case for wall mounting in a non-hazardous or general purpose location and requires a 120 or 240 V ac, 50/60 Hz power supply at 75 watts (max.) The kit contains 20 ft. (6m) of lead wire for use between the transducer and generator.

OPTIONAL EQUIPMENT

Spare Sensor Assembly

Spare pH Sensing Probes (measuring and reference electrodes and temperature compensator).

Support Beam and Mounting Bracket for immersion type sensor assembly.

Sensor Assembly Maintenance Kit (includes two spare pH measuring electrodes, buffer solutions and seals).

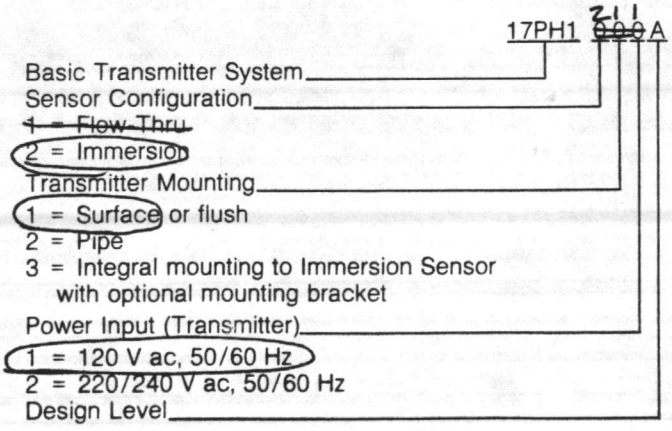
Remote indicator/recorder/controller.

Ultrasonic Electrode Cleaning Kit

ORDERING INFORMATION

Series Number
Voltage and Frequency
Optional Equipment
Application Data
pH Range
Sensor Configuration
Transmitter Mounting
Process Liquid Characteristic:
(eg: Flow rate, Pressure and Temperature)

MODEL NUMBER DESIGNATION



Note: Specifications are subject to change without notice.

Pub. 22386

Printed in U.S.A. May 1977

FISCHER & PORTER COMPANY
Warminster, Pennsylvania 18974
Phone: (215) 674-6000

FISCHER & PORTER

ANALYZER SYSTEMS
EQUIPMENT SPECIFICATION

Sheet __ of __

Customer Name: Holcomb Blvd. Water Plant Inquiry No.: Harry Pepper & Assoc, Inc.

F&P Proposal No.: Combs & Associates Item No.: J4001 & J4002 Quan. Two (2)

Tag No(s).: J4001 pH ANALYZER TRANSMITTER

J4002 " " "

Model Number: F&P 17pH1211A

System Functions

P.B.

- [x] Analyzer - Refer to reverse side for Description
- [ ] 51-1321 Recorder - Refer to Sheet _____ for Description
- [ ] 53EG4000 Controller - Refer to Sheet _____ for Description
- [ ] 51-1102DB Circular Chart Recorder - Refer to Sheet _____ for Description

Note: All accessories (ie. Charts, Ink, etc...) are to be specified on the appropriate Equipment Specification Sheet referenced above. Provide complete price breakdown on attached sheets and use this form for the total system price only.

Total: _____

Notes: _____

ANALYZER - TRANSMITTER
EQUIPMENT SPECIFICATION

Item No.: J4001 & 002 **Quantity:** Two **Model:** F & P 17PH1211A

Tag No(s).: J4001 & J4002 pH analyzer transmitters

Input: ☐ Free ☐ Total Residual Chlorine ☐ Fluoride ☐ With Hexametaphosphate (Calgon)
☐ Dissolved Ozone ☐ Potassium Permanganate ■ pH ☐ Redox (ORP) ☐ Dissolved Oxygen

Operating and Scale Range:
☐ 0-0.5 ☐ 0-1 ☐ 0-2 ☐ 0-3 ☐ 0-5 ☐ 0-10 ☐ 0-20 mg/L Residual Chlorine
☐ 0-1 mg/L (Not Available with Calgon) ☐ 0-2 mg/L Fluoride
☐ 0-2 (Scale Range 0-20) ☐ 0-5 ☐ 0-10 ☐ 0-20 mg/L Dissolved Oxygen
☐ 0-0.5 ☐ 0-1 ☐ 0-2 mg/L Potassium Permaganate
■ 0-10 ■ 2-12 ☐ 4-14 pH
☐ 0-0.5 ☐ 0-1 mg/L Dissolved Ozone
☐ _____ mv (Redox) (Standard Scale Is Percent)

Output Signal: 4-20 mA dc ✓

Operating Voltage: ■ 120 V 50/60 Hz. ☐ 220/240 V 50/60 Hz (17DO, 17PH, 17RX)

Sensor Configuration (17PH, 17RX): ☐ Immersion ☐ Flow Thru

	P.B.
Base Price of meter as described above.....	
Options and Accessories	
17B, 17F, 17L, 17P	
☐ Door Lock ~~Shatterproof Glass~~	
☐ Sample Filter P/N _____ ☐ ~~Sample~~ Pump Model _____	
☑ Chemicals (Provide ~~Part~~ Number and Quantity ~~-~~ Model 17B, 17F w/Calgon)	
_____	
_____	
2-12	
■ With Indicator ☐ Without Indicator	
☐ Salt/Seawater Service (17B)	
☐ Breakpoint (17B) 0-10 mg/L Max. Range	
17DO, 17PH, 17RS	
■ Mounting Bracket and Support Extension (Base on 17DO)	
☐ Cable Length _____ ☐ ~~Maintenance Kit~~	
☐ ~~Spare Sensor Assembly (17DO, 17PH)~~	
☐ ~~Spare Membrane Assembly (17DO)~~	
☐ ~~Spare Reference Electrode (17PH, 17RX)~~	
☐ ~~Spare Temperature Compensator~~ ☐ Ultrasonic Electrode Cleaning Kit (17PH)	
☐ ~~Spare Measuring Electrode (17PH, 17RX)~~ ☐ Special Direct Read Meter (17RX)	

Hartt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	132	12-17-85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

TO: Henry Von Oesen & Associates, Inc.

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

[X] Contractor Approved [ ] OICC Approval [ ] Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	4.3	Filter media Gradation and Material Certification	4		AB

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Reese Phil Reese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
12/20/85	Henry von Oesen & Assoc., Inc.	

[ ] Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

[ ] Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

CONTRACTOR'S APPROVAL APPEARS TO APPROPRIATE.

HENRY VON OESEN AND ASSOCIATES, INC.
CONSULTING ENGINEERS & PLANNERS

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	12/23/85	

☆ U.S. GPO:1984-537-003/11170 Region 3-11

LAW ENGINEERING TESTING COMPANY
3301 WINTON ROAD • P.O. BOX 18288
TELEPHONE (919) 876-0416 • RALEIGH, N.C. 27619

REPORT OF FILTER GRAVEL ANALYSIS

CLIENT: Southern Products & Silica Co.
Hoffman, North Carolina

DATE: November 29, 1984

PROJECT: Laboratory Testing

JOB NO.: RAG-1660

SIEVE ANALYSIS

SAMPLE SIZE	SIEVE	% RET	% PASSING	SPECIFICATIONS LIMITS % PASSING
1 1/2" X 3/4"	1 1/2"	1.7	98.3	92.0 Min.
	3/4"	97.4	2.6	8.0 Max.

NOTE: Test sample obtained and tested in accordance with the American Water Works Association, Section B100-80.

This analysis is true and correct.

C. K. Smith, General Manager

North Carolina

Moore County

I, Pam H Wood, a Notary Public for said County and STate, do hereby certify that C K Smith personally appeared before me this day, and signed the foregoing instrument.

Witness my hand and official seal, this the 3rd day of December, 1985.

Pam H Wood
Notary Public

My commission expires 4-2-89.

Respectfully Submitted
LAW ENGINEERING TESTING CO.

477-02

It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut (s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

X Approved for use.

_____ Submitted for Government approval.

_____ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Feese DATE 12-17-85

LAW ENGINEERING TESTING COMPANY
3301 WINTON ROAD • P.O. BOX 18288
TELEPHONE (919) 876-0416 • RALEIGH, N.C. 27619

REPORT OF FILTER GRAVEL ANALYSIS

CLIENT: Southern Products & Silica Co.
Hoffman, North Carolina

DATE: November 29, 1984

PROJECT: Laboratory Testing

JOB NO.: RAG-1660

SIEVE ANALYSIS

SAMPLE SIZE	SIEVE	% RET	% PASSING	SPECIFICATIONS LIMITS % PASSING
1" X 5/8"	1"	1.9	98.1	92.0 Min.
	5/8"	97.8	2.2	8.0 Max.

NOTE: Test sample obtained and tested in accordance with the American Water Works Association, Section B100-80.

This analysis is true and Correct.

C. K. Smith

C. K. Smith, General Manager

North Carolina

Moore County

I, Pam H. Wood, a Notary Public for said County and State, do hereby certify that C K Smith personally appeared before me this day, and signed the foregoing instrument.

Witness my hand and official seal, this the 3rd dayof December, 1985.

Pam H. Wood

Notary Public

My commission expires 4-2-89.

Respectfully Submitted
LAW ENGINEERING TESTING CO.

477-02

LAW ENGINEERING TESTING COMPANY
3301 WINTON ROAD • P.O. BOX 18288
TELEPHONE (919) 876-0416 • RALEIGH, N.C. 27619

REPORT OF FILTER GRAVEL ANALYSIS

CLIENT: Southern Products & Silica Co.
Hoffman, North Carolina

DATE: December 20, 1984

PROJECT: Laboratory Testing

JOB NO.: RAG-1660

SIEVE ANALYSIS

SAMPLE SIZE	SIEVE	% RET	% PASSING	SPECIFICATIONS LIMITS % PASSING
5/8" X 3/8"	5/8"	0	100	92.0 Min.
	3/8"	98.8	1.2	8.0 Max.

NOTE: Test sample obtained and tested in accordance with the American Water Works Association, Section B100-80.

This analysis is true and correct.

C. K. Smith

C. K. Smith, General Manager

North Carolina
Moore County

I, Pam H. Wood, a Notary Public for said County and State, do hereby certify that C K Smith personally appeared before me this day, and signed the foregoing instrument.

Witness my hand and official seal, this the 3rd day of December, 1985.

Pam H. Wood
Notary Public

My commission expires 4-2-89.

Respectfully Submitted
LAW ENGINEERING TESTING CO.

LAW ENGINEERING TESTING COMPANY
3301 WINTON ROAD • P.O. BOX 18288
TELEPHONE (919) 876-0416 • RALEIGH, N.C. 27619

REPORT OF FILTER GRAVEL ANALYSIS

CLIENT: Southern Products & Silica Co.
Hoffman, North Carolina

DATE: November 29, 1984

PROJECT: Laboratory Testing

JOB NO.: RAG-1660

SIEVE ANALYSIS

SAMPLE SIZE	SIEVE	% RET	% PASSING	SPECIFICATIONS LIMITS % PASSING
3/8" X 3/16"	3/8"	0	100	92.0 Min.
	3/16"	98.0	2.0	8.0 Max.

NOTE: Test sample obtained and tested in accordance with the American Water Works Association, Section B100-80.

This analysis is true and correct.

C. K. Smith

C. K. Smith, General Manager

North Carolina

Moore County

I, Pam H Wood, a Notary Public for said County and State, do hereby certify that C K Smith Personally appeared before me this day, and signed the foregoing instrument.

Witness my hand and official seal, this the 3rd day of December, 1985

Pam H Wood Notary Public

My commission expires 4-2-, 1989.

Respectfully Submitted
LAW ENGINEERING TESTING CO.

477-02

LAW ENGINEERING TESTING COMPANY
3301 WINTON ROAD • P.O. BOX 18288
TELEPHONE (919) 876-0416 • RALEIGH, N.C. 27619

REPORT OF FILTER GRAVEL ANALYSIS

CLIENT: Southern Products & Silica Co.
Hoffman, North Carolina

DATE: November 29, 1984

PROJECT: Laboratory Testing

JOB NO.: RAG-1660

SIEVE ANALYSIS

SAMPLE SIZE	SIEVE	% RET	% PASSING	SPECIFICATIONS LIMITS % PASSING
3/16 X #10	3/16"	1.1	98.9	92.0 Min.
	#10	99.2	.8	8.0 Max.

NOTE: Test sample obtained and tested in accordance with the American Water Works Association, Section B100-80.

This analysis is true and Correct.

C. K. Smith

C. K. Smith, General Manager

North Carolina

Moore County

I, Pam N. Wood, a Notary Public for said County and State, do hereby certify that C K Smith personally appeared before me this day, andsigned Witness my habd abd official seal, this the 3rd day of December, 19 85

Pam N. Wood

Notary Public

My commission expires 4-2-89.

Respectfully Submitted
LAW ENGINEERING TESTING CO.

Cindy Fuller

477-02

LAW ENGINEERING TESTING COMPANY
3301 WINTON ROAD • P.O. BOX 18288
TELEPHONE (919) 876-0416 • RALEIGH, N.C. 27619

REPORT OF FILTER GRAVEL ANALYSIS

CLIENT: Southern Products & Silica Co.
Hoffman, North Carolina

DATE: November 29, 1984

PROJECT: Laboratory Testing

JOB NO.: RAG-1660

SIEVE ANALYSIS

SAND - .45 mm X .55 mm

SIEVE	% RET	% PASSING	SPECIFICATIONS
10	0	100	
16	4.5	95.5	
20	17.3	82.7	
25	42.0	58.0	
30	69.1	30.9	
35	87.2	12.8	
40	95.1	4.9	
50	99.3	.7	
Uniformity coefficient	- 1.5		1.7 or Less
Effective size	- .48 mm		.45 mm - .55 mm

NOTE: Test sample obtained and tested in accordance with the American Water Works Association, Section B100-80.

This analysis is true and correct.

C. K. Smith, General Manager

North Carolina
Moore County

I, Pam H. Wood, a Notary Public for said County and State, do hereby certify that C K Smith personally appeared before me this day, and signed the foregoing instrument.

Witness my hand and official seal, this the 3rd day of December, 1985.

Pam H Wood
477-02 Notary Public

My commission expires 4-2-89.

Respectfully Submitted
LAW ENGINEERING TESTING CO.

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	61-8	1-2-86

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☒ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
		Letter from Combs & Associates, Inc. to Harry Pepper & Associates, Inc.			
	6.2.8	Manufacturer's Data and Shop Drawings on Filter Concole			

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: COPY TO ROICC

CONTRACTOR REPRESENTATIVE *(Signature)*: Paul Sense

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
1/6/86	Henry Von Oesen & Assoc., Inc.	

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Equipment installation, controls, etc. ... equipment ... so that it will be ...

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)		

☆ U.S. GPO:1984-537-003/11170 Region 3-11

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	181	3-13-86

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☐ OICC Approval ☒ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

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C-Comments
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ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	6.5.e	Manufacturer's Data and Drawings on PH Sensor	7	A	CCS 405 4/7/86
2		Estimate for Change Order	7	C	CCS 405 4/7/86

CONTRACTOR'S COMMENTS

(1) The attached Manufacturer's Data is being provided for the following reasons.
a. The current PH Sensor when removed causes Treatment Process System to be shut down.
b. The Deviation will allow removal of Sensor without a shut down.
(2) The attached Manufacturer's Data has been reviewed by Plant Operating Personnel and found to be acceptable.
(3) Cost of Deviation (PH Sensor) is provided as shown.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC	CONTRACTOR REPRESENTATIVE (Signature)
ONE COPY TO ROICC	Phil Reese Phil Reese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
4/3/86	BM	dist

☒ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Deviation is approved subject to an equitable change order settlement to be negotiated by Lt. KRUG.

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	4/8/86	Bill Mauney

☆ U.S. GOP: 1983 - 739-003/2122 Region 3-11

17 APR 1986 13 00

ONE(1) MODEL 222T-A01-H

pH and ORP Electrode Assemblies

Basic Assembly

This multi-purpose sensor assembly is suitable for virtually all pH and ORP measurement applications, and flexibility is further enhanced when used with a variety of mounting option accessories. Assembly accepts a variety of glass pH and metallic pH and ORP electrodes with unique design for interchangeability or replacement. Units available for use with 2220 Series Monitor or E99 Series Transmitters.

The sensor assembly is a compact unit: comprises a Ryton housing; a pH or ORP measuring electrode; a plug-in dual liquid reference junction and a replaceable solution ground; and built-in automatic temperature compensator. The electrode and reference junction are mechanically secured with a replaceable keeper and a knurled stud. The keeper and stud also serve as solution ground. The unit is not affected by normally encountered chemical solutions and is capable of withstanding continuous operation in a wide range of process pressures and temperatures. A differential high impedance solid state preamplifier is optionally encapsulated in the sensor housing.

Measuring Electrodes

Interchangeable plug-in sensing electrodes are available in both glass and metal configurations to suit any given application. This unique concept allows the user a choice of any of these electrodes. If an incorrect one is chosen, or if the measurement conditions change, it is simple to change from one measurement system to another in the field.

Glass pH electrodes offer the best performance in most solutions, and inherently provide the most accurate measurement. The small bulb design results in a rugged electrode suitable for industrial service.

Metallic antimony pH electrodes are available for abrasive solutions or for solutions containing hydrofluoric acid or other chemicals which attack glass electrodes. Antimony should not be used in acid copper solutions nor in oxidizing or reducing solutions such as chromates, chlorine, hypochlorites, or sulfides. ORP electrodes are available in both platinum or gold (gold is primarily used in cyanide reduction systems).

Reference Electrode

The reference electrode is a non-flowing dual liquid type. A silver-silver chloride half cell immersed in saturated potassium chloride is used because of its highly stable output voltage. The filling solution and the junction may be readily replaced in the field.

Mounting

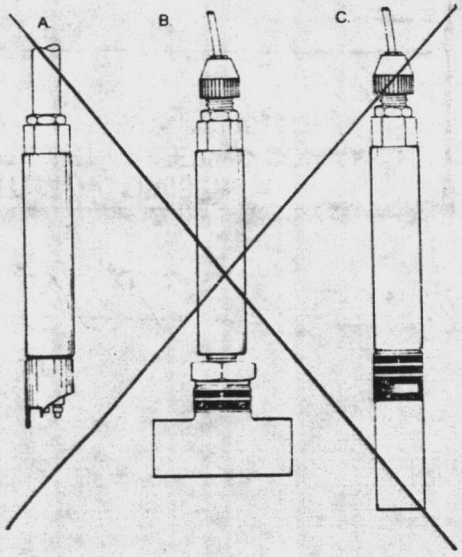
The basic sensor assembly may be mounted as follows:

~~A. In situ, in tank or trough, etc., as shipped. Optional electrode protection sleeve is recommended for this use (cutaway view).~~

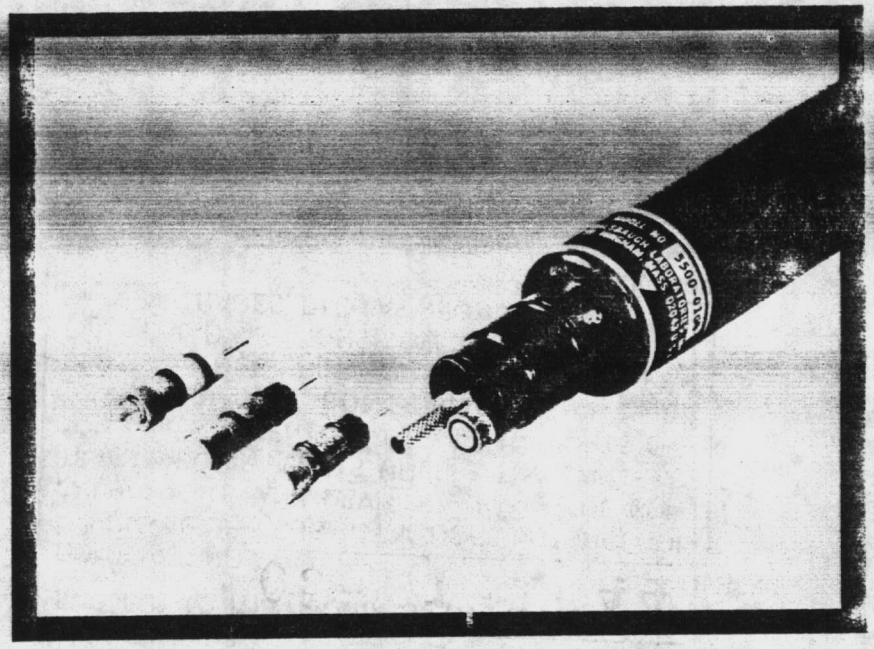
~~B. In-line via twist-lock bushings or tees for permanent installation in pipeline or tank.~~

~~C. Sample line twist-lock flow chambers are available for clean sample stream applications. 316 SS flow chamber is recommended for pure or ultrapure water pH measurement.~~

D. In-line via ball valve unit which permits sensor assembly to be removed from process stream or tank, underrated temperature and pressure, without draining the system or resorting to a bypass arrangement.



Ryton is a trademark of Phillips Petroleum Company
Viton is a trademark of E I duPont de Nemours and Company



SERIES 222
pH AND ORP ELECTRODE ASSEMBLIES

Features:

- SINGLE, MULTI-PURPOSE ASSEMBLY SUITABLE FOR VIRTUALLY ALL APPLICATIONS
- FIELD INTERCHANGEABLE, PLUG-IN GLASS AND METAL ELECTRODES FOR pH AND ORP
- PLUG-IN REPLACEABLE DUAL LIQUID REFERENCE JUNCTION
- DESIGNED FOR CONTINUOUS OPERATION AT HIGH TEMPERATURES AND PRESSURES
- AUTOMATIC INTEGRAL TEMPERATURE COMPENSATION
- RECHARGEABLE REFERENCE ELECTRODE
- INTEGRAL PREAMPLIFIER AVAILABLE
- FLEXIBILITY ENHANCED WHEN USED WITH VARIETY OF MOUNTING ACCESSORIES
  - IN-LINE TWIST LOCK BUSHINGS
  - BALL VALVE INSERTION UNIT
  - SAMPLE LINE FLOW CHAMBERS
  - ELECTRODE PROTECTION SLEEVE

FOXBORO

Item #1

I hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut(s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

_____ Approved for use.

_____ Submitted for Government approval.

_X_ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Pesce DATE 3-13-86

ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK VIRGINIA 23511

APPROVED _____
APPROVED AS NOTED _____
DISAPPROVED _____
SUBMITTAL OF _____

CONTRACT NO. _____
APPROVAL OF A SUBMITTAL DOES NOT INCLUDE
APPROVAL OF ANY DEVIATION FROM THE CON-
TRACT REQUIREMENTS UNLESS THE CONTRAC-
TOR CALLS ATTENTION TO AND SUBMITS THE
DEVIATION--THE CONTRACTOR SHALL BE
RESPONSIBLE FOR PROVIDING PROPER
PHYSICAL DIMENSIONS & WEIGHTS COORDINA-
TION OF TRADES, ETC., AS REQUIRED

REVIEWER _____ DATE _____

FOR OFFICER IN CHARGE OF CONSTRUCTION

ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

APPROVED ✓
APPROVED AS NOTED _____
DISAPPROVED _____
SUBJECT TO THE REQUIREMENTS OF

CONTRACT NO. 05-81-1644
APPROVAL OF A SUBMITTAL DOES NOT INCLUDE
APPROVAL OF ANY DEVIATION FROM THE CON-
TRACT REQUIREMENTS UNLESS THE CONTRAC-
TOR CALLS ATTENTION TO AND SUBMITS THE
DEVIATION--THE CONTRACTOR SHALL BE
RESPONSIBLE FOR PROVIDING PROPER
PHYSICAL DIMENSIONS & WEIGHTS COORDINA-
TION OF TRADES, ETC., AS REQUIRED

7 APR 1986

REVIEWER CCS DATE _____

FOR OFFICER IN CHARGE OF CONSTRUCTION

ONE (1) MODEL 2220 -A 02 -W-J

Product Specifications

PSS 6-1A1 C

2220 MONITORS (pH AND ORP)

The Foxboro 2220 Monitor, in conjunction with an appropriate 222T Sensor, provides continuous measurement and indication of the pH or Oxidation-Reduction Potential (ORP) of a wide variety of industrial process solutions.

The 2220 Monitor provides a 0 to 10 V dc output to drive a recorder, digital voltmeter, or similar device. An optional isolated 4 to 20 or 10 to 50 mA dc output signal is available for recorders, controllers, or converters that provide an input to computers.

This direct readout monitor features a variety of ranges that cover several spans between the range limits of 0 and 14 pH and -500 and +2000 mV dc ORP on easily read scales.

EASY ACCESS TO CONTROLS

Monitor operation and pre-operation checks are simplified because of easy access to the High and Low Alarm settings and Standardize control, both conveniently located on the monitor front panel.

CHOICE OF MOUNTING

Panel mounting (into panel cutout), surface mounting (with or without rear access), pipe mounting (DN 25 or 1 in), or field mounting (optional hinged-door enclosure) are offered. The monitor may be located a maximum of 300 m (1000 ft) from the measurement location.

SENSOR AND ACCESSORY SELECTIONS

A variety of sensors is available (e.g., choices of body material, measuring electrode, reference junction, etc.). A versatile selection of sensor mounting accessories meet virtually all process requirements. For information on sensors and accessories, refer to PSS 6-1A2 B.

FOXBORO®

®Registered Trademark

CONTINUOUS ALARM INDICATION

A pair of red light-emitting diodes (LED's), located on the monitor front panel, provide a constant visible alarm indication when the measured value is above or below the alarm settings.

INSTALLATION AND MAINTENANCE SIMPLIFIED

Removal of two screws on the monitor front panel permits easy access for installation or routine maintenance. Unplugging a cable connector allows the front panel to be separated from the housing.

FUNCTIONAL SPECIFICATIONS

Model Code

2220= Monitor, pH and ORP

Supply Voltage
-A = 120 V, 50/60 Hz
~~B = 240 V, 50/60 Hz~~

Range
01 = 0 to 14 pH, Glass Electrode
02 = 2 to 12 pH, Glass Electrode
03 = 4 to 10 pH, Glass Electrode
04 = 0 to 14 pH, Antimony Electrode
05 = 2 to 12 pH, Antimony Electrode
06 = 4 to 10 pH, Antimony Electrode
07 = 0 to 10 pH, Antimony Electrode
08 = -500 to +500 mV, ORP Electrode
09 = 0 to 1000 mV, ORP Electrode
10 = 0 to 2000 mV, ORP Electrode
11 = Fixed Intermediate, Glass (Specify)
12 = Fixed Intermediate, Antimony (Specify)
13 = Fixed Intermediate, ORP (Specify)

Mounting
P = Panel/Rear Access Surface
S = Pipe/Front Access Surface
W = Field, NEMA 4

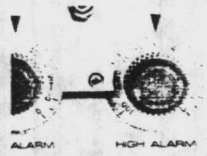
Selectable Options
~~Current Output (Isolated)~~
-J = 4 to 20 mA dc, 120/240 V ac
-K = 10 to 50 mA dc, 120/240 V ac

~~Alarm - Sealed Relay~~
-R = Sealed Alarm Contacts (2 Form C contacts)

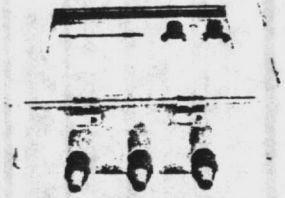
~~Dial Lock~~
-DL1 = Dial Lock, 1-position
-DL2 = Dial Lock, 2-position

Example: 2220-A01P-J-R-DL1

SELECTABLE OPTIONAL FEATURES

Optional Feature	Description	Model Code Suffix
 Isolating Current Output PWA	Available for a recorder, controller, or a converter that serves as an input to a computer. Isolated, 4 to 20 mA dc into 1 kΩ Isolated, 10 to 50 mA dc into 400 Ω	 -J -K
 Dial Lock	Provides added system security by allowing locking of either Low or High Alarm knob (-DL1) or both (-DL2). 1-Position 2-Position	 -DL1 -DL2
 Alarm	Sealed alarm contacts, (2 Form C contacts)	-R

NEMA 4 ENCLOSURE

	Description	How to Order
 Mounting Code W Shown	Provides the environmental protection of NEMA 4, and can be used to mount a 2220 Monitor in an area with a rigorous environment. Enclosure With 2220 Monitor	Specify Mounting Code W
	Enclosure Without Monitor	Specify Foxboro Part Number 0051101

Output Signal (For a Recorder) 0 to 10 V dc linear into 2 kΩ minimum

Optional Output Signal
Isolated, 4 to 20 mA dc into 1 kΩ maximum
Isolated, 10 to 50 mA dc into 400 Ω maximum

Supply Voltage and Frequency Limits
105 and 125 V, 50/60 ± 1 Hz, 10 VA maximum
210 and 250 V, 50/60 ± 1 Hz, 10 VA maximum

Range and Span Limits

Measurement	Range Limits*	Span Limits*
pH	0 and 14 pH	4 and 14 pH
ORP	-500 and +2000 mV	1000 and 2000 mV

*As specified by Range in Model Code

Ambient Temperature Limits -20 and +60°C (-5 and +140°F)

Temperature Compensation When used with Foxboro 2221 Sensors, the monitor provides automatic temperature compensation for electrode thermal errors for solution temperature between -5 and +105°C (20 and 220°F).

Alarms Two independently set Form C contacts rated 3 A resistive at 120 V ac or 28 V dc. (Optional sealed relay available with same ratings.)

Operating Adjustments (On Front Panel)
Low Alarm Potentiometer (with knob)
High Alarm Potentiometer (with knob)
Standardize Potentiometer (screwdriver adjustment)

Electrical Classification (Mounting Suffixes P and W Only) CSA approved for ordinary locations

PERFORMANCE SPECIFICATIONS

Accuracy ± 1% of span

Indicator Accuracy ± 2% of upper-range value

Repeatability 0.1% of span

Alarm Lockup Fixed lockup of 3% of span nominal

Humidity Effect Negligible effect between 0 and 95% relative humidity.

Supply Voltage and Frequency Effect Line voltage and frequency affect the measurement less than 1% within the supply limits.

PHYSICAL SPECIFICATONS

Mounting
Monitor Housing
Model Code P
Panel Mounting Mounting into panel cutout (mounting hardware supplied).
Surface Mounting Mounting on a surface with rear access by user-supplied hardware.
Model Code S (Surface Mounting) Mounting on a surface with no rear access. A gray steel plate, plus mounting hardware, is supplied.
Surface Mounting on a surface that is too thick to be penetrated by the 1/4-20 × 0.50 in hardware that connects into the rear of housing.
Pipe Mounting on any unobstructed horizontal or vertical section of DN 25 or 1 in pipe, 300 mm (12 in) long (user supplied).
Model Code W (Field) Surface mounting enclosure has a hinged door for convenient access to controls. The door has a window to observe indicator and controls.

Environmental Protection
Monitor Housing The monitor housing is weatherproof and dust-protected as defined by IEC IP53 and provides the raintight protection of NEMA Type 3.
Optional Enclosure The enclosure is weatherproof and dusttight as defined by IEC IP65 and provides the watertight protection of NEMA Type 4 (or CSA Enclosure 4).

Monitor Material
Front Panel Fully gasketed glass-reinforced polyester.
Housing Aluminum, epoxy paint finish

Optional NEMA 4 Housing Aluminum, epoxy paint finish

Indicator Scale Length 114 mm (4.5 in)

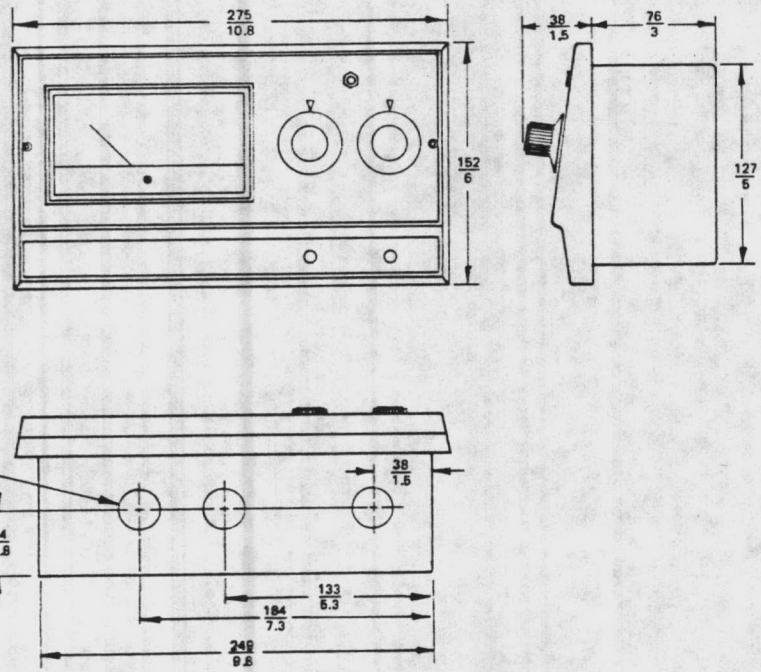
Wiring Connections
Through Housing At bottom through conduit (user supplied)
Internal Terminal connections

ORDERING INSTRUCTIONS

1. Model Code
2. Scale Range (For Range Model Codes 11, 12, and 13 Only)
3. Tag

DIMENSIONS—NOMINAL

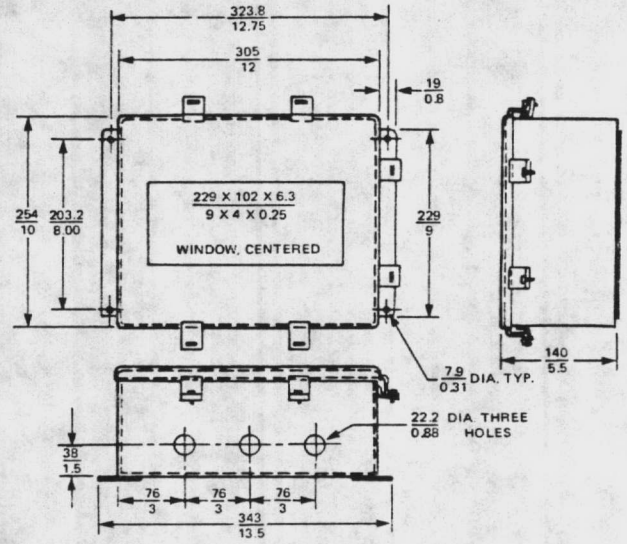
mm / in



DIMENSIONS—NOMINAL (Cont)

mm / in

FIELD MOUNTED (NEMA 4)



Specifications

✓ **Performance:** Reproducibility is typically 2 mV (0.03 pH unit) at reference conditions. Reproducibility at operating conditions depends on calibration standard employed, cleanliness of electrode and other process-related conditions. Optional Foxboro electrode cleaners aid in maintaining a high degree of reproducibility on pH and ORP electrodes in dirty process streams. (See PSS on Electrode Cleaning Systems.)

✓ **Measuring electrodes:** Plug-in interchangeable electrodes; glass pH, employing high stability silver, silver chloride (Ag, AgCl) internals; antimony pH; and platinum or gold ORP. For easy identification, the plug-in end of the electrode is color coded as per page 4.

✓ **Reference electrode:** Non-flowing, double junction with Ag, AgCl internal and saturated potassium chloride (KCl) electrolyte. Process junction is ceramic.

Measuring and reference junctions are mounted in Ryton and ptfe mounts with Viton O-rings.

Automatic temperature compensation (ATC): Assembly includes encapsulated ATC compatible with 2220 Series Monitors or E99 Series Transmitters, as specified. Covers temperatures between −5 and +105 °C (20 and 220 °F).

✓ **Solution ground:** Titanium Grade 2 CP solution ground stud or screw when used with optional electrode wiper cleaning systems. Also acts as keeper for securing electrodes in assembly.

✓ **Basic sensor assembly:** Immersion/Submersion. Depth: 50 mm (2 in) minimum and 6 m (20 ft) maximum.

✓ **Wetted parts:** Durable Ryton housing, Viton O-ring, electrodes and solution ground as noted.

✓ **Preamplifier:** Specify appropriate unit for use with 2220 Series Monitor or E99/E91 Series Transmitter (preamp Suffix B). 222F version is used with E99/E91 Series Transmitters with integral or remote preamplifier (HiZ module) with E99 HiZ Suffix A or C. 222F version may also be used with the high impedance input of various other pH units—but automatic temperature compensation compatible only with DIN 100 ohm platinum units. May be used with manually compensated or uncompensated units.

✓ **Cable:** 6 m (20 ft) integral cable terminated in numbered spade lugs. PVC jacketed cable on units with integral preamplifier, and units without preamplifier have vinyl jacketed cable.

✓ **Extension cable and junction boxes:** Sensor assemblies with integral preamplifier may be mounted up to 300 m (1000 ft) from the basic monitor or transmitter. For longer distances, or other assemblies, refer to Foxboro.

✓ **Electrical classification:** 222 Series electrode assemblies may be used in ordinary locations (general purpose) and in Class I, Groups A, B, C and D, Division 2.

Certain assemblies may be used in Class I, Groups A, B, C and D, Division 1 locations when coupled to specified versions of pH transmitters.

Electrical classification of sensor does *not* apply when used with optional electrode cleaning systems.

Specification	Housing* with Preamp.	Housing* without Preamp.	Housing* with or without Preamp.	Glass pH Electrode*	ORP or Antimony Electrode*
Operating Temperature Limits	−5 and +80 °C (20 and 175 °F) submerged	−5 and +125 °C (20 and 255 °F) submerged	−5 and +125 °C (20 and 255 °F) in-line	−5 and +105 °C (20 and 220 °F)	−5 and +125 °C (20 and 255 °F)
Maximum Pressure	1 MPa (150 psi)			0.7 MPa (100 psi)	1 MPa (150 psi)

*See also specifications for mounting options.

Specifications of Options

Mounting Options

Ball Valve Unit

The unit consists of the ball valve unit itself, and the insertion shaft assembly to support the sensor in the stream. Since the area of the insertion shaft is 2 cm^2 (0.3 in^2), a force of only 170 newtons (37.5 pound force) is required to insert the sensor in the stream at the maximum rated pressure of 0.9 MPa (125 psi). Standard flexible conduit (user provided) can be easily utilized if desired for cable protection, etc. Overall Dimensions: 500 mm (19 in.) long x 130 mm (5 in.) high x 100 mm (4 in.) wide. 1.3 m (48 in.) from mounting (pipe, tank wall, etc.) is required to remove sensor from unit.

Pressure/temperature: 0.9 MPa (125 psi) at 20 °C (70 °F) or 0.5 MPa (70 psi) at 65 °C (150 °F) or 0.3 MPa (50 psi) at 95 °C (200 °F).

Process line connection: 1 1/2 NPT.

Process wetted parts: 316 SS process connection and housing. Glass filled polypropyelene ball valve with ptfe seats and EPR O-ring seals.

Twist Lock Accessories

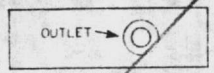
Twist lock connection for sensor assembly on flow chambers, bushings, tee and electrode protection sleeve listed below allows easy installation of sensor without tools. 90° rotation locks sensor in place and fittings are tapped for locking screw for added security.

Temperature and pressure specifications per Table.

Material	Temperature °C	Temperature °F	Pressure MPa	Pressure psi
PVC	50	120	0.4	60
~~CPVC~~	~~93~~	~~200~~	~~0.4~~	~~60~~
~~Ultem~~	~~175~~	~~350~~	~~0.4~~	~~60~~

Mounting Options (continued)

Flow Chambers



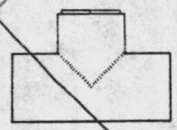
Inlet and outlet tapped for 1/4 NPT. Cell holder passes nominal 70 mL/s (2 gpm). 316 SS or PVC as specified. Nominal size is 127 mm (5 in) high, 38 mm (1½ in) diameter.

Bushings

Threaded bushing: 316 SS 1 1/4 or 1 1/2 NPT, or PVC 1 1/4 NPT as specified.

Tee

Solvent weld 1 inch IPS, PVC tee for insertion in pipeline.



Electrode Protection Sleeve PVC

For submersible unit only.

Interconnection Options For 222E or 222T Only

Junction Box

Provides junction box for interconnecting sensor assembly cable to extension cable to allow separation of sensor and monitor/transmitter to 300 m (1 000 ft). Box provides the environmental protection of NEMA Type 4.

Extension Cable

For use with sensor and junction box specified above. Specify length.

Plug Options

Twist lock 316 SS or PVC plugs may be used to provide system security if sensor assembly is removed for inspection or service.

Spare Parts

It is recommended that an additional electrode kit, buffer packets or solution and a reference cavity refill kit be ordered with a basic system.

Electrode Kit

Contains electrode, replacement locking keeper and stud and electrode removal tool and complete instructions. All parts necessary for field installation are provided. Electrode can be inserted or removed in less than a minute. For identification, the plug-in end of the electrode is color-coded, as per the chart below:

Description	Color	Part Number
Glass pH Electrode Kit	White	0022505
Antimony pH Electrode Kit	Green	0022506
Platinum ORP Electrode Kit	Red	0022507
Gold ORP Electrode Kit	Black	0022508

Reference Cavity Refill Kit

The refill kit contains the replaceable dual liquid reference junction, a bottle of saturated potassium chloride filling solution, all necessary tools, and complete instructions.

Buffers

Solution		Part Number
	Buffer 4.00 pH, 0.47 L (16 fl oz)	Q0104KC
	Buffer 7.00 pH, 0.47 L (16 fl oz)	Q0104KB
	Buffer 10.0 pH, 0.47 L (16 fl oz)	Q0104KA
Dry Powder	4.00 pH	1600-100
	7.00 pH	1600-101
	10.0 pH	1600-102

Packet mixed with distilled water makes .5L (16 fl oz) of buffer.

Ordering Instructions:

	Model and Description
~~222E~~	= ~~Electrode Assembly (with preamplifier for E91, E99 Series)~~
~~222F~~	= ~~Electrode Assembly (without preamplifier E91, E99 Series)~~
222T	= **Electrode Assembly** (with preamplifier 2220 Series)
	Electrode:
−A	= Glass pH
−B	= Antimony pH
−D	= Platinum ORP
−E	= Gold ORP
	Reference Junction:
01	= Ceramic
	Mounting Options:
−H	= Ball Valve Unit
−M	= Flow Chamber, 316 SS
−N	= Flow Chamber, PVC
−P	= Bushing, 1 1/4 NPT, 316 SS
−R	= Bushing, 1 1/2 NPT, 316 SS
−S	= Bushing, 1 1/4 NPT, PVC
−T	= Tee, PVC, 1 IPS
−U	= Electrode Protection Sleeve, PVC (submersion only)
	Interconnection Options: (222E or T Series only)
−1	= Junction Box, NEMA 4
−2	= Extension Cable (specify length)
	Plug Options:
−Y	= PVC (-N, -S, -T only)
−Z	= 316 SS (-M, -P, -R only)

Example:
222T-A01-U (Electrode assembly with preamplifier for 2220 Series monitor, with glass pH electrode, ceramic reference junction and PVC electrode protection sleeve)

Foxboro Analytical
A Division of The Foxboro Company

Armstrong Road
Plymouth Industrial Park
Plymouth, Massachusetts 02360
Tel (617) 747-1100

FOXBORO

ESTIMATE FOR CHANGE ORDER *(Less than $500,000)*

Item #2

VFAC 4330/43 (6/82) S/N 0108-LF-003-3430

CONTRACT #	CONTRACT TITLE	DATE
N62470-81-C-1644	Expansion of Holcomb Blvd. Water Treatment Plant	3/11/86

CHANGE DESCRIPTION,

MOD # 35 Ph Sensor

PRIME CONTRACTOR'S WORK		REVISIONS
LABOR	-0-	
FRINGE BENEFITS	-0-	
MATERIAL *(incl. sales tax)*	1,384.00	
RENTAL EQUIPMENT *(incl. sales tax)*	-0-	
OPERATING & MINOR MAINT. FOR OWNED EQUIPMENT	=0-	
SUB-TOTAL *(1 + 2 + 3 + 4 + 5)*		1,384.00
FIELD OVERHEAD *(10% of line 6)*	138.00	
LIABILITY & COMPENSATION INS. (% of line 1)	-0-	
SUB-TOTAL *(6 + 7 + 8)*		1,522.00
HOME OFFICE OVERHEAD *(3% of line 9)*	46.00	
EQUIPMENT OWNERSHIP EXPENSE	-0-	
SOCIAL SECURITY & UNEMPLOYMENT INS. (% of line 1)	-0-	
SUB-TOTAL *(9 + 10 + 11 + 12)*		1,568.00

MARKS

SUB-CONTRACTOR'S WORK		
LABOR		
FRINGE BENEFITS		
MATERIAL *(incl. sales tax)*		
RENTAL EQUIPMENT *(incl. sales tax)*		
OPERATING & MINOR MAINT. FOR OWNED EQUIPMENT		
SUB-TOTAL *(14 + 15 + 16 + 17 + 18)*		
FIELD OVERHEAD *(10% of line 19)*		
LIABILITY & COMPENSATION INS. (% of line 14)		
SUB-TOTAL *(19 + 20 + 21)*		
HOME OFFICE OVERHEAD *(3% of line 22)*		
EQUIPMENT OWNERSHIP EXPENSE		
SOCIAL SECURITY & UNEMPLOYMENT INS. (% of line 14)		
SUB-TOTAL *(22 + 23 + 24 + 25)*		
PROFIT *(6% of line 26)*		
SUB-TOTAL *(26 + 27)*		

MARKS

SUMMARY		
PRIME CONTRACTOR'S WORK *(from line 13)*	1,568.00	
SUB-CONTRACTOR'S WORK *(from line 28)*	-0-	
PRIME CONTRACTOR'S OVERHEAD ON SUB-CONTRACT WORK *(5% of line 30)*	-0-	
SUB-TOTAL *(29 + 30 + 31)*		1,568.00
PRIME CONTRACTOR'S PROFIT *(6% of line 32)*	94.00	
SUB-TOTAL *(32 + 33)*		1,662.00
PRIME CONTRACT BOND PREMIUM (% of line 34, actual)	8.00	
TOTAL COST *(34 + 35)*		1,670.00

MATED TIME EXTENSION AND JUSTIFICATION — CALENDAR DAYS

HARRY PEPPER & ASSOCIATES, INC. — Field Engineer

AME CONTRACTOR'S NAME — SIGNATURE AND OFFICIAL TITLE

INSTRUCTIONS FOR PREPARING CHANGE ORDER ESTIMATES

All Cost Estimates shall be addressed to the Resident Officer in Charge of Construction. Such requests must clearly state the conditions and scope of the change and shall be accompa
by a breakdown of cost as indicated. Lump sum items will not be accepted in either the prime or sub-contractor's breakdown. The total cost for labor, material, and equipment renta
ach item shall be transferred to the front of this form. At the contractor's option, the standard overhead rates shown on the front of this form may be used in lieu of detailed item
stimates of field and home office overhead expenses. Requests for overhead rates in excess of the standard rates must be accompanied by an independently prepared audit report cov
t least a current one-year period that substantiates the higher overhead costs claimed. The estimate should also include a request for an extension of time, in calendar days, if a
equired in order to complete the work covered by the proposed change. The contractor shall not proceed with any of the work included in the change prior to written approval of
Resident Officer in Charge of Construction.

