

REV. #	ZONE	DESCRIPTION	DATE	BY
1	GLOBAL	UPDATED FOR NEW PARTS AND CHANGES	2/26/99	D. BEACH
2	ITEM 8	INCREASED BOLT LENGTH TO 3/4"	3/9/99	D. BEACH
3	GLOBAL	UPDATED HARDWARE CALLOUTS	4/5/99	D. BEACH
4	GLOBAL	UPDATED DRAWING FOR ACCELEROMETER OPTIONS	4/21/99	D. BEACH
5	ITEM 11	CHANGED SIZE FROM #8-32 TO #4-40	4/27/99	D. BEACH
6	NOTES 1,2	CLARIFIED ACCELEROMETER NOTES	10/4/00	D. BEACH
7	GLOBAL	ELIMINATED TRIAXIAL ACCELEROMETER UNIT (#9 HARDWARE)	6/28/01	D. BEACH
8	GLOBAL	ADDED NOTE 2. ADDED D TO HARDWARE. CLARIFIED REV. 7	7/16/01	C. SPADR
9	HARDWARE	REVISED HARDWARE FOR UPDATED ACHILLES MOUNTING	7/16/01	C. SPADR
10	HARDWARE	REMOVED FOOT SKIN CALLOUT	7/16/01	C. SPADR
11	GLOBAL	3D EXPLODED ASSEMBLY	1/10/06	J. McDONALD

QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL	
7	1	MCM# 91251A110	#4-40 x 1/2" S.H.C.S. (ALLOY)	PURCHASED
6	2	MCM# 91253A110	#4-40 x 1/2" F.H.S.C.S.	PURCHASED
5	3	MCM# 91253A536	1/4-20 x 7/8" F.H.S.C.S.	PURCHASED
4	4	MCM# 91253A539	1/4-20 x 5/8" F.H.S.C.S.	PURCHASED
3	1	T1FTM311	LOWER ACHILLES MOUNTING POST	6061-T6
2	1	T1FTM214	HEEL PAD	NEOPRENE
1	1	T1FTM210	ANKLE / ACHILLES MOUNTING BRACKET	6061-T6
B	1	T1FTM006	TRI-PACK ACCELEROMETER ASSEMBLY	SEE DWG.
A	1	T1FTM010	FOOT - COMPOSITE SOLE PLATE	SEE DWG.
1	1	T1FTM000	FOOT MECHANICAL ASSEMBLY	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: SEE DWGS.
MATERIAL: SEE DWGS.

