AMPHENOL AEROSPACE

LINE REPLACEABLE MODULE (LRM)

L - 2088

COMPLIANT BACKPLANE CONNECTOR USER GUIDELINES

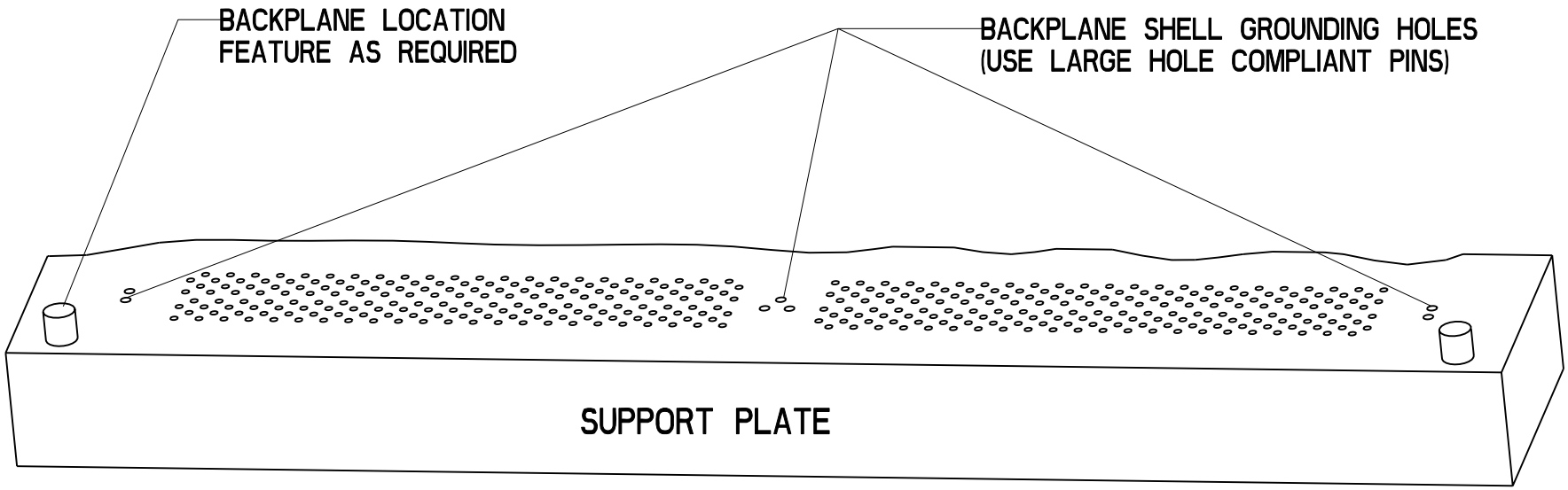
THESE GUIDELINES COVER THE FOLLOWING ITEMS:

1. CONNECTOR ASSEMBLY TO BACKPLANE PWB'S
2. CONNECTOR SHELL REMOVAL
3. CONNECTOR KEY INSERTION AND EXTRACTION
4. BRUSH CONTACT PROBES
5. TYPICAL INSTALLATION PLATE DEFINITIONS

09/18/2008 DM	DATE 09/18/2008 SUPERSEDES 06/01/2006. ADDED INFORMATION NOTE TO SHEET 5
REVISION	

NOTICE: THESE GUIDELINES ARE OFFERED AS SUGGESTIONS ONLY. THE USER MUST DETERMINE THE SUITABILITY OF THESE OR OTHER ASSEMBLY METHODS FOR EACH SPECIFIC APPLICATION.

STAGGERED GRID/GEN X INSERT ASSEMBLIES

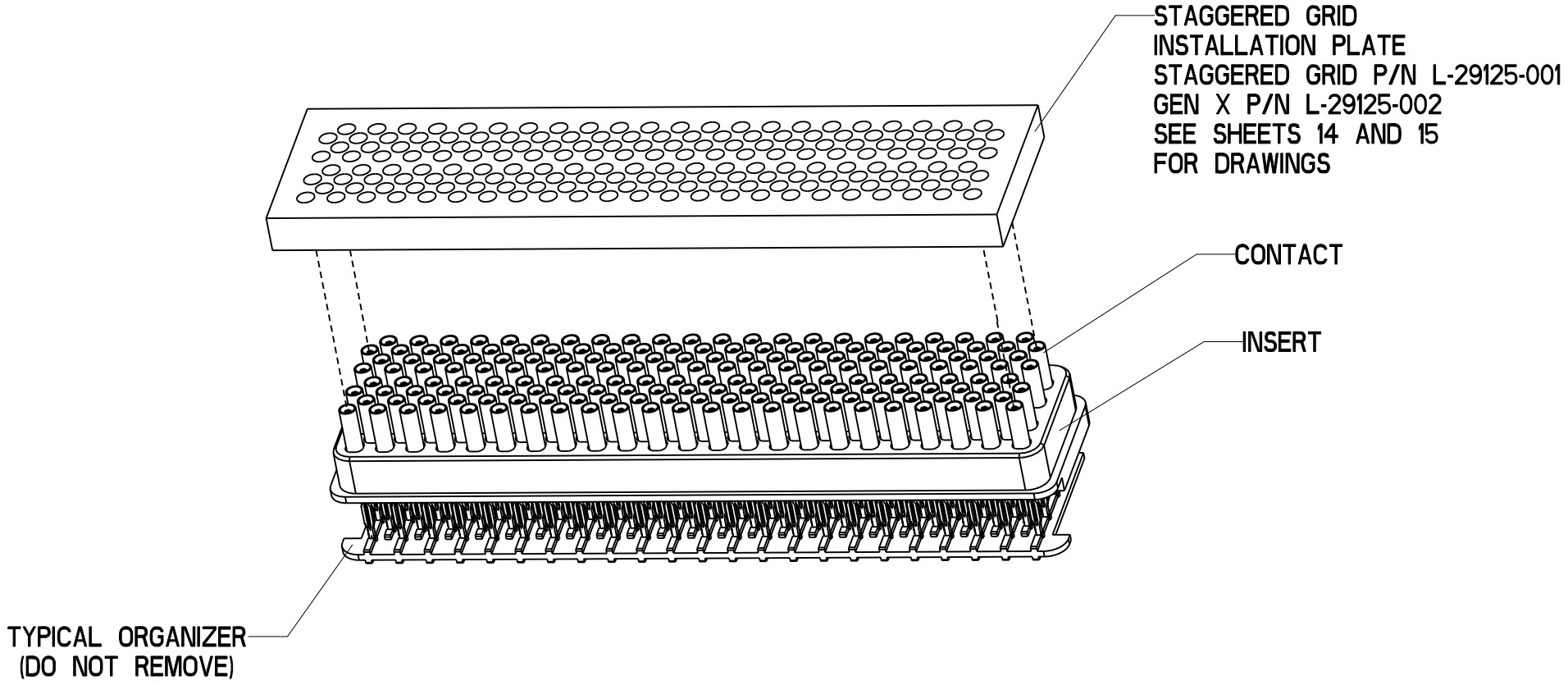


MACHINE THE SUPPORT PLATE TO HAVE THE SAME HOLE PATTERN AS THE BACKPLANE PWB WITH THE EXCEPTION THAT THE MINIMUM HOLE DIAMETERS SHOULD BE THE MAXIMUM BACKPLANE PWB HOLE DIAMETER PLUS THE BACKPLANE PWB AND SUPPORT PLATE POSITIONAL TOLERANCES.

THE THICKNESS OF THE PLATE IS TO BE NO LESS THAN THE MAXIMUM LENGTH OF THE BACKPLANE CONTACT USED MINUS THE MINIMUM THICKNESS OF THE BACKPLANE PWB.

CUTOUTS FOR THE FIBER OPTIC, RF AND POWER SUPPLY CONNECTORS WILL BE NEEDED IN THE SUPPORT PLATE IF THE BACKPLANE PWB IS NOT OF SUFFICIENT THICKNESS.