BREAKDOWN ESTIMATE OF DIRECT COSTS

CONTRACT NO.: N62470-81-C-1644

NAME OF CONTRACTOR: HARRY PEPPER & ASSOCIATES, INC

CONTRACTOR: XX☒ PRIME ☐ SUBCONTRACT

ITEM NO.	ITEM OF WORK	NO. OF UNITS	LABOR		MATERIAL		EQUIPMENT			TOTAL COST
			UNIT COST	TOTAL COST	UNIT COST	TOTAL COST	EQU. DAYS	RATE	TOTAL COST	
1.	Original Sensor CREDIT	1	------	------	(1151.00)	(1151.00)	------	---	--------	(1,151.
2.	Removable Sensor	1	--------	--------	2,475.00	2,475.00	-----	---	--------	$2,475.
			XXX	--------	XXX	1,324.00	XXXXX	XX	--------	1,324

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	114-A	1-3-86

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☒ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	6.5	Shop Drawings on Acid Transfer Pumps and Acid Feed Pumps, Control Panel	7	AN	JPB 1/9/86

CONTRACTOR'S COMMENTS

Shop Drawings have been revised. See Transmittal # 114, dated 10-17-85.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Reese Phil Reese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
1/6/86	Henry von Oesen & Assoc., Inc.	ROICC

☒ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

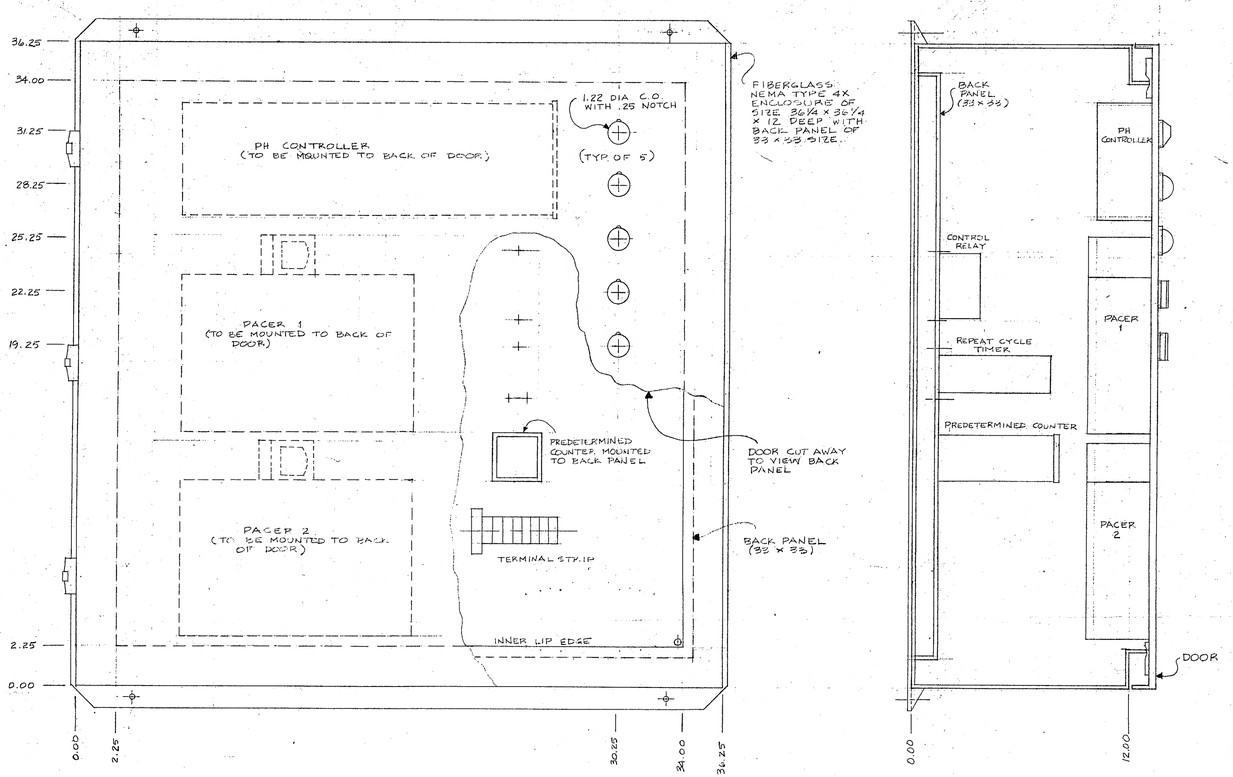
Equipment submittals must be coordinated with other equipment with which it operates to assure that they are compatible and complete and that the system will perform the required function.

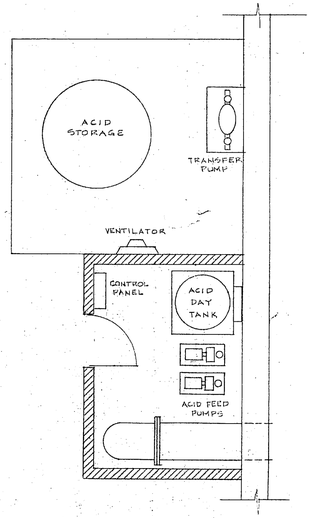
COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	1/9/86	

☆ U.S. GPO:1984-537-003/11170 Region 3-11

CONTROL PANEL — LAYOUT AND FABRICATION — FRONT & SIDE

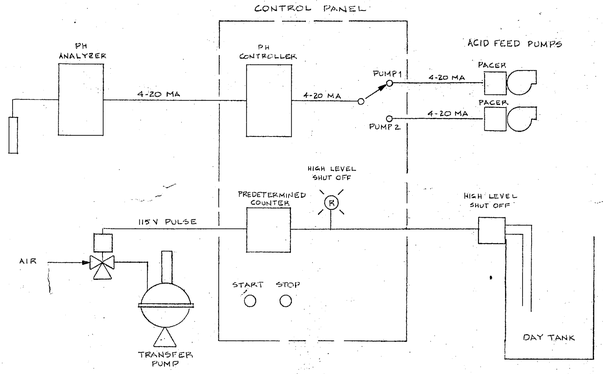
SCALE 1/4" = 1.0"





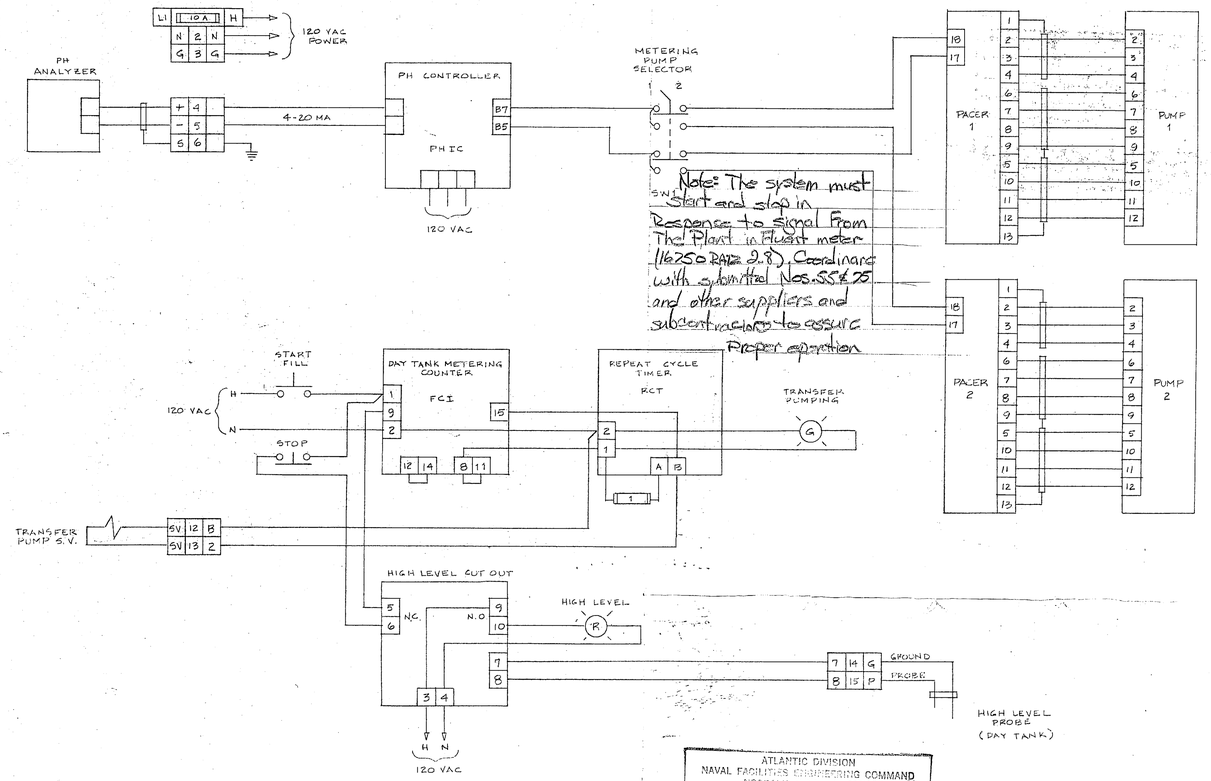
ACID FEED AREA EQUIPMENT LAYOUT

1/4" = 1'-0"



FLOW DIAGRAM

ACID TRANSFER PUMP AND ACID METERING PUMP WIRING DIAGRAM



ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

APPROVED
APPROVED AS NOTED ✓
DISAPPROVED

SUBJECT TO THE REQUIREMENTS OF CONTRACT NO. N62470-81-C-1644

APPROVAL OF THIS [illegible] DOES NOT INCLUDE APPROVAL OF ANY DEVIATION FROM THE CONTRACT REQUIREMENTS UNLESS THE CONTRACTOR CALLS ATTENTION TO SUCH DEVIATIONS AT THE TIME OF SUBMISSION AND SECURES APPROVAL THEREOF. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ERRORS IN DIMENSIONS, PHYSICAL INTERFERENCE, AND FOR THE COORDINATION OF TRADES, ETC., AS REQUIRED.

REVIEWER [signature] DATE 1/8/86

FOR OFFICER IN CHARGE OF CONSTRUCTION

"It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut(s), etc., and N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

- Approved for use.
- X Submitted for Government approval.
- Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. [signature] DATE 1-3-86

COMBS & ASSOCIATES, INC. CHARLOTTE, NORTH CAROLINA		
EXPANSION HOLCOMB BOULEVARD WTP	SCALE AS SHOWN	DRAWN BY DAH; REVISED △12-5-85
ACID FEED AREA CONTROL PANEL		
DATE 9-10-85	APPROVED BY	DRAWING NUMBER HB102

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	111	10-17-85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☒ Contractor Approved ☐ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged
C-Comments
R-Resubmit

ITEM NO	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	4.2	Manufacturer's Data on FIlter Bottom	4	RA	EdR 10/21/85
		Anchor Bolts			

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Reese Phil Reese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
10/21/85	Henry von Oesen & Assoc.	

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Kontractors approval appears to be appropriate.

HENRY VON OESEN AND ASSOCIATES, INC.

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	10/21/85	

☆ U.S. GPO:1984-537-003/11170 Region 3-11

22 OCT 1985 11 12

Contract N62470-81-C1644
Holcomb Boulevard Water Treatment Plant
Marine Corps Base
Camp Lejeune, North Carolina

Equipment Submittal
Section 11336

Henry von Oeson & Associates
Engineer
Wilmington, North Carolina

Harry Pepper & Associates, Inc.
Contractors
Jacksonville, Florida

Anchor Bolts

Purchase Order # 642-0011

August 15, 1985

"It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut (s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

X Approved for use.

____ Submitted for Government approval.

____ Approved for use subject to Government approval of specific deviation.

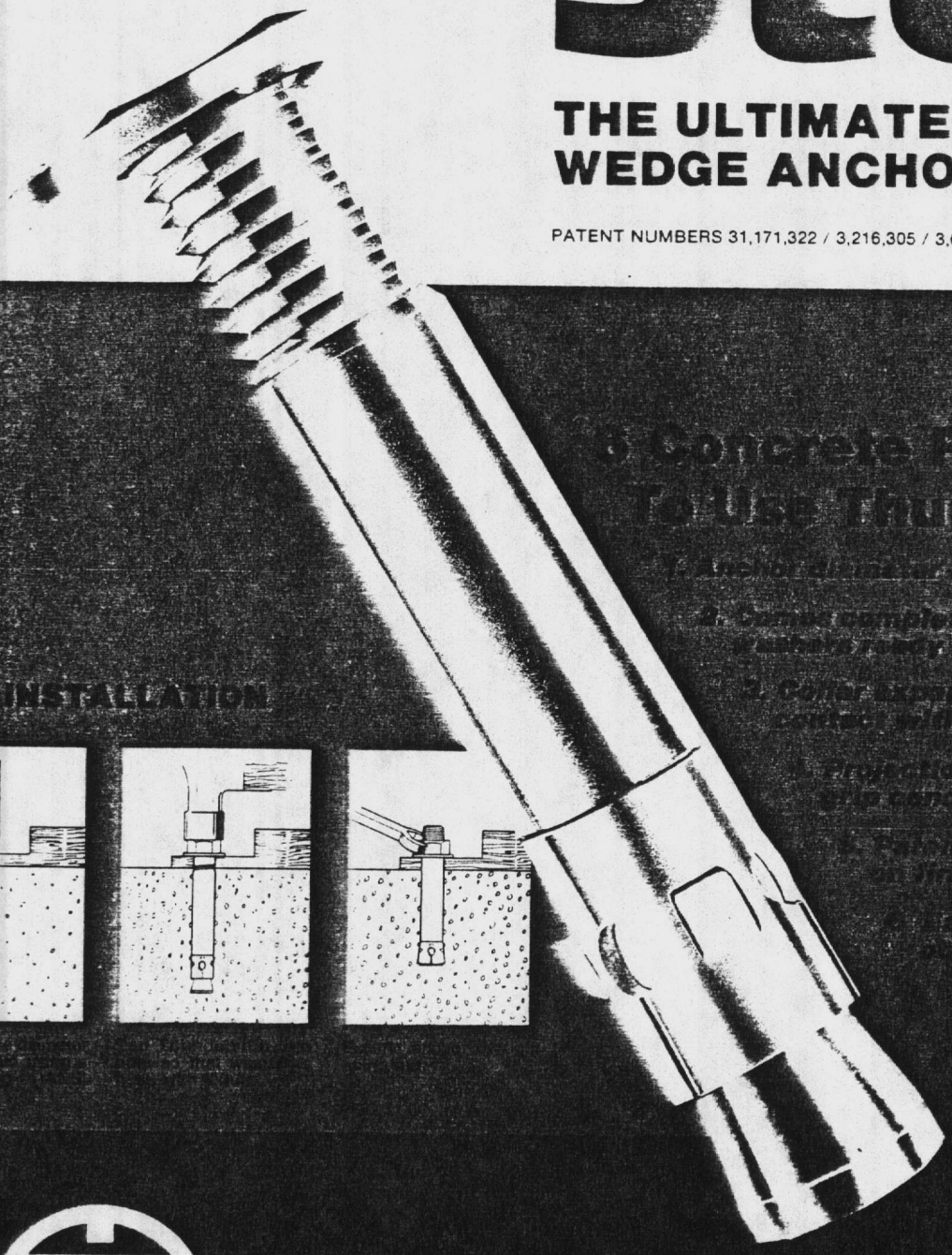
Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Reese DATE 10-17-85

Thunder stud

THE ULTIMATE CONCRETE WEDGE ANCHOR

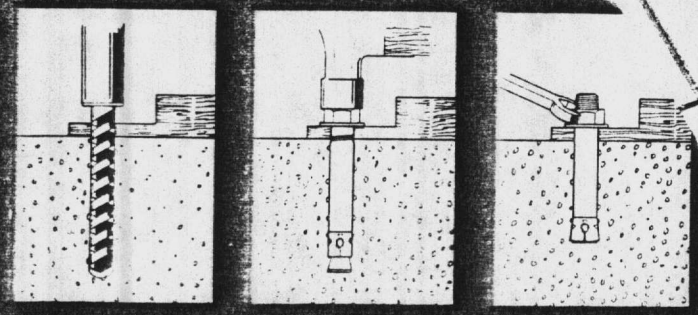
PATENT NUMBERS 31,171,322 / 3,216,305 / 3,667,341



3 Concrete Reasons To Use Thunderstud

1. Anchor diameter equals hole diameter
2. Cannot complete with nuts and washers ready for use
3. Cannot expand when fastener contacts only masonry
4. Professional color finish only on concrete
5. Patented self-compensating cone design
6. Easy to install

EASY INSTALLATION

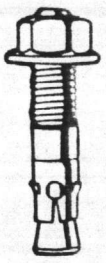


UNIFAST

UNIFAST INDUSTRIES, INC. 45 GILPIN AVE., HAUPPAUGE, NY 11788/516-348-0290/TELEX: 5102246151

#TS-84

ThunderStud Technical Data



Listed by Underwriters Laboratories (UL), International Conference of Building Officials (ICBO), Board of Standards and Appeals (BSA)

Meets or exceeds U.S. Government G.S.A. Specifications FF-S-325 Group 11, Type 4, Class 1

Size	Carbon Steel Cat. No.	Stainless Steel (Grade 303) Cat. No.	Galvanized Steel Cat. No.	Hole Size & Threads Per Inch	Fastens Material Up To	Thread Length	Minimum Embed.	Ultimate Pullout* Lbs.	Ultimate Shear* Lbs.
1/4 x 1¾"	TS-14-134	TS-14-134SS		¼" / 20	3/16"	3/4"	1⅛"	1855	1647
1/4 x 2¼"	TS-14-214	TS-14-214SS		¼" / 20	5/8"	3/4"	1⅛"	1855	1647
1/4 x 3"	TS-14-3	TS-14-3SS		¼" / 20	1½"	3/4"	1⅛"	1855	1647
5/16 x 2"	TS-516-2	TS-516-2SS		5/16" / 18	1/8"	7/8"	1½"	2500	2455
5/16 x 2¾"	TS-516-234	TS-516-234SS		5/16" / 18	5/8"	1⅛"	1½"	2500	2455
5/16 x 3½"	TS-516-312	TS-516-312SS		5/16" / 18	1½"	1⅛"	1½"	2500	2455
5/16 x 5"	TS-516-5	TS-516-5SS		5/16" / 18	2¾"	1⅛"	1½"	2500	2455
3/8 x 2⅛"	TS-38-218	TS-38-218SS		3/8" / 16	1/8"	7/8"	1⅝"	3075	3294
•3/8 x 2¾"	TS-38-234	TS-38-234SS		3/8" / 16	1/2"	1⅛"	1⅝"	3075	3294
•3/8 x 3"	TS-38-3	TS-38-3SS		3/8" / 16	3/4"	1⅛"	1⅝"	3075	3294
•3/8 x 3½"	TS-38-312	TS-38-312SS		3/8" / 16	1¼"	1⅛"	1⅝"	3075	3294
•3/8 x 3¾"	TS-38-334	TS-38-334SS		3/8" / 16	1½"	1⅛"	1⅝"	3075	3294
•3/8 x 5"	TS-38-5	TS-38-5SS		3/8" / 16	2¾"	1⅛"	1⅝"	3075	3294
•1/2 X 2¾"	TS-12-234	TS-12-234SS		1/2" / 13	1/8"	1⅛"	2¼"	4982	6243
•1/2 x 3¾"	TS-12-334	TS-12-334SS		1/2" / 13	7/8"	1¼"	2¼"	4982	6243
•1/2 x 4¼"	TS-12-414	TS-12-414SS	TS-12-414G	1/2" / 13	1½"	1¼"	2¼"	4982	6243
•1/2 x 5½"	TS-12-512	TS-12-512SS	TS-12-512G	1/2" / 13	2½"	1¼"	2¼"	4982	6243
•1/2 x 7"	TS-12-7	TS-12-7SS		1/2" / 13	4"	1¼"	2¼"	4982	6243
•5/8 x 3½"	TS-58-312	TS-58-312SS		5/8" / 11	3/16"	1½"	2¾"	7007	8084
•5/8 x 4½"	TS-58-412	TS-58-412SS		5/8" / 11	1⅛"	1½"	2¾"	7007	8084
•5/8 x 5"	TS-58-5	TS-58-5SS		5/8" / 11	1½"	1½"	2¾"	7007	8084
•5/8 x 6"	TS-58-6	TS-58-6SS	TS-58-6G	5/8" / 11	2½"	1½"	2¾"	7007	8084
•5/8 x 7"	TS-58-7	TS-58-7SS		5/8" / 11	3½"	1½"	2¾"	7007	8084
•5/8 x 8"	TS-58-8	TS-58-8SS		5/8" / 11	4½"	1½"	2¾"	7007	8084
•5/8 x 8½"	TS-58-812	TS-58-812SS		5/8" / 11	5"	1½"	2¾"	7007	8084
•3/4 x 4¼"	TS-34-414	TS-34-414SS		3/4" / 10	1/2"	1½"	3¼"	10820	12556
•3/4 x 4¾"	TS-34-434	TS-34-434SS		3/4" / 10	3/4"	1½"	3¼"	10820	12556
•3/4 x 5½"	TS-34-512	TS-34-512SS	TS-34-512G	3/4" / 10	1½"	1½"	3¼"	10820	12556
•3/4 x 7"	TS-34-7	TS-34-7SS		3/4" / 10	3"	1½"	3¼"	10820	12556
•3/4 x 8½"	TS-34-812	TS-34-812SS	TS-34-812G	3/4" / 10	4½"	1½"	3¼"	10820	12556
•3/4 x 10"	TS-34-10	TS-34-10SS		3/4" / 10	6"	1½"	3¼"	10820	12556
7/8 x 6"	TS-78-6	TS-78-6SS	TS-78-6G	7/8" / 9	1"	2¼"	4"	13244	22360
7/8 x 8"	TS-78-8	TS-78-8SS	TS-78-8G	7/8" / 9	3"	2¼"	4"	13244	22360
7/8 x 10"	TS-78-10	TS-78-10SS		7/8" / 9	5"	2¼"	4"	13244	22360
7/8 x 12"	TS-78-12	TS-78-12SS		7/8" / 9	7"	2¼"	4"	13244	22360
1 x 6"	TS-1-6	TS-1-6SS		1" / 8	1/2"	2¼"	4½"	15188	20250
1 x 9"	TS-1-9	TS-1-9SS	TS-1-9G	1" / 8	3½"	2¼"	4½"	15188	20250
1 x 12"	TS-1-12	TS-1-12SS		1" / 8	6½"	2¼"	4½"	15188	20250
1¼ x 9"	TS-114-9	TS-114-9SS		1¼" / 7	2¼"	2¼"	5½"	29952	40784
1¼ x 12"	TS-114-12	TS-114-12SS		1¼" / 7	5¼"	2¼"	5½"	29952	40784

•UL LISTED **Grades 304, 316 Stainless Available Upon Request. Special Lengths Available Upon Request.**

*Ultimate load capacity in 4000 PSI concrete. Laboratory test reports available upon request. Safe working loads for static loading should not exceed 25% of ultimate loads.

SOLD ONLY THROUGH AUTHORIZED DISTRIBUTORS

Distributed by:

UNIFAST INDUSTRIES, INC.

45 GILPIN AVE., HAUPPAUGE, NY 11788

516-348-0290

UNIFAST INDUSTRIES INC. - Printed in U.S.A.

LOAD CALCULATIONS

DOWNWARD FORCE

FILTER BLOCK 4 SQ FT = 150#/BLOCK
9 - 3" CERAMIC SPHERES = 11.16#/BLOCK
36 - 1 3/8" CERAMIC SPHERES = 4.32#/BLOCK
165.48#/BLOCK ÷ 4 SQ.FT./BLOCK = 41.37#/SQ FT.

12" GRAVEL @ 100#/cuft = 100.00 #/SQ FT.

27" SAND @ 100#/cuft = 225.00#/SQ FT.

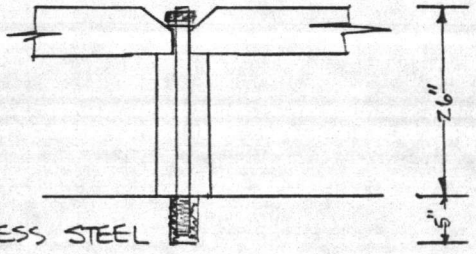
2'-6" WATER TO THE LIP OF THE TROUGH = 62.4 X 2.5 = 156.00 #/SQ FT.

WEIGHT OF WATER IN PORE SPACE OF MEDIA = 81.00#/SQ FT.
603.37#/SQ FT.

h_L OF ±250' PIPE @ 18"ϕ = ±1.0'
h_L THROUGH ISOLATION VALVE @ 90° = 45'
h_L THROUGH CONTROL VALVE = (17.46 psi @ 50' @ 7000 gpm

PSI SUPPLY = 50' x 62.4 = 3120 POUNDS/SQ FT = 21.64 psi
PSI BACKPRESSURE = 603.37#/SQ FT = -4.18 psi
17.46 psi CONTROL VALVE ANGLE = 35% OPEN

ANCHOR BOLTS



THUNDERSTUD 303 STAINLESS STEEL
1/2"ϕ 5" ANCHOR DEPTH = WORKING PULLOUT @ 1878#
ULTIMATE @ 7512# PULLOUT

17.46 psi x 144 = 2514.24 POUNDS/SQ FT
X 360 SQ FT/FILTER
905,126 #/FILTER = 8228#/BOLT
110 BOLTS

HOLCOMB BLVD WTP
FILTER BOTTOM ANCHORS

4000 PSI CONCRETE

5/8" ϕ	4 1/2" EMBED	11,658 # PULLOUT	ULTIMATE
	6" EMBED	13,358 # PULLOUT	"
3/4" ϕ	5 1/2" EMBED	15,265 # PULLOUT	"
	4 1/2" EMBED	11,589 # PULLOUT	"

3/4" ϕ 5 1/2" EMBED $\frac{15265\ \#\ \text{PULLOUT}}{4} = 3816.25$ WORKING STRENGTH

X 110 BOLTS

419,787 # WORKING STRENGTH FOR 110 BOLTS

17.46 PSI

8.09 PSI

9.37 PSI

40° ANGLE ON VALVE

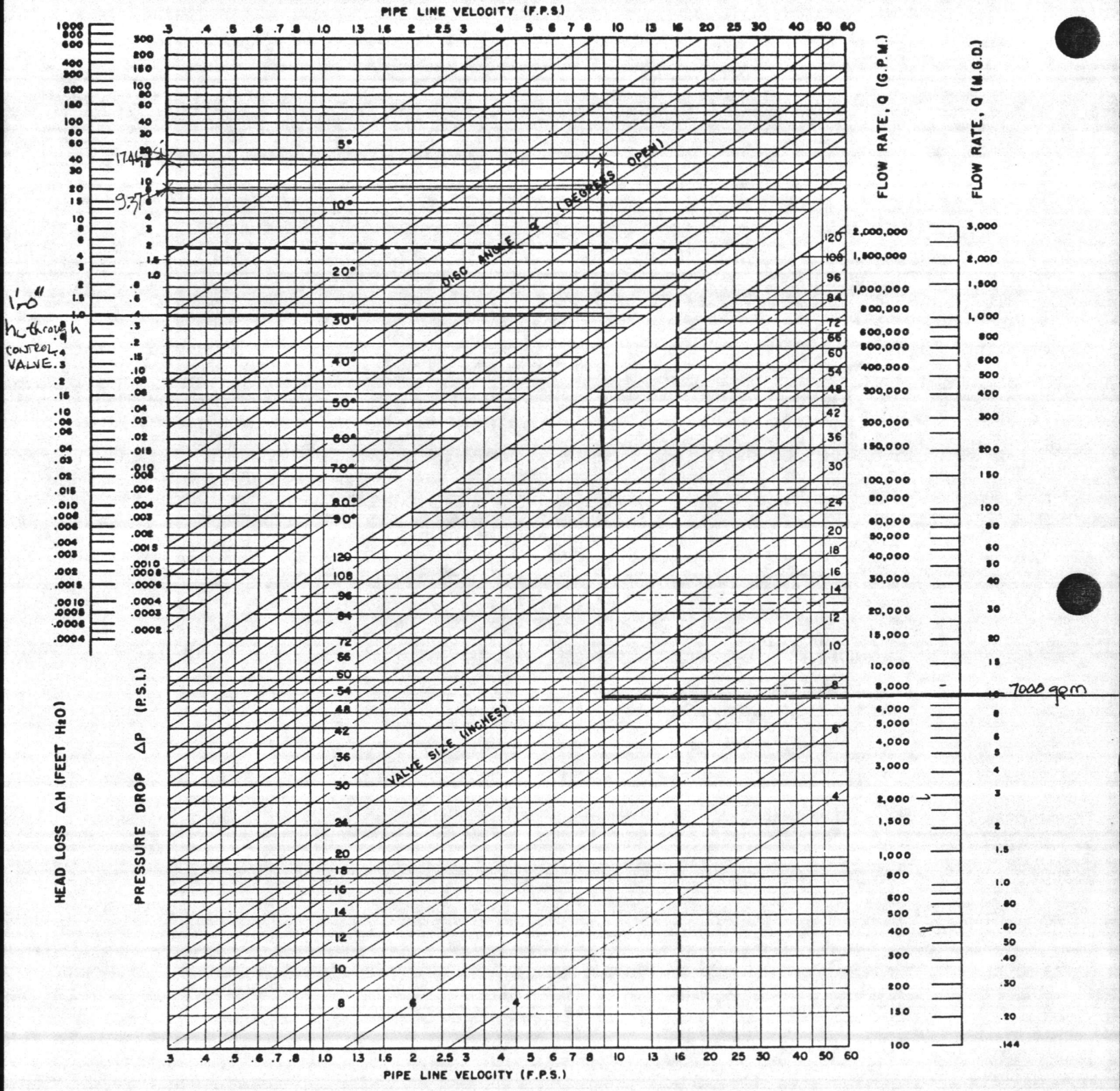
$\frac{419{,}787\ \#\ \phi}{3605\text{Q FT} \times 144\ \text{SQ IN/SQ FT}} = 8.09$ PSI

USE — 3/4" ϕ ANCHOR BOLT ←

5 1/2" EMBED IN 4000 PSI CONCRETE

~~***~~ NOTE: CONTRACTOR TO LIMIT & IF POSSIBLE CUT BACK UP TO 15 PSI FROM BACKWASH PUMP OUTPUT AS DELIVERED TO THE FILTER BY THROTTLING AFTER THE BACKWASH PUMP AND/OR STOPS ON THE ISOLATION & THROTTLING VALVES TO LIMIT OPENING OF THE VALVES TO CREATE HEADLOSS.

CONTROL VALVE



SIZING NOMOGRAPH FOR (S.I.B.O.) SURESEAL BUTTERFLY VALVES
CLASS 150A - 150B

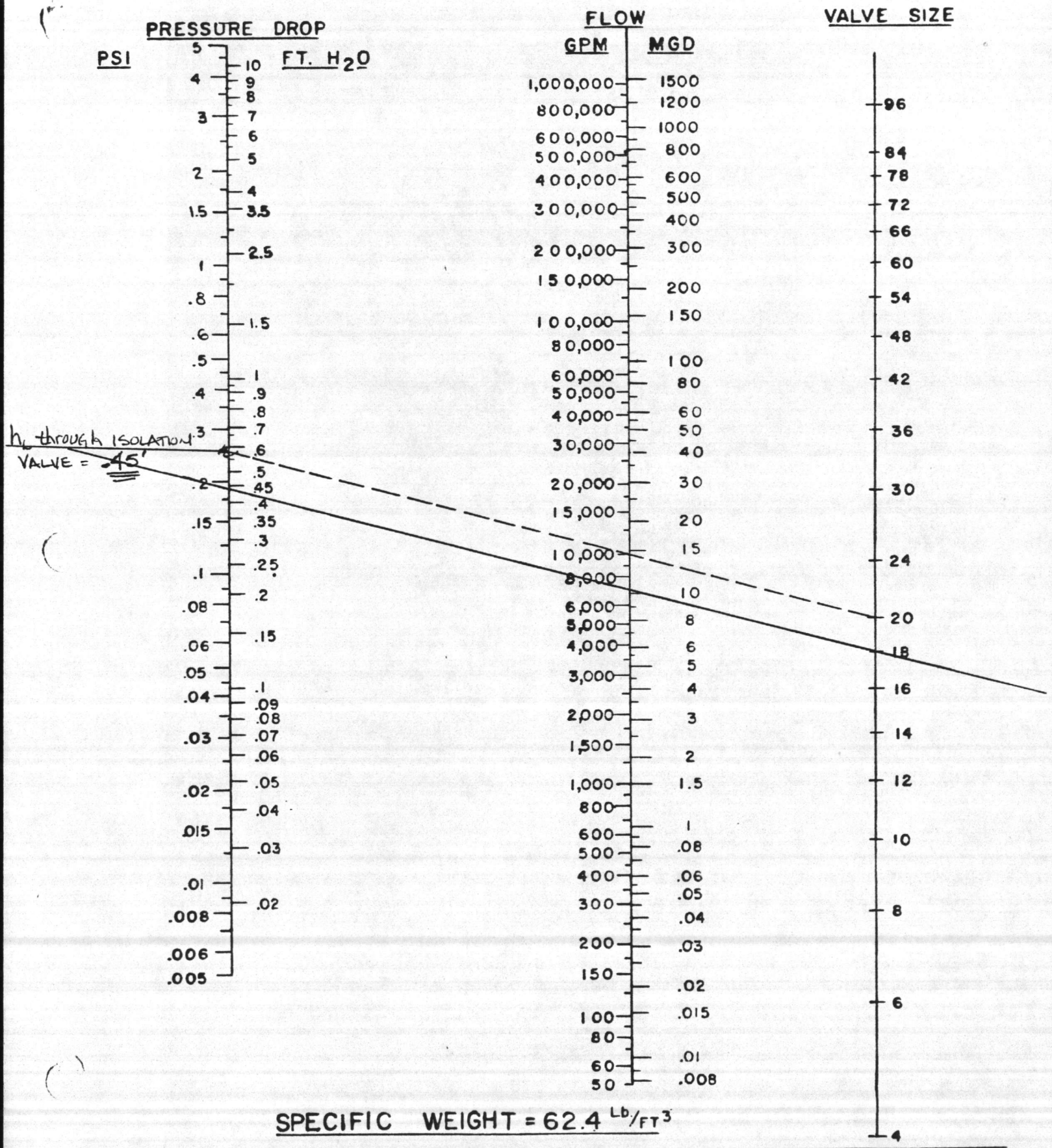
Fig. 5

BIF
BASIC IN FLOW
A UNIT OF GENERAL SIGNAL · WEST WARWICK, R.I. 02893

ISOLATION VALVE

FLOW OF WATER THRU WIDE OPEN (90°) BUTTERFLY VALVE

(S.I.B.O. SURESEAL) 150 A & B



Hart

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV.NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	172	3-4-86

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

[X] Contractor Approved [ ] OICC Approval [ ] Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	4.2	Manufacturer's Data on Filter Bottom Anchor Bolts.	4	RA	ROB 3/13/86

CONTRACTOR'S COMMENTS

This Transmittal replaces Transmittal # 111, dated 10-17-85. Anchor Bolts originally submitted were designed by the wrong criteria, per discussion between Combs and Associates and Mr. Robbie Benson, of Henry Von Oesen.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Reese Phil Reese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
3/7/86	Henry von Oesen & Assoc., Inc.	

[ ] Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

[ ] Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

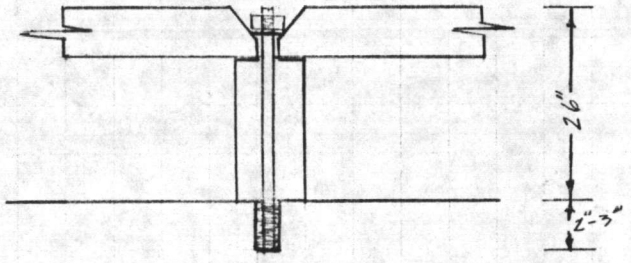
Contractor's approval appears to be appropriate.

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	3/13/86	

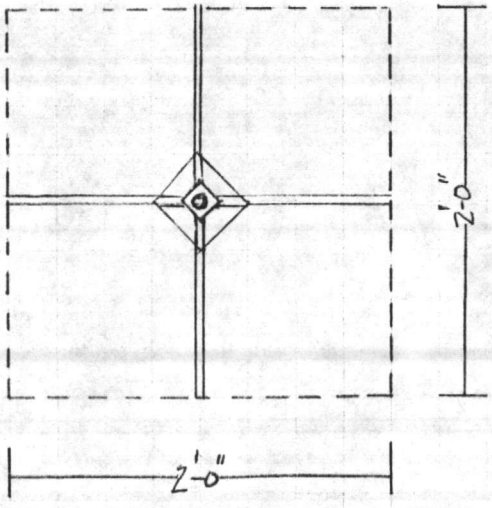
☆ U.S. GPO:1984-537-003/11170 Region 3-11

PULL OUT CALCULATIONS

ANCHOR BOLTS ORIGIONALLY DISCUSSED & SUBMITTED WE'RE DESIGNED BY THE WRONG CRITERIA. DURING A DISCUSSION ON FILTER BOTTOM ANCHORING WITH MR. ROBBIE BENSON, OF HENRY VON OESON, CONSULTING ENGINEERS FOR THIS PROJECT, IT WAS DETERMINED THAT 2psi SHOULD BE THE ABSOLUTE MAXIMUM HEAD LOSS THROUGH THE FILTER BOTTOM. THE CALCULATIONS BELOW VERIFY A 1/2" ϕ ANCHOR BOLT WHICH IS THE INDUSTRY STANDARD FOR ANCHORING FILTER BOTTOMS.



N.T.S.



2 PSI HEAD LOSS = $\frac{4 \text{ SQ. FT}}{2 \text{ PSI} = 4.62' H_2O}$

462 X 62.4 #/cuft X 4 SQ FT = 1,153#

SAFETY FACTOR = 4

4 X 1,153# = 4,612# ULTIMATE

USE 1/2" X 2 1/4" EMBEDDED (LENGTHS AS NECESSARY)
THUNDER STUD
SS ANCHOR BOLTS (30355)

EACH FILTER TO HAVE 72 BOLTS 29" LONG - EMBED X 2 1/4"
∴ 72 X 3 = 216 - 29" LONG X 2 1/4" EMBED

EACH FILTER HAS 38 BOLTS 7" LONG - EMBED X 2 1/4"
∴ 38 X 3 = 114 - 7" LONG BOLTS X 2 1/4" EMBED

It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut (s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

X Approved for use.

_____ Submitted for Government approval.

_____ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Perez DATE 5-4-86

Thunder Stud

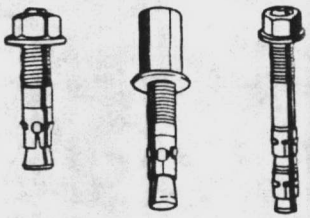
THE ULTIMATE CONCRETE WEDGE ANCHOR

PATENT NUMBERS 3[illegible]

UNIFAST INDUSTRIES, INC. 45 GILPIN AVE., HAUPPAUGE, NY 11788/516-348-0290/TELEX: 5102246151

#TS-84

ThunderStud Technical Data



Listed by Underwriters Laboratories (UL), International Conference of Building Officials (ICBO), Board of Standards and Appeals (BSA)

Meets or exceeds U.S. Government G.S.A. Specifications FF-S-325 Group 11, Type 4, Class 1

Size	Carbon Steel Cat. No.	Stainless Steel (Grade 303) Cat. No.	Galvanized Steel Cat. No.	Hole Size & Threads Per Inch	Fastens Material Up To	Thread Length	Minimum Embed.	Ultimate Pullout* Lbs.	Ultimate Shear* Lbs.
1/4 x 1¾"	TS-14-134	TS-14-134SS		¼" / 20	3/16"	3/4"	1⅛"	1855	1647
1/4 x 2¼"	TS-14-214	TS-14-214SS		¼" / 20	5/8"	3/4"	1⅛"	1855	1647
1/4 x 3"	TS-14-3	TS-14-3SS		¼" / 20	1½"	3/4"	1⅛"	1855	1647
5/16 x 2"	TS-516-2	TS-516-2SS		5/16" / 18	1/8"	7/8"	1½"	2500	2455
5/16 x 2¾"	TS-516-234	TS-516-234SS		5/16" / 18	5/8"	1⅛"	1½"	2500	2455
5/16 x 3½"	TS-516-312	TS-516-312SS		5/16" / 18	1½"	1⅛"	1½"	2500	2455
5/16 x 5"	TS-516-5	TS-516-5SS		5/16" / 18	2¾"	1⅛"	1½"	2500	2455
3/8 x 2⅛"	TS-38-218	TS-38-218SS		3/8" / 16	1/8"	7/8"	1⅜"	3075	3294
•3/8 x 2¾"	TS-38-234	TS-38-234SS		3/8" / 16	1/2"	1⅛"	1⅜"	3075	3294
•3/8 x 3"	TS-38-3	TS-38-3SS		3/8" / 16	3/4"	1⅛"	1⅜"	3075	3294
•3/8 x 3½"	TS-38-312	TS-38-312SS		3/8" / 16	1¼"	1⅛"	1⅜"	3075	3294
•3/8 x 3¾"	TS-38-334	TS-38-334SS		3/8" / 16	1½"	1⅛"	1⅜"	3075	3294
•3/8 x 5"	TS-38-5	TS-38-5SS		3/8" / 16	2¾"	1⅛"	1⅜"	3075	3294
1/2 X 2¾"	TS-12-234	TS-12-234SS		1/2" / 13	1/8"	1⅛"	2¼"	4982	6243
1/2 x 3¼"	TS-12-334	TS-12-334SS		1/2" / 13	7/8"	1⅛"	2¼"	4982	6243
•1/2 x 4¼"	TS-12-414	TS-12-414SS	TS-12-414G	1/2" / 13	1½"	1⅛"	2¼"	4982	6243
•1/2 x 5½"	TS-12-512	TS-12-512SS	TS-12-512G	1/2" / 13	2½"	1⅛"	2¼"	4982	6243
•1/2 x 7"	TS-12-7	TS-12-7SS		1/2" / 13	4"	1⅛"	2¼"	4982	6243
•5/8 x 3½"	TS-58-312	TS-58-312SS		5/8" / 11	3/16"	1½"	2¾"	7007	8084
•5/8 x 4½"	TS-58-412	TS-58-412SS		5/8" / 11	1⅛"	1½"	2¾"	7007	8084
•5/8 x 5"	TS-58-5	TS-58-5SS		5/8" / 11	1½"	1½"	2¾"	7007	8084
•5/8 x 6"	TS-58-6	TS-58-6SS	TS-58-6G	5/8" / 11	2½"	1½"	2¾"	7007	8084
•5/8 x 7"	TS-58-7	TS-58-7SS		5/8" / 11	3½"	1½"	2¾"	7007	8084
•5/8 x 8"	TS-58-8	TS-58-8SS		5/8" / 11	4½"	1½"	2¾"	7007	8084
•5/8 x 8½"	TS-58-812	TS-58-812SS		5/8" / 11	5"	1½"	2¾"	7007	8084
•3/4 x 4¼"	TS-34-414	TS-34-414SS		3/4" / 10	1/2"	1½"	3¼"	10820	12556
•3/4 x 4¾"	TS-34-434	TS-34-434SS		3/4" / 10	3/4"	1½"	3¼"	10820	12556
•3/4 x 5½"	TS-34-512	TS-34-512SS	TS-34-512G	3/4" / 10	1⅛"	1½"	3¼"	10820	12556
•3/4 x 7"	TS-34-7	TS-34-7SS		3/4" / 10	3"	1½"	3¼"	10820	12556
•3/4 x 8½"	TS-34-812	TS-34-812SS	TS-34-812G	3/4" / 10	4⅛"	1½"	3¼"	10820	12556
•3/4 x 10"	TS-34-10	TS-34-10SS		3/4" / 10	6"	1½"	3¼"	10820	12556
7/8 x 6"	TS-78-6	TS-78-6SS	TS-78-6G	7/8" / 9	1"	2¼"	4"	13244	22360
7/8 x 8"	TS-78-8	TS-78-8SS	TS-78-8G	7/8" / 9	3"	2¼"	4"	13244	22360
7/8 x 10"	TS-78-10	TS-78-10SS		7/8" / 9	5"	2¼"	4"	13244	22360
7/8 x 12"	TS-78-12	TS-78-12SS		7/8" / 9	7"	2¼"	4"	13244	22360
1 x 6"	TS-1-6	TS-1-6SS		1" / 8	1/2"	2¼"	4½"	15188	20250
1 x 9"	TS-1-9	TS-1-9SS	TS-1-9G	1" / 8	3½"	2¼"	4½"	15188	20250
1 x 12"	TS-1-12	TS-1-12SS		1" / 8	6½"	2¼"	4½"	15188	20250
1¼ x 9"	TS-114-9	TS-114-9SS		1¼" / 7	2¼"	2¾"	5½"	29952	40784
1¼ x 12"	TS-114-12	TS-114-12SS		1¼" / 7	5¼"	2¼"	5½"	29952	40784

•UL LISTED **Grades 304, 316 Stainless Available Upon Request. Special Lengths Available Upon Request.**

*Ultimate load capacity in 4000 PSI concrete. Laboratory test reports available upon request. Safe working loads for static loading should not exceed 25% of ultimate loads.

SOLD ONLY THROUGH AUTHORIZED DISTRIBUTORS

Distributed by:

UNIFAST INDUSTRIES, INC.

45 GILPIN AVE., HAUPPAUGE, NY 11788

516-348-0290

UNIFAST INDUSTRIES INC. - Printed in U.S.A.

