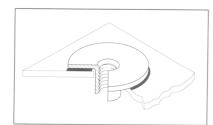




Shur-Lok Advanced Composites Catalog

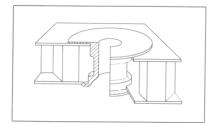
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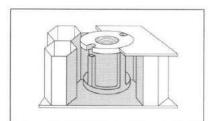
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SL6170	Stud	
SL6172	Stud	
SL6031	Insert	
SL6031-F	Insert, Floating	
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SL6257	Insert, Floating	
SLD6000	Data	
SLT6001B	Heat Unit	
SLTA6001B	Tip Adapter	



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Insert, Lightweight, Thin Panel	
Data	
Sleeve and Plug	
	Insert, Through Threaded Insert, Clearance Hole Insert, Countersunk Clearance Hole Insert, Blind, Floating Nut Insert, Lightweight, Thin Panel Data Installation Tools Sleeve and Plug



Insert Packaging Systems
Plastic Tube Pack. Clear Plastic Box

Fasteners For Advanced Composites

INTRODUCTION

FOREWORD:

As an adjunct to the contents of this catalog, especially for those who have had little or no prior experience with respect to the use of fasteners for sandwich panel Shur-Lok has produced a Design Manual covering all the basic considerations for the selection and application of Sandwich Panel Fasteners. This Manual has been produced by Shur-Lok with assistance from a number of leading aerospace firms and presents an exhaustive investigation into virtually every aspect of the subject complete with many pages of test report data. This Design Manual is available upon request from the Shur-Lok Corporation. Simply ask for "Sandwich Panel Fasteners — Design Manual."

INTRODUCTION:

Composites, as addressed in this catalog, are made up of high strength, high-modulus, fiber-reinforced thermostats or thermoplastic resins. Some of the more common reinforcements are: fiberglass, boron, graphite/ carbon, and Kevlar[™]/epoxy. Composite structures have an excellent strength-to-weight or stiffness-toweight relationship in comparison to metallic materials. It is because of these strength and stiffness characteristics and the ease by which a final configuration can be achieved that the use of these materials is greatly increasing in the aircraft and aerospace industry.

FASTENING IN COMPOSITES:

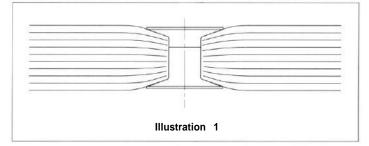
While in may ways, fiber-reinforced advanced composites are strongerthan metallic structure, they do not respond well to localized concentrated loading. Fasteners have been developed to address this issue and others. These other design considerations are outlined below.

A. Galvanic Compatibility —This concern is primarily related to material containing carbon fiber. Because of the highly noble character of the graphite, and the fact that the fibers can come in contact with the less noble metallic fastener, the fastener must be made of materials considered galvanically noncorrosive. If a reaction does occur, the fastener becomes sacrificial and literally corrodes away. This reaction not only destroys the integrity of the joint, but it is also aesthetically undesirable. Shur-Lok recommends titanium, Inconel, A286, or nonmetallic fasteners for use in graphite-based structures. Materials to avoid are summed up in Table I.

TABLE 1 -Material Compatibility With Graphite

Compatible	Noncompatible			Noncompatible	
Titanium Ti Allovs	Magnesium Aluminum Alloys				
Ti-Cb	Aluminum				
MP~35N (AMS 5758)	Alloy Steel				
Inco600 (AMS 5687)	300 Series CRES				
A286 (AMS 5731, 5737)	Monel				
PH13-8Mo (AMS 5629)					
Nonmetallics					

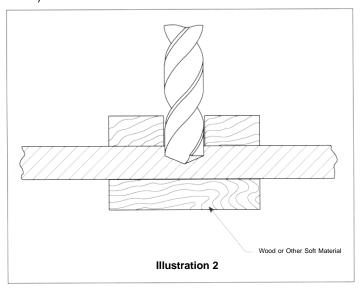
- B. Interference Fit It is not recommended that fasteners be installed using an interference fit in composite structure because slight delamination occurs as the fastener is pressed in place. As little as a few thousandths of interference can result in substantial strength loss, with no improvement in fatigue life. Structural characterization is recommended to evaluate performance.
- **C. Hole Edge Crushing** Since most composites do not have transverse reinforcement, i.e., fiber directed through the thickness of the laminates, there is relatively little resistance to crushing (Illustration 1). As crushing occurs, strength is substantially compromised.



Avoidance of crushing can be achieved by enlarging the "footprint" of the fastener used and closely controlling the installation forces.

- D. Vibration Damage —During installation it is important to apply forces into composite lay-up smoothly. For example, a two-part insert should be squeezed, not hammered together thus avoiding structural damage induced by heavy shock or vibration.
- E. Hole Preparation —Of primary importance to any fastener joint is the preparation of a good installation hole. Unlike metallic structure, composites tend to suffer surface ply splintering, surface ply delamination, irregularities inside the hole, and heat damage while drilling holes. In response to this problem, Shur-Lok has developed a series of bonded fasteners that attach to the surface of the substrate thereby avoiding the need for holes.

When holes are required, it is important to use the proper drill such as special spade or diamond abrasive impregnated core drills. It may be necessary to back up the entry and exit area of the panel to prevent splintering and delamination (Illustration 2).



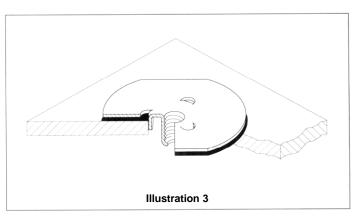
F. Water Absorption —As composite materials are drilled or machined, the natural sealing process of lamination is disrupted. In areas where fibers become exposed, an action may take place in which water, fuel, etc. is slowly absorbed through the fiber-matrix interface into structure. This results in weight gain and laminate degradation. In cases where holes are required, it may be necessary to avoid this phenomenon.

In developing a series of fasteners for fiber-reinforced advanced composites, Shur-Lok has addressed these related issues. While no one fastener is the total answer, Shur-Lok has developed a variety of fasteners that make the use of these advanced materials a practical reality.

TYPES OF FASTENERS

Shur-Lok has developed three classifications of fasteners for fiber-reinforced advanced composites. These classifications are: bonded, bonded-mechanical, and nonmetallic potted. A brief, general description of each type of fastener is written below. For more complete information and installation procedures, please refer to the introduction section for each specific fastener.

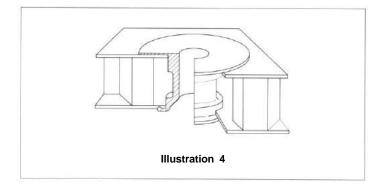
A. Bonded —This is a series of studs and inserts that are bonded to the surface of the substrate. The stud series requires no hole and the insert series requires a single hole to allow for nut float and bolt protrusion (Illustration 3).



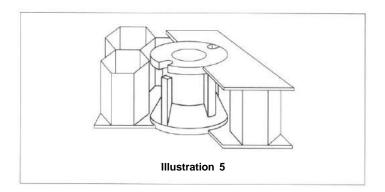
These fasteners are available with or without a preattached hot melt or thermoplastic adhesive disk. Fasteners supplied with the hot melt or adhesive disk are simply installed by heating the fastener to melt the adhesive, removing the heat source and holding it in place as the adhesive cools. These types of fasteners lend themselves well to robotic installation.



B. Bonded/Mechanical — Fasteners of this type use a combination of adhesive and mechanical measures for retention in the structure. In most cases the adhesive is applied to the surface under the fastener flange. In the adjustable insert, however, potting compound is injected through the flange into the void in the panel after the part has been adjusted to the panel thickness.



C. Nonmetallic Potted — Primarily designed for sandwich panel, this potted type fastener can also work with thicker composite lay-ups. The primary material is a polyetherimide thermoplastic, which is nonreactive with all current composites and is very lightweight. Installation is accomplished using the industry-standard Shur-Tab® potting process. A version with a floating nut element is also available for correction of hole misalignment (Illustration 5)



All potted style fasteners are supplied with a Shur-Tab® which greatly simplifies the installation procedure. Please refer to the Fasteners for Sandwich Structure catalog for information on tab installation.

SUMMARY:

All of the fasteners presented in this catalog are available in materials compatible with all known composite materials. These parts are only examples and are not intended to be suitable for all structures. Please consult the Shur-Lok Technical Service Department for further suggestions regarding specific applications. Shur-Lok also has an extensive engineering facility to assist in the development and testing of fasteners for special applications.

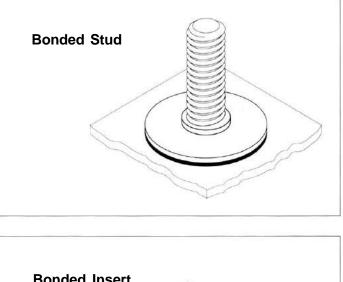


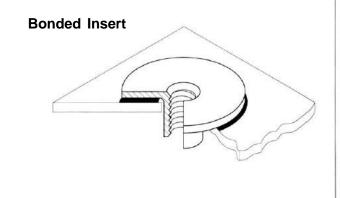


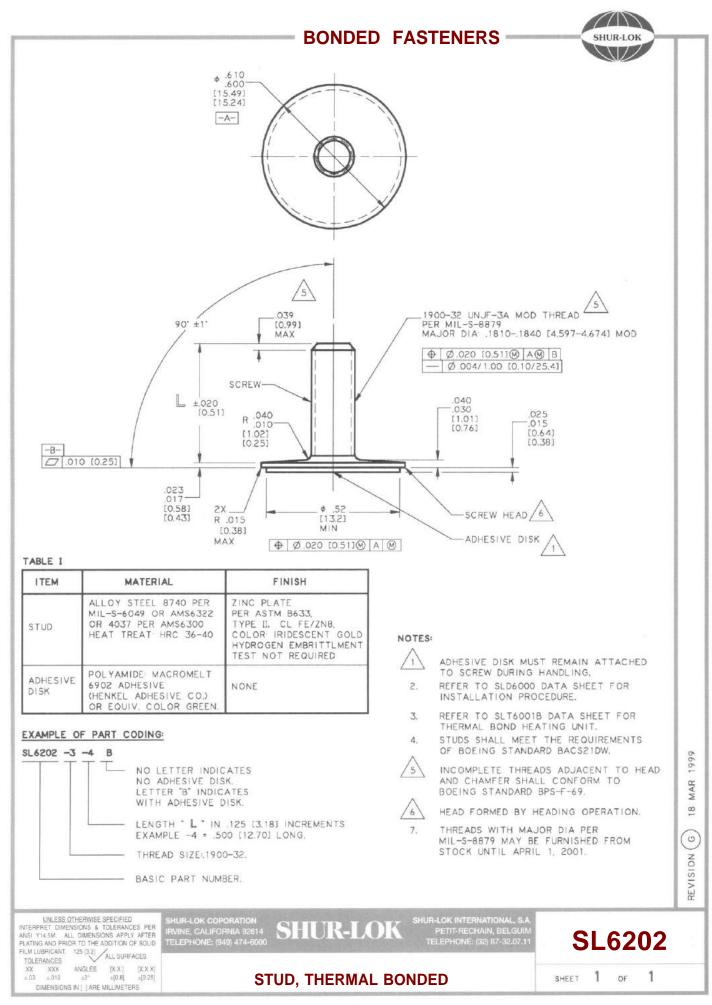
INTRODUCTION

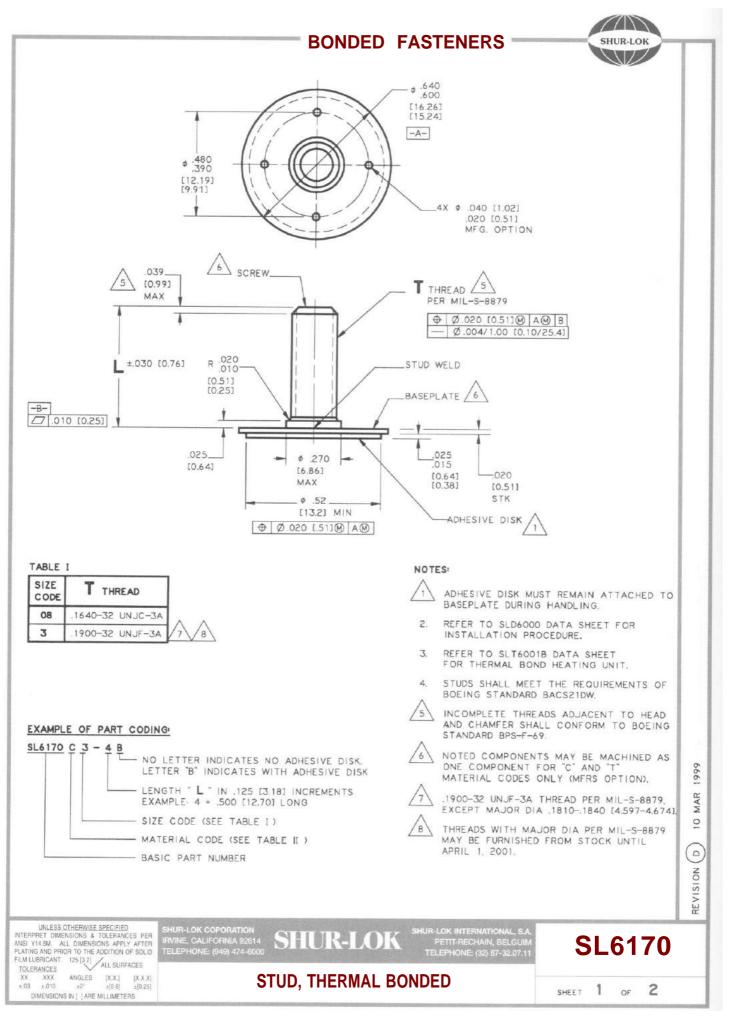
Fasteners in this category include inserts and studs which utilize surface bonding for structural attachment. Featuring a somewhat larger mounting flange to achieve adequate shear or tensile strength, bonding is accomplished by means of a heat unit applied to the part to melt the thermoplastic disk under the flange. Fasteners are available with or without this adhesive (or hotmelt) disk. Use of a heat sink greatly reduces the cooling cycle. One floating nut style requires, and is furnished with, adisposable nonmetallic locating pin to insure proper positioning with respect to the bolt hole in the structure.

