

REV. #	QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
11	1	MCM# A144	#6-32 X 1/4 B.H.S.C.S (ALLOY)	ALLOY
10	1	MCM# B.....A281	#10-32 X 1/4 B.H.S.C.S (ALLOY)	ALLOY
9	1	T1INM011	HEAD-NECK GROUND STRAP	SEE DWG.
8	4	MCM# 91251A542	1/4-20 x 1" S.H.C.S (ALLOY)	ALLOY
7	2	CH # 516181YFP	5/16-18 x 1/2" F.H.S.C.S W/ NYLON PELLET	ALLOY
6	18	CH # 516181X75FP	5/16-18 x 3/4" F.H.S.C.S W/ NYLON PELLET	ALLOY
5	2	CH # 516181X062SSP	5/16-18 x 5/8" F.H.S.C.S W/ NYLON PELLET	ALLOY
4	2	CH # 516181X050FP	5/16-18 x 1/2" F.H.S.C.S W/ NYLON PELLET	ALLOY
3	8	CH # 1420X050SP	1/4-20 x 1/2" S.H.C.S W/ NYLON PELLET	ALLOY
2	4	CH # 1420X050FP	1/4-20 x 1/2" F.H.S.C.S W/ NYLON PELLET	ALLOY
1	1	T1INM330	INSTRUMENT THORACIC SPINE LOAD CELL	SEE DWG.
1	1	T1SPM609	THORACIC SPINE LOAD CELL ADAPTOR PLATE INSTRUMENTATION ASSEMBLY	SEE DWG.
1	1	T1SPM200	NECK PITCH CHANGE MECHANISM MECHANICAL ASSEMBLY	SEE DWG.
H	1	T1SPM800	PELVIS/LUMBAR MOUNTING BLOCK ASSEMBLY	SEE DWG.
L	G	1	LUMBAR FLEX JOINT MOLDED ASSEMBLY	SEE DWG.
F	1	T1SPM820	THORACIC SPINE LOAD CELL (NON-ACTIVE)	SEE DWG.
E	1	T1SPM501	LUMBAR PITCH CHANGE SPINE POSTURE ADJUSTMENT	SEE DWG.
K	D	1	LUMBAR SPINE PITCH CHANGE ASSEMBLY	SEE DWG.
C	1	T1SPM400	LOWER THORACIC SPINE ASSEMBLY	SEE DWG.
B	1	T1SPM310	UPPER THORACIC SPINE PLATE JOINT MOLDED ASSEMBLY	SEE DWG.
A	1	T1SPM101	UPPER THORACIC SPINE MECHANICAL ASSEMBLY-TRIP-PACK ACCELEROMETERS	SEE DWG.

NOTES:

1 THE LOWER THORACIC SPINE ASSEMBLY T1SPM400 IS ATTACHED TO THE TOP PLATE OF THE LUMBAR SPINE PITCH CHANGE T1SPM511 USING TWO 5/16-18 x 1/2" F.H.S.C.S. ON THE LEFT SIDE AND TWO 5/16-18 x 5/8" F.H.S.C.S. ON THE RIGHT SIDE.

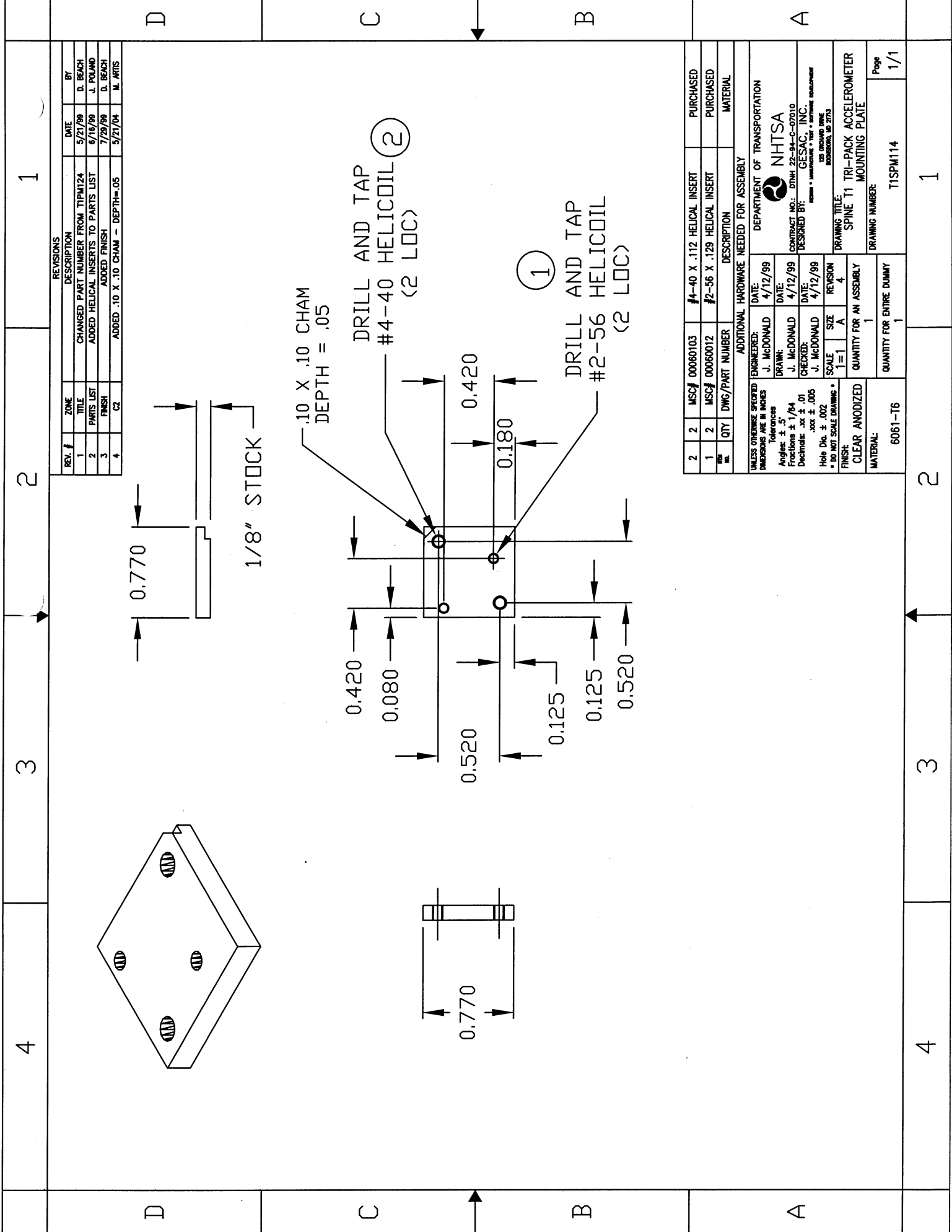
2 ATTACH SPINE PART T1SPM800 TO PELVIS (NOT SHOWN) USING 4 1/4-20 SHCS.

3 THE NECK - SPINE GROUND STRAP (T1INM011) ATTACHES THE SPINE AT THE UPPER THORACIC SPINE BACK PLATE (T1LAM123) TO THE NECK AT THE NECK MOUNTING PLATFORM (T1INM210), USING RESPECTIVELY A 10-32 AND 6-32 B.H.S.C.S.

4 THE LUMBAR SPINE GROUND STRAP (T1INM014) ATTACHES T1SPM610 TO THE LOWER ABDOMEN REAR ATTACHMENT PLATE (T1LAM123), USING RESPECTIVELY A #6-32 AND 1/4-20 B.H.S.C.S.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ENGINEERED: D. BEACH	DATE: 6/10/97	DEPARTMENT OF TRANSPORTATION	
Tolerances		DRAWN: B. SECK	DATE: 9/01/04	NHTSA	
Angles: ± .5		CHECKED: J. McDONALD	DATE: 9/1/04	CONTRACT NO.: DTRR 22-94-C-07010	
Fractions: ± 1/64		SCALE: 1=1	REVISION: RB	DESIGNED BY: GBSAC, INC.	
Decimals: .xx ± .01		FINISH: SEE DWGS	QUANTITY FOR AN ASSEMBLY: 1	DRAWING TITLE: SPINE MECHANICAL ASSEMBLY	
Surface Finish: .125		MATERIAL: SEE DWGS	QUANTITY FOR ENTIRE DUMMY: 1	DRAWING NUMBER: T1SPM000	
* DO NOT SCALE DRAWING *				Page 1/1	

	8	7	6	5	4	3	2	1																												
D	<table border="1"> <thead> <tr> <th colspan="2">REVISIONS</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>GENERAL</td> <td>9/18/02</td> <td>M. ARTIS</td> </tr> <tr> <td>6</td> <td>FIXED ORIENTATION OF TRI-PACK MOUNT PLATE</td> <td>9/21/04</td> <td>M. ARTIS</td> </tr> <tr> <td>8</td> <td>UPDATED THE ASSEMBLY TO NT</td> <td>9/21/04</td> <td>M. ARTIS</td> </tr> </tbody> </table>								REVISIONS		DATE	BY	5	GENERAL	9/18/02	M. ARTIS	6	FIXED ORIENTATION OF TRI-PACK MOUNT PLATE	9/21/04	M. ARTIS	8	UPDATED THE ASSEMBLY TO NT	9/21/04	M. ARTIS												
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	<p>RIGHT-SIDE OBLIQUE VIEW</p>																																			
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A	1	UTS - WELD BOX ASSEMBLY	SEE DWG																																	
M			MATERIAL																																	
	<p>ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY</p> <p>UNLESS OTHERWISE SPECIFIED: ENGINEERED: M. ARTIS DATE: 5/21/04 DEPARTMENT OF TRANSPORTATION  TOLERANCES ARE IN INCHES: DRAWN: M. ARTIS DATE: 5/21/04  ANGLE: 2.5° CHECKED: M. ARTIS DATE: 5/21/04  POSITION: ± .1/64 SURFACE FINISH: 125  SCALE: 1=1 SIZE: B REVISION: 6  * DO NOT SCALE DIMENSIONS *  FINISH: -</p> <p>QUANTITY FOR AN ASSEMBLY: 1  QUANTITY FOR ENTIRE DUMMY: 1</p> <p>MATERIAL: -</p> <p>DRAWING TITLE: UPPER THORACIC SPINE  MECHANICAL ASSEMBLY - TRI-PACK ACCELEROMETER  DRAWING NUMBER: T1SPM101  Page: 1/1</p>																																			
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	<p>RIGHT-SIDE OBLIQUE VIEW</p>																																			
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REV. #	ZONE	DESCRIPTION	DATE	BY
1		CHANGED PART NUMBER FROM T1SPM124	5/21/99	D. BEACH
2		ADDED HELICAL INSERTS TO PARTS LIST	6/16/99	J. POLAND
3		ADDED FINISH	7/29/99	D. BEACH
4		ADDED .10 X .10 CHAM - DEPTH=.05	5/21/04	M. ARTIS

REV. #	QTY	DWG/PART NUMBER	DESCRIPTION	PURCHASED	MATERIAL
2	2	MSC# 00060103	#4-40 X .112 HELICAL INSERT	PURCHASED	
1	2	MSC# 00060012	#2-56 X .129 HELICAL INSERT	PURCHASED	

UNLESS OTHERWISE SPECIFIED:		DATE:	DEPARTMENT OF TRANSPORTATION
ENGINEERED:	J. McDONALD	4/12/99	 NHTSA CONTRACT NO.: DTNH 22-94-C-07010 DESIGNED BY: GESAC, INC. <small>CONTRACTOR • INVESTMENT • TEST • SERVICE SOLUTION</small> 120 ROCKWOOD DRIVE ROCKFORD, IL 61103
DRAWN:	J. McDONALD	4/12/99	
CHECKED:	J. McDONALD	4/12/99	
Hole Dia. ± .002			
SCALE:	1=1	SIZE:	A
FINISH:	CLEAR ANODIZED	REVISION:	4
CLEAR ANODIZED		QUANTITY FOR AN ASSEMBLY:	1
MATERIAL:		QUANTITY FOR ENTIRE DUMMY:	1
6061-T6		DRAWING NUMBER:	T1SPM114

1

2

3

4

D

C

B

A

1

2

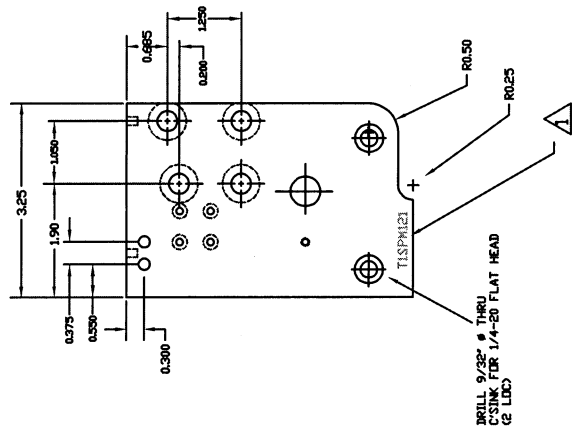
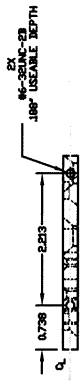
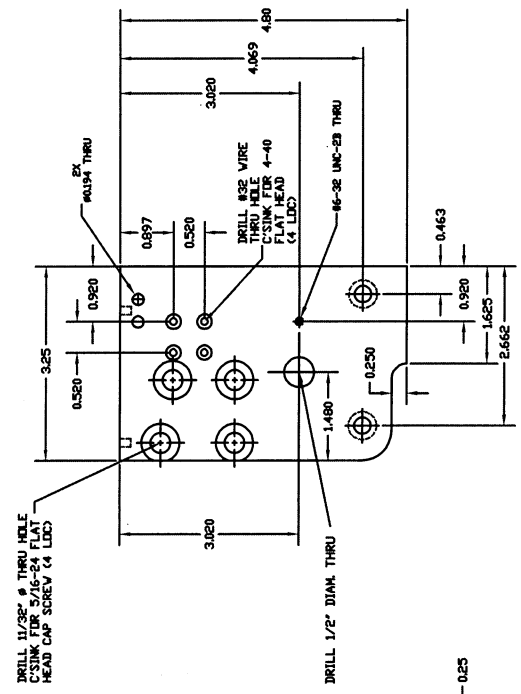
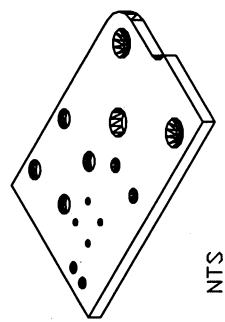
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Page 1/1

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
J	I	H	G	F	E	D	C	B	A							

REVISION	
1	ADD 4 Ø.188 THRU HOLES WITH C-SINK FOR TR-AX ADJ.
2	SEPARATE DWGS FOR LEFT AND RIGHT
3	ADDED 1/2" HOLE FOR NPCM ADJUSTMENT
4	ADDED #2-32 TAPPED HOLES
5	ELIMINATED #10 AND 1/4-20 TAPPED HOLES
6	ADDED TWO DIA. 184 THRU HOLES
7	ADDED #8-32 TAPPED HOLE



NOTE:

△ ENGRAVE DWG. # T1SPM121 AT THE LOCATION SPECIFIED ABOVE.

QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1	1018 CRS	UPPER THORACIC SPINE SIDE PLATE - RIGHT SIDE	1018 CRS
1	T1SPM121	UPPER THORACIC SPINE SIDE PLATE - RIGHT SIDE	1018 CRS

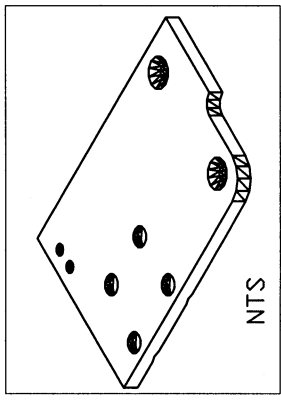
ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
ENGINEERED:	Y.M. ZHAO
DATE:	3/5/98
DESIGNED BY:	M. ARTIS
CHECKED:	M. ARTIS
DATE:	12/9/03
SCALE:	1=1
SIZE:	D
REVISION:	5
QUANTITY FOR AN ASSEMBLY:	1
QUANTITY FOR ENTIRE DUMMY:	1
DRAWING NUMBER:	T1SPM121
Page:	1/1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES:	ANGLES ± .5°
FRACTIONS ± 1/64	DECIMALS ± .01
MAX. DIM. ± .002	MIN. DIM. ± .005
DO NOT SCALE DRAWING	

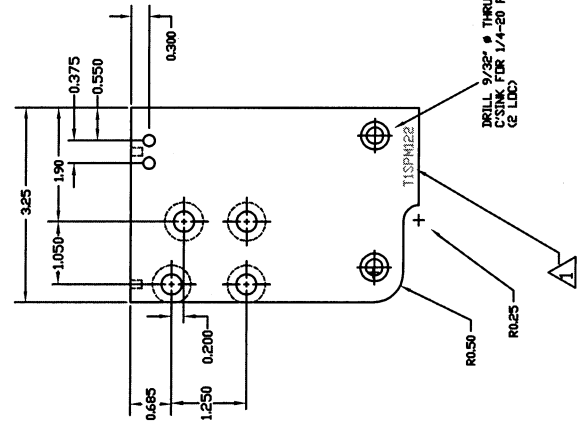
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CONTRACT NO.:	77781 28-94-C-0700
DESIGNED BY:	GESAC, INC.
DATE:	12/9/03
SCALE:	1=1
SIZE:	D
REVISION:	5
QUANTITY FOR AN ASSEMBLY:	1
QUANTITY FOR ENTIRE DUMMY:	1
DRAWING NUMBER:	T1SPM121
Page:	1/1

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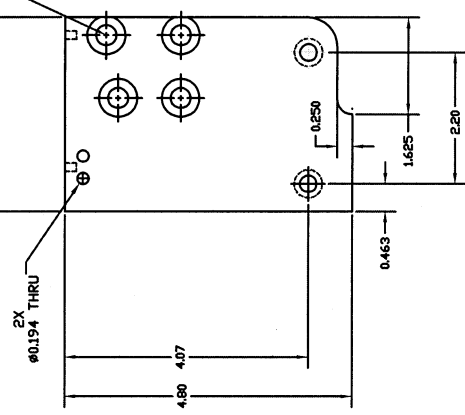
REV. #	ZONE	DESCRIPTION	DATE	BY
1		SEPARATE DWGS FOR LEFT AND RIGHT SIDE CHANGED HOLE DIMS	6/5/98	D. BRACK
2		ADDED #6-32 TAPPED HOLES	12/9/08	M. ARTIS
		ELIMINATED #10 AND 1/4-20 TAPPED HOLES	12/9/08	M. ARTIS
		ADDED TWO DIA. .194 THRU HOLES	12/9/08	M. ARTIS



2X #6-32UNC-2B  
.188" USEABLE DEPTH



DRILL 11/32" THRU HOLE  
C-SINK FOR 5/16-24 FLAT  
HEAD CAP SCREW (4 LDC)



DRILL 9/32" THRU  
C-SINK FOR 1/4-20 FLAT HEAD  
(2 LDC)

NOTE:

△ ENGRAVE DWG. # T1SPM122 AT THE LOCATION SPECIFIED ABOVE.

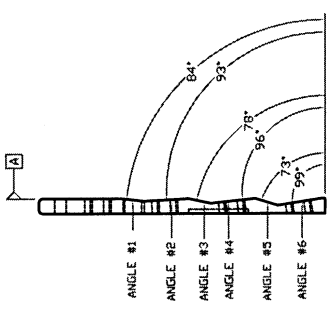
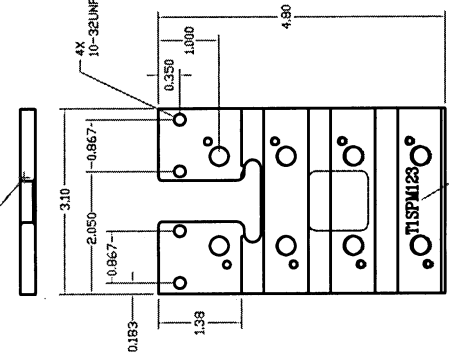
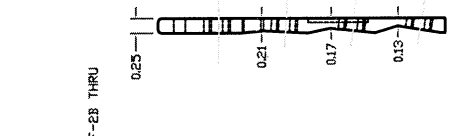
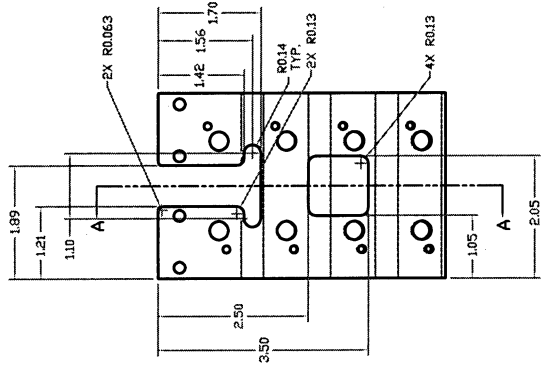
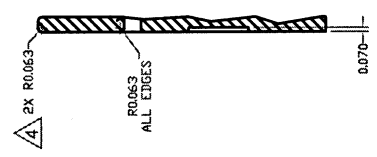
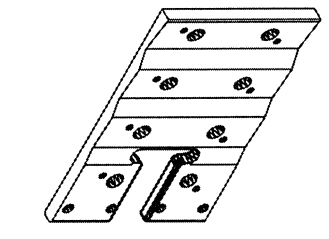
QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1	T1SPM122	UPPER THORACIC SPINE SIDE PLATE - LEFT SIDE	1018 CRS
1	T1SPM122	UPPER THORACIC SPINE SIDE PLATE - RIGHT SIDE	1018 CRS
1	T1SPM122	UPPER THORACIC SPINE SIDE PLATE - LEFT SIDE	1018 CRS
1	T1SPM122	UPPER THORACIC SPINE SIDE PLATE - RIGHT SIDE	1018 CRS

ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY		DEPARTMENT OF TRANSPORTATION	
ENGINEERED:	Y.M. ZHAO	DATE:	3/5/98
DRAWN:	Y.M. ZHAO	DATE:	3/5/98
CHECKED:	M. ARTIS	DATE:	12/9/08
SCALE:	1=1	SIZE:	D
REVISION:	2	QUANTITY FOR AN ASSEMBLY:	1
		QUANTITY FOR ENTIRE DUMMY:	1
		DRAWING NUMBER:	T1SPM122
		Page:	1/1

NHTSA  
DEPARTMENT OF TRANSPORTATION  
CONTRACT NO.: DTMB 98-04-C-07010  
DESIGNED BY: GESAC, INC.  
DRAWN BY: Y.M. ZHAO  
CHECKED BY: M. ARTIS  
DATE: 12/9/08  
SCALE: 1=1  
SIZE: D  
REVISION: 2  
DRAWING TITLE: UPPER THORACIC SPINE SIDE PLATE - LEFT SIDE  
DRAWING NUMBER: T1SPM122  
Page: 1/1

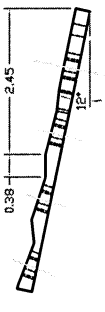
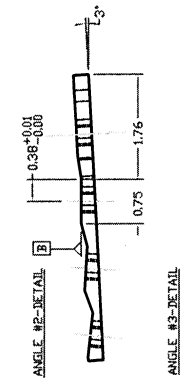
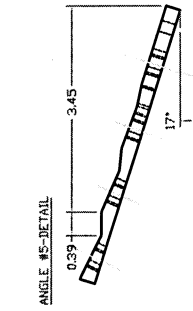
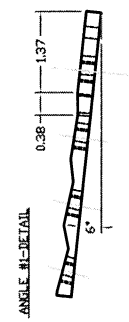
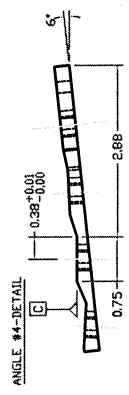
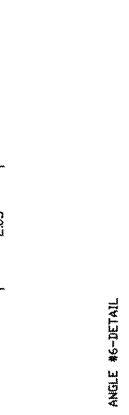
REV. #	ZONE	DESCRIPTION	DATE	BY
1		CHANGED HOLES FOR THE MATERIALS TO 8V/PM-24 ELIMINATED TOP AND HOLES	6/6/97	D. REARCE
2		NOTES 8 DELETED REFERENCE TO DUMMY SERIAL NUMBER	5/20/98	D. REARCE
3	GLOBAL	ADJUSTED RELATIVE SIZE OF LABELING	6/10/98	J. POLAND
4	ELI3	REPOSITIONED #10-32 HOLE	1/24/01	M. ARTIS
5	GLOBAL	ADDED SLOT, DIA. .124 HOLES, AND REDRAWN	10/16/03	M. ARTIS
6	GB	ADDED TILT SENSOR RELIEF	2/10/04	J. POLAND
7	GLOBAL	ADDED .063 R TO EDGES OF SLOT AND SECTION A-A	9/10/04	J. POLAND
8	GLOBAL	REMOVED TEFLON COATING SPEC.	9/19/04	M. ARTIS

SECTION A-A

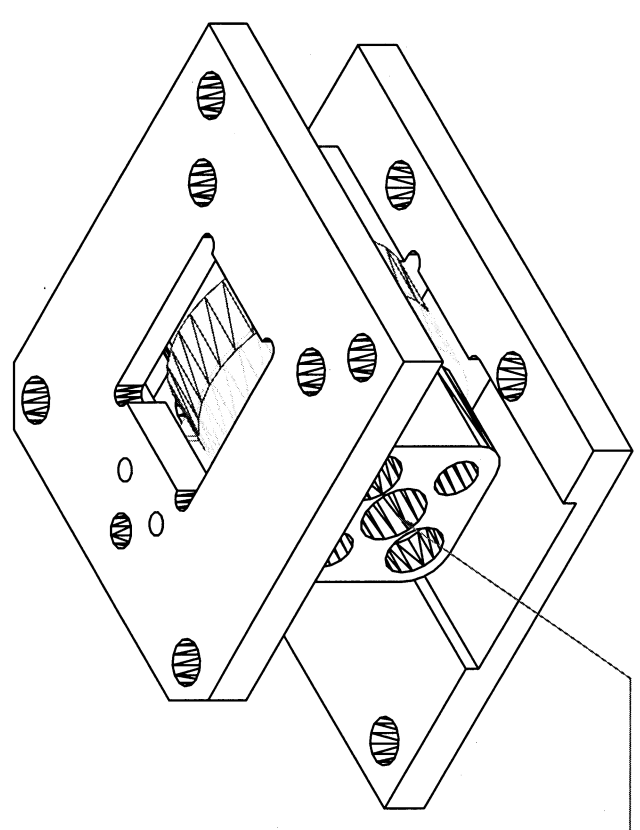


NOTES

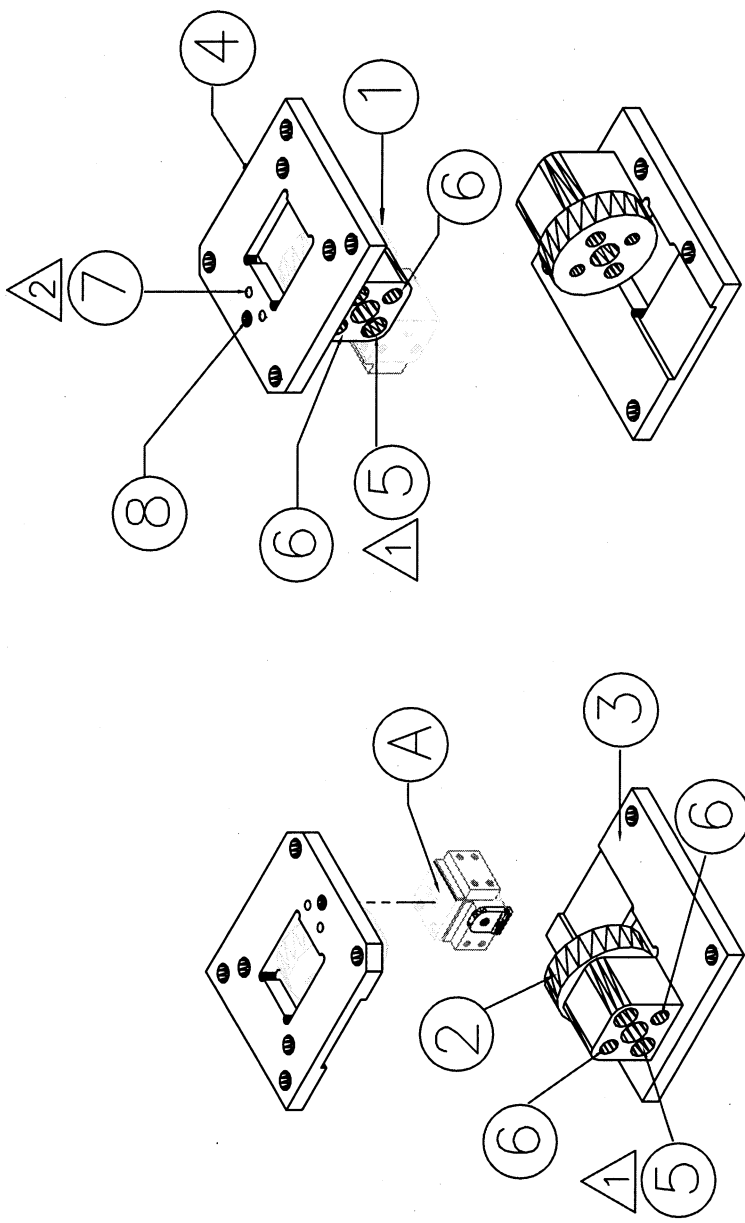
- 1 ENGRAVE DWG # T1SPM123 ON THE SPECIFIED AREA.
- 2 THE HOLE PATTERN ON EACH STEP IS IDENTICAL.
- 3 USE THE APPROPRIATE POSITION TOLERANCE DATUM WHEN DRILLING/REAMING THE  $\phi 0.1240$  ON EACH STEP.
- 4 EDGES USED AS REFERENCE, MACHINE RADII AS THE LAST OPERATION.



QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES Tolerances Angles: $\pm .5^\circ$ Fractions: $\pm 1/64$ Decimals: $\pm .005$ Surface Finish: 125 UNLESS OTHERWISE SPECIFIED TO NOT SCALE DRAWING			
ENGINEERED BY: Y.M. ZHOU		DATE: 3/4/96	DEPARTMENT OF TRANSPORTATION
DRAWN BY: M. ARTIS		DATE: 10/16/03	NHTSA
CHECKED BY: M. ARTIS		DATE: 10/16/03	CONTRACT NO.: DTRC 98-04-C-0010
SCALE: 1=1		REVISION: 8	DESIGNED BY: GISSAC, INC.
QUANTITY FOR AN ASSEMBLY: 1		DRAWING TITLE: UPPER THORACIC SPINE	
QUANTITY FOR ENTIRE DUMMY: 1		DRAWING NUMBER: T1SPM123	
MATERIAL: 1018 CRS		Page: 1/1	

8	7	6	5	4	3	2	1																																																				
<table border="1"> <tr> <td>REV. #</td> <td>ZONE</td> <td>DATE</td> <td>BY</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>								REV. #	ZONE	DATE	BY																																																
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			Page 1/2																																																								
<p style="text-align: center;">9</p> <p style="text-align: center;">FRONT OBLIQUE VIEW</p> 																																																											
8	7	6	5	4	3	2	1																																																				

REV. #	ZONE	DESCRIPTION	DATE	BY
9	GLOBAL	UPDATED WITH T1SPM216 R12	4/14/05	C. SPUR
10	GLOBAL	UPDATED TILT SENSOR & T1SPM216 TO REV13	5/19/04	M. ARTIS



FRONT OBLIQUE VIEW

REAR OBLIQUE VIEW

NOTES:

- ▲ INSTALL THE PULL-OUT DOWEL PIN SO THAT THE END THAT IS NOT TAPPED PROTRUDES .25 +/- .01 INCHES INTO ITS RESPECTED MATING PART, STAR PATTERN 1 OR STAR PATTERN 2.
- ▲ PRESS THE DOWEL PIN IN ITS MATING PART UNTIL IT IS FLUSH WITH THE TOP SURFACE OF THE MATING PART (AS SHOWN).

QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
9	MCM # 91252A633	3/8-24 X 1 1/4 SSBS (ALLOY)	PURCHASE
1	MCM # 91252A106	#4-40 X .25 SSBS (ALLOY)	PURCHASE
2	MCM # 97586A435	1/8 DIA X .375 L DOWEL PIN (SS)	PURCHASE
4	MCM # 97586A110	PULL-OUT DOWEL PIN 1/4" X 3/4" (ALLOY)	PURCHASE
4	T1SPM220	STAR PATTERN BOLT	ALLOY STEEL
4	T1SPM210	TOP PLATE	1018 CRS
3	T1SPM213	BASE PLATE	1018 CRS
2	T1SPM211	STAR PATTERN 2	440C SS
1	T1SPM210	STAR PATTERN 1	440C SS
1	T1SPM501-2	TILT SENSOR ASSEMBLY - NECK	-
1	QTY	DESCRIPTION	MATERIAL

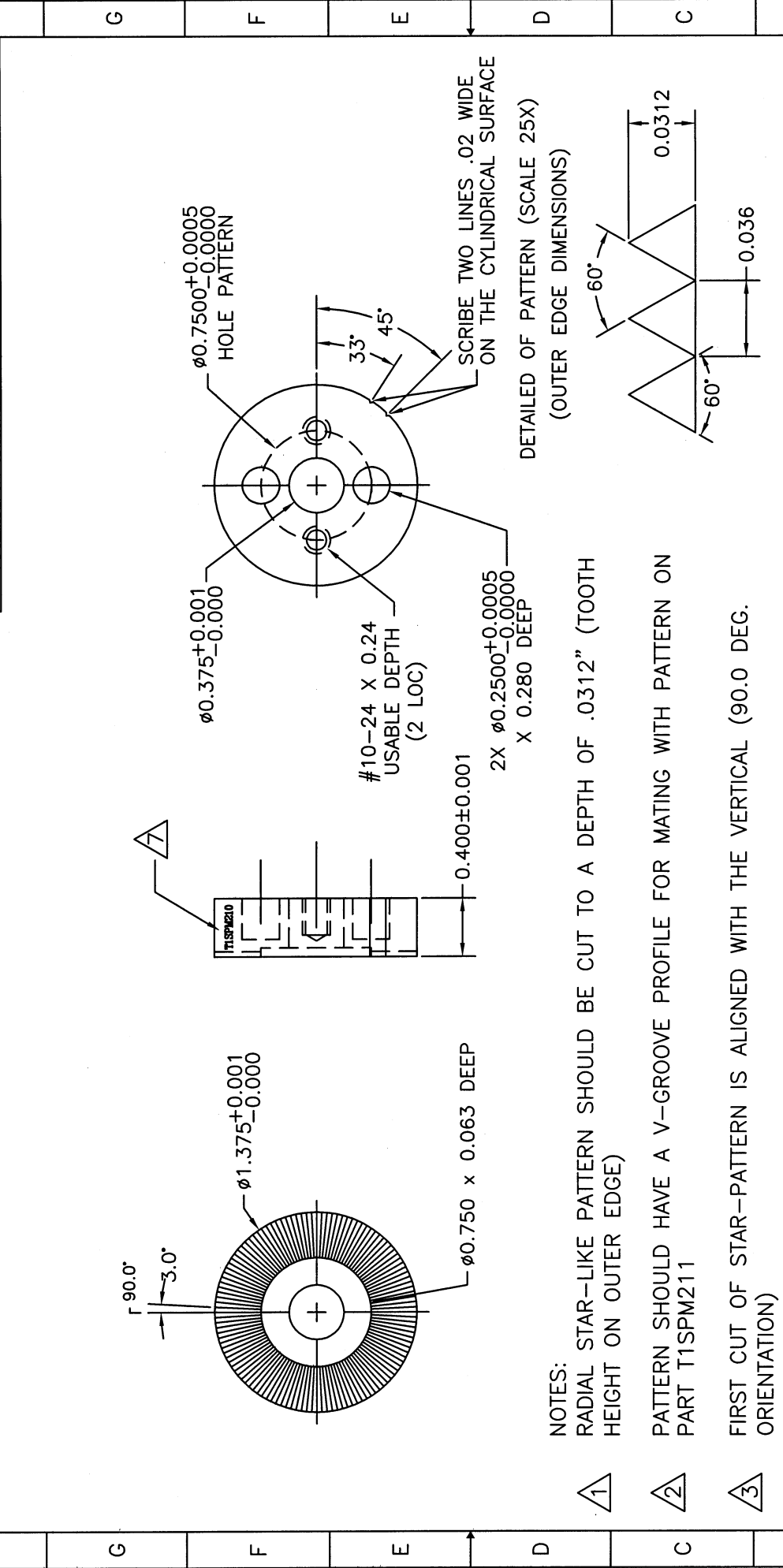
ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
ENGINEERED:	DATE: 9/26/96
Y.M. ZELAO	
DRAWN:	DATE: 9/19/04
M. ARTIS	
CHECKED:	DATE: 5/19/04
M. ARTIS	
SCALE:	REVISION
1=1	D 10
FINISH:	
QUANTITY FOR AN ASSEMBLY	
1	
QUANTITY FOR ENTIRE DUMMY	
1	

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
Tolerances  
Angles: ± .5°  
Fractions: ± 1/64"  
Decimals: .001"  
Hole Dia: ± .002"  
\*. TO NOT SCALE DRAWING \*FINISH:

DEPARTMENT OF TRANSPORTATION  
NHSTA  
CONTRACT NO.: DTMB 95-24-C-0010  
DESIGNED BY: GESAC, INC.  
155 DEWATER BLVD  
INDIANAPOLIS, IN 46213  
DRAWING TITLE: NECK PITCH CHANGE MECHANISM MECHANICAL ASSEMBLY  
DRAWING NUMBER: T1SPM200-2  
Page 2/2



REV. #	ZONE	DESCRIPTION	DATE	BY
1		REWORK #10-24 TO BE 0.250 DIA 0.28 DEEP	10/5/96	Y.M. ZHAO
2	B-2	CHANGED TOOTH DEPTH NOTE	4/24/99	D. BRACH
3	GLOBAL	MOVED NOTES, CHANGED PLS TO LOC	6/16/99	J. POLAND
4	B, E	ADDED .02 SCRIBE LINES	10/5/04	J. McDONALD

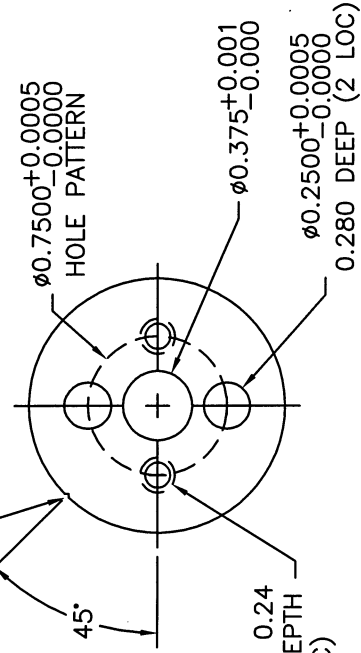
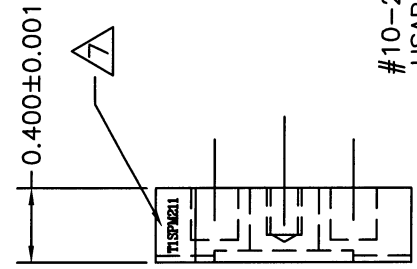
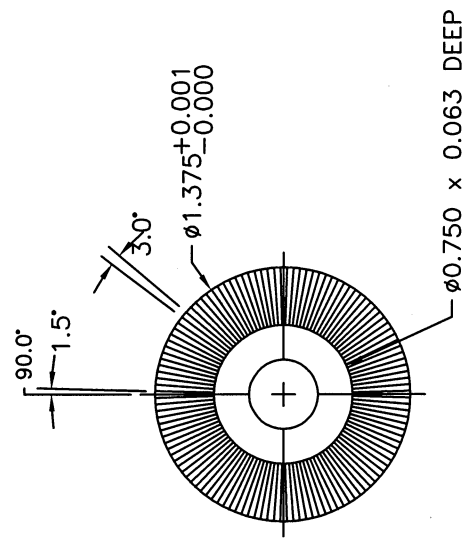


QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
		ENGINEERED: Y.M. ZHAO DATE: 9/25/96	DEPARTMENT OF TRANSPORTATION
		DRAWN: Y.M. ZHAO DATE: 9/25/96	NHTSA
		CHECKED: Y.M. ZHAO DATE: 9/25/96	CONTRACT NO.: DTRR 22-94-C-07010
		SCALE: 2=1 C	DESIGNED BY: GTSAC, INC.
		REVISION: 4	125 BRIDGE AVE BOZEMAN, ID 83725
		QUANTITY FOR AN ASSEMBLY: 1	DRAWING TITLE: NECK PITCH CHANGE MECHANISM STAR PATTERN 1
		QUANTITY FOR ENTIRE DUMMY: 1	DRAWING NUMBER: T1SPM210
			MATERIAL: 440 C SS

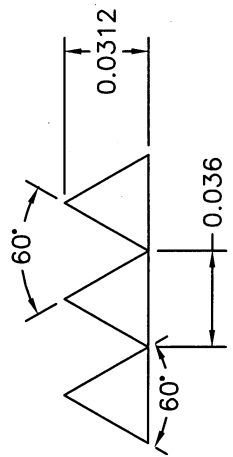
- NOTES:
- RADIAL STAR-LIKE PATTERN SHOULD BE CUT TO A DEPTH OF .0312" (TOOTH HEIGHT ON OUTER EDGE)
  - PATTERN SHOULD HAVE A V-GROOVE PROFILE FOR MATING WITH PATTERN ON PART T1SPM211
  - FIRST CUT OF STAR-PATTERN IS ALIGNED WITH THE VERTICAL (90.0 DEG. ORIENTATION)
  - STAR PATTERN IS CUT AT 3.0 DEGREE INTERVALS
  - A TOTAL OF 120 RADIAL LINES ARE REQUIRED FOR THE STAR-PATTERN
  - PART SHOULD BE HEAT TREATED AND TEMPERED AT 600 DEG. F FOR 57C ROCKWELL HARDNESS
  - ENGRAVE DWG. # T1SPM210 AT THE LOCATION SPECIFIED ABOVE

10	9	8	7	6	5	4	3	2	1
REVISION									
REV. #	ZONE	DESCRIPTION		DATE	BY				
1		REWORK #10-24 HOLES TO 0.25 DIA. X 0.28 DEEP (2 PLS)		10/3/96	Y.M. ZHAO				
2	B-2	CHANGED TOOTH DEPTH NOTE		4/21/99	D. BRACH				
3	S, E	ADDED .02 SCRIBE LINE		10/9/04	J. MCGONNOLD				

SCRIBE A LINE .02 WIDE  
ON THE CYLINDRICAL SURFACE

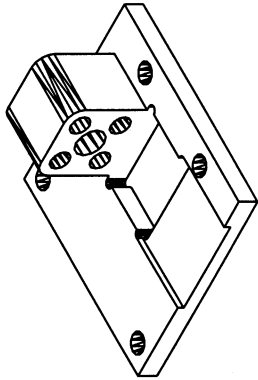
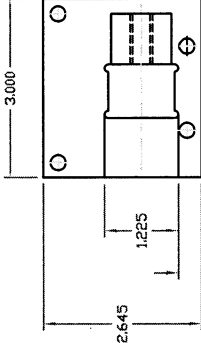
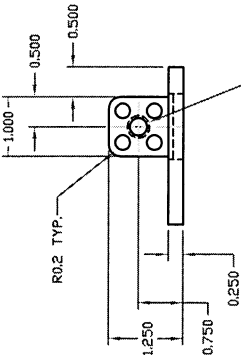
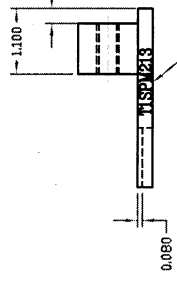
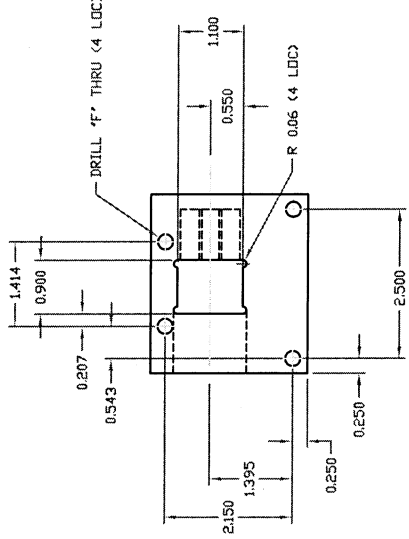
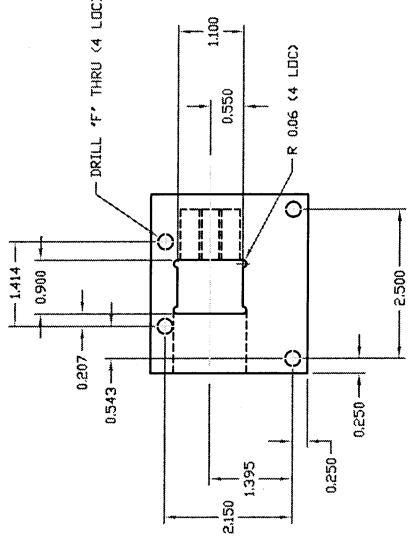


DETAILED OF PATTERN (SCALE 25X)  
(OUTER EDGE DIMENSIONS)

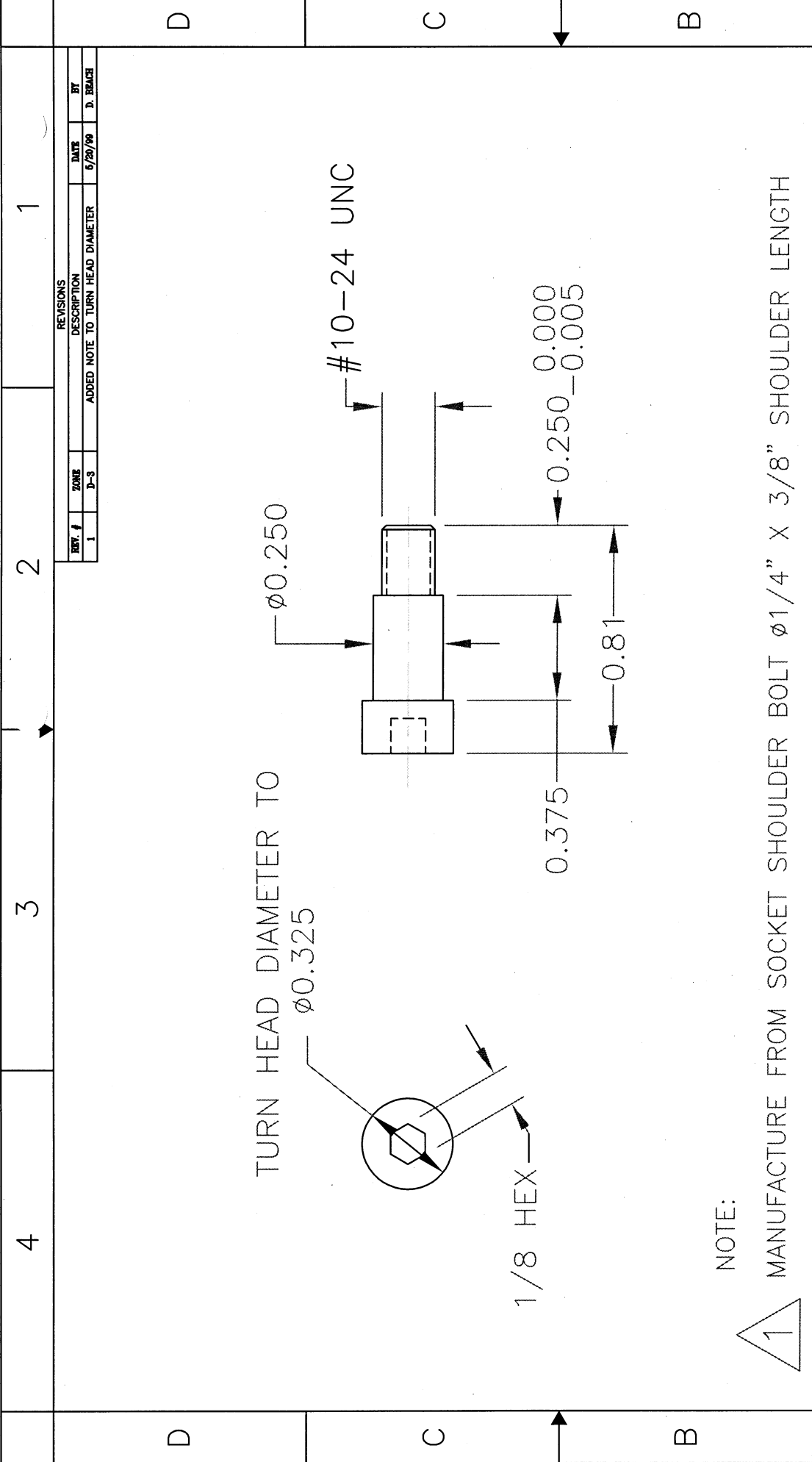


- NOTES:
- 1 RADIAL STAR-LIKE PATTERN SHOULD BE CUT TO A DEPTH OF .0312" (TOOTH HEIGHT ON OUTER EDGE)
  - 2 PATTERN SHOULD HAVE A V-GROOVE PROFILE FOR MATING WITH PATTERN ON PART T1SPM210
  - 3 FIRST CUT OF STAR-PATTERN IS OFFSET 1.5 DEG FROM THE VERTICAL (90.0 DEG. ORIENTATION)
  - 4 STAR PATTERN IS CUT AT 3.0 DEGREE INTERVALS
  - 5 A TOTAL OF 120 RADIAL LINES ARE REQUIRED FOR THE STAR-PATTERN
  - 6 PART SHOULD BE HEAT TREATED AND TEMPERED AT 600 DEG. F FOR 57C ROCKWELL HARDNESS
  - 7 ENGRAVE DWG. # T1SPM211 AT THE LOCATION SPECIFIED ABOVE.

QTY		DWG/PART NUMBER	DESCRIPTION	MATERIAL					
UNLESS OTHERWISE SPECIFIED		ENGINEERED:	ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY						
DIMENSIONS ARE IN INCHES		DATE:	DEPARTMENT OF TRANSPORTATION						
Tolerances		Y.M. ZHAO							
Angles: ± .5°		DATE:							
Fractions: ± 1/64		Y.M. ZHAO							
Decimals: .xx ± .001		DATE:							
Hole Dia. ± .002		Y.M. ZHAO							
FINISH:		CHECKED:							
		Y.M. ZHAO							
		DATE:							
		9/25/96							
		SCALE:							
		2=1							
		SIZE:							
		C							
		REVISION:							
		3							
		QUANTITY FOR AN ASSEMBLY:							
		1							
		QUANTITY FOR ENTIRE DUMMY:							
		1							
MATERIAL:									
440 C SS									
10	9	8	7	6	5	4	3	2	1
DRAWING TITLE: NECK PITCH CHANGE MECHANISM STAR PATTERN 2									
DRAWING NUMBER: T1SPM211									
CONTRACT NO.: DTMB 28-94-C-07010									
DESIGNED BY: GESAC, INC.									
122 ORCHARD DRIVE BOZEMAN, MT 59715									
NHTSA DEPARTMENT OF TRANSPORTATION									
Page 1/1									

J	I	H	G	F	E	D	C	B	A	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																																																																																																																																																																			
																																																																																																																																																																																																												
																																																																																																																																																																																																												
																																																																																																																																																																																																												
																																																																																																																																																																																																												
																																																																																																																																																																																																												
																																																																																																																																																																																																												
<p>0.250<sup>+0.001</sup><sub>-0.000</sub> THRU HOLES DRILLED  A DN A <math>\phi</math> 0.7500<math>\pm</math>0.0005 BOLT CIRCLE  C'BORE <math>\phi</math>0.330 X 0.470" DEPTH  (2 LOC)</p>																																																																																																																																																																																																												
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<p>ENGRAVE DWG. # T1SPM213 AT THE LOCATION SPECIFIED ABOVE</p>																																																																																																																																																																																																												
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<p> <math>\phi 0.125</math> THRU        C-BORE <math>\phi 0.188 \times 0.125</math> DEPTH        2X <math>\phi 0.125 \pm 0.001</math> THRU  <math>\phi 0.25</math> THRU (2 LOC)  <math>\phi 1/4-20</math> UNC THRU (4 LOC)        2.432 <math>\pm 0.002</math>        2X 2.182 <math>\pm 0.002</math>        0.200 <math>\pm 0.001</math>        1.187 <math>\pm 0.001</math>        0.200 <math>\pm 0.001</math>        0.280        2.220        2.250        0.55        1.40        0.63        0.250        0.280  <math>\phi 0.250 \pm 0.001</math> THRU (2 PLACES)        C-BORE <math>\phi 0.330 \times 0.20</math> DEPTH  <math>\phi 0.2500 \pm 0.0005</math> THRU (2 LOC)  <math>\phi 0.7500 \pm 0.0005</math> HOLE PATTERN        45.0°        1.250        1.375        0.750        0.060        0.250        0.600        2.75        R 0.20 TYP.  <math>\phi 0.375 \pm 0.001</math> THRU        0.500        1.000        R0.06 (4 LOC)        0.20 X 45 DEG. CHAMFER (2 LOC)        0.900        0.763        1.225        1.100        R0.06 (4 LOC)     </p>																																																																																																		
<p>NOTE: <math>\triangle</math> ENGRAVE DWG. # T1SPM216 AT THE LOCATION SPECIFIED ABOVE.</p>																																																																																																		
<table border="1"> <tr> <th>QTY</th><th>DWG/PAIR NUMBER</th><th>DESCRIPTION</th><th>MATERIAL</th> </tr> <tr> <td>1</td><td></td><td>ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY</td><td></td> </tr> <tr> <td colspan="4">UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</td> </tr> <tr> <td>ENGINEER:</td><td>DATE:</td><td colspan="2">DEPARTMENT OF TRANSPORTATION</td> </tr> <tr> <td>Y.M. ZEMO</td><td>7/9/96</td><td colspan="2">NHTSA</td> </tr> <tr> <td>DRAWN:</td><td>DATE:</td><td colspan="2">CONTRACT NO.: DTIC-95-001</td> </tr> <tr> <td>D. BRACHI</td><td>8/26/97</td><td colspan="2">DESIGNED BY: GESSAC, INC.</td> </tr> <tr> <td>CHECKED:</td><td>DATE:</td><td colspan="2">DRAWING TITLE:</td> </tr> <tr> <td>D. BRACHI</td><td>8/26/97</td><td colspan="2">NECK PITCH CHANGE MECHANISM</td> </tr> <tr> <td>SCALE:</td><td>SIZE:</td><td colspan="2">DRAWING NUMBER:</td> </tr> <tr> <td>1=1</td><td>D</td><td colspan="2">13</td> </tr> <tr> <td colspan="4">QUANTITY FOR AN ASSEMBLY</td> </tr> <tr> <td colspan="4">1</td> </tr> <tr> <td colspan="4">QUANTITY FOR ENTIRE DUMMY</td> </tr> <tr> <td colspan="4">1</td> </tr> <tr> <td colspan="4">MATERIAL:</td> </tr> <tr> <td colspan="4">1018 CRS</td> </tr> <tr> <td colspan="4">DRAWING NUMBER:</td> </tr> <tr> <td colspan="4">T1SPM216</td> </tr> <tr> <td colspan="4">Page</td> </tr> <tr> <td colspan="4">1/1</td> </tr> </table>															QTY	DWG/PAIR NUMBER	DESCRIPTION	MATERIAL	1		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES				ENGINEER:	DATE:	DEPARTMENT OF TRANSPORTATION		Y.M. ZEMO	7/9/96	NHTSA		DRAWN:	DATE:	CONTRACT NO.: DTIC-95-001		D. BRACHI	8/26/97	DESIGNED BY: GESSAC, INC.		CHECKED:	DATE:	DRAWING TITLE:		D. BRACHI	8/26/97	NECK PITCH CHANGE MECHANISM		SCALE:	SIZE:	DRAWING NUMBER:		1=1	D	13		QUANTITY FOR AN ASSEMBLY				1				QUANTITY FOR ENTIRE DUMMY				1				MATERIAL:				1018 CRS				DRAWING NUMBER:				T1SPM216				Page				1/1			
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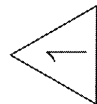
REV. #		ZONE		DESCRIPTION		DATE		BY	
1		D-3		ADDED NOTE TO TURN HEAD DIAMETER		5/20/99		D. BRACK	

