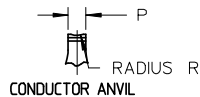
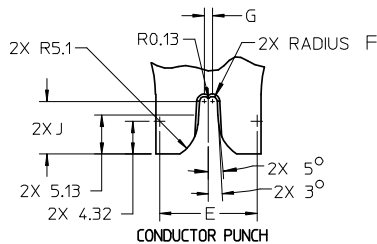
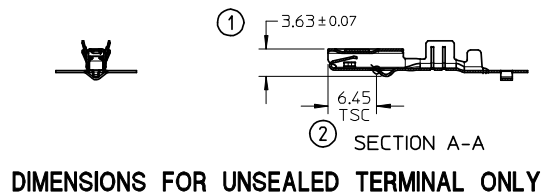


CRIMP INFORMATION



CRIMP TOOL INFORMATION

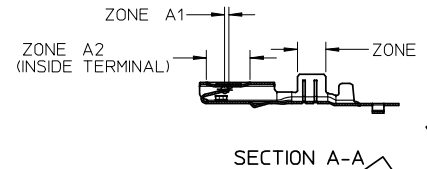
SEE TABLE 2 FOR TABULATED DIMENSIONS

NOTES: (UNLESS OTHERWISE SPECIFIED)

- MATING TERMINAL SHOWN ON SD-33000-001
- MATERIAL: ASTM B422, UNS C19025, HR04
THICKNESS: 0.25 mm ± 0.01
TEMPER: FULL HARD (REF)
TENSILE: 496-572 MPA
PLATING: SEE PLATING NOTES ABOVE
- MEETS PERFORMANCE SPECIFICATION FOR CABLE TO TERMINAL ELECTRICAL CRIMPS PER SAE/USCAR-21 (8/2001)
- MEETS PERFORMANCE STANDARD FOR AUTOMOTIVE ELECTRICAL CONNECTOR SYSTEMS FOR SAE/USCAR-2, REV. 3 (4/2001)
- MEETS FIELD CORRELATED LIFE TEST (FCLT) PER SAE/USCAR-20 (11/2001)
- MEETS WIRING COMPONENT DESIGN GUIDELINES SAE/USCAR-12 REV 2 (12/2001)
- TSC ON A DIMENSION TO BE INTERPRETED AS DISTANCE TO A THEORETICAL SHARP CORNER AS IF THE RADIUS WERE NOT PRESENT
- 0.2mm MAX RADIUS PERMISSIBLE ON EDGES AND FILLETS SHOWN SHARP FOR STAMPED PARTS

- ALL UNMARKED RADII 0.25mm MAX
- INSERTION FORCE (TYP AVG. FROM PV TESTING = 35N SEALED TERMINAL (REFERENCE)
- ALL DIMENSIONS EXCEPT ① ② ③ & ④ ARE COMMON TO BOTH SEALED AND UNSEALED TERMINALS.

PLATING INFORMATION



PLATING NOTES: (FOR SEALED AND UNSEALED TERMINALS)

1. TIN PLATING: (ENTIRE TERMINAL)

BASE LAYER THICKNESS 0.25-1.00 MICROMETERS
ELECTRODEPOSITED ADVANCED TIN BARRIER

TIN THICKNESS 0.50-1.00 MICROMETERS
ELECTRODEPOSITED REFLOW 100% TIN, NO BRIGHTENERS

GOLD PLATING NOTES: (FOR SEALED AND UNSEALED TERMINALS)