Attachment of surface bonded fasteners requires only minimal preparation, however, certain precautions should be observed which are presented in Paragraph E in the General Information on pages 1 and 2 of this catalog. Stud attachments do not require a hole in the structure so that in effect no preparation on the structure is involved. It should also be noted that where mounting surfaces are glossy, an improved bond may be achieved by abrading the surface prior to attachment.











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MATL	ITEM	MATERIAL	HEAT TREAT	FINISH
_	SCREW	STEEL-1010 TO 1022 PER FED-STD-66	NONE	ZINC PLATE PER ASTM B633 TYPE II. CLASS FE/ZNB, COLOR IRIDESCENT
	BASEPLATE	STEEL 1050 PER AMS5085 OR ASTM A684	HRC 36-40	GOLD, EXCEPT HYDROGEN Embrittlement test not required.
	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.), OR EQUIVALENT. COLOR GREEN	NONE	NONE
	SCREW	CRES A286 PER AMS5731. AMS5737. AMS5804 OR AMS5805 UTS 130KSI MIN	NONE	PASSIVATE PER AMS-00-P-35
c	BASEPLATE	CRES A286 PER AMS5525 UTS 130KSI MIN	NONE	
	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.), OR EQUIVALENT. COLOR GREEN	NONE	NONE
	SCREW	TITANIUM 6AL-4V	NONE	PER SHUR-LOK MPS 0012
т	BASEPLATE	TITANIUM 6AL-4V	NONE	
1	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.), OR EQUIVALENT. COLOR GREEN	NONE	NONE

UNLESS-OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI Y14.5M ALL DIMENSIONS APPLY AFTER PLATING AND PRIOR TO THE ADDITION OF SOLID FILM LUBRICANT 125 [32] ALL SURFACES TOLERANCES XX XXX ANGLES [XX] [XXX] ±.03 +.010 s.2 ±.0.8] ±[0.25] DIMENSIONS IN [] ARE MILLIMETERS

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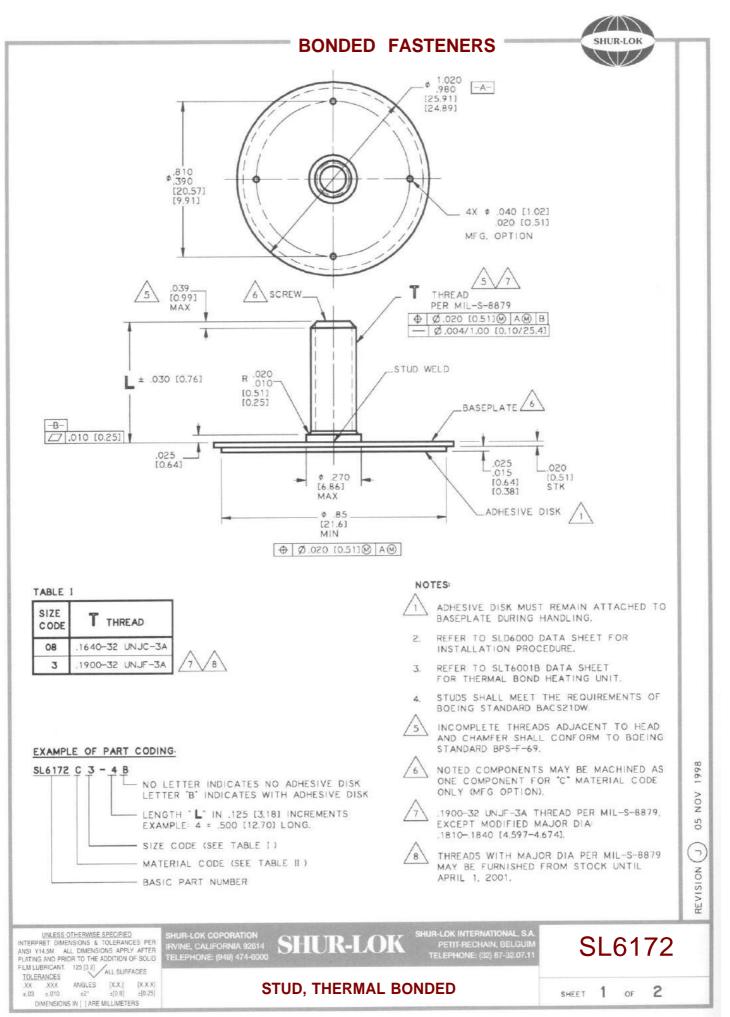




TABLE I

MATL	ITEM	MATERIAL	HEAT TREAT	FINISH
	SCREW	STEEL 1010 TO 1022 PER FED-STD-66	NONE	ZINC PLATE PER ASTM B633 TYPE II. CLASS FE/ZN8.
	BASEPLATE	STEEL PER 1050 PER AMS5085 OR ASTM A684	HRC 36-40	EXCEPT HYDROGEN EMBRITTLEMENT TEST NOT REQUIRED.
-	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE COJ, OR EQUIVALENT. COLOR GREEN	NONE	NONE
	SCREW	300 SERIES CRES PER QO-S-763, AMS5644, AMS5678 OR AMS5529 WITH A MIN UTS OF 130KSI	NONE	
с	BASEPLATE	17-7 CRES PER AMS5644, AMS5678 OR AMS5529 WITH A MIN UTS OF 130KSI	NONE	PASSIVATE PER AMS-00-P-35
<u> </u>	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.). OR EQUIVALENT. COLOR GREEN	NONE	NONE

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UNLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI Y14 M. ALL DIMENSIONS APPLY AFTER PLATING AND PRIOR TO THE ADDITION OF SOLID FILM LUBRICANT. 125 [3.2] JOLERANCES

 FILM LUBRICANT.
 12b (3.42)

 TOLERANCES
 XX

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 ±.010

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 ±.028

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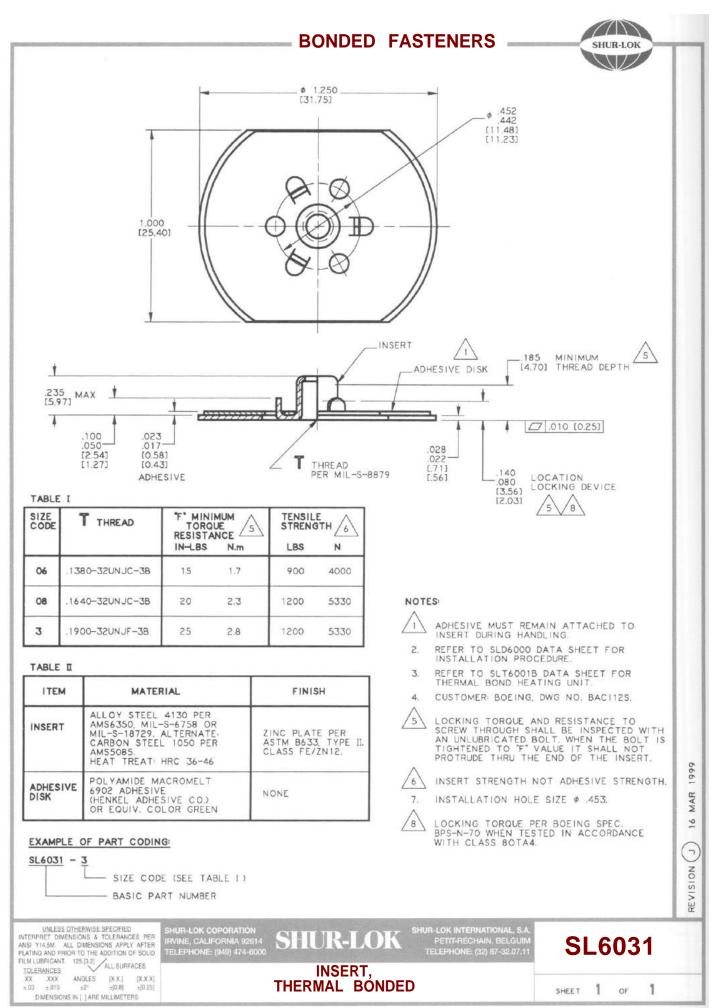
SHUR-LOK COPORATION IRVINE, CALIFORNIA 92614 TELEPHONE: (949) 474-8000 SHUR-LOK INTERNATIONAL, S.A PETIT-RECHAIN, BELGUIM TELEPHONE: (32) 87-32.07.11

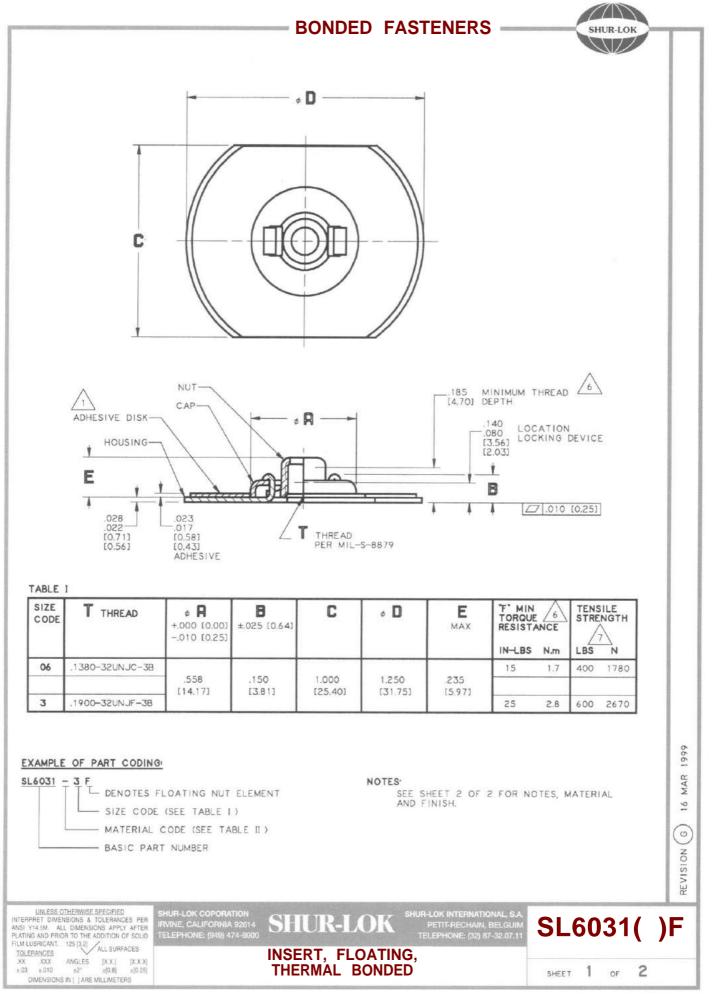
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SHEET 2 OF 2

STUD, THERMAL BONDED

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TABLE I

MATERIAL	ITEM	MATERIAL	FINISH
-		ALLOY STEEL 4130 PER AMS6350, MIL-S-6758 OR MIL-S-18729, ALTERNATE CARBON STEEL 1050 PER AMS5085. HEAT TREAT: HRC 36-46	ZINC PLATE PER ASTM B633 TYPE II. CLASS FE/ZN12.
	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.) OR EQUIV. COLOR GREEN	NONE
	HOUSING CAP	CRES 17-7PH PER AMS5529	PASSIVATE
с	NUT	CRES 302 PER ASTM A276	PER AMS-QQ-P-35
с	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.) OR EQUIV. COLOR GREEN	NONE

NOTES

- ADHESIVE MUST REMAIN ATTACHED TO HOUSING DURING HANDLING.
- 2. REFER TO SLD6000 DATA SHEET FOR INSTALLATION PROCEDURE.
- 3. REFER TO SLT6001B DATA SHEET FOR THERMAL BOND HEATING UNIT.
- 4. NUT RADIAL FLOAT .030 MIN.
- 5. CUSTOMER: BOEING, DWG NO. BACI12S.



LOCKING TORQUE AND RESISTANCE TO SCREW SHALL BE INSPECTED WITH AN UNLUBRICATED BOLT. WHEN THE BOLT IS TIGHTENED TO "F" VALUE IT SHALL NOT PROTRUDE THRU THE END OF THE INSERT.