QUANTITY FOR AN ASSEMBLY: 1
QUANTITY FOR ENTIRE DUMMY: 2

ENGINEERED: D. BEACH
DATE: 12/23/97

DRAWN: B. SECK
DATE: 12/03/04

CHECKED: J. McDONALD
DATE: 12/03/04

SCALE: 1=1 C 11

REVISION: 11

DRAWING TITLE: FOOT MECHANICAL ASSEMBLY

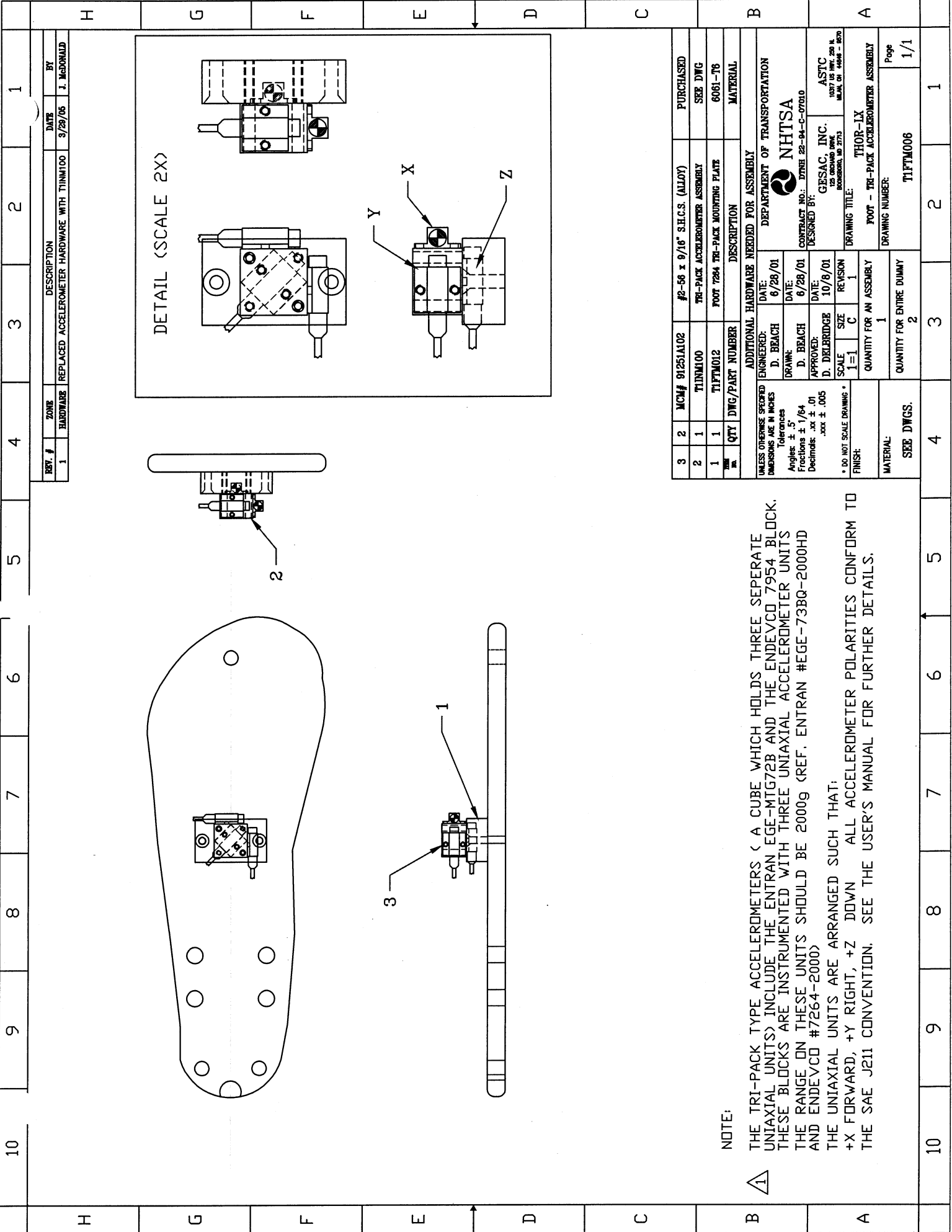
DRAWING NUMBER: T1FTM000

Page: 1/1

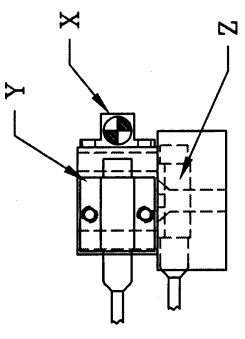
DEPARTMENT OF TRANSPORTATION
NHTSA
CONTRACT NO.: DTFN 22-94-C-07010
DESIGNED BY: GESAC, INC.
125 DEWEEB DR.
ROCKFORD, IL 61153

NOTE:
 1 THE TRI-PACK TYPE ACCELEROMETERS (A CUBE WHICH HOLDS THREE SEPARATE UNIAXIAL UNITS) INCLUDE THE ENTRAN EGE-MTG72B AND THE ENDEVCO 7954 BLOCK. SEE T1FTM006 FOR ADDITIONAL DETAILS.
 2 FOOT SKINS NOT SHOWN FOR CLARITY - SEE T1FTS000 FOR ADDITIONAL DETAILS
 3 ANKLE IS SHOWN FOR REFERENCE ONLY.

10	9	8	7	6	5	4	3	2																																																																																																					
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G	<p>NOTE: HEEL PAD IS POSITIONED OVER T1FTM210 PLATE SO THAT TOP RADIUS OF HEEL PAD IS ALIGNED WITH THE TOP RADIUS OF THE PLATE. ACCESS TO THE ANKLE AND ACHILLES MOUNTING HOLES MUST BE MAINTAINED BY ALLOWING REMOVAL OF THE HEEL PAD FROM THE FOOT SKIN.</p>																																																																																																												
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DETAIL (SCALE 2X)



NOTE:

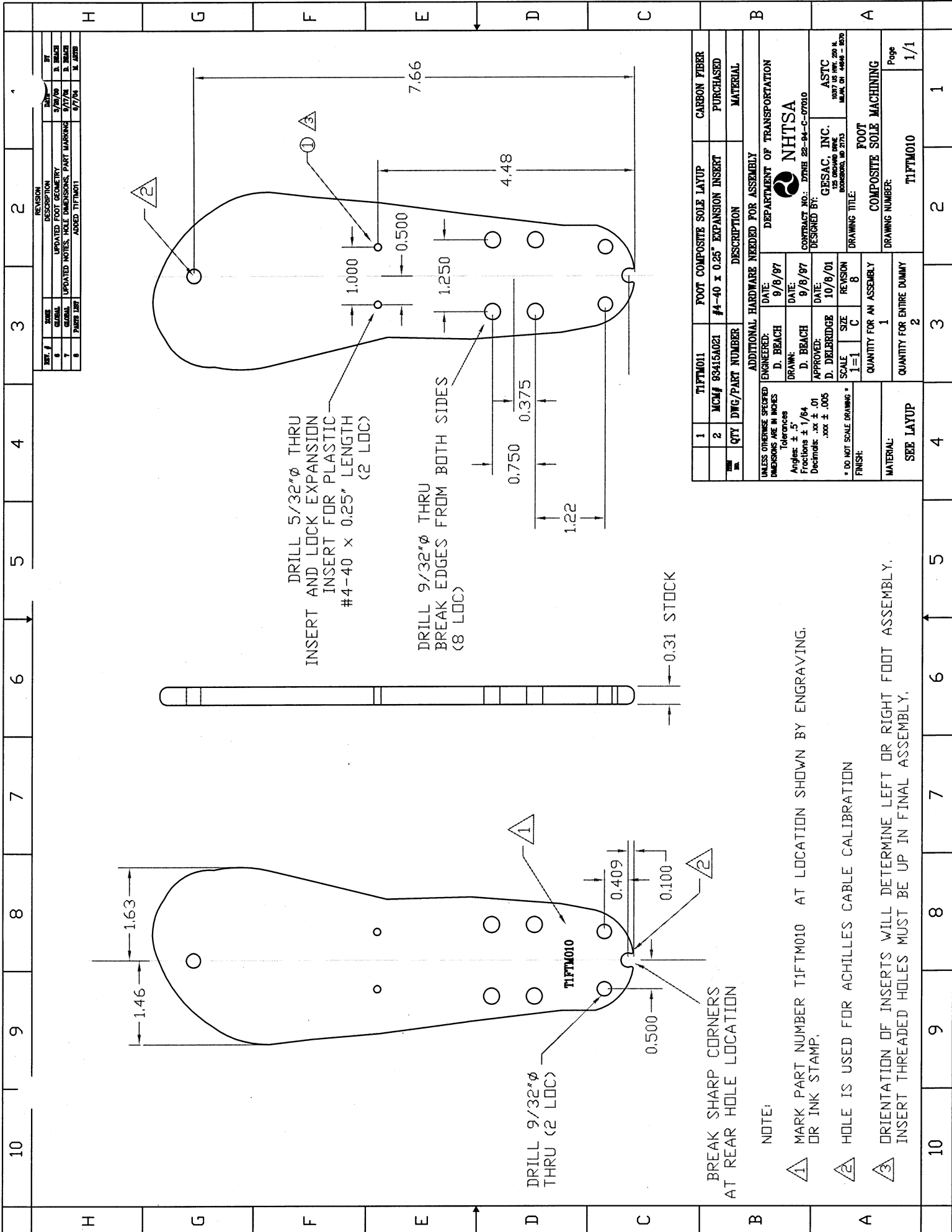
THE TRI-PACK TYPE ACCELEROMETERS (A CUBE WHICH HOLDS THREE SEPERATE UNIAxIAL UNITS) INCLUDE THE ENTRAN EGE-MTG72B AND THE ENDEVCO 7954 BLOCK. THESE BLOCKS ARE INSTRUMENTED WITH THREE UNIAxIAL ACCELEROMETER UNITS THE RANGE ON THESE UNITS SHOULD BE 2000g (REF. ENTRAN #EGE-73BQ-2000HD AND ENDEVCO #7264-2000)