UNIVERSAL FASTENINGS CORPORATION

				TENSION				SHEAR			
PART NO.	DIA. (in.)	EMBED. (in.)	CONCRETE STRENGTH (PSI)	AVG. LOAD @ 1/16" (lbs.)	AVG. ULT. LOAD (lbs.)	TYPICAL MODE OF FAILURE*	NO. TESTS	AVG. LOAD @ 1/16" (lbs.)	AVG. ULT. LOAD (lbs.)	TYPICAL MODE OF FAILURE*	NO. TESTS
TS 12-234	1/2	2 1/4	2000	1315	3415	C-C	3	2875	6115	S	3
TS 12-334		3		2602	4452	C-C	3	3049	6491	S	5
TS 12-512		3 1/2		2146	4576	P-O	3	3781	7996	S	3
TS 12-7		4		3103	5950	P-O	5	4939	8042	S	3
TS 12-234	1/2	2 1/4	4000	3869	4982	C-C	3	1625	6243	S	3
TS 12-334		3		2029	6852	P-O,C-C	3	3729	7307	S	3
TS 12-512		3 1/2		2938	9537	P-O	3	6170	11021	S	3
TS 12-7		4		2375	8679	P-O	3	4969	8050	S	3
TS 12-234	1/2	2 1/4	6000	3012	5982	C-C	3	3307	7062	S	3
TS 12-334		3		3864	9557	P-O,C-C	3	3568	6601	S	3
TS 12-512		3 1/2		4988	9293	P-O,C-C,A-D	3	5385	10899	S	3
TS 12-7		4		4561	11019	A-D	3	6669	10051	S	3

* P-O - Pull out
C-C - Concrete cone
S - Shear
A-D - Anchor Device through reduced portion of bolt diameter

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	161	1-28-86

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

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REVIEWER USE ONLY

**ACTION CODES
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D-Disapproved
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RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	02713	EXTERIOR WATER DISTRIBUTION SYSTEM			
1	1.3.2 2.2.7	Manufacturer's Certification on 12 inch Single Acting Altitude Valve.	4	RA	AB

CONTRACTOR'S COMMENTS

This Certification is for the 12 inch Altitude Valve located at the Montford Point Elevated Storage Tank.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Reese Phil Reese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
1/29/86	Henry von Oesen & Assoc.	

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Contractor's approval appears to be appropriate.

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	1/29/86	M Brown

☆ U.S. GPO:1984-537-003/11170 Region 3-11

30 JAN 1986 13 09

January 23, 1986

The Bryant Companies
P.O. Box 1430
High Point, NC 27261

Subject: P.O. 8539-14
GAI #850683Rev#1
Camp LeJeune, NC
Holcomb Blvd. WTP Expansion
#N62470-81-B-1644

Attn: Mr. Richard Money

Dear Mr. Money:

We hereby certify that the 12" Fig. 3200-D, Single-Acting Altitude Valve provided on the subject order is of standard materials and meets the above specifications.

Very truly yours,

GA INDUSTRIES, INC.

Janet L. McKinney

Janet L. McKinney

cc Heyward, Inc. (NC)

Sworn before me on this

day 23Rd of JAN 1986

Juanita M Scharf

JUANITA M. SCHARF, NOTARY PUBLIC
CRANBERRY TWP., BUTLER COUNTY
MY COMMISSION EXPIRES JULY 11, 1989
Member, Pennsylvania Association of Notaries

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X Approved for use.

_____ Submitted for Government approval.

_____ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Reese DATE 1-28-86

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	71	6-24-85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☒ Contractor Approved ☐ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	~~11~~336	WATER TREATMENT EQUIPMENT			
1		Manufacturer's Information Sheet & Drawing on Filter Influent Cylinder	4	RA	JB
2	M-6	SHop Drawing on 24 X 24 Sleuce Gate Drawing # 850198001	4	RA	JB
3	6.2.6 c	Shop Drawing on 12 X 18 Sleuce Gate Drawing # 850198002	4	RA	JB

CONTRACTOR'S COMMENTS

A/E See Verification request on Shop Drawing 850198001.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Feese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
6/25/85	Henry von Oesen & Assoc., INC.	

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☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Contractor's approval appears to be appropriate.

Henry von Oesen and Associates, Inc.

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	6/26/85	W. S. Burns Jr.

☆ U.S. GPO:1984-537-003/11170 Region 3-11

27 JUN 1985 11 22

HYDRO Gate Corporation

CERTIFIED INFORMATION SHEET - CYLINDERS

1. Hydro Reference No. 1184015
   Hydro Sales Order No. 85-0198
   Hydro Purchase Order No. _____
   Vendor Shop No. _____
   Mark/Tag all Dwgs. & Equipment: FILTER INLET, HYDRO DWG 850198002
   Vendor Dwg. No's. _____

   Date: 11-21-84
   Date Revised: 5/8/85, TIM FRAZIER
   Engineer: U.S. NAVAL FACIL ENGR COMMAND
   Project: Water Treatment Effluent. Camp Lejeune, North Carolina
   Gate Location: _____

2. Gate Data — Quantity: 3
   A. Model: Heavy Duty Slide
   B. Size: 12" x 18"
   C. Operating Head: 10 ft.
   D. Push Load: 462 Lbs.
   E. Pull Load: 662 Lbs.

3. Project Requirements
   A. Cylinder ☒
   B. Power Unit ☐
   C. Accumulators ☐
   D. Electrical Controls ☐
   E. _____ ☐

4. Cylinder Data
   A. Model:
   B. Bore: 5"
   C. Rod Diameter: 1"
   D. Rod End Style: STD
   *E. Rod End Threads: 7/8-9 UNC-2A, 6" LONG
   *F. Stroke: 20"
   *G. Rod Extension Length (Piston Retracted): 9"
   H. Single or (double acting.) (circle one)
   I. Cushioning - (none,) both ends, rod end, cap end (circle one)
   J. Operating Media: WATER
   K. Operating Pressure: 50 P.S.I.
   L. Rate of Travel: 12"-24" (Unless Specified)
   M. Port Sizes: 1/2"
   N. Cylinder Rated Pressure: 150 PSI
   *O. Underwater Usage - (yes) no (circle one)
   P. Double Rod End - (yes) no (circle one)
   *Q. Type of Mounting: (Front Flange) lug & side, trunion, clevis tie rod (circle one)
   R. Limit Switch - Both Ends, One End (circle one)
   S. Limit Switch Type (if required):

5. Materials
   A. Piston: CAST IRON CADMIUM PLATED
   B. Barrel: BRONZE
   C. Rod: TYPE 304 STAINLESS
   D. Caps: CAST IRON CADMIUM PLATED
   E. Tie Rods/Nuts:
   F. Wiper Seals:
   G. Piston Rod Seals: BUNA-N
   H. Rod Bearings: BRONZE ASTM B-144 ALLOY 3B
   I. Piston Seals: BUNA-N
   J. Size, Quantity & Material of Mounting Bolts: BY HYDRO
   K. Cleaning & Paint: EPOXY PAINT

6. Power Unit And Accessories (Describe Major Components By Size and Quantity)

Tail Rod = 60" Long
Dust wiper

GATE POSITION IS INDICATED BY ROD POSITION

7. Vendor Notes

"It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut(s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

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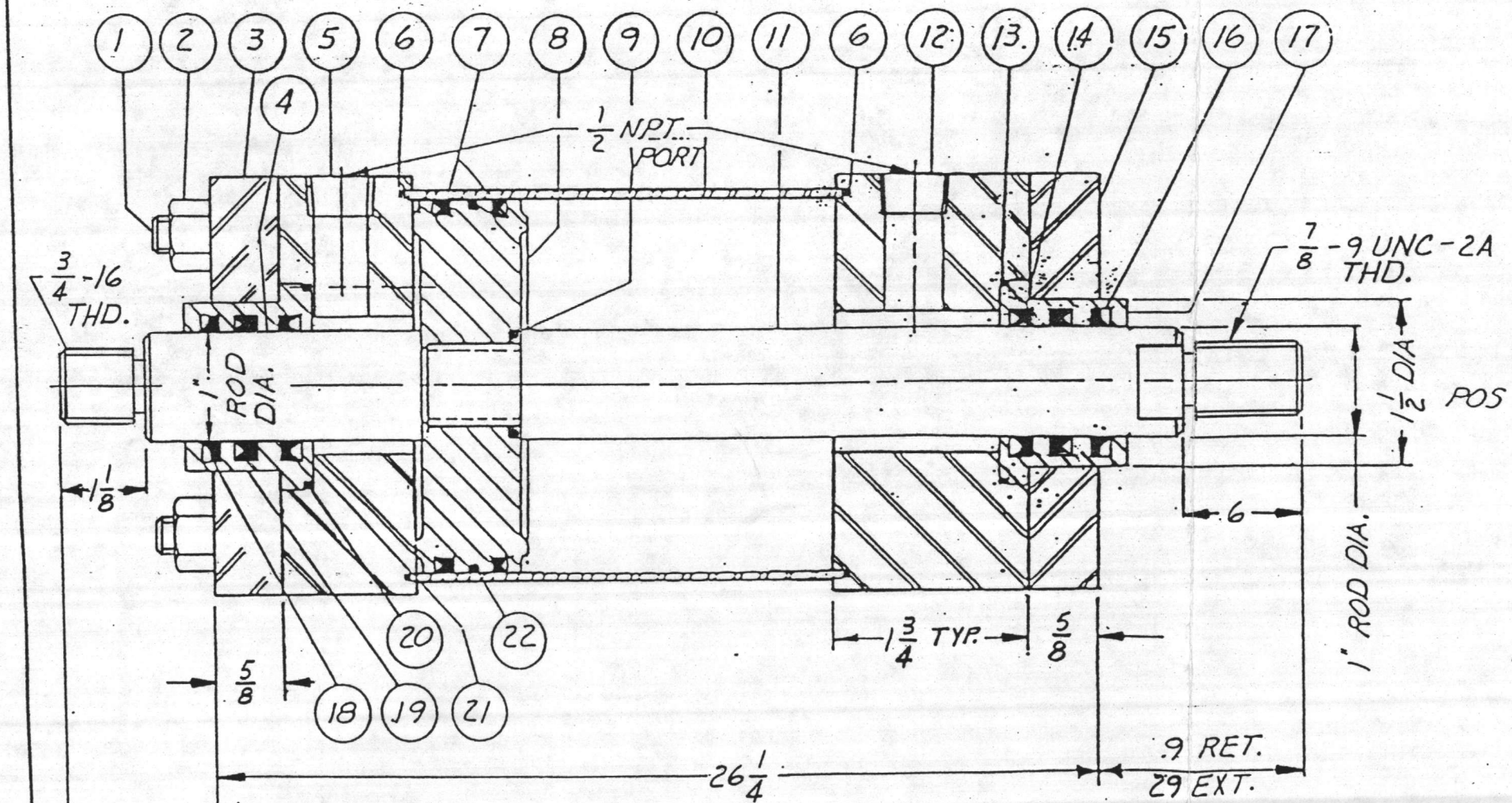
_____ Submitted for Government approval.

_____ Approved for use subject to Government approval of specific deviation.

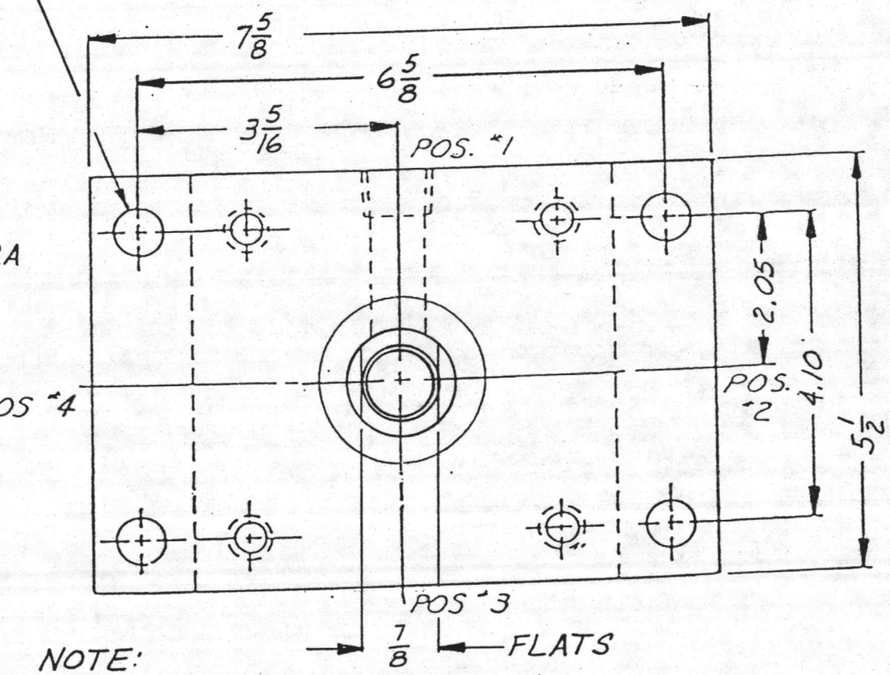
Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Pence DATE 6-24-85

KEY	QTY.	DESCRIPTION	MATERIAL	KEY	QTY	DESCRIPTION	MATERIAL
1	4	TIE ROD	STRESSPROOF	12	1	CYLINDER HEAD	STEEL CAD. PL.
2	4	TIE ROD NUT	GRADE 8	13	1	ROD BUSH. SEAL	BUNA-N
3	1	BUSH. RETAINER	STEEL	14	2	ROD PACKING	BUNA-N
4	1	TALE ROD	STEEL CHR. PL.	15	1	FLANGE PLATE	STEEL
5	1	CYLINDER CAP	STEEL CAD. PL.	16	1	ROD WIPER	BUNA-N
6	2	TUBE END SEAL	BUNA-N	17	1	ROD BUSHING	BRONZE
7	2	PISTON PACKING	BUNA-N	18	1	ROD WIPER	BUNA-N
8	1	PISTON	DUCTILE IRON CAD PL.	19	1	ROD BUSHING	BRONZE
9	1	PISTON ROD SEAL	BUNA-N	20	1	ROD BUSH. SEAL	BUNA-N
10	1	CYLINDER TUBE	BRASS	21	2	ROD PACKING	BUNA-N
11	1	PISTON ROD	304 SST. CHR. PL.	22	1	PISTON O-RING	BUNA-N



QUAN _____ 3
BORE: _____ 5
STROKE: _____ 20
MODEL _____ LH-20
PORT LOC.: ____ POS. #1 BOTH ENDS
CUST. P.O.#: ____ D-4088
CUST: _____ HYDRO GATE CORP.
WORK ORDER 5278C
OPERATING PRESSURE: 50 PSI



NOTE:
PAINT: COAL TAR EPOXY

REVISIONS
2
1

MACHINING TOLERANCES

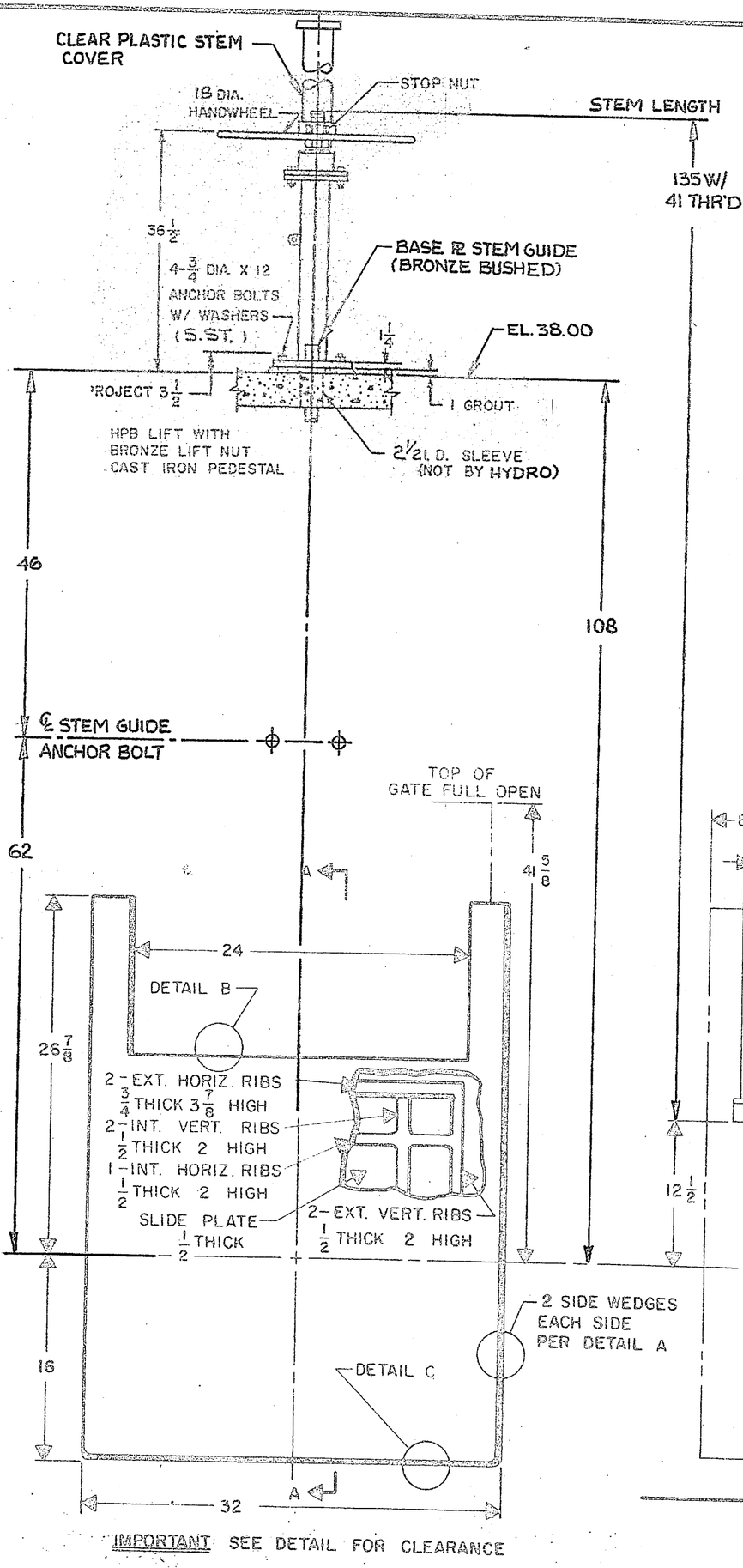
UNLESS OTHERWISE SPECIFIED
FRACTIONAL DIMENSIONS ± 1/64
DECIMAL DIMENSIONS ± .005
ALL ANGLES ± 1°
DIAMETERS ON COMMON CENTERLINE ARE TO BE CONCENTRIC WITHIN .003 T.I.R.
MAX. SURFACE ROUGHNESS 125 # in.
REMOVE ALL BURRS AND BREAK ALL SHARP CORNERS

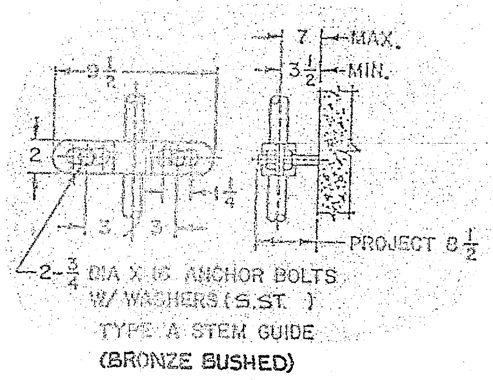
CHICAGO FLUID POWER

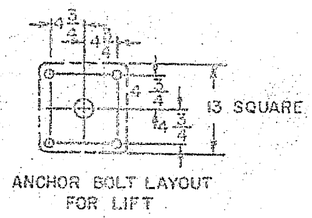
SCALE: NONE	APPROVED BY: R. Dodson	DRAWN BY TS
DATE: 5-22-85		REVISED

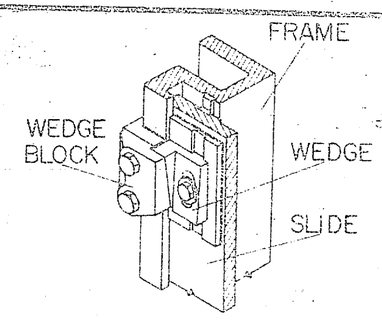
TITLE: CERTIFICATION DRWG.
LIGHT DUTY HYDRAULIC CYLINDER

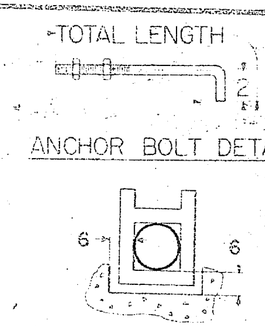
DRAWING NUMBER C-2039-B

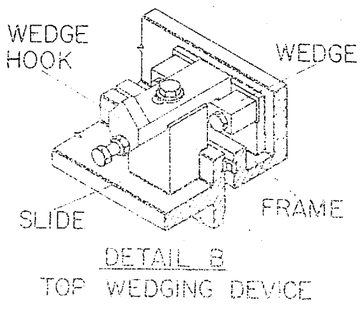


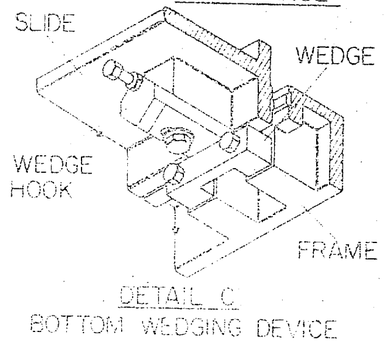


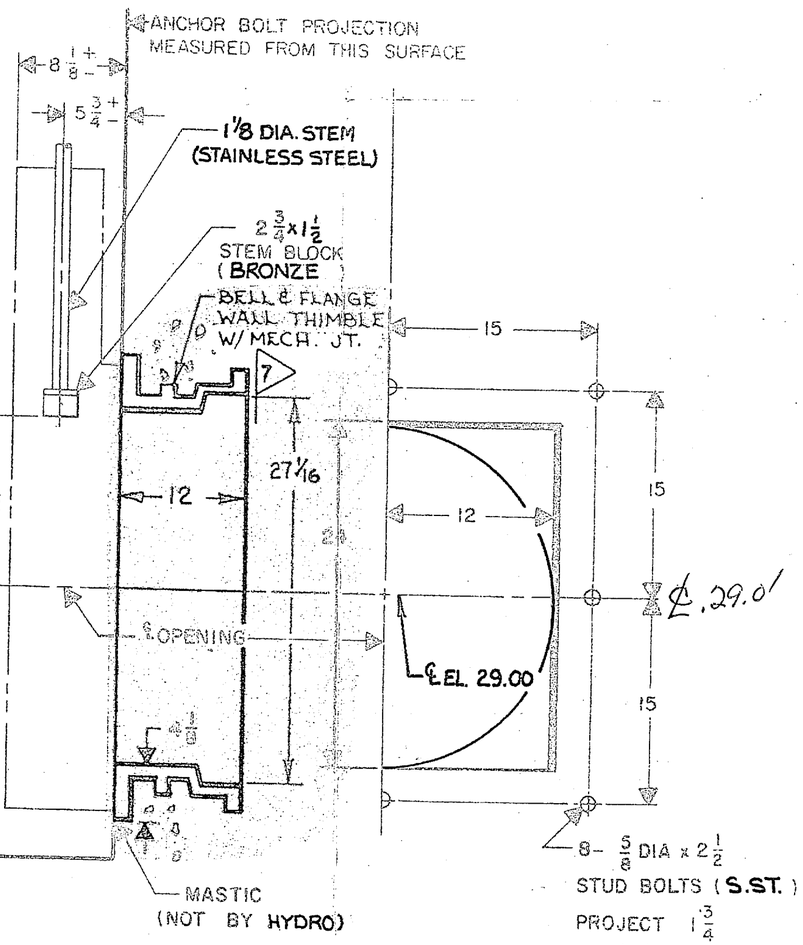












NOTES

1. CASTING TOLERANCES APPLY ON ALL UNMACHINED SURFACES.
2. SEE MANUAL G-1000 FOR INSTALLATION AND ADJUSTMENT INSTRUCTIONS.
3. ALL DIMENSIONS IN INCHES UNLESS NOTED OTHERWISE.
4. MATERIAL SPECIFICATIONS AND COATINGS PER DRAWING 850198500.
5. TOP AND BOTTOM WEDGES 75/ YES ☒ NO ☐
6. GATE DESIGN HEAD 35/ (55) FEET SEATING (20) FEET UNSEATING
7. MECHANICAL JOINT HAS TAPPED HOLES. BOLTS, NUTS, GLAND & GASKET NOT BY HYDRO.
8. TAG: FINISH WATER INLET TO RESERVOIR.

A/E Please Verify if seating And unseating Heads specified are Applicable for This Gate
YES JMB

Hydro Gate Corporation
6101 DEXTER STREET
COMMERCE CITY, COLORADO 80022

SLUICE GATE SERIES 501

SIZE 24x24
UNIVERSAL FRAME-FLANGE STANDARD BOTTOM
ONE REQUIRED
NOT SELF CONTAINED RISING STEM

REVISED	DRAWN BY	APPROVED BY	DIST. ORDER	PLANT ORDER
	MS			85-0198
	CHECKED BY	SCALE	DATE	DWG. NO.
		NONE	5-2-85	850198001

R2-12043

MATERIAL SPECIFICATIONS

Gate Part or Item of Assembly	Material Description	Material Code	Materials Shown in ASTM Specification unless Noted Otherwise
EMBEDMENTS			
Wall Thimble	Cast Iron	(A)	A126, Class B
Wall Thimble Studs	Stainless Steel	(L)	A276, Type 304
Wall Thimble Nuts	Stainless Steel	(L)	F594, Alloy Group 1
Anchor Bolts	Stainless Steel	(L)	A276, Type 304
Anchor Bolt Nuts	Stainless Steel	(L)	F594, Alloy Group 1
GATE ASSEMBLY			
Frame & Slide	Cast Iron	(A)	A126, Class B
Seating Faces	Naval Bronze	(F)	B21, Alloy 482
Side Wedge Blocks	Manganese Bronze	(K)	B584, Alloy 863
Side Wedges	Manganese Bronze	(K)	B584, Alloy 863
Top & Bottom Wedges	Manganese Bronze	(K)	B584, Alloy 863
Fasteners	Stainless Steel	(L)	F593 (Bolts) F594 (Nuts) Alloy Group 1
~~Stop Plate & Retainer~~	~~Stainless Steel~~	~~(L)~~	~~A276, Type 304~~
~~Flush Bottom Seal~~	~~Rubber~~	~~(B)~~	~~D2000, Grade 1AA625~~
STEM AND ACCESSORIES			
Stem	Stainless Steel	(L)	A276, Type 304
~~Stem Splice~~	~~Stainless Steel~~	~~(M)~~	~~A582, Type 305~~
Stem Block	Manganese Bronze	(K)	B584, Alloy 865
Key	Stainless Steel	(L)	A276, Type 304
LIFT ASSEMBLY			
Lift Pedestal & Housing	Cast Iron	(A)	A126, Class B
Lift Nut	Manganese Bronze	(K)	B584, Alloy 865
Stop Nut	Naval Bronze	(F)	B21, Alloy 485
STEM GUIDE ASSEMBLY			
Stem Guide	Cast Iron	(A)	A126, Class B
Stem Guide Bushing	Tin Bronze	(E)	B584, Alloy 932
Fasteners	Stainless Steel	(L)	F593 (Bolts), Alloy Group 1 F594 (Nuts), Alloy Group 1
Base Plate Stem Guide	Carbon Steel	(V)	A36

COATING SPECIFICATIONS

CLEANING:
- ☐ Standard Clean - Removal of Loose Rust, Mill Scale and Paint by Air Hose, Scraping, and Wire Brush.
- ■ Blast Clean (Per Steel Structures Painting Council)

COMMERCIAL Grade SSPC-SP6

COATING: KOPPER'S 654 EPOXY PRIMER Color MAROON

2 Shop Coats for a Dry Film Thickness of 4.0 Mils for the following components:

- ■ Gate
- ■ Thimble
- ☐ Stem Block
- ☐ Stem
- ■ Stem Guides
- ☐ Wall Bracket
- ■ Lift
- ■ Base Plate Stem Guide

COATING: _____ Color _____

_____ Shop Coats for a Dry Film Thickness of _____ Mils for the following components:

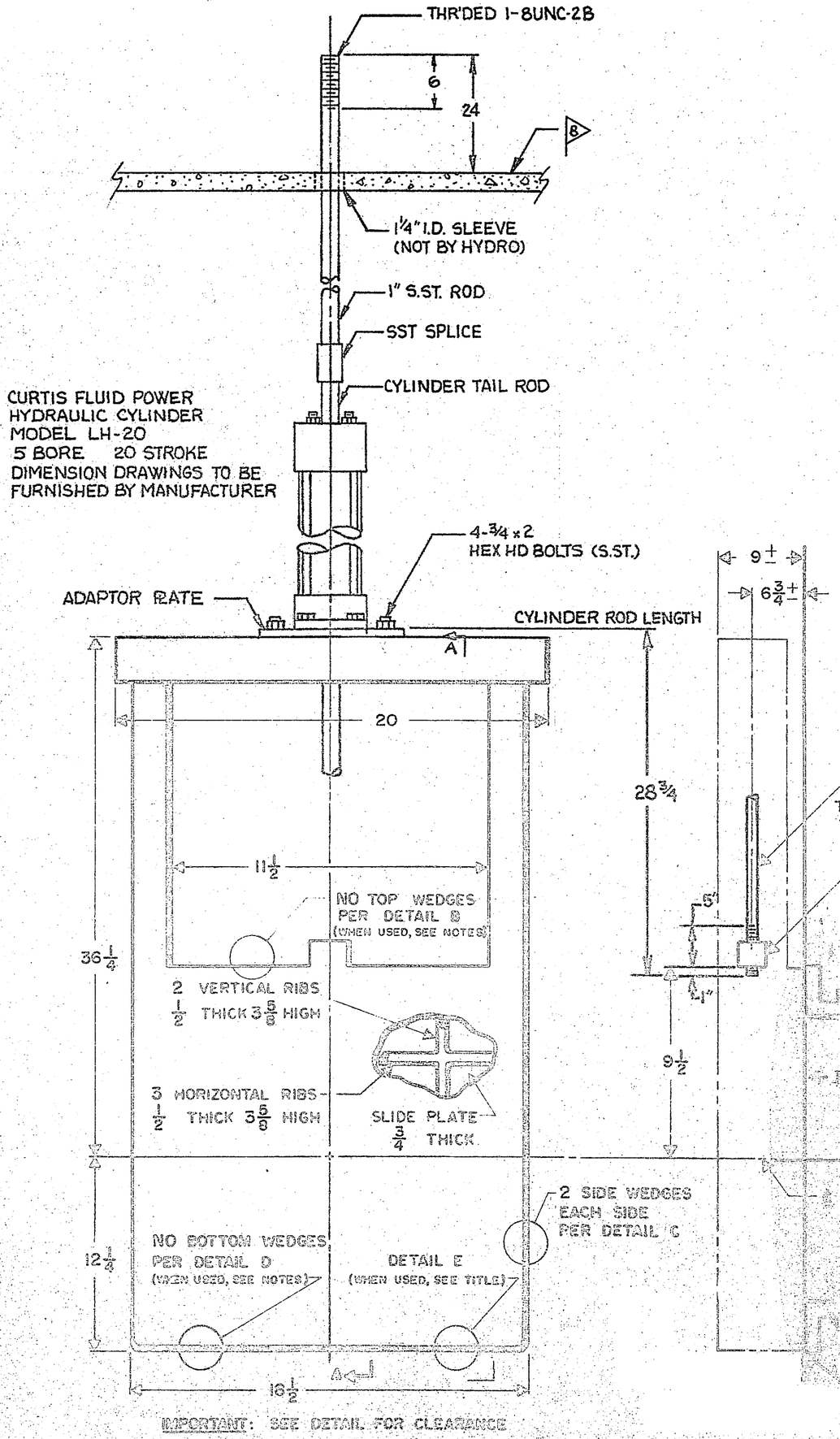
- ☐ Lift
- ☐ Base Plate Stem Guide

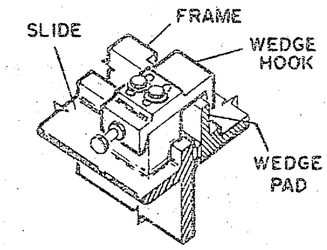
NOTES:
1. Surfaces embedded in concrete are not painted.
2. Seating surfaces machined to 63 micro-inch finish.
3. Wall thimbles stamped with the word "top" for alignment.
4. .004 clearance check provided on seating surfaces between frame and slide.

MATERIAL AND COATING SPECIFICATIONS
HEAVY DUTY SLUICE GATE [redacted]
MATERIAL COMBINATION NO. 1

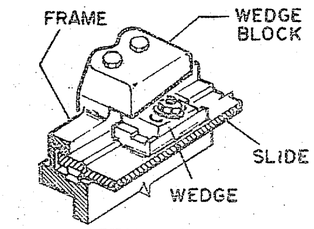
REVISED	DRAWN BY	APPROVED BY	DIST. ORDER	PLANT ORDER
	MS			85-0198
	DATE 5-2-85	SCALE		DWG. NO. 850198500

GC7-44

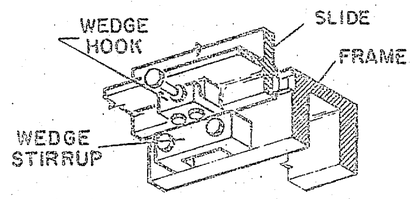




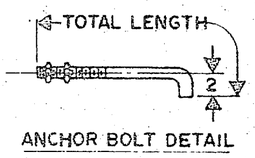
DETAIL B
TOP WEDGING DEVICE



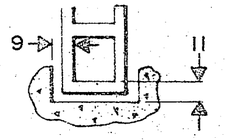
DETAIL C
SIDE WEDGING DEVICE



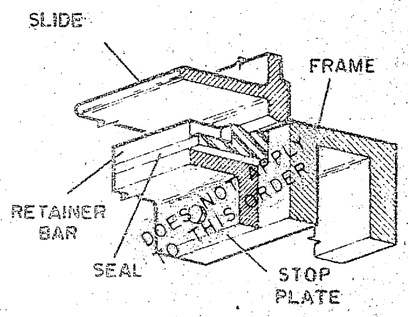
DETAIL D
STANDARD BOTTOM
BOTTOM WEDGING DEVICE



ANCHOR BOLT DETAIL



INSTALLATION CLEARANCE



DETAIL E
FLUSH BOTTOM

NOTES:

1. CASTING TOLERANCES APPLY ON ALL UNMACHINED SURFACES.
2. SEE MANUAL G-1000 FOR INSTALLATION AND ADJUSTMENT INSTRUCTIONS.
3. ALL DIMENSIONS IN INCHES UNLESS NOTED OTHERWISE.
4. TOP WEDGES YES ☐ NO ☒
5. BOTTOM WEDGES YES ☐ NO ☒
6. MAX. OPERATING HEAD 10' ☐ 20' ☐
7. MATERIAL & COATING SPECIFICATIONS PER DRAWING 850198500

8 PLEASE CONFIRM THIS ELEVATION TO HYDRO

9. TAG: FILTER INLET GULLET, DWG 33 & 34

3 REQUIRED

Hydro Gate Corporation
5101 DEXTER STREET
COMMERCE CITY, COLORADO 80022

35

HEAVY DUTY SLUICE GATE

DESIGNED FOR 100' SEATING 30' UNSEATING HEAD
SIZE 12" X 18" SEATING FACES BRONZE
FLANGE BACK SELF-CONTAINED FRAME
STANDARD BOTTOM NON-RISING STEM

REVISED	DRAWN BY	APPROVED BY	DIST. ORDER	PLANT ORDER
	MS			85-0198
	CHECKED BY	SCALE	DATE	DWG. NO.
			5-3-85	850198002

H2-5302

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	21-A	6-24-85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☐ OICC Approval ☑ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	6.2.6	Hydraulically Operated Filter Valves	7	A	CCS 405 7/9/85
	15271	PLANT PIPING			
1	5.4.1.b3	Hydraulically Operated Valves	7	A	
2		AWWA Approval for Non-Metal Cylinders	7	D	

CONTRACTOR'S COMMENTS

The attached (Item # 2) of AWWA C504-85 allows the use of Non-Metallic operators. The Contractor, in the past has had corrosion problems with metallic operators due to the presents of various other metals in the operators and would prefer the use of these operators as submitted.If this proposed deviation is approved there will be no additional cost to the Government and any changes caused by this deviation will be the responsibility of the Contractor at no expense to the Government.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Bill Pepper

DATE RECEIVED BY REVIEWER: 7/2/85

FROM (Reviewer): LANTDIV

TO: ROICC / HARRY PEPPER

☒ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

NON-METALLIC OPERATORS ARE NOT APPROVED BY AWWA; PROVIDE BRONZE BODY OPERATORS AS SPECIFIED.

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	7/12/85	[illegible] East

☆ U.S. GPO:1984-537-003/11170 Region 3-11

Item # 1

CUSTOMERS NAME: HARRY PEPPER & ASSOCIATES

CUSTOMERS P.O. NO. 642-0009

JOB NAME: EXPANSION OF THE HOLCOMB BLVD. WATER TREATMENT PLANT - MARINE CORPS BASE - CAMP LEJEUNE, NORTH CAROLINA CONTRACT NO. N62470-81-C-1644

QUOTE NO. 85-1153

ORDER NO.

Provide Certification

M&H VALVE COMPANY
A Division of McWane, Inc.
P.O. BOX 2088
ANNISTON, ALABAMA 36202

NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK

APPROVED ✓
APPROVED AS NOTED
DISAPPROVED
SUBJECT TO THE REQUIREMENTS OF
CONTRACT NO 05-81-1644
APPROVAL OF SUBMITTAL DOES NOT INCLUDE APPROVAL OF ANY DEVIATION FROM THE CONTRACT REQUIREMENTS UNLESS THE CONTRACTOR CALLS ATTENTION TO AND SUPPORTS THE DEVIATION--THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS, COORDINATION OF TRADES ETC AS REQUIRED

9 JUL 1985

REVIEWER GCS DATE

FOR OFFICER IN CHARGE OF CONSTRUCTION

"It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut (s), etc., and approved/proposed to be incorporated into Contract Number [redacted]470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

_____ Approved for use.

X Submitted for Government approval.

_____ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Pearce DATE 6-24-85

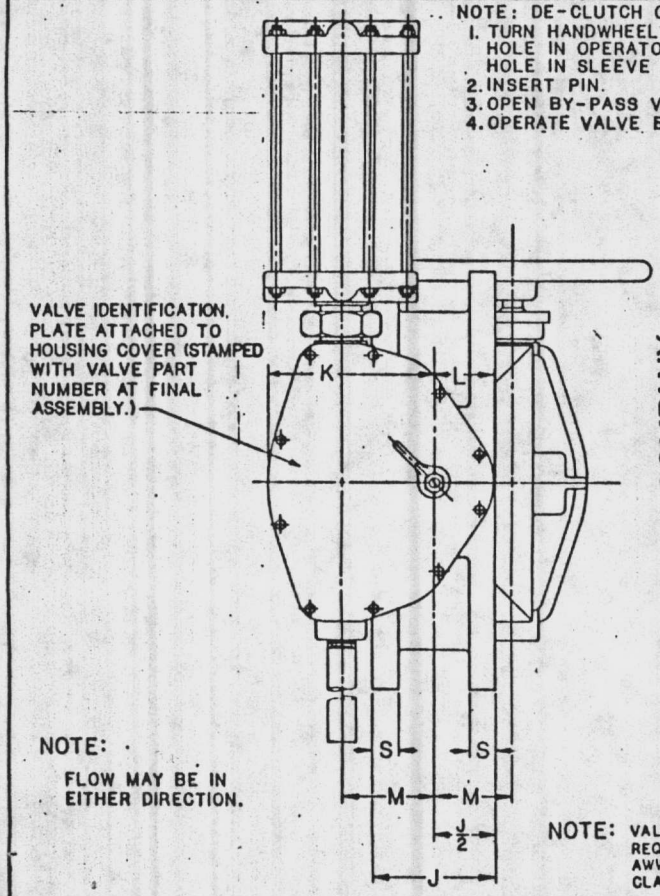
(1) 18" REQ'D. - BACKWASH VALVE FLANGED MARK C01.
(3) 18" REQ'D. - WASH VALVES FLANGED MARK C02, C03, C04.
(3) 10" REQ'D. - EFFLUENT VALVES FLANGED MARK C05, C06, C07.
(3) 6" REQ'D. - REWASH VALVES FLANGED MARK C08, C09, C010.

COATING IN ACCORDANCE WITH APPLICABLE AWWA STANDARD AND FED. SPEC. TT-C-494A OR EQUAL.

VALVE SIZE	A	B	C	J	P	Q	R	S	AA	AB
4	4	7 3/4	7 1/2	5	8	5/8	9	15/16	4	5/8-11
▶ 6	5	8 3/4	9 1/2	5	8	3/4	11	1"	4	3/4-10
8	6	9 3/4	11 3/4	6	8	3/4	13 1/2	1 1/8	4	3/4-10
▶ 10	7 3/4	12 1/4	14 1/4	8	12	7/8	16	1 3/16	—	—
12	9 1/2	14	17	8	12	7/8	19	1 1/4	—	—
14	10 7/16	15 3/8	18 3/4	8	12	1"	21	1 3/8	4	1"-8
16	12 3/16	17 1/8	21 1/4	8	16	1"	23 1/2	1 7/16	4	1"-8
▶ 18	13 5/16	19 5/8	22 3/4	8	16	1 1/8	25	1 9/16	4	1 1/8-7
20	14 7/8	21 1/4	25	8	20	1 1/8	27 1/2	1 11/16	4	1 1/8-7
24	17 13/32	24	29 1/2	8	20	1 1/4	32	1 7/8	4	1 1/4-7

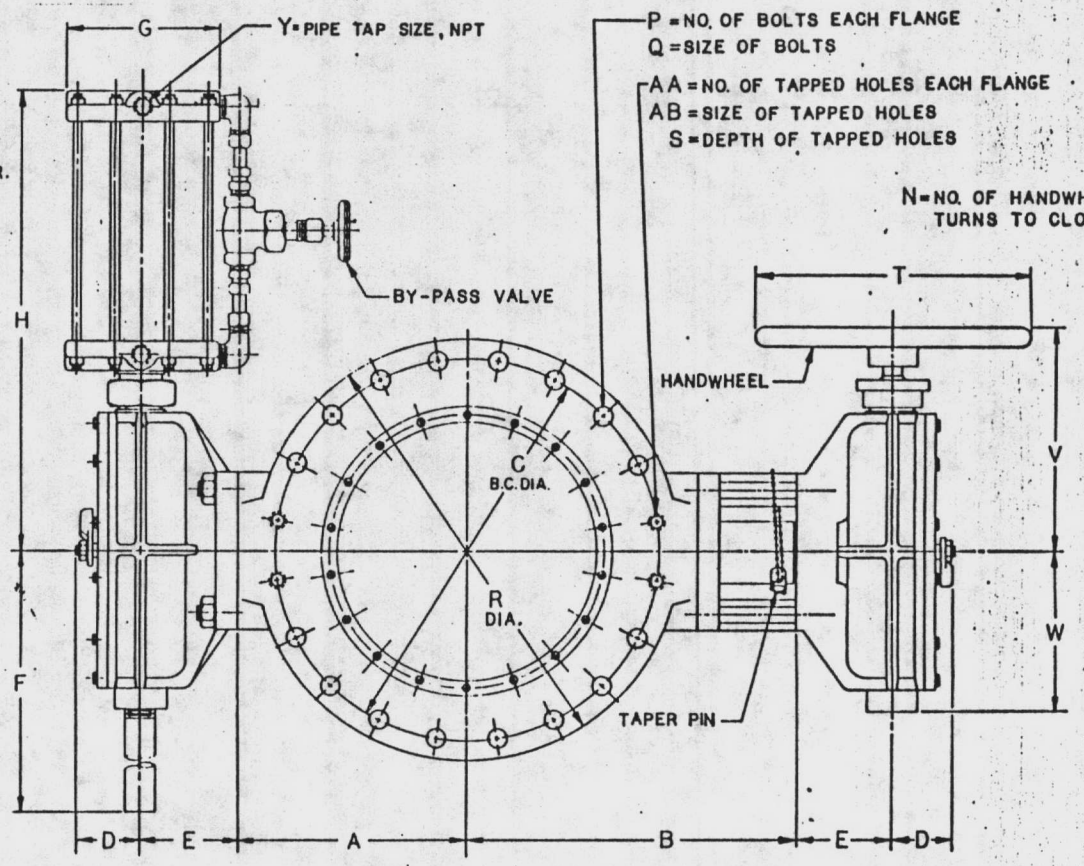
	OPERATOR MODEL CYLINDER & HANDWHEEL	CYLINDER BORE	CYLINDER STROKE	D	E	F	G	H	K	L	M	N	T	V	W	Y
	65	5	2 3/4	2 15/16	3 9/16	7 1/4	5 1/2	12 1/4	3 7/16	2 1/4	1 3/8	16 1/2	7 1/2	7 3/4	3 7/16	3/8-18
6" ▶	150	5	2 3/4	2 15/16	3 9/16	7 1/4	5 1/2	12 1/4	3 7/16	2 1/4	1 3/8	16 1/2	7 1/2	7 3/4	3 7/16	3/8-18
	175	6	2 3/4	2 15/16	3 9/16	7 1/4	6 1/2	13	3 7/16	2 1/4	1 3/8	16 1/2	12	7 3/4	3 7/16	1/2-14
10" ▶	510	6	6	3 3/16	4 1/2	12 5/8	6 1/2	18 5/8	6 1/8	2 3/4	3	36	12	10 3/16	5 7/16	1/2-14
	1250	8	8	4 1/16	5 3/4	17	10	24	7 7/8	3 1/4	4	48	18	12 1/2	8 3/8	3/8-14
18" ▶	2200	8	12	4 1/16	6 1/4	23	10	30	10 3/4	3 7/8	6	72	18	14 1/2	10 3/8	3/8-14

NOTE: DE-CLUTCH OPERATION
1. TURN HANDWHEEL TO LINE UP HOLE IN OPERATOR SHAFT WITH HOLE IN SLEEVE ON VALVE SHAFT.
2. INSERT PIN.
3. OPEN BY-PASS VALVE ON CYLINDER.
4. OPERATE VALVE BY HANDWHEEL.



NOTE:
FLOW MAY BE IN EITHER DIRECTION.