MCM #		QTY		DWC/PART NUMBER		1/4" x 3/8" SHOULDER BOLT (SS)		PURCHASED	
-		1		90289A635				MATERIAL	

UNLESS OTHERWISE SPECIFIED		ENGINEERED:		DATE:		DEPARTMENT OF TRANSPORTATION	
DIMENSIONS ARE IN INCHES		Y.M. ZHAO		9/28/96		NHTSA	
ANGLES ARE IN DEGREES		DRAWN:		DATE:		CONTRACT NO.: DTMB 92-94-C-07010	
TOLERANCES UNLESS OTHERWISE SPECIFIED:		Y.M. ZHAO		9/28/96		DESIGNED BY: GESAC, INC.	
FRACTIONS ± 1/64		CHECKED:		DATE:		155 BRACKEN RD	
DECIMALS .005		J. FULLERTON		2/13/97		ROCKFORD, IL 61173	
HOLE DIA. ± .002		SCALE		SIZE		DRAWING TITLE:	
± .010 NOT SCALE DRAWING		2=1		A		NECK PITCH CHANGE MECHANISM	
FINISH:		QUANTITY FOR AN ASSEMBLY		REVISION		NECK STAR PATTERN BOLTS	
MATERIAL:		4		1		DRAWING NUMBER:	
SEE NOTES		QUANTITY FOR ENTIRE DUMMY		4		T15PM220	
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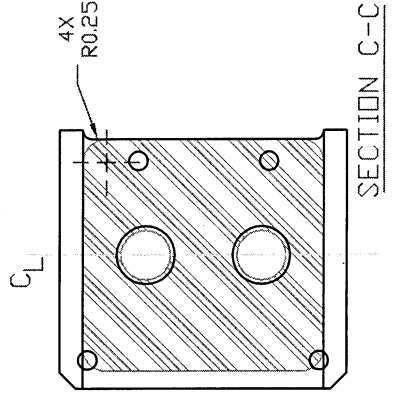
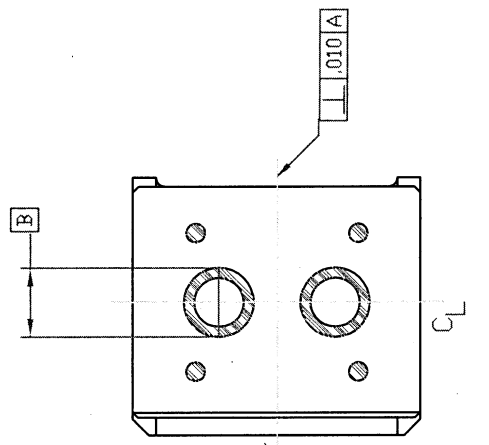
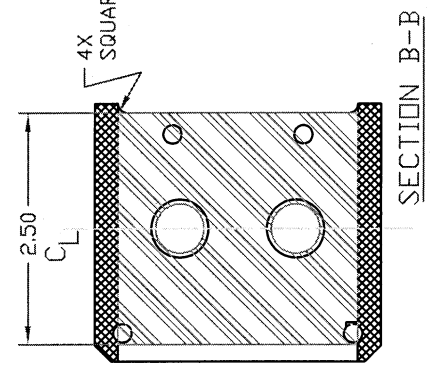
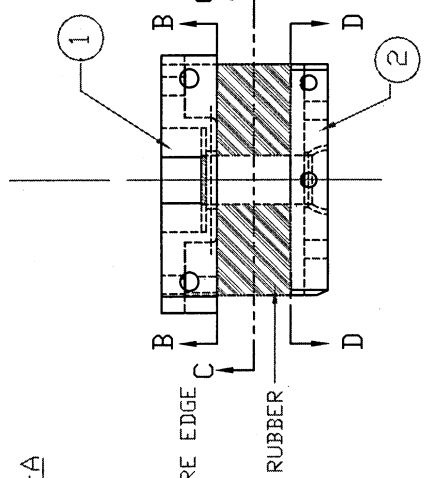
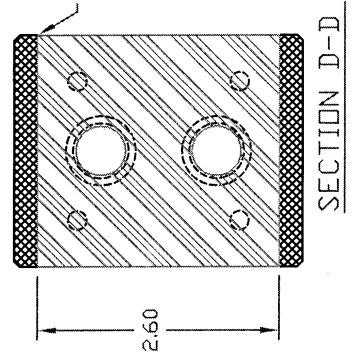
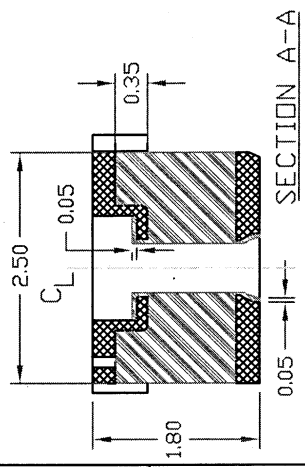
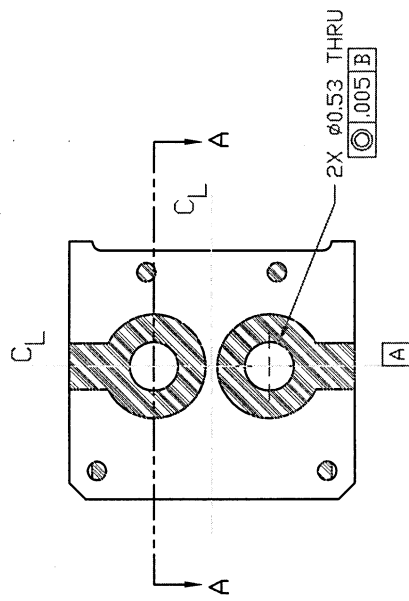
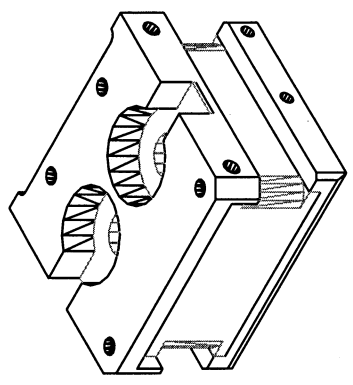


NOTE:

MANUFACTURE FROM SOCKET SHOULDER BOLT  $\phi 1/4"$  X  $3/8"$  SHOULDER LENGTH

10	9	8	7	6	5	4	3	2	1
H	G	F	E	D	C	B	A		

REV. #	ZONE	DESCRIPTION	DATE	BY
XI	GLOBAL	UPDATED DWG T1SPM311_X1 & 312_X1	1/14/04	M. ARTIS
4	GLOBAL	T1SPM310R4 REPLACES & IS IDENTICAL TO T1SPM310_X1	4/7/04	M. ARTIS
30	GLOBAL	T1SPM310R0D REPLACES & IS IDENTICAL TO T1SPM310R4	5/27/04	M. ARTIS



- NOTES:
- 1 MATERIAL SPECIFICATIONS: INJECTION MOLDED BUTYL RUBBER; SHORE 75 A +/- 2.
  - 2 PERFORMANCE SPEC TAKES PRECEDENCE OVER DIMETER.
  - 3 PLUG ALL THRU HOLES BEFORE MOLDING.
  - 4 DIMENSIONS PROVIDED REPRESENT PART SIZE AFTER MOLDING.

REV. #	QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
2	1	T1SPM312	UPPER FLEX JOINT - BOTTOM PLATE	CRS 1018
1	1	T1SPM311	UPPER FLEX JOINT - TOP PLATE	CRS 1018

ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
ENGINEERED:	DATE:
M. ARTIS	7/1/03
DRAWN:	DATE:
M. ARTIS	7/1/03
CHECKED:	DATE:
STAFF	1/14/04
SCALE	SIZE
1=1	C
REVISION	BO
QUANTITY FOR AN ASSEMBLY	1
QUANTITY FOR ENTIRE DUMMY	1

UNLESS OTHERWISE SPECIFIED	
DIMENSIONS ARE IN INCHES	
Tolerances	Angles: ± 5°
Fractions: ± 1/64	Decimals: .xx ± .01
Decimals: .xxx ± .005	
* DO NOT SCALE DRAWING *	
FINISH:	

DEPARTMENT OF TRANSPORTATION	
NHTSA	
CONTRACT NO.: DTMB 28-94-C-07010	
DESIGNED BY: GESAC, INC.	
125 ORCHARD DRIVE	
ROCKFORD, MD 21775	
DRAWING TITLE:	UPPER THORACIC SPINE FLEX JOINT MOLDED ASSEMBLY
DRAWING NUMBER:	T1SPM310
Page	1/1

SECTION C-C

SECTION D-D

SECTION B-B

SECTION A-A

SEE NOTE 1

MATERIAL:

FINISH:

SCALE

REVISION

QUANTITY FOR AN ASSEMBLY

QUANTITY FOR ENTIRE DUMMY

DRAWING NUMBER:

DRAWING TITLE:

DESIGNED BY:

CONTRACT NO.:

DEPARTMENT OF TRANSPORTATION

NHTSA

ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY

DESCRIPTION

MATERIAL

UPPER FLEX JOINT - TOP PLATE

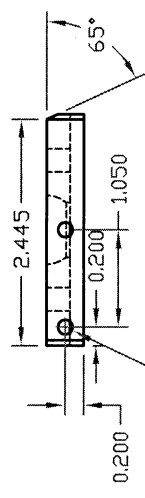
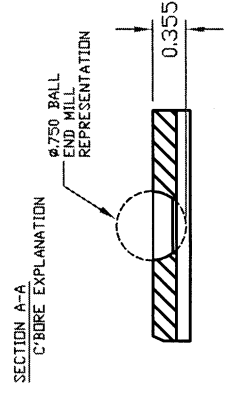
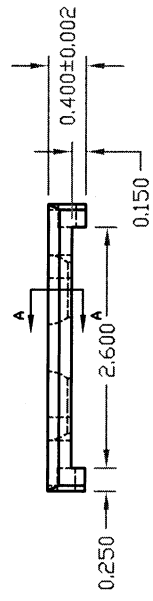
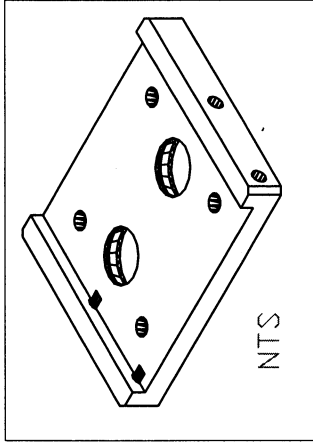
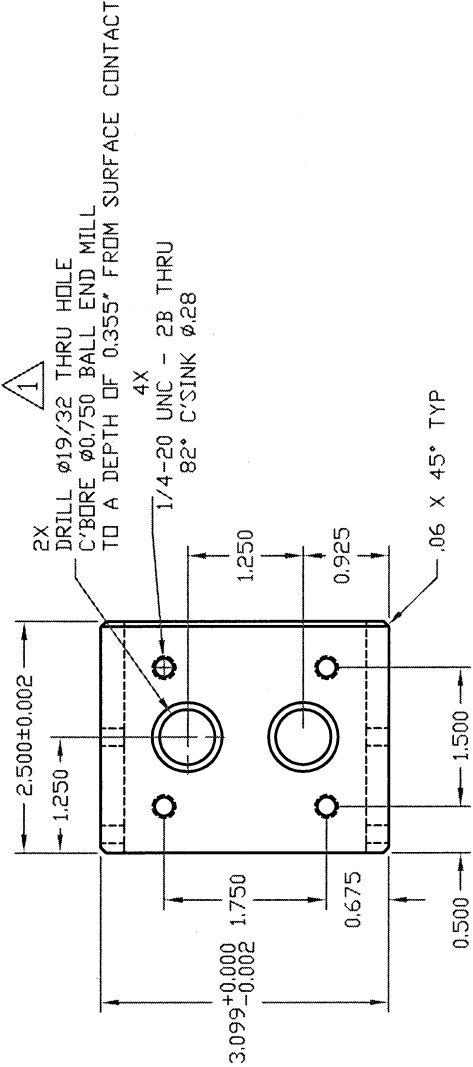
UPPER FLEX JOINT - BOTTOM PLATE

T1SPM311

T1SPM312

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H	G	F	E	D	C	B	A																						
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REV. #	ZONE	DESCRIPTION	DATE	BY																									
1	GLOBAL	CHANGED DRILLED HOLES TO TAPPED HOLES	1/14/04	M. ARTIS																									
7	GLOBAL	T1SPM311R7 REPLACES & IS IDENTICAL TO SPM311R7	4/7/04	M. ARTIS																									
8	GLOBAL	T1SPM311R8 REPLACES & IS IDENTICAL TO SPM311R7	5/27/04	M. ARTIS																									
<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</p> <p>Tolerances Angles: <math>\pm .5^\circ</math> Fractions: <math>\pm 1/64</math> Decimals: <math>.xx \pm .01</math>           <math>.xxx \pm .005</math></p> <p>* DO NOT SCALE DRAWING *</p> <p>FINISH:</p>																													
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QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL																										
1		UPPER THORACIC SPINE FLEX JOINT TOP PLATE	1018 CRS																										
1		QUANTITY FOR AN ASSEMBLY																											
1		QUANTITY FOR ENTIRE DUMMY																											
<p>DATE: 6/30/03 DEPARTMENT OF TRANSPORTATION NHTSA CONTRACT NO.: DTMB 22-84-C-07010 DESIGNED BY: GESAC, INC. 125 ORCHARD DRIVE ROCKFORD, IL 61153</p>																													
<p>DRAWING TITLE: UPPER THORACIC SPINE FLEX JOINT TOP PLATE DRAWING NUMBER: T1SPM311 Page 1/1</p>																													
<p>REVISION</p>																													
<p>1/4-20 UNC-2B 4X .25 USEABLE DEPTH</p>																													
<p>4X R0.13</p> <p>1/4-20 UNC-2B THRU</p> <p>4X</p> <p>2.500</p> <p>0.300</p> <p>2.149</p> <p>1.414</p> <p>0.843</p> <p>0.332</p> <p>0.600±0.002</p> <p>2.787±0.002</p>																													
<p>SECTION A-A</p> <p>2X R0.063</p> <p>0.350</p> <p>2.025</p> <p>0.675</p>																													
<p>2X .175 X 45° CHAM</p> <p>2X R0.10</p> <p>1.250</p> <p>0.925</p> <p>0.250±0.002</p> <p>1.350</p> <p>0.100±0.002</p> <p>DRILL <math>\phi 0.625</math> THRU-<math>\phi 1.125</math> CBORE .482 DEEP - 2 HOLES</p>																													

10	9	8	7	6	5	4	3	2	1
H	G	F	E	D	C	B	A		



REV. #	ZONE	DESCRIPTION	DATE	BY
10	GLOBAL	CHANGED DRILLED HOLES TO TAPPED HOLES	1/14/04	M. ARTIS
11	GLOBAL	T1SPM312R10 REPLACES & IS IDENTICAL TO SPM312R1	4/7/04	M. ARTIS
12	GLOBAL	T1SPM312R60 REPLACES & IS IDENTICAL TO SPM312R10	9/27/04	M. ARTIS

QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1018 CRS	1018 CRS	UPPER THORACIC SPINE FLEX JOINT BOTTOM PLATE	1018 CRS
1	1	QUANTITY FOR AN ASSEMBLY	1
1	1	QUANTITY FOR ENTIRE DUMMY	1
1	1	QUANTITY FOR ENTIRE DUMMY	1

UNLESS OTHERWISE SPECIFIED:  
 DIMENSIONS ARE IN INCHES  
 Tolerances  
 Angles: ± .5°  
 Fractions: ± 1/64  
 Decimals: .xxx ± .005  
 .xxx ± .005

\* DO NOT SCALE DRAWING \*  
 FINISH:

ENGINEERED: M. ARTIS DATE: 6/30/03  
 DRAWN: M. ARTIS DATE: 6/30/03  
 CHECKED: D. FOWLER DATE: 1/14/04  
 SCALE: 1=1 SIZE: C BO  
 REVISION: 1

ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY:  
 DEPARTMENT OF TRANSPORTATION  
 NHTSA  
 CONTRACT NO.: DTRM 22-04-C-07010  
 DESIGNED BY: GESAC, INC.  
 125 ORCHARD DRIVE  
 ROCKFORD, MD 2115

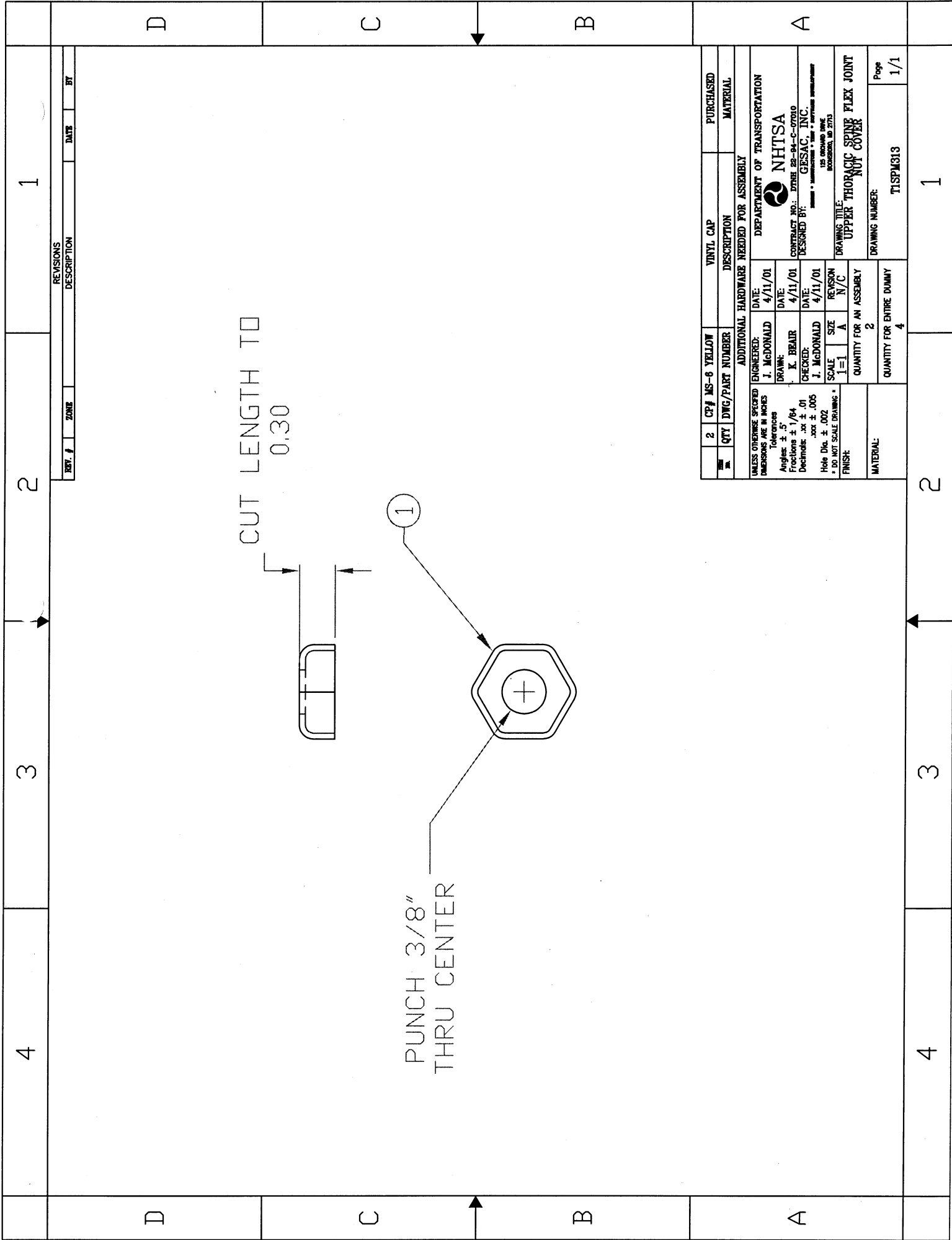
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 UPPER THORACIC SPINE FLEX JOINT  
 BOTTOM PLATE

DRAWING NUMBER:  
 T1SPM312

Page  
 1/1

NOTES:  
 1 SEE SECTION A-A FOR C'BORE EXPLANATION.





2	CP# MS-6 YELLOW	VINYL CAP	PURCHASED
QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			
ENGINEERED:	J. McDONALD	DATE:	4/11/01
DRAWN:	K. BEAR	DATE:	4/11/01
CHECKED:	J. McDONALD	DATE:	4/11/01
SCALE	1=1	SIZE	A
FINISH:	* DO NOT SCALE DRAWING *		
ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY			
DEPARTMENT OF TRANSPORTATION			
NHTSA			
CONTRACT NO.: DTRM 22-94-C-07010			
DESIGNED BY: GESAC, INC.			
125 ORCHARD DRIVE ROCKFORD, IL 61153			
DRAWING TITLE: UPPER THORACIC SPINE FLEX JOINT NOI COVER			
DRAWING NUMBER:			Page
T1SPM313			1/1

CUT LENGTH TO  
0.30

PUNCH 3/8"  
THRU CENTER

1

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REV. #	ZONE	DATE	BY

REVISIONS  
DESCRIPTION

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Page

1/1

DRAWING NUMBER:

T1SPM313

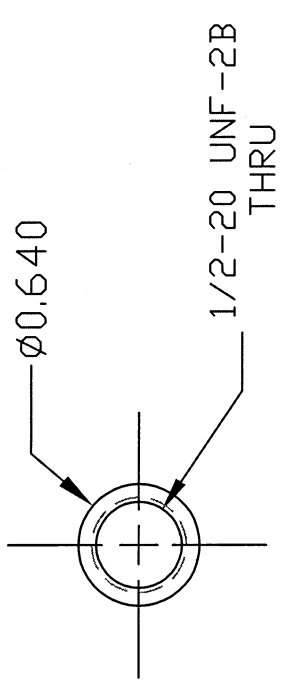
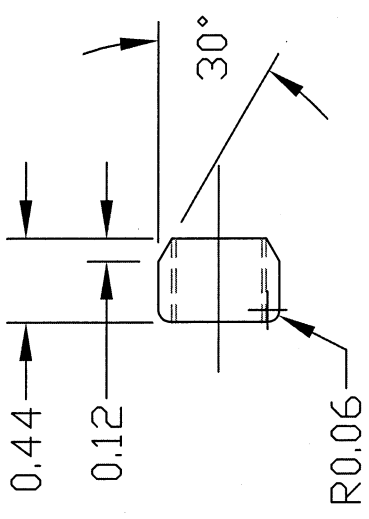
QUANTITY FOR AN ASSEMBLY

2

QUANTITY FOR ENTIRE DUMMY

4

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7	C-7		UPDATED ASSEMBLY WITH T1SPM325 R3	12/02/08	C. SPANIE																																																		
<p style="text-align: center;">NOTES:</p> <p style="text-align: center;">① USE LOCTITE 271 TO LOCK THE THREADED BALL END FITTING IN PLACE AT THE SPECIFIED LOCATION. ALLOW 20 MIN. FOR THE LOCTITE TO CURE.</p> <p style="text-align: center;">② ONE SAMPLE FROM EACH ASSEMBLY BATCH NEEDS TO BE TESTED TO INSURE NO SLIPPAGE OF THE BALL OR THREADED SLEEVE ON THE CABLE SHALL OCCUR UNDER 1,700 LBS OF TENSILE LOADING.</p>																																																							
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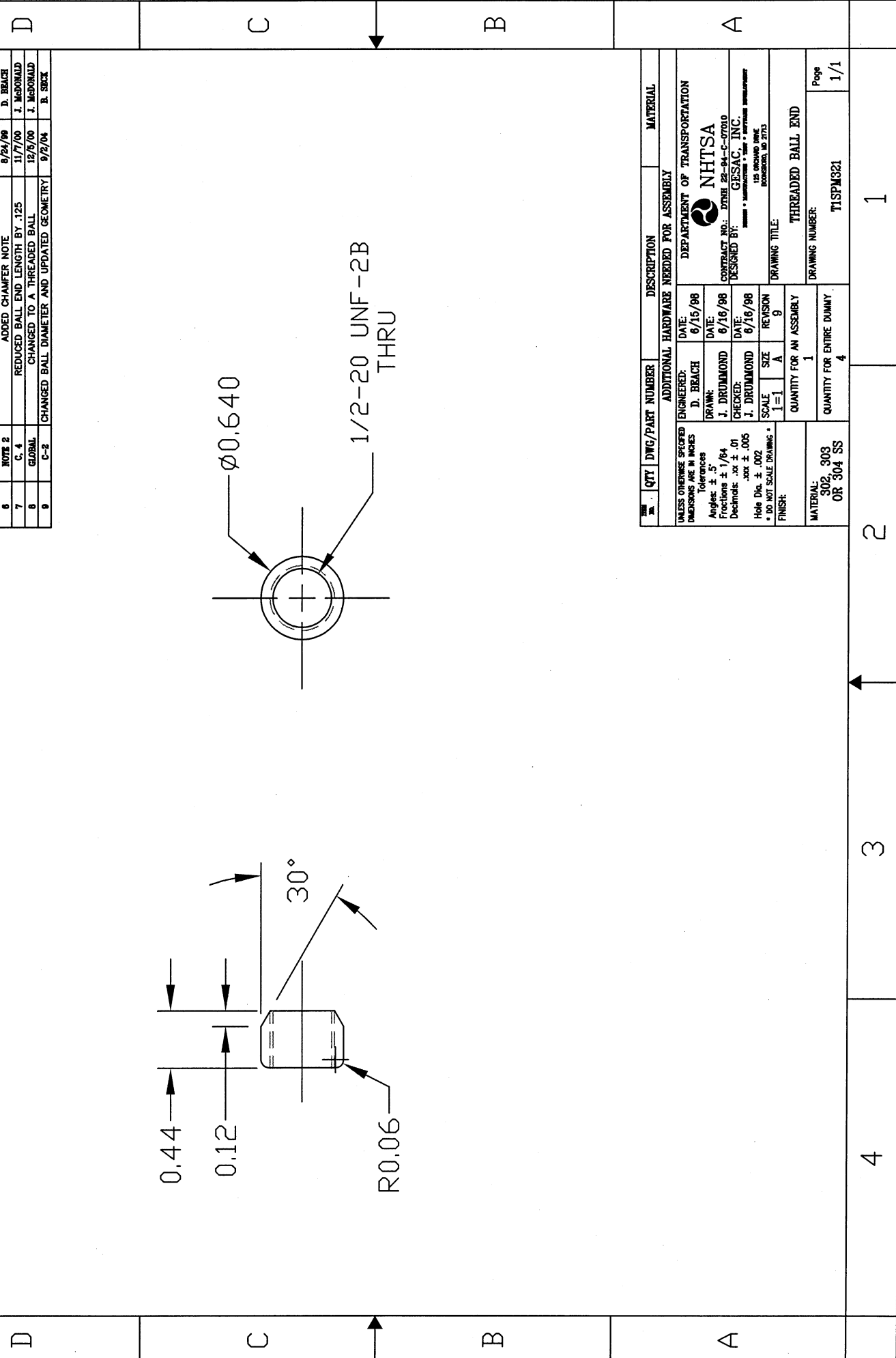