THE UNIAxIAL UNITS ARE ARRANGED SUCH THAT:
 +X FORWARD, +Y RIGHT, +Z DOWN ALL ACCELEROMETER POLARITIES CONFORM TO THE SAE J211 CONVENTION. SEE THE USER'S MANUAL FOR FURTHER DETAILS.

3	2	MCM# 91251A102	#2-56 x 9/16" S.H.C.S. (ALLOY)	PURCHASED
2	1	T11M100	TRI-PACK ACCELEROMETER ASSEMBLY	SEE DWG
1	1	T1PTM012	FOOT 7284 TRI-PACK MOUNTING PLATE	6061-T6
QTY	DWG/PART NUMBER	DESCRIPTION		
ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY				
UNLESS OTHERWISE SPECIFIED:				
DIMENSIONS ARE IN INCHES				
Tolerances				
Angles: ± .5°				
Fractions: ± 1/64				
Decimals: .xx ± .01				
.xxx ± .005				
* DO NOT SCALE DRAWING *				
FINISH:				
SCALE 1=1 C				
REVISION 1				
QUANTITY FOR AN ASSEMBLY 1				
QUANTITY FOR ENTIRE DUMMY 2				
MATERIAL:				
SEE DWGS.				

DEPARTMENT OF TRANSPORTATION
NHTSA
 CONTRACT NO.: DTMB 28-94-C-07010
 DESIGNED BY: **GESAC, INC.**
 125 ORCHARD WALK
 BOSTON, MA 02713
 ASTC
 1007 15 ST. 2ND FL.
 BOSTON, MA 02111-1006 - 800

DRAWING TITLE: **THOR-IX**
 FOOT - TRI-PACK ACCELEROMETER ASSEMBLY
 DRAWING NUMBER: **T1PTM006**
 Page 1/1



REV. #	DATE	DESCRIPTION
1	9/7/90	INITIAL
2	9/7/90	UPDATED FOOT GEOMETRY
3	9/7/90	UPDATED NOTES, HOLE DIMENSIONS, PART MARKING
4	9/7/90	ADDED T1FTM010

NO.	QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1		T1FTM011	FOOT COMPOSITE SOLE LAYOUT	CARBON FIBER
2		MCM# 93415A021	#4-40 x 0.25" EXPANSION INSERT	PURCHASED

ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
ENGINEERED:	D. BEACH
DATE:	9/8/97
DRAWN:	D. BEACH
DATE:	9/8/97
APPROVED:	D. DELBRIDGE
DATE:	10/8/01
SCALE:	1" = 1" C
SIZE:	C
REVISION:	B