STAGGERED GRID/GEN X INSERT ASSEMBLIES

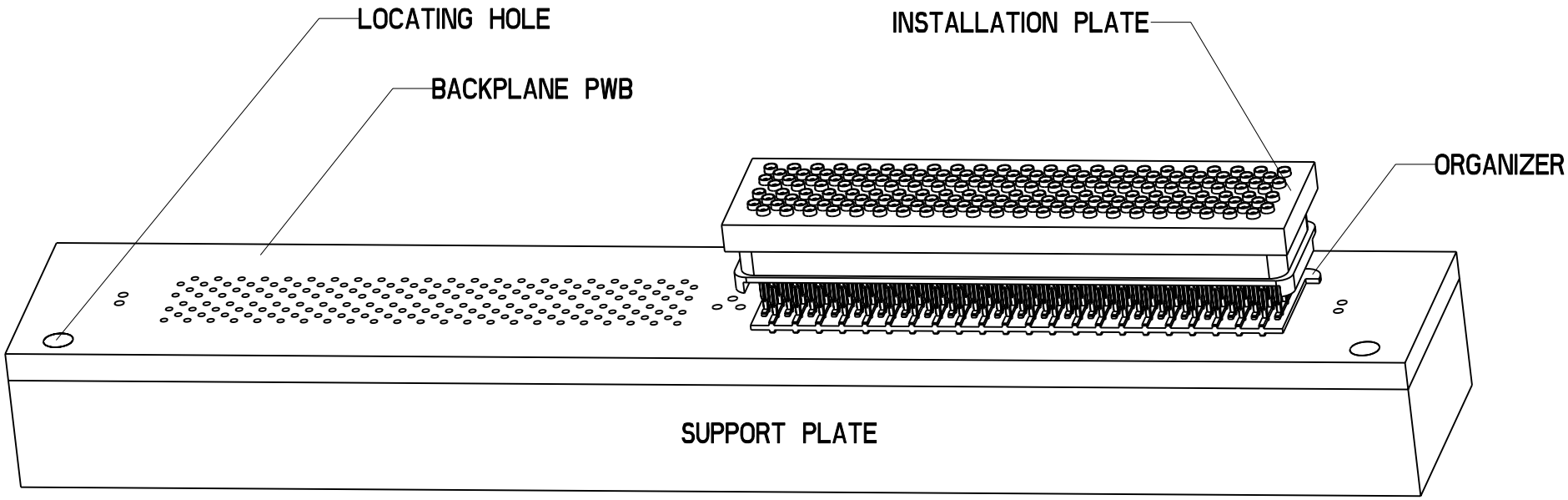


TO ENSURE CORRECT ALIGNMENT OF CONTACTS PRIOR TO CONNECTOR INSTALLATION INTO THE BACKPLANE, PLACE INSERT ON A FLAT SURFACE AND PLACE STAGGERED GRID INSTALLATION PLATE ONTO THE CONNECTOR UNTIL INSTALLATION PLATE MATES TO THE SURFACE OF THE CONNECTOR BODY.

THE SUGGESTED INSTALLATION PLATE PRIMARY FUNCTION IS TO CONTROL THE ALIGNMENT OF THE CONTACTS DURING THE INSERTION PROCESS INTO THE BACKPLANE PWB.

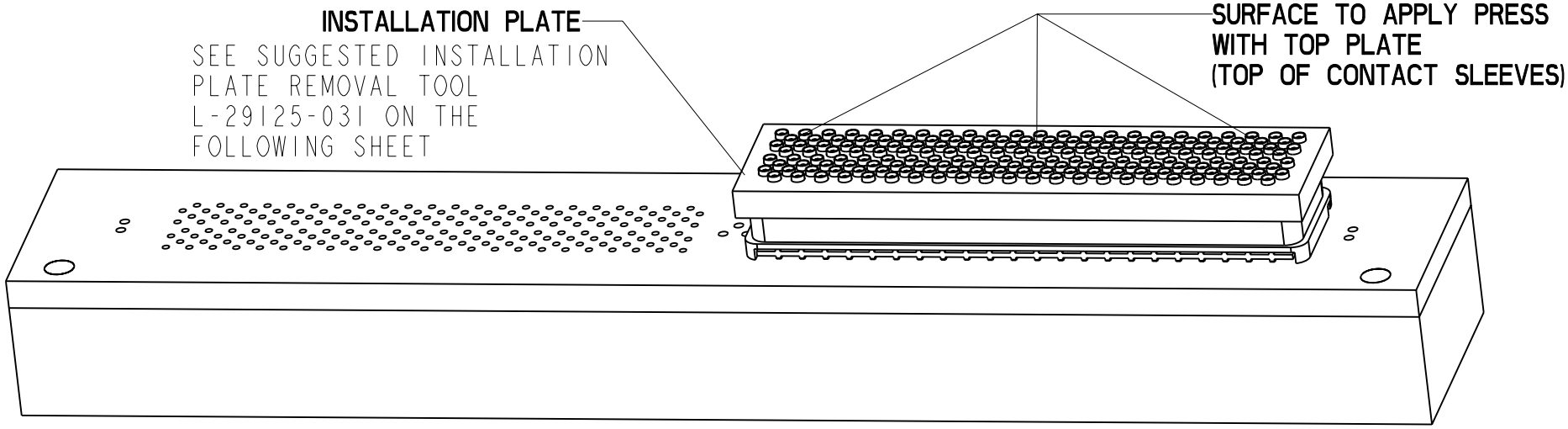
ALIGN THE ORGANIZER TO WITHIN .020" OF THE END OF THE CONTACT TAILS TO FACILITATE ALIGNMENT. (ORGANIZER APPEARANCE WILL VARY WITH DIFFERENT CONTACTS.)

STAGGERED GRID/GEN X INSERT ASSEMBLIES

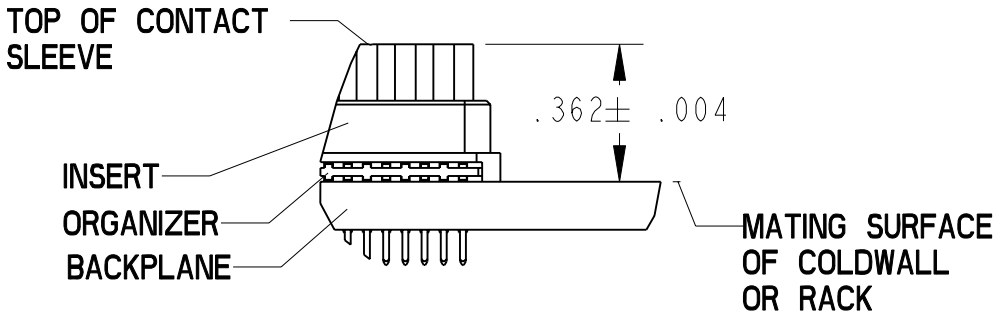


BEFORE PRESSING INSERT ASSEMBLY IN WITH INSTALLATION PLATE, ALIGN THE CONTACT TAILS TO THE BACKPLANE PWB HOLES. WHILE HOLDING THE PLASTIC INSERT, PUSH THE INSERT ASSEMBLY DOWN BY HAND AS FAR AS POSSIBLE INTO THE BACKPLANE PWB, KEEPING THE INSERT ASSEMBLY PARALLEL TO THE BACKPLANE PWB UNTIL THE COMPLIANT REGION IS TOUCHING THE ORGANIZER.

STAGGERED GRID/GEN X INSERT ASSEMBLIES



MAKE SURE THE INSERT ASSEMBLY IS PARALLEL TO THE BACKPLANE.
PRESS THE INSERT ASSEMBLY INTO THE BACKPLANE WITH A FLAT PLATE APPLIED TO THE TOP SURFACE OF THE ENTIRE GROUP OF CONTACT SLEEVES.
MAKE SURE THE PLATE AND INSERT ASSEMBLY ARE PARALLEL TO THE BACKPLANE PWB DURING THE ENTIRE SEATING PROCESS.
THE FORCE IS NOT EXPECTED TO EXCEED 15 POUNDS PER CONTACT.
AFTER INSTALLATION, A TOOL IS RECOMMENDED TO EVENLY EXTRACT THE INSTALLATION PLATE FROM THE INSERT ASSEMBLY. SEE EXAMPLE L-29125-031 ON THE FOLLOWING PAGE. IT IS VERY IMPORTANT TO TRANSLATE THE INSTALLATION PLATE OFF OF THE INSERT ASSEMBLY: ANY ROTATION COULD DAMAGE THE CONTACT SLEEVES.



* PRESS THE INSERT ASSEMBLY TO .362± .004 ABOVE BACKPLANE PWB SURFACE AS SHOWN, RELATIVE TO THE PWB SURFACE THAT MOUNTS TO THE COLDWALL/RACK.