M&H VALVE COMPANY
A Division of McWane, Inc.
P.O. BOX 2088
ANNISTON, ALABAMA 36202



WITH 125* ANSI FLANGES & DRILLING PER AWWA C-504

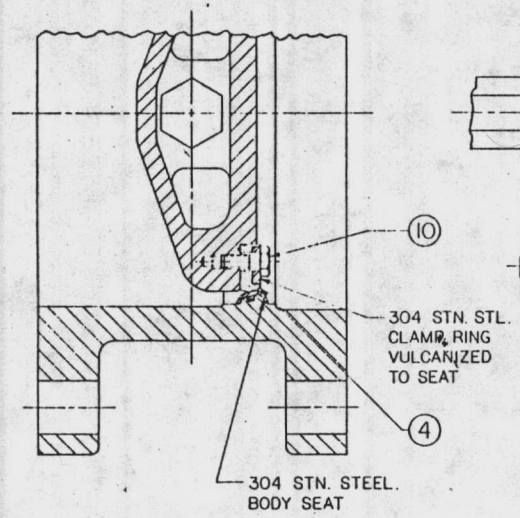
NOTE: VALVE SHAFT WILL MEET OR EXCEED REQUIREMENTS OF SHAFT TABLE PER AWWA STANDARD C-504 FOR APPLICABLE CLASS.

REVISIONS: REK PER CN# 3818 — 7/11 — A — W/C

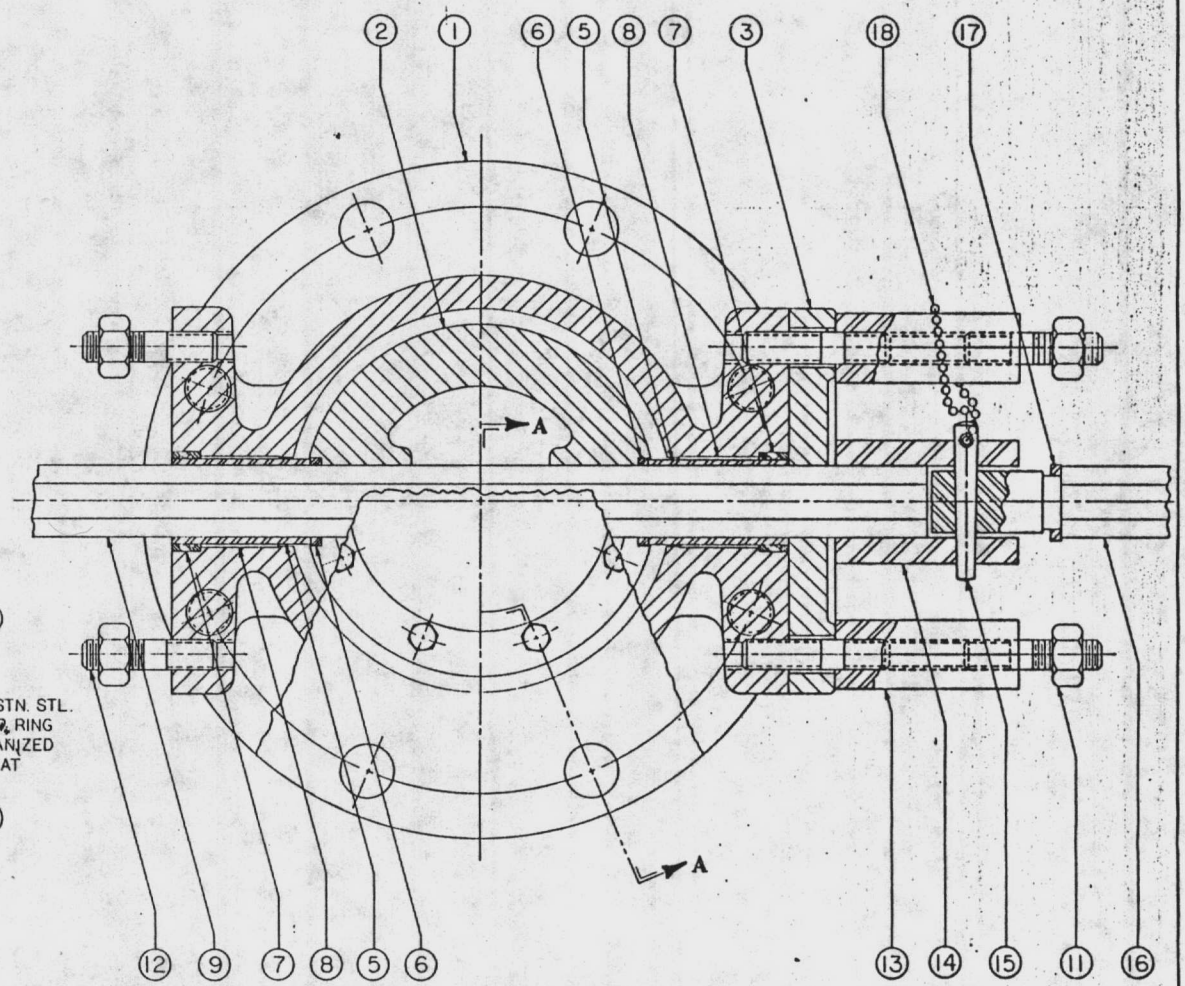
ASSEMBLY - STYLE 450 SERIES FLANGED BFV W/CYLINDER OPERATOR & HANDWHEEL DE-CLUTCH

DRAWN BY JLW — DATE 10-2-79 — DWG. NO. 99-02079 — REV. A

ITEM NO.	DESCRIPTION	MATERIAL
1	BODY, VALVE	CAST IRON, A-126, B~W/18-8 STN. STL. SEAT
2	VANE	CAST IRON, A-48, CL. 40
3	COVER, END	CAST IRON, A-126, CL. B
4	SEAT RING, VANE	BUNA "S" W/304 STN. STL. INSERT
5	JOURNAL, VALVE SHAFT	304 STN STL
6	SEAL, SHAFT	BUNA "S"
7	PACKING, JOURNAL	BUNA "S"
8	BUSHING, BODY	REINFORCED TEFLON
9	HEX DRIVE SHAFT	CDS-C-1018 STL.
10	CAPSCREW, HEX	18-8 STN STL-W/ "NYLOK" INSERT
11	NUT, HEX	STL., ASTM A-307, GR. B, ELECTRO-ZINC PLATED
12	STUD	STL., ASTM A-307, GR. B, ELECTRO-ZINC PLATED
13	SPACER	CDS-C-1018 STL.
14	CONNECTOR-SLEEVE	CDS-C-1018 STL.
15	PIN-TAPER	BRASS
16	SHAFT; OPERATOR-DE-CLUTCH	CDS-C-1018 STL.
17	PACKING	RUBBER
18	CHAIN-BEAD	STAINLESS STEEL



SECTION A-A



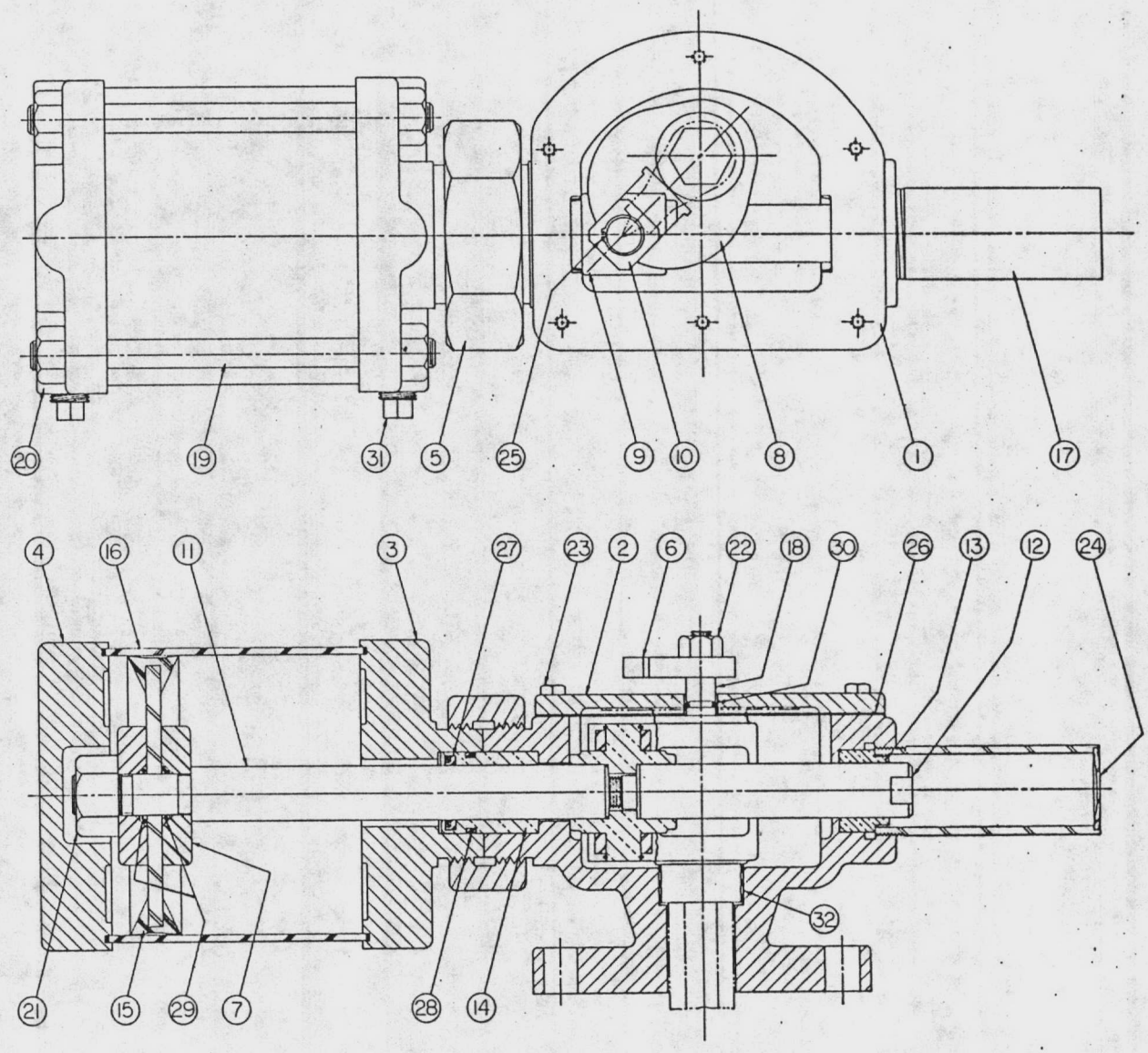
M & H VALVE COMPANY
A Division of McWane, Inc.
P.O. BOX 2088
ANNISTON, ALABAMA 36202

REVISIONS	DATE	BY	APP

SUB-ASSEMBLY-STYLE 450 SERIES FLANGED END BFV W/DE-CLUTCH & BUNA "S" SEALS

DRAWN BY	CHECKED BY	NO. SHEETS	DWG. NO.	REV.
JLW			99-01395	
DATE 6-29-78	SCALE FULL	FILE NO.		

ITEM NO.	DESCRIPTION	MATERIAL
1	HOUSING, OPERATOR	CAST IRON, A-126, CL B
2.	COVER, HOUSING	CAST IRON, A-126, CL. B
3	HEAD, CYLINDER, ROD END	CAST IRON, A-126, CL. B CADMIUM PLATED
4	HEAD, CYLINDER, BLANK END	CAST IRON, A-126, CL. B CADMIUM PLATED
5	NUT, CONNECTING	CAST IRON, A-126, CL. B
6	INDICATOR	CAST IRON, A-126, CL. B
7	PISTON HALF	CAST IRON, A-126, CL. B CADMIUM PLATED
8	LEVER	DUCTILE IRON, A-536 GR. 65-45-12
9	CROSSHEAD	DUCTILE IRON, A-536 GR. 80-55-06
10	SLEEVE, CROSSHEAD	ALLOY IRON
11	PISTON ROD	18-8 STAINLESS STEEL HARD CROME PLATED
12	TAIL ROD	STEEL, C-1040
13	BUSHING, TAIL ROD	BEARING BRONZE, B-144, ALLOY 3B
14	CARTRIDGE, SEAL	BEARING BRONZE, B-144, ALLOY 3B
15	PISTON CUP	BUNA "N"
16	BARREL, CYLINDER	GLASS FIBER REINFORCED EPOXY TUBING WITH MOLYBDENUM DISULFIDE LINER
17	GUARD, TAIL ROD	COMM. STEEL PIPE
18	INDICATOR PIN	C.D STEEL
19	TIE ROD	STEEL, COMM.
20	NUT, HEX (TIE ROD)	STEEL, COMM.
21	NUT, HEX (PISTON)	STEEL, COMM. - CADMIUM PLATED
22	NUT, HEX (INDICATOR)	STEEL, COMM.
23	CAPSCREW, HEX	STEEL, COMM.
24	PLUG, EXPANSION	BRASS, COMM.
25	RING, RETAINING	SPRING STEEL
26	GASKET, COVER	CORK-NEOPRENE
27	SEAL, ROD	URETHANE, SELF LUBRICATED
28	SEAL (CARTRIDGE)	BUNA "N"
29	SEAL (PISTON HALF)	BUNA "N"
30	SEAL (INDICATOR PIN)	BUNA "N"
31	PLUG, PIPE-SQ. HD	CAST IRON, COMM.
32	BUSHING	NYLON (MOLY-DISULFIDE FILLED)



REVISIONS	DATE	B	BY	APP

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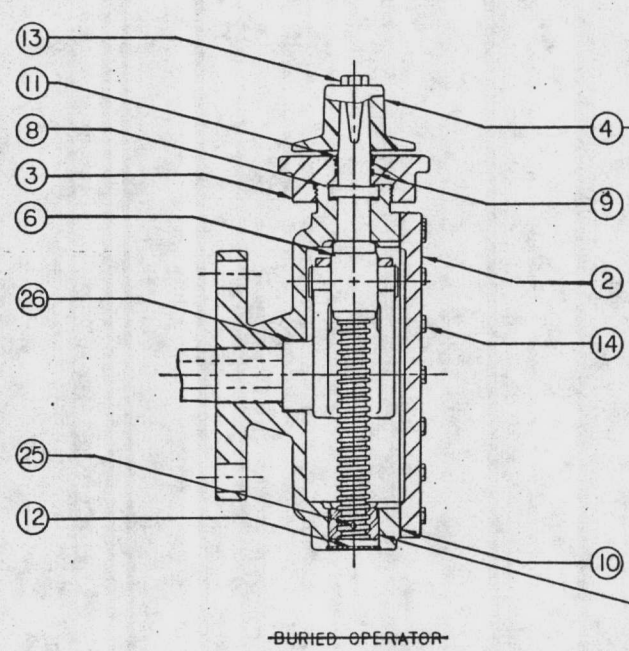
SUB-ASSEMBLY—CYLINDER OPERATOR

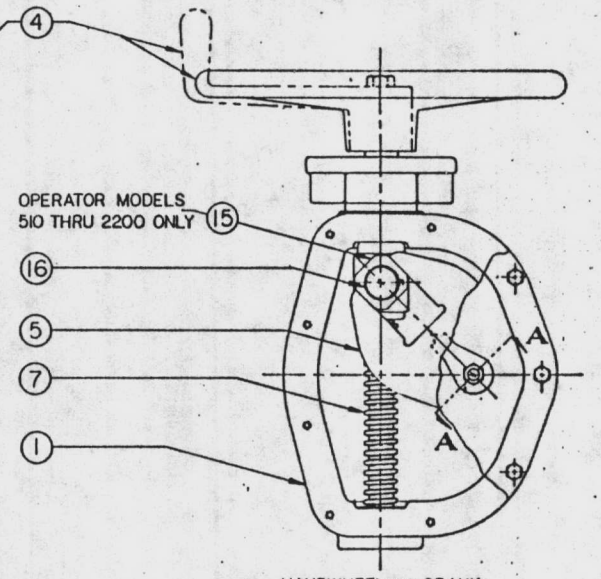
DRAWN BY	CHECKED BY	NO. SHEETS	DWG. NO.	REV.
J.A.W.	ALH	1	99-01362	
DATE 5-17-78	SCALE —	FSCM NO. 20996-1		

M & H VALVE COMPANY
A Division of McWane, Inc.
P.O. BOX 2088
ANNISTON, ALABAMA 36202

ITEM NO.	DESCRIPTION	MATERIAL
1	HOUSING, OPERATOR	CAST IRON, A-126 CL. B
2	COVER, HOUSING	CAST IRON, A-126 CL. B
3	CAP, THRUST	CAST IRON, A-126 CL. B
4	AS REQUIRED	CAST IRON, A-126 CL. B
5	LEVER	DUCTILE IRON, A-536 GR 65-45-12
6	CROSSHEAD	DUCTILE IRON, A-536 GR 80-55-06
7	SHAFT, INPUT	C.D. STEEL, 12 L 14
8	SEAL (HOUSING)	BUNA "N"
9	SEAL (CAP)	BUNA "N"
10	GASKET, COVER	CORK-NEOPRENE
11	SHIELD, SHAFT	REINFORCED TEFLON
12	PLUG, EXPANSION	BRASS, COMM.
13	BOLT, HEX. HD. (AWWA NUT)	STEEL, COMM.
14	BOLT HEX HD. (COVER)	STEEL, COMM.
15	SLEEVE, CROSSHEAD	ALLOY IRON
16	RING, RETAINING	SPRING STEEL
17	INDICATOR	CAST IRON, A-126 CL. B
18	PIN, INDICATOR	STEEL, COMM.
19	SEAL, INDICATOR PIN	BUNA "N"
20	NUT, HEX	STEEL, COMM.
21	BEARING, NEEDLE	STEEL, COMM.
22	RACE, THRUST	HARDENED STEEL
23	SPACER	HARDENED STEEL
24	WASHER, THRUST	HARDENED STEEL
25	PIN, INPUT SHAFT	STEEL, COMM.
26	BUSHING	REINFORCED TEFLON

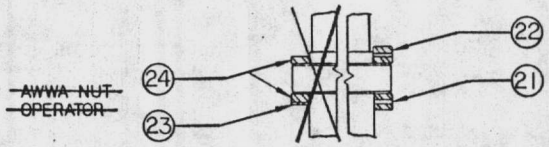


~~BURIED OPERATOR~~



HANDWHEEL ~~AND CRANK~~ OPERATOR

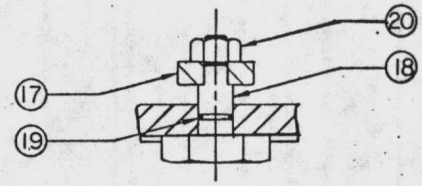
INTEGRAL STOP NUT
MODELS 65 THRU 510 ONLY.



~~AWWA NUT~~ OPERATOR

HANDWHEEL ~~AND CRANK~~ OPERATOR

THRUST COLLAR AREA
MODELS ~~1250-4~~ 2200 ONLY



SECTION A-A
FOR HANDWHEEL ~~AND CRANK OPERATOR~~ ONLY

REVISIONS	DATE	BY	APP

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SUB-ASSEMBLY MANUAL OPERATOR

DRAWN BY	CHECKED BY	NO SHEETS	DWG. NO.	REV.
LS	ALR	1	99-01351	
DATE 5-2-78	SCALE —	FILE NO. 2096-1		

M & H VALVE COMPANY
A Division of McWane, Inc.
P.O. BOX 2088
ANNISTON, ALABAMA 36202

C504-85
approved in 3/85

3.8.4.20 Piston-Rod Bushing - bronze or nonmetallic materials suitable for air service.

Item #2

3.8.4.21 Rod Seals - nonmetallic materials suitable for air service.

3.8.4.22 Piston Seals - nonmetallic materials suitable for air service. Piston seals shall be of a pressure sensitive type.

3.8.4.23 Nonmetallic Materials for Water and Air Operated Cylinders. This standard recognizes nonmetallic materials for use in cylinder assemblies. Considering the various properties of nonmetallics such as creep, water absorption, impact resistance, etc., it is not practical to specify general material usage since specific manufacturers' designs limit the use of the many available nonmetallic materials or certain combinations of those materials. The manufacturer of nonmetallic cylinders must have manufactured the assembly for a minimum of five years of satisfactory service and shall provide documentation when requested by the purchaser.

3.8.4.24 For material specifications refer to Section 2 Materials.

SECTION 4-WORKMANSHIP AND PAINTING

SEC. 4.1 WORKMANSHIP

Valve parts shall be designed, and manufacturing tolerances set, to provide interchangeability of parts between units of the same size and type produced by any one manufacturer. When assembled, valves manufactured in accordance with this standard shall be well fitted and smooth operating, and body and shaft seal shall be watertight.

SEC. 4.2 PAINTING

All interior and exterior surfaces except finished or bearing surfaces shall be carefully prepared by removing all dirt, grease, and rust and shall

ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

APPROVED
APPROVED AS NOTED ✓
DISAPPROVED
SUBJECT TO THE REQUIREMENTS OF
CONTRACT NO. 05-81-1644
APPROVAL OF THIS SUBMITTAL DOES NOT INCLUDE
APPROVAL OF ANY DEVIATION FROM THE CONTRACT REQUIREMENTS UNLESS THE CONTRACTOR CALLS ATTENTION TO AND SUPPORTS THE DEVIATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS, COORDINATION OF TRADES, ETC. AS REQUIRED

REVIEWER CCS DATE 9 JUL 1985

FOR OFFICER IN CHARGE OF CONSTRUCTION

Hart

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	84	7-30-85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☒ Contractor Approved ☐ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	6.2.6 b	Manufacturer's Data and Drawing on Diaphragm Valve for Surface Wash	4	RA	7/31/85

CONTRACTOR'S COMMENTS

Certification Conforming to Section 15271 is forthcoming.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Feese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
7/28/85	Henry von Oesen & Assoc., Inc.	

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Contractor's approval appears to be appropriate.

COPIES TO
ROICC (2)
LANTDIV (1)
A-E (1)

DATE 7/31/85

SIGNATURE

☆ U.S. GPO:1984-537-003/11170 Region 3-11

-1 AUG 1985 11 12

Specifications

Item #1

SIZES — *Globe:* 3/8" - 3" screwed; 1½" - 16" flanged
Angle: 1½" - 3" screwed; 2" - 16" flanged

END DETAILS — *Flanged:* Cast Iron, 125 & 250 ANSI B16.1
Cast Steel, 150 & 300 ANSI B16.5
Cast Bronze, 150 & 300 ANSI B16.24
Screwed: 250 and 300 ANSI B2.1

PRESSURE RATINGS — 125 class 175 psi/150 class 275 psi
250 class 300 psi/300 class 400 psi

TEMPERATURES RANGES — Water, Air, to +180°F.
Light Petroleum Products −40 to +180°F.

CLA-VAL CO.
CERTIFIED FOR INSTALLATION
DIMENSIONS ONLY
By _____ Date 7/28/

MATERIALS

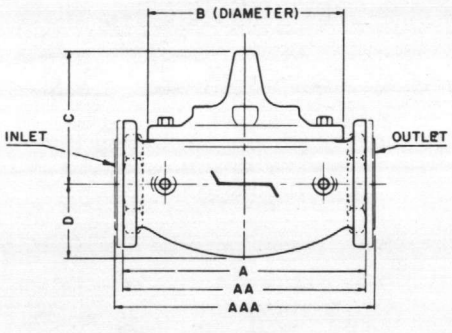
Main valve body & cover:
Cast Iron ASTM A48
Cast Steel ASTM A216-WCB
Cast Bronze ASTM B62
Cast Aluminum 356-T6

Main valve trim:
Brass QQ-B-626
Bronze ASTM B61
Stainless Steel 303

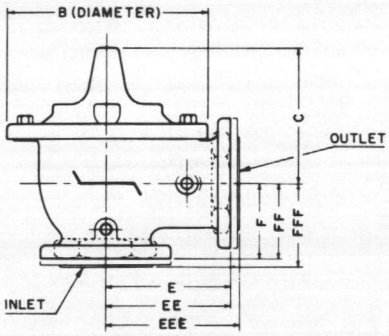
Rubber Parts:
Buna N Synthetic Rubber

OTHER MATERIALS — Available on special order

Dimensions



100-01 (Globe)



100-01 (Angle)

SIZE		3/8	1/2-3/4	1	1¼-1½	2	2½	3	4	6	8	10	12	14	16
A	Screwed	2¾	3½	5⅛	7¼	9⅜	11	12½							
AA	125 ANSI 150 ANSI	—	—	—	*8½	9⅜	11	12	15	20	25⅜	29¾	34	39	41⅜
AAA	250 ANSI 300 ANSI	—	—	—	—	10	11⅝	13¼	15⅝	21	26⅜	31⅛	35½	40½	43½
B		2½	3⅛	4⅜	5⅝	6⅝	8	9⅛	11½	15¾	20	23⅝	28	32¾	35½
C		1½	2⅜	2½	4 15/16	5¾	6⅞	7½	9⅞	12½	13⅞	16⅜	20	23¼	25
D		1¼	7/8	1⅝	2	2½	2⅞	3⅛	4¼	6	7 9/16	9¼	10¾	12⅝	15½
E	Screwed				3¼	4¾	5½	6¼	—	—	—	—	—	—	—
EE	125 ANSI 150 ANSI				—	4¾	5½	6	7½	10	12¾	14⅞	17	19½	20 13/16
EEE	250 ANSI 300 ANSI				—	5	5⅞	6⅜	7⅞	10½	13¼	15 9/16	17¾	20¼	21⅝
F	Screwed				1⅞	3¼	4	4½	—	—	—	—	—	—	—
FF	125 ANSI 150 ANSI				—	3¼	4	4	5	6	8	8⅝	13¾	14⅞	15 11/16
FFF	250 ANSI 300 ANSI				—	3½	4 5/16	4⅜	5 5/16	6½	8½	9 5/16	14½	15⅝	16½
Cover Tapping N.P.T.		1/8	1/8	1/4	1/4	3/8	1/2	1/2	3/4	3/4	1	1	1	1	1
Body Tapping N.P.T.		—	1/8	1/4	3/8	3/8	1/2	1/2	3/4	3/4	1	1	1	1	1
Shipping Weight Lbs.		3	3	8	15	35	50	70	140	285	500	780	1165	1600	2265

*1½ SIZE ONLY

Purchase Specifications

This valve shall be a hydraulically operated, diaphragm-actuated, globe or angle pattern valve. It shall contain a resilient, synthetic rubber disc, having a rectangular cross-section, contained on three and one-half sides by a disc retainer and disc guide, forming a tight seal against a single removable seat insert. The diaphragm assembly containing a valve stem shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. This diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The diaphragm shall consist of nylon fabric bonded with synthetic rubber and shall not be used as a seating surface. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the valve. All necessary repairs shall be possible without removing the valve from the line.

Valve shall be similar in all respects to the Cla-Val Model 100-01 Hytrol Valve as manufactured by Cla-Val Co., Newport Beach, California, or approved equal.

WHEN ORDERING PLEASE SPECIFY:

1. Size.
2. Model 100-01 Hytrol (Globe or Angle)
3. Pressure Class.
4. Temperature and fluid to be handled.
5. Static and flowing line pressure.
6. Operating fluid and pressure (if other than line pressure).
7. Body and trim materials.
8. End Details (screwed or flanged).

Provide Certification Per Section 15271

VALVE SIZE	Cv FACTOR	FLOW OF WATER — GALLONS PER MINUTE — THRU GLOBE PATTERN VALVE																					
		5	10	15	20	30	40	50	60	80	100	150	200	300	400	600	800	1000	2000	3000	4000	6000	10,000
½	6.0	.7	2.7	6.2	11.0																		
¾	8.5	.3	1.4	3.1	5.5	12.5																	
1	13.3	.14	.57	1.3	2.3	5.1	9.1	14.1	20.4														
1¼	30.0		.1	.25	.44	1.0	1.8	2.8	4.0	7.1	11.0												
1½	32.0		.1	.23	.4	.9	1.6	2.4	3.5	6.3	9.8	22.0											
2	54.0				.14	.31	.55	.86	1.23	2.19	3.43	7.72	13.72										
2½	80.0					.14	.25	.4	.6	1.0	1.6	3.5	6.25	14.1									
3	115.0						.12	.19	.27	.48	.76	1.70	3.02	6.81	12.10								
4	200.0							.06	.09	.16	.25	.56	1.0	2.25	4.0	9.0	16.0						
6	500.0										.04	.09	.16	.36	.64	1.44	2.56	4.00	16.00				
8	840.0												.06	.13	.23	.51	.91	1.42	5.67	12.76			
10	1245.0														.10	.23	.41	.65	2.58	5.81	10.32		
12	1725.0																.22	.34	1.34	3.02	5.38	12.10	
14	2300.0																	.19	.76	1.70	3.02	6.81	18.90
16	2940.0																		.46	1.04	1.85	4.16	11.57
	GPM→	5	10	15	20	30	40	50	60	80	100	150	200	300	400	600	800	1000	2000	3000	4000	6000	10,000

PRESSURE IN P.S.I. (BASED ON WIDE OPEN VALVE)

FLOW CHART — Pressure drop in pounds per square inch for sizes ½" thru 16" Clayton Valves

LIQUID VOLUME DISPLACED FROM DIAPHRAGM CHAMBER WHEN VALVE OPENS

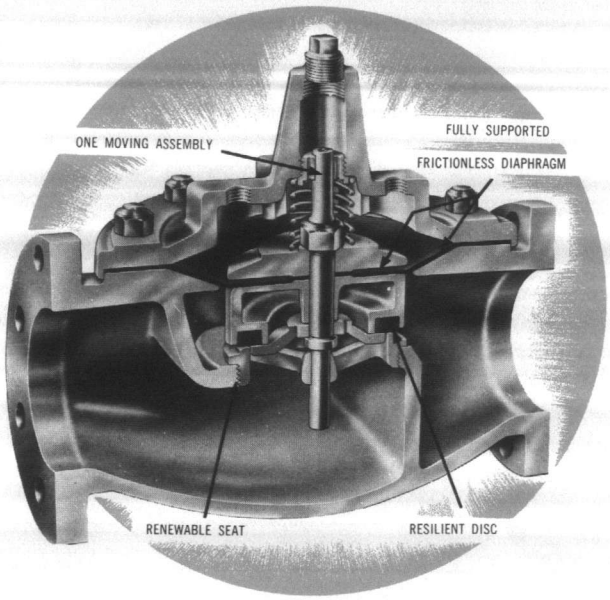
VALVE SIZE	DISPLACEMENT
3/8"	0.012 Fl. Oz.
½"	0.34 Fl. Oz.
¾"	0.34 Fl. Oz.
1"	0.7 Fl. Oz.
1-¼"	.020 Gals.
1-½"	.020 Gals.
2"	.032 Gals.
2-½"	.043 Gals.
3"	.080 Gals.
4"	.169 Gals.
6"	.531 Gals.
8"	1.26 Gals.
10"	2.51 Gals.
12"	4.0 Gals.
14"	6.50 Gals.
16"	9.57 Gals.

CLA-VAL CO. Newport Beach, California U.S.A.
CLA-VAL CANADA LTD. Beamsville, Ontario, Canada

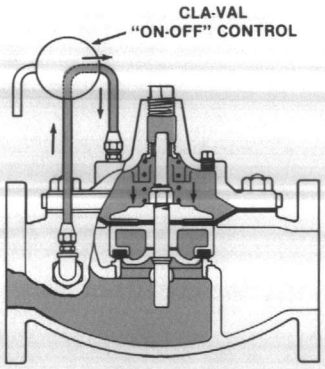
The Cla-Val Model 100-01 Hytrol valve is a hydraulically operated, diaphragm actuated, globe, or angle pattern valve. It consists of three major components: the body, diaphragm assembly, and cover. The diaphragm assembly is the only moving part.

The body contains a removable seat insert. The diaphragm assembly (sizes 1¼" and larger) is guided top and bottom by a precision machined stem. It utilizes a diaphragm of nylon fabric bonded with synthetic rubber. A resilient, synthetic rubber disc, contained on three and one-half sides by a disc retainer and disc guide, forms a drip-tight seal with the valve seat when pressure is applied above the diaphragm. The diaphragm assembly forms a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The valve's packless construction and simplicity of design assures a long life of dependable operation.

The Model 100-01 Hytrol valve is used as the basic valve in almost all Cla-Val automatic valves. It is used in many types of piping systems requiring remote control, pressure regulation, solenoid operation, rate of flow control, liquid level control, or check valve operation. It is available in various materials and in a full range of sizes, with either screwed or flanged ends.

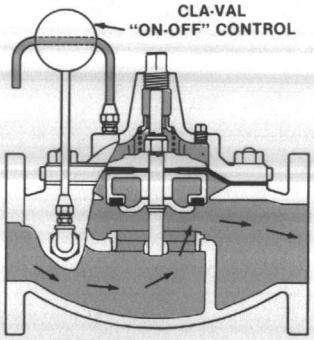


Principle of Operation



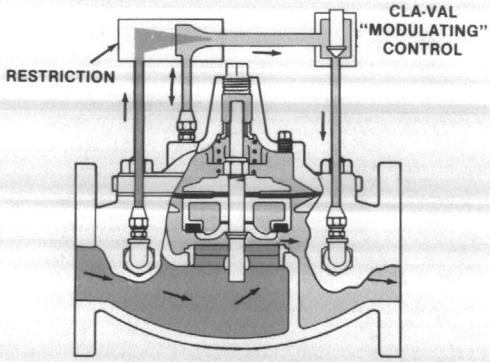
TIGHT CLOSING OPERATION

When pressure from the valve inlet (or an equivalent independent operating pressure) is applied to the diaphragm chamber the valve closes drip-tight.



FULL OPEN OPERATION

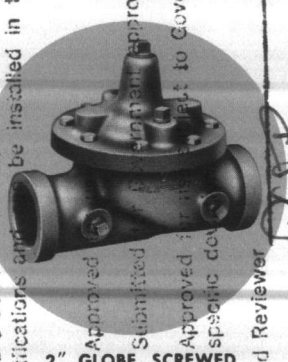
When pressure in diaphragm chamber is relieved to a zone of lower pressure (usually atmosphere) the line pressure at the valve seat opens the valve. Flow in either direction is permitted.



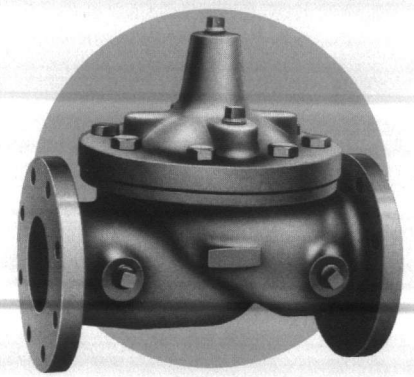
MODULATING ACTION

Valve modulates when diaphragm pressure is held at an intermediate point between inlet and discharge pressure. With the use of a Cla-Val Co., "Modulating" Control, which reacts to line pressure changes, the pressure above the diaphragm is varied, allowing the valve to throttle and compensate for the changes.

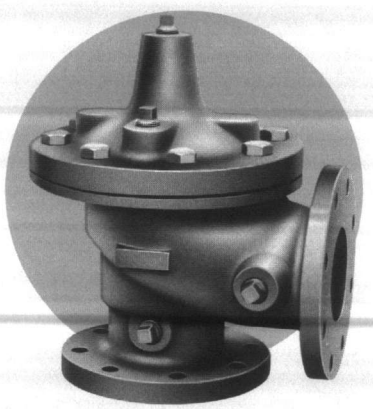
Valve Models



2" GLOBE, SCREWED



4" GLOBE, FLANGED



4" ANGLE, FLANGED

CLA-VAL CO. Newport Beach, California U.S.A.
CLA-VAL CANADA LTD. Beamsville, Ontario, Canada

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	110-A	12-4-85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☐ OICC Approval ☒ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	6.4	Manufacturer's Data on Lime Solution Pumps	7	AN	CCS 405 12/24/85

CONTRACTOR'S COMMENTS

These pumps match the existing pumps now in use at Bldg # 670, and the existing pumps work to the satisfaction of the owners. If this proposed Deviation is approved, there will be no additional cost to the Government and any changes caused by this Deviation, will be at the expense of the Contractor.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC	CONTRACTOR REPRESENTATIVE (Signature)
ONE COPY TO ROICC	PHIL REESE, COO Phil Reese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
20 Dec 85	BM	distribution

☒ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	3 Jan 86	Bill Mauney

☆ U.S. GPO:1984-537-003/11170 Region 3-11

EQUIPMENT LIST

Three (3) Milroyal pumps, by Milton Roy Company, 2-1/2" plunger diameter, 142 strokes per minute, 245 gallons per hour, 316 stainless steel plunger, cast iron head, 316 stainless steel seats, 404 stainless steel balls, 3/4 horsepower, 230volt/460 volt/3 phase/60 hertz.

NOTE: The above pumps are requested by the owner as explained to me in a meeting held in September 1985. The Milton Roy pump is the same manufacturer as those presently used by Camp Lejeune.

The above pumps have stainless steel plungers in lieu of ceramic. The ceramic plungers have been cracking and the owner is presently using 316 stainless steel plungers.

OPERATING RANGE 10:1

DEVIATION ~~None~~

ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK VIRGINIA 23511

APPROVED _____
APPROVED AS NOTED ✓
DISAPPROVED _____
SUBJECT TO THE REQUIREMENTS OF
CONTRACT NO. 05-81-1644
APPROVAL OF A SUBMITTAL DOES NOT INCLUDE APPROVAL OF ANY DEVIATION FROM THE CONTRACT REQUIREMENTS UNLESS THE CONTRACTOR CALLS ATTENTION TO AND SUPPORTS THE DEVIATION--THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS, COORDINATION OF TRADES, ETC., AS REQUIRED

REVIEWER CCS DATE 24 DEC 1985

FOR OFFICER IN CHARGE OF CONSTRUCTION

"It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut(s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

_____ Approved for use.

X Submitted for Government approval.

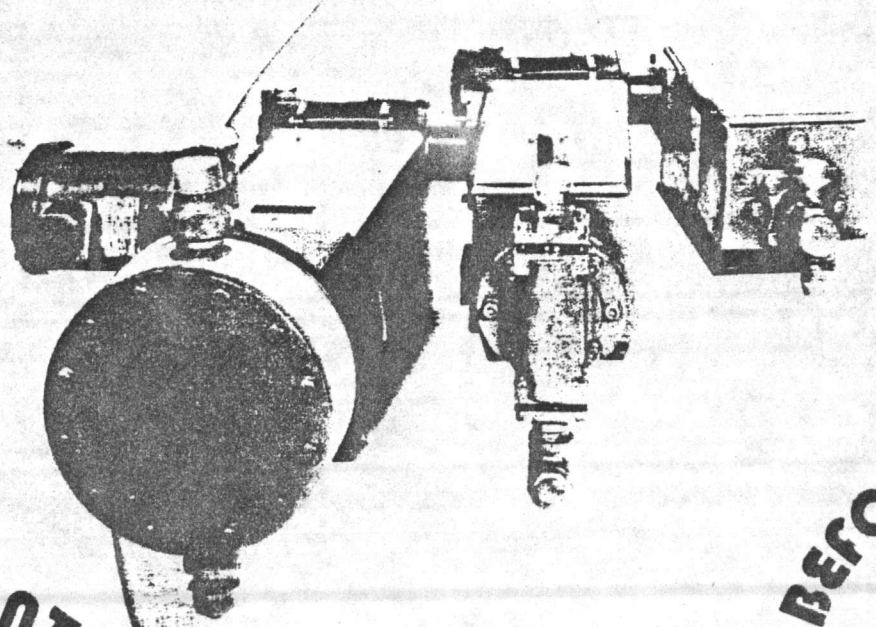
_____ Approved for use subject to Government approval of specific deviation.

Authorized Revlewer _____ DATE _____

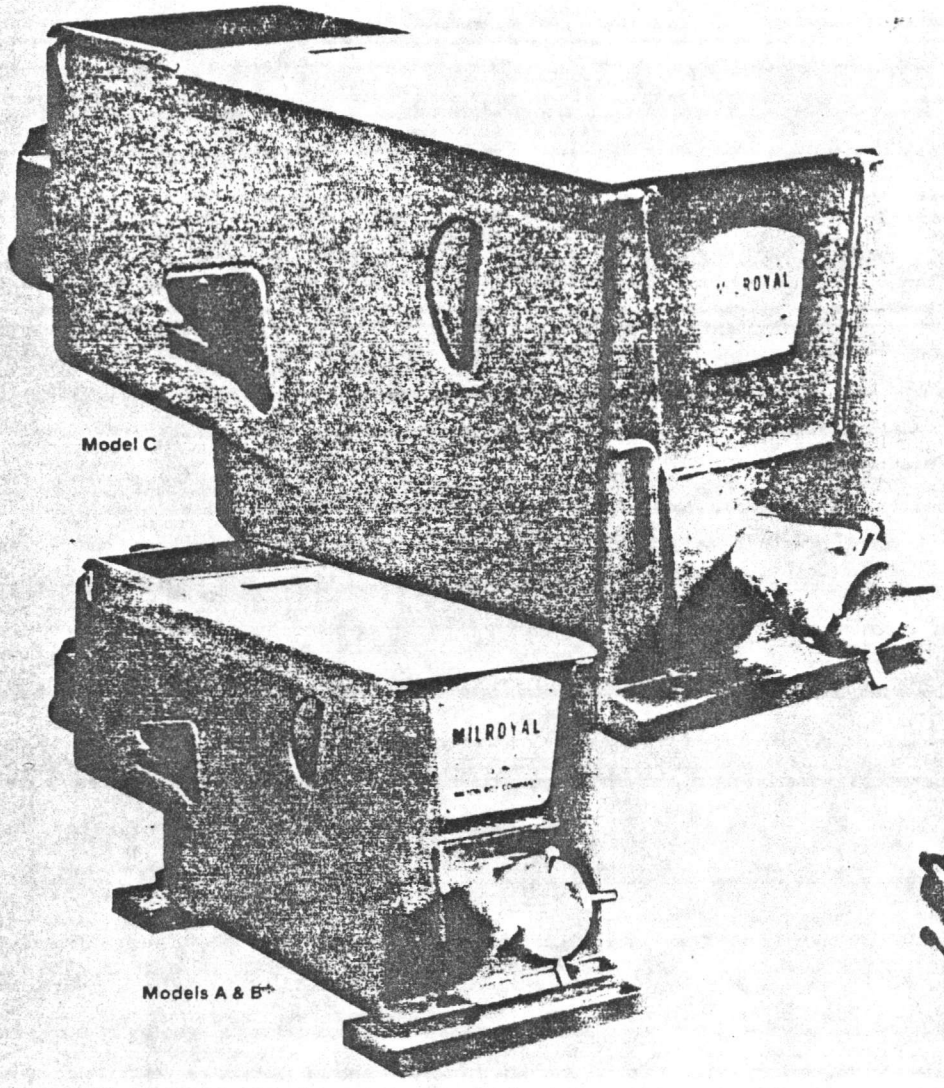
Signature CQC Rep. Phil Pace DATE 12-4-85

MILTON ROY

MILROYAL® CONTROLLED VOLUME PUMPS



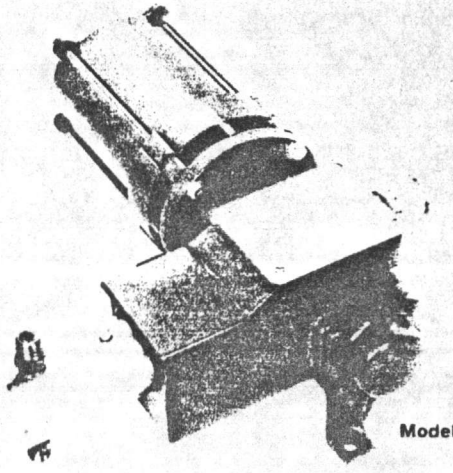
...LOOK INTO MILTON ROY LIQUID CONTROL BEFORE YOU BUY.



Model C

Models A & B

Four configurations of the Milroyal are available, designated models A, B,C, and D. Models A and B are the same frame size, differing only in internal gearing. Model C is the largest Milroyal and Model D is a compact version for laboratory use.



Model D

FEATURES

- Interchangeable packed plunger, disc diaphragm or tubular double diaphragm liquid ends available
- Capacities range from 0.1 to 1000 gph
- Discharge pressures to 7500 psi
- Minimum maintenance with totally enclosed design
- Capacities adjustable over full range while pump is in operation
- Finished with chemical resistant paint
- All moving drive parts operate in oil
- 24 month warranty on drive, models A, B, C

The Milroyal controlled volume pump is backed by over 35 years of Milton Roy experience. Because of its high quality and dependability, the Milroyal is the recognized leader in the controlled volume pump field.

The Milroyal is designed and built with maximum precision to accurately proportion highly corrosive chemicals, solvents, viscous liquids and slurries in both industrial and laboratory environments. It can deliver flow rates to 1000 gph and is capable of operating against discharge pressures to 7500 psi.

The Milroyal will give you the most accurate, dependable operation available and at a price that makes it a sound, economical investment.

ACCURATE, RELIABLE PERFORMANCE

The Milroyal® features free-turning, self-cleaning, double ball check valves to ensure accuracy to within ± 1% with the packed plunger and disc diaphragm liquid ends (± 1.7% for the tubular double diaphragm).

EXCEPTIONAL VERSATILITY

Three interchangeable liquid ends in a variety of metallurgies and plastics are available to suit your particular application. Milroyal Models A and B can be equipped with packed plunger, disc diaphragm or tubular diaphragm configurations; Model C is available with either packed plunger or disc diaphragm.

Motors can be replaced or changed to other types and sizes with ease. Plunger sizes also can be changed quickly permitting flow rate changes up to 75 times the original.

Capacity is continuously adjustable from 0 to 100% while the pump is running, manually with a micrometer dial or automatically with pneumatic or electric controls.

LOW COSTS, MINIMUM MAINTENANCE

To reduce maintenance and assure long life, all moving drive parts of the Milroyal run in oil and are totally enclosed to prevent dirt, moisture or corrosive vapors from reaching the drive mechanism.

A unique pressurized oil-lubrication system insures long drive mechanism life and permits the Milroyal to operate at high suction and discharge pressures. A magnetic oil cleaner installed at the suction of the lubricating oil pump reduces wear of moving parts and extends oil life.

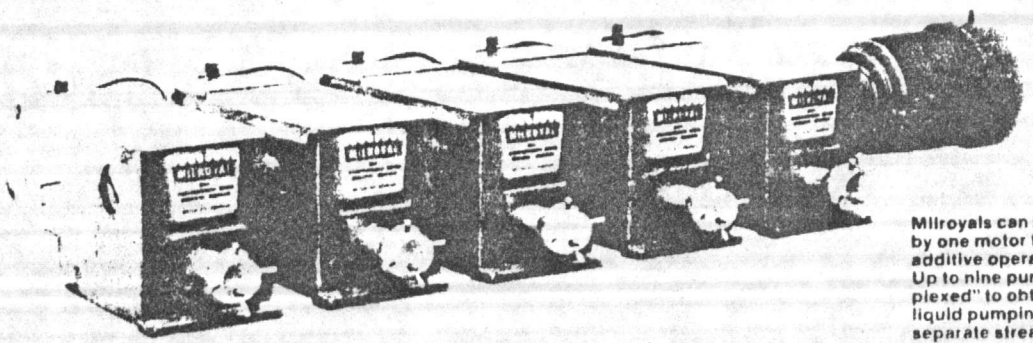
WIDE RANGE OF CAPACITIES AND PRESSURES

Packed plunger liquid ends can deliver from 0.1 to 1000 gph and are capable of operating against discharge pressures to 7500 psi. Capacities for the disc diaphragm liquid end range from 0.2 to 605 gph, against discharge pressures ranging to 3500 psi. The double diaphragm liquid end can deliver from 0.2 to 475 gph and can operate against discharge pressures to 1000 psi. See the Specification Tables on pp. 8-11 for details of size, capacity, discharge pressures and dimensions.