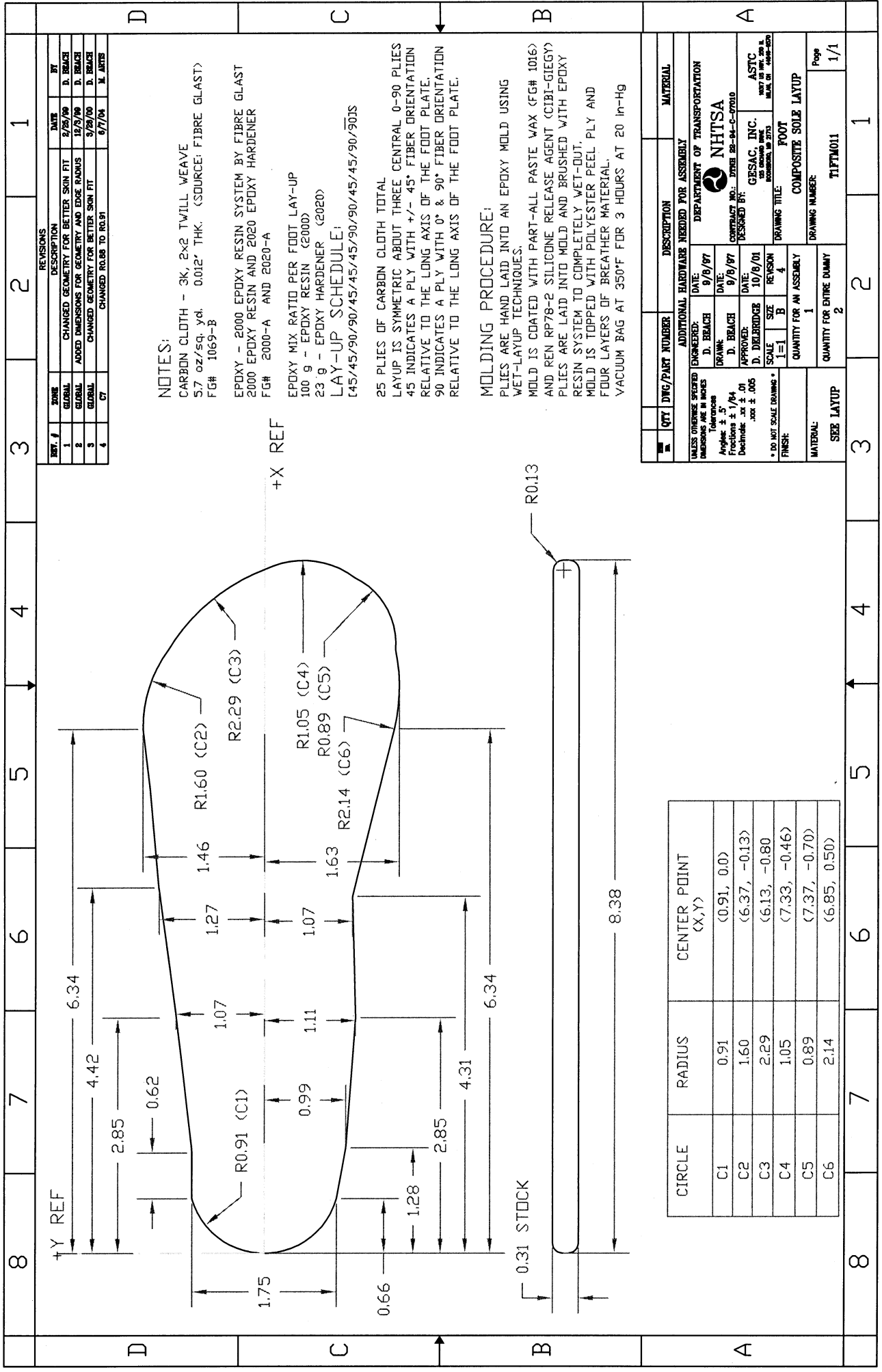
DEPARTMENT OF TRANSPORTATION	
NHTSA	
CONTRACT NO.: DTMB 22-94-C-07010	
DESIGNED BY: GESAC, INC.	
ASTC	
DRAWING TITLE: FOOT	
COMPOSITE SOLE MACHINING	
QUANTITY FOR AN ASSEMBLY:	1
QUANTITY FOR ENTIRE DUMMY:	2
DRAWING NUMBER:	T1FTM010
Page:	1/1

NOTE:

1 MARK PART NUMBER T1FTM010 AT LOCATION SHOWN BY ENGRAVING, OR INK STAMP.

2 HOLE IS USED FOR ACHILLES CABLE CALIBRATION

3 ORIENTATION OF INSERTS WILL DETERMINE LEFT OR RIGHT FOOT ASSEMBLY. INSERT THREADED HOLES MUST BE UP IN FINAL ASSEMBLY.



REV. #	DATE	DESCRIPTION
1	2/25/90	CHANGED GEOMETRY FOR BETTER SKIN FIT
2	12/2/90	ADDED DIMENSIONS FOR GEOMETRY AND EDGE RADIUS
3	3/25/90	CHANGED GEOMETRY FOR BETTER SKIN FIT
4	9/7/90	CHANGED R0.89 TO R0.91

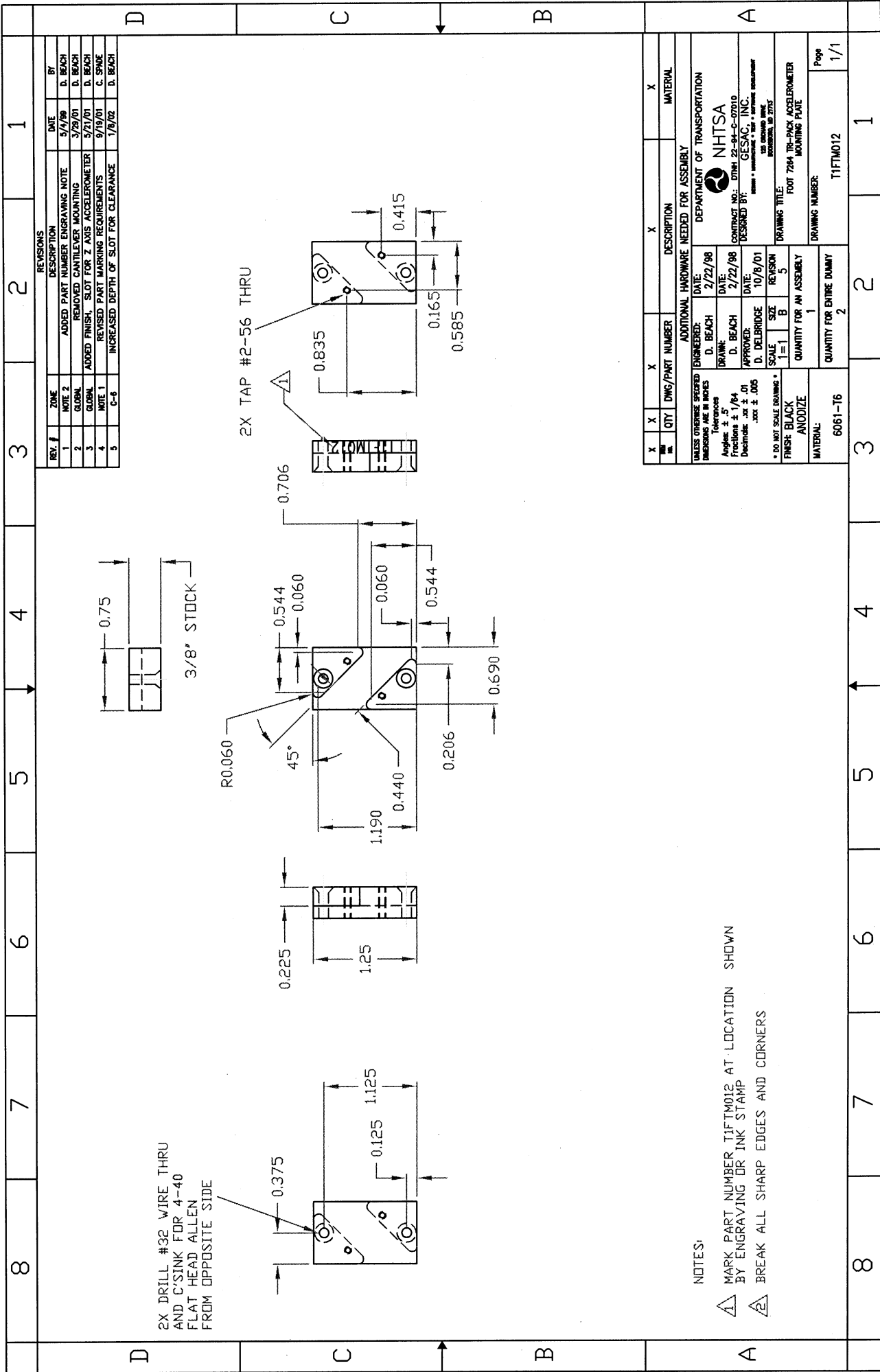
NOTES:
 CARBON CLOTH - 3K, 2x2 TWILL WEAVE
 5.7 oz/sq. yd. 0.012" THK. (SOURCE: FIBRE GLAST)
 FG# 1069-B
 EPOXY - 2000 EPOXY RESIN SYSTEM BY FIBRE GLAST
 2000 EPOXY RESIN AND 2020 EPOXY HARDENER
 FG# 2000-A AND 2020-A
 EPOXY MIX RATIO PER FOOT LAY-UP
 100 g - EPOXY RESIN (2000)
 23 g - EPOXY HARDENER (2020)
 LAY-UP SCHEDULE:
 [45/45/90/90/45/45/45/90/90/45/45/90/90]JS
 25 PLYS OF CARBON CLOTH TOTAL
 LAYUP IS SYMMETRIC ABOUT THREE CENTRAL 0-90 PLYS
 45 INDICATES A PLY WITH +/- 45° FIBER ORIENTATION
 RELATIVE TO THE LONG AXIS OF THE FOOT PLATE.
 90 INDICATES A PLY WITH 0° & 90° FIBER ORIENTATION
 RELATIVE TO THE LONG AXIS OF THE FOOT PLATE.