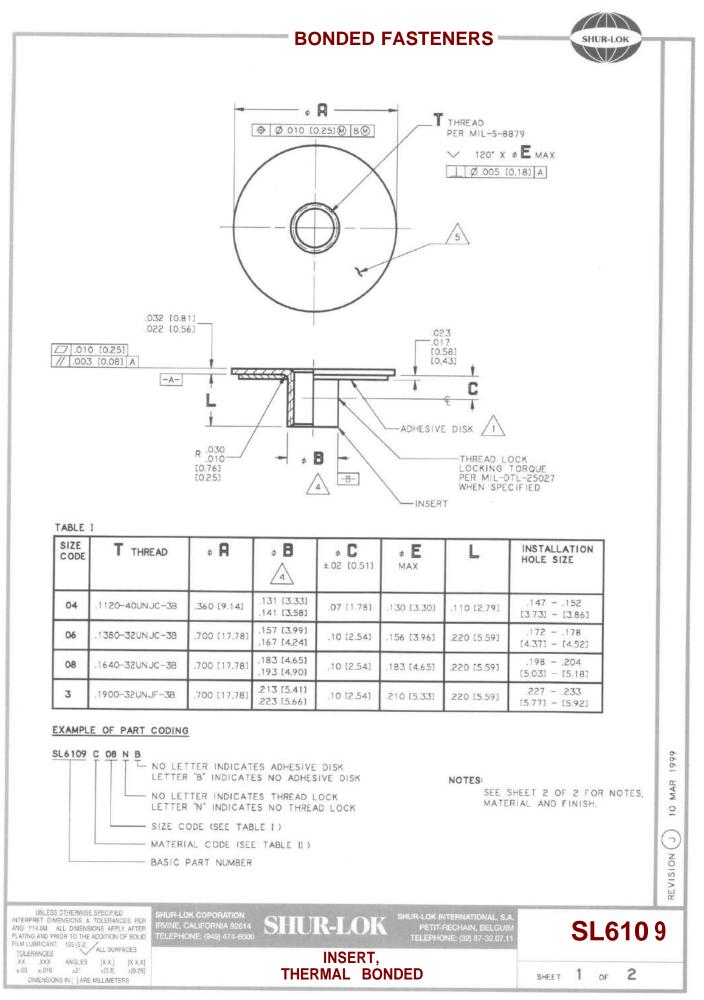




TABLE I

MATERIAL	ITEM	MATERIAL	FINISH
	INSERT	ALLOY STEEL 4130 PER AMS6350. MIL-S-6758 OR MIL-S-18729. OR CARBON STEEL 1035,1040, 1042 OR 1050.	DIFFUSED NICKEL CADMIUM PER AMS2416
-	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.) OR EQUIV. COLOR GREEN	NONE
	INSERT	CRES 17-7PH PER AMS5528. COND. TH1050, OR AMS5643. COND. H-1000	PASSIVATE PER AMS-QQ-P-35 AND DRY LUBE PER MIL-L-8937 OR MIL-L-46010, TYPE I ON THREAD AREA ONLY
с	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.) OR EQUIV. COLOR GREEN	NONE
k.	INSERT	CRES A286 PER AMS5525. AMS5732 OR AMS5737	PASSIVATE PER AMS-QQ-P-35 AND DRY LUBE PER MIL-L-8937 OR MIL-L-46010, TYPE I ON THREAD AREA ONLY
CA	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.) OR EQUIV. COLOR GREEN	NONE
	INSERT	CRES 304 PER AMS5513 OR QQ-S-763	PASSIVATE PER AMS-OQ-P-35 AND DRY LUBE PER MIL-L-8937 OR MIL-L-46010, TYPE I ON THREAD AREA ONLY
СВ	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.) OR EQUIV. COLOR GREEN	NONE

NOTES

ADHESIVE DISK MUST REMAIN ATTACHED TO INSERT DURING HANDLING.

- 2. REFER TO SLD6000 DATA SHEET FOR INSTALLATION PROCEDURE.
- 3. REFER TO SUITAGOOIB DATA SHEET FOR THERMAL BOND HEATING UNIT.
- DIMENSION DOES NOT APPLY IN AREA OF THREAD LOCK.
- 5 MARKING PERMANENTLY MARK SHUR-LOK LOGO \$ AND PART NUMBER IN AREA INDICATED.
- 6. THIS PART MEETS THE REQUIREMENTS OF NAS 1873.

UNLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI Y14.5M. ALL DIMENSIONS APPLY AFTER PLATING AND PRIOR TO THE ADDITION OF SOLID FILM LUBRICANT. 125 [3,2] ALL SURFACES XX XXX ANGLES [X,X] [X,X] ±.03 ±.010 ±2' ±[0,8] ±[0.25]

DIMENSIONS IN [] ARE MILLIMETERS

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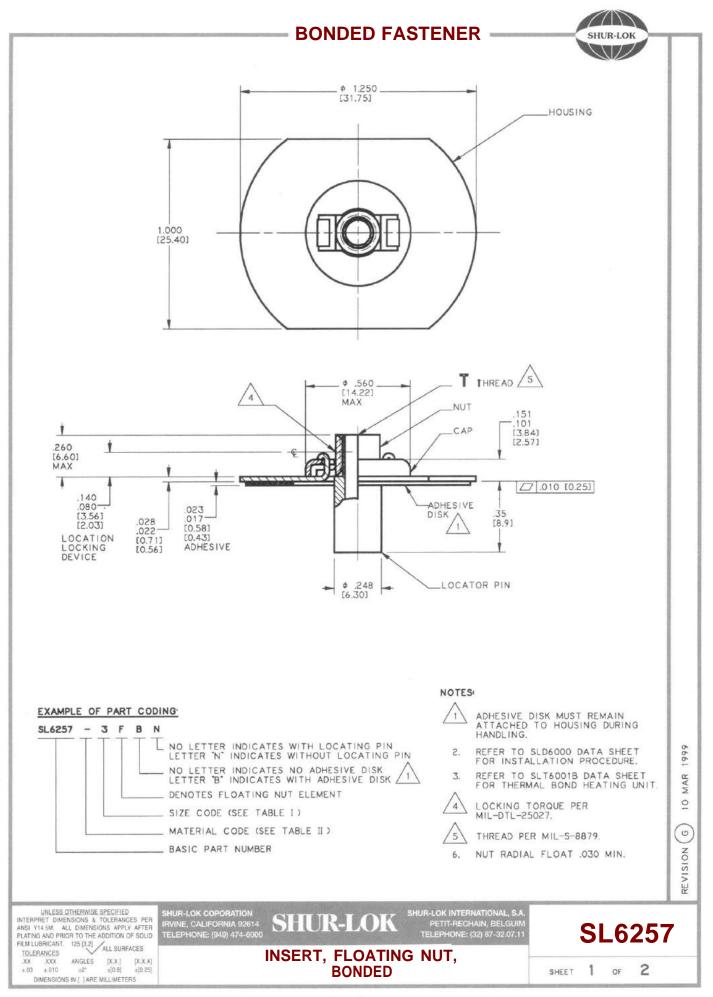




TABLE I

SIZE		INSTALLATION HOLE SIZE
08	.1640-32UNJC-38	.249255 [6.32-6.48]
3	.1900-32UNJF-3B	.249255 [6.32-6.48]

TABLE II

MATERIAL CODE	ITEM	MATERIAL	FINISH		
	HOUSING CAP NUT	ALLOY STEEL 4130 PER AMS6350, MIL-S-6758 OR MIL-S-18729, ALTERNATE: CARBON STEEL 1050 PER AMS5085. HEAT TREAT: HRC 36-46	ZINC PLATE PER ASTM B633, TYPE II. CLASS FE/ZN12		
-	LOCATOR	NON METALLIC MATERIAL	NONE		
	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.) OR EQUIV. COLOR GREEN	NONE		
с	HOUSING CAP	17-7PH CRES PER AMS5529	PASSIVATE PER AMS QO-P-35		
	NUT	302 CRES PER ASTM A276	1		
	LOCATOR	NON METALLIC MATERIAL	NONE		
	ADHESIVE	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.) OR MEQUIV. COLOR GREEN	- NONE		

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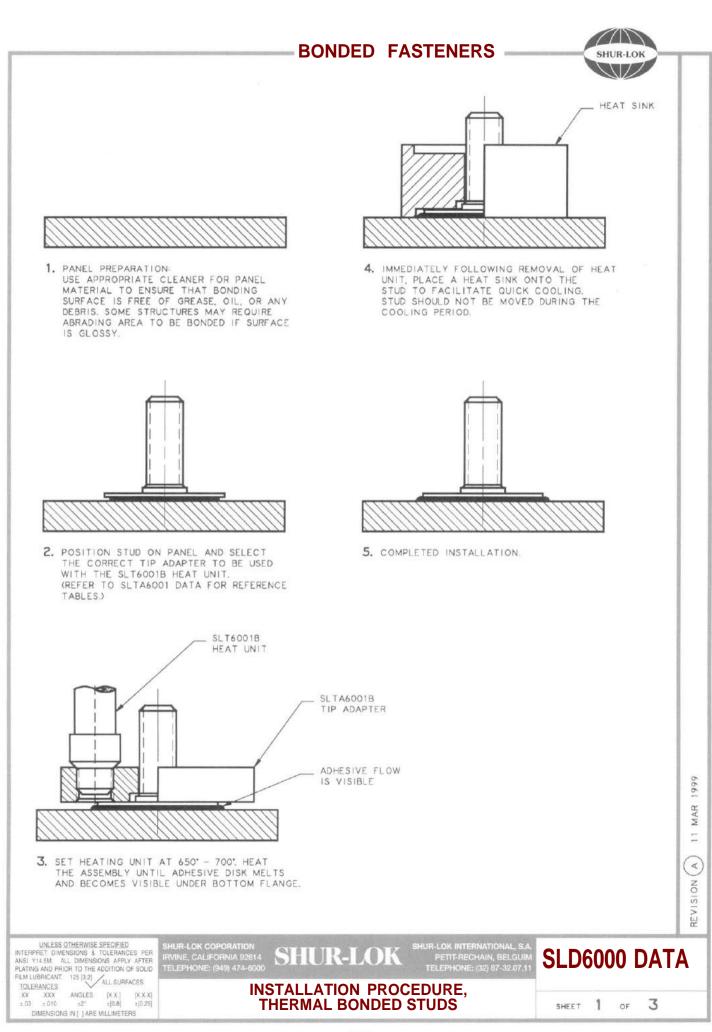
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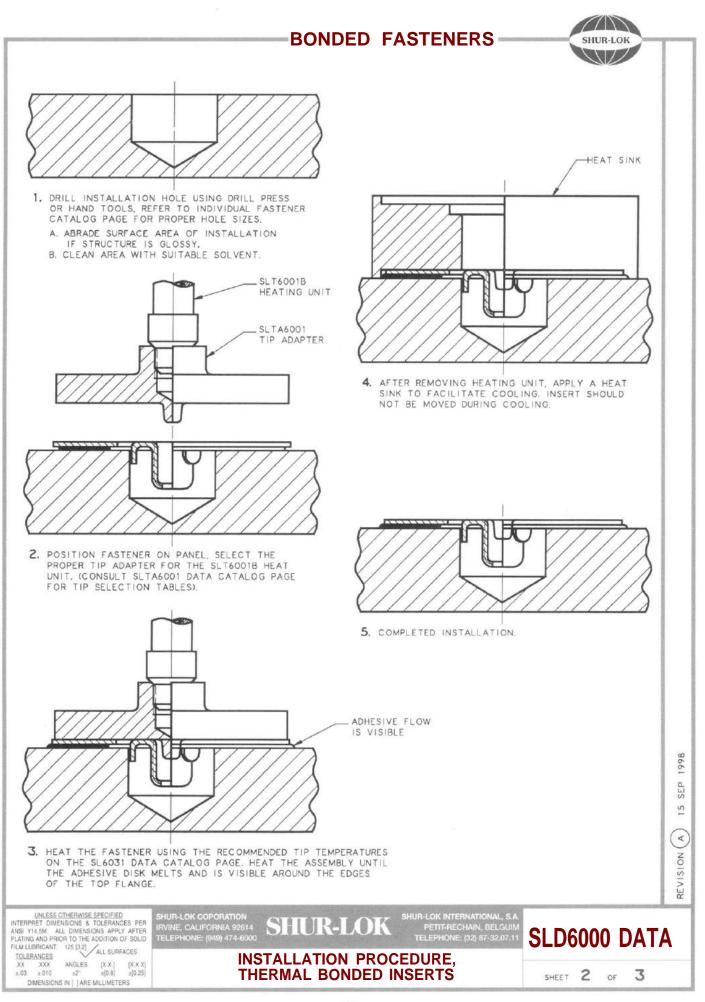
UNLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI Y14.5M ALL DIMENSIONS APPLY AFTER PLATING AND PRIOR TO THE ADDITION OF SOLID FLM LUBRICANT. 125 (3.2) ALL SURFACES TOLERANCES XX XXX ANGLES [X.X.] [X.X.X] ±03 ±.010 ±2² ±[0.6] ±[0.25] DIMENSIONS IN] ARE MILLIMETERS