MILROYAL D

The Milroyal line also features the Milroyal D—a compact controlled volume pump for accurately delivering small volumes of liquids under both laboratory conditions and industrial environments. See page 9 for capacities and pressures and for more information request Bulletin 36.001.

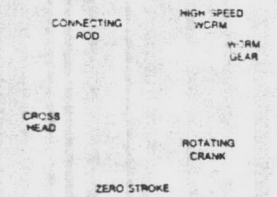
The Milroyal is only part of the full line of controlled volume pumps and accessories manufactured by Milton Roy Company for use in industrial, pilot plant or laboratory processes. For information on our complete product line, ask for general bulletin 100.13—or call or write your nearest Milton Roy Sales Office. A company representative who is expert in applying these flow control instruments will be pleased to assist you in selecting the best pump for handling your particular liquid and environment.



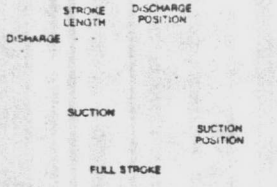
Milroyals can be ganged and driven by one motor to control several additive operations simultaneously. Up to nine pumps can be "multiplexed" to obtain high output single liquid pumping or for metering of separate streams in precise ratio, depending on process requirements

operation

The heart of the Milroyal* controlled volume pump is the unique patented polar crank drive. A high speed worm gear connects motor to polar crank and continuously turns the crank assembly. A connecting rod with spherical bearings on each end links the crank to the crosshead and plunger assembly. The force-feed lubrication system insures positive lubrication of these bearings, permitting high bearing loading with exceptionally long bearing life.

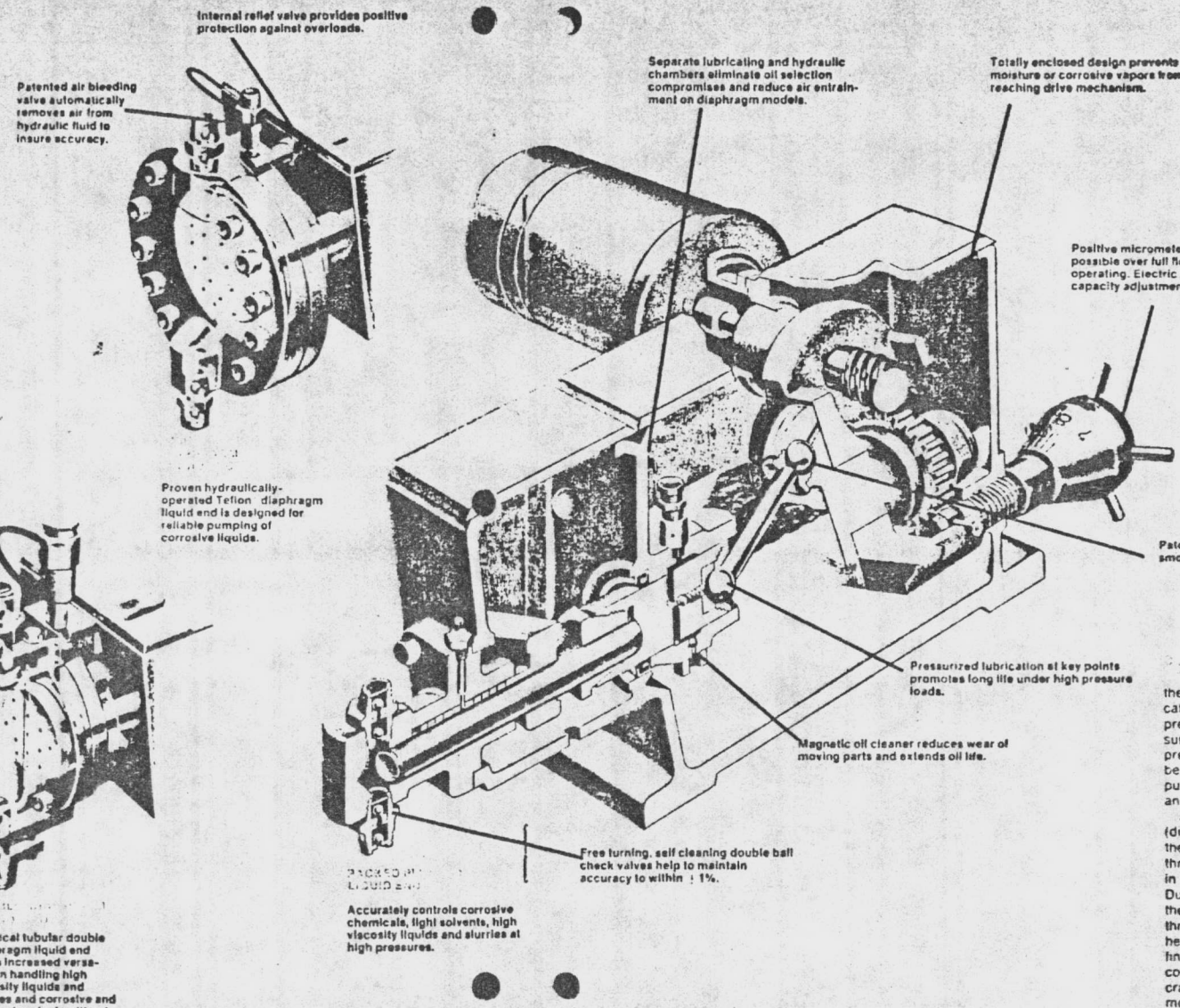


(fig. 1) When the pump is at zero stroke, the worm gear is in a vertical position. The crank then rotates in a vertical plane and one end of the connecting rod revolves with it. The crosshead and plunger remain stationary because no reciprocating action is produced.



(fig. 2) Maximum capacity is pumped when the rotating crank is moved to its maximum angle from the vertical axis. At the top of the rotation cycle the connecting rod is pushed forward, moving the crosshead and plunger to discharge the pump. Conversely, the bottom of the rotation cycle pulls the plunger back to generate suction. A cam-like swiveling action is generated by the polar crank which moves the plunger back and forth to produce the pumping action.

The angle of the polar crank can be adjusted in small increments between zero and maximum stroke for extremely accurate controlled volume pumping.



® A DuPont registered trademark

To achieve a high thrust capacity, the Milroyal uses a crosshead lubricating pump delivering oil under pressure of 80 psi to all load-carrying surfaces in contact. This positive oil pressure lubrication insures long bearing life and permits the Milroyal pump to operate at very high suction and discharge pressures.

As the crosshead moves forward (discharge), oil from the reservoir at the bottom of the pump is drawn up through a ball check into the cavity in the step of the crosshead bore. During the pump's suction stroke the lubricant is trapped and forced through the crosshead into the crosshead connecting rod bearing and finally into and through the hollow connecting rod where it lubricates the crank connecting rod bearing. Every moving part is lubricated during one complete cycle of the pump.

To reduce the wear of moving parts and extend oil life, a magnetic oil cleaner is installed at the suction of the lubricating oil pump.

capacities & pressures

MILROYAL A Stroke Length 1½"					
			Max Discharge Pressure (psig)[3]		
Plgr Dia	SPM	Max Cap gph[2]	Packed Plunger	Disc Diaphragm	Tubular Diaphragm
5/16	49 59 72 95 113 142	1.1 1.4 1.7 2.2 2.7 3.4	7500	N/A	N/A
7/16	49 59 72 95 113 142	2.2 2.7 3.3 4.4 5.3 6.6	4450	3500	1000
5/8	49 59 72 95 113 142	5.0 6.0 7.3 9.6 11.5 14.4	2190	2190	1000
7/8	49 59 72 95 113 142	10.1 12.1 14.8 19.6 23.0 29.0	1050	1050	1000
1⅛	49 59 72 95 113 142	17.1 21.0 25.0 33.0 39.0 50.0	620	620	615
1½	49 59 72 95 113 142	30.0 37.0 45.0 59.0 70.0 88.0	335	335	330
1¾	49 59 72 95 113 142	41.0 50.0 61.0 80.0 95.0 120.0	240	240	N/A
2½	49 59 72 95 113 142	85.5 102.0 124.0 164.0 195.0 245.0	105	105	105

(1) Stroking speeds based on 1750 RPM motor speed.

(2) GPH listed are for simplex packed plunger liquid end pumps. Capacities differ slightly for disc diaphragm and tubular diaphragm liquid ends.

(3) Maximum discharge pressures shown are obtained by using the largest motor available for each particular pump model.
Model A available in 1/4, 1/3, 1/2, 3/4, 1 HP
Model B available in 1/3, 1/2, 3/4, 1, 1-1/2 HP
Model C available in 1, 1-1/2, 2, 3, 5 HP
Pressures decrease when using a lower HP motor.

MILROYAL B Stroke Length 1½"					
			Max Discharge Pressure[3]		
Plgr Dia	SPM	Max Cap gph[2]	Packed Plunger	Disc Diaphragm	Tubular Diaphragm
5/16	46 70 92 140	1.1 1.6 2.2 3.3	7500	N/A	N/A
7/16	46 70 92 140	2.1 3.2 4.3 6.5	6450	3500	1000
5/8	46 70 92 140	4.7 7.1 9.3 14.2	3175	3150	1000
7/8	46 70 92 140	9.5 14.4 19.0 28.0	1555	1500	1000
1⅛	46 70 92 140	16.0 24.0 32.0 49.0	975	900	900
1½	46 70 92 140	28.0 44.0 57.0 87.0	505	500	500
1¾	46 70 92 140	39.0 59.0 78.0 118.0	360	360	N/A
2½	46 70 92 140	79.0 121.0 159.0 242.0	165	165	N/A
3½	46 70 92 140	155.0 236.0 310.0 475.0	75	N/A	100

(4) Use 1750 RPM motors for 70 and 140 SPM and 1140 RPM motors for 46 and 92 SPM. For a given plunger size, 70 and 46 SPM units are the same pumps, just as the 140 and 92 SPM units are the same pumps. The difference in motor speeds results in the difference in output speeds.

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	114	10-17-85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☒ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	6.5	Shop Drawings on Acid Transfer Pumps and Acid Feed Pumps, Control Panel	7	AN	DB 10/21/85

CONTRACTOR'S COMMENTS

NOTE: A/E The panel is not shown on the Drawings. Please advise Contractor of a location and enclosure type.

11-54

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC	CONTRACTOR REPRESENTATIVE (Signature)
ONE COPY TO ROICC	Phil Reese Phil Reese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
10/18/85	Henry Von Oesen & Assoc	Harry Pepper & Assoc

☒ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

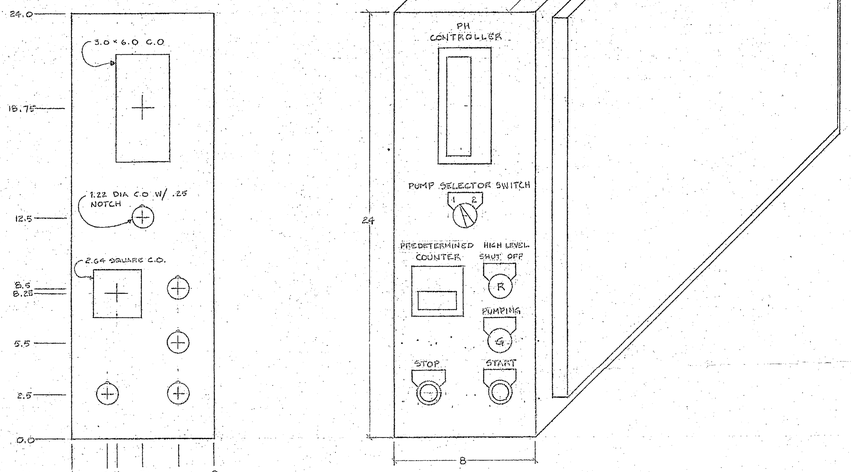
REVIEWER'S COMMENTS

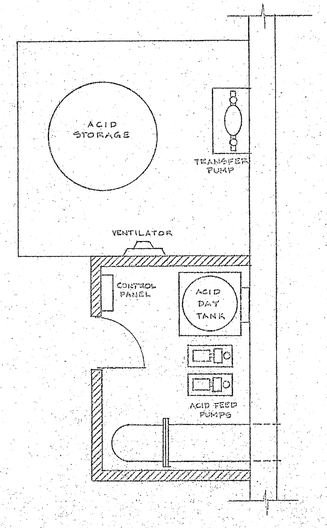
COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	10/21/85	DBonner

☆ U.S. GPO:1984-537-003/11170 Region 3-11

CONTROL PANEL — LAYOUT AND FABRICATION

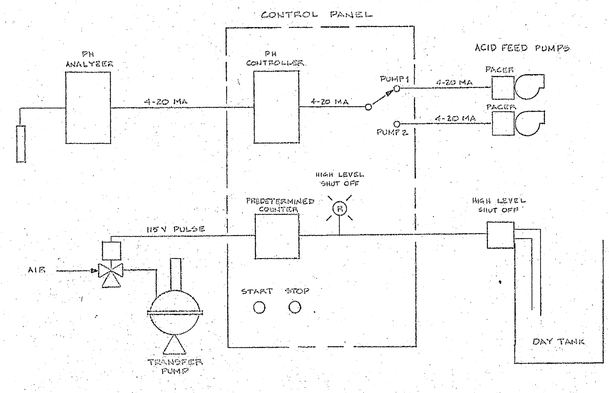
1/4" = 1.0"





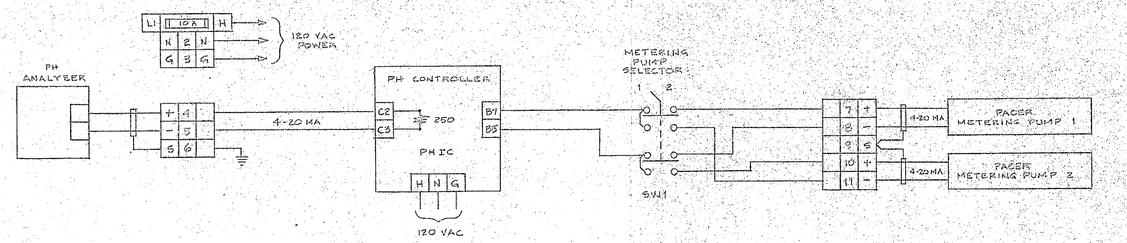
ACID FEED AREA EQUIPMENT LAYOUT

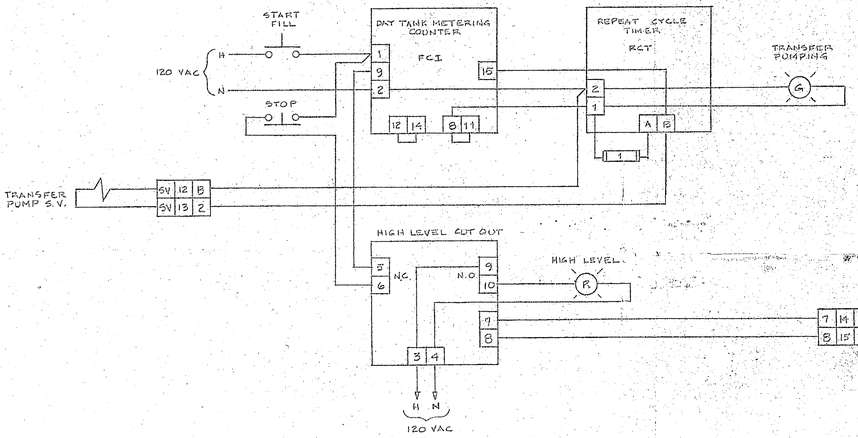
1/4" = 1'-0"



FLOW DIAGRAM

ACID TRANSFER PUMP AND ACID METERING PUMP WIRING DIAGRAM





ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

APPROVED
APPROVED AS NOTED ✓
DISAPPROVED

SUBJECT TO THE REQUIREMENTS OF CONTRACT NO. N62470-81-C-1644

CONTRACTOR'S SUBMITTAL DOES NOT RELIEVE APPROVAL OF ANY DEVIATION FROM THE CONTRACT REQUIREMENTS UNLESS THE CONTRACTOR CALLS ATTENTION TO AND SUPPORTS THE DEVIATION --- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS, COORDINATION OF TRADES, ETC., AS REQUIRED.

DATE OCT 21 1985

REVIEWER

FOR OFFICER IN CHARGE OF CONSTRUCTION

A/E
This Panel is not shown on the Drawing
Location and enclosure type need to be determined

1.) Location shown on this sheet is ok

2.) Enclosure Nema 4X-
SEE SPECS PAGE 113369
GDS

I hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog, cut to, etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

___ Approved for use.
X Submitted for Government approval.
___ Approved for use subject to Government approval of special deviation.

Authorized Reviewer _____ DATE _____
Signature and Title _____ DATE 10-17-85

COMBS & ASSOCIATES, INC. CHARLOTTE, NORTH CAROLINA		
EXPANSION HOLCOMB BOULEVARD WTP	SCALE AS SHOWN	DRAWN BY DAH / REVISED
ACID FEED AREA, CONTROL PANEL		
DATE 9-10-85	APPROVED BY	DRAWING NUMBER HB102

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO.	TRANSMITTAL NO.	DATE
62-C-7644	12	4/16/85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Harry von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☐ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
	6.2.5	Access Manholes	7	A	HTW/14 05 18APR 85

CONTRACTOR'S COMMENTS

Contractor requests to use R-6476 Pressure Manhole Frame and Lid per attached Drwg, in lieu of the one as outlined in Para 6.2.5, due to the availability. If this proposed deviation is approved there will be no cost tothe Covernment and any changes caused by the proposed deviation will be the responsibility of the Contractor at no expense to the Government.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): [signature]

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
4/16/85	LANTDIV	HARRY PEPPER ROICC

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REVIEWER'S COMMENTS

APPROVED. NO CHANGE IN COST OR TIME.

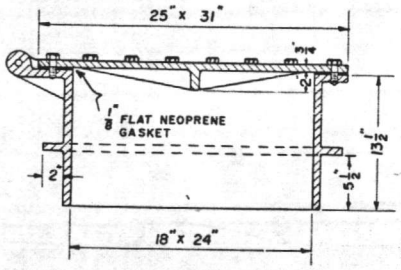
COPIES TO:	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	4/17/85	[signature]

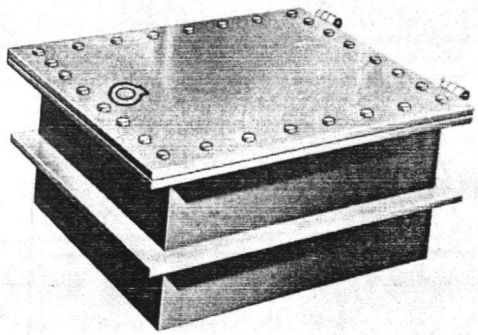
R-6476 Pressure Manhole Frame and Lid

Heavy Duty

Total Weight 550 Pounds

Especially designed for pressure access covers in treatment plants or reservoirs. Cover is bolted with 28 exposed stainless steel hex head cap screws as specified. Note 2" water seal flange.



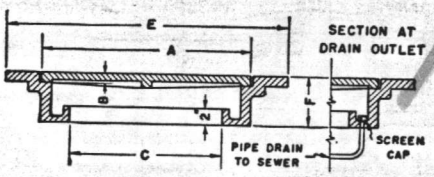


R-6485 Series Slab Manhole Frames and Lids with Inside Trough

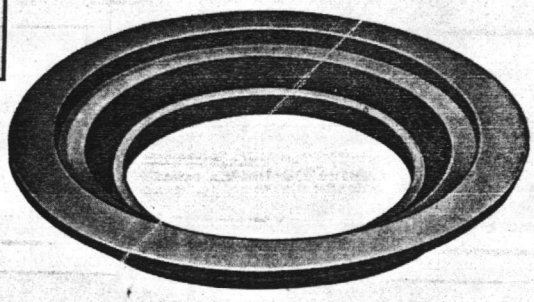
Light Duty

Specify:

1. Catalog number.
2. Drain pipe tap size.
3. Pickhole or Type G waterproof handle in lid.



Catalog No.	Dimensions in inches					Wt. Lbs.
	A	B	C	E	F	
R-6485-A	16	¾	13	20	4	125
R-6485-B	24	¾	19	30	4	190
R-6485-D	32	¾	25	36½	6	350
R-6485-E	37½	¾	31	42½	6	345
R-6485-F	44	1	37	48	6	720
R-6485-G	50½	1	43	54	6	930



Lid Removed

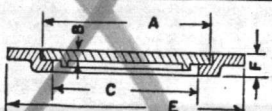
Furnished with open pickhole or Type G lift handle.

R-6490 Series Light Slab Frames and Covers

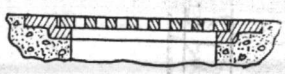
Light Duty — for Grease Trap, Cesspools

Specify:

1. Complete catalog number.



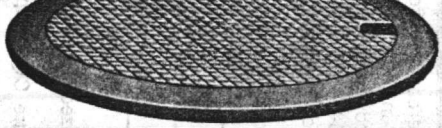
Solid



Grated

Solid	Grated	Dimensions in inches					Wt.* Lbs.
		A	B	C	E	F	
R-6490-AS	R-6490-AG	13	½	12	17	1½	45
R-6490-B1S	R-6490-B1G	18	¼	17	21	3	50
R-6490-C1S	R-6490-C1G	19	½	18	21	3	60
R-6490-D1S	R-6490-D1G	21	½	20	23	3	70
R-6490-E1S	R-6490-E1G	25	½	24	27	3	95

*Weights shown apply to solid type.



NEENAH FOUNDRY COMPANY

ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

APPROVED ✓
APPROVED AS NOTED _____
DISAPPROVED _____
SUBJECT TO THE REQUIREMENTS OF
CONTRACT NO. 81-1644
APPROVAL OF A SUBMITTAL DOES NOT INCLUDE APPROVAL OF ANY DEVIATION FROM THE CONTRACT REQUIREMENTS UNLESS THE CONTRACTOR CALLS ATTENTION TO AND SUPPORTS THE DEVIATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL [illegible] & WEIGHTS, COORDINATION OF TRADES, ETC., AS REQUIRED.

REVIEWER HFW DATE 18Apr85

FOR OFFICER IN CHARGE OF CONSTRUCTION

It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut(s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

___ Approved for use.

X Submitted for Government approval.

___ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. [signature] DATE 4-4-85

3-25-85

DEVIATION: APPROVED ✓

DISAPPROVED _____

CANTDIV REVIEWER HFW

DATE 18Apr85

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	166	2-17-86

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☒ Contractor Approved ☐ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	03302	CAST IN PLACE CONCRETE			
1	2.2.9	Preformed Joint Filler	4	RA	ROB 3/17/86

CONTRACTOR'S COMMENTS

a(1)

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Reese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
2/21/86	Henry von Oesen & Assoc., Inc.	

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Contractor's approval appears to be appropriate.

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	3/18/86	

☆ U.S. GPO:1984-537-003/11170 Region 3-11

PRODUCT BULLETIN

THE BURKE COMPANY
CONCRETE ACCESSORIES GROUP

FIBER EXPANSION JOINT

2655 Campus Drive • P.O. Box 5818 • San Mateo, CA 94402 • TWX 910-374-2349 (BURKE SMT) • (415) 349-7600

FIBER EXPANSION JOINT

1. PRODUCT NAME **Fiber Expansion Joint, Group Order No. 236**

2. MANUFACTURED BY **The Burke Company**

3. PRODUCT DESCRIPTION

Basic Uses

Burke Fiber Expansion Joint is composed of fibers bonded together, then impregnated with a durable bituminous compound. The impregnation results in a waterproof, resilient expansion joint that is not affected by temperature changes.

Fiber Expansion Joint is a multi-purpose filler used to prevent stresses in concrete that are caused by temperature, moisture or internal shrinkage changes. The compressible fiber expansion joint allows the concrete structure to expand or contract without damage.

Fiber Expansion Joint is particularly useful in highways, streets, runways, curbs, gutters, driveways, piers, bridges, retaining walls, masonry, reinforced concrete buildings.

It can be sealed with a rubberized asphalt sealer to insure proper joint function.

Size

Standard sheets are 3 ft. wide by 10 ft. long (0.9m x 3m) or 4 ft. wide by 10 ft. long (1.2m x 3m) in thicknesses of 1/4", 3/8", 3/4" and 1" (6mm, 9mm, 13mm, 19mm, and 25mm).

Strips available in ½" (13mm) increments from 2" to 48" (51mm to 1219mm) widths in thicknesses of ⅜", ½", ¾" and 1" (9mm, 13mm, 19mm and 25mm).

Precaution

Store Fiber Expansion Joint on a flat surface to protect against warping.

4. SPECIFICATIONS

ASTM D 1751-73
AASHTO M 213-74
HHF 341F, Type 1
CRD C508-72
FAS P501-2.4, P610-217
ANSI A37, 113/1964
NAVFAC TS 03300, 6.10

...s hereby certified that the (material) (equipment) shown and ...arked in this submittal, shop drawings, catalog cut(s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

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_____ Submitted for Government approval.

_____ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Lane DATE 2-17-86

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	21 B	8-16-85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant, MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

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☒ Contractor Approved ☐ OICC Approval ☐ Deviation/Substitution For OICC Approval

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**ACTION CODES
A-Approved
D-Disapproved
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RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	6.2.6	Manufacturer's Data on Hydraulically Operated Filter Valves	4	RA	8/20/85
	15271	PLANT PIPING			
1	5.4.B (3)	Manufacturer's Data on Hydraulically Operated Valves	4	RA	8/20/85

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Reese

DATE RECEIVED BY REVIEWER: 8/20/85

FROM (Reviewer): Henry von Oesen and Assoc., Inc.

TO: Phil Reese

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

CONTRACTOR's APPROVAL APPEAR TO BE APPROPRIATE.

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	8/20/85 ST VNC [illegible] 43 08	

☆ U.S. GPO:1984-537-003/11170 Region 3-11

Item #4

M & H VALVE COMPANY

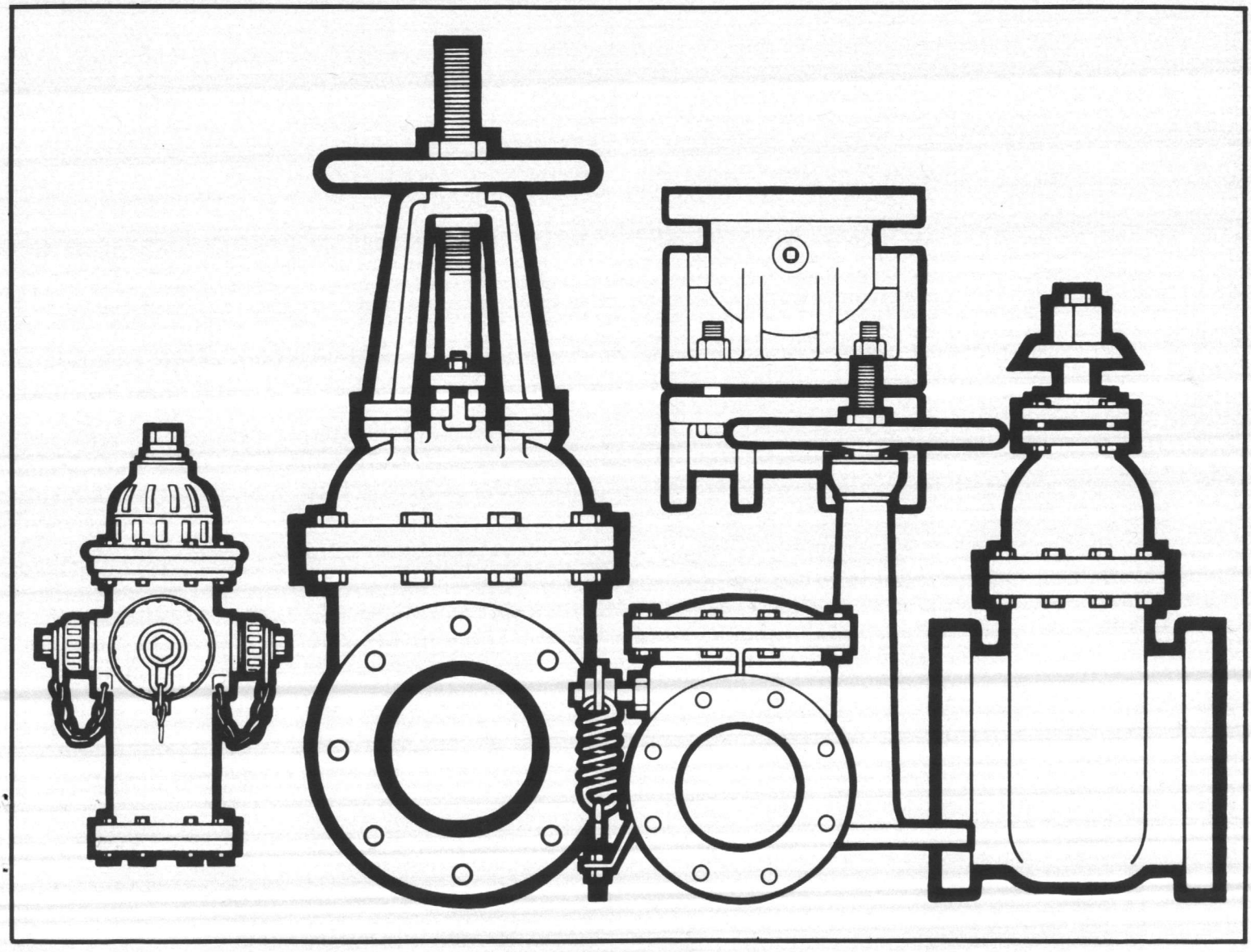
A Division of McWane, Inc.

P. O. Box 2088

Anniston, Alabama 36202

Drawings and/or

Installation, Operating & Maintenance Instructions



CUSTOMERS NAME: HARRY PEPPER & ASSOCIATES

CUSTOMERS P.O. NO. 642-0009

JOB NAME: EXPANSION OF THE HOLCOMB BLVD. WATER TREATMENT PLANT - MARINE CORPS BASE - CAMP LEJEUNE, NORTH CAROLINA CONTRACT NO. N62470-81-C-1644

QUOTE NO. 85-1153

ORDER NO. _____

M & H VALVE COMPANY
A Division of McWane, Inc.
P.O. BOX 2088
ANNISTON, ALABAMA 36202

1. Provide Letter of Certification That Valve Meets AWWA C-504

It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut (s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

X Approved for use.

_____ Submitted for Government approval.

_____ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Pene DATE 8-16-85

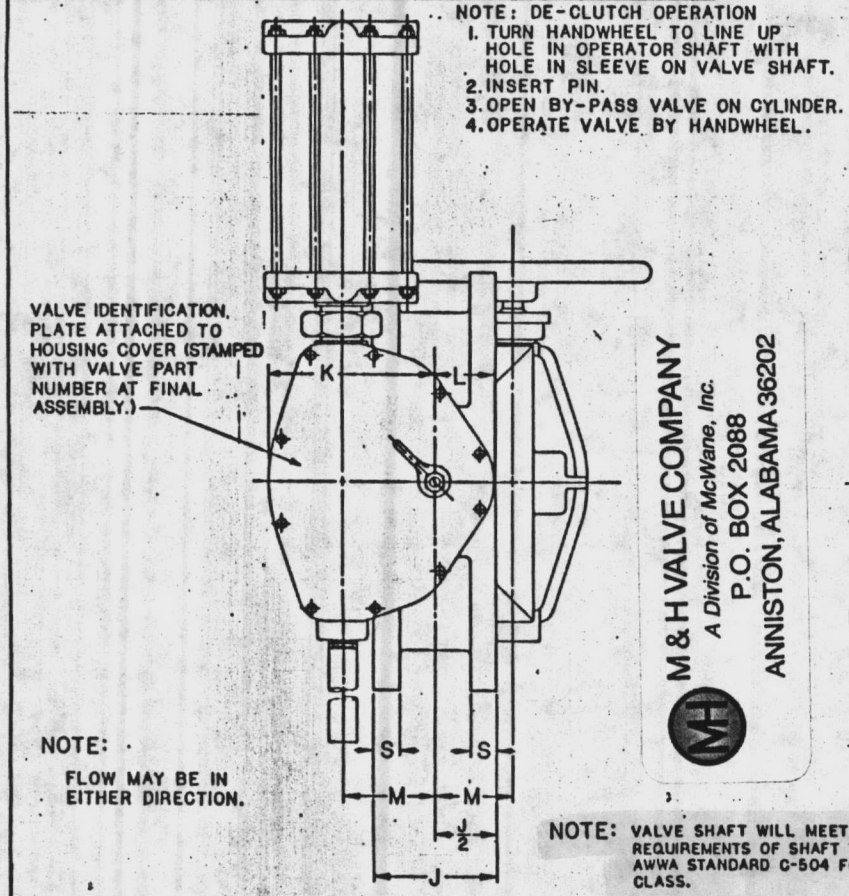
(1) 18" REQ'D. - BACKWASH VALVE FLANGED MARK C01.
(3) 18" REQ'D. - WASH VALVES FLANGED MARK C02, C03, C04.
(3) 10" REQ'D. - EFFLUENT VALVES FLANGED MARK C05, C06, C07.
(3) 6" REQ'D. - REWASH VALVES FLANGED MARK C08, C09, C010.

COATING IN ACCORDANCE WITH APPLICABLE AWWA STANDARD AND FED. SPEC. TT-C-494A OR EQUAL.

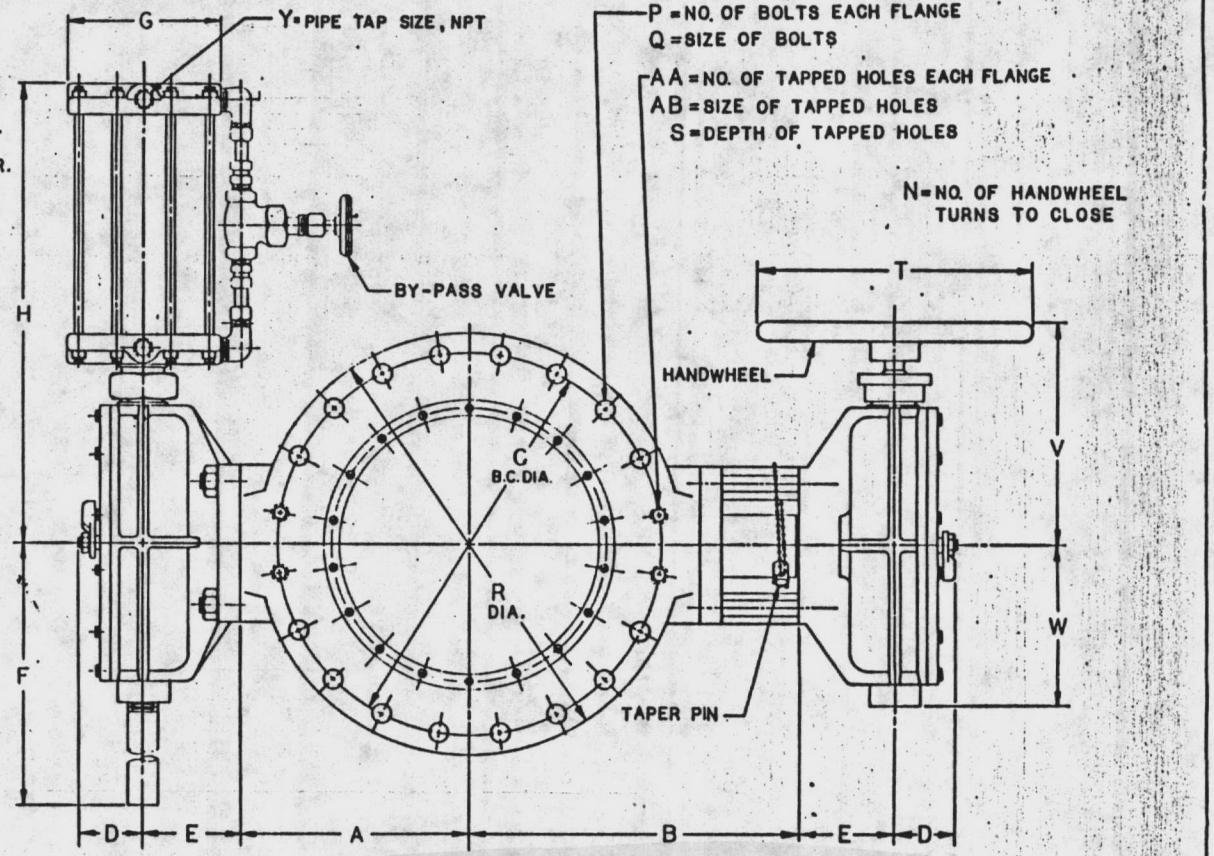
VALVE SIZE	A	B	C	J	P	Q	R	S	AA	AB
4	4	7 3/4	7 1/2	5	8	5/8	9	1 1/16	4	3/4-11
6	5	8 3/4	9 1/2	5	8	3/4	11	1"	4	3/4-10
8	6	9 3/4	11 3/4	6	8	3/4	13 1/2	1 1/8	4	3/4-10
10	7 3/4	12 1/4	14 1/4	8	12	7/8	16	1 3/16	—	—
12	9 1/2	14	17	8	12	7/8	19	1 1/4	—	—
14	10 7/16	15 3/8	18 3/4	8	12	1"	21	1 3/8	4	1"-8
16	12 3/16	17 1/8	21 1/4	8	16	1"	23 1/2	1 7/16	4	1"-8
18	13 5/16	19 5/8	22 3/4	8	16	1 1/8	25	1 5/16	4	1 1/8-7
20	14 7/8	21 1/4	25	8	20	1 1/8	27 1/2	1 11/16	4	1 1/8-7
24	17 13/32	24	29 1/2	8	20	1 1/4	32	1 7/8	4	1 1/4-7

	OPERATOR MODEL CYLINDER & HANDWHEEL	CYLINDER BORE	CYLINDER STROKE	D	E	F	G	H	K	L	M	N	T	V	W	Y
	65	5	2 3/4	2 15/16	3 9/16	7 1/4	5 1/2	12 1/4	3 7/16	2 1/4	1 3/8	16 1/2	7 1/2	7 3/4	3 7/16	3/8-18
6" →	150	5	2 3/4	2 15/16	3 9/16	7 1/4	5 1/2	12 1/4	3 7/16	2 1/4	1 3/8	16 1/2	7 1/2	7 3/4	3 7/16	3/8-18
	175	6	2 3/4	2 15/16	3 9/16	7 1/4	6 1/2	13	3 7/16	2 1/4	1 3/8	16 1/2	12	7 3/4	3 7/16	1/2-14
10" →	510	6	6	3 7/16	4 1/2	12 5/8	6 1/2	18 3/8	6 1/8	2 3/4	3	36	12	10 3/16	5 7/16	1/2-14
	1250	8	8	4 1/16	5 3/4	17	10	24	7 7/8	3 1/4	4	48	18	12 1/2	8 3/8	3/4-14
18" →	2200	8	12	4 1/16	6 1/4	23	10	30	10 3/4	3 7/8	6	72	18	14 1/2	10 3/8	3/4-14

NOTE: DE-CLUTCH OPERATION
1. TURN HANDWHEEL TO LINE UP HOLE IN OPERATOR SHAFT WITH HOLE IN SLEEVE ON VALVE SHAFT.
2. INSERT PIN.
3. OPEN BY-PASS VALVE ON CYLINDER.
4. OPERATE VALVE BY HANDWHEEL.



NOTE: FLOW MAY BE IN EITHER DIRECTION.



WITH 125# ANSI FLANGES & DRILLING PER AWWA C-504

M & H VALVE COMPANY
A Division of McWane, Inc.
P.O. BOX 2088
ANNISTON, ALABAMA 36202

NOTE: VALVE SHAFT WILL MEET OR EXCEED REQUIREMENTS OF SHAFT TABLE PER AWWA STANDARD C-504 FOR APPLICABLE CLASS.

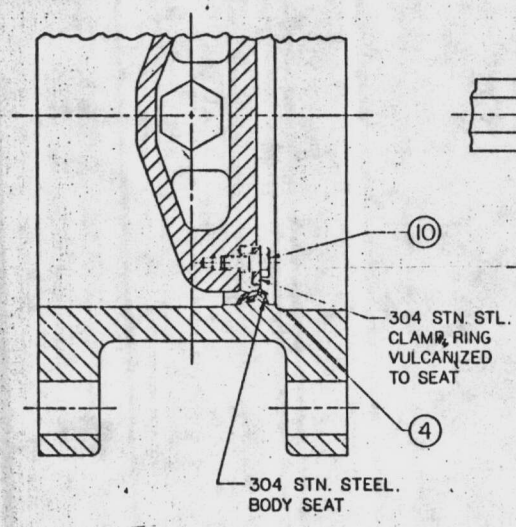
REVISIONS: REK per CN# 3818 — 5/11 — A — JW/LS

ASSEMBLY - STYLE 450 SERIES FLANGED BFV W/CYLINDER OPERATOR & HANDWHEEL DE-CLUTCH

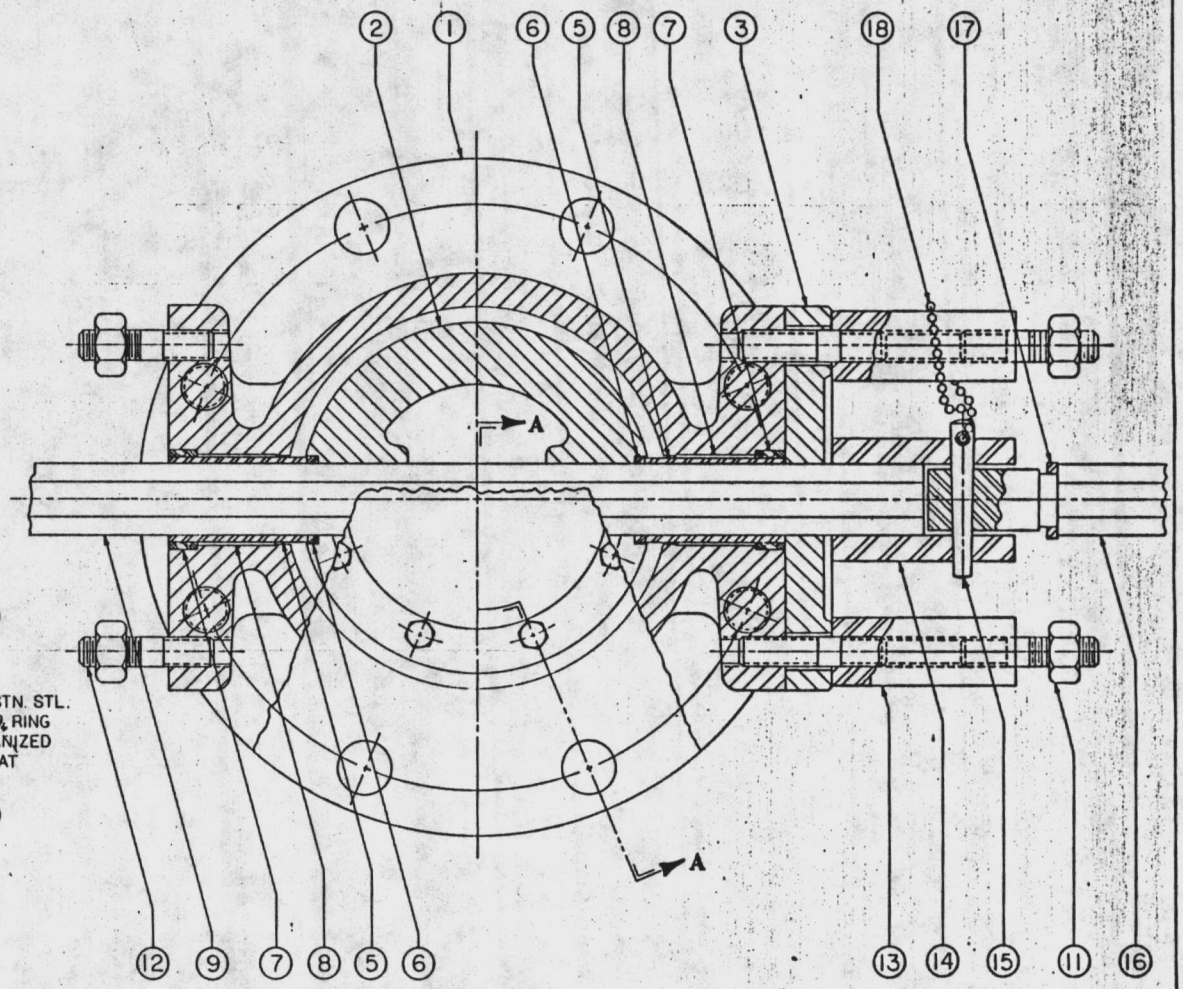
DRAWN BY JLW — DATE 10-2-79 — CHKD BY LS — SCALE — NO. CHKD — PAT. NO. 3939-1

DWG. NO. 99-02079 — REV. A

ITEM NO.	DESCRIPTION	MATERIAL
1	BODY, VALVE	CAST IRON, A-126, B~W/18-8 STN. STL. SEAT
2	VANE	CAST IRON, A-48, CL. 40
3	COVER, END	CAST IRON, A-126, CL. B
4	SEAT RING, VANE	BUNA "S" W/304 STN. STL. INSERT
5	JOURNAL, VALVE SHAFT	304 STN STL
6	SEAL, SHAFT	BUNA "S"
7	PACKING, JOURNAL	BUNA "S"
8	BUSHING, BODY	REINFORCED TEFLON
9	HEX DRIVE SHAFT	CDS-C-1018 STL.
10	CAPSCREW, HEX	18-8 STN. STL-W/ "NYLOK" INSERT
11	NUT, HEX	STL., ASTM A-307, GR. B, ELECTRO-ZINC PLATED
12	STUD	STL., ASTM A-307, GR. B, ELECTRO-ZINC PLATED
13	SPACER	CDS-C-1018 STL.
14	CONNECTOR-SLEEVE	CDS-C-1018 STL.
15	PIN-TAPER	BRASS
16	SHAFT; OPERATOR-DE-CLUTCH	CDS-C-1018 STL.
17	PACKING	RUBBER
18	CHAIN-BEAD	STAINLESS STEEL



SECTION A-A



REVISIONS | DATE | BY | APP.