ZONE A1 AND ZONE A2:
PER MOLEX ES-88 REVISION REL

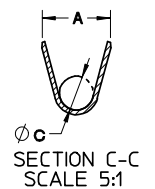
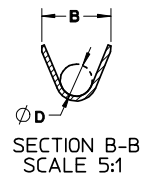
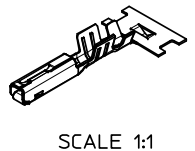
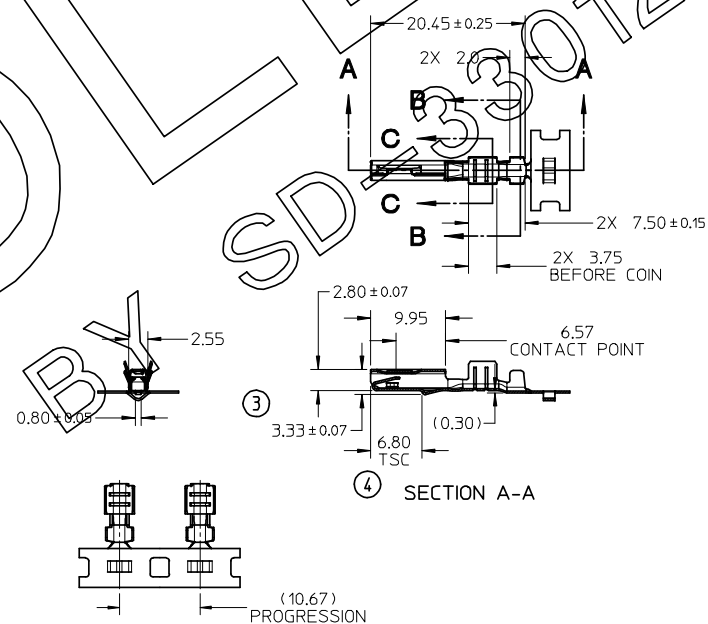
BASE LAYER THICKNESS 1.25 - 2.25 MICROMETERS
ELECTRODEPOSITED DUCTILE SULFAMATE NICKEL

GOLD LAYER THICKNESS 0.76 MICROMETERS MINIMUM
ELECTRODEPOSITED GOLD

ZONE B:
TIN PLATING, PER MOLEX ES-88 REVISION REL

BASE LAYER THICKNESS 1.25-2.25 MICROMETERS
ELECTRODEPOSITED DUCTILE SULFAMATE NICKEL

TIN LAYER THICKNESS 2.50 - 2.00 MICROMETERS
ELECTRODEPOSITED 100% TIN MATTE FINISH



ENTER DESCRIPTION
EC NO: UAU2008-0560
DRAWN BY: PULLIAM
CHKD BY: DHIR
APPR: BMOSER

QUALITY SYMBOLS
▽=0
▽=0

GENERAL TOLERANCES (UNLESS SPECIFIED)

	mm	INCH
4 PLACES	± ---	± ---
3 PLACES	± ---	± ---
2 PLACES	± 0.10	± ---
1 PLACE	± 0.3	± ---
ANGULAR	± 3 °	

DIMENSION STYLE	
MM ONLY	
DRAWN BY	DATE
L. PULLIAM	2006/02/24
CHECKED BY	DATE
A. DHIR	2006/03/06
APPROVED BY	DATE
B. MOSER	2006/03/08
MATERIAL NO.	
SEE TABLE	
SIZE	
C	

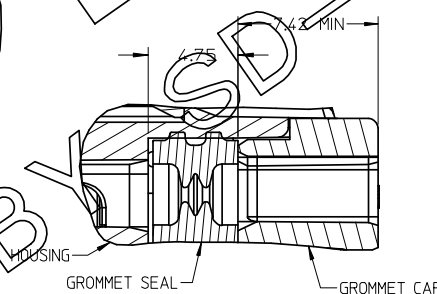
SCALE	DESIGN UNITS	THIRD ANGLE PROJECTION
2:1	METRIC	☉
MX150 RECEPTACLE TERMINAL		
MOLEX INCORPORATED		
DOCUMENT NO. SD-33012-001		SHEET NO. 1 OF 4
THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION		