REV. #	ZONE	DESCRIPTION	DATE	BY
1	C-2	DECREASED DIAMETER OF BALL	7/7/98	J. DRUMMOND
2	GLOBAL	CHANGED PART NUMBER, ADDED NOTE 1	5/21/99	D. BEACH
3	TITLE BLOCK	CHANGED PAGE NUMBER	5/21/99	D. BEACH
4	B-3	ADDED RADIUS DIMENSIONS	7/28/99	D. BEACH
5	B-2	CHANGE DIMENSION OF THROUGH HOLE	8/25/99	D. BEACH
6	NOTE 2	ADDED CHAMFER NOTE	8/24/99	D. BEACH
7	C, 4	REDUCED BALL END LENGTH BY .125	11/7/00	J. McDONALD
8	GLOBAL	CHANGED TO A THREADED BALL	12/5/00	J. McDONALD
9	C-2	CHANGED BALL DIAMETER AND UPDATED GEOMETRY	9/2/04	B. SECK

QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY			
ENGINEERED:		DATE:	
D. BEACH		6/15/98	
DRAWN:		DATE:	
J. DRUMMOND		6/16/98	
CHECKED:		DATE:	
J. DRUMMOND		6/16/98	
SCALE	SIZE	REVISION	
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QUANTITY FOR AN ASSEMBLY		DRAWING TITLE:	
1		THREADED BALL END	
QUANTITY FOR ENTIRE DUMMY		DRAWING NUMBER:	
4		T1SPM321	
MATERIAL:		Page	
302, 303		1/1	
OR 304 SS			

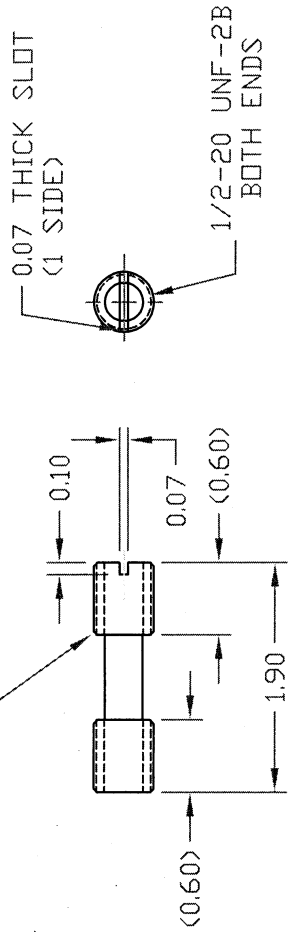

  
 DEPARTMENT OF TRANSPORTATION  
**NHTSA**  
 CONTRACT NO.: DTNE 22-94-C-07010  
 DESIGNED BY: GESAC, INC.  
135 BROADWAY, SUITE 2000, NEW YORK, NY 10038

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<table border="1"> <thead> <tr> <th colspan="4">REVISIONS</th> </tr> <tr> <th>REV. #</th> <th>ZONE</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>C7</td> <td>ADDED CHAMFER</td> <td>2/27/01</td> <td>J. McDONALD</td> </tr> <tr> <td>2</td> <td>C8</td> <td>ADDED SLOT</td> <td>4/11/01</td> <td>M. ARTS</td> </tr> <tr> <td>3</td> <td>GLOBAL</td> <td>CHANGED SWAGED DIMENSIONS TO REFERENCE DIM DECREASED SLOT FROM .20 TO .10</td> <td>12/02/08</td> <td>C. SPARE</td> </tr> </tbody> </table>								REVISIONS				REV. #	ZONE	DESCRIPTION	DATE	BY	1	C7	ADDED CHAMFER	2/27/01	J. McDONALD	2	C8	ADDED SLOT	4/11/01	M. ARTS	3	GLOBAL	CHANGED SWAGED DIMENSIONS TO REFERENCE DIM DECREASED SLOT FROM .20 TO .10	12/02/08	C. SPARE
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<p style="text-align: center;">A</p>																															
<p style="text-align: center;">SEE NOTES</p>																															
8	7	6	5	4	3	2	1																								

4X .03 X 45° CHAMFER



NOTES:



CABLE ASSEMBLY IS MACHINED TO SPECIFICATION AFTER THE END FITTINGS HAVE BEEN SWAGED.

1	1	T1SPM326	SWAGED THORACIC CABLE	303 (SEE) SS	
QTY		DWG/PART NUMBER		DESCRIPTION	MATERIAL
<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</p> <p>Tolerances          Angles ± .5°          Fractions ± 1/64          Decimals ± .01          Hole Dia. ± .002          * DO NOT SCALE DRAWING *</p>					
<p>ENGINEERED: J. McDONALD DATE: 12/5/00</p> <p>DRAWN: J. McDONALD DATE: 12/5/00</p> <p>CHECKED: J. McDONALD DATE: 12/5/00</p> <p>SCALE: 1=1 SIZE: B</p> <p>REVISION: 3</p> <p>QUANTITY FOR AN ASSEMBLY: 2</p> <p>QUANTITY FOR ENTIRE DUMMY: 2</p>					
<p>ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY</p> <p>DEPARTMENT OF TRANSPORTATION  <b>NHTSA</b>          CONTRACT NO.: DTMB C534C-0700          DESIGNED BY: JAMES G. BISHOP, INC.          125 GARDNER AVE.          BOSTON, MA 02113</p>					
<p>DRAWING TITLE:          UPPER THORACIC SPINE FLEX JOINT          CABLE MACHINED ASSEMBLY</p>					
MATERIAL:				DRAWING NUMBER:	Page
SEE NOTES				T1SPM326	1/1

8	7	6	5	4	3	2	1																
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<p style="text-align: center;"> </p>																							
<p style="text-align: center;"> <b>ASSEMBLY NOTES:</b>  <b>1</b> THE DIMENSIONS OF THE CABLE ASSEMBLY IS POST SWAGING.         </p>																							
<p style="text-align: center;"> <b>NOTES:</b>  <b>1</b> CABLE ASSEMBLY IS TO BE CONSTRUCTED USING STANDARD 5/16" STEEL CABLE OF 7x19 CONSTRUCTION.  <b>2</b> THREADED SLEEVE &amp; SHANK BALL SLEEVE END TO BE CRIMPED SECURELY SO THAT NO SLIPPAGE OF BALL OR THREADED SLEEVE ON CABLE SHALL OCCUR UNDER 1,700 LBS OF TENSILE LOADING.         </p>																							
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<p style="text-align: center;"> <b>ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY</b>  <b>UNLESS OTHERWISE SPECIFIED</b>          DIMENSIONS ARE IN INCHES          Tolerances:          Angles: ± 1/64          Finishes: ± .01          Dimensions: see ± .005          Hole Dia: ± .002          * DO NOT SCALE DRAWING *          FINISH:       </p>																							
<p style="text-align: center;"> <b>ENGINEER:</b> J. McDONALD    <b>DATE:</b> 12/5/00  <b>DRAWN:</b> J. McDONALD    <b>DATE:</b> 12/5/00  <b>CHECKED:</b> J. McDONALD    <b>DATE:</b> 12/5/00  <b>SCALE:</b> 1=1    <b>SIZE:</b> B    <b>REVISION:</b> 1  <b>QUANTITY FOR AN ASSEMBLY:</b> 2  <b>QUANTITY FOR ENTIRE DUMMY:</b> 2  <b>MATERIAL:</b>  <b>SEE NOTES</b> </p>																							
<p style="text-align: center;"> <b>DEPARTMENT OF TRANSPORTATION</b>  <b>NHTSA</b>  <b>CONTRACT NO.:</b> DTMB 99-04-C-07010  <b>ISSUED BY:</b> GLENNAC, INC.  <small>125 NEWARK BLVD.    NEWARK, NJ 07102</small> </p>																							
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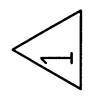
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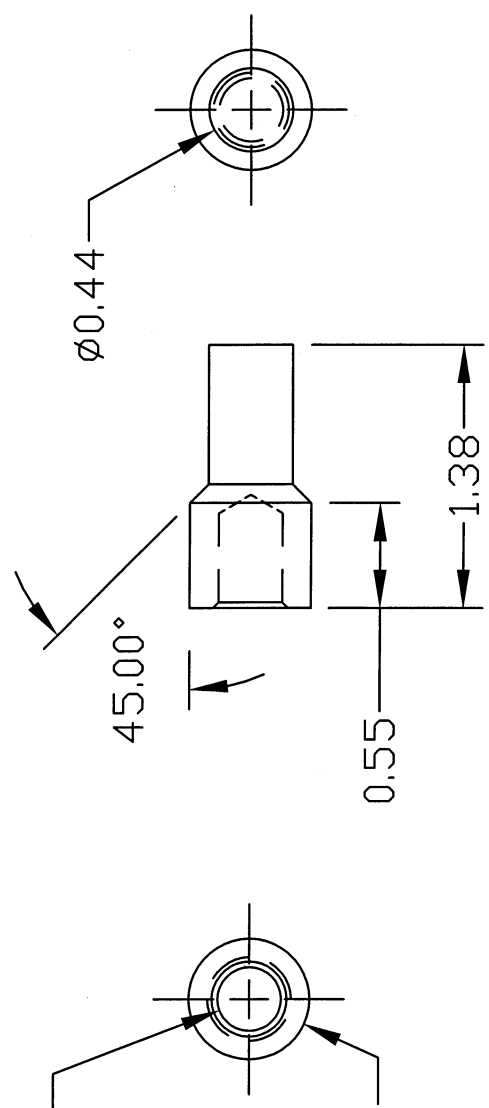
REVISIONS		DATE	BY
1	REDUCED OVERALL PART LENGTH TO 1.38	11/25/02	C. SPANIE
2	ADD 1/32 CHAMFER	12/9/04	J. McDONALD

NOTE:



MATERIAL IS CRITICAL - MUST BE 303 SELENIUM BEARING STAINLESS STEEL

$\phi 0.335 \times .50$   
 FULL DIA. DEPTH  
 CHAMFER ID  $45^\circ \times 1/32$



QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
ENGINEERED: D. BEACH		DATE: 6/15/98	
DRAWN: J. DRUMMOND		DATE: 6/17/98	
CHECKED: J. DRUMMOND		DATE: 6/17/98	
SCALE: 1=1	SIZE: A	REVISION: 2	
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QUANTITY FOR ENTIRE DUMMY: 4		DRAWING NUMBER: T1SPM327	
MATERIAL: 303 SE (SS)		Page: 1/1	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		TOLERANCES	
Angles:	$\pm .5$	Fractions:	$\pm 1/64$
Decimals:	$.xx \pm .01$	Hole Dia.:	$\pm .002$
* DO NOT SCALE DRAWING *			
FINISH:			

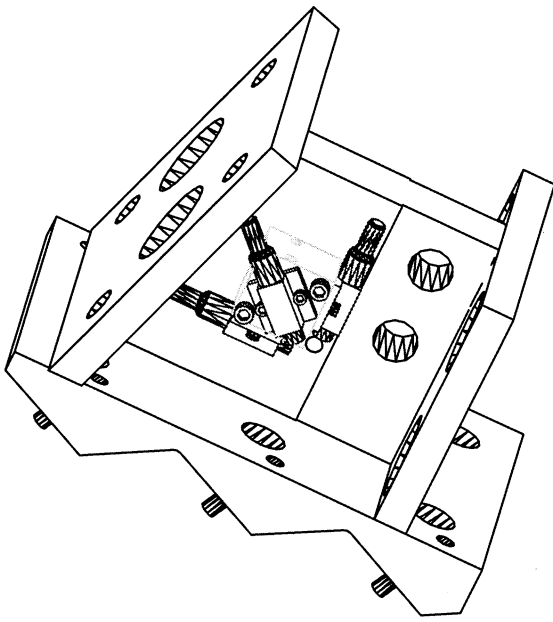
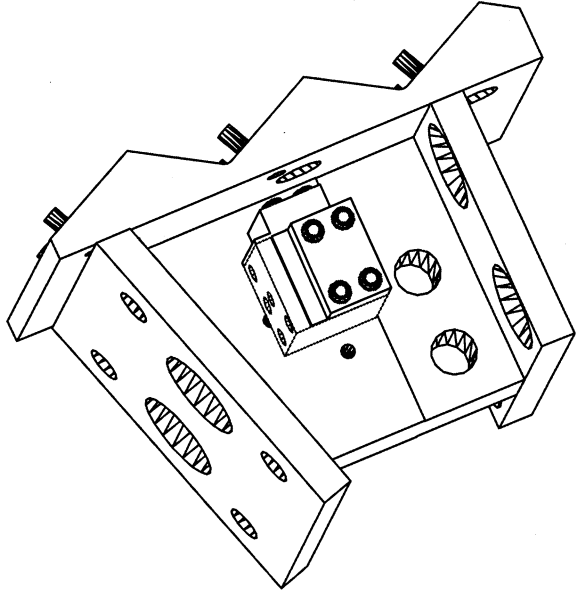
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DRAWN: J. DRUMMOND		DATE: 6/17/98	
CHECKED: J. DRUMMOND		DATE: 6/17/98	
SCALE: 1=1	SIZE: A	REVISION: 2	
QUANTITY FOR AN ASSEMBLY: 1		DRAWING TITLE: CABLE END SWAGE BLANK	
QUANTITY FOR ENTIRE DUMMY: 4		DRAWING NUMBER: T1SPM327	
MATERIAL: 303 SE (SS)		Page: 1/1	

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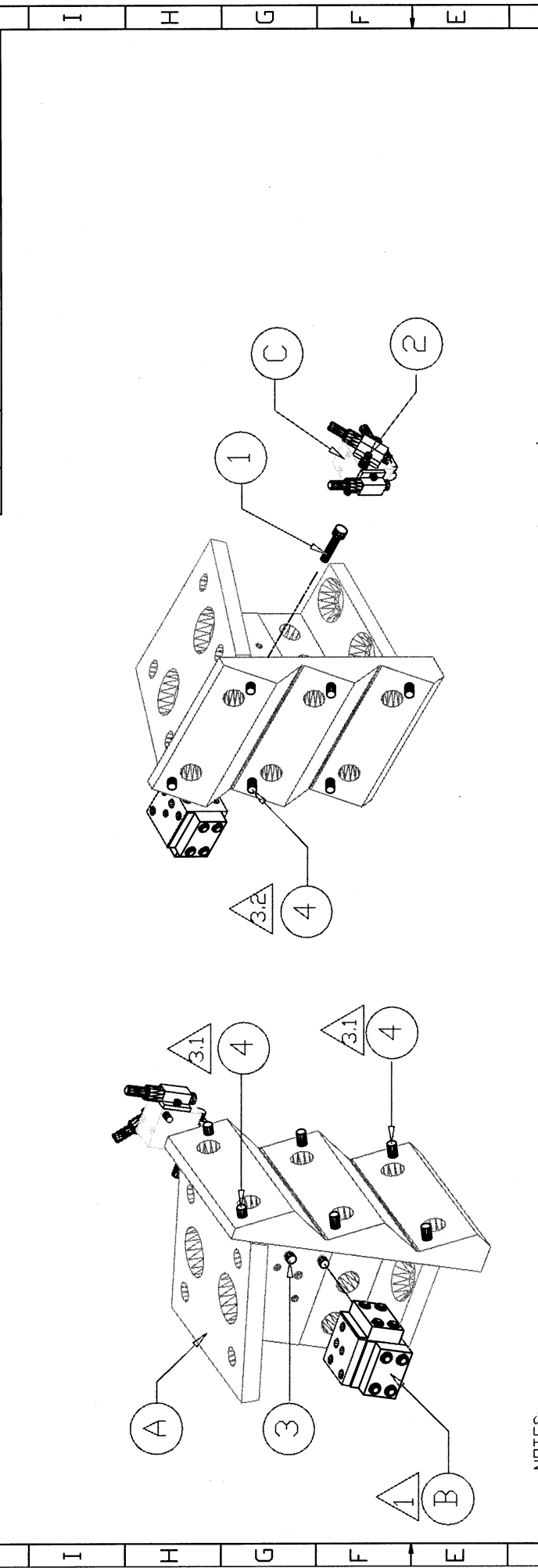
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		REVISION: 3																																																									
		QUANTITY FOR AN ASSEMBLY: 1																																																									
		QUANTITY FOR ENTIRE DUMMY: 1																																																									
		DRAWING NUMBER: T1SPM400-1																																																									
			Page 1/2																																																								
8	7	6	5	4	3	2	1																																																				

REV. #	ZONE	DESCRIPTION	DATE	BY
1	GLOBAL	CHANGED ERROR IN ITEM# 5	9/19/04	J. POLLAD
2	GLOBAL	ADD TILT SENSOR, TRI-PACK ACCEL, T1SPM412 R4	4/7/04	J. McDONALD
3	GLOBAL	ADD T1SPM410R3 & UPDATED PARTS LIST	5/19/04	M. ARTIS



QTY	DWG/PART NUMBER	DESCRIPTION	DATE	DATE
4	MCM# 983004470	1/8" X 3/8" DOWEL PIN	2/6/96	PURCHASE
3	MCM# 983004472	1/8" X 5/8" DOWEL PIN	2/6/96	PURCHASE
2	CM# 25600825	#2-56 X 9/16" SHCS (ALLOY)	9/19/04	PURCHASE
1	MCM# 91251110	#4-40 X .5" SHCS (ALLOY)	9/19/04	PURCHASE
1	T1SPM410	TRI-PACK ACCELEROMETER ASSEMBLY	5/19/04	PURCHASE
1	T1SPM400	TILT SENSOR ASSEMBLY	5/19/04	8061-76
1	T1SPM400	LTS - WELDED ASSEMBLY		SEE DWGS.
1				MATERIAL

ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
ENGINEERED:	D. REACH
DATE:	2/6/96
DESIGNED BY:	M. ARTIS
CHECKED:	M. ARTIS
SCALE:	1=1
SIZE:	D
REVISION:	3
QUANTITY FOR AN ASSEMBLY:	1
QUANTITY FOR ENTIRE DUMMY:	1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
Angles:	± .5°
Fractions:	± 1/64
Decimals:	± .005
Hole Dia.:	± .002
* DO NOT SCALE DRAWING *	
FINISH:	

DEPARTMENT OF TRANSPORTATION	
<b>NHTSA</b>	
CONTRACT NO.: DTMB 98-04-C-0700	
DESIGNED BY: GESAC, INC.	
135 BROADWAY, 10TH FLOOR, NEW YORK, NY 10038	
DRAWING TITLE: LOWER THORACIC SPINE ASSEMBLY DRAWING	
DRAWING NUMBER:	T1SPM400-2
Page:	2/2

NOTES:

- 1 THE DUAL AXIS TILT SENSOR ASSEMBLY MUST BE MOUNTED PRIOR TO MOUNTING THE TRI-PACK ACCELEROMETER ASSEMBLY.
- 2 INSTALL THE DOWEL PIN SO THAT IT PROTRUDES OUTWARD FROM THE MATING PART SURFACE AS SHOWN. THE OPPOSITE END OF THE DOWEL PIN SHOULD BE FLUSH WITH THE MATING OPPOSITE SURFACE.
- 3 PRESS FIT EACH DOWEL UNTIL THE TARGET PROTRUDED HEIGHT IS ACHIEVED. THE HEIGHT IS MEASURED FROM THE END OF THE DOWEL PIN THAT FACES AWAY FROM THE PART, PERPENDICULAR TO THE MATING PART SURFACE.

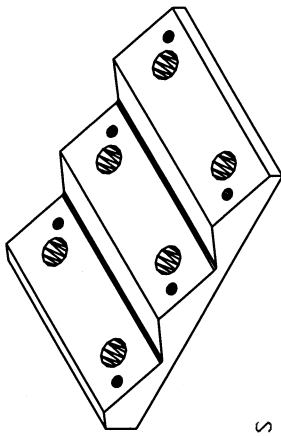
TARGET PROTRUDED HEIGHT

3.1 .13 +/- .01 IN

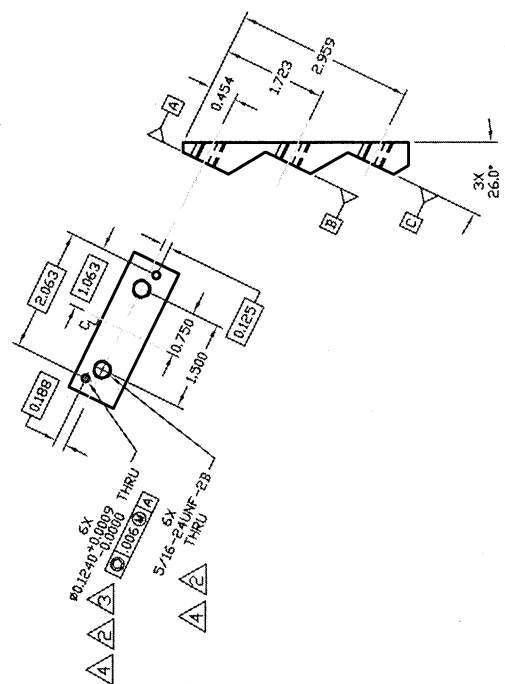
3.2 .19 +/- .01 IN



REVISION				
REV. #	DATE	DESCRIPTION	BY	
5	10/15/08	REDRAWN AND ADDED DIA. .124 HOLES	M. ARTIS	1
TITLE				
GENERAL				

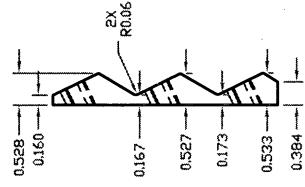
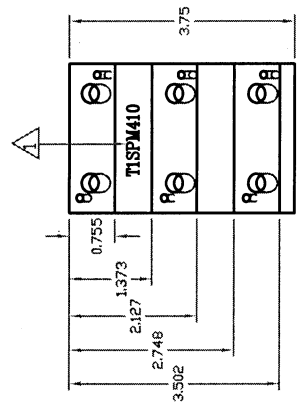
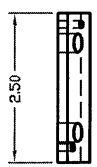


NTS



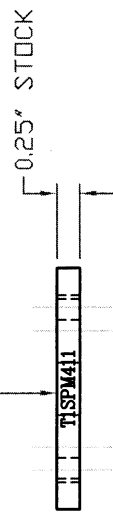
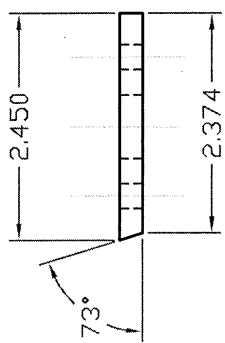
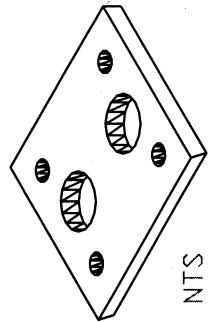
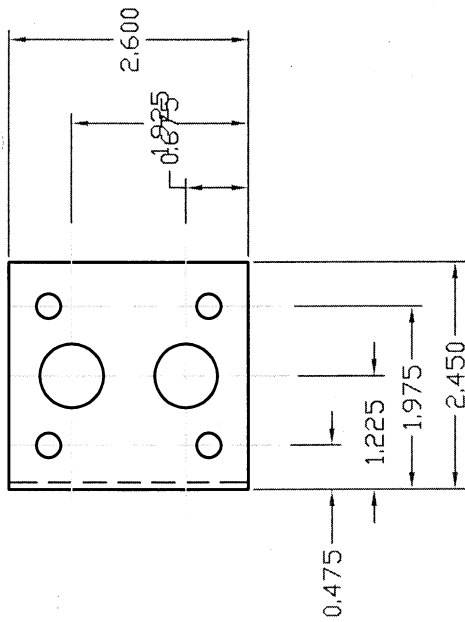
NOTES

- 1 ENGRAVE DWG # T1SPM410 ON THE SPECIFIED AREA.
- 2 THE HOLE PATTERN ON EACH STEP IS IDENTICAL.
- 3 USE THE APPROPRIATE POSITION TOLERANCE DATUM WHEN DRILLING/REAMING THE  $\varnothing 0.1240$  ON EACH STEP.
- 4 PLUG ALL HOLE BEFORE TEFLON COATING.



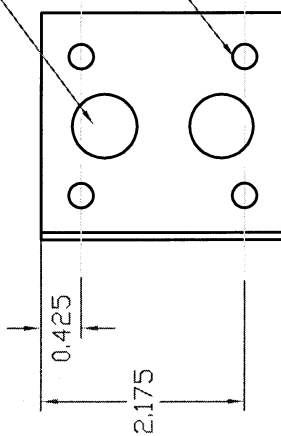
QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1	T1SPM410	LOWER THORACIC SPINE RIB MOUNTING PLATE	T1SPM410
ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY			
UNLESS OTHERWISE SPECIFIED: DATE: 1/31/96			
D. BELACE			
ENGINEERED: 10/15/08			
DATE: 10/15/08			
DRAWN: M. ARTIS			
CHECKED: M. ARTIS			
DATE: 10/15/08			
DESIGNED BY: GESAC, INC.			
125 GARDNER BLVD.			
INDIANAPOLIS, IN 47713			
DRAWING TITLE: LOWER THORACIC SPINE RIB MOUNTING PLATE			
DRAWING NUMBER: T1SPM410			
QUANTITY FOR AN ASSEMBLY: 1			
QUANTITY FOR ENTIRE DUMMY: 1			
MATERIAL: 1018 CRS			
FINISH: -			
* DO NOT SCALE DRAWING *			
TOLERANCES ARE IN INCHES			
Angles: ± .5°			
Fractions: 1/64			
Decimals: .001			
Holes: ± .005			
SCALE: 1=1			
SIZE: D			
REVISION: 3			
PAGE: 1/1			

10	9	8	7	6	5	4	3	2	1
H	G	F	E	D	C	B	A		



DRILL 11/16" Ø THRU  
(2 LOC)

DRILL 17/64" Ø THRU  
(4 LOC)



NOTE:

ENGRAVE DWG. # T1SPM411 ON SPECIFIED AREA ABOVE.