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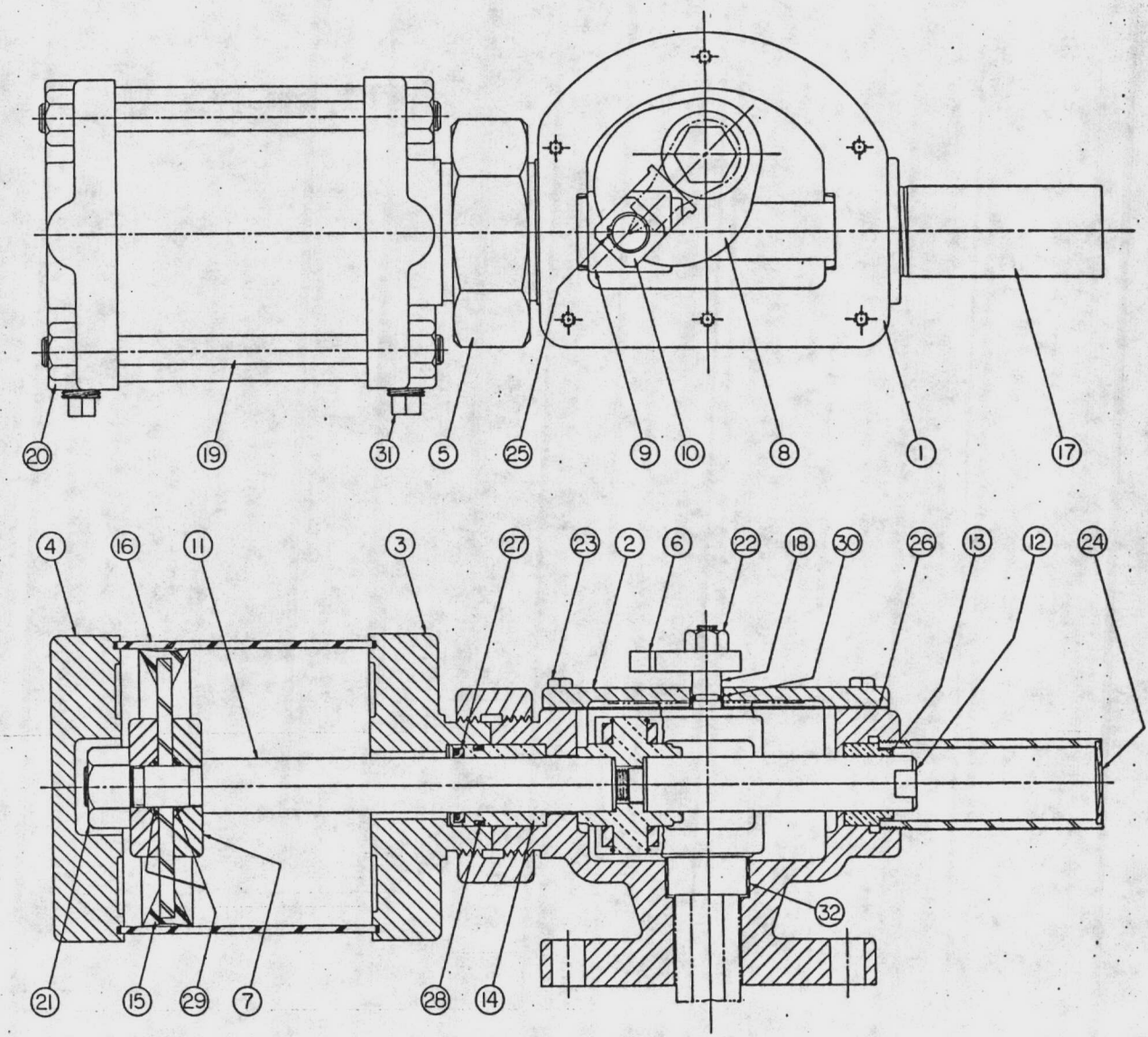
SUB-ASSEMBLY-STYLE 450 SERIES FLANGED END BFV W/DE-CLUTCH & BUNA "S" SEALS

DRAWN BY	CHECKED BY	APPROVED	DWG. NO.	REV.
JLW	L.J.		99-01395	
DATE 6-29-78	SCALE FULL	FILE NO.		

M & H VALVE COMPANY
A Division of McWane, Inc.
P.O. BOX 2088
ANNISTON, ALABAMA 36202

ITEM NO.	DESCRIPTION	MATERIAL
1	HOUSING, OPERATOR	CAST IRON, A-126, CL B
2.	COVER, HOUSING	CAST IRON, A-126, CL.B
3	HEAD, CYLINDER, ROD END	CAST IRON, A-126, CL.B CADMIUM PLATED
4	HEAD, CYLINDER, BLANK END	CAST IRON, A-126, CL.B CADMIUM PLATED
5	NUT, CONNECTING	CAST IRON, A-126, CL.B
6	INDICATOR	CAST IRON, A-126, CL.B
7	PISTON HALF	CAST IRON, A-126, CL.B CADMIUM PLATED
8	LEVER	DUCTILE IRON, A-536 GR. 65-45-12
9	CROSSHEAD	DUCTILE IRON, A-536 GR. 80-55-06
10	SLEEVE, CROSSHEAD	ALLOY IRON
11	PISTON ROD	18-8 STAINLESS STEEL HARD CROME PLATED
12	TAIL ROD	STEEL, C-1040
13	BUSHING, TAIL ROD	BEARING BRONZE, B-144, ALLOY 3B
14	CARTRIDGE, SEAL	BEARING BRONZE, B-144, ALLOY 3B
15	PISTON CUP	BUNA "N"
16	BARREL, CYLINDER	**BRONZE**
17	GUARD, TAIL ROD	COMM. STEEL PIPE
18	INDICATOR PIN	C.D STEEL
19	TIE ROD	STEEL, COMM.
20	NUT, HEX (TIE ROD)	STEEL, COMM.
21	NUT, HEX (PISTON)	STEEL, COMM.-CADMIUM PLATED
22	NUT, HEX (INDICATOR)	STEEL, COMM.
23	CAPSCREW, HEX	STEEL, COMM.
24	PLUG, EXPANSION	BRASS, COMM.
25	RING, RETAINING	SPRING STEEL
26	GASKET, COVER	CORK-NEOPRENE
27	SEAL, ROD	URETHANE, SELF LUBRICATED
28	SEAL (CARTRIDGE)	BUNA "N"
29	SEAL (PISTON HALF)	BUNA "N"
30	SEAL (INDICATOR PIN)	BUNA "N"
31	PLUG, PIPE-SQ. HD.	CAST IRON, COMM.
32	BUSHING	NYLON (MOLY-DISULFIDE FILLED)



REVISIONS | DATE | B | BY | APP.

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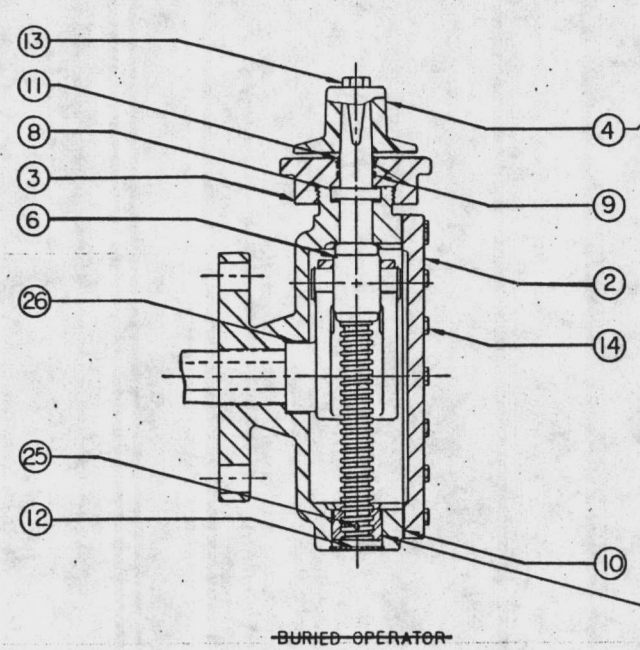
SUB-ASSEMBLY—CYLINDER OPERATOR

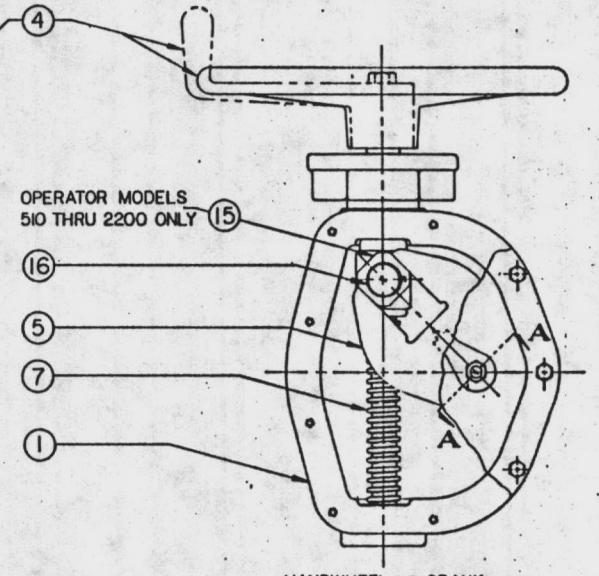
DRAWN BY	CHECKED BY	NO. SHEETS	DWG. NO.	REV.
J.A.M	ALR	1	99-01362	-
DATE 5-17-78	SCALE —	FILE NO. 2090-1		

M & H VALVE COMPANY
A Division of McWane, Inc.
P.O. BOX 2088
ANNISTON, ALABAMA 36202

ITEM NO.	DESCRIPTION	MATERIAL
1	HOUSING, OPERATOR	CAST IRON, A-126 CL. B
2	COVER, HOUSING	CAST IRON, A-126 CL. B
3	CAP, THRUST	CAST IRON, A-126 CL. B
4	AS REQUIRED	CAST IRON, A-126 CL. B
5	LEVER	DUCTILE IRON, A-536 GR 65-45-12
6	CROSSHEAD	DUCTILE IRON, A-536 GR 80-55-06
7	SHAFT, INPUT	C.D. STEEL, 12 L 14
8	SEAL (HOUSING)	BUNA "N"
9	SEAL (CAP)	BUNA "N"
10	GASKET, COVER	CORK-NEOPRENE
11	SHIELD, SHAFT	REINFORCED TEFLON
12	PLUG, EXPANSION	BRASS, COMM.
13	BOLT, HEX. HD. (AWWA NUT)	STEEL, COMM.
14	BOLT HEX HD. (COVER)	STEEL, COMM.
15	SLEEVE, CROSSHEAD	ALLOY IRON
16	RING, RETAINING	SPRING STEEL
17	INDICATOR	CAST IRON, A-126 CL. B
18	PIN, INDICATOR	STEEL, COMM.
19	SEAL, INDICATOR PIN	BUNA "N"
20	NUT, HEX	STEEL, COMM.
21	BEARING, NEEDLE	STEEL, COMM.
22	RACE, THRUST	HARDENED STEEL
23	SPACER	HARDENED STEEL
24	WASHER, THRUST	HARDENED STEEL
25	PIN, INPUT SHAFT	STEEL, COMM.
26	BUSHING	REINFORCED TEFLON

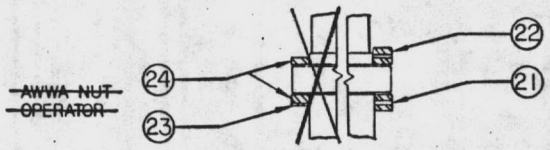


~~BURIED OPERATOR~~



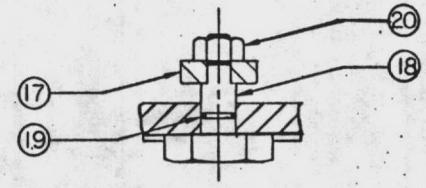
HANDWHEEL ~~AND CRANK~~ OPERATOR

INTEGRAL STOP NUT
MODELS 65 THRU 510 ONLY.



HANDWHEEL ~~AND CRANK~~ OPERATOR

THRUST COLLAR AREA
MODELS ~~1250~~ 2200 ONLY



SECTION A-A
FOR HANDWHEEL ~~AND CRANK OPERATOR~~ ONLY

REVISIONS	DATE	B	BY	APP

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SUB-ASSEMBLY MANUAL OPERATOR

DRAWN BY	CHECKED BY	NO SHEETS	DWG. NO.	REV.
LS	ALR	1	99-01351	
DATE 5-2-78	SCALE	FILE NO. 2096-1		

M & H VALVE COMPANY
A Division of McWane, Inc.
P.O. BOX 2088
ANNISTON, ALABAMA 36202

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO.	TRANSMITTAL NO.	DATE
81-C-1644	30	5-1-85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

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ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	6.2.6 (a)	Manufacturers Data and Drawings on Filter			
		Valves	4		
2	6.5. (a)	Manufacturers Data and Shop Drawings on Acid Storage Tank	4		
3	6.5. (c)	Manufacturers Data and Shop Drawings on Acid Day Tank	4		

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Fowe

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO

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REVIEWER'S COMMENTS

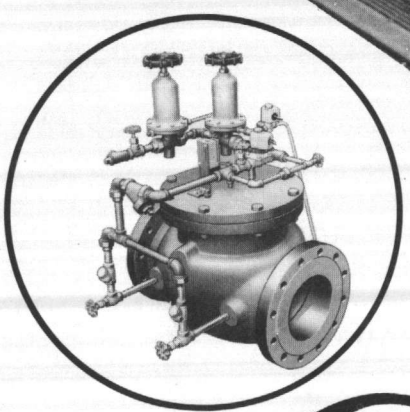
Contractor's approval appears to be appropriate.

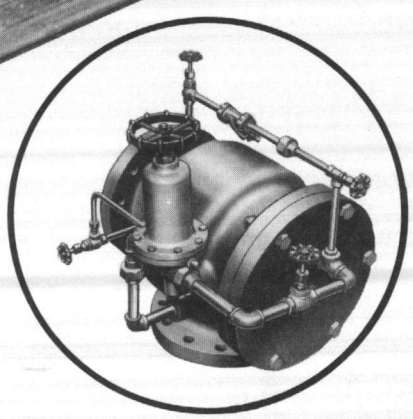
COPIES TO: ROICC (2) LANTDIV (1) A-E (1)	DATE	SIGNATURE

Item #1 PARA 6.2.6 A

GOLDEN-ANDERSON

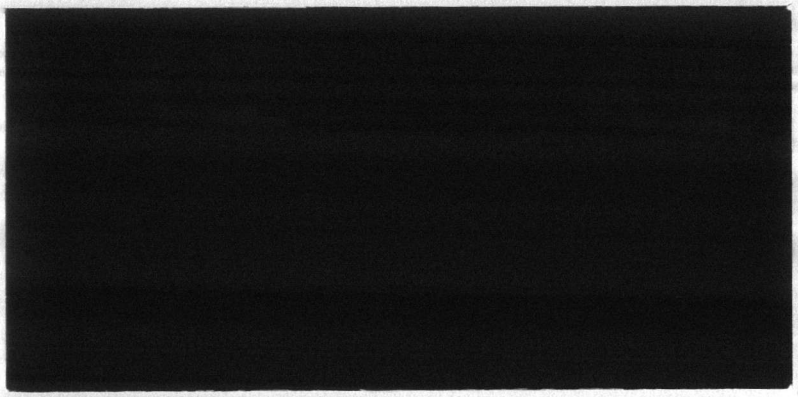
[redacted]





HEYWARD INCORPORATED
717 East Boulevard
Charlotte, North Carolina 28203
(704) 372-5805

GA *Industries Inc.*
AUTOMATIC VALVE SPECIALISTS
9025 MARSHALL RD., MARS, PA 16046 (412) 776-1020
TELEX: 86-6490



"It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut (s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

X Approved for use.

_____ Submitted for Government approval.

_____ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Reese DATE 5-1-85

JWSchock 3-25-85

DRAWING SUBMITTAL

VALVE SIZE (3) 20"
FIGURE NO. 1890-LC
SERIAL NO. 850197

PLEASE FURNISH THE FOLLOWING DATA:

MAXIMUM INLET PRESSURE: _____ ?

MAXIMUM CYLINDER OPERATING PRESSURE: _____ ?

MINIMUM Cylinder Operating pressure _____ ?

BACK PRESSURE ON VALVE _____ ?

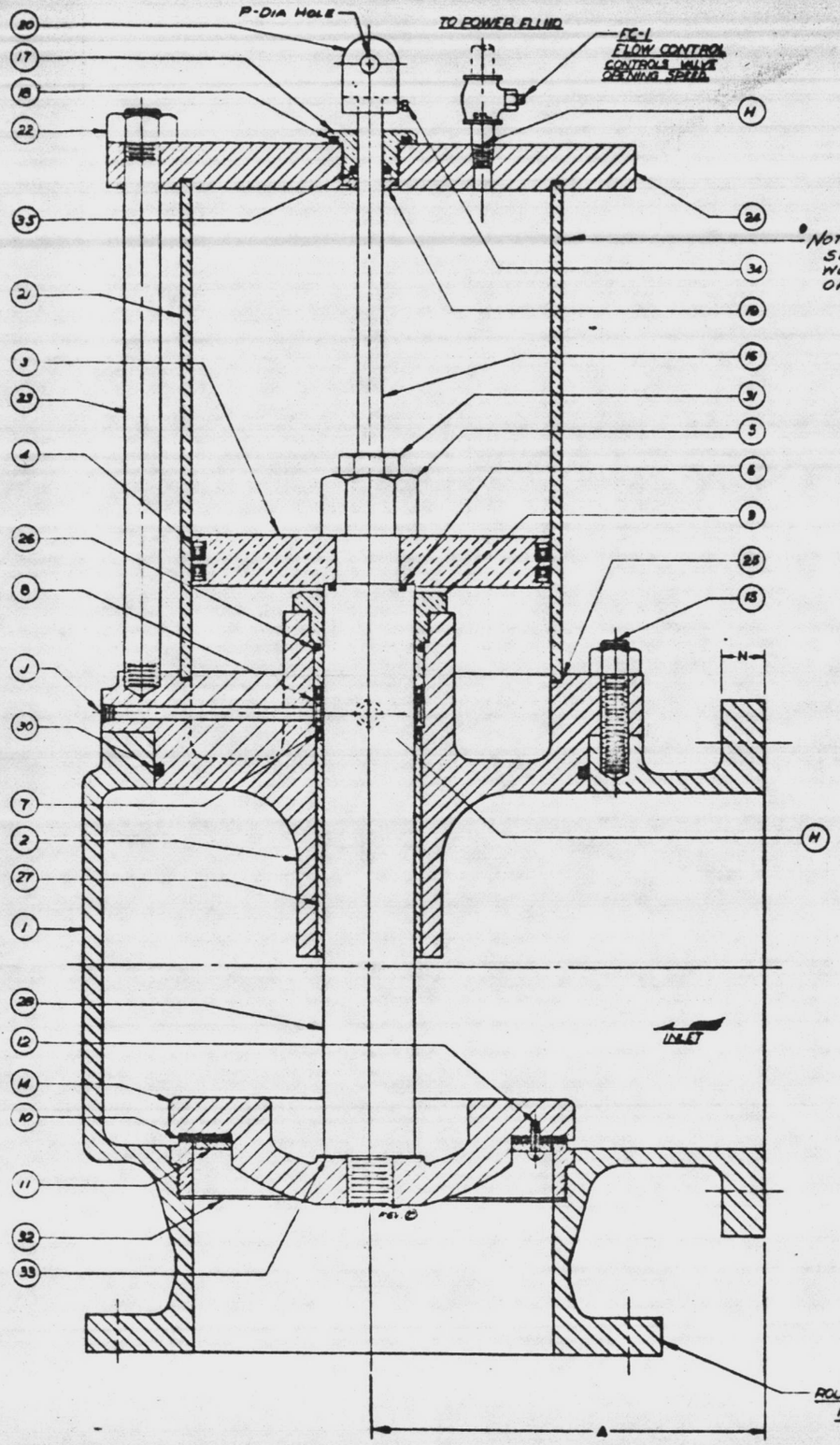
P/E
PLEASE VERIFY

JOB HOLCOMB BLVD WATER TREATMENT PLANT

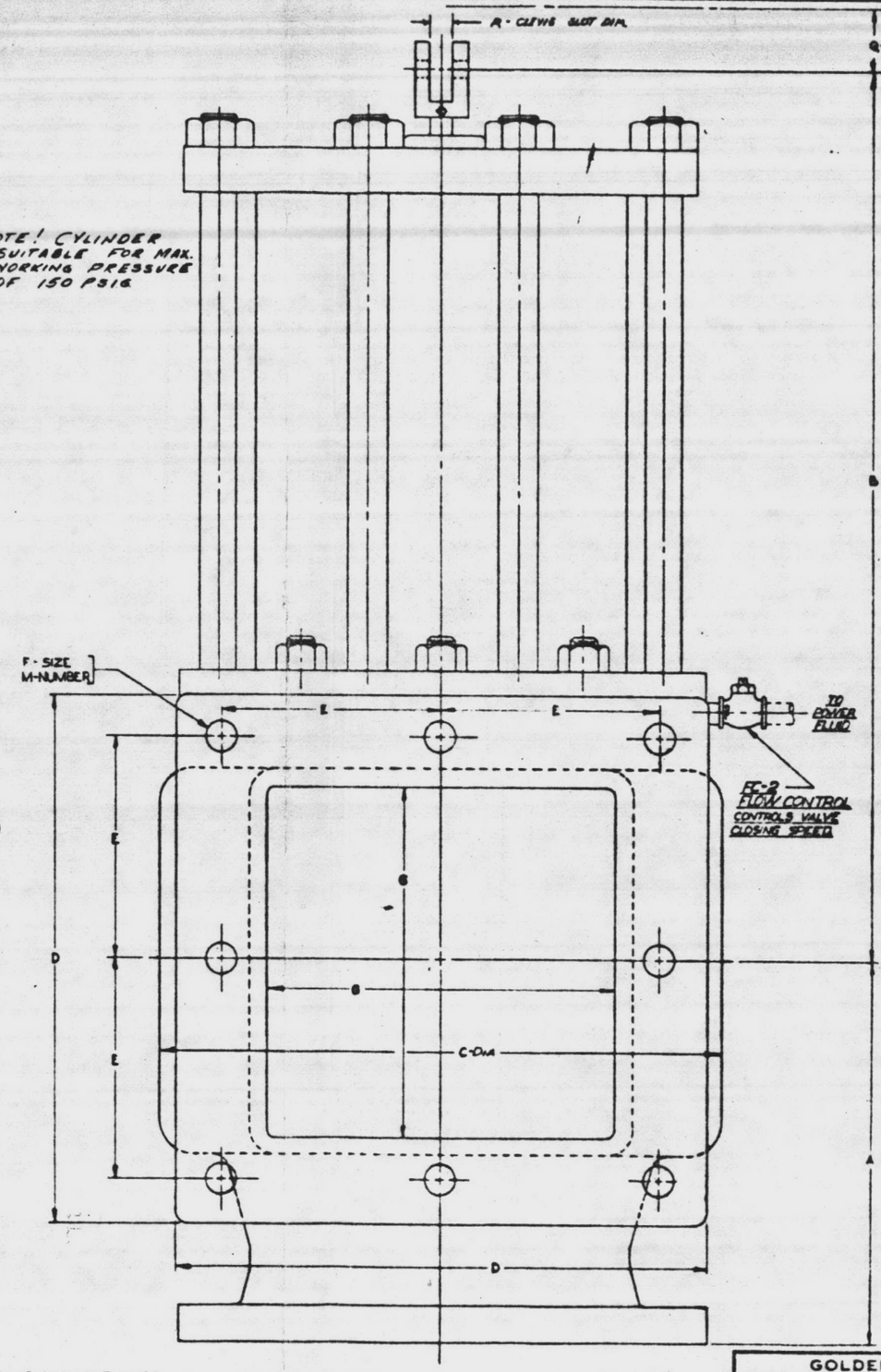
ENGINEERS _____

CONTRACTOR HARRY PEPPER & ASSOC

G.A. INDUSTRIES INC.
MARS, PA.



NOTE! CYLINDER SUITABLE FOR MAX. WORKING PRESSURE OF 150 PSIG



Perc
Par
6.2.6 A

	PARTS LIST
1	DRAIN VALVE BODY
2	BODY COVER
3	PISTON
4	PISTON CUPS (2)
5	PISTON NUT
6	PISTON GASKET
7	STEM CUPS (2)
8	LANTERN RING
9	STEM CUP RETAINER
10	SEAT WASHER
11	SEAT RETAINER FOLLOWER
12	SEAT SCREWS
14	DISC
15	COVER BOLTS
16	INDICATOR
17	INDICATOR GLAND
18	INDICATOR GLAND SEAL
19	INDICATOR BUSHING
20	CLEVIS
21	CYLINDER
22	CYLINDER NUTS
23	CYLINDER STUDS
24	CYLINDER COVER
25	CYLINDER GASKETS (2)
26	STEM RETAINER GASKET
27	STEM BUSHING
28	STEM
30	COVER GASKET
31	INDICATOR LOCKNUT
32	SEAT RING
33	STEM-DISC GASKET
34	CLEVIS SET SCREW
35	INDICATOR SEAL

GENERAL DIMENSIONS

	10"	12"	14"	16"	18"	20"	24"	30"
A	11	12	12	15	16¾	18	22	25
B	26½	27½	30½	27"	35"	42	42	50
C	15½	18½	20½	25½	29	29½		
D	15	17	19	20½	28	29	32	37
E	6¾	7⅝	9¼	7	14	16	18	18½
F	¼	¼	¼	⅜	⅜	½	½	½
G	12	12	14	16	18	20	24	30
H	1	1	1	1	1	1	1	1
J	8	8	8	8	8	8	8	8
M	8	8	8	12	12	12	12	16
N	1	1	1	1½	1½	1½	1½	1½
P	⅜	⅜	⅜	⅜	⅝	⅝		
Q	4"	6⅛	6⅛	5"	11¼	12⅛		
R	7/16	7/16	7/16	9/16	7/16	9/16		

MAXIMUM INLET PRESSURE _____
MINIMUM & MAXIMUM CYLINDER PRESSURE _____
CYLINDER OPERATING FLUID _____

NOTE
WHEN ORDERING PARTS SPECIFY PART NUMBER, NAME OF PART, SIZE OF VALVE FOR WHICH REQUIRED AND MENTION SHOP SERIAL NUMBER FROM VALVE IDENTIFICATION PLATE.

GOLDEN-ANDERSON VALVE SPECIALTY CO., PITTSBURGH, PA.

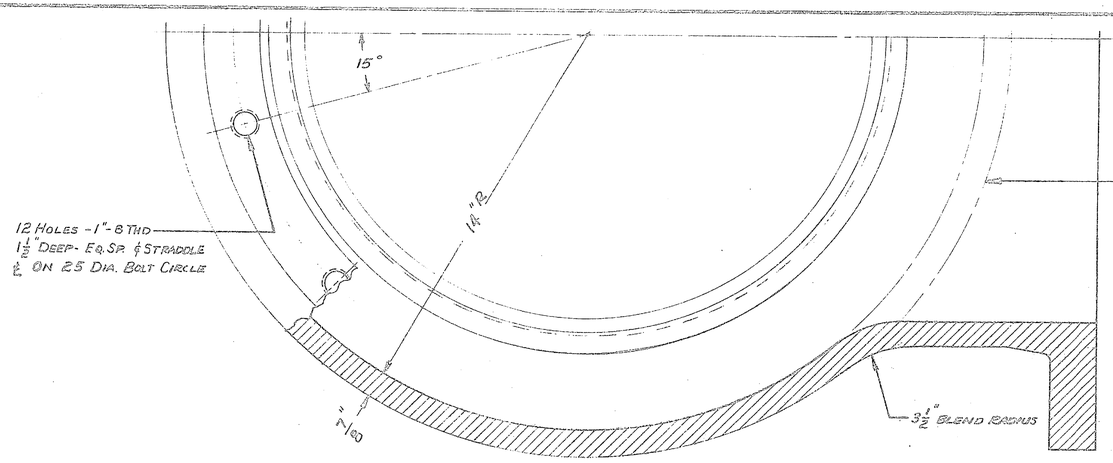
REVISION	DATE
ADDED NOTE	2-2-44
REVISED ART	4-4-47

10" TO 30" ANGLE GRAIN VALVE
SQUARE INLET, ROUND OUTLET
CYLINDER OPERATED
GENERAL ARRANGEMENT

DRAWN K-H-L TRACED CHECKED FILE NO. 1-27-L

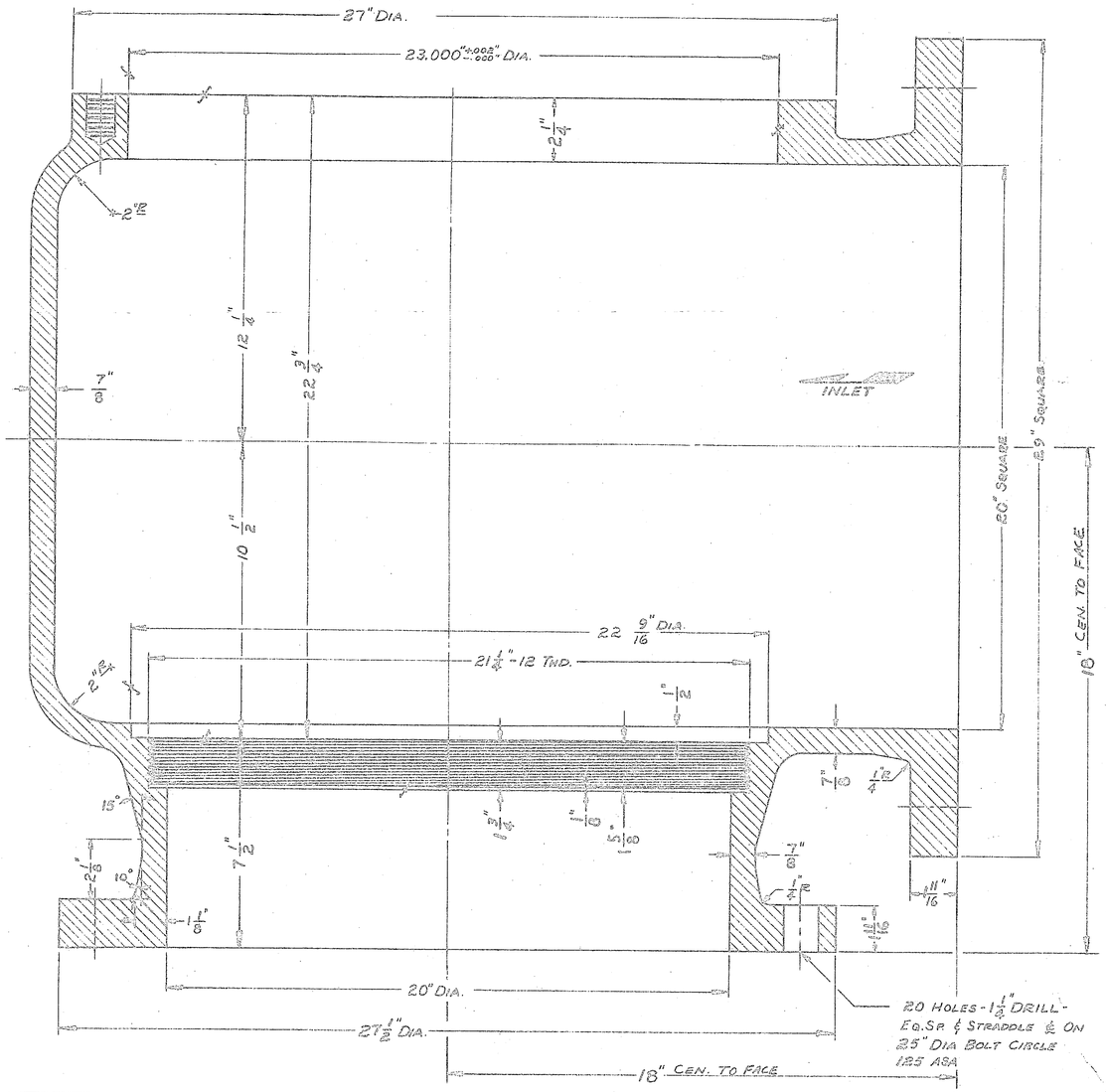
SIZE B | DRAWING NUMBER 97116

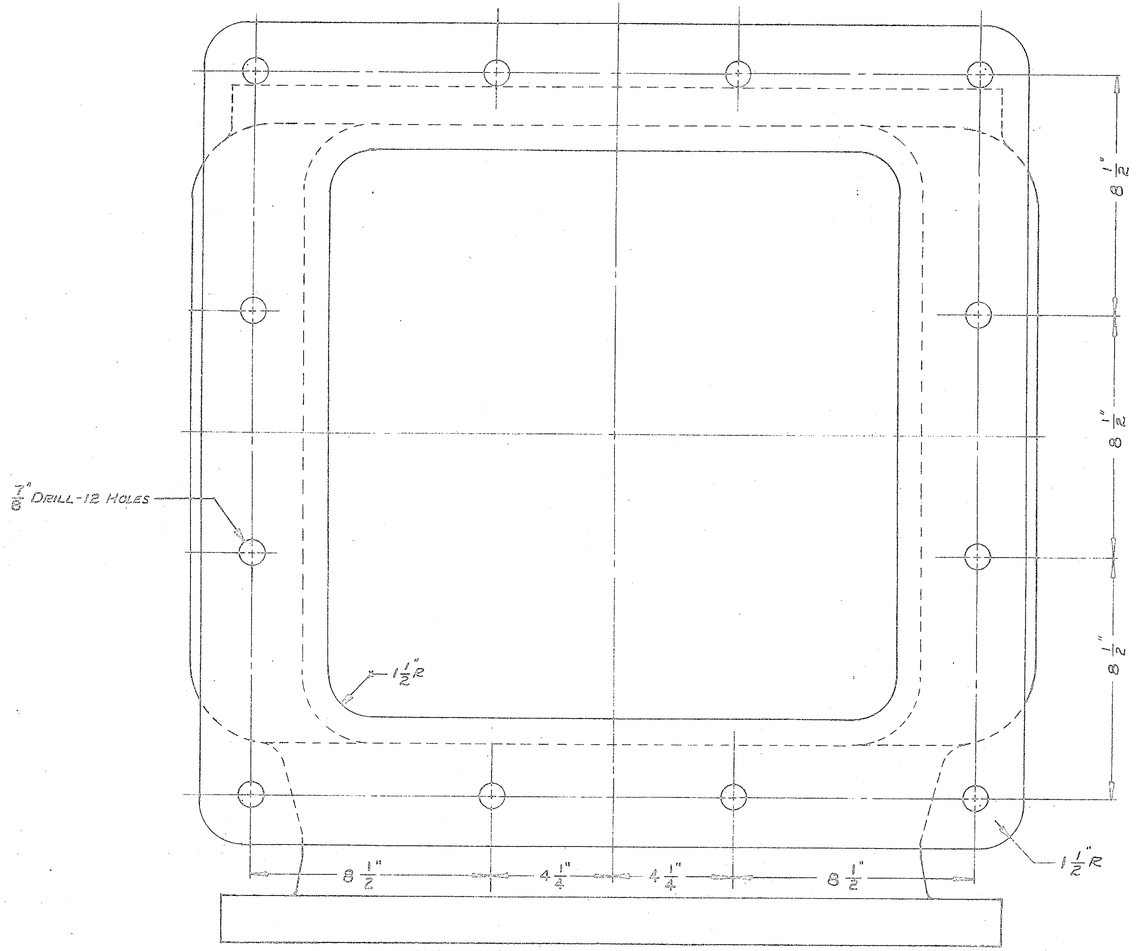
IX
0.04F1950



PATTERN SHOP NOTE: SQUARE INLET PIECE MUST BE REMOVABLE FROM PATTERN SO ROUND INLET CAN BE ATTACHED WHEN REQUIRED.

CAST ON SIDE:
20
25WP
GAVSCO
AWWA
56069-S





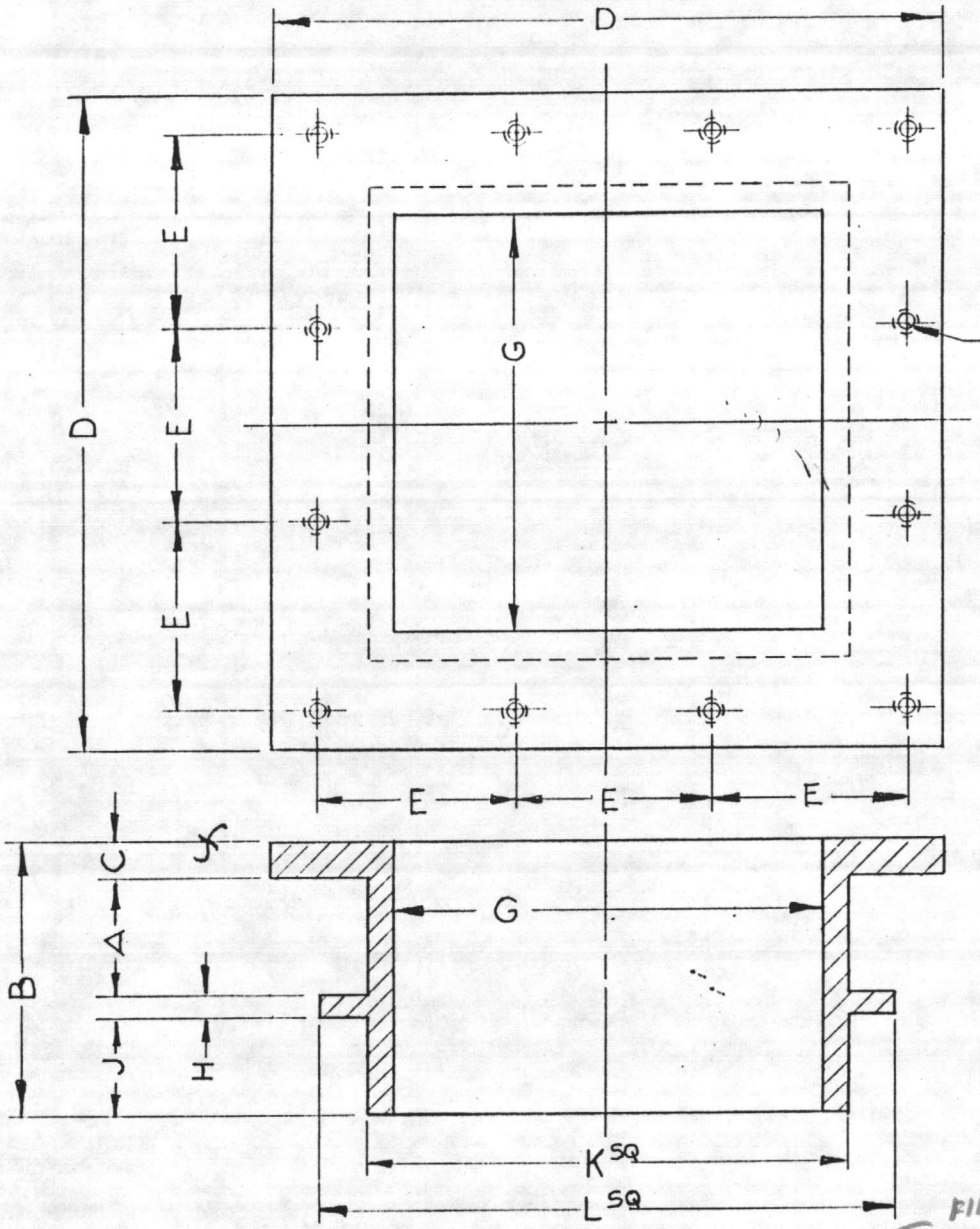
GOLDEN-ANDERSON VALVE SPECIALTY CO., PITTSBURGH, PA.

REVISION	DATE	

20" FILTER DRAIN VALVE BODY
C.I. DETAIL - 25LB. WORKING PRESSURE
SQUARE INLET - PATT. NO. 56069-S (SQUARE)

DRAWN	12-2-54	DMH	SCALE 3/8" = 1"	PATT. DRAWING NUMBER
CHECKED			PRO. NO.	14 56069

850197



NOTE

CUSTOMER TO ADVISE DIMENSIONS A, B, & J.

FIELD VERIFY

GENERAL DIMENSIONS

SIZE	10"	12"	14"	16"	18"	20"	24"	30"
A						28 1/4		
B						36		
C	7/8	3/4	1	1 1/4	1 1/2	1 1/4	1 1/4	1 1/4
D	15	17	19	23 1/2	28	29	32	37
E	6 1/4	7 5/8	8 1/2	7	8 1/4	8 1/2	9 1/8	8 9/16
F	5/8-11NC	5/8-11NC	5/8-11NC	3/4-10NC	3/4-10NC	3/4-10NC	5/8-11NC	3/4-10NC
G	10	12	14	16	18	20	24	30
H	5/8	1/2	3/4	1	1	1	1	1
J						5 1/2		
K	11	13	15 1/4	17 3/4	20	21 3/4	25 1/2	31 1/2
L	14	15	18	22 3/4	24	26 3/4	30	34
M	8	8	8	12	12	12	12	16

NOTE:
10", 12", 14" & 30" VALVE HOLES ARE ON CENTER LINE & DO NOT STRADDLE ℄.

ITEM 1159

GOLDEN-ANDERSON VALVE SPECIALTY CO., PITTSBURGH, PA.

10" TO 30" SQUARE OPENING WALL THIMBLE IRON ~ GENERAL ARRANGEMENT

REFERENCES:

II
0.04F1890

SCALE:

FIG. NO.:

DRAWN BY: R.H.L

DATE: 7-25-62

FILE: 33 140

DWG. NO.: 78327

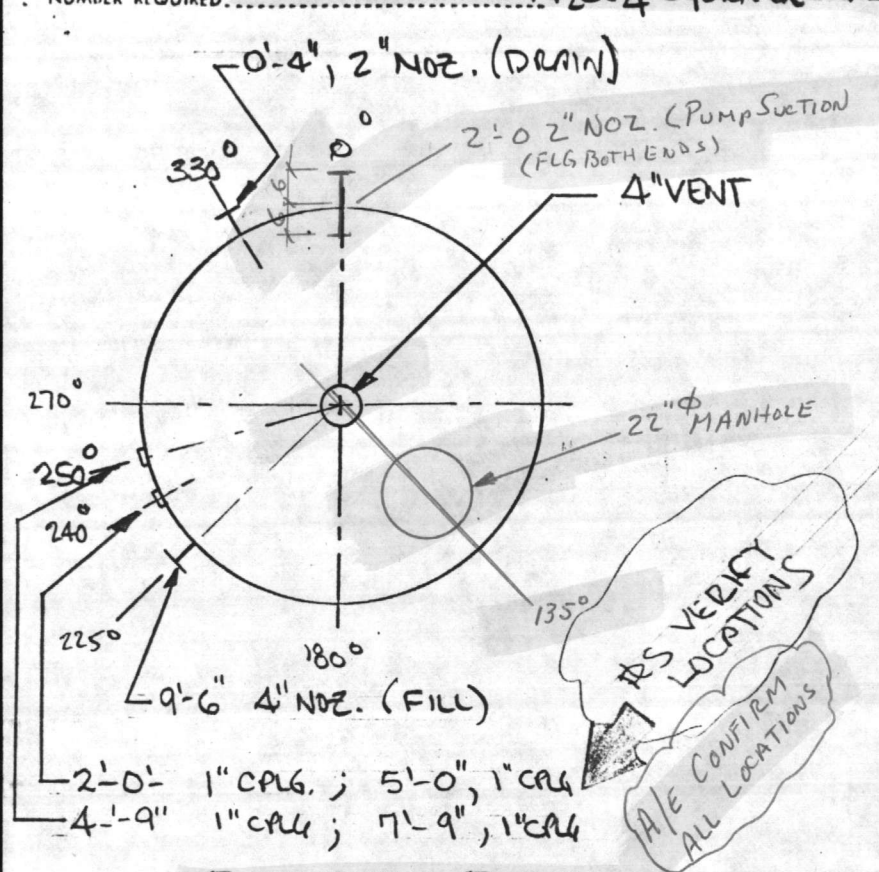
BETHLEHEM STEEL CORPORATION

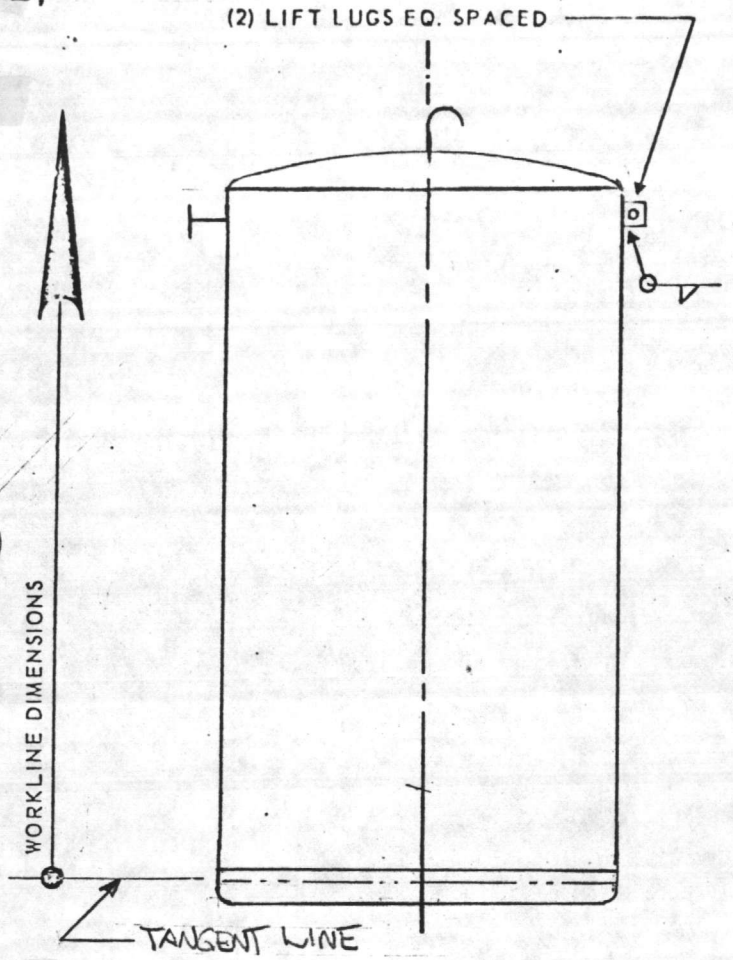
BUFFALO TANK DIVISION

CUSTOMER HARRY PEPPER & ASSOC., DATE 3/26/85

CAPACITY 2,000 GALS. DIAMETER 6'-0" LENGTH 10'-0"

NUMBER REQUIRED ONE 66° Be H_2SO_4 STORAGE TK.