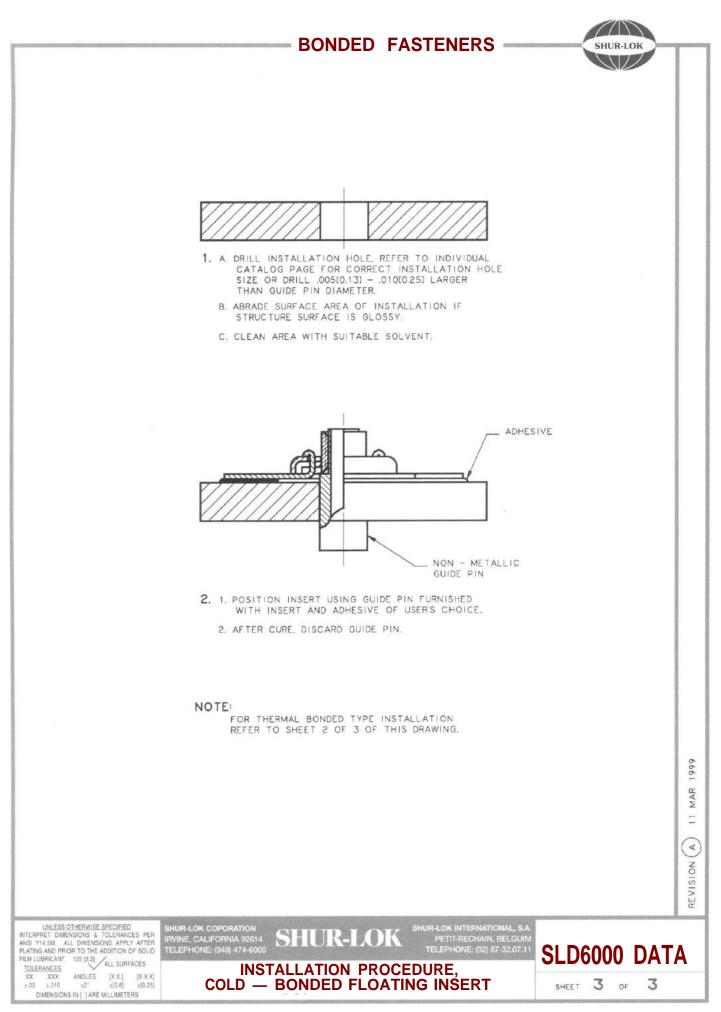
SHUR-LOK COPORATION IRVINE, CALIFORNIA 92614 TELEPHONE: (949) 474-6000 INSERT, FLOATING NUT, BONDED

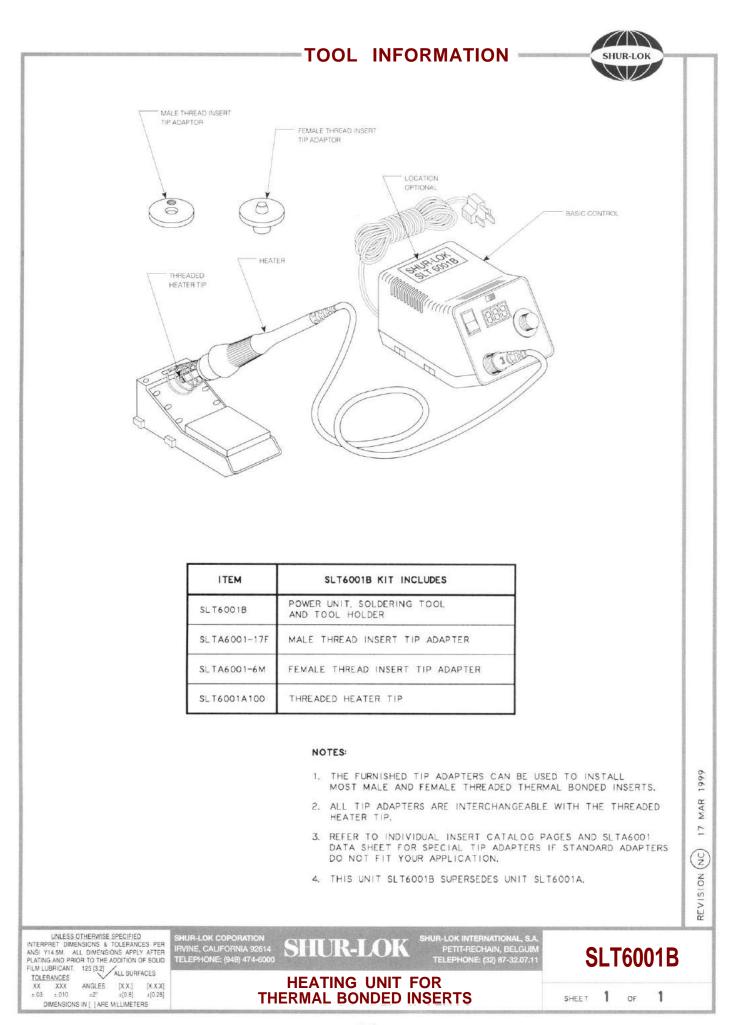
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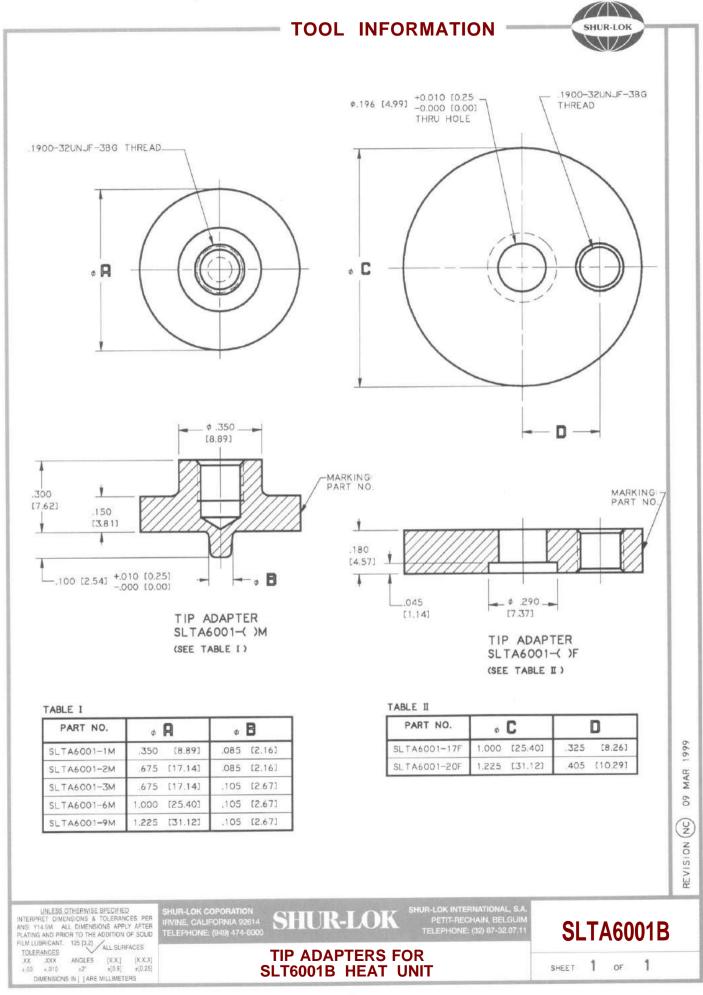
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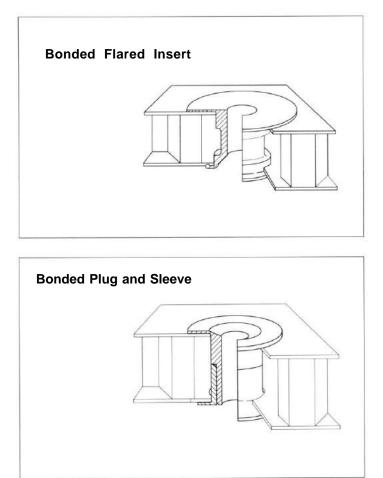


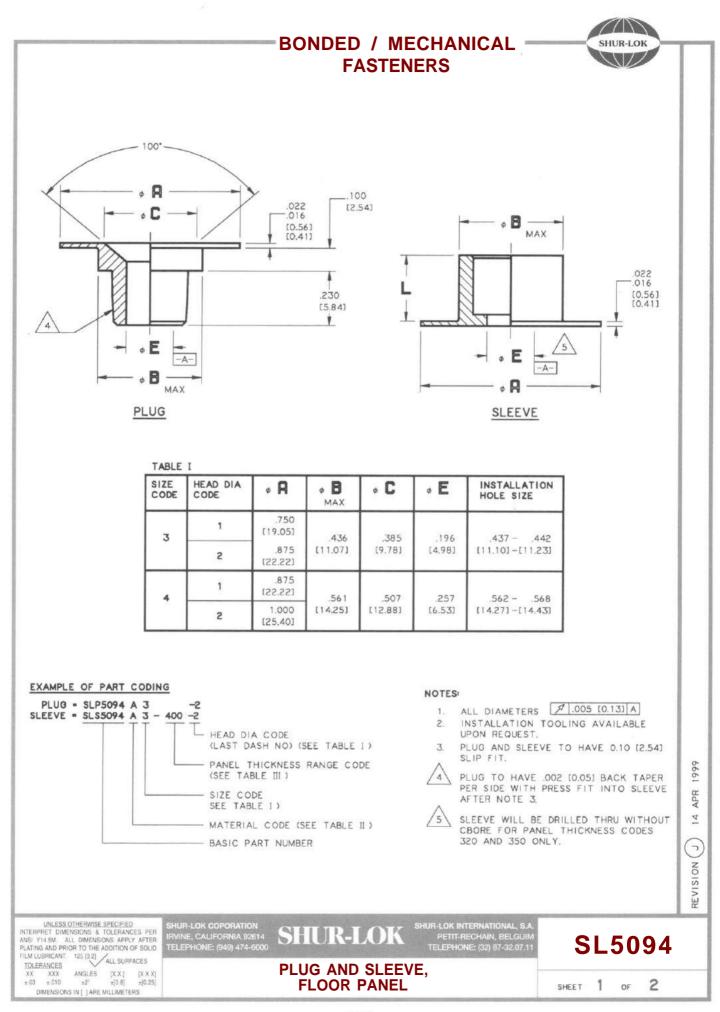




INTRODUCTION

Providing the highest degree of structural integrity, this family of fasteners combines two means of retention in the panel. Parts in this group employ both surface bonding and various methods of mechanical retention. The mechanical retention is effected in several ways: Flaring one element of the fastener or by using a press fit between the mated fastener components. The adhesive bonding is done first, followed by the mechanical method of retention.





BONDED / MECHANICAL FASTENERS



TARIE T

MATERIAL	MATERIAL	FINISH	
A	AL ALLOY 2024-T4 PER QQ-A-225/6	ANODIZE PER MIL-A-8625	

PANEL THICKNESS RANGE CODE	PANEL THICKNESS RANGE	L
320	.315329 [8.00] - [8.36]	.220 [5.59]
350	.330379 [8.38] - [9.63]	.230 [5.84]
400	.380429 [9.65] -[10.90]	.280 [7.11]
450	.430479 [10,92] -[12,17]	.330 [8,38]

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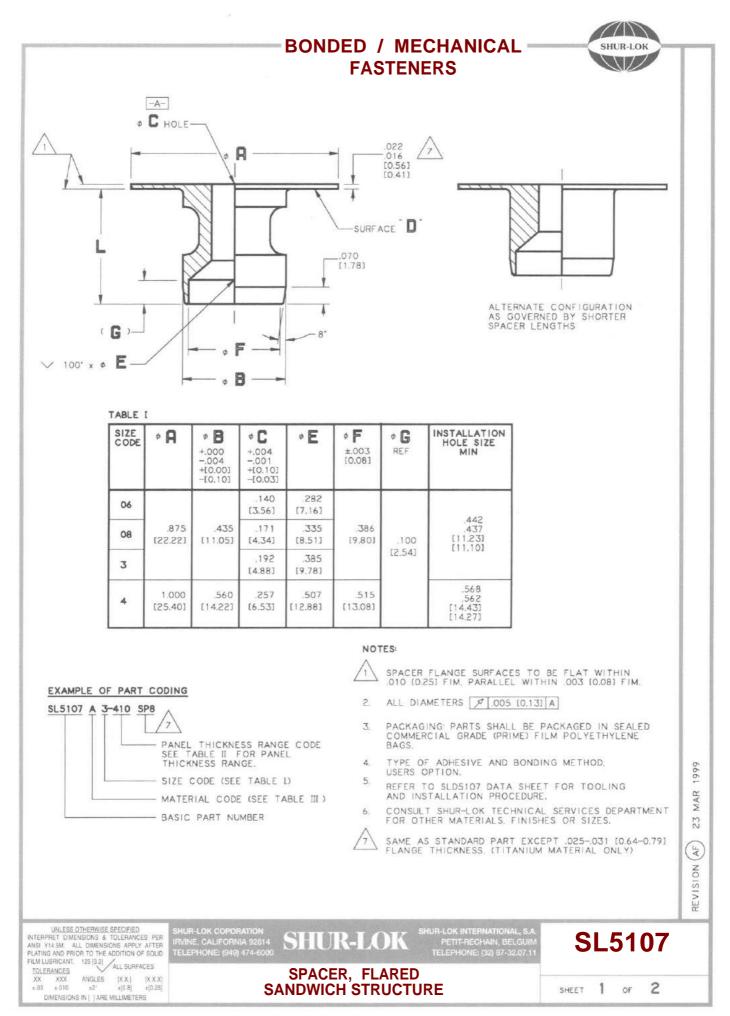
UNLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI Y14.5M ALL DIMENSIONS APPLY AFTER PLATING AND PHICP TO THE ADDITION OF SQUID FILM LUBRICANT. 125 [3,2] ALL SURFACES TOLERANCES XX XXX ANGLES [XX] ±.03 ±.010 ±2¹¹ ±[0.8] ±[0.25] DIMENSIONS IN | 1ARE MILLIMETERS