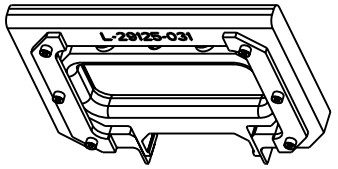
* AFTER CONNECTOR ASSEMBLY, INSERT SHALL MEET A PARALLELISM REQUIREMENT OF 0.004 RELATIVE TO THE BACKPLANE PWB SURFACE THAT MOUNTS TO THE COLDWALL/RACK | // | 0.004 |

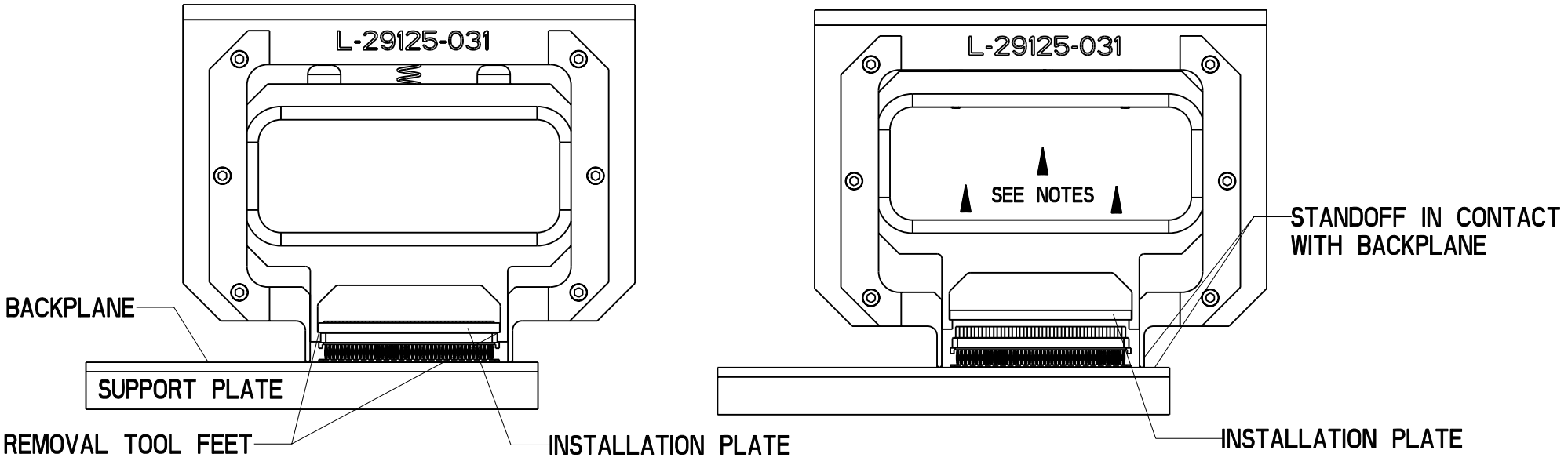
NOTE: POST FIRST MATE OF CONNECTOR ASSEMBLY, THE CONTACT ASSEMBLY MAY BECOME RECESSED FROM .362 ±.004 TO .335 MIN.

THIS OCCURANCE WILL NOT EFFECT FORM, FIT OR FUNCTION OF THE CONNECTOR ASSEMBLY THROUGH ALL INTENDED ENVIRONMENTS.

STAGGERED GRID/GEN X INSERT ASSEMBLIES

INSTALLATION PLATE REMOVAL TOOL





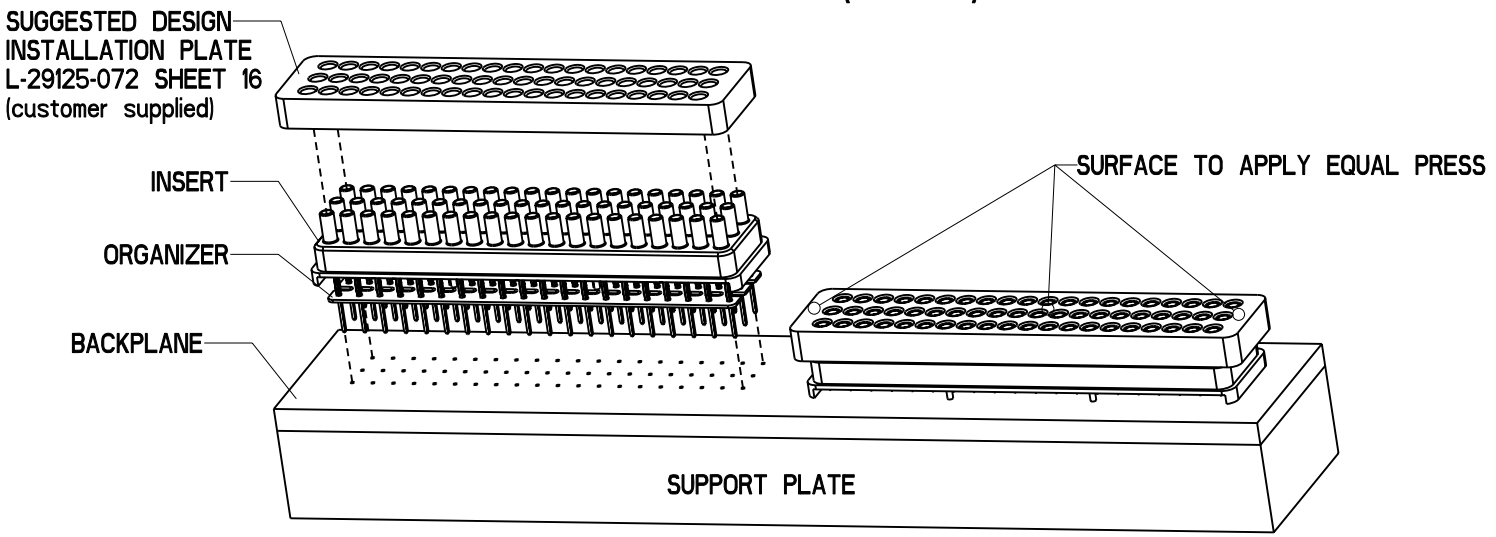
INSTALLATION PLATE REMOVAL TOOL L-29125-031 IS DESIGNED TO REMOVE AAO DESIGNED INSTALLATION PLATES L-29125-001 AND L-29125-002.