TABLE 1 – TERMINAL CRIMP DIM REFERENCE TABLE

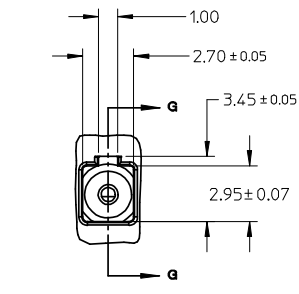
SUPPLIER PART NO.	FORD PART NO.	PLATING	WIRE SIZE (awg)	WIRE SPECIFICATION	CONDUCTOR CH (SEC Z-Z) ±0.05 mm	CONDUCTOR CW (SEC Z-Z) ±0.10 mm	INSULATOR H (SEC Y-Y) ±0.10 mm	INSULATOR HW (SEC Y-Y) ±0.10 mm	WIRE PULL FORCE (N)
SEALED TERMINALS									
RIGHT PAYOFF	LEFT PAYOFF								
33012-0001	33012-0001	2L1T-14474-DA	TIN	14	ML-135A1	TBD	TBD	TBD	TBD
				16	ML-123A	1.35	1.95	2.15	248
33012-0002	33012-0002	2L1T-14474-CA	TIN	18	ML-123A	1.10	1.95	1.90	152
				20	ML-123A	1.05	1.95	1.80	123
33012-0003	33012-0003	2L1T-14474-BA	TIN	22	ML-123A	0.95	1.45	1.60	79
33012-0001	33012-0001	2L1T-14474-DA	TIN	150mm ²	ML-126A1	TBD	TBD	TBD	TBD
33012-0002	33012-0002	2L1T-14474-CA	TIN	1.0mm ²	ML-126A1	1.20	1.95	2.00	211
				0.75mm ²	ML-126A1	1.10	1.95	1.85	200
33012-0003	33012-0003	2L1T-14474-BA	TIN	0.50mm ²	ML-126A1	1.00	1.45	1.80	105
				0.35mm ²	TBD	TBD	TBD	TBD	TBD
33001-0003	33001-0003	2L1T-14474-GA	GOLD	14	ML-135A1	TBD	TBD	TBD	TBD
				16	ML-123A	1.35	1.95	2.15	248
33001-0004	33001-0004	2L1T-14474-FA	GOLD	18	ML-123A	1.10	1.95	1.90	152
				20	ML-123A	1.05	1.95	1.80	123
33001-0005	33001-0005	2L1T-14474-EA	GOLD	22	ML-123A	0.95	1.45	1.60	79
33001-0003	33001-0003	2L1T-14474-GA	GOLD	150mm ²	ML-126A1	TBD	TBD	TBD	TBD
33001-0004	33001-0004	2L1T-14474-FA	GOLD	1.0mm ²	ML-126A1	1.20	1.95	2.00	211
				0.75mm ²	ML-126A1	1.10	1.95	1.85	200
33001-0005	33001-0005	2L1T-14474-EA	GOLD	0.50mm ²	ML-126A1	1.00	1.45	1.80	105
				0.35mm ²	TBD	TBD	TBD	TBD	TBD
UNSEALED TERMINALS									
33012-0021	33012-0021	4L2T-14474-CA	TIN	14	ML-135A1	1.60	2.15	2.65	358
				16	ML-123A	1.35	1.95	2.15	248
33012-0022	33012-0022	4L2T-14474-BA	TIN	18	ML-123A	1.10	1.95	1.90	248
				20	ML-123A	1.05	1.95	1.80	123
33012-0023	33012-0023	4L2T-14474-AA	TIN	22	ML-123A	0.95	1.45	1.60	79
33012-0021	33012-0021	4L2T-14474-CA	TIN	150mm ²	ML-126A1	TBD	TBD	TBD	TBD
33012-0022	33012-0022	4L2T-14474-BA	TIN	1.0mm ²	ML-126A1	1.20	1.95	2.00	211
				0.75mm ²	ML-126A1	1.10	1.95	1.85	200
33012-0023	33012-0023	4L2T-14474-AA	TIN	0.50mm ²	ML-126A1	1.00	1.45	1.80	105
				0.35mm ²	TBD	TBD	TBD	TBD	TBD
				20-20	ML-123A	1.25	1.95	2.80	280
				20-22	ML-123A	1.10	1.95	2.70	280
				22-22	ML-123A	1.00	1.95	2.50	280
				0.35+0.35	ML-126A1	TBD	TBD	TBD	TBD
				0.35+0.50	ML-126A1	TBD	TBD	TBD	TBD
				0.50+0.75	ML-126A1	TBD	TBD	TBD	TBD
				0.50+0.75	ML-126A1	TBD	TBD	TBD	TBD
33001-0021	33001-0021	4L2T-14474-GA	GOLD	14	ML-135A1	1.60	2.15	2.65	358
				16	ML-123A	1.35	1.95	2.15	248
33001-0022	33001-0022	4L2T-14474-FA	GOLD	18	ML-123A	1.10	1.95	1.90	248
				20	ML-123A	1.05	1.95	1.80	123
33001-0023	33001-0023	4L2T-14474-EA	GOLD	22	ML-123A	0.95	1.45	1.60	79
33001-0021	33001-0021	4L2T-14474-GA	GOLD	150mm ²	ML-126A1	TBD	TBD	TBD	TBD
33001-0022	33001-0022	4L2T-14474-FA	GOLD	1.0mm ²	ML-126A1	1.20	1.95	2.00	211
				0.75mm ²	ML-126A1	1.10	1.95	1.85	200
33001-0023	33001-0023	4L2T-14474-EA	GOLD	0.50mm ²	ML-126A1	1.00	1.45	1.80	105
				0.35mm ²	TBD	TBD	TBD	TBD	TBD