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PLUG AND SLEEVE, FLOOR PANEL

SHEET 2 OF 2





BONDED / MECHANICAL FASTENERS

SANDWICH PANEL THICKNESS

RANGE .631 -

[16.03] -[16.51]

[16.54] -[17.02]

[17.04] -[17.53]

[17.55] -[18.03]

[18.06] -[18.54]

[18.57]-[19.05]

[19.08] -[19.56]

[19.58]-[20.07]

[20.09]-[20.57]

[20.60] -[21.08]

[21,11]-[21,59]

[21.62]-[22.10]

[22.12] -[22.61]

[22.63] -[23.11]

[23.14] -[23.62]

[23.65] -[24.13]

[24.16]-[24.64]

[24.66] -[25.15]

[25.17] -[25.65]

SHUR-LOK INTERNATIONAL, S./ PETIT-RECHAIN, BELGUII TELEPHONE: (32) 87-32.07.1

.971 - .990

.991 - 1.010

.951 -

.931 - .950

811 -

.831 -

.851 -

.871 -

.891 -

.911 -

.791 - .810

771 -

.751 - .770

651 -

.671 -

.691 -

711 -

.731 -

.650

.670

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.750

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.890

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.970

L

.710

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810

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850

.870

890

910

.930

950

.970

.990

[18.03]

[18.54]

[19.05]

[19.56]

[20.07]

[20.57]

[21.08]

[21.59]

[22.10]

[22.61]

[23.11]

[23.62]

[2413]

[24.64]

[25.15]

[25.65]

1.010

1.030

[26.16]

1.050

1.070

[26.67]

[27.18]

TABLE I

	120 ·····	TAD	
PANEL THICKNESS RANGE CODE	SANDWICH PANEL THICKNESS RANGE	L	PANEL THICKNESS RANGE CODE
250	.231250 [5.87] - [6.35]	.310 [7.87]	650
290	.271290 [6.88] - [7.37]	.350 [8.89]	670
310	.291310 [7.39] - [7.87]	.370 [9.40]	690
330	.311330 [7.90] - [8.38]	.390 [9.91]	710
350	.331350 [8.41] - [8.89]	.410 [10.41]	730
370	.351370 [8.92] - [9,40]	.430 [10.92]	750
390	.371390 [9.42] - [9.91]	.450 [11.43]	770
410	.391410 [9.93] -[10.41]	.470 [11.94]	790
430	.411430 [10.44] -[10.92]	.490 [12.45]	810
450	.431450 [10.95] -[11.43]	.510 [12.95]	830
470	.451470 [11.46] -[11.94]	.530 [13.46]	850
490	.471490 [11.96] -[12.45]	.550 [13.97]	870
510	.491510 [12.47] -[12.95]	.570 [14.48]	890
530	.511530 [12.98] -[13.46]	.590 [14.99]	910
550	.531550 [13.49] -[13.97]	.610 [15.49]	930
570	.551570 [14.00] -[14.48]	.630 [16.00]	950
590	.571590 [14.50] -[14.99]	.650 [16.51]	970
610	.591 - 610 [15.01] -[15.49]	.670 [17.02]	990
630	.611630 [15.52] -[16.00]	.690 [17.53]	1010

1 1 1 1

SHUR-LOK COPORATION IRVINE, CALIFORNIA 92614 TELEPHONE: (949) 474-6000

TABLE III

MATERIAL CODE	MATERIAL	FINISH
A	AL ALLOY 6061-T6 PER QQ-A-225/8	ANODIZE PER MIL-A-8625 TYPE IB, CLASS 1 UNSEALED PLUS APPLY PRIMER PER SHUR-LOK PROCESS SPEC MPSO006 SURFACE "D" ONLY. OTHER SURFACES OPTIONAL.
т	TITANIUM POWDER RMI-TI-20M-2140 OR COMMERCIALLY PURE TITANIUM GRADE 2 PER ASTM B348	CLEAN PER SHUR-LOK MPS0012
с	CRES 304 PER ASTM A582	PASSIVATE PER AMS-00-P-35

UNLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI 114.5M. ALL DIMENSIONS APPLY AFTER PLATING AND PRIOR TO THE ADDITION OF SOLID FLM LUBRICANT. 123 (2) ALL SURFACES TOLERANCES TOLERANCES ANGLES [X.X.] [X.X.X] ±2" ±[0.8] ±[0.25] .XX .XXX ±.010 3 ±.010 ±2" ±[0.8] ± DIMENSIONS IN [] ARE MILLIMETERS

SPACER, FLARED SANDWICH STRUCTURE

26

SHUR-LOK

23 REVISION

SL5107

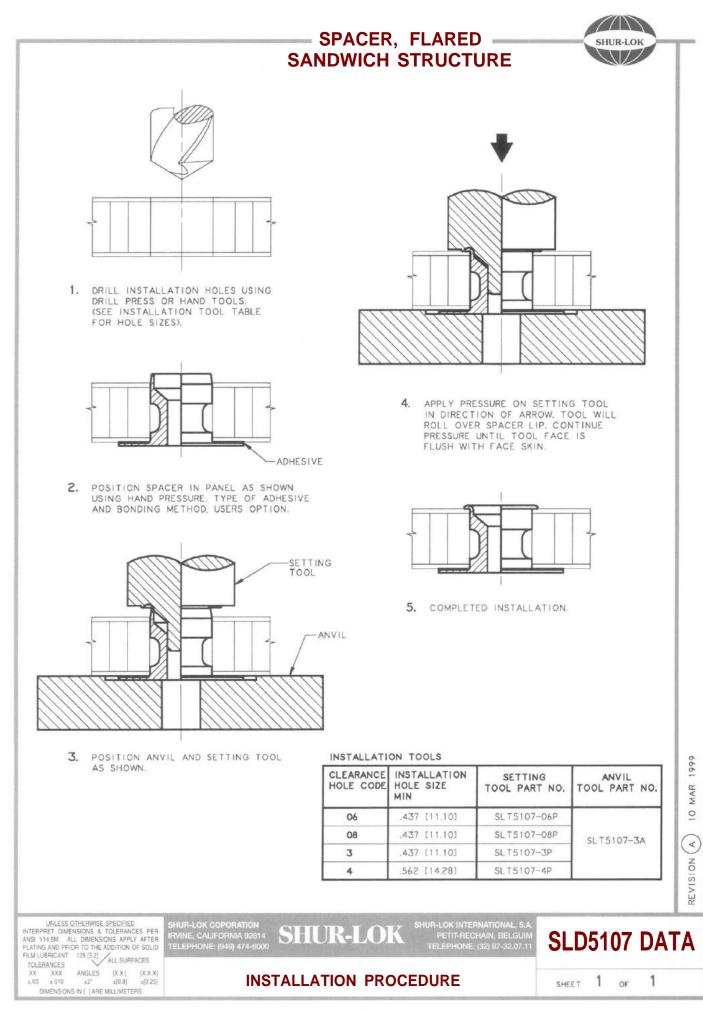
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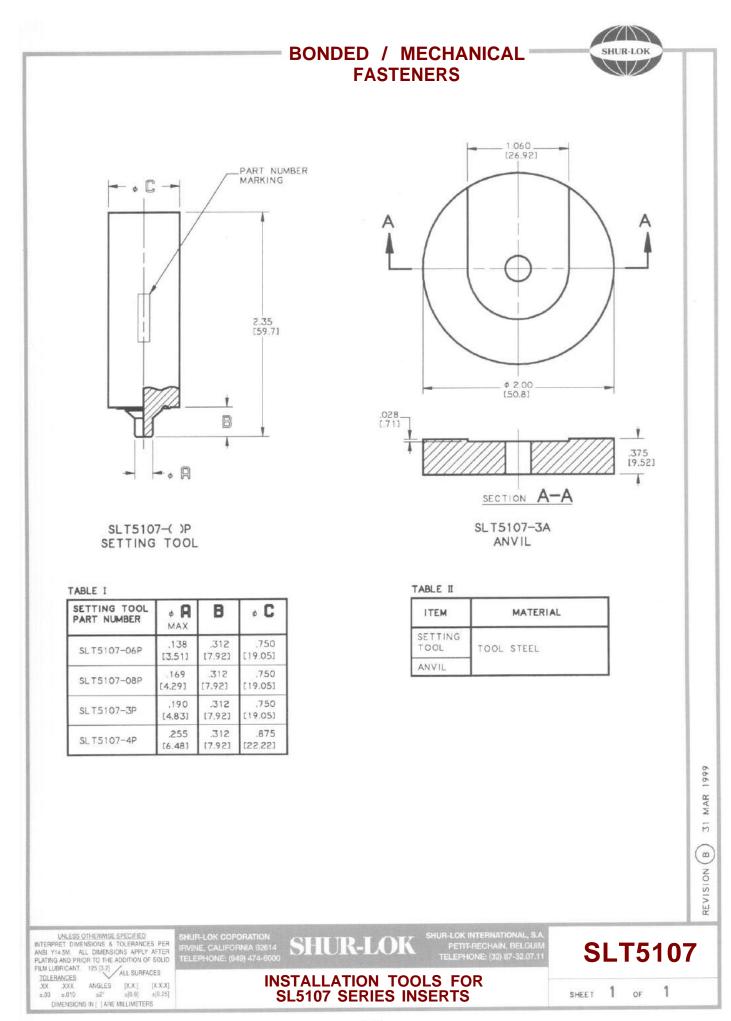
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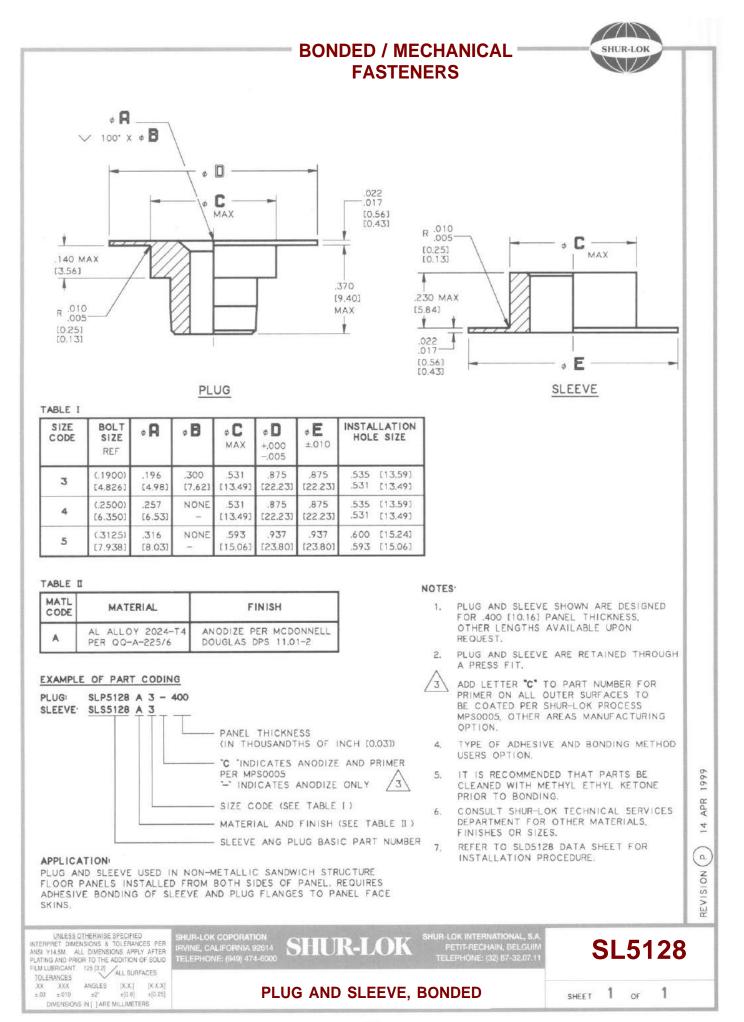
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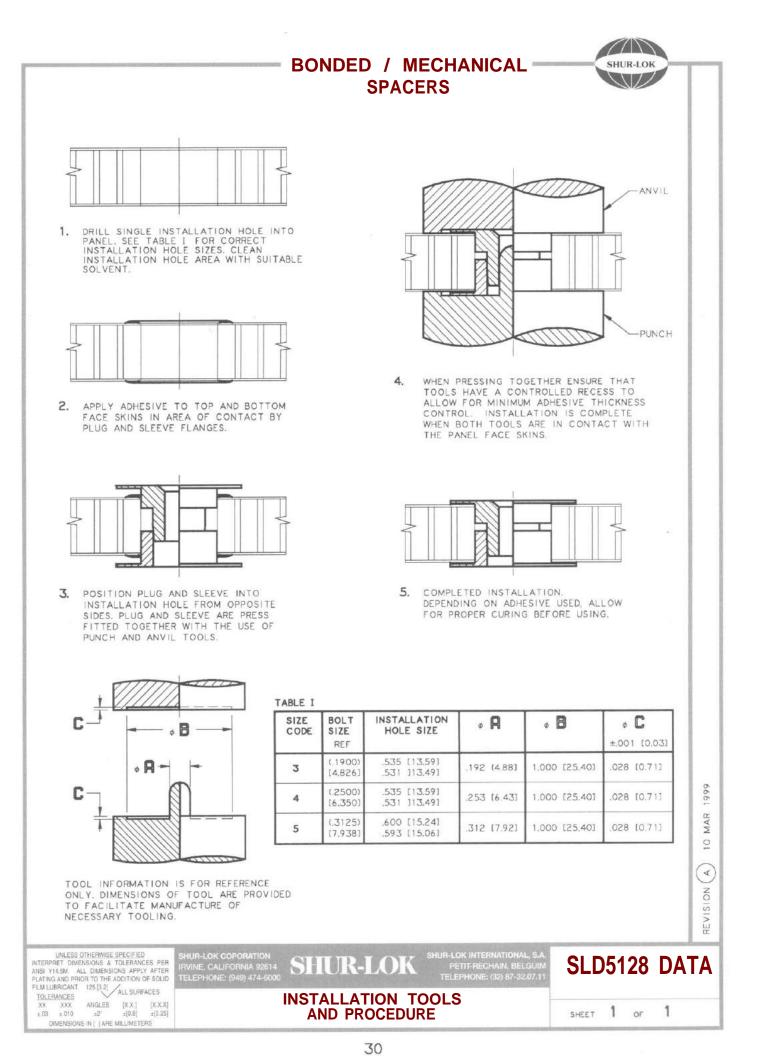
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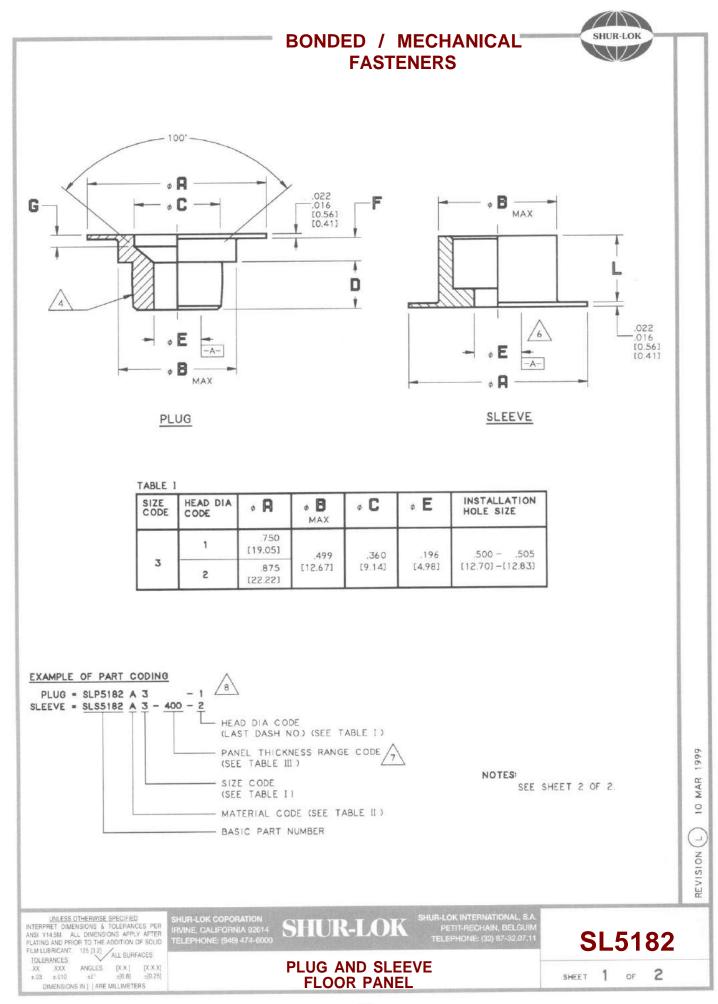
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BONDED / MECHANICAL FASTENERS