1. POSITION INSTALLATION PLATE REMOVAL TOOL L-29125-031 ADJACENT TO INSERT.

2. SLIDE TOOL OVER INSERT, MAKING SURE THE FEET ARE UNDERNEATH THE INSTALLATION PLATE.

3. ONCE TOOL IS IN THE CORRECT POSITION, BOTTOM STANDOFFS ON BACKPLANE CIRCUIT BOARD AND GENTLY PULL UP ON HANDLE.

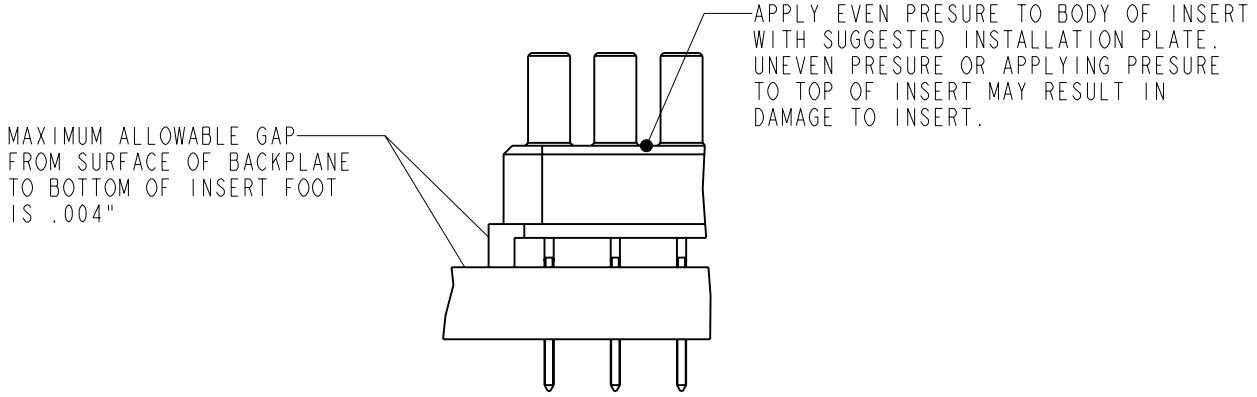
DIFFERENTIAL PAIR (LVDS) INSERT ASSEMBLIES



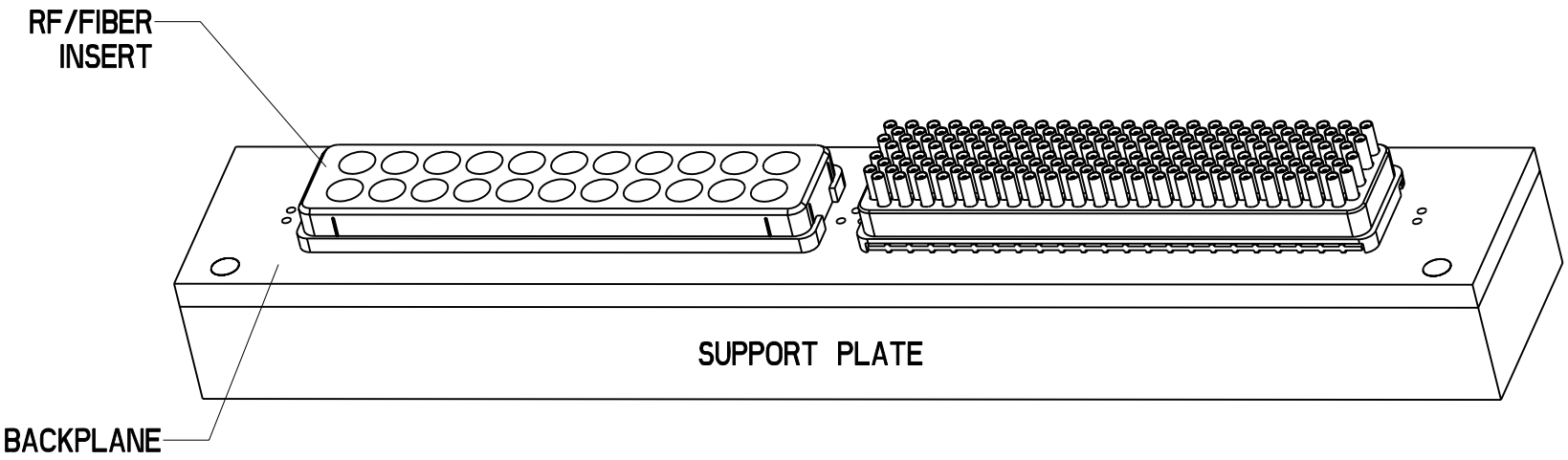
BEFORE PRESSING INSERT ASSEMBLY IN WITH INSTALLATION PLATE, ALIGN THE CONTACT TAILS TO THE BACKPLANE HOLES. WHILE HOLDING PLASTIC INSERT, PUSH THE INSERT ASSEMBLY DOWN BY HAND AS FAR AS POSSIBLE INTO THE BACKPLANE, KEEPING THE INSERT ASSEMBLY AND INSTALLATION PLATE PARALLEL TO THE BACKPLANE UNTIL THE COMPLIANT REGION IS TOUCHING THE ORGANIZER.

PRESS THE INSERT ASSEMBLY INTO THE BACKPLANE WITH THE INSTALLATION PLATE; MAKING SURE TO KEEP INSERT ASSEMBLY AND INSTALLATION PLATE PARALLEL TO THE BACKPLANE DURING THE ENTIRE SEATING PROCESS.
BOTTOM SURFACE OF INSERT ASSEMBLY FEET SHOULD REST ON TOP SURFACE OF BACKPLANE AFTER INSERTION PROCESS IS COMPLETE.

AFTER INSTALLATION, CHECK BOTTOM SURFACE OF INSERT ASSEMBLY WITH TOP SURFACE OF BACKPLANE USING A .004" GAGE. MAXIMUM ALLOWABLE GAP AFTER INSERTION IS .004".

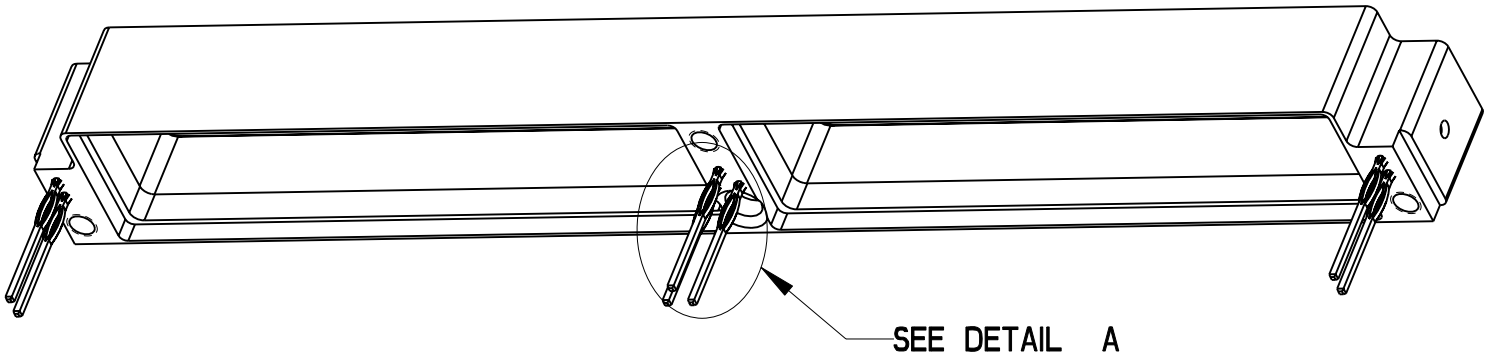


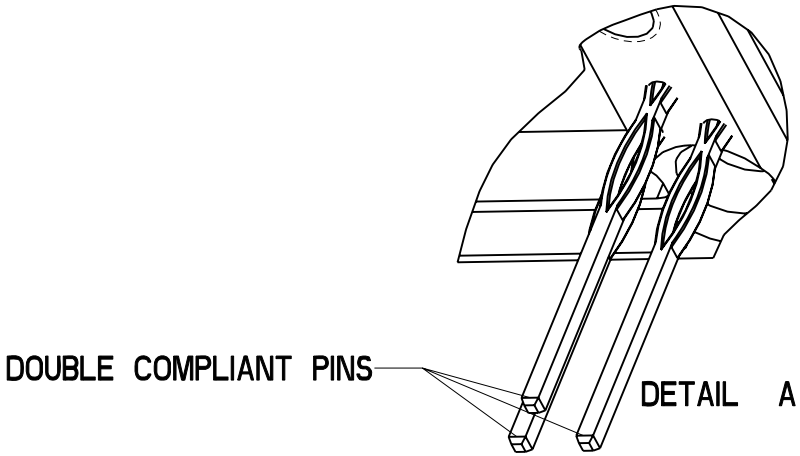
CONNECTORS WITH DIGITAL, RF AND FIBER OPTIC CONTACTS



FOR CONNECTORS WITH COMBINATION DIGITAL, RF AND FIBER OPTIC CONTACTS. FIRST ASSEMBLE THE FIBER/RF INSERTS INTO THE BACKPLANE. AFTER THE DIGITAL PORTIONS OF THE BACKPLANE CONNECTORS HAVE BEEN ASSEMBILED TO THE BACKPLANE,ASSEMBLE THE SHELL OVER THE INSERTS AS DIRECTED.