TABLE 2 – TERMINAL GRIP/CRIMP TOOL DIM. REFERENCE TABLE

SUPPLIER PART NO.	FORD PART NO.	PLATING (STAMPING)	WIRE APPLICATION	A ±0.30	B ±0.30	C ±0.30	D ±0.30	E ±0.005	F ±0.005	G ±0.005	J ±0.005	K ±0.005	M ±0.005	N ±0.005	P ±0.005	R ±0.005	U ±0.005	V ±0.005
SEALED TERMINALS																		
RIGHT PAYOFF	LEFT PAYOFF		SAE	METRIC														
33012-0001	33012-0001	2L1T-14474-DA	TIN	14	15	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
33012-0002	33012-0002	2L1T-14474-CA	TIN	16	-	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.55	1.23	6.51	1.89	1.76
33012-0002	33012-0002	2L1T-14474-CA	TIN	18	10	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.55	1.08	6.41	1.89	1.76
33012-0002	33012-0002	2L1T-14474-CA	TIN	20	0.75	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.55	0.98	6.36	1.89	1.76
33012-0003	33012-0003	2L1T-14474-BA	TIN	22	0.5	2.3	2.3	0.9	0.9	11.88	0.37	0.65	6.52	12.34	0.88	6.36	1.89	1.76
33012-0003	33012-0003	2L1T-14474-BA	TIN	-	0.35	2.3	2.3	0.9	0.9	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
33001-0003	33001-0003	2L1T-14474-GA	GOLD	14	15	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
33001-0004	33001-0004	2L1T-14474-FA	GOLD	16	-	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.55	1.23	6.51	1.89	1.76
33001-0004	33001-0004	2L1T-14474-FA	GOLD	18	10	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.55	1.08	6.41	1.89	1.76
33001-0004	33001-0004	2L1T-14474-FA	GOLD	20	0.75	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.34	0.98	6.36	1.89	1.76
33001-0005	33001-0005	2L1T-14474-EA	GOLD	22	0.5	2.3	2.3	0.9	0.9	11.88	0.37	0.65	6.52	12.34	0.88	6.36	1.89	1.76
33001-0005	33001-0005	2L1T-14474-EA	GOLD	-	0.35	2.3	2.3	0.9	0.9	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
UNSEALED TERMINALS																		
33012-0021	33012-0021	4L2T-14474-CA	TIN	14	15	3.9	3.6	18	17	12.58	0.56	0.98	6.53	13.17	1.38	6.61	2.08	1.94
33012-0022	33012-0022	4L2T-14474-BA	TIN	16	-	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.55	1.23	6.51	1.89	1.76