TABLE II

TADIE

MATERIAL CODE	MATERIAL	FINISH
A	AL ALLOY 2024-T4 PER QQ-A225/6	ANODIZE PER MIL-A-8625 TYPE I. CLASS 1
т	TITANIUM 6AL-4V PER AMS 4965 OR MIL-T-9047	NITRIC - FLUORIDE ETCH FOR 5 MINUTES PER BAC5753, METHOD II. SOLUTION 1, 2 OR 3.

PANEL THICKNESS RANGE CODE	PANEL THICKNESS RANGE	D	F	G	L	
200	.185234 [4.70] - [5.94]	.105 [2.67]	.080 [2.03]	.015025 [0.38] -[0.64]	.105 [2.67]	
250	.235280 [5.97] - [7.11]	.105 [2.67]	.080 [2.03]	.015025 [0.38] -[0.64]	.155 [3.94]	
300	.290329 [7.37] - [8.36]				.190 [4.83]	6
350	.330379 [8.38] - [9.63]				.230 [5.84]	
400	.380429 [9.65] -[10.90]				.280 [7.11]	
450	.430479 [10.92] -[12.17]				.330 [8.38]	NOTES:
500	.480529 [12.19] -[13.44]				.380 [9.65]	1. ALL DIAMETERS 2. INSTALLATION TOOLING AVAILABLE
550	.530579 [13.46] -[14.71]				.430 [10.92]	UPON REQUEST. 3. PLUG AND SLEEVE TO HAVE
600	.580629 [14.73] -[15.98]	.200 [5.08]	.100 [2.54]	.045055 [1.14]-[1.40]	.480 [12.19]	0.10 (2.54) SLIP FIT EXCEPT SLP5182A3-200.
650	.630679 [16.00] -[17.25]				.530 [13.46]	A PLUG TO HAVE .002 [0.05] BACK TAPER PER SIDE WITH PRESS FIT INTO SLEEVE AFTER NOTE 3.
670	.650680 [16.51]-[17.27]				.550 [13.97]	5. PLUG AND SLEEVE TO BE USED WITH BOEING 69B18850-4 BOLT
700	.680729 [17.27] -[18.52]				.580 [14.73]	WITH NYLON SEAL.
750	.730779 [18.54] -[19.79]				.630 [16.00]	WITHOUT C'BORE FOR PANEL THICKNESS CODES 200, 250 AND 30 A ONLY.
800	.780829 [19.81] -[21.06]				.680 [17.27]	7 FOR 200 AND 250 PANEL THICKNES CODES USE PLUG SLP5182()3-200- OR SLP5182()3-200-2.
850	.830879 [21.08] -[22.33]				.730 [18,54]	FOR ALL OTHER PANEL THICKNESS CODES USE PLUG SLP5182()3-1 OR
900	.880929 [22.35] -[23.60]				.780 [19.81]	-2. (NO OTHER PANEL THICKNESS CODE CALLOUT REQUIRED).
950	.930979 [23.62] -[24.87]				.830 [21.08]	SUFFIX "SP1" TO PLUG PART NUMBE INDICATES SAME AS STANDARD PLU EXCEPT NO "♥ C"," G" OR 100"
1000	.980 - 1.029 [24.89] -[26.14]				.880 [22.35]	INCLUDED ANGLE AND "# E" IS THRU

UNLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI Y14.5M. ALL DIMENSIONS APPLY AFTER PLATING AND PRIOR TO THE ADDITION OF SOLID FLM LUBRICANT. 125 [32] ALL SURFACES TOLERANCES XX XXX ANGLES [X.X] [X.X.X] ±03 ±010 ±2° ±[0.8] ±[0.25] DIMENSIONS IN.] [ARE MILLIMETERS

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K SHUR-LOK INTERNATIONAL, S.A. PETIT-RECHAIN, BELGUIM TELEPHONE. (32) 82-32 07 11

SL5182

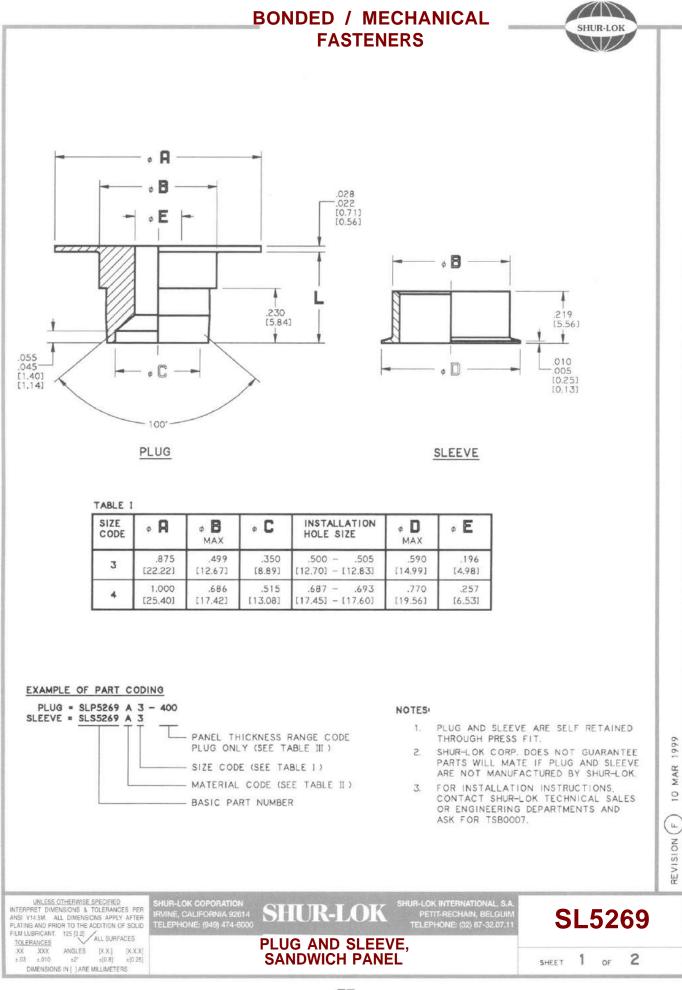
SHEET 2 OF 2

10 MAR 1999

E

REVISION

PLUG AND SLEEVE, FLOOR PANEL



BONDED / MECHANICAL FASTENERS



TABLE II

MATERIAL CODE	MATERIAL	FINISH
A	AL ALLOY 2024-T4 PER QQ-A-225/6	ANODIZE PER MIL-A-8625. TYPE IB, CLASS 1, UNSEALED
т	TITANIUM 6AL-4V PER AMS 4967	NITRIC - FLUORIDE ETCH FOR 5 MINUTES PER BAC5753, METHOD II, SOLUTION 1, 2 OR 3
с	CRES 303 PER ASTM A582	PASSIVATE PER AMS-QQ-P-35



PANEL THICKNESS RANGE CODE	PANEL THICKNESS RANGE	L	
300	.290329 [7.37] - [8.36]	.290 [7.37]	
350	.330 .379 [8.38] - [9.63]	.330 [8.38]	
400	.380429 [9.65] -[10.90]	.380 [9.65]	
450	.430479 [10.92] -[12.17]	.430 [10.92]	
500	.480529 [12.19] -[13.44]	.480 [12.19]	

10 MAR 1999

REVISION (F)

LINLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI V14.5M. ALL DIMENSIONS APPLY AFTER PLATING AND PRIOR TO THE ADDITION OF SOLID FILM LUBRICANT. 125 [3.2] ALL SURFACES TOLERANCES XX XXX ANGLES [X.X.] (X.X.X] ±.03 ±.010 ±2° ±[0.8] ±[0.25] DIMENSIONS IN [] ARE MILLIMETERS SHUR-LOK COPORATION IRVINE, CALIFORNIA 92614 TELEPHONE: (949) 474-600 SHUR-LOK INTERNATIONAL, S.A PETIT-RECHAIN, BELGUIA TELEPHONE: (32) 87-32.07.1

PLUG AND SLEEVE, SANDWICH PANEL

SHEET 2 OF 2

SL5269

BONDED SPACER FOR NON-METALLIC PANEL

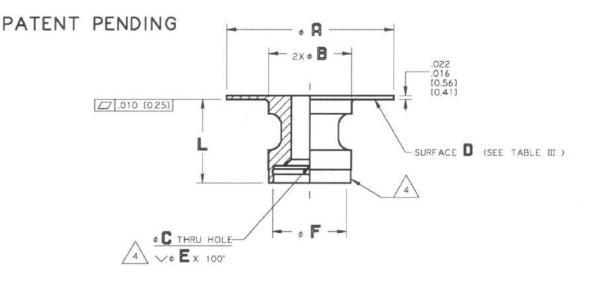


TABLE I

SIZE	• 8	• 8	• C	•	E	۰F	INSTALLATION HOLE SIZE
CODE	00400 +[0.00] +[0.	+.004 001 +[0.10] -[0.03]	HIGH SEAT		±.003 [0.08]	HOLE SIZE	
3	.875 [22.22]	.435 [11.05]	.192 [4.88]	.275 [6.98]	.330 [8.38]	.377 [9.58]	.437442 [11.10] -[11.23]