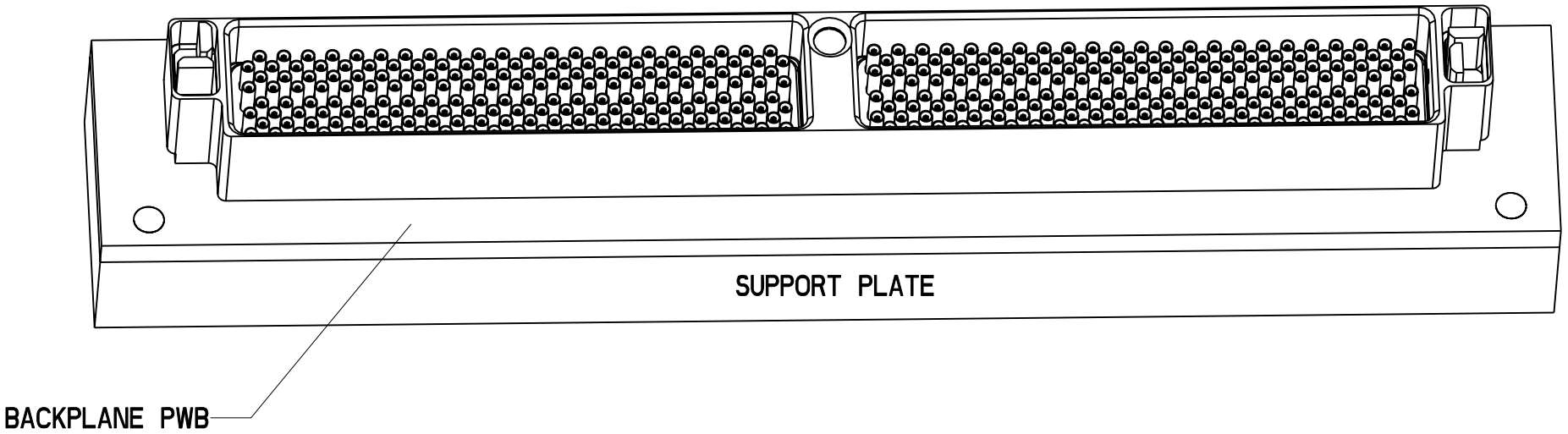
OPTIONAL SHELL GROUNDING





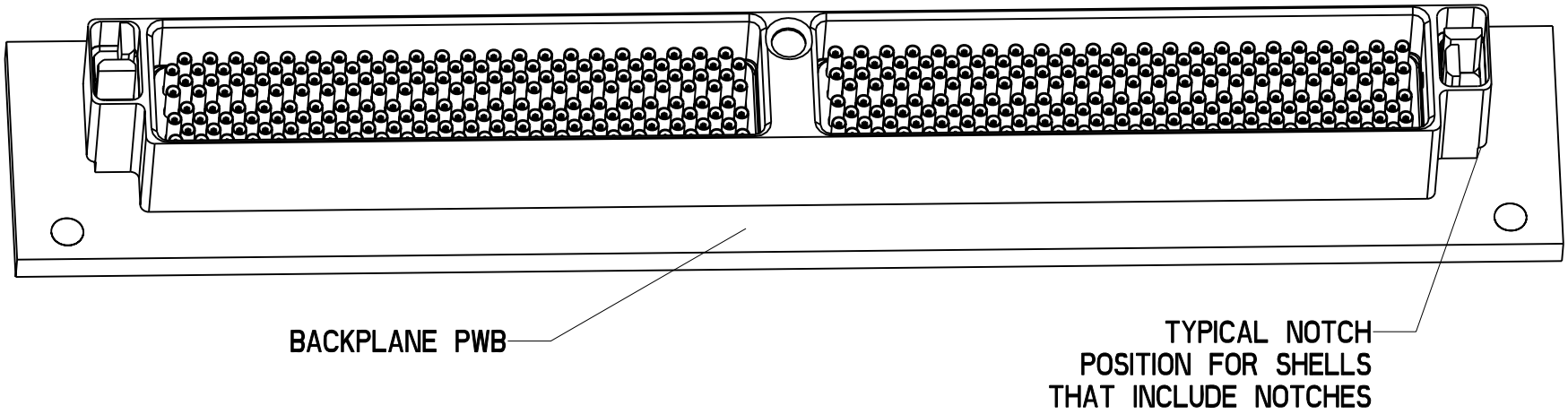
SOME BACKPLANE CONNECTORS ARE SUPPLIED WITH DOUBLE COMPLIANT GROUND PINS TO GROUND THE CONNECTOR SHELL TO THE BACKPLANE. WHEN SHELL GROUNDING IS REQUIRED, INSTALL THE DOUBLE COMPLIANT PINS BY BOTTOMING THE BLUNT END IN THE BLIND HOLES LOCATED ON THE SHELL MOUNTING SURFACE. CARE MUST BE TAKEN TO PREVENT DAMAGING THE EXPOSED COMPLIANT SECTION. THE REQUIRED FORCE IS EXPECTED TO BE NO GREATER THAN 40 POUNDS PER PIN. THE SHELL MUST BE COMPLETELY SUPPORTED DURING THIS ASSEMBLY STEP.

SHELL ASSEMBLY



PLACE THE SHELL OVER THE INSERTS IN THE PROPER ORIENTATION. PUSH THE SHELL DOWN TOWARD THE BACKPLANE INSERTING THE COMPLIANT GROUNDING PINS INTO THE BACKPLANE. FASTEN THE SHELL TO THE BACKPLANE WITH THE CUSTOMER SUPPLIED FASTENERS TO THE THREADED MOUNTING HOLES IN THE SHELLS.
THE LENGTH OF THE SCREWS WILL DEPEND ON THE THICKNESS OF THE BACKPLANE PWB.

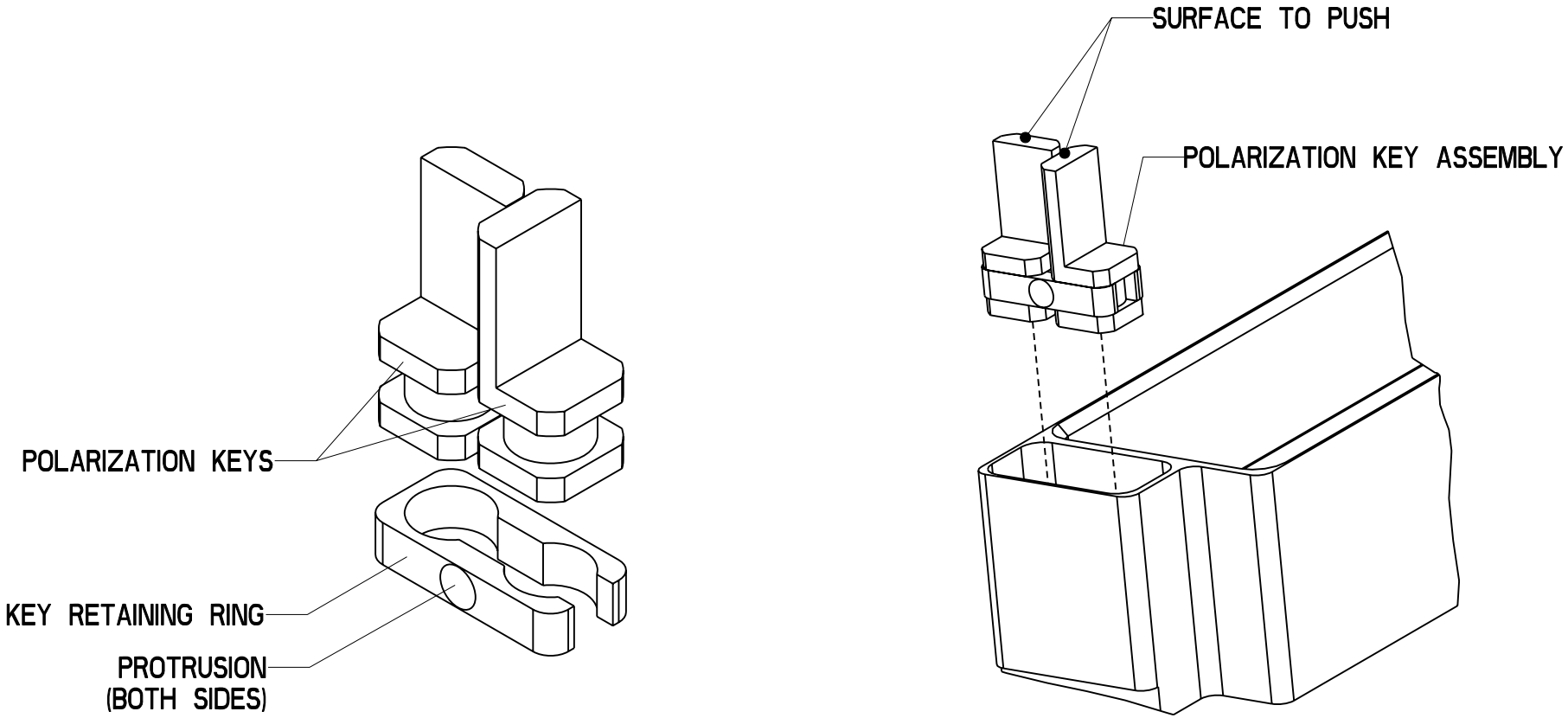
BACKPLANE CONNECTOR SHELL DISASSEMBLY



TO DISASSEMBLE THE BACKPLANE CONNECTOR SHELL, REMOVE THE ATTACHING SCREWS FROM THE BOTTOM OF THE BACKPLANE.

IF SHELL GROUNDING WITH COMPLIANT PINS WAS USED, GENTLY AND EVENLY PRY THE SHELL FROM THE BACKPLANE PWB. SOME CONNECTOR SHELLS HAVE NOTCHES TO FACILITATE SHELL REMOVAL.

ASSEMBLY OF POLARIZATION KEYS



IN THE DESIRED ORIENTATION, INSERT THE TWO KEYS INTO THE KEY RETAINING RING. USING A FLAT SURFACE PUSH THE POLARIZATION KEY ASSEMBLY INTO THE THE KEYING POCKET UNTIL THE PROTRUSION ON THE KEY RETAINING RING SNAPS INTO PLACE.

WHEN CHANGING POLARIZATION KEY ASSEMBLY IN INSERT. DISCARD OLD KEY RETAINING RING AND REPLACE WITH NEW ONE. REASSEMBLE KEYS WITH NEW KEY RETAINING RING AND INSTALL POLARIZATION KEY ASSEMBLY INTO INSERT KEYING POCKET.