33012-0022	33012-0022	4L2T-14474-BA	TIN	18	10	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.55	1.08	6.41	1.89	1.76
33012-0022	33012-0022	4L2T-14474-BA	TIN	20	0.75	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.34	0.98	6.36	1.89	1.76
33012-0023	33012-0023	4L2T-14474-AA	TIN	22	0.5	2.3	2.3	0.9	0.9	11.88	0.37	0.65	6.52	12.34	0.88	6.36	1.89	1.76
33012-0023	33012-0023	4L2T-14474-AA	TIN	-	0.35	2.3	2.3	0.9	0.9	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
33012-0024	33012-0024	4L2T-14474-DA	TIN	20-20	-	3.0	3.6	12	17	12.39	0.51	0.88	6.54	12.96	1.28	6.51	1.89	1.76
33012-0024	33012-0024	4L2T-14474-DA	TIN	20-22	-	3.0	3.6	12	17	12.39	0.51	0.88	6.54	12.96	1.28	6.51	1.89	1.76
33012-0024	33012-0024	4L2T-14474-DA	TIN	22-22	-	3.0	3.6	12	17	12.39	0.51	0.88	6.54	12.96	1.28	6.51	1.89	1.76
33012-0024	33012-0024	4L2T-14474-DA	TIN	-	0.35+0.35	3.0	3.6	12	17	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
33012-0024	33012-0024	4L2T-14474-DA	TIN	-	0.35+0.50	3.0	3.6	12	17	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
33012-0024	33012-0024	4L2T-14474-DA	TIN	-	0.50+0.50	3.0	3.6	12	17	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
33001-0021	33001-0021	4L2T-14474-GA	GOLD	14	15	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
33001-0022	33001-0022	4L2T-14474-FA	GOLD	16	-	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.55	1.23	6.51	1.89	1.76
33001-0022	33001-0022	4L2T-14474-FA	GOLD	18	10	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.55	1.08	6.41	1.89	1.76
33001-0022	33001-0022	4L2T-14474-FA	GOLD	20	0.75	3.0	2.9	12	13	12.39	0.51	0.88	6.54	12.34	0.98	6.36	1.89	1.76
33001-0023	33001-0023	4L2T-14474-EA	GOLD	22	0.5	2.3	2.3	0.9	0.9	11.88	0.37	0.65	6.52	12.34	0.88	6.36	1.89	1.76
33001-0023	33001-0023	4L2T-14474-EA	GOLD	-	0.35	2.3	2.3	0.9	0.9	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

GROMMET SEAL / CAP CONFIGURATION TO MODIFY
UNSEALED CAVITY TO ACCEPT SEALED APPLICATIONS

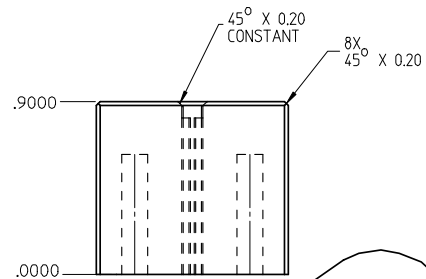
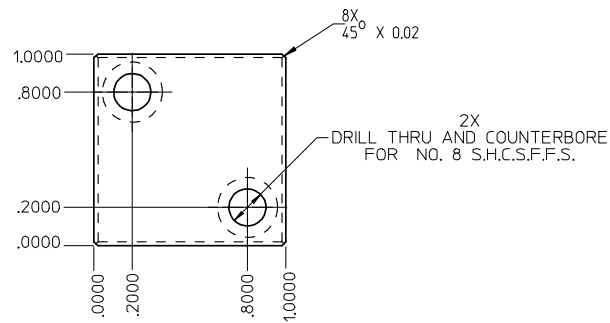
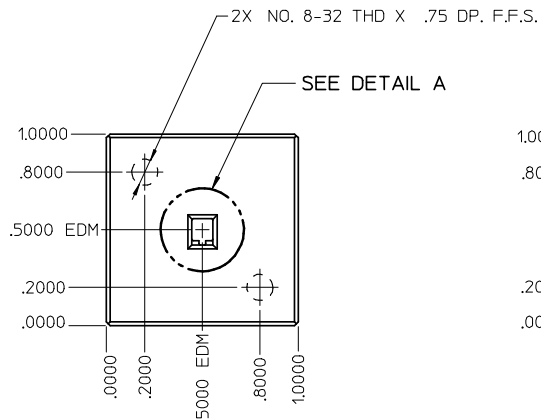
SECTION G-G