TABLE I	
MATL	MATERIAL
A	ALUMINUM ALLOY 6061-T6 PER AMS-QQ-A-225/8

TA	01	-	m
10	ᇝ	5	ш

FINISH	FINISH	SEAL
-	ANODIZE PER	NONE
S	MIL-A-8625 TYPE IB, CLASS 1	SEAL
Ρ	ANODIZE PER MIL-A-8625 TYPE IB, CLASS 1 UNSEALED PLUS BMS5-89 PRIMER	NONE
т	PER SHUR-LOK PROCESS MPSOOG APPLIED TO SURFACE "D". OTHER SURFACES OPTIONAL	SEAL

EXAMPLE OF PART CODING

ANSI Y14.5M ALL DIMENSIONS APPLY AFTER PLATING AND PRIOR TO THE ADDITION OF SOLID FILM LUBRICANT 125 [3.2] ALL SURFACES

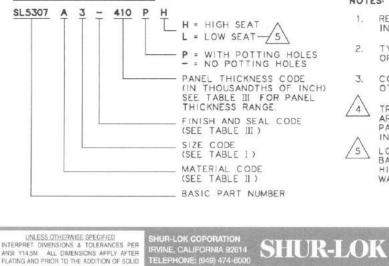
 XXX
 ANGLES
 [X.X.]
 [X.X.X]

 3
 ±.010
 ±.2°
 ±[0.8]
 ±[0.25]

 DIMENSIONS IN | _______ARE MILLIMETERS

TOLERANCES

XX .XXX ±.03 ±.010



PANEL THICKNESS CODE	PANEL THICKNESS RANGE		
	± .015 [0.38]		
790	.380		

TABLE IV

390	[9.65]	[10.67]
410	.400 [10.16]	.440 [11.18]
510	.500 [12.70]	.540 [13.72]

NOTES:

- REFER TO SLD5307 DATA SHEET FOR TOOLING AND INSTALLATION PROCEDURE. 1.
- TYPE OF ADHESIVE AND BONDING METHOD, USERS 2. OPTION.
- CONSULT SHUR-LOK ENGINEERING DEPARTMENT FOR OTHER MATERIALS, FINISHES OR SIZES. 3.
- TRANSPARENT SEALANT, WHEN SPECIFIED IN NOTED AREA, TO PREVENT MOISTURE PENETRATING INTO PANEL CORE AND THROUGH BOLT HEAD AFTER 4 INSTALLATION.
- LOW SEAT DESIGNED TO ACCOMMODATE BOEING BACS126R SCREW WITH ADDITIONAL SEALING WASHER. HIGH SEAT DESIGNED FOR USE WITHOUT SEALING WASHER. SEE TABLE 1 FOR COUNTERSINK SIZE. 5

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SL5307

- 1

SHEET 1 OF

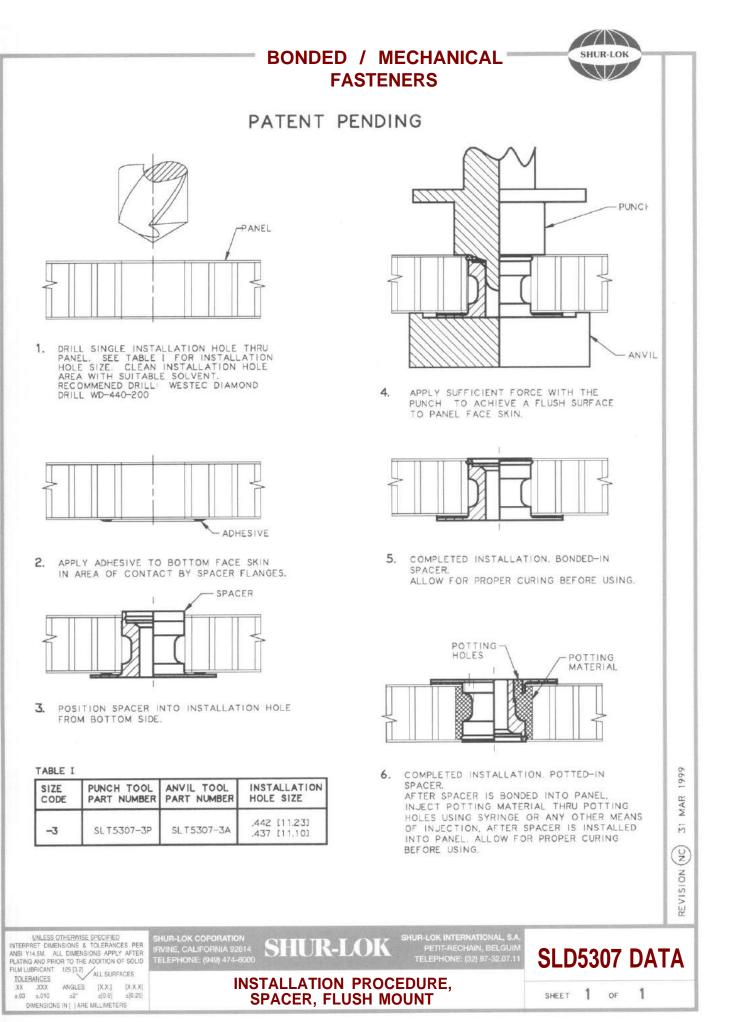
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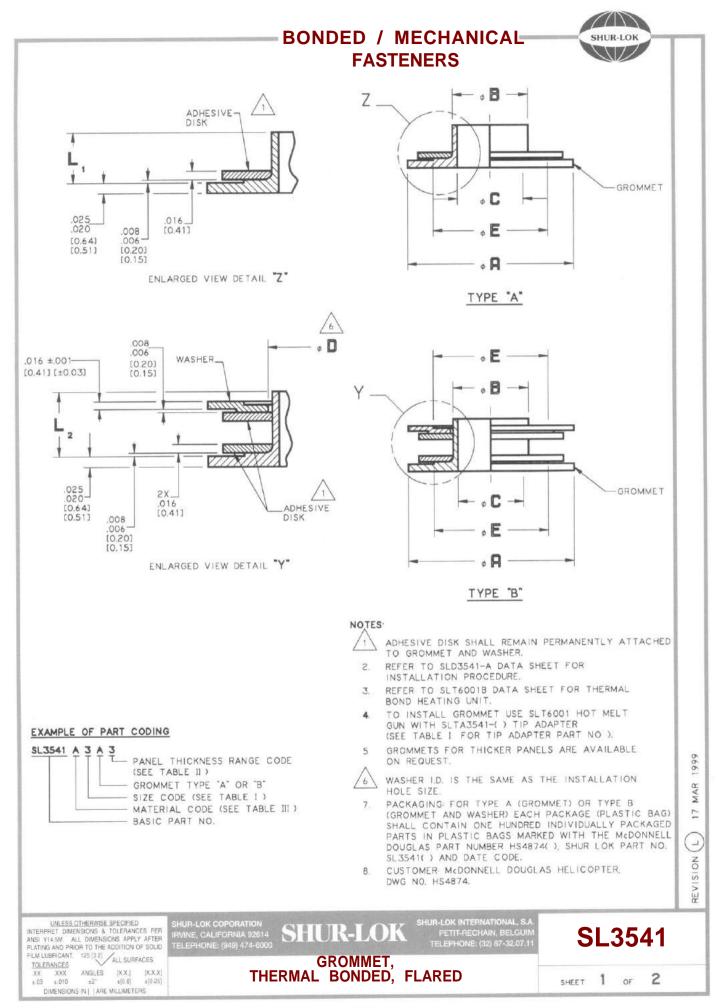
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BONDED / MECHANICAL FASTENERS



TABLE I

SIZE CODE	* A	• В мах	¢ C +.004 000 +[0.10] -[0.00]	¢ D +.004 000 +[0.10] -[0.00]	۰E	INSTALLATION HOLE SIZE		INSTALLATION ROLLOVER TOOL PART NUMBER	TIP ADAPTER PART NUMBER
08	.500 [12.70]	.200 [5.08]	.171 [4.34]	.201 [5.11]	.320 [8.13]	.201205 [5.11] - [5.21]	SLW3541-08	SLT3541-08	SLTA3541-08
3	.500 [12.70]	.227 [5.77]	.196 [4.98]	.228 [5.79]	.347 [8.81]	.228232 [5.79] - [5.89]	SLW3541-3	SLT3541-3	SLTA3541-3
4	.625 [15.88]	.280 [7,11]	.252 [6.40]	.281 [7.14]	.400 [10.16]	.281285 [7,14] - [7.24]	SLW3541-4	SLT3541-4	SLTA3541-4
4A	.625 [15.88]	.311 [7.90]	.281 [7.14]	.312 [7.92]	.431 [10.95]	.312316 [7.92] - [8.03]	SLW3541-4A	SLT3541-4A	SLTA3541-4A
5	.750 [19.05]	.347 [8.81]	.316 [8.03]	.348 [8.84]	.467 [11.86]	.348352 [8.84] - [8.94]	SLW3541-5	SLT3541-5	SLTA3541-5
6	.875	.405 [10.29]	.377 [9.58]	.406 [10.31]	.525 [13.34]	.406410 [10.31] - [10.41]	SLW3541-6	SLT3541-6	SL TA3541-6

TABLE I

PANEL THICKNESS RANGE CODE	PANEL THICKNESS RANGE	Lı	L 2
1	.020031	.063	.085
	[0.51]-[0.79]	[1.60]	[2.16]
2	.032053	.085	.105
	[0.81]-[1.35]	[2.16]	[2.67]
3	.054073	.105	.135
	[1.37] -[1.85]	[2.67]	[3.43]
4	.074103	.135	.165
	[1.88]-[2.62]	[3.43]	[4.19]
5	.104134	.165	.195
	[2.64] -[3.40]	[4.19]	[4.95]
6	.135165	.195	.227
	[3.43] -[4.19]	[4.95]	[5.77]

..... TA

MATERIAL	ITEM	MATERIAL	FINISH	
	GROMMET	AL ALLOY 6061-T6 OR 6061-T651 PER AMS-QO-A-225/8	ANODIZE PER	
A	WASHER	AL ALLOY 2024-T3 PER AMS-QO-A-250/4 OR 2024-T4, PER AMS-QO-A-225/6		
	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.) OR EQUIV. COLOR GREEN	NONE	
с	GROMMET	CRES 302 OR 304 PER QQ-S-763, CONDITION A	PASSIVATE PER	
	WASHER	CRES 300 SERIES PER ASTM A666	AMS-QQ-P-35	
	ADHESIVE DISK	POLYAMIDE MACROMELT 6902 ADHESIVE (HENKEL ADHESIVE CO.) OR EQUIV. COLOR GREEN	NONE	

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REVISION

UNLESS OTHERWISE SPECIFIED INTERPHET DIMENSIONS & TOLEPANCES PER ANSI Y14 SM. ALL DIMENSIONS APPLY AFTER PLATING AND PRIOR TO THE ADDITION OF SOLID FILM LUBRICANT 125 [3,2] ALL SURFACES TOLERANCES
 FILM LUBHICANI
 LCS [24]
 ALL SURFACES

 TOLERANCES
 XX XXX
 ANGLES
 [X.X]
 [X.X]

 ±.03
 ±.010
 ±.2'
 ±[0.8]
 ±[0.25]

 DIMENSIONS IN [ARE MILLIMETERS

SHUR-LOK COPORATION IRVINE, CALIFORNIA 92614 TELEPHONE: (949) 474-6000

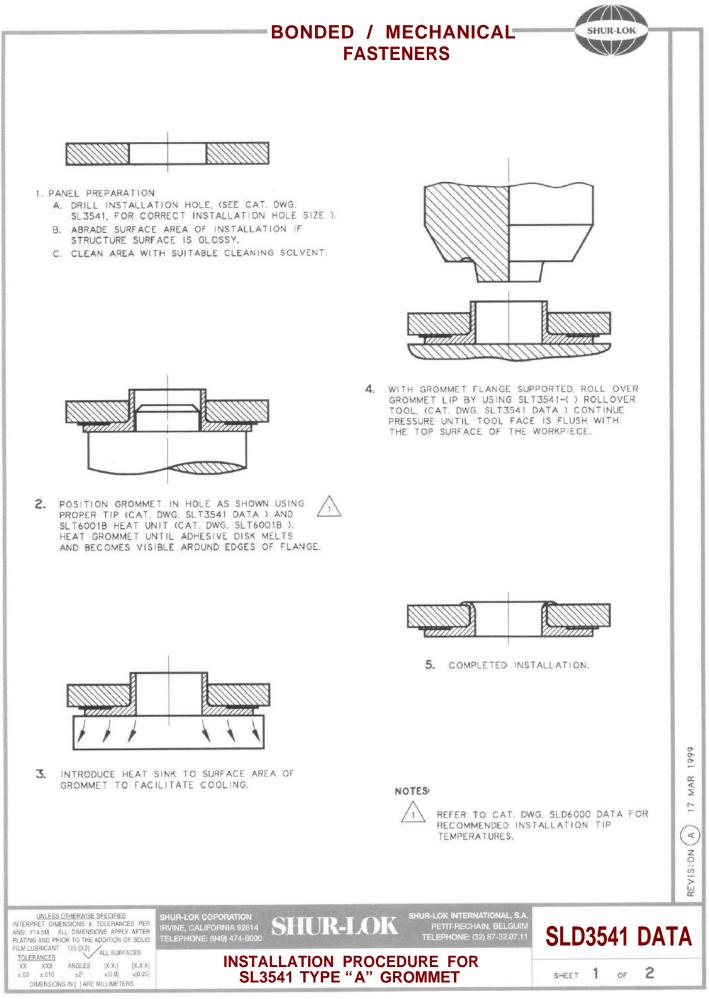
SHUR-LOK INTERNATIONAL, S.A. PETIT-RECHAIN, BELGUIM TELEPHONE: (32) 87-32.07.11 SHUR-LOK