TESTING OF BRUSH CONTACTS

TEST PROBE KIT- FOR USE WITH AMPHENOL BRUSH CONTACTS IN LRM CONNECTORS

AMPHENOL SUPPLIES A TEST PROBE KIT ESPECIALLY DESIGNED FOR PROBING BRUSH CONTACTS TO INSURE THAT THEY ARE PROPERLY WIRED WITHIN A CONNECTOR. IT CONSISTS OF A PLASTIC HOLDER, INSERT AND TWO CONTACTS WHICH ARE USABLE FOR EITHER THE BACKPLANE OR MODULE CONNECTOR. IT IS SUGGESTED THAT THE USER PURCHASE TWO KITS IF THEY ARE USING CONNECTORS OF TWO GENDERS. THE KITS ARE NOT CONVERTIBLE AFTER ASSEMBLY.

INSTRUCTIONS FOR USE OF BACKPLANE TEST PROBE-

SLIDE THE INSERT BACK OVER THE WIRE AND CRIMP CONTACT ON. FOLLOW CRIMPING PROCEDURE BELOW. THEN SNAP THE INSERT CONTACT ASSEMBLY INTO THE HOLDER.

INSTRUCTIONS FOR USE OF MODULE TEST PROBE-

SLIDE HOLDER OVER WIRE AND THEN CRIMP CONTACT. FOLLOW CRIMPING PROCEDURE BELOW. SLIDE THE INSERT ON THE CONTACT AND SEAT IT AGAINST THE SHOULDER. SLIDE THE HOLDER FORWARD AND SNAP IT ONTO THE INSERT.

CRIMPING PROCEDURE-

USING ACCEPTED INDUSTRY PROCEDURES, STRIP WIRE END TO BE TERMINATED 1/8 TO 5/32 INCHES. CARE SHOULD BE TAKEN NOT TO NICK WIRE STRANDS. ASSEMBLE THE M22520/2-01 CRIMP TOOL AND M22520/2-27 POSITIONER AND PLACE TOOL SELECTOR IN CORRCT SETTING FOR WIRE SIZE. SELECTED WIRE SIZE MUST NOT HAVE AN INSULATION DIAMETER GREATER THAN .062 FOR THE MODULE PROBE AND NOT GREATER THAN .038 FOR THE BACKPLANE PROBE.

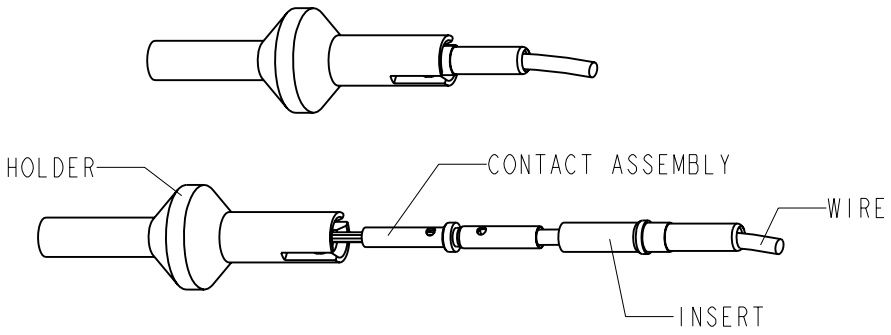
AWG	22	24	26	28
SEL	5	4	3	2

INSERT STRIPPED WIRE END INTO CONTACT WIRE WELL. STRANDS SHOULD BE VISIBLE IN WIRE WELL INSPECTION HOLE. BOTTOM CONTACT AND WIRE ASSEMBLY IN POSITIONER AND CLOSE HANDLES OF CRIMP TOOL TO COMPLETE CRIMP. HANDLES WILL NOT OPEN UNLESS FULL CRIMPING CYCLE HAS BEEN COMPLETED.

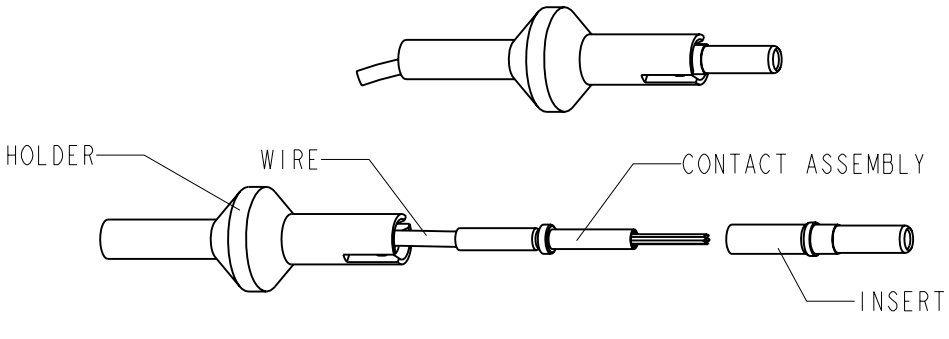
PART NUMBER FOR ORDERING TEST PROBE KIT IS 11-10400-23

ATTENTION:

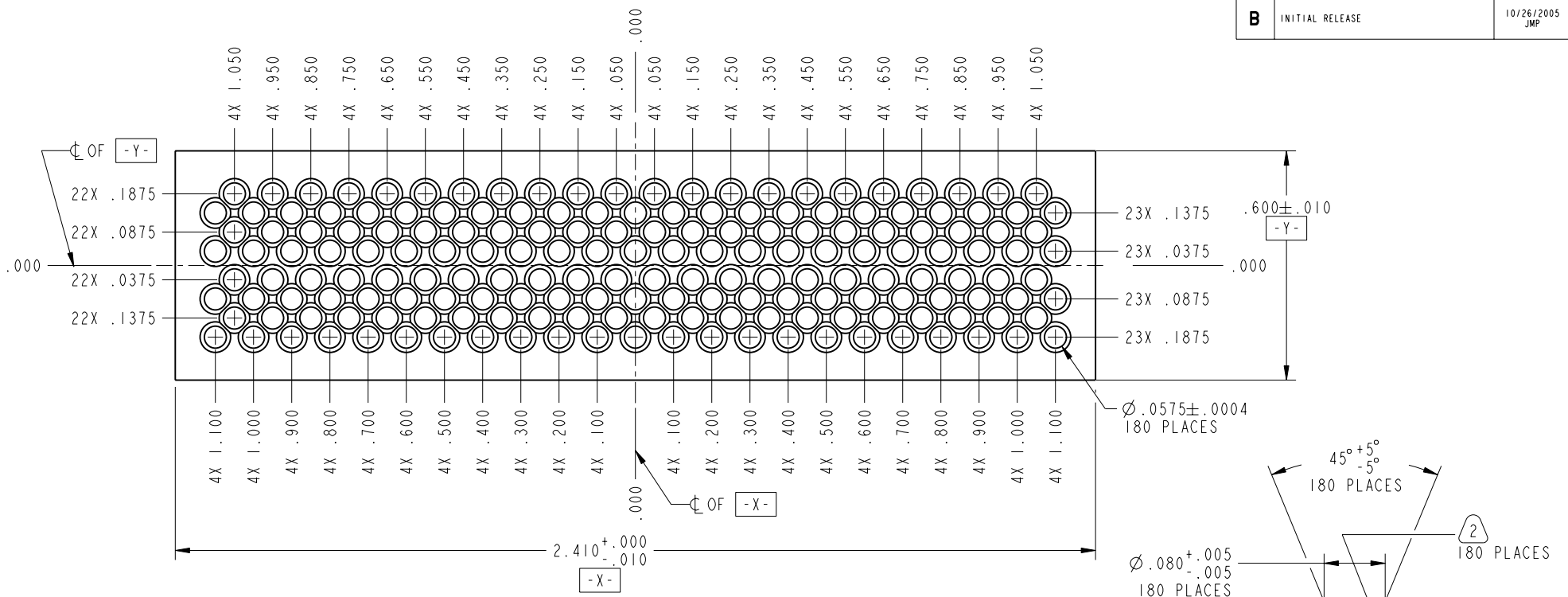
PROBING BRUSH CONTACTS WITH ANYTHING OTHER THAN A BRUSH CONTACT MAY DAMAGE OR DEGRADE THE BRUSH CONTACT PERFORMANCE.