REV. #	ZONE	DESCRIPTION	DATE	BY
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QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1018 CRS	T1SPM411	LOWER THORACIC SPINE TOP PLATE	1018 CRS
1	1	QUANTITY FOR AN ASSEMBLY	1
1	1	QUANTITY FOR ENTIRE DUMMY	1

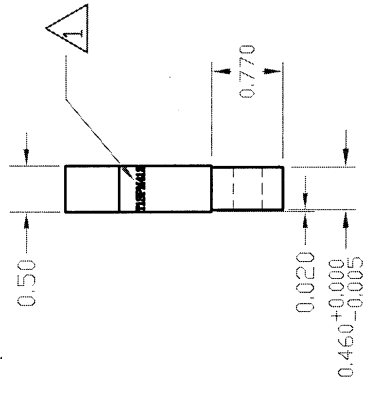
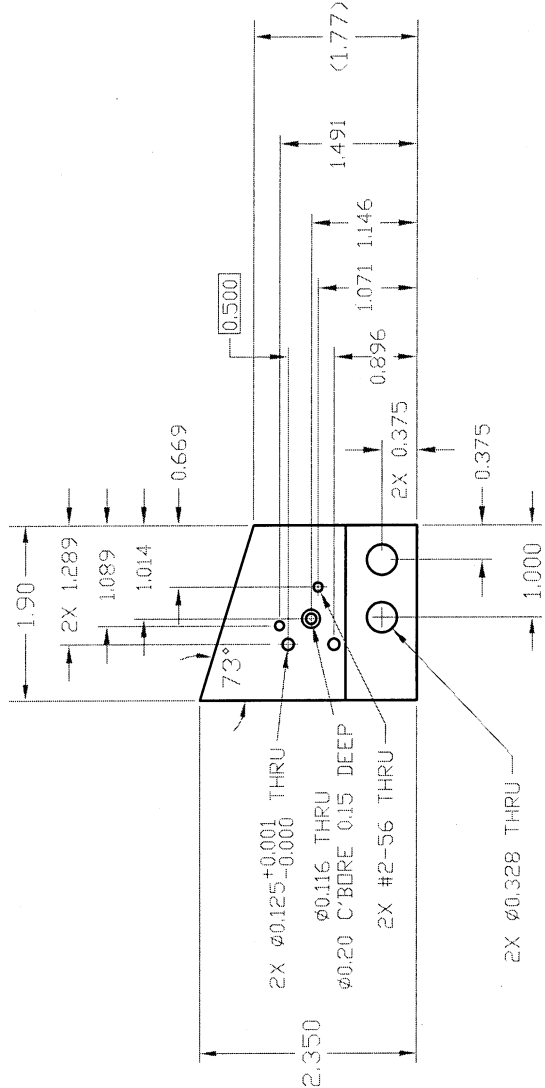
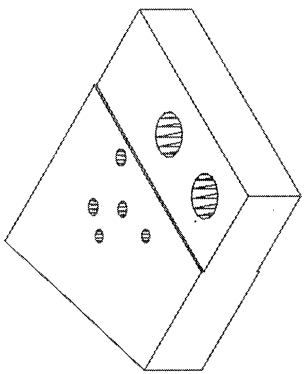
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	MATERIAL
Tolerances	ENGINEERED: D. BEACH	DATE: 1/31/86
Angles: ± .5°	DRAWN: D. BEACH	DATE: 1/31/86
Fractions: ± 1/64	CHECKED: D. BEACH	DATE: 6/6/87
Decimals: .xxx ± .005	SCALE: 1=1	REVISION: N/C
Hole Dia. ± .002	FINISH:	
* DO NOT SCALE DRAWING *		

DESIGNED BY: GESAC, INC.	CONTRACT NO.: DTMB 28-84-C-07010
DESIGNED BY: GESAC, INC.	CONTRACT NO.: DTMB 28-84-C-07010
125 ORLANDO BLVD.	ROCKFORD, MD 21753

10	9	8	7	6	5	4	3	2	1
H	G	F	E	D	C	B	A		

REV. #	ZONE	DESCRIPTION	DATE	BY
1	D-9	CHANGED TOLERANCE ON PART THICKNESS	7/28/98	D. BEACH
2	B, E	ADDED THRU AND TAPPED HOLES	1/2/04	J. McKNALD
3	S, E	ADDED .460 THICK SECTION	1/2/04	J. McKNALD
4	E-9	CHANGED DIA. .094 HOLE TO .116	6/8/04	M. ARTIS



QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1018 CRS		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES Tolerances Angles: ± .5° Fractions: ± 1/64 Decimals: .xxx ± .01 Hole Dia: ± .002 * DO NOT SCALE DRAWING * FINISH: -			
ENGINEERED: D. BEACH DATE: 1/31/98 DRAWN: D. BEACH DATE: 1/31/98 CHECKED: D. BEACH DATE: 6/8/97 SCALE: 1=1 SIZE: C REVISION: 4 QUANTITY FOR AN ASSEMBLY: 1 QUANTITY FOR ENTIRE DUMMY: 1			
MATERIAL: 1018 CRS			
NHTSA DEPARTMENT OF TRANSPORTATION CONTRACT NO.: DTMB 22-94-C-07010 DESIGNED BY: GESAC, INC. 125 ORCHARD DRIVE BOSSBORO, MD 21713			
DRAWING TITLE: LOWER THORACIC SPINE CENTRAL PLATE DRAWING NUMBER: T1SPM412 Page 1/1			

NOTE: ENGRAVE DWG. # T1SPM412 ON SPECIFIED AREA ABOVE.

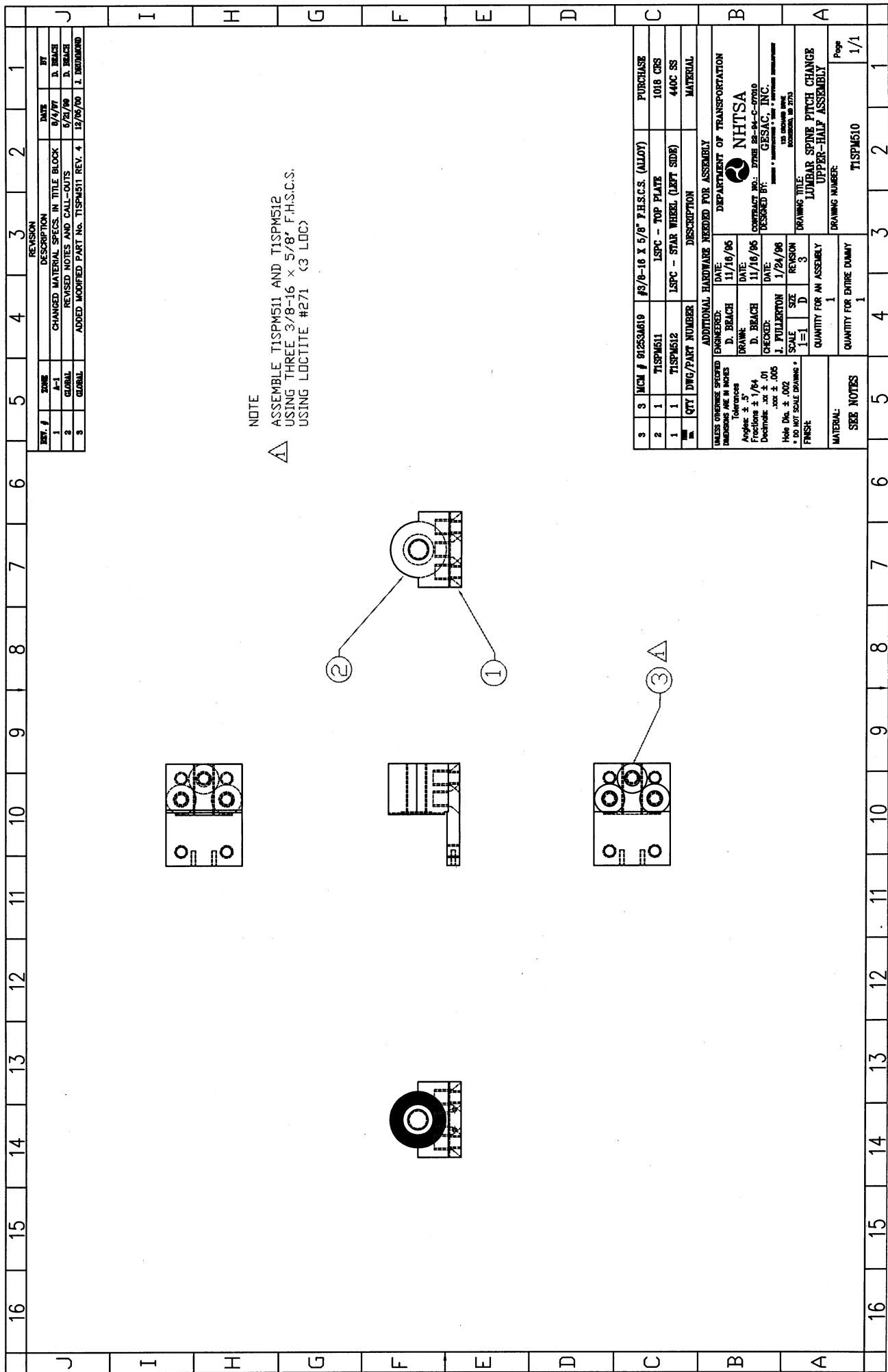
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REV. #	ZONE	DESCRIPTION	DATE	BY																																																									
<p>DRILL 21/64" Ø THRU AND C'SINK FOR 5/16-18 FLAT HEAD ALLEN BOLTS (2 LOC)</p> <p>0.25" STOCK</p> <p>1.500</p> <p>0.400</p> <p>1.90</p> <p>2.50</p> <p>2.150</p> <p>0.350</p>																																																													
<p>NOTE: 1 ENGRAVE DWG. # T1SPM413 ON THE SPECIFIED AREA ABOVE.</p>																																																													
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ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY		DEPARTMENT OF TRANSPORTATION	NHTSA																																																										
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<p style="text-align: center;"><b>NOTE:</b></p> <p style="text-align: center;"> <span style="border: 1px solid black; padding: 2px;">1</span> USE LOCTITE GRAPHITE ANTISIEZE LUBRICANT (MCM# 1287K31) ON THE 1/2-20 x 2.5" S.H.C.S. PRIOR TO INSERTION. TORQUE BOLT TO 50 FT-LB TO TIGHTEN PITCH CHANGE MECHANISM.         </p>																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV. #</th> <th>ZONE</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>A-1</td> <td>CHANGED MATERIAL SPECS. IN TITLE BLOCK</td> <td>9/4/97</td> <td>D. BRACE</td> </tr> <tr> <td>2</td> <td></td> <td>CHANGED ITEM 1 PART #</td> <td>7/09/98</td> <td>J. POLIUD</td> </tr> <tr> <td>3</td> <td>GLOBAL</td> <td>ADDED MODIFIED PART NO. T1SPM511 REV. 4</td> <td>02/06/00</td> <td>J. BROUDMOND</td> </tr> <tr> <td>4</td> <td>GLOBAL</td> <td>UPDATED ASSEMBLY TO NT</td> <td>5/17/04</td> <td>M. ARTIS</td> </tr> </tbody> </table>								REV. #	ZONE	DESCRIPTION	DATE	BY	1	A-1	CHANGED MATERIAL SPECS. IN TITLE BLOCK	9/4/97	D. BRACE	2		CHANGED ITEM 1 PART #	7/09/98	J. POLIUD	3	GLOBAL	ADDED MODIFIED PART NO. T1SPM511 REV. 4	02/06/00	J. BROUDMOND	4	GLOBAL	UPDATED ASSEMBLY TO NT	5/17/04	M. ARTIS																							
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UNLESS OTHERWISE SPECIFIED		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY																																																					
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<p>RIGHT SIDE-VIEW</p> <p>NOTES:          THE SPINE POSTURE IS ADJUSTED BY LOOSENING THE 1/2-20 SHCS LOCATED ON THE RIGHT SIDE OF THE SPINE AND ROTATING THE UPPER HALF OF THE SPINE WITH RESPECT TO THE LOWER HALF. ALIGN THE INDICATOR WITH THE PROPER COLOR OF THE POSTURE DESIRED. REFERENCE THE COLOR CHART TO DETERMINE THE POSTURE SETTING.</p>																																																																																																																															
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POSTURE CHART

POSTURE	COLOR
ERECT	RED
NEUTRAL	WHITE
SLOUCHED	ORANGE
SUPER SLOUCHED	YELLOW



NOTE  
 ASSEMBLE T1SPM511 AND T1SPM512  
 USING THREE 3/8-16 x 5/8" F.H.S.C.S.  
 USING LOCTITE #271 (3 LOC)

REV. #	ZONE	DESCRIPTION	DATE	BY
1	A-1	CHANGED MATERIAL SPECS. IN TITLE BLOCK	8/4/97	D. BRACE
2	GLOBAL	REVISED NOTES AND CALL-OUTS	5/21/98	D. BRACE
3	GLOBAL	ADDED MODIFIED PART No. T1SPM511 REV. 4	12/05/00	J. DEBARRAND

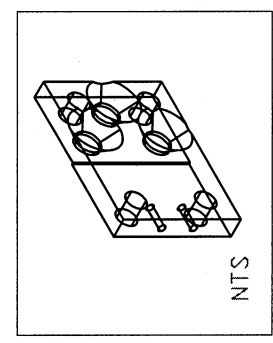
QTY	DNWG/PART NUMBER	DESCRIPTION	MATERIAL
3	99/8-16 x 5/8" F.H.S.C.S. (ALLOY)		PURCHASE
2	T1SPM511	LSPC - TOP PLATE	1018 CRS
1	T1SPM512	LSPC - STAR WHEEL (LEFT SIDE)	440C SS
ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY			
ENGINEER: D. BRACE		DATE: 11/16/96	DEPARTMENT OF TRANSPORTATION
DRAWN: D. BRACE		DATE: 11/16/96	NHTSA
CHECKED: J. FULLERTON		DATE: 1/24/98	CONTRACT NO.: DTMB 99-94-C-07010
SCALE: 1=1		REVISION: 3	DESIGNED BY: GESAC, INC.
MATERIAL: SEE NOTES		QUANTITY FOR AN ASSEMBLY: 1	12500 WOODBURN BLVD ROCKVILLE, MD 20850
QUANTITY FOR ENTIRE DUMMY: 1		DRAWING TITLE: HUBBAR SPINE PITCH CHANGE UPPER-HALF ASSEMBLY	DRAWING NUMBER: T1SPM510
PAGE: 1/1			

J	I	H	G	F	E	D	C	B	A						
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

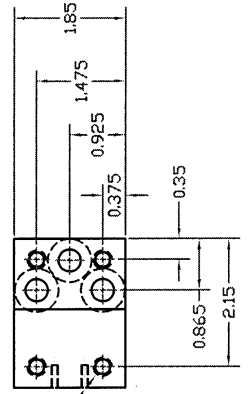
REV. #	ZONE	DESCRIPTION	DATE	BY
1	P-10	ADDED TOLERANCE TO MILLED AREA DIMENSION	4/21/98	D. BRACE
2	NOTES	CLARIFICATION OF NOTES FOR ASSEMBLY	6/21/98	D. BRACE
3	TITLE BLOCK	ADDED FINISH	6/26/98	J. POLAND
4	P-15	ADDED #4-40 THREADS	11/16/00	J. DRUMMOND
5	P-11	ELIMINATED MILLED SURFACE REDUNDANT DIM. (1.1877)	10/6/01	M. JAKS

NOTE:

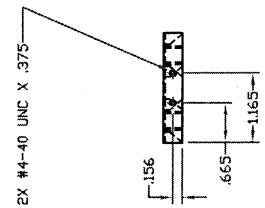
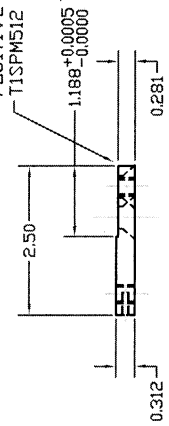
REMOVE ALL BURRS AND BREAK SHARP EDGES.



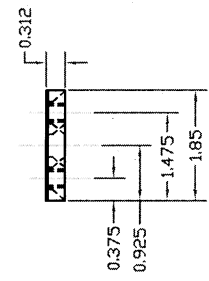
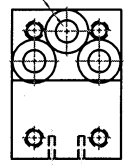
DRILL AND TAP  
5/16-18 UNC THRU  
(4 LOC)



MILL INDICATED AREA TO  
DEPTH OF 0.031" TO PROVIDE  
POSITIVE ALIGNMENT OF  
T1SPM512 DURING MOUNTING



DRILL 3/8" THRU HOLE  
C/SINK 82° FOR 3/8-16  
FLAT HEAD ALLEN BOLT  
(3 LOC)



QTY	DMG/PART NUMBER	DESCRIPTION	MATERIAL
		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
		DEPARTMENT OF TRANSPORTATION	
		NHTSA	
		CONTRACT NO.: DTRE BRAC-000	
		DESIGNED BY: GREGG C. JACO	
		125 COLONY DRK	
		WINDHAM, IA 52753	
		DRAWING TITLE: LUMBAR SPINE PITCH CHANGE	
		TOP PLATE	
		DRAWING NUMBER: T1SPM511	
		Prop	1/1
1		QUANTITY FOR AN ASSEMBLY	
1		QUANTITY FOR ENTIRE DUMMY	
1018	CRS		

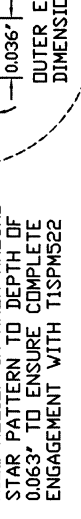


16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

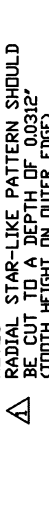
REV. #	DATE	DESCRIPTION
1	8/1/77	CHANGED MATERIAL FROM 440 SS TO 440C SS
2	11/21/78	CHANGED FIRST CUT FROM PATTERNS EFFECT FROM 1.0 TO 1.5 DIA.
3	11/21/78	ADDED HORIZONTAL SCRIBE LINES
4	7/28/78	ADDED C'SINKS TO BOTTOM
5	7/28/78	ADDED 1/16 DONUT PIN HOLE FOR SHOP FIXTURE
6	12/05/78	REMOVED HORIZONTAL SCRIBE LINES FROM PART
7	12/05/78	REPLACED 1/16 DIA. HOLE FOR 1/8 DIA. HOLE
8	9/7/74	ADDED C'SINK ANGLE



MILL RELIEF IN AREA AROUND STAR PATTERN TO DEPTH OF 0.063" TO ENSURE COMPLETE ENGAGEMENT WITH T1SPM522



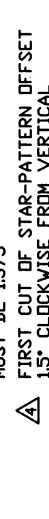
RIGHT-SIDE VIEW



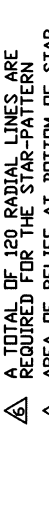
FRONT VIEW



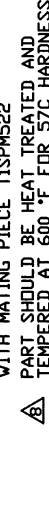
LEFT-SIDE VIEW



TOP VIEW



TOOTH PATTERN SEE DETAIL SECTION A-A



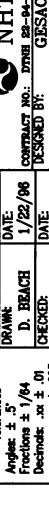
DETAIL SECTION A-A (SCALE 2:1)



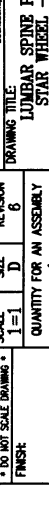
RIGHT-SIDE VIEW



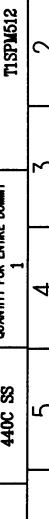
FRONT VIEW



LEFT-SIDE VIEW



TOP VIEW



TOOTH PATTERN SEE DETAIL SECTION A-A



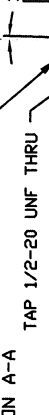
DETAIL SECTION A-A (SCALE 2:1)



DRILL AND TAP 3/8-16

0.375 DIA. SEABLE THREAD DEPTH

0.375 DIA. MAXIMUM HOLE DEPTH MUST NOT EXCEED 0.48"



NOTES:

- △ RADIAL STAR-LIKE PATTERN SHOULD BE CUT TO A DEPTH OF 0.0312" (TOOTH HEIGHT ON OUTER EDGE)
- △ PATTERN SHOULD HAVE A V-GROOVE PROFILE FOR MATING WITH PATTERN ON PART T1SPM522 ( CUT WITH 60° BIT )
- △ MINIMUM OUTER DIAMETER OF PATTERN MUST BE 1.375"
- △ FIRST CUT OF STAR-PATTERN OFFSET 1.5° CLOCKWISE FROM VERTICAL
- △ STAR PATTERN IS CUT IN 3° INTERVALS
- △ A TOTAL OF 120 RADIAL LINES ARE REQUIRED FOR THE STAR-PATTERN
- △ AREA OF RELIEF AT BOTTOM OF STAR PATTERN IS NEEDED TO ENSURE ENGAGEMENT WITH MATING PIECE T1SPM522
- △ PART SHOULD BE HEAT TREATED AND TEMPERED AT 600 °F FOR 57C HARDNESS
- △ ENGRAVE DWG. # T1SPM512 ON THE SPECIFIED AREA ABOVE.

QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
1		DEPARTMENT OF TRANSPORTATION	
1		NHTSA	
1		CONTRACT NO.: DTMB 88-84-C-0700	
1		DESIGNED BY: GESAC, INC.	
1		FOR OFFICE USE ONLY: DATE: 10/20/88 BY: 2713	
1		DRAWING TITLE: LUMBAR SPINE PITCH CHANGE STAR WHEEL - LEFT SIDE	
1		DRAWING NUMBER: T1SPM612	
1		Page 1/1	

QUANTITY FOR AN ASSEMBLY 1

QUANTITY FOR ENTIRE DUMMY 1

MATERIAL: 440C SS

440C SS

440C SS

440C SS

440C SS

440C SS

440C SS

440C SS

440C SS

440C SS

440C SS

440C SS

440C SS

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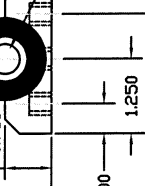
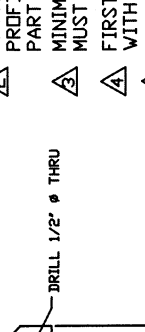
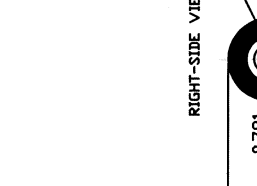
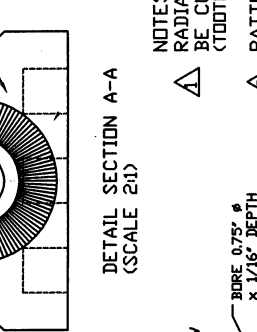
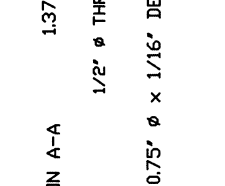
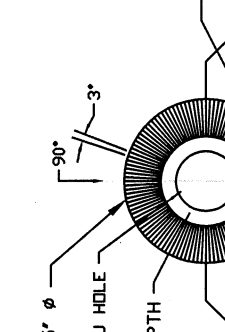
440C SS

440C SS

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D	C	B	A																								
<p>REVISIONS</p> <table border="1"> <tr> <th>REV. #</th> <th>DATE</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> <tr> <td>3</td> <td>GLOBAL</td> <td>UPDATED DWG FOR T1SPM522 REV 5 &amp; 6.</td> <td>12/06/00</td> <td>J. INDIANAND</td> </tr> <tr> <td>4</td> <td>GLOBAL</td> <td>UPDATED TO NT</td> <td>5/17/04</td> <td>M. ARTIS</td> </tr> </table>								REV. #	DATE	DESCRIPTION	DATE	BY	3	GLOBAL	UPDATED DWG FOR T1SPM522 REV 5 & 6.	12/06/00	J. INDIANAND	4	GLOBAL	UPDATED TO NT	5/17/04	M. ARTIS					
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4	GLOBAL	UPDATED TO NT	5/17/04	M. ARTIS																							
<p>NOTE:</p> <p>① ASSEMBLE PARTS WITH LOCTITE #271.</p>																											
<table border="1"> <tr> <td>3</td> <td>3</td> <td>MCM # 01263A619</td> <td>3/8-16 X 5/8" FBKCS</td> <td>PURCHASED</td> </tr> <tr> <td>2</td> <td>1</td> <td>T1SPM522</td> <td>LSPC - STAR WHEEL (RIGHT SIDE)</td> <td>440C SS</td> </tr> <tr> <td>1</td> <td>1</td> <td>T1SPM521</td> <td>LSPC - BOTTOM PLATE</td> <td>1018 CRS</td> </tr> <tr> <td>QTY</td> <td>DWG/PART NUMBER</td> <td>DESCRIPTION</td> <td>MATERIAL</td> <td></td> </tr> </table>								3	3	MCM # 01263A619	3/8-16 X 5/8" FBKCS	PURCHASED	2	1	T1SPM522	LSPC - STAR WHEEL (RIGHT SIDE)	440C SS	1	1	T1SPM521	LSPC - BOTTOM PLATE	1018 CRS	QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL	
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QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL																								
<p>UNLESS OTHERWISE SPECIFIED</p> <p>ENGINEERED: D. BEACH DATE: 11/28/06</p> <p>DEPARTMENT OF TRANSPORTATION</p> <p>INCHES ARE IN INCHES</p> <p>TOLERANCES</p> <p>ANGLES: ± .5 / 64</p> <p>POSITIONS: ± .1 / 64</p> <p>DECIMALS: ± .005</p> <p>SURFACE FINISH: 125</p> <p>• DO NOT SCALE DRAWING</p> <p>FINISH:</p> <p>SCALE: 1=1</p> <p>SIZE: B</p> <p>REVISION: 4</p> <p>QUANTITY FOR AN ASSEMBLY: 1</p> <p>MATERIAL: SEE SPECS.</p> <p>QUANTITY FOR ENTIRE DUMMY: 1</p> <p>DRAWING NUMBER: T1SPM520</p> <p>Page: 1/1</p>																											
8	7	6	5	4	3	2	1																				
D	C	B	A																								