MOLDING PROCEDURE:
 PLYS ARE HAND LAID INTO AN EPOXY MOLD USING
 WET-LAYUP TECHNIQUES.
 MOLD IS COATED WITH PART-ALL PASTE WAX (FG# 1016)
 AND REN RP78-2 SILICONE RELEASE AGENT (CIBI-GIEGY)
 PLYS ARE LAID INTO MOLD AND BRUSHED WITH EPOXY
 RESIN SYSTEM TO COMPLETELY WET-OUT.
 MOLD IS TOPPED WITH POLYESTER PEEL PLY AND
 FOUR LAYERS OF BREATHER MATERIAL.
 VACUUM BAG AT 350°F FOR 3 HOURS AT 20 in-Hg

CIRCLE	RADIUS	CENTER POINT (X,Y)
C1	0.91	(0.91, 0.0)
C2	1.60	(6.37, -0.13)
C3	2.29	(6.13, -0.80)
C4	1.05	(7.33, -0.46)
C5	0.89	(7.37, -0.70)
C6	2.14	(6.85, 0.50)

QTY	DTG/PART NUMBER	DESCRIPTION	MATERIAL
		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
		ENGINEERED: DATE: 9/8/97	
		D. BEACH DRAWN: DATE: 9/8/97	
		D. BEACH APPROVED: DATE: 10/8/01	
		D. DELIBERATE SCALE: 1:1	
		SIZE: B	
		REVISION: 4	
		QUANTITY FOR AN ASSEMBLY: 1	
		QUANTITY FOR ENTIRE DUMMY: 2	
		MATERIAL: SEE LAYOUT	

NHTSA
 DEPARTMENT OF TRANSPORTATION
 CONTRACT NO. DTRC 98-04-C-0700
 DESIGNED BY: CESAC, INC.
 100 BROADWAY, 2ND FL.
 NEW YORK, NY 10038-5000
 DRAWING TITLE: FOOT
 COMPOSITE SOLE LAYOUT
 DRAWING NUMBER: T1FTM011
 Page: 1/1



REV. #	ZONE	DESCRIPTION	DATE	BY
1	NOTE 2	ADDED PART NUMBER ENGRAVING NOTE	5/4/98	D. BEACH
2	GLOBAL	REMOVED CANTILEVER MOUNTING	3/29/01	D. BEACH
3	GLOBAL	ADDED FINISH - SLOT FOR Z AXIS ACCELEROMETER	5/21/01	D. BEACH
4	NOTE 1	REMOVED PART MARKING REQUIREMENTS	9/19/01	C. SPADE
5	C-B	INCREASED DEPTH OF SLOT FOR CLEARANCE	1/8/02	D. BEACH

NOTES:

- △ MARK PART NUMBER T1FTM012 AT LOCATION SHOWN BY ENGRAVING OR INK STAMP
- △ BREAK ALL SHARP EDGES AND CORNERS

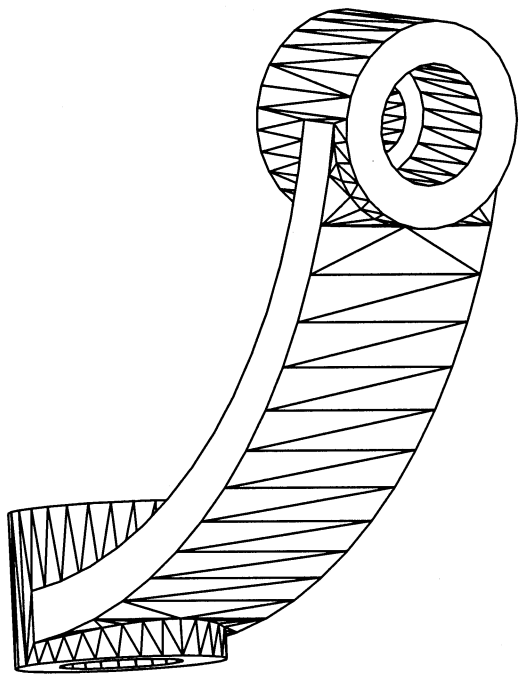
QTY	X	DWG/PART NUMBER	DESCRIPTION	MATERIAL
1	X	6061-T6	ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	MATERIAL
1	X	ANODIZE	FINISH BLACK	
1	X	1	QUANTITY FOR AN ASSEMBLY	
2	X	2	QUANTITY FOR ENTIRE DUMMY	

ENGINEERED:	DATE:	DEPARTMENT OF TRANSPORTATION
D. BEACH	2/22/98	NHTSA
DRAWN:	DATE:	CONTRACT NO.: DTNH 22-94-C-07010
D. BEACH	2/22/98	DESIGNED BY: GESAC, INC.
APPROVER:	DATE:	ISSUED BY: GESAC, INC.
D. DELBRIDGE	10/8/01	125 BROADWAY DRIVE
SCALE:	SIZE:	REVISION:
1=1	A	5
DRAWING TITLE: FOOT 784 TR-PACK ACCELEROMETER MOUNTING PLATE		
DRAWING NUMBER: T1FTM012		
Page 1/1		

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6	B-2	ADDED ANGULAR DIMENSIONS	9/8/99	D. BEACH																																																																		
7	B-2	CHANGED NAME AND DRAWING NUMBER	4/5/99	D. BEACH																																																																		
8	NOTE 2	ADDED PART NUMBER ENGRAVING NOTE	5/5/99	D. BEACH																																																																		
9	FINISH	SPECIFIED BLACK ANODIZE FINISH	8/8/00	D. BEACH																																																																		
10	B-9	CHANGED REAR C'SINK TO 1/4-20	9/14/01	D. BEACH																																																																		
	NOTE 2	REVISED PART MARKING REQUIREMENTS	9/19/01	C. SPRUE																																																																		
G	<p>DRILL 17/64" THRU C'SINK FOR 1/4-20 F.H.S.C.S. (7 LOC)</p>																																																																					
F	<p>NOTE: 1 COUNTER SINKS MUST ALLOW FLAT HEAD SCREWS TO SIT FLUSH.</p> <p>NOTE: 2 MARK PART NUMBER T1FTM210 AT LOCATION SHOWN BY ENGRAVING OR INK STAMP</p>																																																																					
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8	7	6	5	4	3	2	1																																				
D	C	B	D																																								
<p>NOTE:</p> <p>1 NEOPRENE 50A ±5 (MCM# 8568K617)</p> <p>2 STATIC HEEL PAD RESPONSE SPECIFICATIONS: COMPRESSION 0.14" (3.5 MM) FORCE RANGE: 1072 TO 1310 LBF (4770 TO 5830 N) TEMPERATURE RANGE: 18-27°C A MINIMUM OF 1HR RECOVERY TIME MUST BE ALLOWED BETWEEN TESTS.</p> <p>3 DUROMETER SPECIFICATION CAN BE SUPERSEDED BY DYNAMIC HEEL IMPACT RESPONSE SPECIFICATION</p>																																											
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D	C	B	A