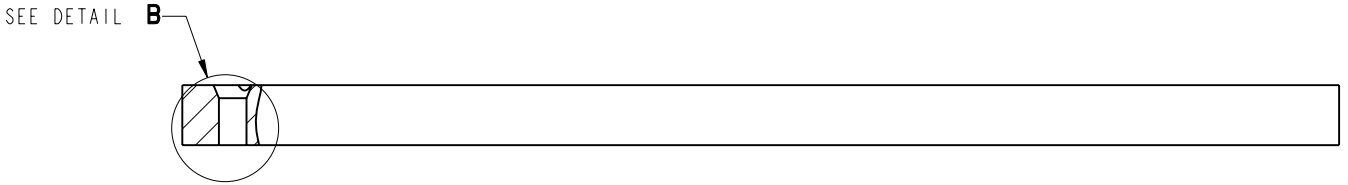


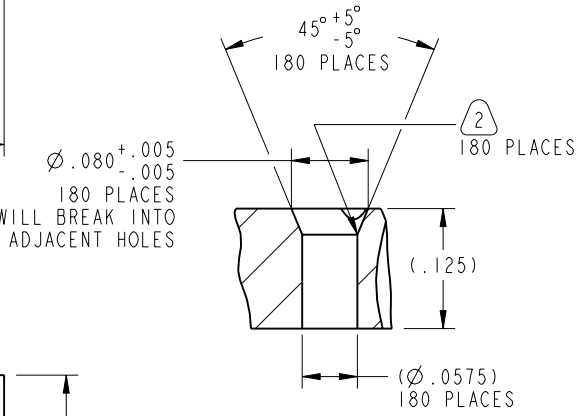
TEST PROBE BACKPLANE CONFIGURATION



TEST PROBE MODULE CONFIGURATION







DETAIL B
SCALE 10.000

2. NO BURS PERMISSIBLE.

1. ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED SHALL HAVE A GENERAL TOLERANCE OF ±.0004, NON ACCUMULATIVE.

NOTES:

REVISIONS		
LTR	DESCRIPTION	DATE
B	INITIAL RELEASE	10/26/2005 JMP

UNLESS OTHERWISE SPECIFIED	SPECIFICATIONS
LINEAR DIMENSIONS ARE IN INCHES TOLERANCES: .XXXX = ±.0005 ANGLES= ±2° .XXX = ±.010 .XX = ±.03 .X = ±.1 DIM.& TOL. PER ASME Y14.5M; DRM PER MIL-DTL-31000; OTHER Amphenol Slds. PER 9-3800 LEGENDS: =FLAG NOTE CALL OUT REFERENCE ONLY	MATERIAL SPEC. ALUM ALLOY AMS 4150 OR AMS 4027 OR 9-8578, 9-8578-6 PROCESS SPEC. N/A

POS	QTY	PART NUMBER	DESCRIPTION	NOTE
PARTS LIST				

APPROVALS	DATE
PREPARED BY J.PAUL	18-JUL-05
ENGINEER IN CHARGE J.PAUL	
DESIGN MANAGER R.SELFRIDGE	
DESIGN ACTIVITY GROUP BOARD LEVEL	
THIRD ANGLE PROJECTION	

AMPHENOL CORPORATION
40-60 DELAWARE AVENUE
SIDNEY, N.Y. 13838

STAGGERED GRID BACKPLANE CONNECTOR INSTALLATION PLATE

SIZE	CAGE CODE	DOCUMENT NO.	REV.
C	77820	L-29125-001	B
SCALE: 5.0	REF. N/A	SHEET 1 OF 1	

THE USE OF THIS DOCUMENT IS UNLIMITED. HOWEVER, DOCUMENTS REFERENCED HEREON MAY CONTAIN LIMITED RIGHTS DATA.

N/A
NEXT ASSEMBLY

PRO/ENGINEER INFORMATION
Pro/e Model Used:
L-29125-001.PART
Drawing Name:
L-29125-001

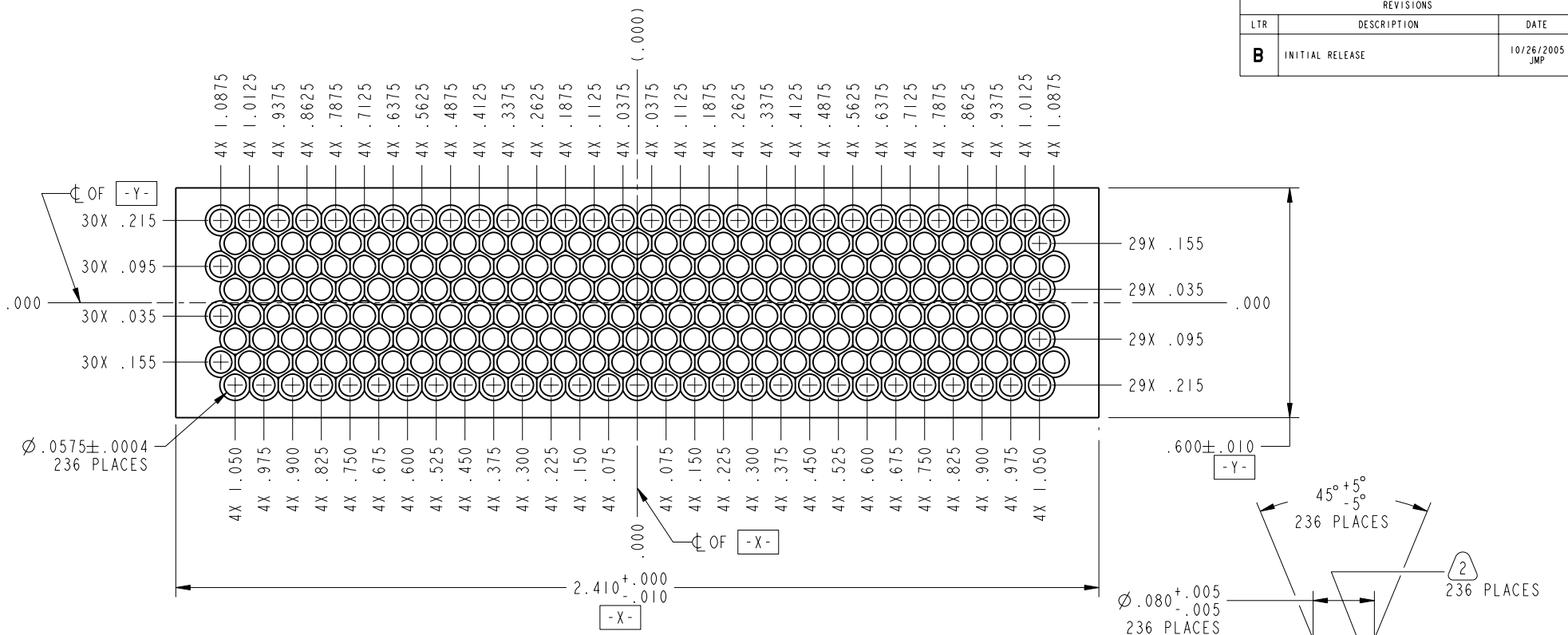
DOCUMENT NO. L-29125-001 | SHEET 1 OF 1 | REV. B

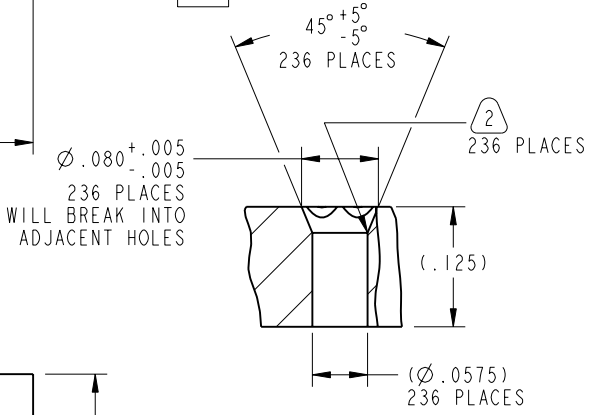
FORMAT: C-U.F.I

DOCUMENT NO. L-29125-001 | REV. B | SHEET 1 OF 1

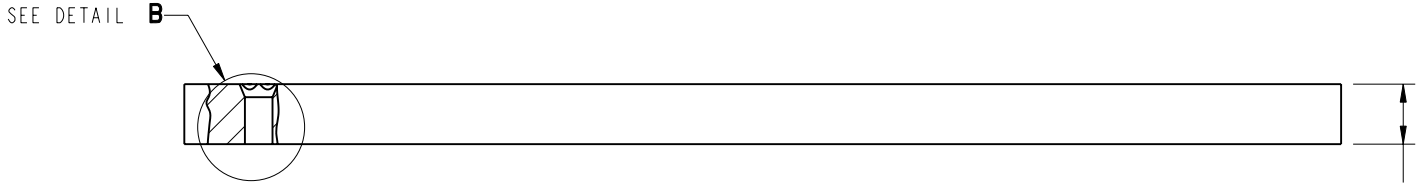
RELEASE STATE Released | REVISION B | VERSION 3

REVISIONS		
LTR	DESCRIPTION	DATE
B	INITIAL RELEASE	10/26/2005 JMP





DETAIL **B**
SCALE 10.000



2. NO BURS PERMISSIBLE.

1. ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED SHALL HAVE A GENERAL TOLERANCE OF ±.0004, NON ACCUMULATIVE.