GROMMET CAP OPENING

ENTER DESCRIPTION
EC NO: UAU2008-0560
DRAWN: PULLIAM
CHKD: DHIR
APPR: BMOSERQUALITY SYMBOLS
▽=0
▽=0
REVISIONGENERAL TOLERANCES (UNLESS SPECIFIED)
mm INCH
4 PLACES ± --- ± ---
3 PLACES ± --- ± ---
2 PLACES ± 0.10 ± ---
1 PLACE ± 0.3 ± ---
ANGULAR ± 3 °DIMENSION STYLE
MM ONLY
DRAWN BY DATE
L. PULLIAM 2006/02/24
CHECKED BY DATE
A. DHIR 2006/03/06
APPROVED BY DATE
B. MOSER 2006/03/08
MATERIAL NO.
SEE TABLE
SIZE CSCALE
DESIGN UNITS
METRIC
THIRD ANGLE PROJECTION
MX150
RECEPTACLE TERMINAL
MOLEX INCORPORATED
DOCUMENT NO.
SD-33012-001
SHEET NO.
2 OF 4
THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION

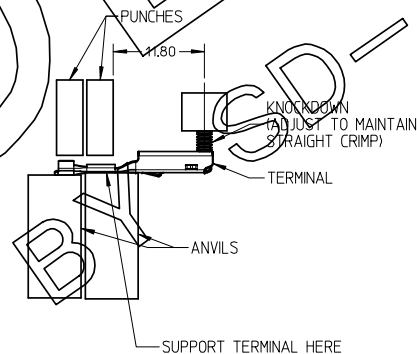
THIS GAUGE IS FOR SEALED TERMINALS ONLY



GAUGE BLOCK UPPER



GAUGE BLOCK LOWER



CRIMPING INFORMATION

CRIMP REQUIREMENTS:

1. CRIMP STRAIGHTNESS MUST BE MAINTAINED
USE A KNOCKDOWN TOOL LOCATED AS SHOWN
TERMINAL BOX MUST NOT BE DEFORMED
2. AFTER CRIMPING, THE CRIMPED TERMINAL (AND UP TO 5 mm OF WIRE PAST THE INSULATOR CUTOFF TAB) MUST BE ABLE TO FREELY FIT IN THE GAUGE SHOWN ON THE PAGE
3. FOR OTHER MECHANICAL REQUIREMENTS ON CRIMPED TERMINALS, REFER TO SAE/USCAR-21 (5-13-02) SECTIONS 4.2 (VISUAL INSPECTION), 4.2 (CROSS SECTION ANALYSIS) AND 4.4 (CONDUCTOR CRIMP PULLOUT FORCE)

GAUGE BLOCK ASSEMBLY SCALE 1:1

R0.0080 MAX
6X

DETAIL A
SCALE 5:1

4.441
4.819
5.181
5.559

ALL DIMENSIONS ON SHEET 3 ARE IN INCHES

ENTER DESCRIPTION	REV	DESCRIPTION
EC NO: UAU2008-0560	2008/02/26	
TD: DRWNL PULLIAM	2008/02/27	
CHKD: A.DHIR	2008/02/27	
APPR: B.MOSER	2008/02/27	