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
J	I	H	G	F	E	D	C	B	A																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV. #</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>9/17/08</td> <td>RE-DIMENSIONED PART - REMOVED 4-40 HOLES</td> </tr> <tr> <td>6</td> <td>9/17/08</td> <td>INCREASED SIDE WALL THICKNESS FROM .375 TO .433</td> </tr> <tr> <td>6</td> <td>9/17/04</td> <td>ENLARGED HOLES TO ACCOUNT FOR TEFLON</td> </tr> <tr> <td>6</td> <td>9/17/04</td> <td>ADDED #10 TAPPED HOLE</td> </tr> </tbody> </table>																REV. #	DATE	DESCRIPTION	5	9/17/08	RE-DIMENSIONED PART - REMOVED 4-40 HOLES	6	9/17/08	INCREASED SIDE WALL THICKNESS FROM .375 TO .433	6	9/17/04	ENLARGED HOLES TO ACCOUNT FOR TEFLON	6	9/17/04	ADDED #10 TAPPED HOLE
REV. #	DATE	DESCRIPTION																												
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NTS																														
<p>1X 10-24UNC 2B .375 DEEP</p>																														
<p>3X DRILL #25/64 C'SINK #0.770 X 82°</p>																														
<p>2X .05 X .05 CHAM</p>																														
<p>R0.438 #0.391</p>																														
<p>6X DRILL #21/64 C'SINK #0.65 X 82°</p>																														
<p>3X DRILL #25/64 C'SINK #0.770 X 82°</p>																														
<p>0.625 0.938</p>																														
<p>0.433 0.750 0.750 0.500 0.375</p>																														
<p>0.312 0.625 0.938</p>																														
<p>0.337 0.031 1.191±0.005 0.500</p>																														
<p>3.18 2.50</p>																														
<p>QTY DWG/PART NUMBER DESCRIPTION MATERIAL</p>																														
<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</p>																														
<p>ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY MATERIAL</p>																														
<p>ENGINEERED: M. ARTIS DATE: 9/11/08 DEPARTMENT OF TRANSPORTATION</p>																														
<p>DRAWN: M. ARTIS DATE: 9/11/08 NHTSA</p>																														
<p>CHECKED: M. ARTIS DATE: 9/11/08 CONTRACT NO.: DTMB 28-04-C-07610</p>																														
<p>DESIGNED BY: GESAC, INC. DESIGNED BY: GESAC, INC.</p>																														
<p>SCALE SIZE REVISION</p>																														
<p>1=1 D 6</p>																														
<p>DRAWING TITLE: LUMBAR SPINE PITCH CHANGE</p>																														
<p>QUANTITY FOR AN ASSEMBLY: 1</p>																														
<p>QUANTITY FOR ENTIRE DUMMY: 1</p>																														
<p>DRAWING NUMBER: T1SPM621</p>																														
<p>PAGE: 1/1</p>																														

REV.	DATE	DESCRIPTION	BY	CHK.
1	1/22/96	CHANGED MATERIAL FROM 440 SS TO 440C SS	W/W	B
2	1/22/96	ADDED BROWN EDGE DIMENSIONS	W/W	B
3	1/22/96	CHANGED TOOTH DEPTH NOTE ADDED TOLERANCE	W/W	B
4	1/22/96	ADDED C-SINK TO BOTTOM	W/W	B
5	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B
6	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B
7	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B
8	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B
9	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B
10	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B
11	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B
12	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B
13	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B
14	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B
15	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B
16	1/22/96	ADDED ENGRAVE DIMENSIONS TO BOTTOM	W/W	B



MILL RELIEF IN AREA AROUND STAR PATTERN TO DEPTH OF 0.063" TO ENSURE COMPLETE ENGAGEMENT WITH T1SPM512

DETAIL SECTION A-A (SCALE 2:1)

RIGHT-SIDE VIEW

SEE DETAIL A-A

BOTTOM VIEW

VIEW B

DETAIL OF PATTERN END-VIEW (SCALE 20:1)

TOOTH PATTERN SEE DETAIL SECTION A-A

1.375' φ

1/2' φ THRU HOLE

0.75' φ x 1/16' DEPTH

DRILL 1/2' φ THRU

DRILL AND TAP 3/8-16 X 0.375' USEABLE THREAD DEPTH C-SINK TO 80.450 (3 LOC) BREAK HOLE EDGE 90° X 1/16' FROM CONTACT NOTE: MAXIMUM HOLE DEPTH MUST NOT EXCEED 0.48'

BREAK CORNERS 45° AS SHOWN R 0.6875' - MAINTAIN RADIUS THROUGHOUT DEPTH OF PIECE

DETAIL SECTION A-A (SCALE 2:1)

RIGHT-SIDE VIEW

SEE DETAIL A-A

BOTTOM VIEW

VIEW B

DETAIL OF PATTERN END-VIEW (SCALE 20:1)

NOTES:

1. RADIAL STAR-LIKE PATTERN SHOULD BE CUT TO A DEPTH OF 0.0312" (TOOTH HEIGHT ON OUTER EDGE)

2. PATTERN SHOULD HAVE A V-GROOVE PROFILE FOR MATING WITH PATTERN ON PART T1SPM512 (CUT WITH 60° BIT) > MINIMUM OUTER DIAMETER OF PATTERN MUST BE 1.375"

3. FIRST CUT OF STAR-PATTERN ALIGNED WITH VERTICAL OR 90° ORIENTATION

4. STAR PATTERN IS CUT IN 3" INTERVALS

5. A TOTAL OF 120 RADIAL LINES ARE REQUIRED FOR THE STAR-PATTERN

6. AREA OF RELIEF AT BOTTOM OF STAR PATTERN IS NEEDED TO ENSURE ENGAGEMENT WITH MATING PIECE T1SPM512

7. PART SHOULD BE HEAT TREATED AND TEMPERED AT 600 °F FOR 57C HARDNESS

8. ENGRAVE DWG. # T1SPM522 ON THE SPECIFIED AREA.

9. ENGRAVE LINES WITH MAX THICKNESS = 0.020" IN THE SPECIFIED AREAS.

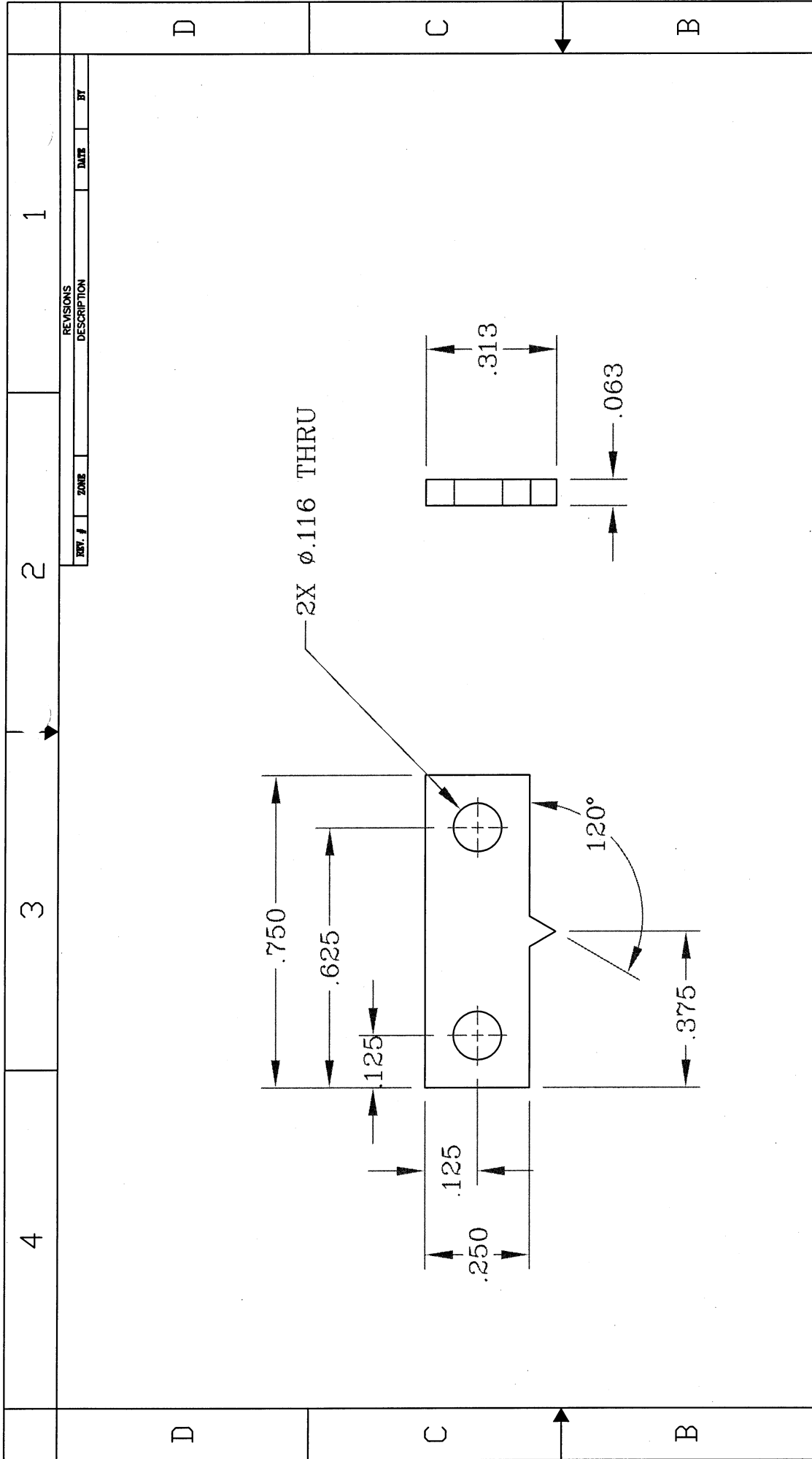
QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1	440C SS	QUANTITY FOR AN ASSEMBLY	
1	440C SS	QUANTITY FOR ENTIRE DUMMY	
4			
3			
2			
1			

ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
ENGINEERED:	DATE: 1/22/96
D. BEACH	DATE: 1/22/96
CHECKED:	DATE: 1/24/96
J. FULLERTON	DATE: 1/24/96
SCALE:	1 = 1 D
FINISH:	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
Tolerances:	
Angles:	± .5°
Fractions:	± 1/64
Decimals:	± .001
High Dns:	± .002
* DO NOT SCALE DIMENSIONS *	

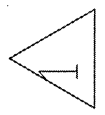
DRAWING TITLE:	
LUMBAR SPINE PITCH CHANGE STAR WHEEL - RIGHT SIDE	
DRAWING NUMBER: T1SPM522	
Page:	1/1

DEPARTMENT OF TRANSPORTATION	
NHTSA	
CONTRACT NO.: DTMB 88-04-C-0700	
DESIGNED BY: GESSAC, INC.	
DRAWN BY: GESSAC, INC.	
APPROVED BY: GESSAC, INC.	



REV.	QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
			ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
			ENGINEERED: J. DRUMMOND DATE: 11/15/00 DEPARTMENT OF TRANSPORTATION	
			DRAWN: J. DRUMMOND DATE: 11/15/00 NHTSA	
			CHECKED: J. DRUMMOND DATE: 11/15/00 CONTRACT NO.: DTRN 22-94-C-07010	
			SCALE: 1=3 SIZE A REVISION N/C DESIGNED BY: GESAC, INC.	
			FINISH: * DO NOT SCALE DRAWING * HOLE DIA. ± .002	
			QUANTITY FOR AN ASSEMBLY: 1	
			QUANTITY FOR ENTIRE DUMMY: 1	
			MATERIAL: BRASS	
			DRAWING TITLE: LUMBAR SPINE PITCH CHANGE INDICATOR	
			DRAWING NUMBER: T1SPM623	Page 1/1

NOTE:

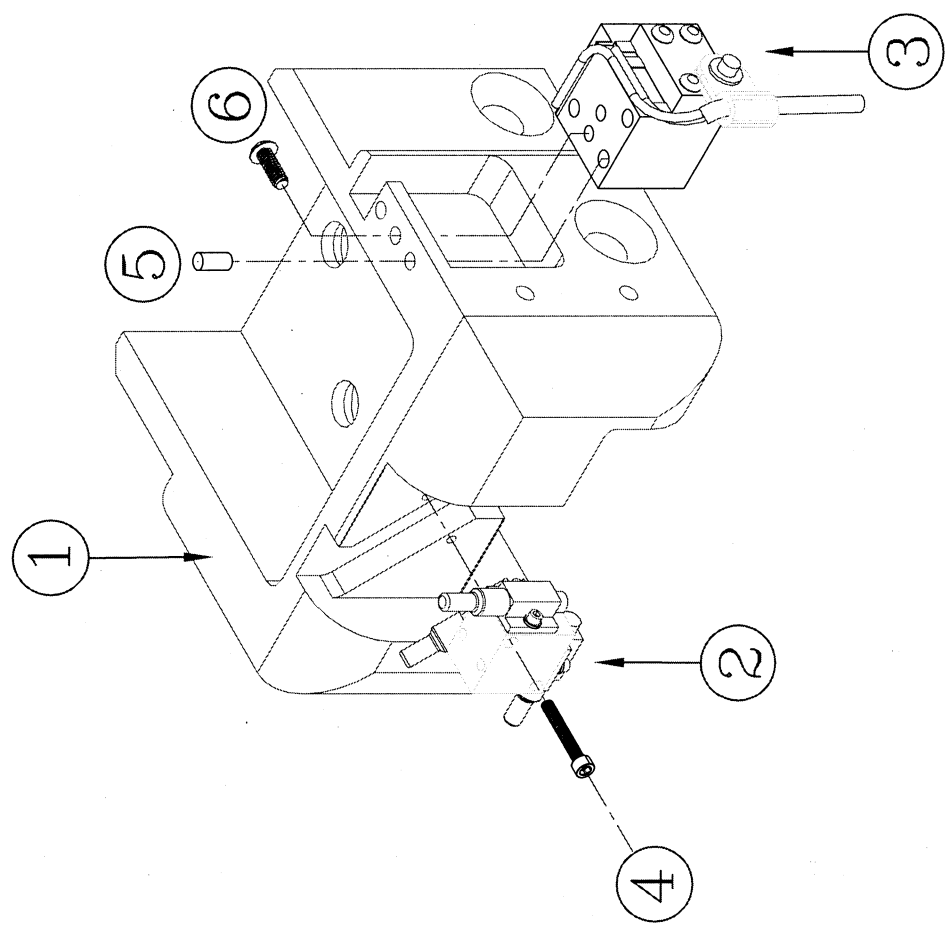


REMOVE ALL BURRS AND BREAK SHARP EDGES.

REV. #	ZONE	DESCRIPTION	DATE	BY

4 3 2 1

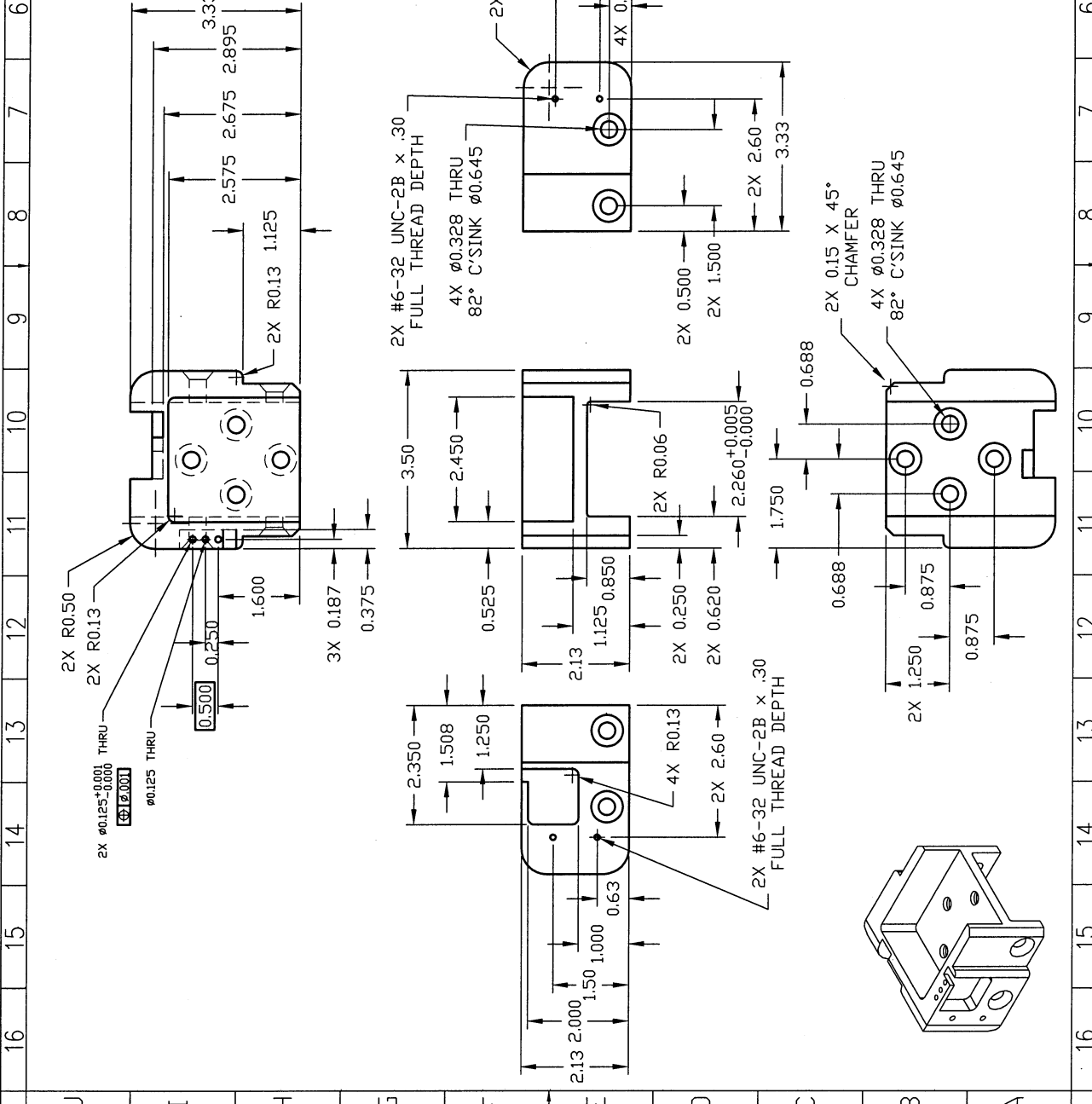
4 3 2 1

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																																															
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		Page: 1/1																																																												

REV. #	ZONE	DESCRIPTION	DATE	BY
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REV. #	ZONE	DESCRIPTION	DATE	BY
1	GLOBAL	CLARIFICATION OF DIMENSIONS	2/6/99	J. McDONALD
2	TITLE BLOCK	ADDED FINISH	6/16/99	J. McDONALD
3	07	ELIMINATED 4-40 X .38 HOLE	2/6/99	J. McDONALD
4	04	ADDED 4-40 X .38 HELICOIL	2/9/99	J. McDONALD
5	04	CHANGED 4-40 TO 6-32	1/30/04	J. McDONALD
6	GLOBAL	USE 1018 CRS. ADDED MASS AND INSTRUMENT MOUNTING	3/30/04	J. McDONALD
7	GLOBAL	ADDED #6-32 HOLES FOR WIRE STRAIN RELIEF	4/21/04	J. McDONALD
8	6 F	ADDED SLOT FOR TILT SENSOR WIRE CLEARANCE	4/21/04	J. McDONALD
9	GLOBAL	MIRROR ALL VIEWS EXCEPT FRONT	11/30/04	J. McDONALD
10	10 B	ADD .15° CHAMFER	11/30/04	J. McDONALD
11	2 E	REMOVE 0.050 FROM ACCELEROMETER POCKET	1/4/05	J. McDONALD

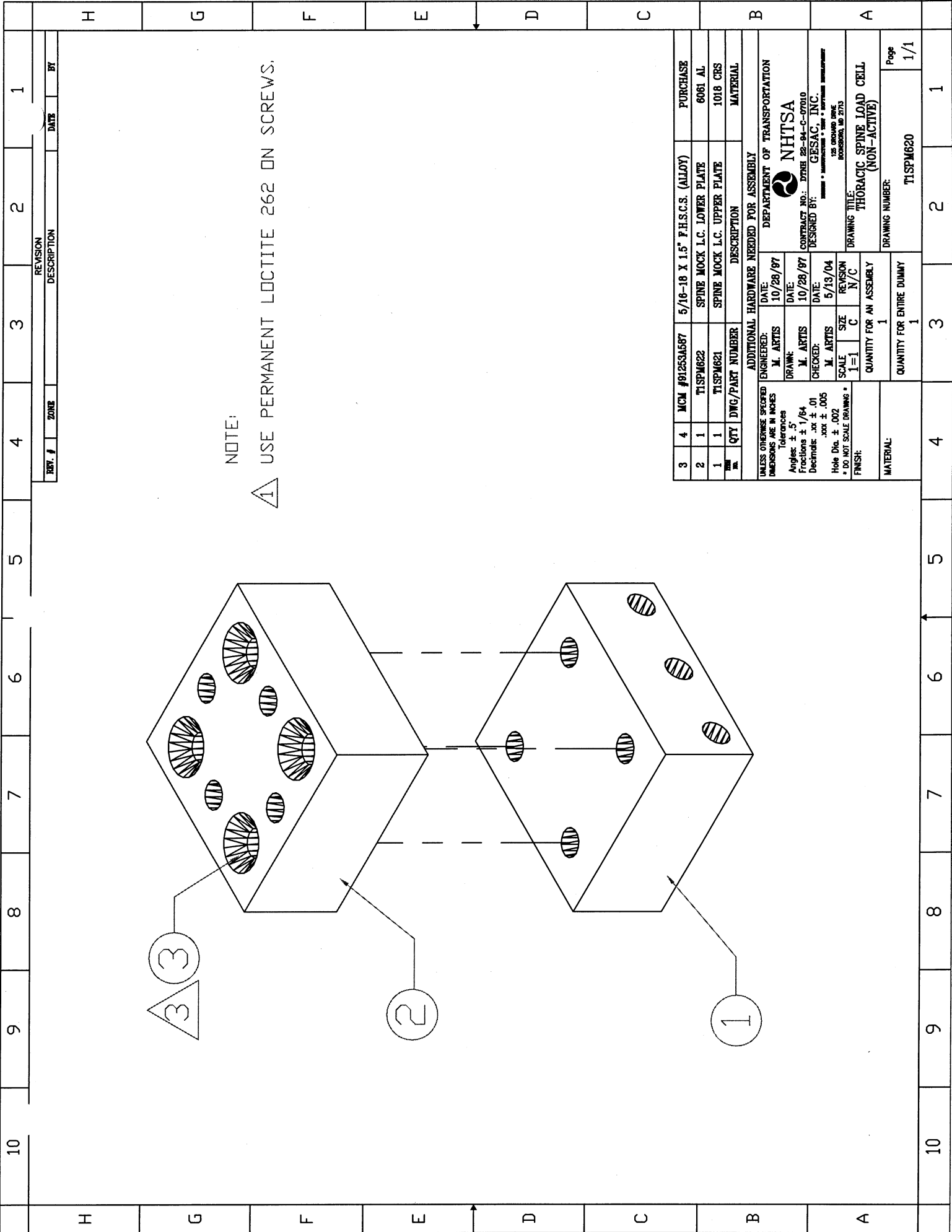
NOTES:  
 1 ENGRAVE DWG. # T1SPM610 AT THE LOCATION SPECIFIED.  
 2 RADIUS ALL EDGES AND CORNERS 1/16"  
 3 HIDDEN LINES ARE REMOVED FOR CLARITY



QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1	T1SPM610	THORACIC SPINE LOAD CELL / FLEX JOINT ADAPTOR PLATE	1018 CRS

ENGINEERED:	DATE:	DEPARTMENT OF TRANSPORTATION
J. McDONALD	3/30/04	NHTSA
DRAWN:	DATE:	CONTRACT NO.:
J. McDONALD	3/30/04	DTNH 22-94-C-07910
CHECKED:	DATE:	DESIGNED BY:
M. ARTIS	4/1/04	GESAC, INC.
125 ORANGE AVE GREENSBORO, NC 27409		
SCALE:	SIZE:	REVISION:
1=1	D	6
FINISH:	QUANTITY FOR AN ASSEMBLY:	DRAWING TITLE:
BLACK POWDER	1	THORACIC SPINE LOAD CELL / FLEX JOINT ADAPTOR PLATE
MATERIAL:	QUANTITY FOR ENTIRE DUMMY:	DRAWING NUMBER:
1018 CRS	1	T1SPM610
		Page 1/1



NOTE:  
 1 USE PERMANENT LOCTITE 262 ON SCREWS.