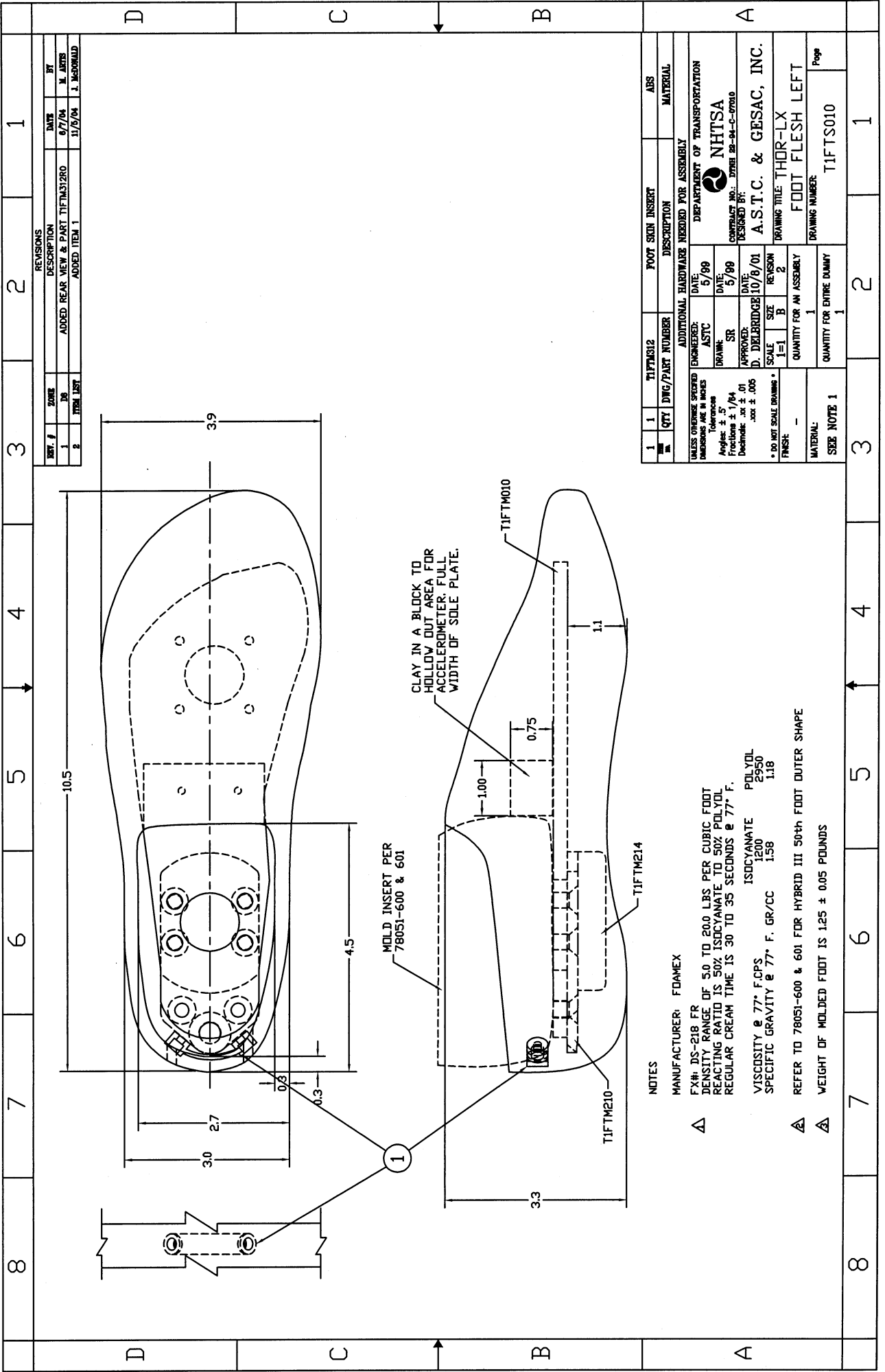


NOTE:
 1 PART USED FOR COPYING IS AVAILABLE FROM NHTSA.

REV. #	ZONE	DESCRIPTION	DATE	BY

QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL
		ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		ENGINEERED: J. McDONALD	DATE: 4/20/04
References		DRAWN: J. McDONALD	DATE: 4/20/04
Angles: ± 1/64		CHECKED: STAFF	DATE: 6/7/04
Fractions: ± 1/64		SCALE	SIZE
Decimals: ± .005		N/T/S	A
Surface Finish: 125		REVISION	N/C
* DO NOT SCALE DRAWING *		QUANTITY FOR AN ASSEMBLY	1
FINISH:		QUANTITY FOR ENTIRE DUMMY	1
MATERIAL:		ABS PLASTIC	
		DRAWING NUMBER:	TIFTM312
		DRAWING TITLE:	FOOT SKIN INSERT
		DESIGNED BY:	GESAC, INC.
		CONTRACT NO.:	DTNH 88-94-C-07010
		DEPARTMENT OF TRANSPORTATION	NHTSA
		125 BUCKINGHAME DRIVE	WASHINGTON, MD 21753
		Page	1/1

4	3	2	1
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REVISIONS			
REV. #	DATE	DESCRIPTION	BY
1	9/7/04	ADDED REAR VIEW & PART TIFTM312R0	M. ARMS
2	11/9/04	ADDED ITEM 1	I. McDONALD

TIFTM312		FOOT SKIN INSERT		ABS	
QTY	DWG/PART NUMBER	DESCRIPTION	MATERIAL		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES					
Tolerances: Fractions ± 1/64					
Decimals: .xxx ± .01					
.xxxx ± .005					
* DO NOT SCALE DRAWING *					
FINISH: -					
MATERIAL: SEE NOTE 1					
QUANTITY FOR ENTIRE DUMMY: 1					
QUANTITY FOR AN ASSEMBLY: 1					
SCALE: 1"=1"					
APPROVED: D. DELBRIDGE 10/6/01					
DRAWN: SR 5/08					
ENGINEERED: ASTC 5/08					
DATE: 5/08					
DEPARTMENT OF TRANSPORTATION					
NHTSA					
CONTRACT NO.: DTRFB 02-04-C-07010					
DESIGNED BY: A.S.T.C. & GESAC, INC.					
DRAWING TITLE: THOR-LX					
FOOT FLESH LEFT					
DRAWING NUMBER: TIFTS010					
Page: 1					