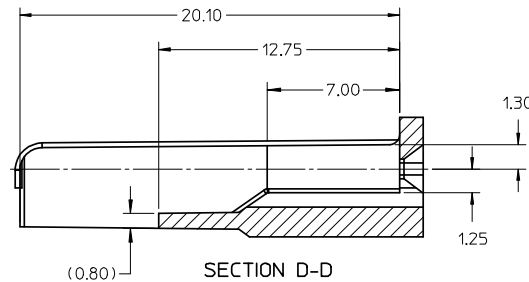
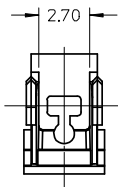
QUALITY SYMBOLS
▽=0
▽=0

GENERAL TOLERANCES (UNLESS SPECIFIED)		
	mm	INCH
4 PLACES	± .0005	± .0000
3 PLACES	± .0005	± .0000
2 PLACES	± 0.10	± .0040
1 PLACE	± 0.3	± .0120
ANGULAR ± 3 °		

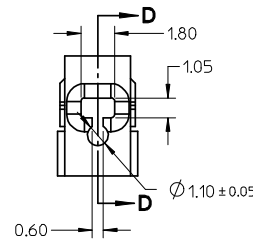
DRAWN BY	DATE
L. PULLIAM	2006/02/24
CHECKED BY	DATE
A. DHIR	2006/03/06
APPROVED BY	DATE
B. MOSER	2006/03/08
MATERIAL NO.	SEE TABLE
SIZE	C

SCALE	2:1
DESIGN UNITS	METRIC
THIRD ANGLE PROJECTION	
TITLE	MX150 RECEPTACLE TERMINAL
MOLEX INCORPORATED	
DOCUMENT NO.	SD-33012-001
SHEET NO.	3 OF 4

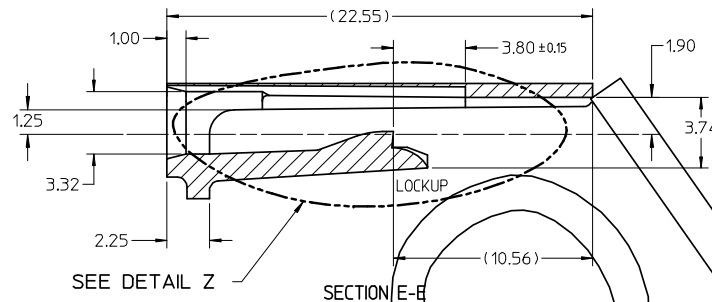
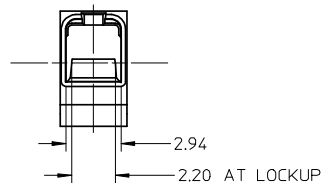
THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION



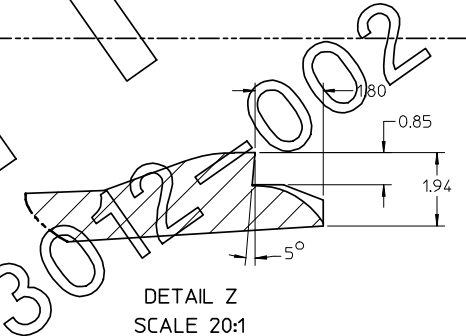
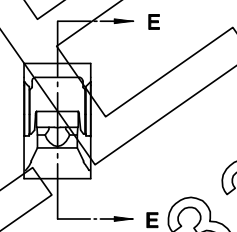
TPA/INSERT DETAIL