REV. #	ZONE	DESCRIPTION	DATE	BY

REV. #	ZONE	DESCRIPTION	DATE	BY

NO.	QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL	DATE	REVISION
3	4	MCM #91253A587	5/16-18 X 1.5" F.H.S.S. (ALLOY)	PURCHASE		
2	1	T1SPM622	SPINE MOCK L.C. LOWER PLATE	6061 AL		
1	1	T1SPM621	SPINE MOCK L.C. UPPER PLATE	1018 CBS		
1	1	T1SPM620	SPINE MOCK L.C. LOWER PLATE	1018 CBS		

ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
ENGINEERED:	M. ARTIS
DATE:	10/28/97
DRAWN:	M. ARTIS
DATE:	10/28/97
CHECKED:	M. ARTIS
DATE:	5/19/04
SCALE:	1=1
SIZE:	C
REVISION:	N/C
FINISH:	
QUANTITY FOR AN ASSEMBLY:	1
QUANTITY FOR ENTIRE DUMMY:	1

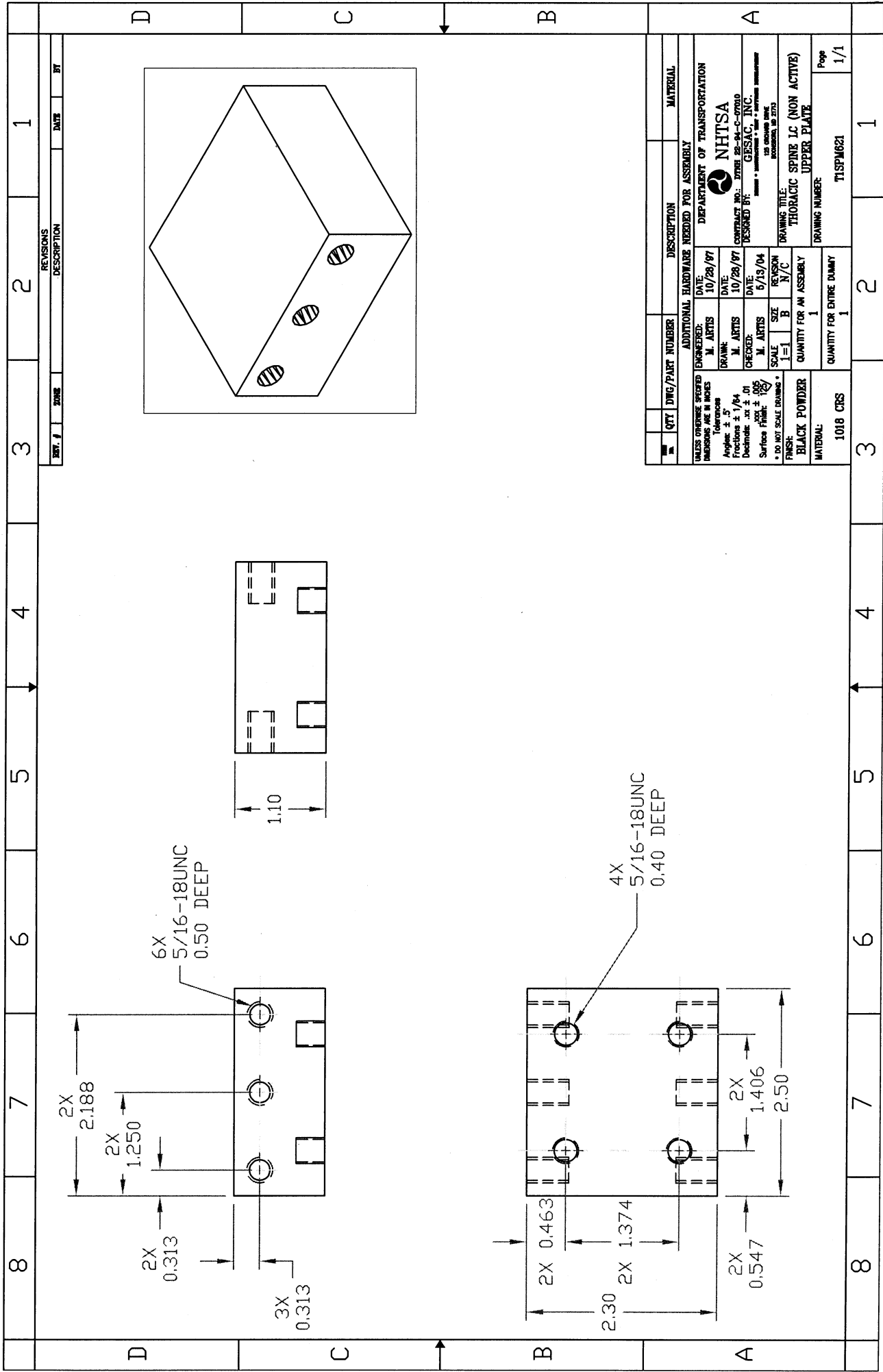
  

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
Tolerances	
Angles	± .5°
Fractions	± 1/64
Decimals	.xxx ± .01
Hole Dia.	± .002
* DO NOT SCALE DRAWING *	

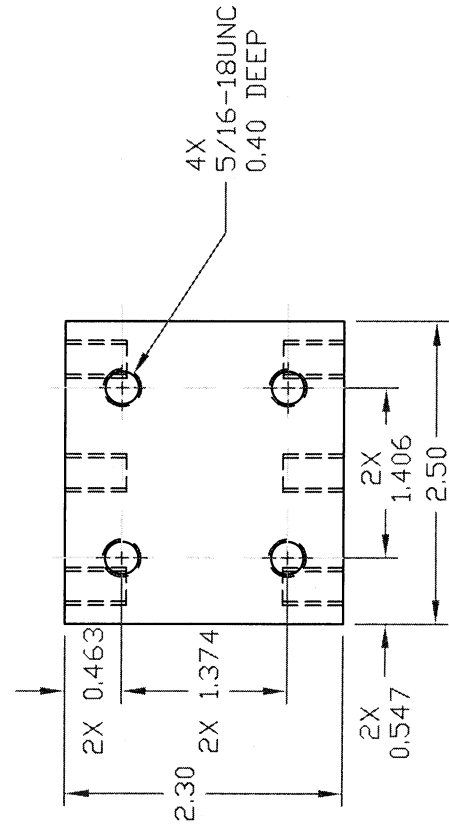
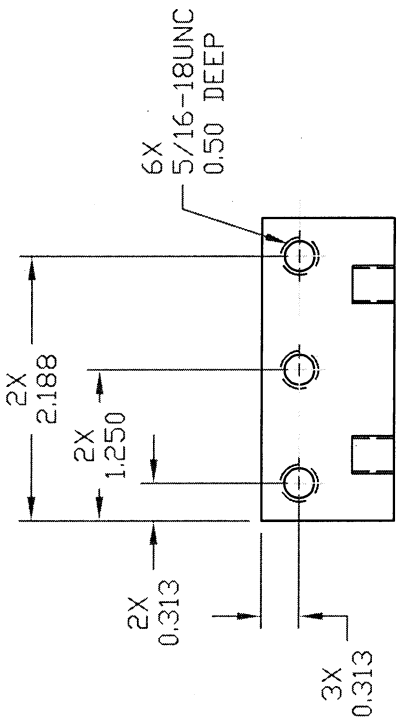
DEPARTMENT OF TRANSPORTATION	
NHTSA	
CONTRACT NO.: DTNH 22-94-C-07010	
DESIGNED BY: GESAC, INC.	
125 ORLAND DRIVE BOSTON, MA 02113	
DRAWING TITLE: THORACIC SPINE LOAD CELL (NON-ACTIVE)	
DRAWING NUMBER:	T1SPM620
Page	1/1





REV. #	ZONE	DESCRIPTION	DATE	BY

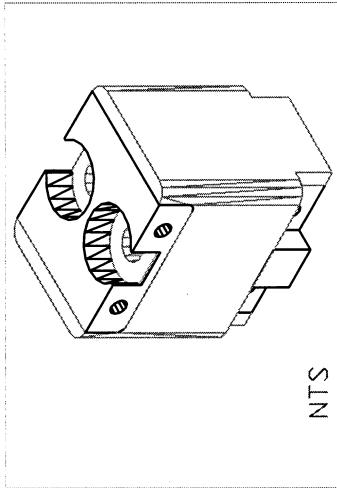
QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
		ENGINEERED: M. ARTIS DATE: 10/26/97	
		DRAWN: M. ARTIS DATE:	
		CHECKED: M. ARTIS DATE: 6/13/04	
		SCALE: 1=1 SIZE: B N/C	
		REVISION:	
		QUANTITY FOR AN ASSEMBLY: 1	
		QUANTITY FOR ENTIRE DUMMY: 1	
		MATERIAL: 1018 CRS	
		DRAWING TITLE: THORACIC SPINE IC (NON ACTIVE) UPPER PLATE	
		DRAWING NUMBER: T1SPM621	
		Page: 1/1	



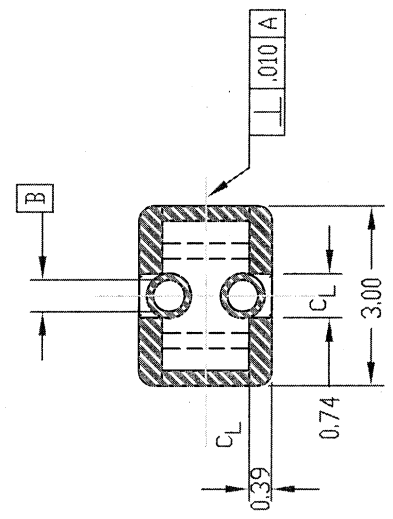
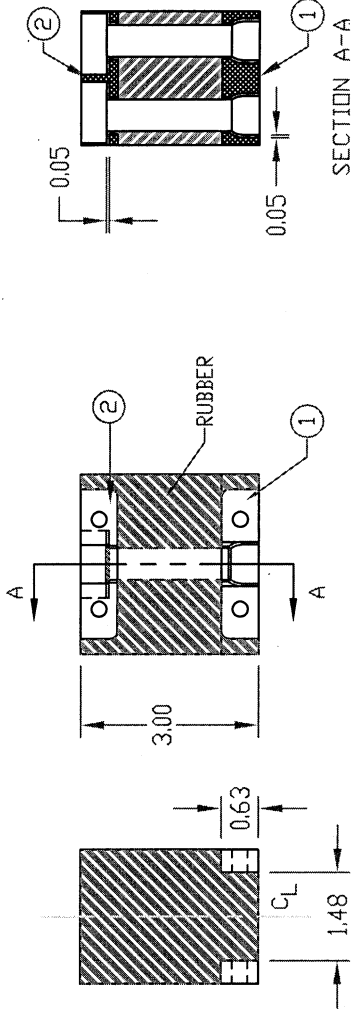
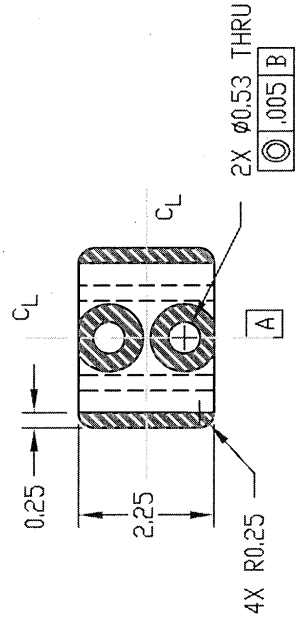
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J	I	H	G	F	E	D	C	B	A							J

REV. #	DATE	BY
5	4/7/04	M. ARTS
4	5/27/04	M. ARTS



NTS



NOTES:

- 1 MATERIAL SPECIFICATIONS: INJECTION MOLDED BUTYL RUBBER; SHORE 75 A +/- 2.
- 2 PERFORMANCE SPEC TAKES PRECEDENCE OVER DIMETER.
- 3 PLUG ALL THRU HOLES BEFORE MOLDING.
- 4 DIMENSIONS PROVIDED REPRESENT PART SIZE AFTER MOLDING.

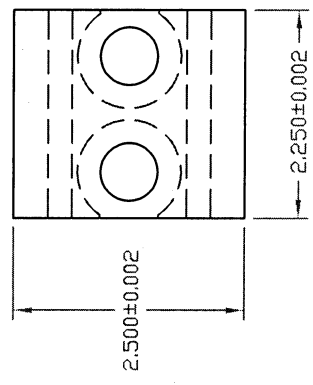
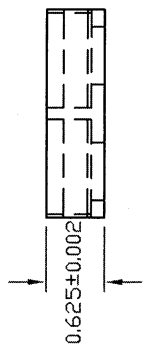
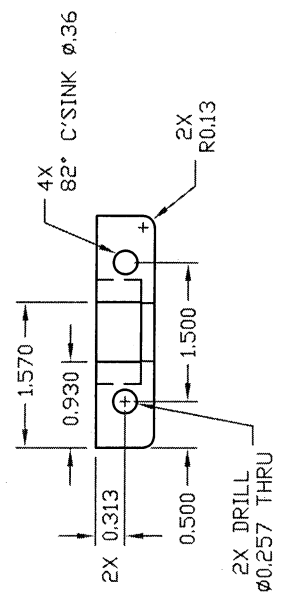
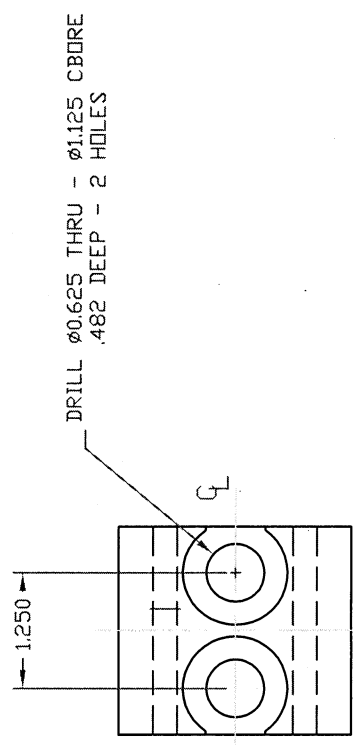
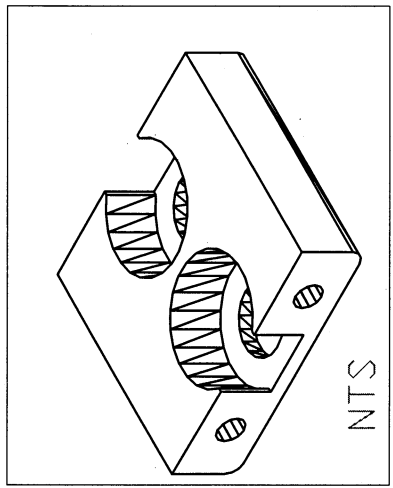
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1	TISPW712	LUMBAR FLEX JOINT - BOTTOM PLATE	1018 CBS

ENGINEERED:	DATE:	DEPARTMENT OF TRANSPORTATION
M. ARTS	6/26/03	NHTSA
DRANK:	DATE:	CONTRACT NO.: DTMB 93-04-C-0000
M. ARTS	6/26/03	DESCRIBED BY: GESAC, INC.
CHECKED:	DATE:	SCALE: 1=1
R. ROSE	6/27/03	REVISION: D
SCALE:	SIZE:	QUANTITY FOR AN ASSEMBLY: 1
1=1	D	QUANTITY FOR ENTIRE DUMMY: 1
D	B0	DRAWING NUMBER: TISPW710
D	B0	PAGE: 1/1

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H	G	F	E	D	C	B	A			

REVISION		DATE	BY
6	T1SPM711R6 REPLACES & IS IDENTICAL TO 711X2	4/7/04	M. ARTIS
5	THIS DWG REPLACES & IS IDENTICAL TO 711R6	5/27/04	M. ARTIS

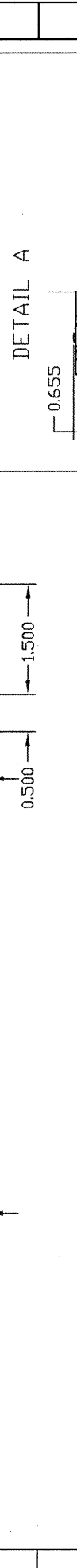
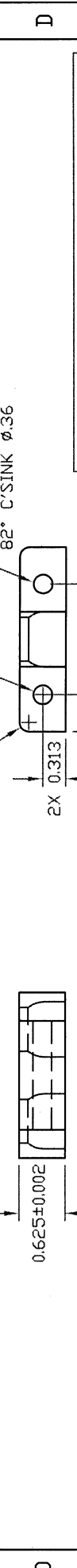
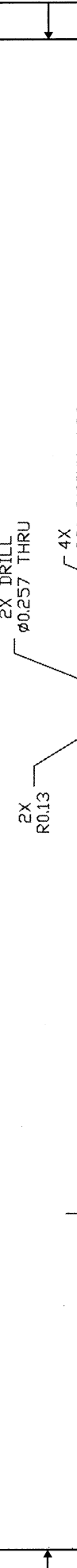


QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1018 CRS		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			
Tolerances: Angles: ± .5° Fractions: ± 1/64 Decimals: .xxx ± .005			
* DO NOT SCALE DRAWING * FINISH: 1=1 C B0			
QUANTITY FOR AN ASSEMBLY: 1			
QUANTITY FOR ENTIRE DUMMY: 1			
MATERIAL: 1018 CRS			
DRAWING TITLE: LUMBAR SPINE FLEX JOINT TOP PLATE			
DRAWING NUMBER: T1SPM711			
DESIGNED BY: GESAC, INC. 125 ORCHARD DRIVE BOSSKOR, MD 21775			
CONTRACT NO.: DPMB 22-04-C-07010			
DEPARTMENT OF TRANSPORTATION NHTSA			
DATE: 6/28/03			
ENGINEERED: M. ARTIS			
DATE: 6/27/03			
DRAWN: M. ARTIS			
DATE: 7/2/03			
CHECKED: R. ROSE			

H G F E D C B A

REV. #	ZONE	DESCRIPTION	DATE	BY
8	GLOBAL	T1SPM712R8 REPLACES & IDENTICAL TO SPM712X2	4/7/04	M. ARTIS
BD	GLOBAL	T1SPM712B0 REPLACES & IDENTICAL TO SPM712R8	6/27/04	M. ARTIS

REV. #	ZONE	DESCRIPTION	DATE	BY
8	GLOBAL	T1SPM712R8 REPLACES & IDENTICAL TO SPM712X2	4/7/04	M. ARTIS
BD	GLOBAL	T1SPM712B0 REPLACES & IDENTICAL TO SPM712R8	6/27/04	M. ARTIS



QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1018 CRS		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
1		QUANTITY FOR AN ASSEMBLY	
1		QUANTITY FOR ENTIRE DUMMY	

ENGINEERED:	DATE:	DEPARTMENT OF TRANSPORTATION
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DRAWN:	DATE:	CONTRACT NO.: DTN82-94-C-07010
M. ARTIS	6/27/03	DESIGNED BY: GESAC, INC.
CHECKED:	DATE:	125 ORLAND DRIVE
R. ROSE	7/2/03	ROCKSBORO, MD 27133
SCALE:	SIZE:	REVISION:
1=1	C	B0

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
Tolerances: Angles: ± .5°
Fractions: ± 1/64
Decimals: .XX ± .01
.XXX ± .005
* DO NOT SCALE DRAWING *
FINISH:

DRAWING TITLE:
LUMBAR SPINE FLEX JOINT BOTTOM PLATE
DRAWING NUMBER:
T1SPM712
Page
1/1

REV. #	ZONE	DESCRIPTION	DATE	BY
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BD	GLOBAL	T1SPM712B0 REPLACES & IDENTICAL TO SPM712R8	6/27/04	M. ARTIS

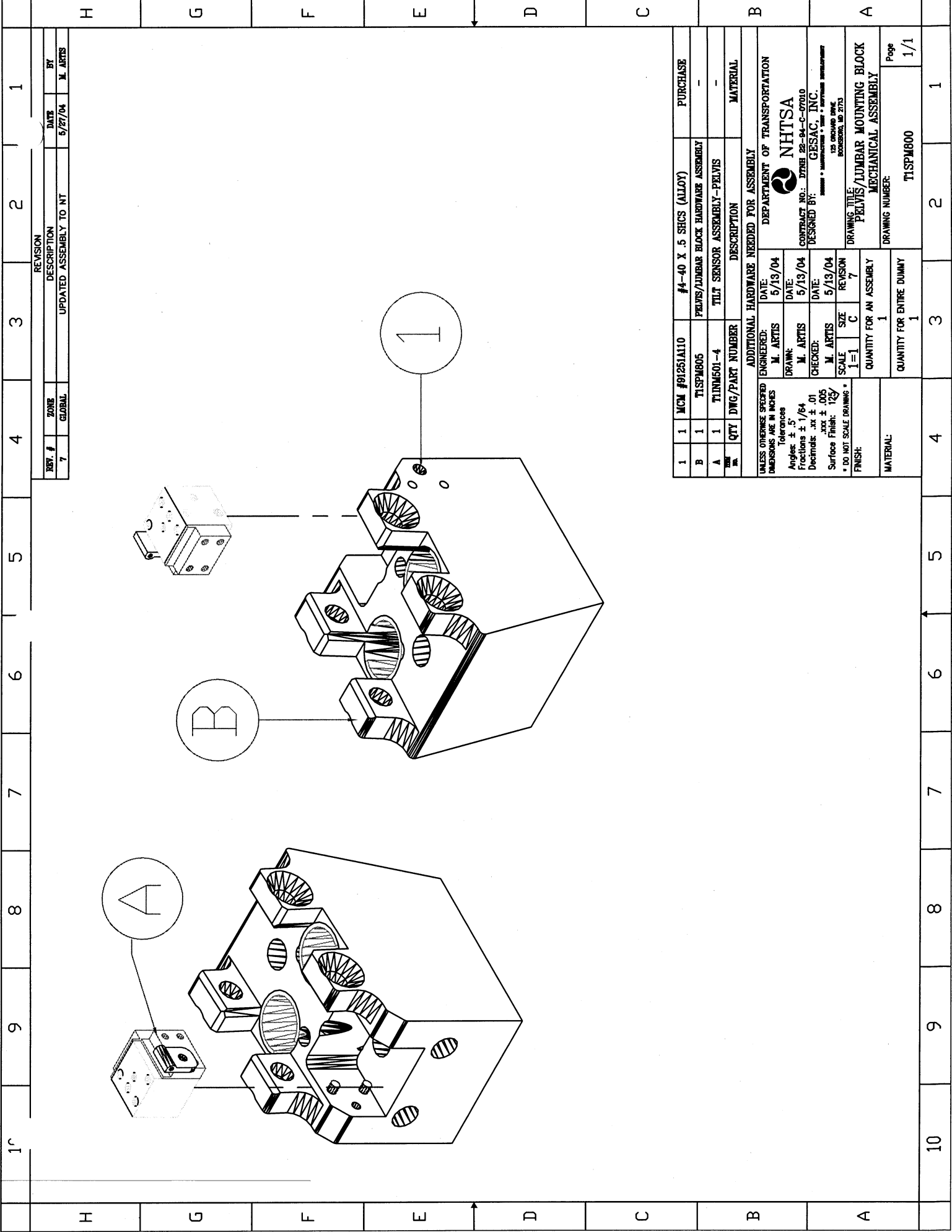
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7	C8	UPDATED ASSEMBLY WITH T1SPM721 R2	12/02/02	C. SPAUR																																															
<p>NOTES:</p> <p>① USE LOCTITE 271 TO LOCK THE THE THREADED BALL END FITTING IN PLACE AT THE SPECIFIED LOCATION. ALLOW 20 MIN. FOR THE LOCTITE TO CURE.</p> <p>② ONE SAMPLE FROM EACH ASSEMBLY BATCH NEEDS TO BE TESTED TO INSURE NO SLIPPAGE OF THE BALL OR THREADED SLEEVE ON THE CABLE SHALL OCCUR UNDER 1,700 LBS OF TENSILE LOADING.</p>																																																			
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<p>NOTES:</p> <p>△ CABLE ASSEMBLY IS MACHINED TO SPECIFICATION AFTER THE END FITTINGS HAVE BEEN SWAGED.</p>																																																	
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8	7	6	5	4	3	2	1																																										
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<p style="text-align: center;">NOTES:</p> <p style="text-align: center;"> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1</span> CABLE ASSEMBLY IS TO BE CONSTRUCTED USING STANDARD 5/16" STEEL CABLE OF 7x19 CONSTRUCTION.         </p> <p style="text-align: center;"> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">2</span> THREADED SLEEVE &amp; SHANK BALL SLEEVE END TO BE CRIMPED SECURELY SO THAT NO SLIPPAGE OF BALL OR THREADED SLEEVE ON CABLE SHALL OCCUR UNDER 1,700 LBS OF TENSILE LOADING.         </p>																																																	
<p style="text-align: center;">ASSEMBLY NOTES:</p> <p style="text-align: center;"> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1</span> THE DIMENSIONS OF THE CABLE ASSEMBLY IS POST SWAGING.         </p>																																																	
<table border="1"> <tr> <td>2</td> <td>1</td> <td>MCM# 3460745</td> <td>5/16" STEEL WIRE ROPE 7 x 19</td> <td>303 (SEE) SS</td> <td>PURCHASED</td> </tr> <tr> <td>1</td> <td>2</td> <td>TISPAN327</td> <td>END STAGE</td> <td></td> <td></td> </tr> <tr> <td colspan="2">QTY</td> <td colspan="2">DWG/PART NUMBER</td> <td colspan="2">DESCRIPTION</td> </tr> <tr> <td colspan="6">           ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY            ENGINEERED: J. McDONALD DATE: 12/6/00            DRAWN: J. McDONALD DATE: 12/6/00            CHECKED: M. ARTS DATE: 12/4/01            SCALE: 1=1 SIZE: B            FINISH: * DO NOT SCALE DRAWING *         </td> </tr> <tr> <td colspan="6">           UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES            Tolerances:            Angles: ± .5°            Fractions: ± 1/64            Decimals: .001 ± .005            Hole Dia: ± .002            * DO NOT SCALE DRAWING *         </td> </tr> <tr> <td colspan="6">           DEPARTMENT OF TRANSPORTATION  <b>NHTSA</b>            CONTRACT NO.: DTMB 98-04-G-0740            DESIGNED BY: GERALD J. VINC.            125 OCTAVIA DRIVE            BOSTON, MA 02115         </td> </tr> <tr> <td colspan="6">           DRAWING TITLE:            LUNBAR SPINE FLEX JOINT            SWAGED CABLE ASSEMBLY            DRAWING NUMBER:            T1SPM722            QUANTITY FOR AN ASSEMBLY:            1            QUANTITY FOR ENTIRE DUMMY:            2            MATERIAL:            SEE NOTES            Page: 1/1         </td> </tr> </table>								2	1	MCM# 3460745	5/16" STEEL WIRE ROPE 7 x 19	303 (SEE) SS	PURCHASED	1	2	TISPAN327	END STAGE			QTY		DWG/PART NUMBER		DESCRIPTION		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY ENGINEERED: J. McDONALD DATE: 12/6/00 DRAWN: J. McDONALD DATE: 12/6/00 CHECKED: M. ARTS DATE: 12/4/01 SCALE: 1=1 SIZE: B FINISH: * DO NOT SCALE DRAWING *						UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES Tolerances: Angles: ± .5° Fractions: ± 1/64 Decimals: .001 ± .005 Hole Dia: ± .002 * DO NOT SCALE DRAWING *						DEPARTMENT OF TRANSPORTATION <b>NHTSA</b> CONTRACT NO.: DTMB 98-04-G-0740 DESIGNED BY: GERALD J. VINC. 125 OCTAVIA DRIVE BOSTON, MA 02115						DRAWING TITLE: LUNBAR SPINE FLEX JOINT SWAGED CABLE ASSEMBLY DRAWING NUMBER: T1SPM722 QUANTITY FOR AN ASSEMBLY: 1 QUANTITY FOR ENTIRE DUMMY: 2 MATERIAL: SEE NOTES Page: 1/1					
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REV. #	ZONE	DESCRIPTION	DATE	BY
7	GLOBAL	UPDATED ASSEMBLY TO NT	5/27/04	M. ARTIS

QTY	MCM #	DESCRIPTION	PURCHASE
1	91251A110	#4-40 X .5 SECS (ALLOY)	
B	TISPM605	PELVIS/LUMBAR BLOCK HARDWARE ASSEMBLY	
A	T1NM601-4	TILT SENSOR ASSEMBLY-PELVIS	
QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL

ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
ENGINEERED:	M. ARTIS
DATE:	5/13/04
DRAWN:	M. ARTIS
DATE:	5/13/04
CHECKED:	M. ARTIS
DATE:	5/13/04
SCALE:	1=1
SIZE:	C
REVISION:	7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
Tolerances	
Angles:	± .5°
Fractions:	± 1/64
Decimals:	.xx ± .01 .xxx ± .005
Surface Finish:	125/
* DO NOT SCALE DRAWING *	

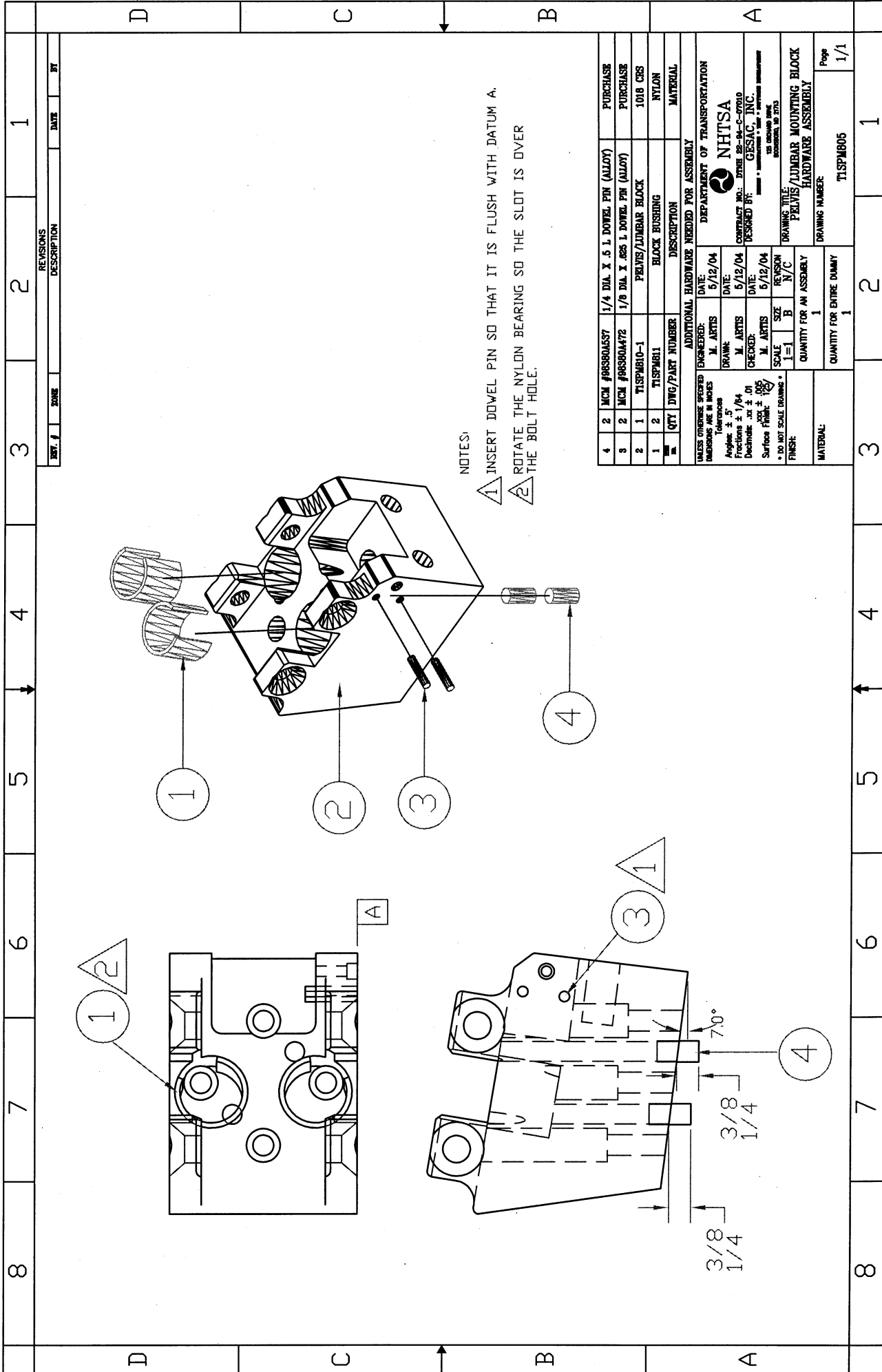
DEPARTMENT OF TRANSPORTATION	
<b>NHTSA</b>	
CONTRACT NO.: DTMBI 22-04-C-07010	
DESIGNED BY: GESAC, INC.	
125 ORCHARD DRIVE BOSSBORO, MD 21710	

DRAWING TITLE:	
PELVIS/LUMBAR MOUNTING BLOCK MECHANICAL ASSEMBLY	
DRAWING NUMBER:	TISPM600
QUANTITY FOR AN ASSEMBLY:	1
QUANTITY FOR ENTIRE DUMMY:	1

Page	
1/1	1



NOTES:

- 1 INSERT DOWEL PIN SO THAT IT IS FLUSH WITH DATUM A.
- 2 ROTATE THE NYLON BEARING SO THE SLOT IS OVER THE BOLT HOLE.

QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
4	NCM #063804537	1/4 DIA. X .5 L. DOWEL PIN (ALLOY)	PURCHASE
3	NCM #063804472	1/8 DIA. X .825 L. DOWEL PIN (ALLOY)	PURCHASE
2	T1SPM810-1	PELVIS/LUMBAR BLOCK	1018 CBS
1	T1SPM811	BLOCK BUSHING	NYLON

ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
ENGINEERED:	DATE: 5/12/04
DRAWN:	M. ARTIS
CHECKED:	M. ARTIS
SCALE:	1=1
SIZE:	B
REVISION:	N/C

UNLESS OTHERWISE SPECIFIED	
DIMENSIONS ARE IN INCHES	
Tolerances	
Angles:	± .5
Fit:	± .004
Form:	± .01
Surface Finish:	± .005
* DO NOT SCALE DRAWING *	

DEPARTMENT OF TRANSPORTATION	
NHTSA	
CONTRACT NO.: DTMB 04-04-0000	
DESIGNED BY: GISSAC, INC.	
120 GARDNER DRIVE	
ROCKFORD, IL 61103	

DRAWING TITLE	
PELVIS/LUMBAR MOUNTING BLOCK	
HARDWARE ASSEMBLY	
DRAWING NUMBER:	T1SPM805
QUANTITY FOR AN ASSEMBLY:	1
QUANTITY FOR ENTIRE DUMMY:	1
Page:	1/1

REV. #	DATE	BY
7	9/7/04	M. ARTS
80	9/22/04	M. ARTS
81	9/29/04	M. ARTS
82	10/16/04	J. MCDONALD
83	12/16/04	J. MCDONALD
84	3/20/06	J. MCDONALD

REV. #	DATE	BY
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83	12/16/04	J. MCDONALD
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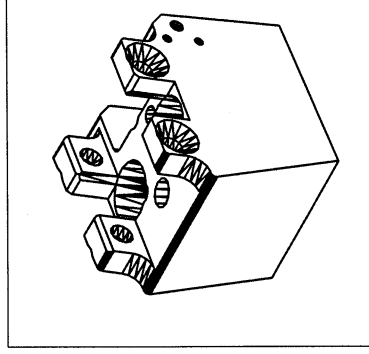
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82	10/16/04	J. MCDONALD
83	12/16/04	J. MCDONALD
84	3/20/06	J. MCDONALD

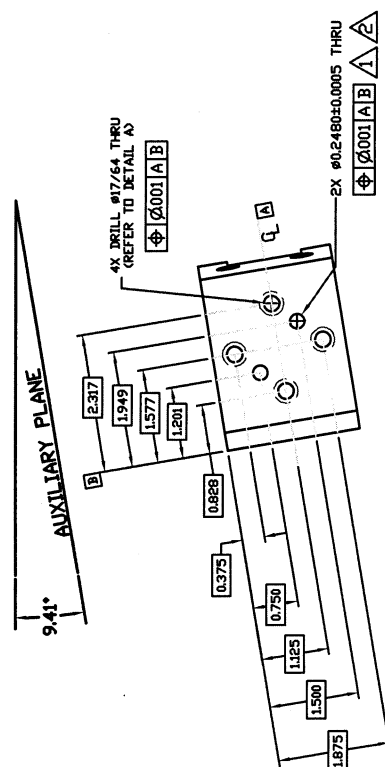
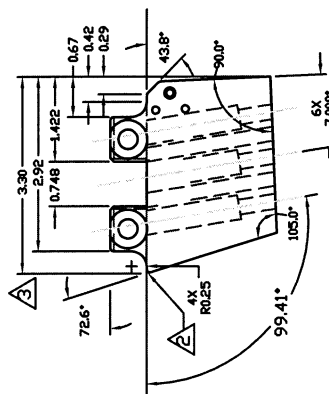
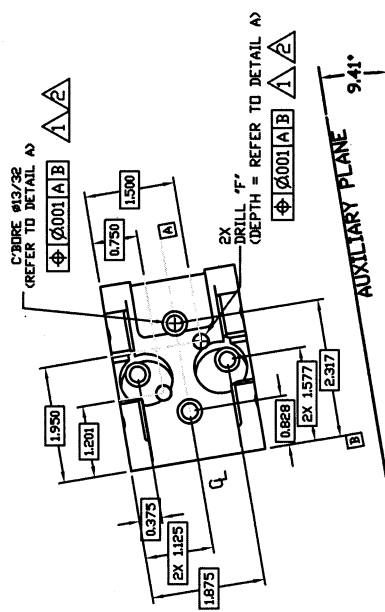
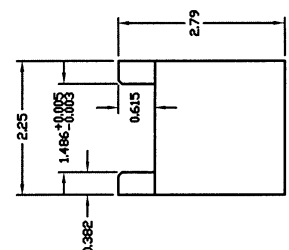
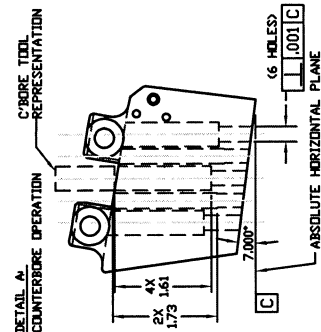
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81	9/29/04	M. ARTS
82	10/16/04	J. MCDONALD
83	12/16/04	J. MCDONALD
84	3/20/06	J. MCDONALD



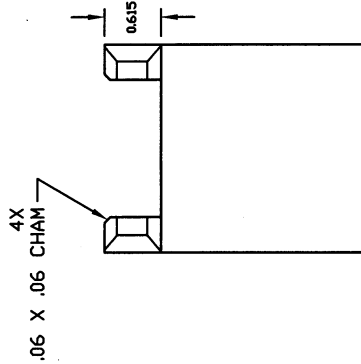
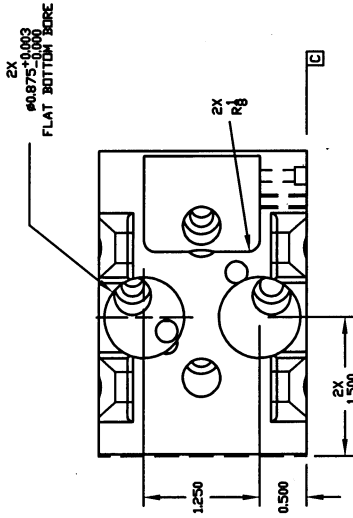
NOTE:

- 1 DRILL/C'BURE THESE HOLES BEFORE PERFORMING THE C'BURE AND REARWARD .100" DEEP CAVITY MACHINING OPERATION FOUND ON PAGE 2.
- 2 ROUND EDGE (R .06) BEFORE DRILLING HOLES.
- 3 DIMENSION PROVIDED IS BEFORE EDGE IS ROUNDED (R .06).

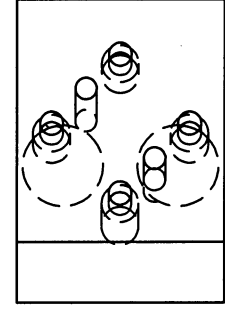
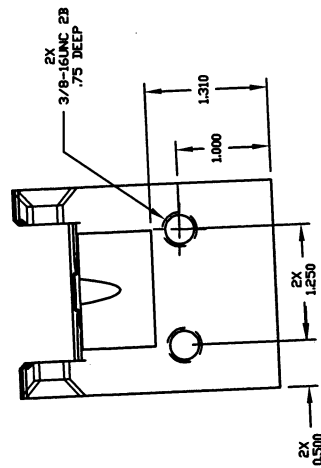
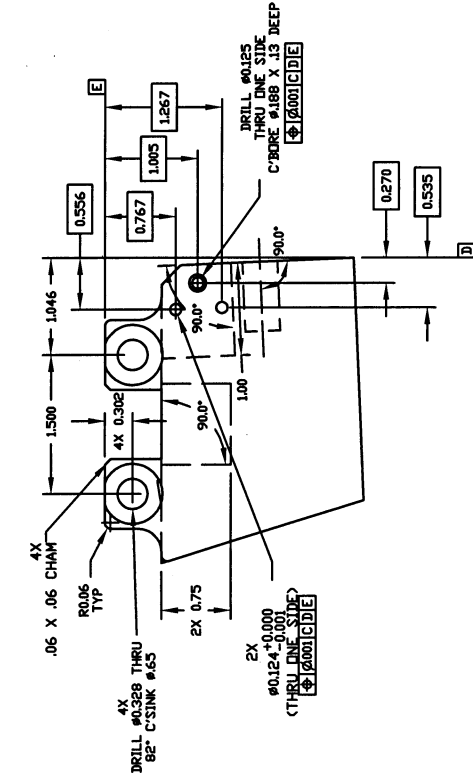
QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
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UNLESS OTHERWISE SPECIFIED ENGINEERED: DATE: 2/11/04			
DIMENSIONS ARE IN INCHES M. ARTS			
TOLERANCES: DATE: 2/11/04			
Angles: ± .5° M. ARTS			
Fractions: 1/64			
Decimals: .001			
.001 ± .005 R. ROSE			
SCALE: DATE: 2/11/04			
SIZE: REVISION			
1 = 1 D B3			
DO NOT SCALE DIMENSIONS			
FINISH: QUANTITY FOR AN ASSEMBLY			
1			
MATERIAL: QUANTITY FOR ENTIRE DUMMY			
1018 CRS 1			
DRAWING TITLE: PELVIS / LUMBAR MOUNTING			
BLOCK - SHEET 1			
DRAWING NUMBER: T1SPM810-1			
Page: 1/2			



H	G	F	E	D	C	B	A
1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16



**AUXILIARY PLANE**



QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
		ENGINEERED: M. ARTIS	
		DATE: 2/11/04	
		DRAWN: M. ARTIS	
		DATE: 2/11/04	
		CHECKED: R. ROSE	
		DATE: 2/11/04	
		SCALE: 1=1	
		SIZE: C	
		REVISION: B2	
		QUANTITY FOR AN ASSEMBLY: 1	
		QUANTITY FOR ENTIRE DUMMY: 1	
		MATERIAL:	
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
		Tolerances	
		Angles: ± .5°	
		Fractions: ± 1/64	
		Decimals: .xx ± .01	
		Surface Finish: 125/	
		* DO NOT SCALE DRAWING *	
		FINISH:	
		DEPARTMENT OF TRANSPORTATION	
		NHTSA	
		CONTRACT NO.: DTMB 22-94-C-07010	
		DESIGNED BY: GESAC, INC.	
		125 ORCHARD DRIVE	
		BOONSBORO, NJ 07008	
		DRAWING TITLE: PELVIS / LUMBAR MOUNTING BLOCK - SHEET #2	
		DRAWING NUMBER:	
		Page	2/2
		TTSPM810-2	

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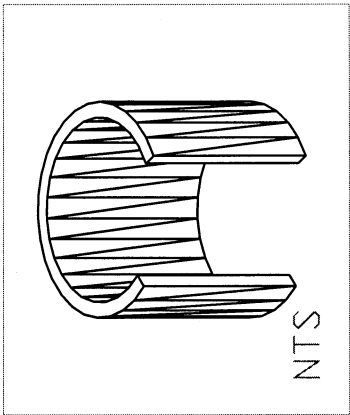
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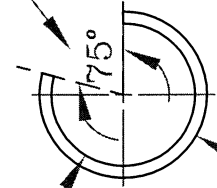
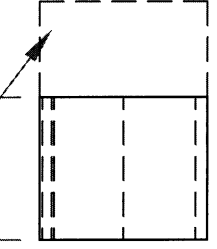
B

A

REV. #	ZONE	DESCRIPTION	DATE	BY
1	GLOBAL	ADDED 75 DEG. CUT	2/11/04	M. ARTIS



REMOVE MATERIAL AS SHOWN



φ.750 STOCK

φ.875 STOCK

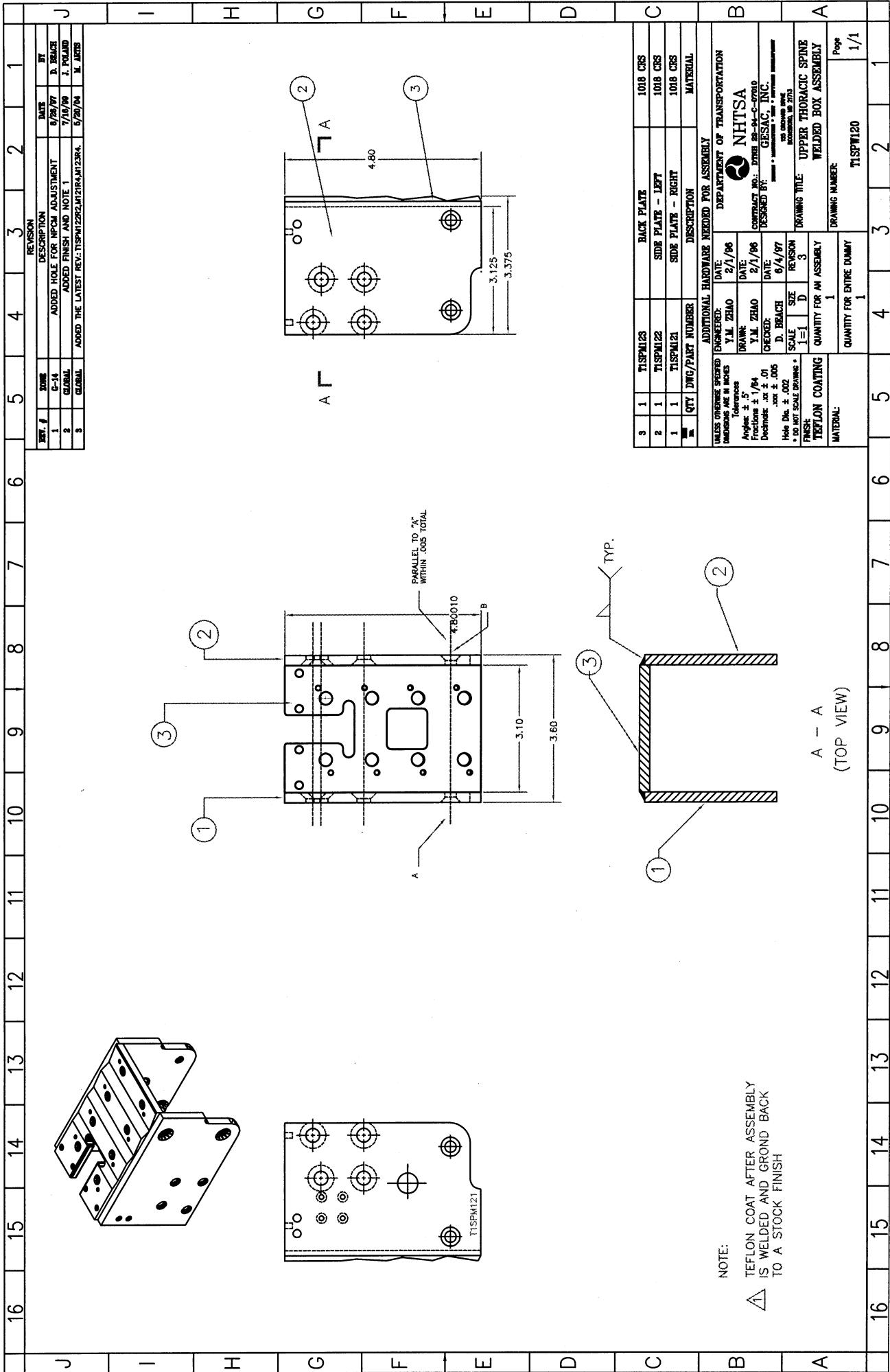
NOTE:



REMOVE ALL BURRS AND BREAK SHARP EDGES.

1	2	QTY	MCM#	DWG/PART NUMBER	DESCRIPTION	DEPARTMENT OF TRANSPORTATION	DATE	ENGINEERED:	DATE	DESIGNED BY:	CONTRACT NO.:	DESIGNED BY:	DATE	REVISION	SIZE	SCALE	FINISH:	QUANTITY FOR AN ASSEMBLY	QUANTITY FOR ENTIRE DUMMY	DRAWING NUMBER:	PURCHASED MATERIAL	Page
			6888R225		3/4" ± 1/8" ± 1-1/4" NYLON BUSHING	NHTSA	9/11/01	J. McDONALD	9/11/01	NHTSA	DTRR 22-94-C-07010	GESAC, INC.	2/11/04	1	A	1=1	SEE ABOVE	2	2	T1SPMB11		1/1
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES Tolerances Angles: ± .5° Fractions: ± 1/64 Decimals: .xx ± .01 Hole Dia: ± .002 * DO NOT SCALE DRAWING * FINISH: MATERIAL: SEE ABOVE ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY: DEPARTMENT OF TRANSPORTATION NHTSA CONTRACT NO.: DTRR 22-94-C-07010 DESIGNED BY: GESAC, INC. 125 CINCINNATI DRIVE BOSTON, MA 02113 DRAWING TITLE: PELVIS/LUMBAR BLOCK BUSHING DRAWING NUMBER: T1SPMB11 QUANTITY FOR AN ASSEMBLY: 2 QUANTITY FOR ENTIRE DUMMY: 2																						

4 3 2 1



REV. #	DATE	DESCRIPTION	BY
1	9/29/97	ADDED HOLE FOR NPCM ADJUSTMENT	D. BRACE
2	7/10/98	ADDED FINISH AND NOTE 1	J. POLLARD
3	5/20/04	ADDED THE LATEST REV. T1SPM122R2, M121R4, M123R4.	H. ARTIS

QTY	DNWG/PART NUMBER	DESCRIPTION	MATERIAL
3	T1SPM123	BACK PLATE	1018 CRS
2	T1SPM122	SIDE PLATE - LEFT	1018 CRS
1	T1SPM121	SIDE PLATE - RIGHT	1018 CRS

UNLESS OTHERWISE SPECIFIED		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
ENGINEERED:	Y.M. ZHAO	DATE:	2/1/96
DESIGNED:	Y.M. ZHAO	DATE:	2/1/96
CHECKED:	D. BRACE	DATE:	6/4/97
SCALE:	1=1	SIZE:	D
REVISION:	1	REVISION:	3
QUANTITY FOR AN ASSEMBLY:	1	QUANTITY FOR ENTIRE DUMMY:	1
MATERIAL:		DRAWING NUMBER:	
TEFLON COATING		T1SPW120	

DEPARTMENT OF TRANSPORTATION  
**NHTSA**  
 CONTRACT NO.: DTRC 95-06-C-0010  
 DESIGNED BY: GESMAC, INC.  
 1000 W. 10TH AVE.  
 DENVER, CO 80202

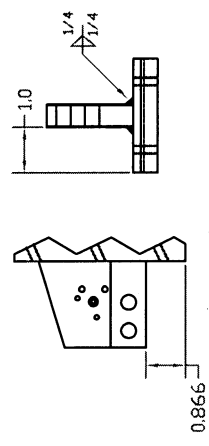
DRAWING TITLE: UPPER THORACIC SPINE  
 WELDED BOX ASSEMBLY  
 Page 1/1

NOTE:  
 ① TEFLON COAT AFTER ASSEMBLY IS WELDED AND GRIND BACK TO A STOCK FINISH

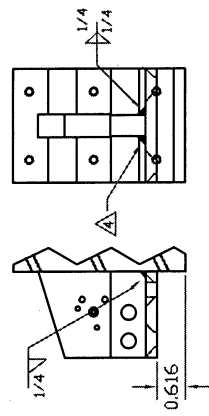
A - A  
 (TOP VIEW)

REV. #	ZONE	DESCRIPTION	DATE	BY
1	ZONE 4	ADDED NOTE 4 - CLEAN WELDED AREAS	6/21/96	D. BEACH
2	ZONE 4	CIRCLED ITEM #'S IN DWG	6/18/96	J. POLAND
3	GLOBAL	LARGER BORDER, ADDED FINISH AND NOTE 5	7/18/96	J. POLAND
4	NOTE 6	ADD NOTE 6 FOR FIT CHECK	7/28/96	D. BEACH
5	GLOBAL	UPDATE TO INCLUDE T1SPM412 R3 & 410 R3	9/25/04	J. McDONALD
6	GLOBAL	UPDATE TO INCLUDE T1SPM410 R3	6/18/04	M. ARTIS

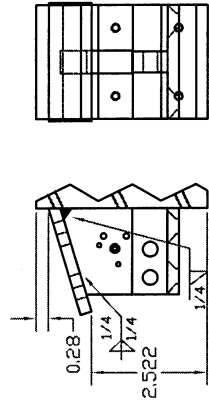
STEP 1: WELD CENTER PLATE T1SPM412 TO RIB MOUNTING PLATE T1SPM410 USING TWO PARALLEL FILLET WELDS.



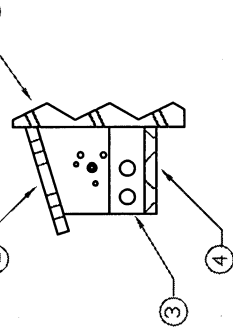
STEP 2: WELD BOTTOM PLATE T1SPM413 TO RIB MOUNTING PLATE T1SPM410 USING ONE FILLET WELD. (WELD IS MADE ON BOTH SIDES OF THE CENTER PLATE T1SPM412.)



STEP 3: WELD BOTTOM PLATE T1SPM413 TO THE CENTER PLATE T1SPM412 USING TWO PARALLEL FILLET WELDS.



STEP 4: WELD TOP PLATE T1SPM411 TO RIB MOUNTING PLATE T1SPM410 USING ONE FILLET WELD. (WELD IS MADE ON BOTH SIDES OF THE CENTER PLATE T1SPM412.)



STEP 5: WELD TOP PLATE T1SPM411 TO CENTER PLATE T1SPM412 USING TWO PARALLEL FILLET WELDS.

NOTES:  
 LOWER THORACIC SPINE IS TO BE WELDED AS SHOWN IN THE DRAWINGS.  
 WELDS SHOULD BE MADE ALONG ADJACENT SIDES AS INDICATED IN THE DRAWINGS.  
 ALL WELDS SHOULD BE FULL LENGTH - HIGH STRENGTH  
 CLEAN WELDED AREA WITH 1/4"φ BALL END MILL AFTER WELDING  
 TEFLON COAT AFTER ASSEMBLY IS WELDED AND GROUND BACK TO A STOCK FINISH  
 CHECK FIT WITH T1UAM110 PRIOR TO TEFLON COATING

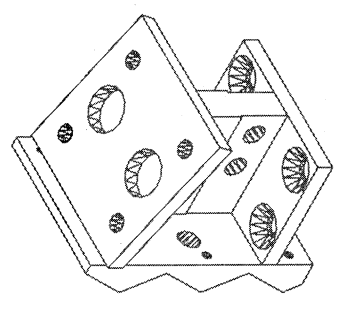
QTY	DWG/PART NUMBER	DESCRIPTION
1	T1SPM413	LTS - BOTTOM PLATE
1	T1SPM412	LTS - CENTRAL PLATE
1	T1SPM411	LTS - TOP PLATE
1	T1SPM410	LTS - RIB MOUNTING PLATE
		MATERIAL

ENGINEERED:	DATE:
D. BEACH	2/5/96
DRAWN:	DATE:
D. BEACH	2/5/96
CHECKED:	DATE:
D. BEACH	6/6/97
SCALE	SIZE
1=1	E
FINISH:	REVISION
	6

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES  
 Tolerances  
 Angles: ± .5°  
 Fractions: ± 1/64  
 Decimals: .XX ± .01  
 .XXX ± .005  
 Hole Dia. ± .002  
 \* DO NOT SCALE DRAWING \*

TEFLON COATING  
 MATERIAL:  
 SEE SPECS.

QUANTITY FOR AN ASSEMBLY: 1  
 QUANTITY FOR ENTIRE DUMMY: 1  
 DRAWING NUMBER: T1SPW400  
 Page: 1/1



REFERENCE DRAWING SHOWING PROPER LOCATION OF ALL PARTS.

REV. #	ZONE	DESCRIPTION	DATE	BY
1	ZONE 4	ADDED NOTE 4 - CLEAN WELDED AREAS	6/21/96	D. BEACH
2	ZONE 4	CIRCLED ITEM #'S IN DWG	6/18/96	J. POLAND
3	GLOBAL	LARGER BORDER, ADDED FINISH AND NOTE 5	7/18/96	J. POLAND
4	NOTE 6	ADD NOTE 6 FOR FIT CHECK	7/28/96	D. BEACH
5	GLOBAL	UPDATE TO INCLUDE T1SPM412 R3 & 410 R3	9/25/04	J. McDONALD
6	GLOBAL	UPDATE TO INCLUDE T1SPM410 R3	6/18/04	M. ARTIS

QTY	DWG/PART NUMBER	DESCRIPTION
1	T1SPM413	LTS - BOTTOM PLATE
1	T1SPM412	LTS - CENTRAL PLATE
1	T1SPM411	LTS - TOP PLATE
1	T1SPM410	LTS - RIB MOUNTING PLATE
		MATERIAL

ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY

DEPARTMENT OF TRANSPORTATION  
 NHTSA  
 CONTRACT NO.: DTNH 22-94-C-07010  
 DESIGNED BY: GESAC, INC.  
 125 ORCHARD DRIVE  
 ROCKFORD, IL 61103

DRAWING TITLE: LOWER THORACIC SPINE WELDED ASSEMBLY  
 DRAWING NUMBER: T1SPW400  
 Page: 1/1