☒ ABOVEGROUND ☒ VERTICAL

MATERIAL: TYPE 316 ST. STEEL HRAP MILL FINISH

Shell Thickness

Head Thickness 1/4" Type SHALLOW DISH & FLG.

1/4" FLAT FLANGED BOTTOM

WELDING: All Seams Continuous Butt Weld Outside & Inside

TEST PRESSURE: 1.5 P. S. I. Air Minimum

EXTERIOR ONLY - SANDBLAST TO A UNIFORM APPEARANCE

ITEM #2

SECT 11336 - 6.5.a

P.O. NO. 642-0015 WGT. 3,000 # CONTRACT NO. J2-31986R

JOB: BLDG. 670 CAMP LEJUNE N.C.

JM Schock 4-3-85

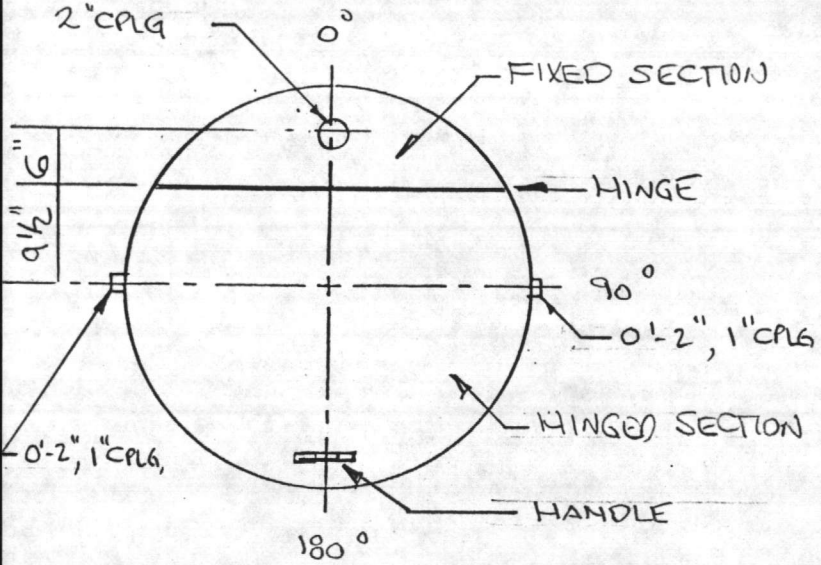
BETHLEHEM STEEL CORPORATION

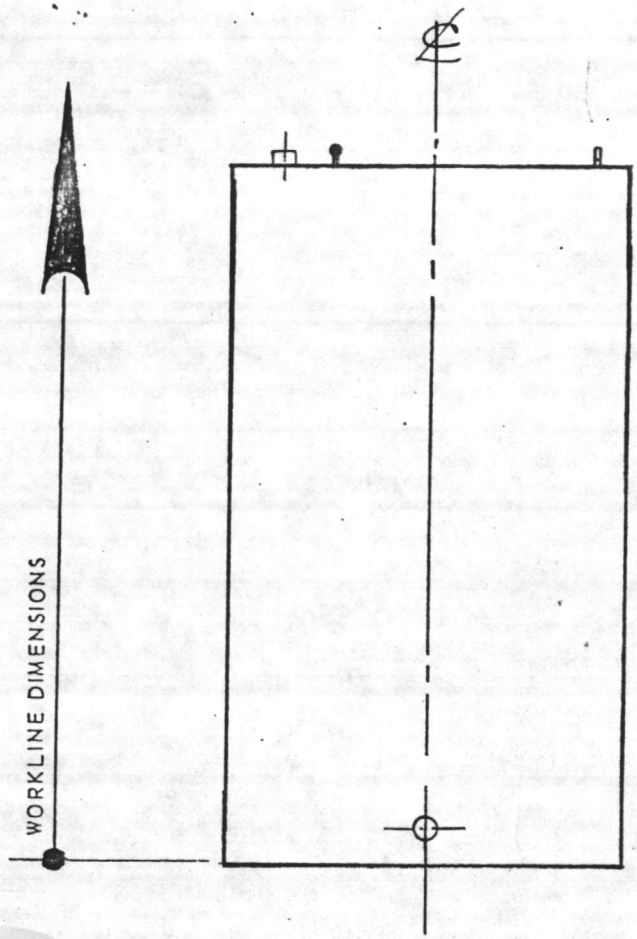
BUFFALO TANK DIVISION

CUSTOMER HARRY PEPPER & ASSOC. DATE 3/27/85

CAPACITY 200 GAL. DIAMETER 38" LENGTH 4'-0" HI

NUMBER REQUIRED ONE H_2SO_4 DAY TANK





☒ ABOVEGROUND ☒ VERTICAL

MATERIAL: TYPE 316 STAINLESS STEEL

Shell Thickness 14 GA.

Head Thickness 14GA. Type FLAT-TOP & BOTTOM

WELDING: All Seams Continuous Weld Outside

TEST PRESSURE: FILL WITH WATER

ITEM #3
SECT. 11336-6.5.C

P.O. NO. 642-0015 WGT. CONTRACT NO. J2-3199 GR

JOB: BLDG. 670 CAMP LEJUNE N.C.

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	160	1-28-86

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☒ Contractor Approved ☐ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	6.2.6 a	Manufacturer's Certification on Filter Drain Valves	4	RA	RB

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Reese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
1/29/86	Henry von Oesen & Assoc.	

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Contractor's approval appears to be appropriate.

Copy

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	30 JAN 1986 15 1/29/86	

☆ U.S. GPO:1984-537-003/11170 Region 3-11

GA Industries Inc.
AUTOMATIC VALVE SPECIALISTS
9025 MARSHALL ROAD
PHONE (412) 776-1020
MARS, PA 16046
TELEX 86-6490

December 10, 1985

Harry Pepper & Associates
119 West Eighth Street
P.O. Box 3007
Jacksonville, FL 32206

Letter of Certification
Harry Pepper & Associates P/O #C642-0010
GAI S/N 850197
(3) 20" 1890-LC Filter Drain Valves Plus Thimbles

We hereby certify that the above mentioned valves are in strict compliance with the most recent ANSI & AWWA specifications covering these items. Furthermore, we certify that the items furnished in this contract are in full compliance with the Purchaser's contract conditions, in our best interpretation thereof.

Sincerely,

GA INDUSTRIES, INC.

Ted Soens

TS/tr

Ted Soens
Valve Department

Sworn before me on this
date 1-10-86

Juanita M. Scharf

JUANITA M. SCHARF, NOTARY PUBLIC
CRANBERRY TWP., BUTLER COUNTY
MY COMMISSION EXPIRES JULY 11, 1989
Member, Pennsylvania Association of Notaries

"It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut (s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

X Approved for use.

_____ Submitted for Government approval.

_____ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Peace DATE 1-28-86

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

Hunt

CONTRACT NO.	TRANSMITTAL NO.	DATE
81-C-1644	16	4-2-85

FROM CONTRACTOR: HARRY Pepper & Associates Inc.

TO: Henry von Oesen & Associates Inc

PROJECT TITLE AND LOCATION: Holcomb Blvd WTP MCB, Camp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☒ Contractor Approved ☐ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	Water Treatment Equipment			
1	4.2 A	Water Softwere Shop Drawings	5	RA	JRB 4/12/85

CONTRACTOR'S COMMENTS

Manufacturers Data + Certification on Water Softners to be forwarded at a later date.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: One Copy to ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Penn

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
4/5/85	HENRY VON OESEN & ASSOC	ROICC

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Contractor's Approval appears to be appropriate

4-23-85

COPIES TO:	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	4/12/1985	JR Benson Jr

"It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut(s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1544 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

X Approved for use.

_____ Submitted for Government approval.

_____ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Perez DATE 4-2-85

J P Schock 3-11-85

11336 4.1.9

4.2.9

CONNECTION DESIGNATION FOR PERMUTIT TERMINAL POINTS

Example: 

Number inside indicates type of conn. (see below)

indicates size of conn

TYPE OF CONNS

1 - 125 lb ANSI std flanged conn
2 - 150 lb ANSI std flanged conn, flat face
3 - 150 lb ANSI std flanged conn, raised face
4 - 125 lb std plastic lined flanged conn (molded raised face)
5 - 125 lb std plastic lined flanged conn (gasketed)
6 - 150 lb std plastic lined flanged conn (molded raised face)
7 - 150 lb std plastic lined flanged conn (gasketed)
8 - 300 lb std plastic lined flanged conn (molded raised face)
9 - 300 lb std plastic lined flanged conn (gasketed)
10 - 300 lb ANSI std flanged conn
11 - 250 lb ANSI std flanged conn
12 - Threaded conn, npt (female)
13 - Socket weld conn
14 - Beveled end for welding
15 - Tubing end (female)
16 - Solvent weld conn (PVC)
17 - Victaulic end conn
18 - Quick disconnect hose conn
19 - Threaded conn, npt (male)
20 - Adhered conn (FRP)
21 - Heat-bonded conn (PP and PE)

101-38378

101-38330

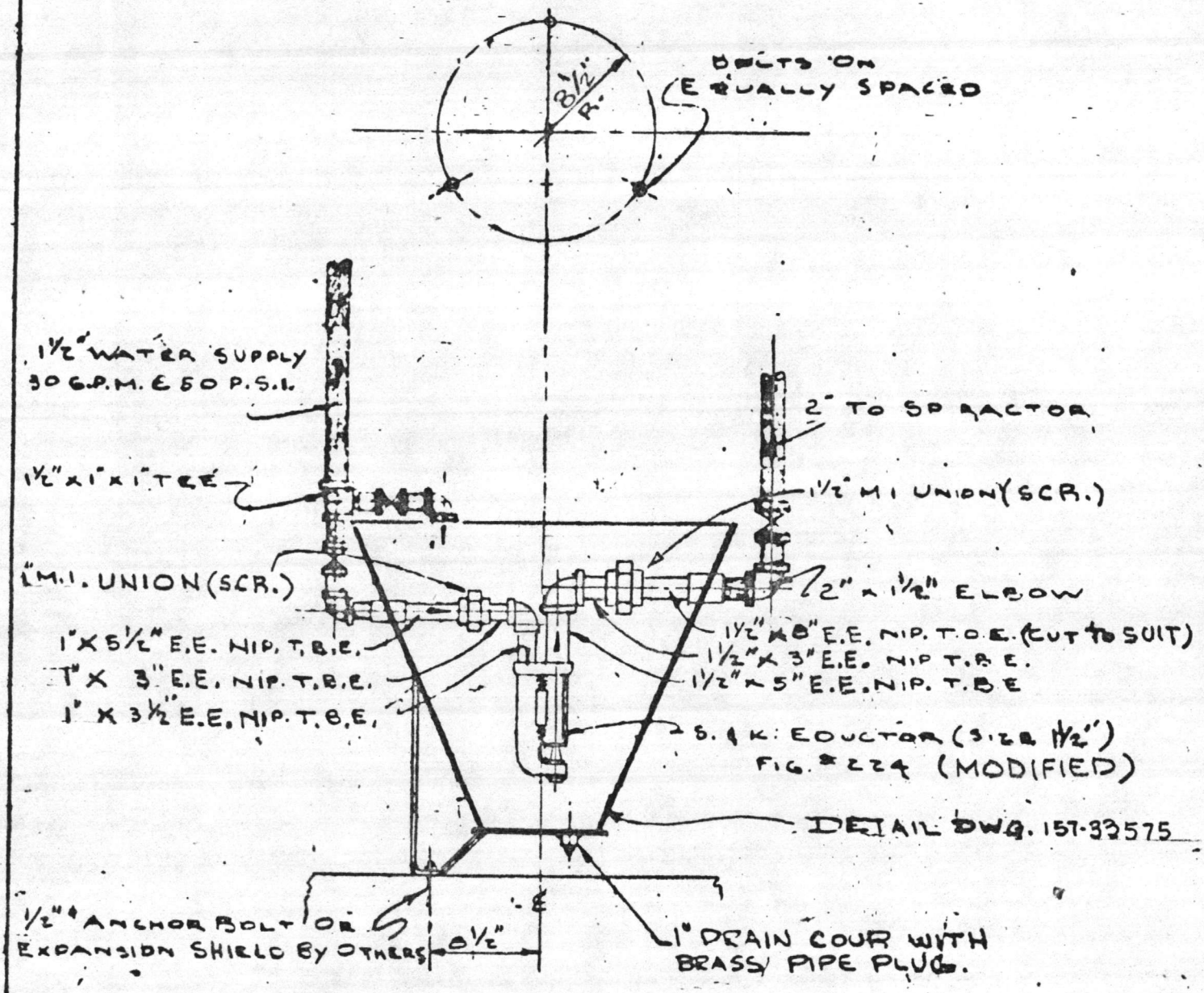
REV	BY	DATE	REVISIONS
0	EM	10-27-78	ECN 3469-AC

PERMUTIT®

CONNECTION DESIGNATION LEGEND FOR PERMUTIT TERMINAL POINTS

SIZE	SCALE	DWG NO.	REV.
A		101-38378	0

DRAWN	ISSUED	SHEET
MR	10-29-78	1 OF 1



ASSEMBLY - CATALYST CHARGING HOPPER

NOTE:-
1. ALL PIPING SHOWN SHADED BY OTHERS
2. ALL PIPE & NIPPLES TO BE SCH. 40 C.S.
3. ALL FITTINGS TO BE 125 LB. C.I. SCR. EXCEPT AS NOTED.

JOB NO. A141D43225

REV.	BY	DATE	REVISIONS

PERMUTIT®
A SUEZ COMPANY

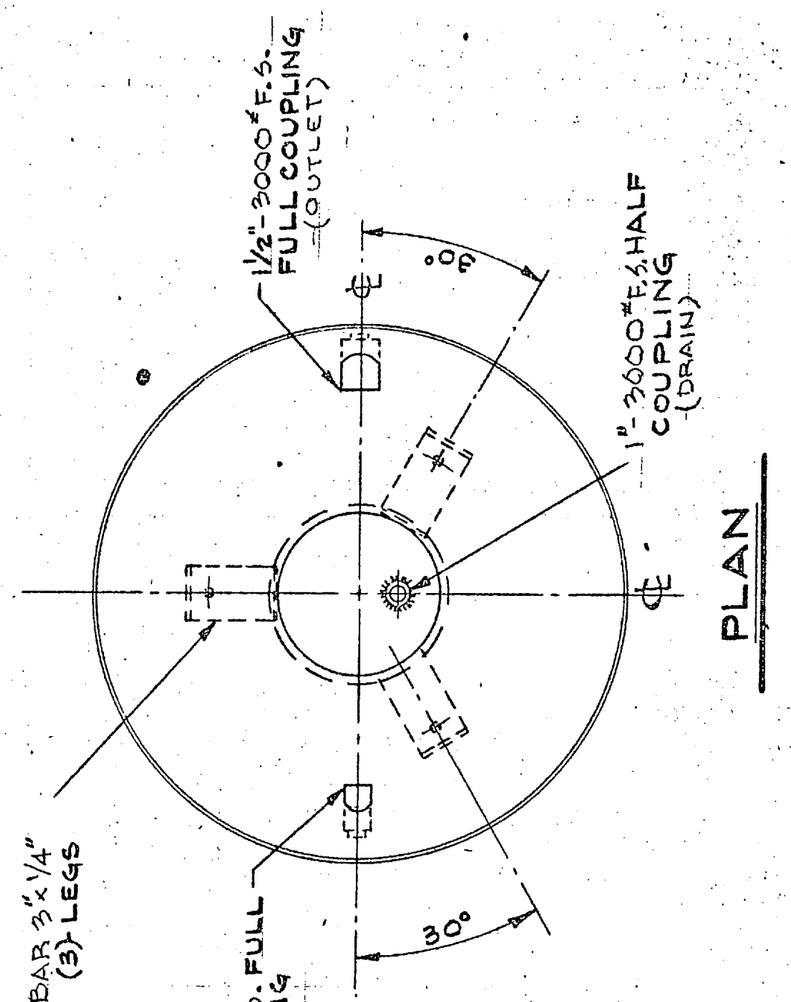
SCALE NONE DATE 3-4-85

101- 40197

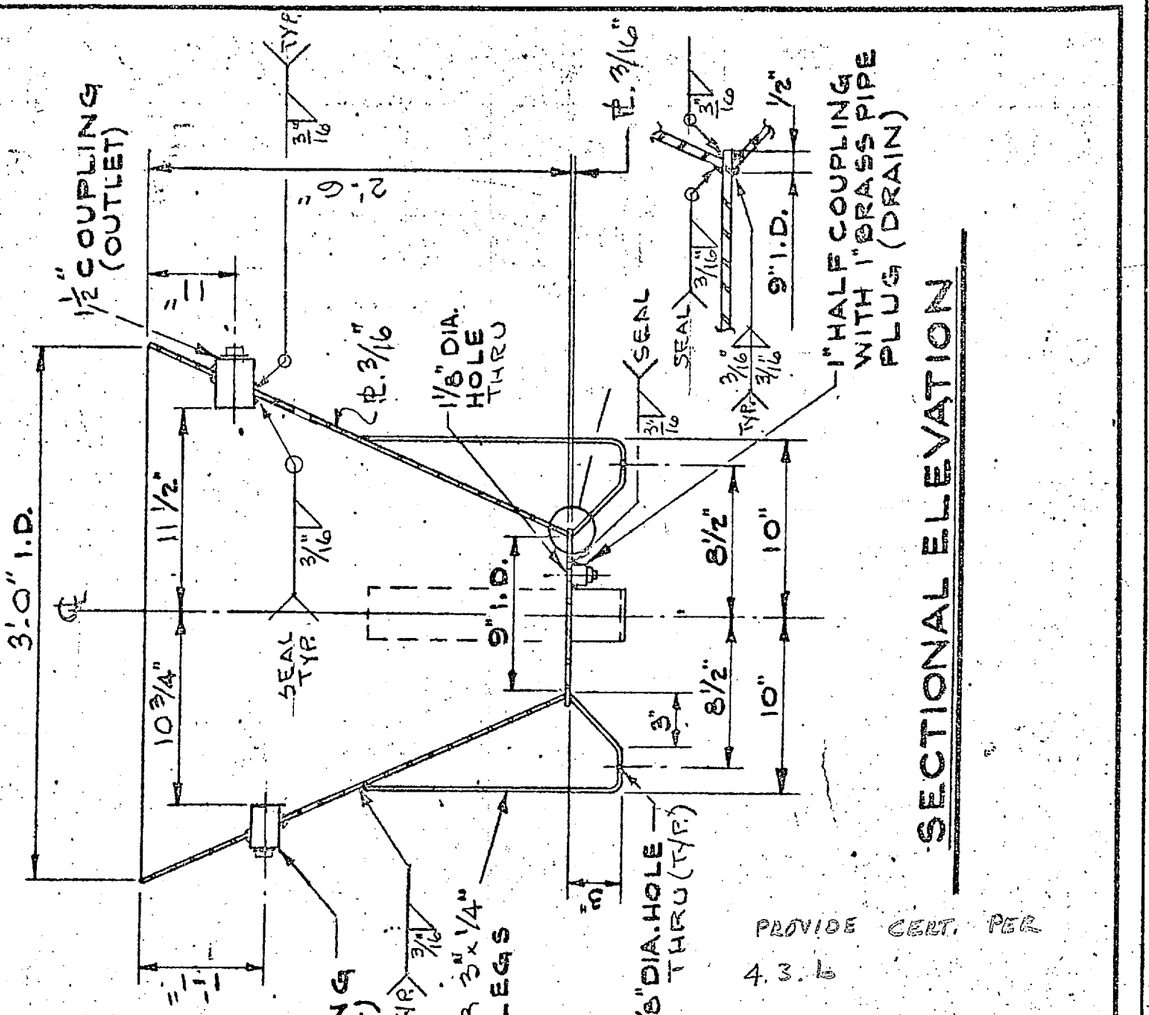
MADE A. WHITE CHECKED

REPRO 101-08796

NOTE: DO NOT SCALE DRAWING. USE DIMENSIONS ONLY.



PLAN



SECTIONAL ELEVATION

NOTES

1. ROUND OFF TOP EDGE OF TANK.
2. FABRICATION TO BE AWWA D100 & PERMUTIT CO. SPEC. 106.
3. ALL COUPLINGS TO BE PLUGGED BEFORE WELDING W/ PLUGS LEFT IN PLACE.
4. SHIP TANK SET-UP FULLY SHOP FABRICATED AS SHOWN.
5. NO SHOP PAINT REQUIRED.

DETAILS OF 3'-0" I.D. × 9" I.D. 2'-6" HG. CATALYST HOPPER

Job No. A141D43225

REV.	BY	DATE	REVISIONS

PERMUTIT
WATER AND WASTE TREATMENT

31357	
DRAWN BY	WHITE
CHECKED BY	WAKEFIELD
APPR'D. BY	
12046	

SCALE 1½"=1'-0" DATE 2-26-85

DRAWING NO. 157-33575 REV 0

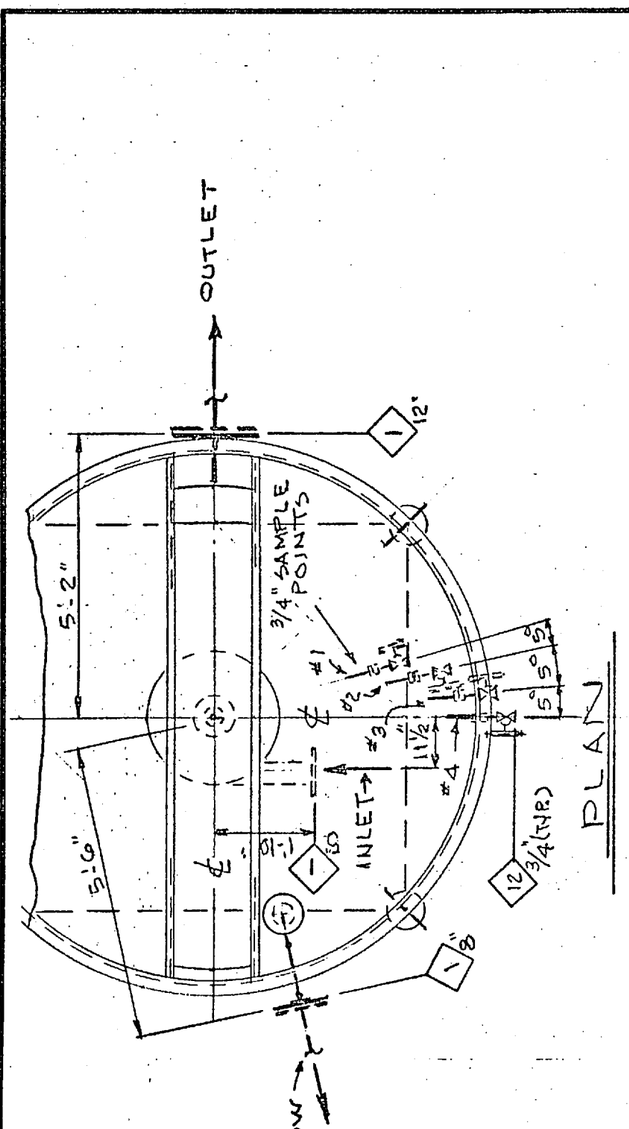
K-E

157-33607

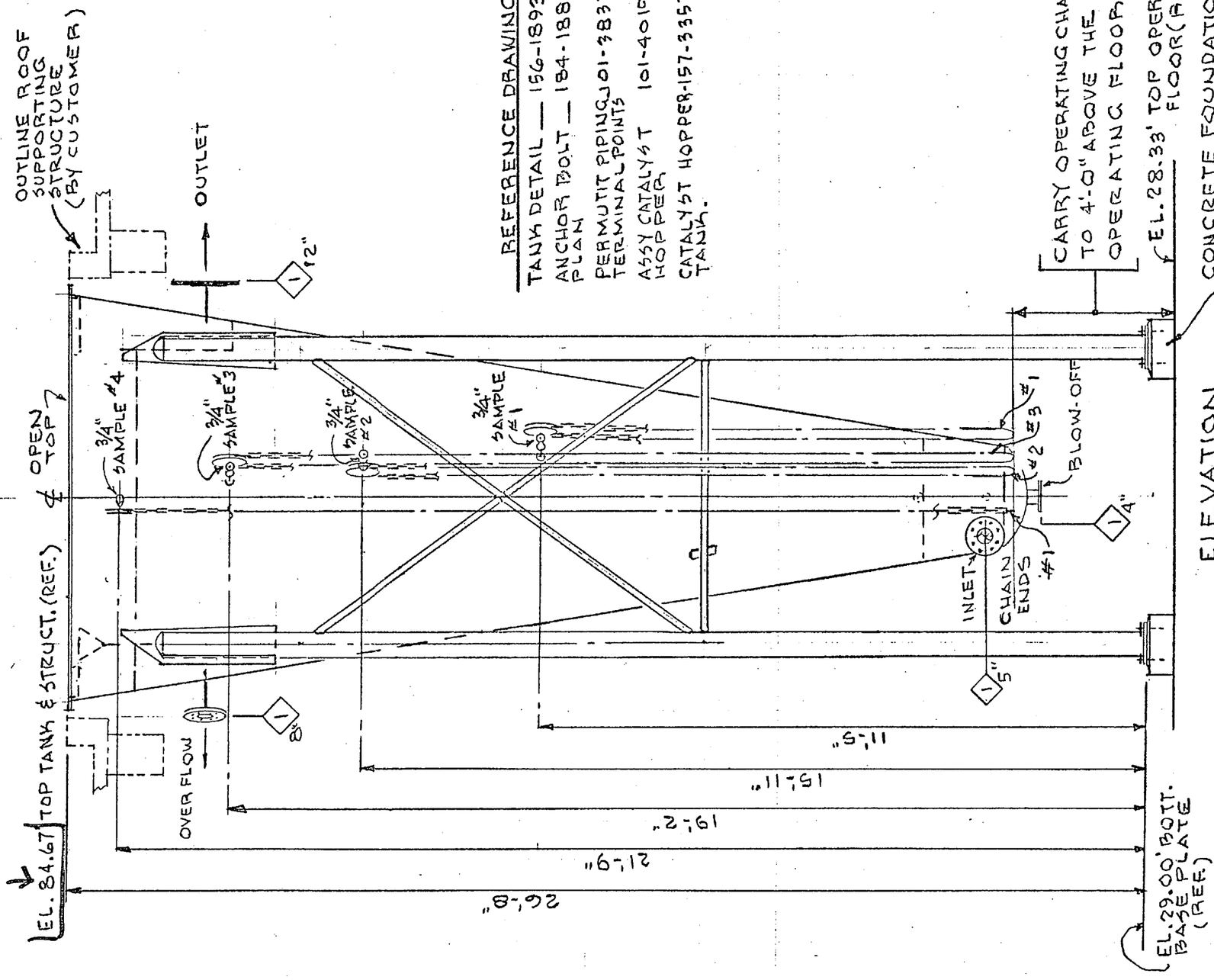
REFERENCE DRAWINGS.

TANK DETAIL — 156-18931
ANCHOR BOLT — 184-18862 PLAN
PERMUTIT PIPING 101-38378 TERMINAL POINTS
ASSY CATALYST HOPPER 101-40197
CATALYST HOPPER-157-33575 TANK.

12X18



PLAN



ELEVATION

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THE USE OR DISTRIBUTION OF THIS PRINT OR THE IDEAS CONTAINED IN THIS PRINT BY ANY PERSON, FIRM OR CORPORATION WITHOUT THE PERMUTIT COMPANY, INC'S WRITTEN APPROVAL SHALL BE DEEMED BY THE PERMUTIT COMPANY, INC AS A VIOLATION OF ITS RIGHTS.

REV.	BY	DATE	REVISIONS

EXPANSION OF HOLCOMB BOULEVARD W.T.P.
MARINE CORP BASE
CAMP LEJEUNE N.C.

JOB NO. A141D43225

DRAWN	A.WHITE
CHECKED	
APPR'D	
DATE	3-4-85
SCALE	3/8"=1'-0"

TYPICAL LAYOUT (3)
10'-0" TOP D. x 2'-6" BOTT. D.
x 23'-3" HG. MODEL 12S
SPIRACTORS.

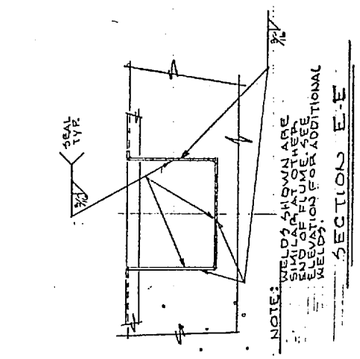
PERMUTIT®
A ZURN COMPANY

DRAWING NO.	REV.
157-33607	0

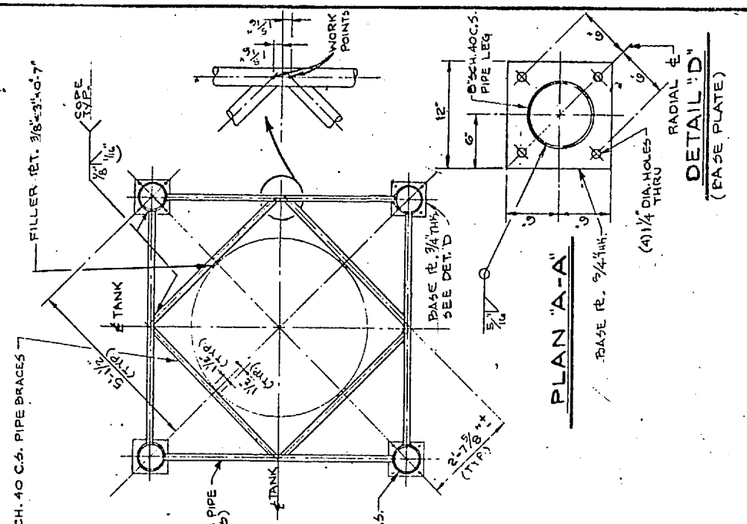
SHEET 1 OF 1

32691

156-18931

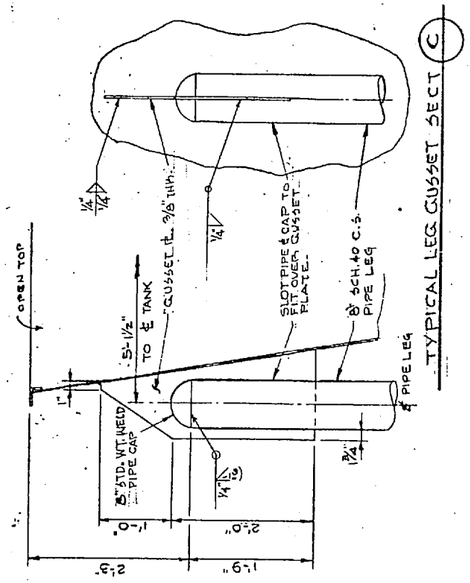


SECTION E-E



PLAN "A-A"

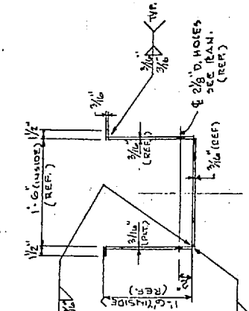
DETAIL "D" (BASE PLATE)



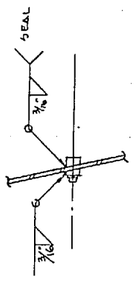
TYPICAL LEG GUSSET SECT (C)

NOTES:

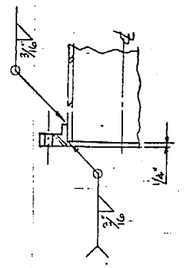
1. FABRICATION PER AWWA D100 & PERMUTIT SPEC. 106.
2. ALL FLANGE CONN'S. TO BE LIGHT WT. TYPE 125 LB. F.S. FLANGES MAY BE MADE BY FABRICATORS OPTION BUT NOT INCLUDING 12" ℄ ABOVE. PLATE TO BE 1" THK. BOLT HOLES TO STRADDLE NATURAL ℄'S.
3. ALL COUPLINGS TO BE PLUGGED BEFORE WELDING AND THE PLUGS LEFT IN PLACE FOR SHIPMENT.
4. SHIP COMPLETELY SHOP FABRICATED, ASSEMBLED & WELDED AS SHOWN.
5. NO SHOP PAINTING REQUIRED.
6. SHIPPING WT. = 9,100 LBS.



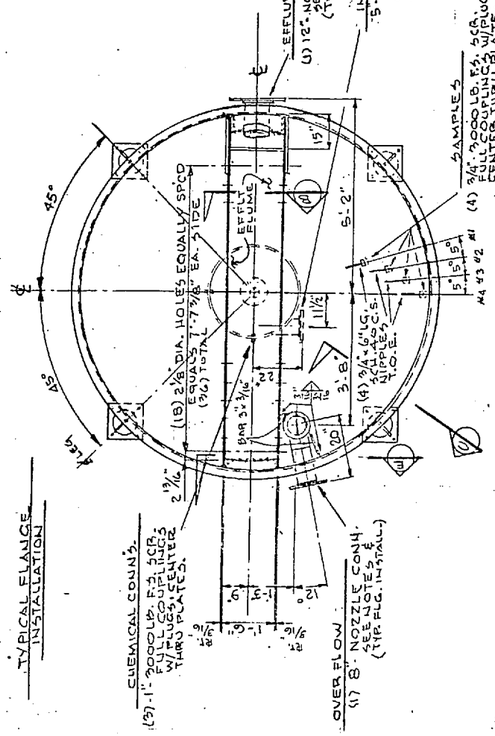
SECTION B-B



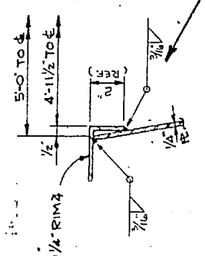
TYPICAL COUPLING INSTALLATION

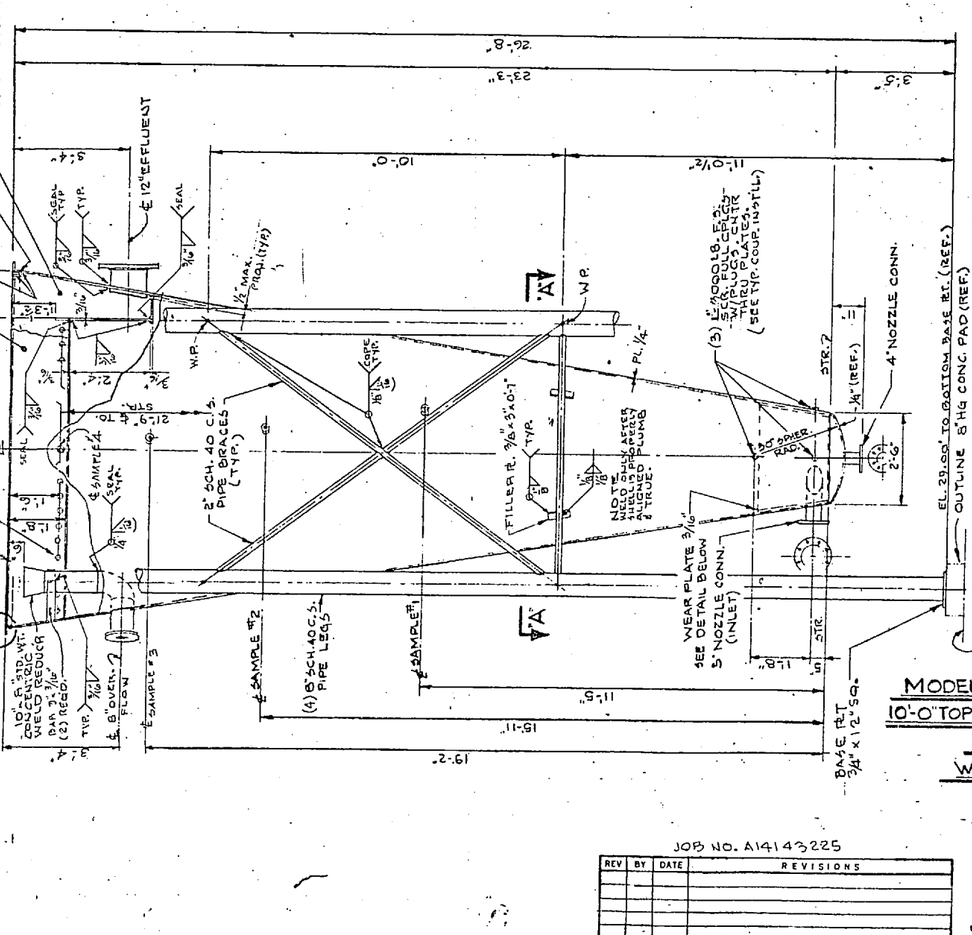


TYPICAL FLANGE INSTALLATION

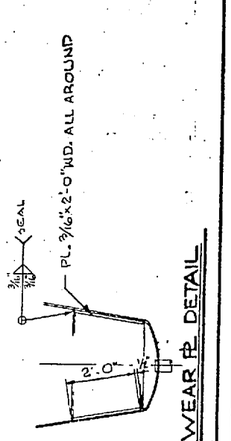


PLAN





ELEVATION (SEE PLAN FOR CORRECT ORIENTATION)



WEAR PL. DETAIL

MODEL 12 S GRAVITY SPIRACTOR
10'-0" TOP DIA. x 2'-6" BOTT. DIA. x 23'-3" HG.
TANK DETAILS W/ PIPE SUPPORTS

NOTE: DO NOT SCALE THIS DRAWING USE DIMENSIONS ONLY.

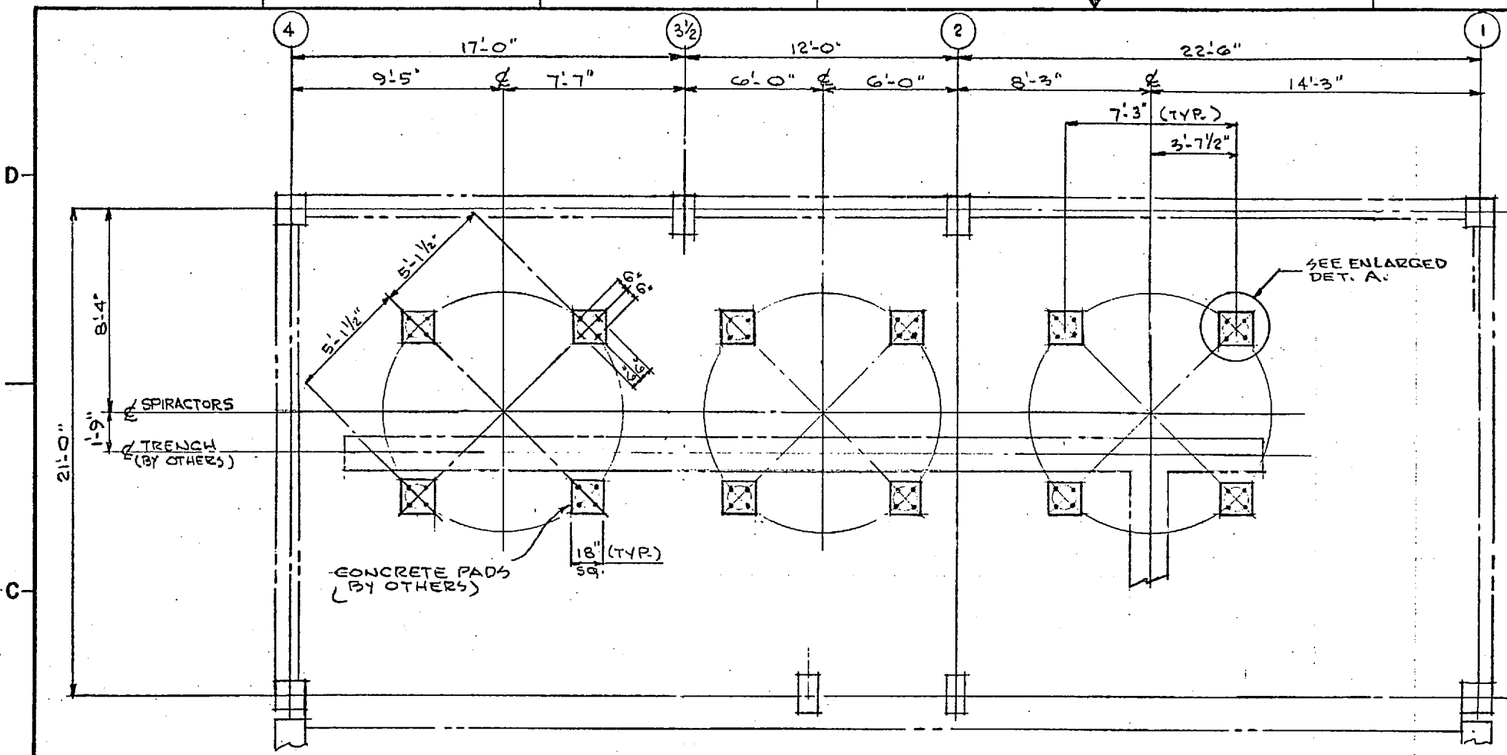
156-18793	
DRAWN BY	A. WHITE
CHECKED BY	WAKEFIELD
APP'RD. BY	

JOB NO. A141143225

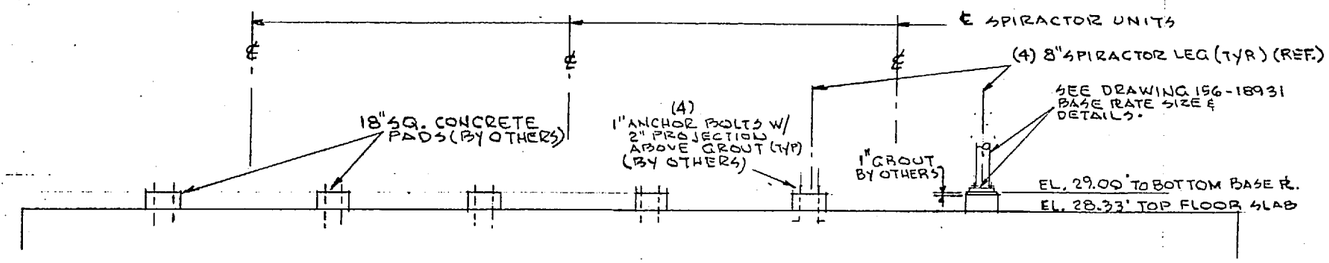
REV	BY	DATE	REVISIONS

PERMUTIT
WATER AND WASTE TREATMENT
SCALE 1/2"=1'-0" DRAWING NO. 156-18931 0
DATE 2/25/85

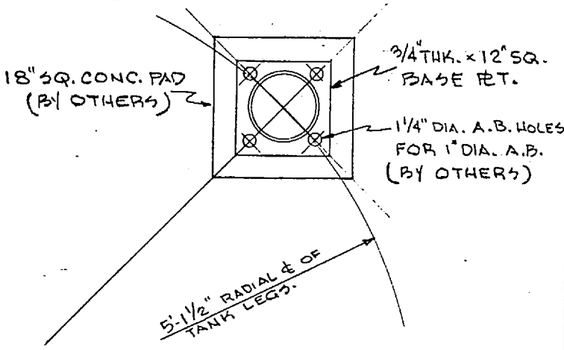
184-18862



PLAN OF ANCHOR BOLT LOCATIONS



ELEVATION OF CONCRETE PADS



ENLARGED DET. "A" (REF.)

NOTE

PERMUTIT CO. ASSUMES NO RESPONSIBILITY FOR DESIGN, MATERIAL AND OR LABOR FOR CONCRETE FOUNDATION & PADS.

18 X 24

DO NOT SCALE THIS DRAWING
USE DIMENSIONS ONLY

REV.	BY	DATE	REVISIONS

EXPANSION OF HOLCOMB BOULEVARD W.T.P.
MARINE CORP BASE
CAMP LEJEUNE, N.C.

JOB NO. A141D43225

DRAWN	A.WL.TE
CHECKED	SWAGELD
APPR'D	
DATE	2-25-85
SCALE	1/4" = 1"

CONCRETE FOUNDATION DETAILS (3) SPIRACTORS

PERMUTIT

DRAWING NO.	REV.
184-18862	0

SHEET 1 OF 1

32801

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-435543 (Rev. 11-80)

CONTRACT NO.	TRANSMITTAL NO.	DATE
81-C-1644	42	5-13-85

FROM CONTRACTOR
Harry Pepper & Associates, Inc.

TO
Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION
Holcomb Blvd Water Treatment Plant
MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☐ OICC Approval ☒ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1		Letter from Warminster Fiberglass Company on Design Features	7	A	CCS 405 5/21/85
2	6.2.2	Manufacturers Data on Wahh Troughs	7	↓	↓
3	6.2.2	Shop Drawings on Wash Troughs	7	↓	↓

CONTRACTOR'S COMMENTS

If this proposed deviation is approved, there will be no additional cost to the Government and any changes caused by this deviation/substitution will be the responsibility of the Contractor, at no expense to the Government.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC
ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature)
Phil Pepper

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
5/21/85	LANTDIV	ROICC/Harry Pepper

☒ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

APPROVED AS NO CHANGE IN COST OR TIME.

COPIES TO:	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	31 5/21/85	[illegible]

31 MAY 1985 11 36

WFC CO., INC.
WARMINSTER FIBERGLASS COMPANY
P.O. BOX 188 • COUNTY LINE ROAD • SOUTHAMPTON, PENNSYLVANIA 18966 • U.S.A.
(215) 674-6900
CUSTOM MOLDERS OF REINFORCED FIBERGLASS PRODUCTS
ASTM MEMBER

Item #1

Harry Pepper & Associates
P. O. Box 3007
Jacksonville, FL. 32206

Date: April 26, 1985

Sub: Shop drawings on wash troughs for Camp LeJeune, your P.O. 642-0013

Attention: Mr. James R. Schock

Ref: Our S.O. 24151-1

Dear Mr. Schock:

Thank you for your order #642-0013 for the fiberglass wash troughs in the filters of Camp LeJeune, and for subsequently sending plan details for our shop drawings. We are pleased to enclose 11 copies of our drawing #24151-1 with proposed details of the wash troughs, and wish to comment on a couple design features, for which reason we urge you include a copy of this letter with your transmittal to the engineers:

1) Since we do not have a mold for the 16" trough width shown in the engineer's plans, we propose our next largest width of 18", which will provide greater capacity and should cause no hydraulic problems. Assuming this to be acceptable, please note the larger box-out size that would be necessary through the gullet wall, for which we would recommend 24" minimum.