NOTES:

N/A
NEXT ASSEMBLY

PRO/ENGINEER INFORMATION
Pro/e Model Used: L-29125-002.PART
Drawing Name: L-29125-002

UNLESS OTHERWISE SPECIFIED
LINEAR DIMENSIONS ARE IN INCHES TOLERANCES: .XXXX = ±.0005 ANGLES= ±2° .XXX = ±.010 .XX = ±.03 .X = ±.1 DIM.& TOL. PER ASME Y14.5M; DRM PER MIL-DTL-31000; OTHER Amphenol Stds. PER 9-3800 LEGENDS: =FLAG NOTE CALL OUT REFERENCE ONLY

SPECIFICATIONS	
MATERIAL SPEC.	ALUM ALLOY AMS 4150 OR AMS 4027 OR 9-8578, 9-8578-6
PROCESS SPEC.	N/A

POS	QTY	PART NUMBER	DESCRIPTION	NOTE

PARTS LIST

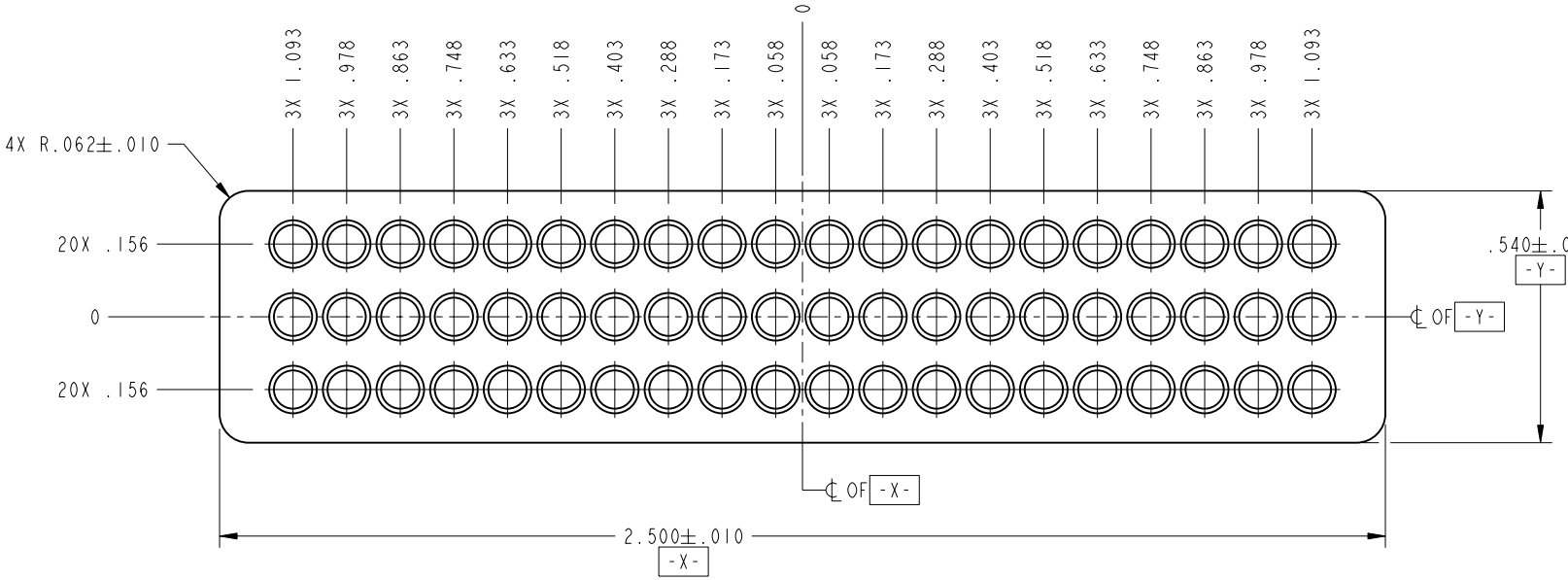
APPROVALS		DATE
PREPARED BY	J.PAUL	18-JUL-05
ENGINEER IN CHARGE	J.PAUL	
DESIGN MANAGER	R.SELFRIDGE	
DESIGN ACTIVITY GROUP	BOARD LEVEL	
THIRD ANGLE PROJECTION		

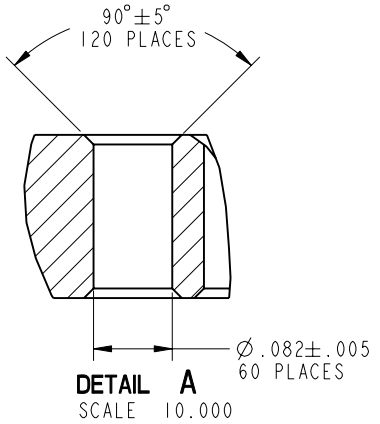
AMPHENOL CORPORATION
40-60 DELAWARE AVENUE
SIDNEY, N.Y. 13838

GEN-X
BACKPLANE CONNECTOR
INSTALLATION PLATE

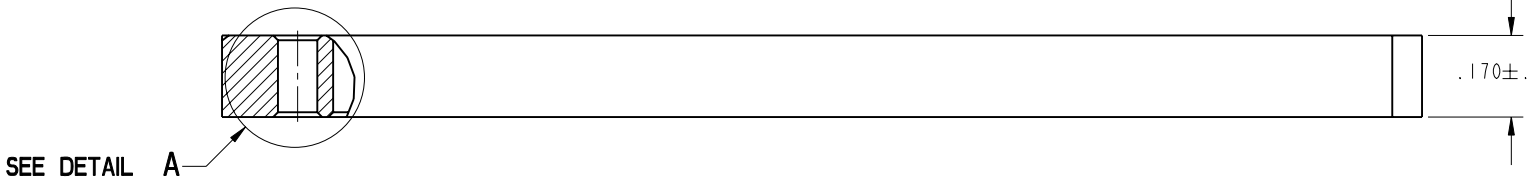
SIZE	CAGE CODE	DOCUMENT NO.	REV.
C	77820	L-29125-002	B
SCALE: 5.0	REF. N/A	SHEET 1 OF 1	

REVISIONS		
LTR	DESCRIPTION	DATE
A	INITIAL RELEASE	05/16/06





DETAIL A
SCALE 10.000



2. REMOVE ALL BURRS AND SHARP EDGES.

1. ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED SHALL HAVE A GENERAL TOLERANCE OF ±.001 NON ACCUMULATIVE

NOTES:

N/A

NEXT ASSEMBLY

PRO/ENGINEER INFORMATION
Pro/e Model Used:
DIFF-PAIR-INSERTION-PLATE.PART
Drawing Name:
L-29125-072

UNLESS OTHERWISE SPECIFIED
LINEAR DIMENSIONS ARE IN INCHES
TOLERANCES:
.XXXX = ±.0005 ANGLES= ±2°
.XXX = ±.010
.XX = ±.03
.X = ±.1
DIM.& TOL. PER ASME Y14.5M;
DRM PER MIL-DTL-31000;
OTHER Amphenol Stds. PER 9-3800
LEGENDS:
=FLAG NOTE CALL OUT
REFERENCE ONLY

SPECIFICATIONS
MATERIAL SPEC.
ALUM ALLOY
AMS 4150 OR
AMS 4027 OR
9-8578, 9-8578-6
PROCESS SPEC.
N/A

POS	QTY	PART NUMBER	DESCRIPTION	NOTE

PARTS LIST

APPROVALS	DATE
PREPARED BY: DMORSE	
ENGINEER-IN-CHARGE: EHICKEY	16-May-06
DESIGN MANAGER: RSELFRIDGE	
DESIGN ACTIVITY GROUP: BLP	

THIRD ANGLE PROJECTION

AMPHENOL CORPORATION
40-60 DELAWARE AVENUE
SIDNEY, N.Y. 13838

DIFFERENTIAL PAIR
BACKPLANE CONNECTOR
INSTALLATION PLATE

SIZE	CAGE CODE	DOCUMENT NO.	REV.
C	77820	L-29125-072	A

SCALE: 5.0 | REF. N/A | SHEET 1 OF 1

DOCUMENT NO. L-29125-072 | SHEET 1 OF 1 | REV. A

FORMAT C-L-1