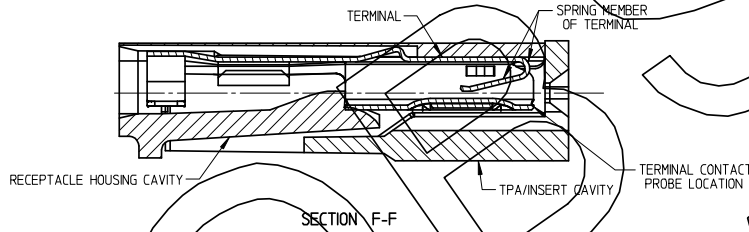
- NOTES: (UNLESS OTHERWISE SPECIFIED)
1. TOLERANCES: LINEAR ± 0.10
ANGULAR $\pm 3^\circ$
 2. ALL DRAFT WITHIN TOLERANCE
 3. MAX RADIUS ON ALL CORNERS SHOWN SHARP: 0.10
 4. MAX FLASH PERMISSIBLE: 0.1
 5. EJECTOR PIN MARKS PERMISSIBLE IF FLUSH TO 0.25 BELOW SURFACE.
 6. MATERIAL: HOUSING/FINGER SPECIFICATION ENGINEERED FOR MATERIAL WITH THE FOLLOWING PROPERTIES:
A. FLEXURAL MODULUS = 4,500 TO 9,000 MPa
PER ASTM TEST D790
B. ELONGATION AT YIELD = 2.3% OR BETTER
PER ASTM TEST D638 TYPE V
 7. CAVITY SPEC FOR USE ONLY WITH MOLEX RECEPTACLE
TERMINAL PART NUMBERS SPECIFIED ELSEWHERE ON THIS
DRAWING



HOUSING DETAIL



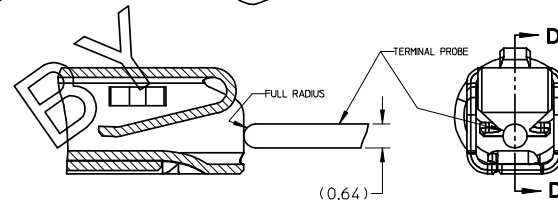
DETAIL Z
SCALE 20:1



RECEPTACLE CAVITY ASSEMBLED VIEWS
(FOR SEALED APPLICATIONS)
FIG. 1

PREFERRED PROBING LOCATION
IS NOT ON SPRING MEMBER

IF ELECTRICAL CONTINUITY PROBE
TOUCHES SPRING MEMBER USE
PROBING AS SHOWN IN FIG. 2



SECTION D-D
FOR UNSEALED APPLICATIONS
FIG. 2

PROBING DOWN THE
THROAT MUST USE
THIS TERMINAL PROBE

PROBE PIN DETAILS:
MANUFACTURER: LONE STAR INDUSTRIAL
PART NUMBER: LS054R-403-N-4.6
PIN DIAMETER: 0.250IN (0.64mm)
TIP SHAPE: SPHERICAL
TEL: 915-779-7255

REV	DESCRIPTION
1	ENTER DESCRIPTION
2	EC NO: UAU2008-0560
3	DRWN: L. PULLIAM
4	CHKD: A. DHIR
5	APPR: B. MOSER
6	2008/02/26
7	2008/02/27
8	2008/02/27

QUALITY SYMBOLS
0
0

GENERAL TOLERANCES (UNLESS SPECIFIED)		
	mm	INCH
4 PLACES	± 0.10	± 0.004
3 PLACES	± 0.10	± 0.004
2 PLACES	± 0.10	± 0.004
1 PLACE	± 0.3	± 0.012
ANGULAR ± 3 °		

DIMENSION STYLE	DATE
MM ONLY	2006/02/24
DRAWN BY	L. PULLIAM
CHECKED BY	A. DHIR
APPROVED BY	B. MOSER
DATE	2006/03/06
MATERIAL NO.	SEE TABLE
SIZE	C

SCALE	DESIGN UNITS	THIRD ANGLE PROJECTION
5:1	METRIC	
MX150 RECEPTACLE TERMINAL		
MOLEX INCORPORATED		
DOCUMENT NO.	SD-33012-001	SHEET NO. 4 OF 4