NOTES

MANUFACTURER: FOAMEX

F.X# 1S-218 FR

DENSITY RANGE OF 5.0 TO 20.0 LBS PER CUBIC FOOT

REACTING RATIO IS 50% ISDCYANATE TO 50% POLYOL

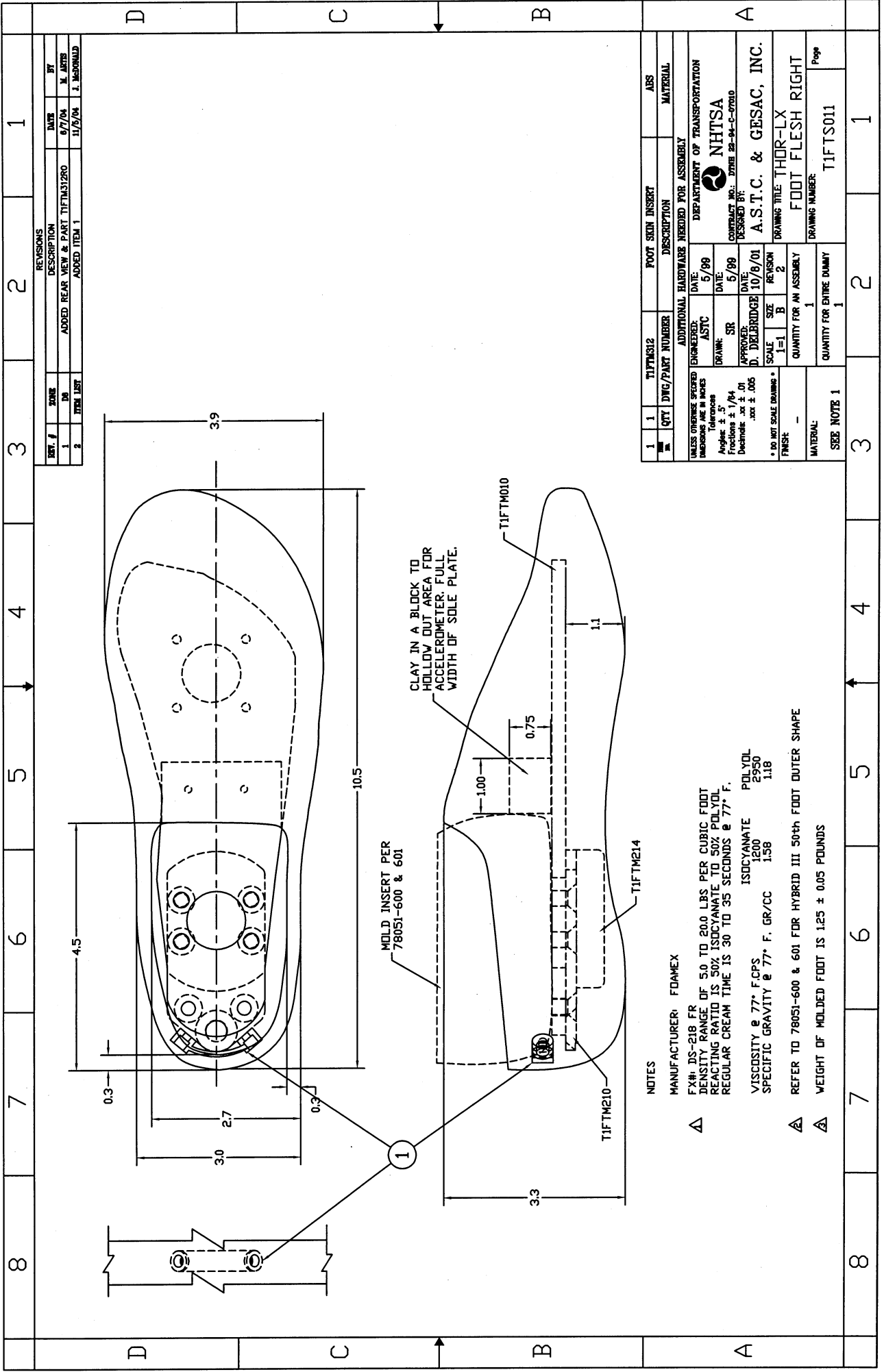
REGULAR CREAM TIME IS 30 TO 35 SECONDS @ 77° F.

VISCOSITY @ 77° F.CPS: ISDCYANATE 1200, POLYOL 2950

SPECIFIC GRAVITY @ 77° F. GR/CC: 1.58, 1.18

REFER TO 78051-600 & 601 FOR HYBRID III 50th FOOT OUTER SHAPE

WEIGHT OF MOLDED FOOT IS 1.25 ± 0.05 POUNDS



REV. #	DATE	BY
1	9/7/04	M. ARTS
2	11/6/04	J. McDONALD

REV. #	DATE	BY
1	9/7/04	M. ARTS
2	11/6/04	J. McDONALD

REV. #	DATE	BY
1	9/7/04	M. ARTS
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1	9/7/04	M. ARTS
2	11/6/04	J. McDONALD

REV. #	DATE	BY
1	9/7/04	M. ARTS
2	11/6/04	J. McDONALD

1	1	1	1	1	1
QTY	DWG/PART NUMBER	TIFTM012	FOOT SOLE INSERT	DESCRIPTION	MATERIAL
ADDITIONAL HARDWARE NEEDED FOR ASSEMBLY NONE ENGINEER: DATE: 5/99 ASST: DATE: 5/99 DRAWN: DATE: 5/99 APPROVED: DATE: 10/8/01 D. DELBRIDGE SCALE: SIZE: REASON: 1-1 B 2 QUANTITY FOR AN ASSEMBLY: 1 QUANTITY FOR ENTIRE DUMMY: 1 MATERIAL: SEE NOTE 1 FINISH: -					
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES Tolerances: Angles: ± .5° Fractions: ± 1/64 Decimals: .xx ± .01 .xxx ± .005 * DO NOT SCALE DRAWING *					
DEPARTMENT OF TRANSPORTATION NHTSA CONTRACT NO.: DTMB 92-94-C-07010 DESIGNED BY: A.S.T.C. & GESAC, INC.					
DRAWING TITLE: THOR-LX FOOT FLESH RIGHT DRAWING NUMBER: TIFTS011 Page: 1					

NOTES

MANUFACTURER: FOMEX

FX# DS-218 FR

DENSITY RANGE OF 5.0 TO 20.0 LBS PER CUBIC FOOT

REACTING RATIO IS 50% ISOCYANATE TO 50% POLYOL

REGULAR CREAM TIME IS 30 TO 35 SECONDS @ 77° F.

POLYOL 2950 1.18

ISOCYANATE 1200 1.58

VISCOSITY @ 77° F.CPS

SPECIFIC GRAVITY @ 77° F. GR/CC

REFER TO 78051-600 & 601 FOR HYBRID III 50th FOOT OUTER SHAPE

WEIGHT OF MOLDED FOOT IS 1.25 ± 0.05 POUNDS

1

MOLD INSERT PER 78051-600 & 601

CLAY IN A BLOCK TO HOLLOW OUT AREA FOR ACCELEROMETER FULL WIDTH OF SOLE PLATE.

TIFTM010

TIFTM210

TIFTM214

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