2) The end mounting with the blind end of the trough fastened firmly against the filter wall, with stainless steel straps and wedge anchors, is one that has worked for over 20 years and in thousands of wash troughs. It is extremely rigid, and with the grouting-in of the gullet end will provide the firmest possible hold and best control over deflection and vibration.

3) The design incorporating steel angles molded into the top edges of the trough and completely encapsulated in fiberglass is one we have used for 20 years and provides extreme rigidity. Its use can also be seen in our trough specification sheet #WFT1000, of which 6 copies are enclosed.

If there are any questions please let us know and thanks again for your order and cooperation.

Very truly yours,

Paul E Sanford

PAUL E. SANFORD
President & General Manager

APR 1985 RECEIVED Harry Pepper & Associates, Inc.

PES:ef

Encl: Drawings
6 - Trough brochures

CC: Tony Combs, Combs & Associates
P.O. Box 32185, Charlotte, N. C. 28232-2185

ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

APPROVED ✓
APPROVED AS NOTED _____
DISAPPROVED _____
SUBJECT TO THE REQUIREMENTS OF
CONTRACT NO. 05-81-1644
APPROVAL OF A SUBMITTAL DOES NOT INCLUDE APPROVAL OF ANY DEVIATION FROM THE CONTRACT REQUIREMENTS UNLESS THE CONTRACTOR CALLS ATTENTION TO AND SUPPORTS THE DEVIATION--THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS, COORDINATION OF TRADES, ETC., AS REQUIRED
REVIEWER CCS DATE 21 MAY 1985
FOR OFFICER IN CHARGE OF CONSTRUCTION

"It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut(s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

___ Approved for use.
___ Submitted for Government approval.
X Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____
Signature CQC Rep. Phil Keene DATE 5-13-85

5/3/85

Item #2

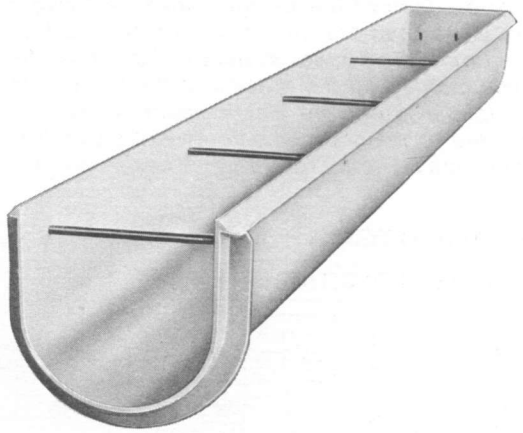
WARMINSTER FIBERGLASS

WFT1000
SPECIFICATION

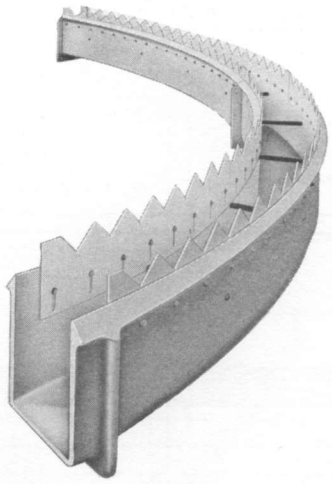
Fiberglass Reinforced-Plastic Troughs

Fiberglass reinforced polyester troughs, manufactured by Warminster Fiberglass Company, are designed for use in water and sewage treatment plants. They are furnished for use as wash troughs in the backwashing of gravity filters, or as collection troughs or launders in structures such as clarifiers, aeration tanks and setting basins.

Warminster Fiberglass troughs are available in a wide variety of widths and depths with round or flat bottoms. They can be molded in a circular configuration to mount against a round tank wall or inboard from the tank wall to double the weir edge footage.



Wash Trough



Molded Circular Troughs with Adjustable Weir Plates for Any Tank Diameter

DESIGN FEATURES

- **Corrosion Resistance:** The tough gel-coated surface of the fiberglass trough, with color molded in, is unexcelled in resistance to corrosion, normal abrasion, sunlight, and atmospheric conditions. Special materials are available for highly corrosive chemical applications. Painting, sandblasting and other costs of maintaining steel troughs are eliminated with fiberglass.
- **Light Weight:** The light weight of fiberglass troughs permits easy installation without special lifting equipment and reduces handling, shipping and storage costs.
- **Precision Molded:** Precision molding of fiberglass troughs provides straight edges for ease of leveling and good flow distribution. Weir edges are molded straight to within 1/8 of an inch and the edges are molded in. No cutting and resealing is necessary.
- **Strong and Rigid:** Molded-in steel stiffening ribs provide strength and rigidity and prevent twisting. The use of steel ribs on many trough styles permits long spans without center hangers or supports. Successful wash trough installations prove that with up to 24 feet span, an $\frac{L}{1000}$ vertical deflection is achieved with water to the weir edges and the trough empty. Also for long spans, allowance for thermal expansion can be incorporated by special designs.

OPTIONS

Factory-set weir plates to proper elevation.

Special sizes, shapes, transitions outlet flanges, drop boxes.

Stainless steel spacer rods.

Adjustable weir plates, straight edge or V-notch.

Selection of colors

Resins for severe chemical or high temperature applications.

Wall anchors or mounting brackets.

Stainless steel cable sets to prevent trough oscillation.

WASH TROUGHS

The Warminster Fiberglass Company trough design, with steel angle molded into the weir edge, provides the most rigid trough available with the least vertical deflection. Final leveling of troughs is accomplished by use of slots in the blind end which is held by stainless steel straps and anchors. A grouting rib on the trough outlet provides firm anchoring and a water-stop. In addition, straight-edge weir plates are available with stainless steel fasteners to permit adjustment to different elevations. Sufficient plastic spacer rods are provided to maintain a uniform width over the length of each trough.

SUGGESTED WASH TROUGH SPECIFICATION

All necessary wash troughs shall be supplied and installed as shown on the plans. The troughs shall be manufactured by Warminster Fiberglass Company, Southampton, PA. Troughs shall be laminated of fiberglass reinforced polyester resin to an average thickness of 1/4". The inside surface of each trough shall have a smooth gel coat finish. The outside surface of each trough shall be resin sealed with no exposed glass fibers. Color shall be molded in and an ultraviolet inhibitor shall be used.

Troughs shall have round bottoms and vertical sides. Top edges of the troughs shall be straight with no more than 1/8-inch deviation from a true plane. Longitudinal steel stiffening ribs shall be integrally molded on the outside of the troughs to assure rigidity. Sufficient plastic spacer rods shall be included to maintain a uniform width over the length of each trough. Troughs shall be designed to support the applied water loadings at each location and shall be made of laminate with the following minimal physical properties: Tensile strength—14,000 psi; Flexural strength—25,000 psi; Flexural modulus—1.0 x 10^6 psi.

A 2-inch wide, 1/2-inch thick wall grouting rib shall be molded to the outside of each trough at the gullet end to act as a water stop when the trough is grouted in place. Slotted holes shall be provided in the closed end of each trough to allow a minimum vertical level adjustment of one inch. Stainless steel wall anchors and flat bars shall be provided.

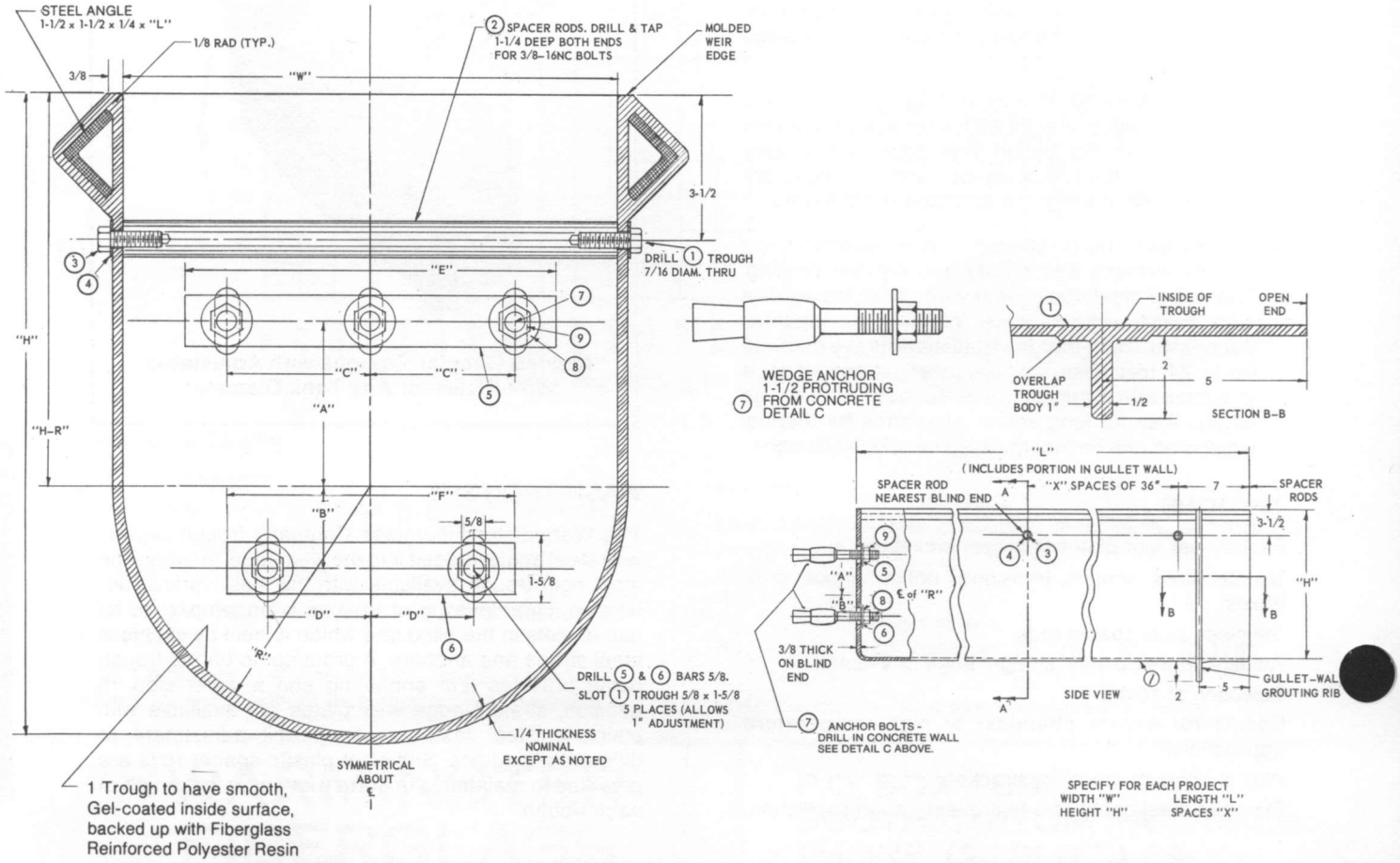
Troughs shall be set in place with weir edges to elevations shown on the plans. Weir edges should be leveled to within 1/8-inch of level over their entire length. Troughs shall be grouted in place after leveling.

ROUND BOTTOM TROUGHS

DIMENSIONS TABLE					
WIDTH W	12	18	21	24	30
R	6	9	10-1/2	12	15
A	4	4	4	4	6
B	2	3	3	5	7
C	3-1/2	6-1/2	8	9	12
D	2-1/2	5	6	7	9
E	9	15	18	20	26
F	7	12	14	16	20
H	AS REQUIRED				
L	AS REQUIRED				

		BILL OF MATERIAL
Item No.	Quantity	DESCRIPTION
1	1	Trough-Fiberglass & Steel Ribs
2	"X" + 1	Spacer Rods-pvc w/1" OD Solid "W" Long
3	Double Item 2	Spacer Bolts-Stainless-3/8-16NC × 1-1/4 Hex Head
4	Double Item 2	Spacer Washers-Stainless-3/8 ID Flat
5	1	End Bar-Stainless-1/4 × 1-1/4 × "E" Long
6	1	End Bar-Stainless-1/4 × 1-1/4 × "F" Long
7	5	Anchor Bolts-Stainless-1/2-13 NC × 4-1/4" Long
8	5	End Washers-Stainless 1/2 ID Flat
9	5	End Nuts-Stainless 1/2-13 NC -Hex

DIMENSIONS



COLLECTION AND EFFLUENT TROUGHS

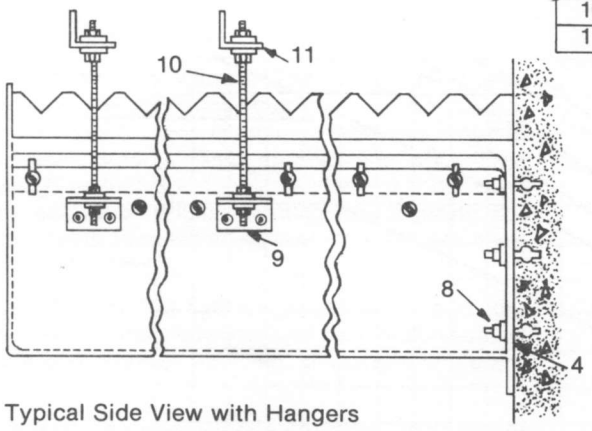
A variety of standard trough sizes are supplied in many different configurations by Warminster Fiberglass Company for collection trough applications. These troughs are often flat bottomed and supplied with adjustable V-notch fiberglass weir plates. The troughs are equipped with spacer rods and reinforcing members to maintain uniform size, shape, and rigidity over the full length of the trough. The troughs may be fastened to steel or concrete tank walls, or supported by braces, hangers or piers.

Weir plates when required are preassembled to trough walls. Scum baffles are frequently supported from the wall of the trough. Weir plates shall be field adjusted by the contractor after installation to compensate for deflection and mounting of troughs.

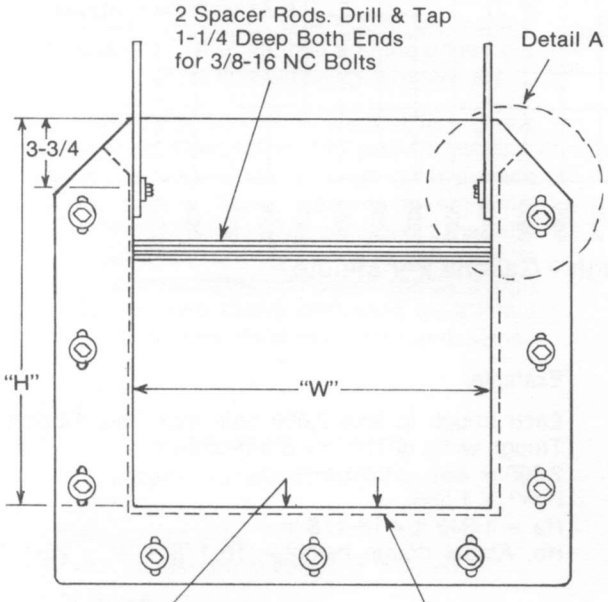
Special transition pieces, "T" sections, flanged outlets and drop boxes are available. To provide additional weir footage, the troughs may be mounted inboard from the wall of circular or rectangular tanks, with weir plates along both sides of the trough. In circular tank applications, troughs may be molded circular, concentric with the tank walls, providing a more economical installation than with straight chordal troughs. This produces more uniform flow, and simplified, more precise erection. The molded circular shape also utilizes a single size support bracket, a single size scum baffle support bracket, and a scum baffle which is concentric with the trough because of the uniform spacing of the circular trough from the tank wall.

	BILL OF MATERIAL
Item No	DESCRIPTION
1	Trough - Fiberglass & Steel Ribs
2	Spacer Rods - pvc - 1" OD Solid × "W" Long
3	Weir Plates - Fiberglass
4	Gasket - 1/2" Neoprene Sponge
5	Weir & Spacer Bolts - Stainless - 3/8" - 16 NC - 1-1/2 Hex
6	Weir & Spacer Washer Stainess
7	Weir Nuts Stainless
8	Drill Anchors - Stainless 1/2 - 13 NC × 4-1/4" Long
9	Hanger Bracket & Hardware Stainless
10	Hanger Rods Stainless 3/4"
11	Hanger Angles & Hardware - Stainless

Standard Flat Bottom Trough Widths:
12", 15", 18", 21", 24", 36"

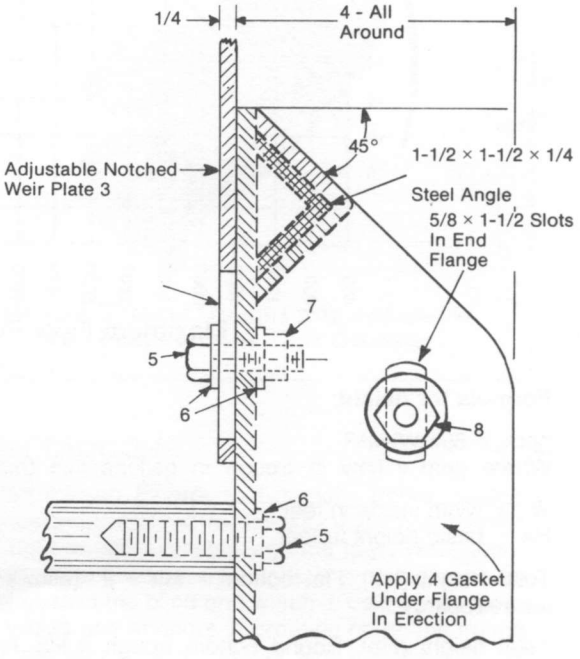


Typical Side View with Hangers



1 Trough to have Smooth Gel-Coated Inside Surface, Backed by Fiberglass Reinforced Polyester Resin

1/4 Thickness Nominal Except as Noted



SUGGESTED COLLECTION TROUGH SPECIFICATION

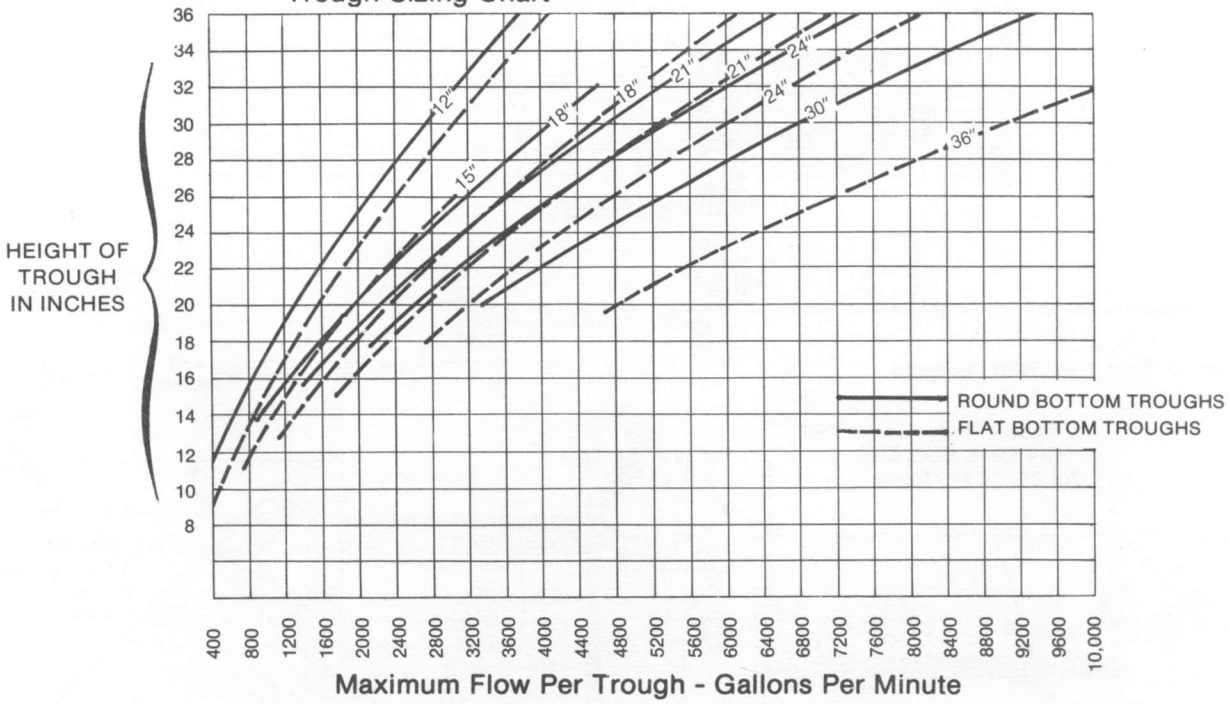
All necessary effluent (collection) troughs (launders) shall be supplied and installed as shown on the plans. The troughs shall be manufactured by Warminster Fiberglass Company, Southampton, PA. Troughs shall be laminated of fiberglass reinforced polyester resin to an average thickness of 1/4-inch. The inside surface of each trough shall have a smooth white (or other) gel coat finish. The outside surface of each trough shall be resin sealed with no exposed glass fibers. Color shall be molded in and an ultra-violet inhibitor shall be used.

Troughs shall have flat (round) bottoms and vertical sides. Top edges of the troughs shall be straight with no more than 1/8-inch deviation from a true plane. Longitudinal stiffening ribs shall be integrally molded on the outside of the troughs to assure rigidity. Sufficient plastic spacer rods shall be included to maintain a uniform width over the length of each trough.

Spacer rods shall be spaced to prevent buckling, and to provide maximum resistance to water loading on the sidewalls of the trough. The troughs shall be fabricated of fiberglass reinforced polyester resin, with fiberglass constituting a nominal 30% by weight. The resin shall be of a general purpose high quality. The glass reinforcement shall be random chopped-strand type with a minimum strand length of 1-inch, and adequate contact molding pressure to provide complete wet-out of the glass fibers. The material shall have the following minimum physical properties: Tensile strength—14,000 psi; Flexural strength—25,000 psi; Flexural modulus—1.0 x 10^6 psi.

Fiberglass adjustable weir plates shall be preassembled to the troughs when shown on the drawings. Trough layout, outlet, and support system shall be as shown on the drawings. All anchors and fasteners shall be Type 304 (316) stainless steel. The support system shall allow 1-inch minimum adjustment of the trough, horizontally and vertically, and shall allow no greater than $\frac{L}{1000}$ upward deflection with the trough empty and water to the weir edge. Stabilizers (cable sets) shall be provided where necessary to restrict lateral movement (oscillation). Final weir plate adjustment shall be performed by the contractor after installation of troughs. Weir plates shall be adjusted to compensate for designed upward deflection and to bring weir plates to correct crest elevation. Design deflection shall be $\frac{L}{1000}$ between supports.

Trough Sizing Chart



Formula for height:

$gpm = 857\ WHa^{3/2}$

Where gpm = flow in trough in gallons/min (max)

W = width inside in feet
Ha = basic height in feet

Total height (Hb), Flat bottom = Ha + 2″ (allows 2″ for freeboard)

Total height (Hb), Round bottom trough = Ha + 4″ (allows for round bottom plus approx. 2″ of freeboard)

Example:

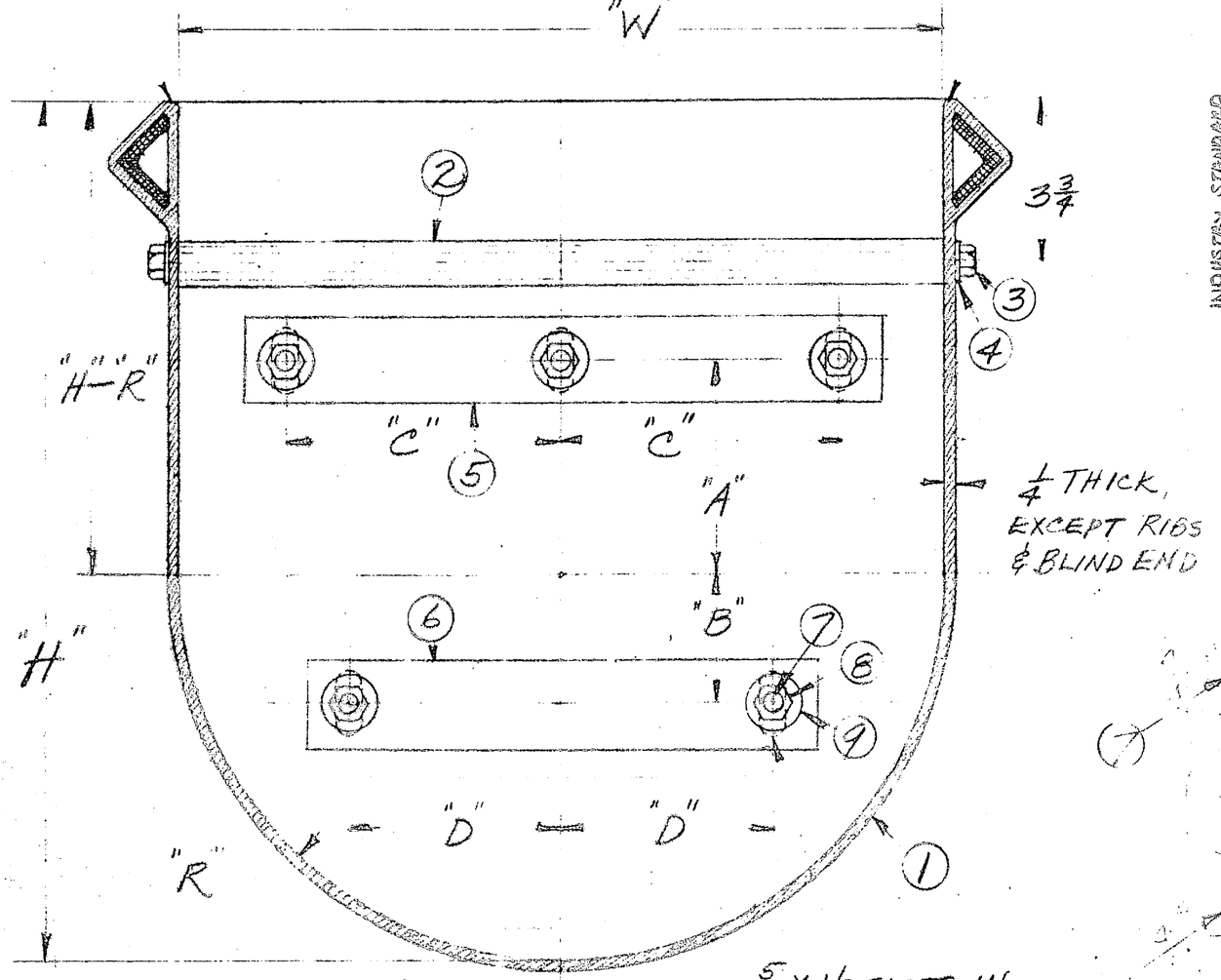
Each trough to take 2,000 gpm max (round bottom)
Trough width of 18″ = 1.5 ft desired
$2{,}000 = 857 \times 1.5\ Ha^{3/2}$
$Ha^{3/2} = 1.556$
Ha = 1.343 ft = 16-1/8 in
Hb, Actual trough height = 16-1/8 + 4″ = 20-1/8″

NOTE: Specifications are subject to change without notice.

WARMINSTER FIBERGLASS
P.O. BOX 188
SOUTHAMPTON, PA 18966
PHONE: (215) 674-6900

1½ X 1½ X ¼ GALVANIZED STEEL ANGLES MOLDED IN FIBERGLASS – FULL LENGTH – BOTH SIDES

MOLDED WEIR EDGES



SYMMETRICAL ABOUT ℄

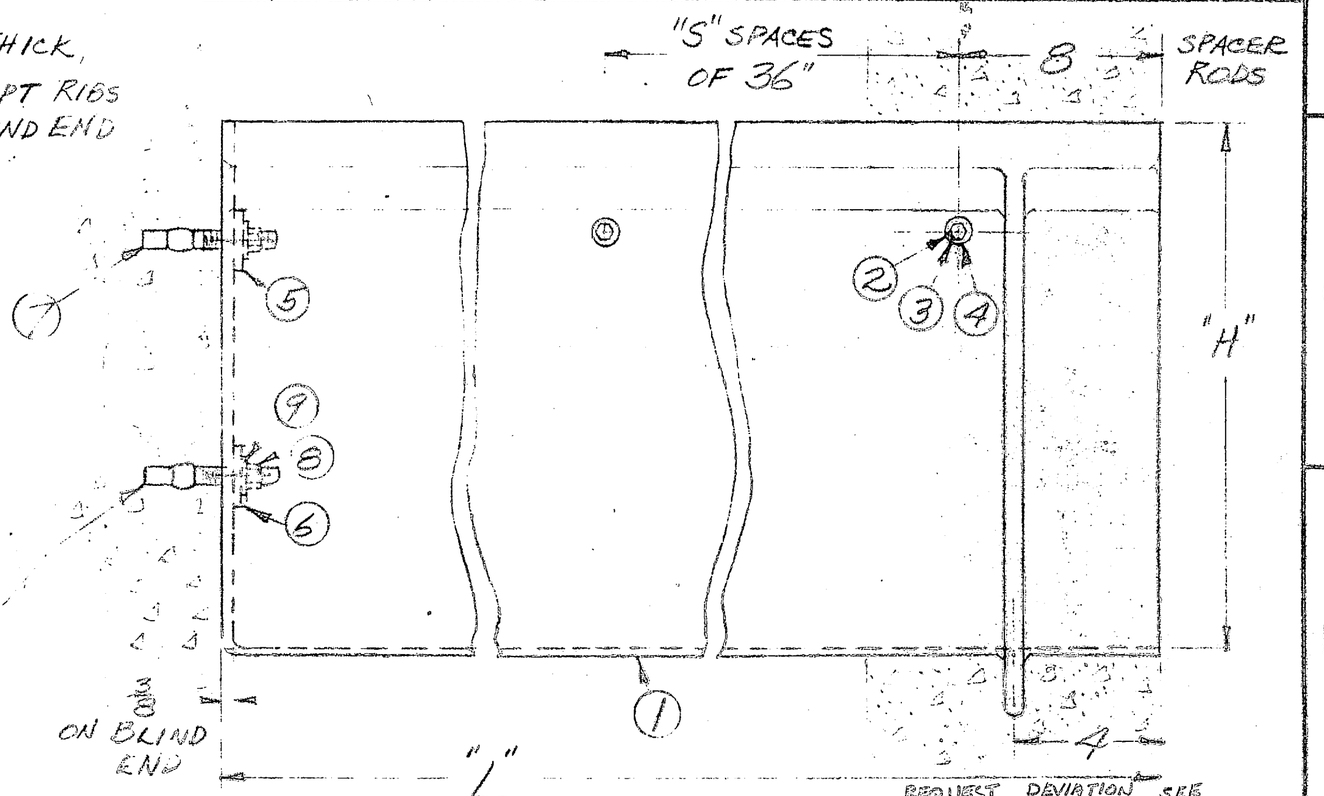
SECTION TOWARD BLIND END

⅝ X ½ SLOTS IN ① TROUGH, & ⅝ HOLES IN BARS ⑤ & ⑥ FOR ⑦ ANCHORS – 5 PLACES

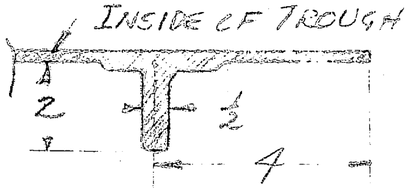
BILL OF MATERIAL

Item # 3

ITEM NO.	QUANTITY	DESCRIPTION
1	1	TROUGH – FIBERGLASS, POLYESTER & GALVANIZED STEEL
2	"S"+1	SPACER RODS – PVC – 1" OD SOLID X "W" LG. – TAPPED ⅜-16 NC
3	DOUBLE ITEM 2	SPACER BOLTS – STAINLESS – ⅜-16 NC X 1¼ – HEX HEAD
4	DOUBLE ITEM 2	SPACER WASHERS – " – ⅜ ID – FLAT
5	1	END BAR – " – ¼ X 2 X "E" LG. – ⅝ HOLES
6	1	END BAR – " – ¼ X 2 X "F" LG. – ⅝ HOLES
7	5	DRILL ANCHORS " ½-13 NC – PHILLIPS # WW-1242
8	5	ANCHOR NUTS – " – ½-13 NC – HEX
9	5	ANCHOR WASHERS – " – ½ ID – FLAT



SIDE ELEVATION



GROUTING RIB SECTION

SPECIFY FOR EACH PROJECT

WIDTH "W" = 18'	QUANTITY OF TROUGHS – 12
HEIGHT "H" = 19"	SPACES "S" – 5
LENGTH "L" = 18'-8"	COLOR – WHITE

DIMENSION TABLE

"W"	12	18	21	24	30
"R"	6	9	10½	12	15
"A"	4	6	6	8	8
"B"	2	3	4	5	7
"C"	3½	6½	6	9	12
"D"	2½	5	6	7	9
"E"	9	15	18	20	26
"F"	7	12	14	16	20

REV.	W.O., R.N., D.P. AUTHORIZATION	DESCRIPTION	DATE	BY
		ADAPTED TO CAMP LEJEUNE, N. CAR.	APR. 24 '68	P.S.
		ORIGINAL: MAY, '67 REVISION DESCRIPTION REDRAWN	APR. 23 '68	P.S.

MODEL NO. | SCALE | REF. DWG.

FIBERGLASS WASH TROUGHS FOR HARRY PEPPER ASSOC. CAMP LEJEUNE, N.C. WTP

WARMINSTER FIBERGLASS CO.
A SUBSIDIARY OF FISCHER & PORTER
COUNTY LINE RD., SOUTHAMPTON, PA. 18966

24151-1

REV. 0

Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO.	TRANSMITTAL NO.	DATE
81-C-1644	65	6-17-85

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☒ Contractor Approved ☐ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	6.1	Manufacturer's Data on Water Softener System	4	RA	JMB
		Bukletin # 5852 SPIRACTOR			

CONTRACTOR'S COMMENTS

See Transmittal # 16, dated 4-2-85 on Shop Drawings on Spiractor.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Reese

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO
6/18/85	Henry von Oesen & Assoc., Inc.	

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Contractor's approval appears to be appropriate.

HENRY VON OESEN AND ASSOCIATES, INC.
Consulting Engineers & Planners

COPIES TO:	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	6/18/85	J M Bauss Jr

ROICC Hunt

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
81-C-1644	135-A	6-24-86

FROM CONTRACTOR: Harry Pepper & Associates, Inc.

TO: Henry Von Oesen & Associates, Inc.

PROJECT TITLE AND LOCATION: Holcomb Blvd Water Treatment Plant

MCB, Cp Lejeune, North Carolina

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☐ OICC Approval ☒ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
	11336	WATER TREATMENT EQUIPMENT			
1	6.5	Letter from Combs and Associates to Harry Pepper and Associates, Inc.	7	RA	CCS 405 7/9/86
2	6.5	Shop Drawings	7	R	" "
3	6.5	Manufacturer's Data and Shop Drawings on Glass-Ball Valves	7	A	" "

CONTRACTOR'S COMMENTS

If this proposed Deviation is approved, there will be no additional cost to the Government, and any changes caused by this Deviation will be at the expense of the Contractor.

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC: ONE COPY TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): Phil Reese Phil Reese

DATE RECEIVED BY REVIEWER: 6/30/86

FROM (Reviewer): BM

TO: distr

☒ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Item # 1 - RA

2 - Resubmit, indicate material to be used for flexible hose. Rubber hose is not acceptable for acid resistance. Proposed diffuser is acceptable.

3 - Approved at no addn'l time or cost.

COPIES TO
ROICC (2)
LANTDIV (1)
A-E (1)

DATE: 7/10/86

SIGNATURE: Bill Mauzy

U.S. GOP: 1983 - 739-003/2122 Region 3-11

Item #1

COMBS & ASSOCIATES, INC.
POST OFFICE BOX 32185 · CHARLOTTE, NORTH CAROLINA 28232-2185
(704) 376-0450

June 17, 1986

Harry Pepper & Associates, Inc.
Attention: Mr. Jim Schock
P.O. Box 3007
Jacksonville, Florida 32206

Re: Acid Diffuser

Dear Jim:

Attached you will find the diffuser which we must specially fabricate for the acid diffuser on the Holcomb Boulevard project.

Felker Brothers Corporation is a specialty stainless steel fabricator who will be fabricating this unit for us. Lab-Crest manufactures the ball valve which is all glass with teflon seats.

Please note that we are using a 1" 316L stainless steel schedule 40 pipe inside of a 1-1/2" 316L stainless steel pipe.

Basically you will use rubber hose to connect to the diffuser to the main stainless steel feed line. If the owner would like to remove this unit, the unit will be unbolted from the right hand side of the page and the 1" stub will be pulled from the 1-1/2" pipe. The flexible hose will be necessary in order to disconnect the unit and put it out of the way.

Washers on the inside will guide the tube in and out. It would not appear that there is a standard diffuser available in the market. The unit is quite expensive to build, and I can not see the Navy or the engineer turning down this particular unit. Would you please submit it and return it to me as quickly as possible?

Thanks for your help in this matter.

Very truly yours,

Tony Combs

A.R. "Tony" Combs, P.E.
Charlotte Office
Combs & Associates, Inc.

enclosures

cc: Mr. John Muter

ARC/bl

It is hereby certified that the (material) (equipment) shown and marked in this submittal, shop drawings, catalog cut(s), etc., and approved/proposed to be incorporated into Contract Number N62470-81-C-1644 is in compliance with the Contract Drawings and Specifications and can be installed in the allocated space, and is:

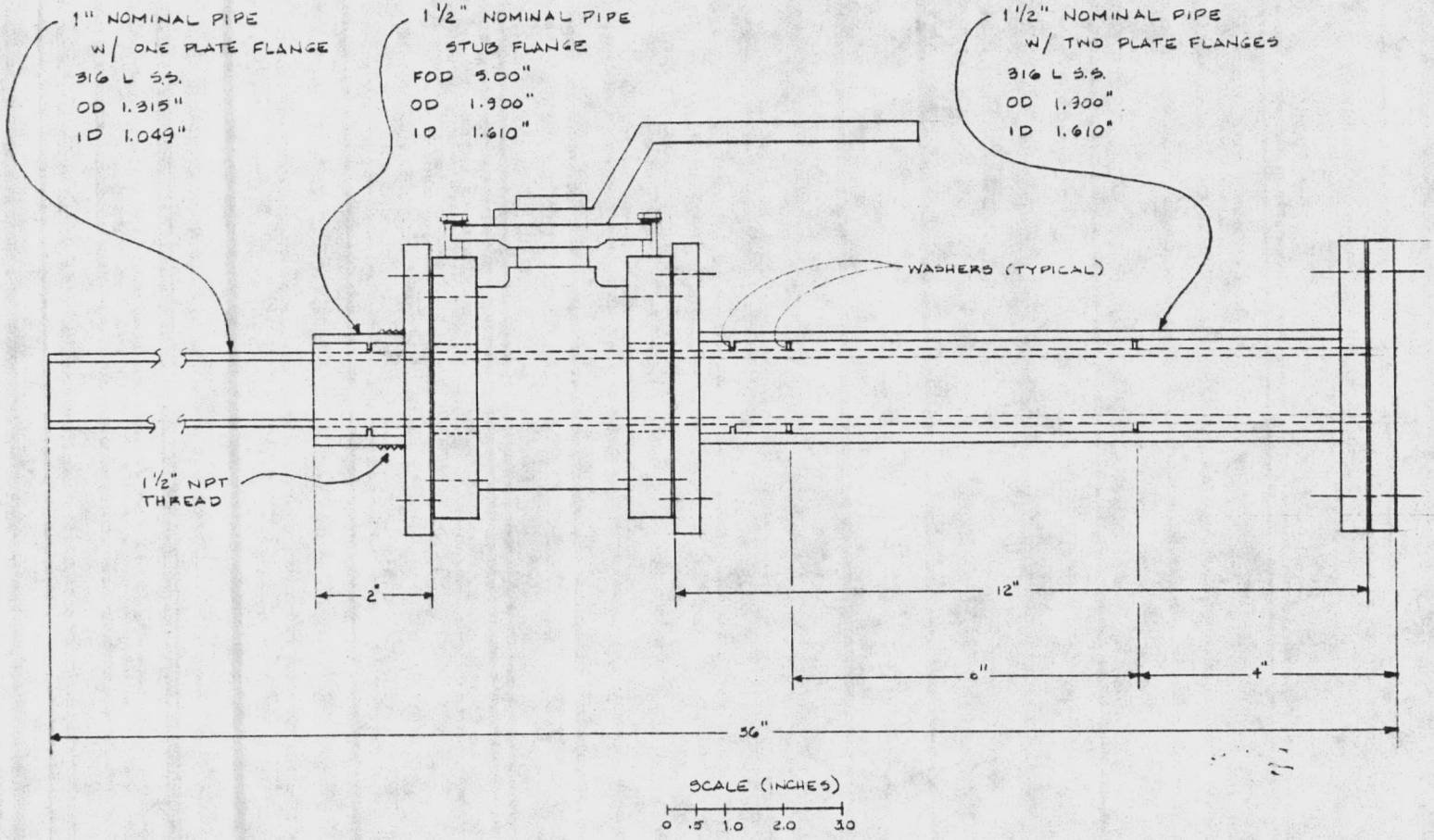
_____ Approved for use.

_____ Submitted for Government approval.

_X_ Approved for use subject to Government approval of specific deviation.

Authorized Reviewer _____ DATE _____

Signature CQC Rep. Phil Peese DATE 6-24-86


1" NOMINAL PIPE
W/ ONE PLATE FLANGE
316 L S.S.
OD 1.315"
ID 1.049"
1 1/2" NOMINAL PIPE
STUB FLANGE
FOD 5.00"
OD 1.900"
ID 1.610"
1 1/2" NOMINAL PIPE
W/ TWO PLATE FLANGES
316 L S.S.
OD 1.900"
ID 1.610"
WASHERS (TYPICAL)
1 1/2" NPT
THREAD
2"
12"
6"
4"
36"
SCALE (INCHES)
0 .5 1.0 2.0 3.0

Item #2

Item #3

GLASS-BALL VALVES

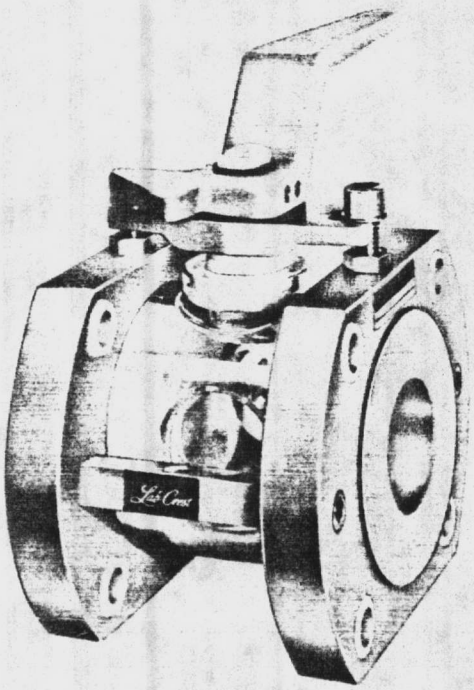
(Lab-Crest)

The rugged Lab-Crest Glass Ball Valve combines inert wetted parts of borosilicate glass, ceramic alumina, and fluorocarbons to assure resistance to practically every corrosive chemical. The flow direction can be repeatedly reversed without affecting the leak-proof operation of the valve. The transparent, highly polished glass ball and fusion-fabricated tempered-glass body permits ready visual inspection for color, clarity and direction of flow. These parts are resistant to media build-up, and will not contaminate the flowing fluid. All parts are highly resistant to thermal shock.

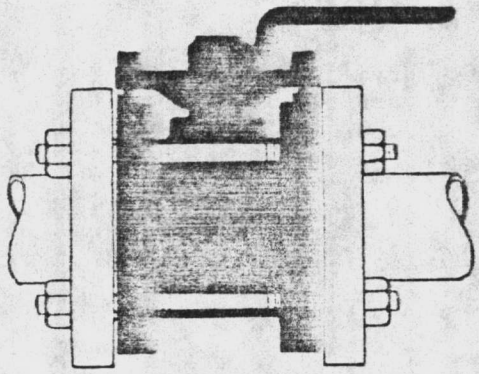
Considerably longer trouble-free service is achieved by using the Lab-Crest Glass Ball Valve than with many corrosion-resistant metal and plastic valves. Virtually indestructible under compressive load, these valves offer unusually long cycle life, thus solving the problem of replacing TFE components used in diaphragm valves, and assuring quick and positive shut-off characteristics not found in other types of glass or ceramic valves.

Design Features

Thermal shock resistance
Wetted parts inert to most chemicals
Non-contaminant glass surfaces
Glass body—serves as sight glass
Pneumatic and electronic operators available



Glass-ball valve with manual operator.



Glass-to-metal mounting (ANSI Flanges)

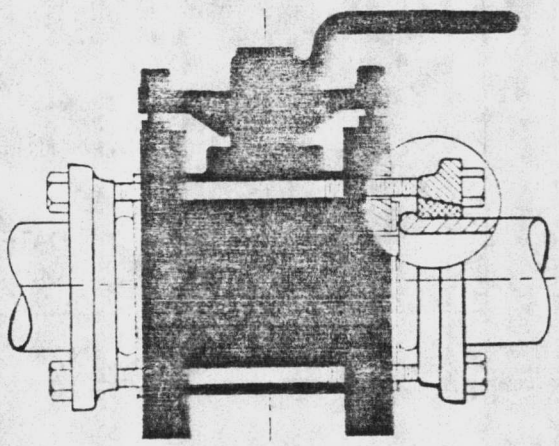
Engineering Specifications

Sizes and Pressure Ratings

Size	3/4"	1"	1-1/2"	2"	3"
Pressure Rating	150 psi		100 psi		50 psi

Materials:
Flanges—Aluminum, carbon steel or stainless steels; PVC coating optional, on carbon steel.
Body—Borosilicate glass; Fiberglass armor optionally available, for external shock resistance.
Other wetted parts—Ceramic aluminum and TFE.

Mounting Methods:
150-lb ANSI metal flanges (built-in TFE envelope makes gasket unnecessary).
Flanged glass piping.
Wall, column or support bracket.



Glass-to-glass mounting (cast-iron Flanges)

ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511-6287

APPROVED V Item #3 only
APPROVED AS NOTED _____
DISAPPROVED _____
SUBJECT TO THE REQUIREMENTS OF

CONTRACT NO. _____
APPROVAL OF A SUBMITTAL DOES NOT INCLUDE APPROVAL OF ANY DEVIATION FROM THE CONTRACT REQUIREMENTS UNLESS THE CONTRACTOR CALLS ATTENTION TO AND SUPPORTS THE DEVIATION—THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS, COORDINATION OF TRADES, ETC., AS REQUIRED.

REVIEWER CCS DATE 7/9/86
FOR OFFICER IN CHARGE OF CONSTRUCTION