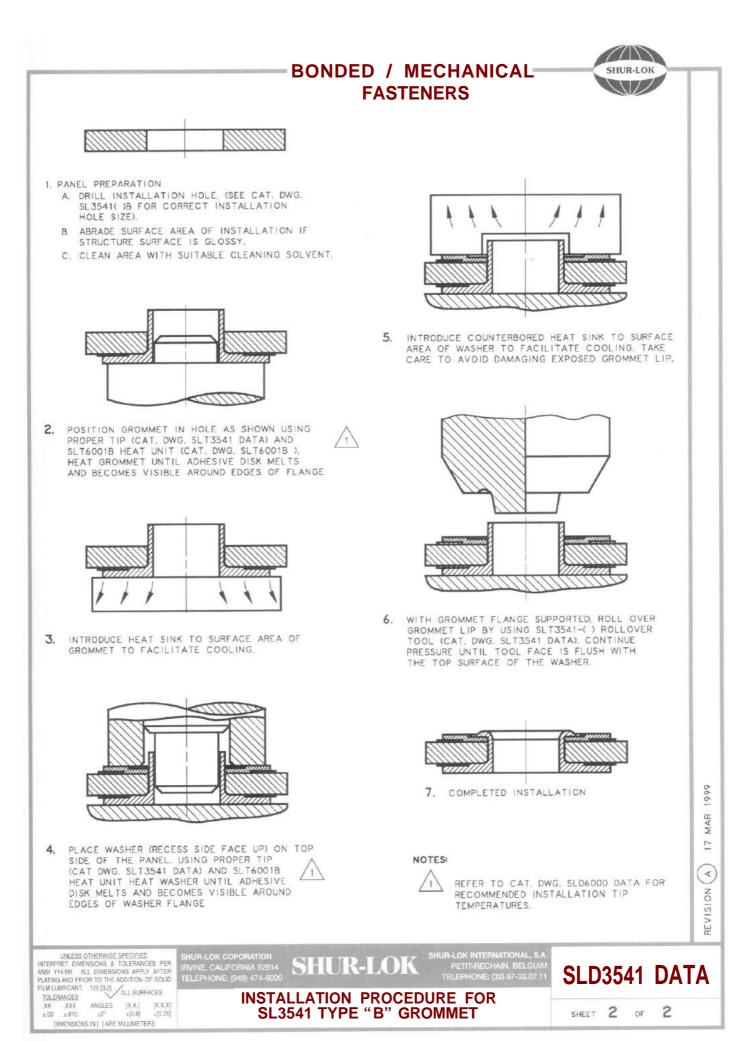
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SHEET 2 OF

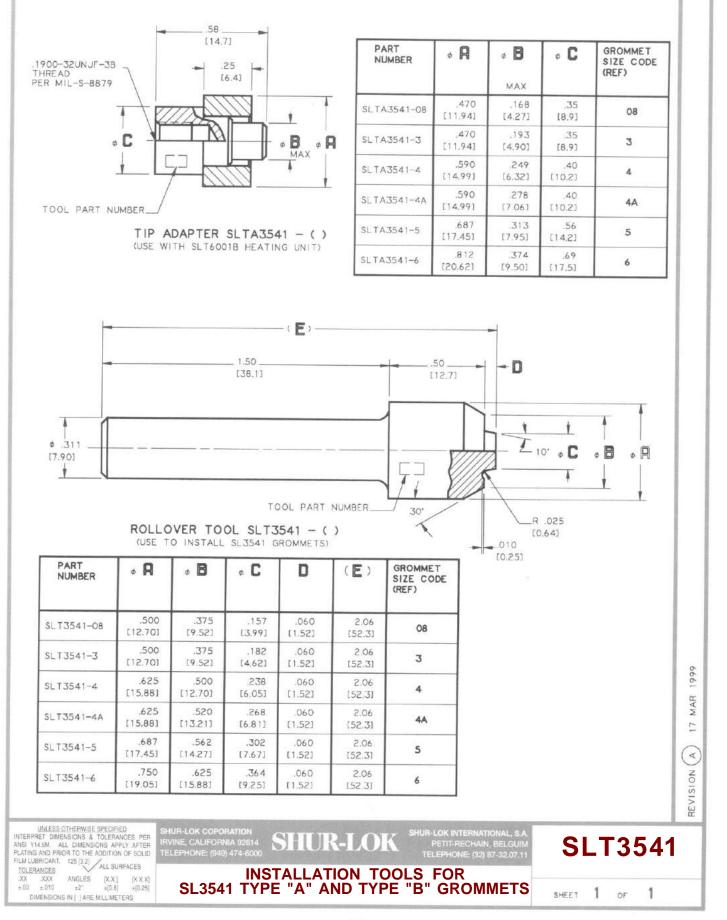






TOOL INFORMATION







INTRODUCTION

WHAT ARE COMPOSITE INSERTS?

The SL6300 series composite inserts include blind threaded, through threaded, clearance bolt hole, and blind threaded floating nut element designs. Composite inserts were initially developed to provide electrochemically compatible inserts for carbon reinforced composite faced sandwich structures. Composite inserts possess significant advantages over metallic inserts.

Material Properties:

Composite inserts are fabricated from glass fiber reinforced polyetherimide material. An advanced amorphous thermoplastic, polyetherimide combines the high performance of exotic specialty polymers with the economics of engineering thermoplastics. The addition of glass to the base resin increases mechanical strength, stiffness, heat deflection temperature, flamability, and chemical resistance.

Weight Savings:

Composite inserts are up to 70 percent lighter in weight than conventional metallic inserts and have a specific gravity equivalent to most common epoxy potting compounds.

Corrosion Resistant:

Composite inserts have good environment resistance and are noncorrosive.

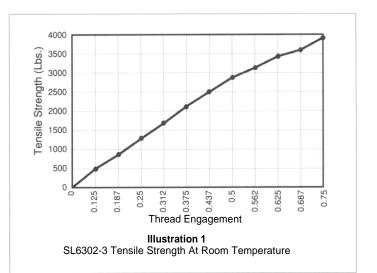
Enhanced Strength:

Optimized geometry and inherent material surface properties are combined to produce an insert with superior insert to potting compound adhesion. Composite inserts will typically produce higher flatwise tensile and shear strengths in lightweight sandwich panels.

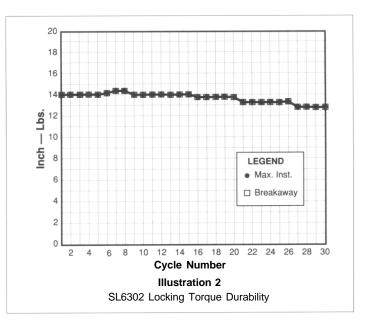
Unlike metallic inserts, the tensile strength of threaded composite inserts increases proportionally with thread engagement. This is shown in Illustration 1.

Nonmetallic Thread Lock:

Threaded composite inserts incorporate an integral prevailing locking feature whose durability typically outperforms most metallic thread locking features. Illustration 2 shows the durability of this

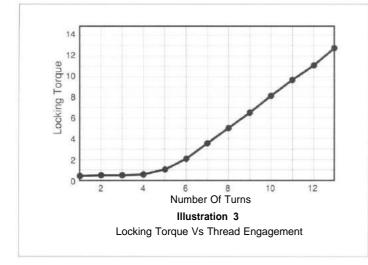


feature over thirty installation and removal cycles. The first four threads are nonlocking to facilitate initial thread engagement. The minimum thread locking torque specified by MIL-N-25027 is obtained after the sixth thread engagement. The thread lock is additive and therefore increases proportionally with each thread engagement into the insert beyond the fourth thread engagement. This is shown in Illustration 3. The thread lock at full thread engagement on longer threaded inserts will not exceed the maximum thread locking torque specified by MIL-N-25027.



Non-Metallic Inserts





Self-Lubricating:

Composite inserts are inherently self-lubricating. This eliminates the need for special platings and dry film lubricants used on metallic threaded inserts.

Thermal Properties:

Polyetherimides high heat deflection temperature contributes to excellent retention of physical properties at elevated temperatures. Composite inserts are also excellent thermal insulators and display low heat release, smoke generation, and toxicity that qualifies them for use in the interiors of aircraft built after 1990.

Design Configuration:

The unique patented ribbed configuration of Shur-Lok's composite inserts is designed to direct the flow of potting compound around the insert and promotes optimum adhesion between the insert and potting compound. Additionally, the ribs serve as a stiffener in both axial and radial directions, and they provide a mechanical interlock between the insert and potting compound to prevent rotation of the insert after cure of the potting compound.

Conventional Installation:

Composite inserts are installed with the aide of standard disposable Shur-Tabs®. The holes in the adhesive-backed tabs are matched with the holes in the insert prior to inserting the fastener in the hole. The tab prevents potting compound from overflowing into the thread area or through hole while also assuring flush installation to the panel face skin. (See page 43 — 6300 Data)

Standardization:

Composite inserts can replace several costly special metallic inserts. Stainless steel inserts can be replaced because composite inserts are corrosion resistant. Adding a nonmetallic locking pellet or ring to aluminum inserts is also unnecessary since composite inserts have an integral nonmetallic lock. The self-lubricating feature makes application of dri-film lubricants unnecessary.

Cleaning:

It may be necessary to clean or degrease the face of composite inserts after installation, especially if the parent panel is to be painted. The following cleaning/degreasing agents have been found to be compatible with composite inserts.

Alcohols-Methyl, Isopropyl, Isobutyl

Aliphatics-Hexane, Heptane

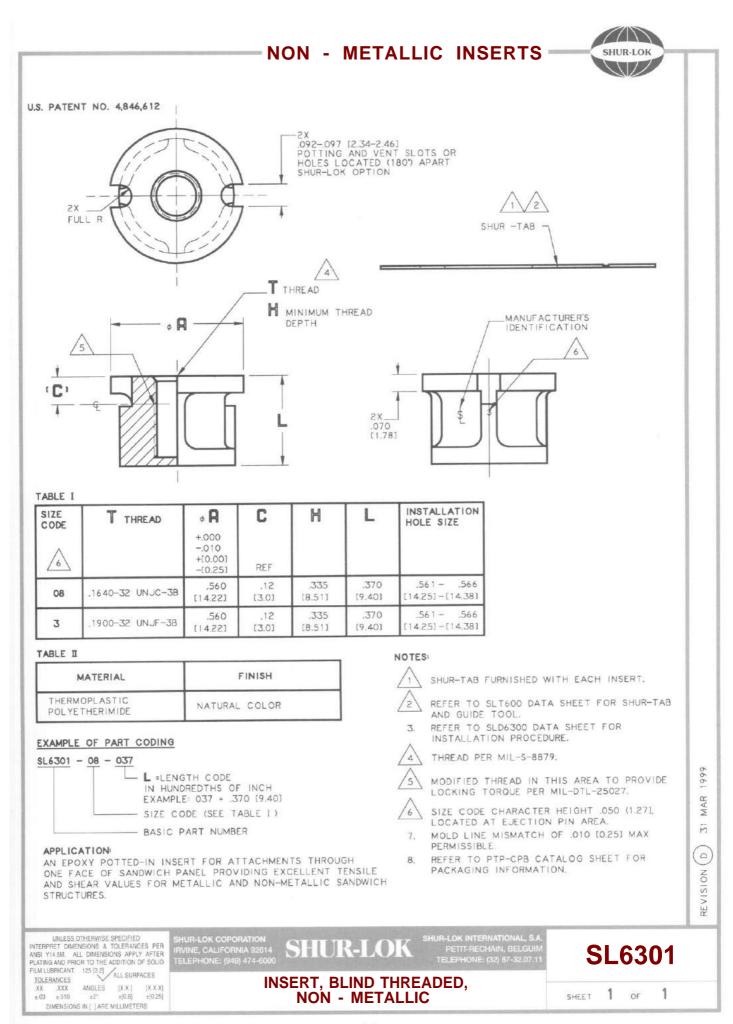
Halogenated Hydrocarbons-Fully Halogenated Freon^R

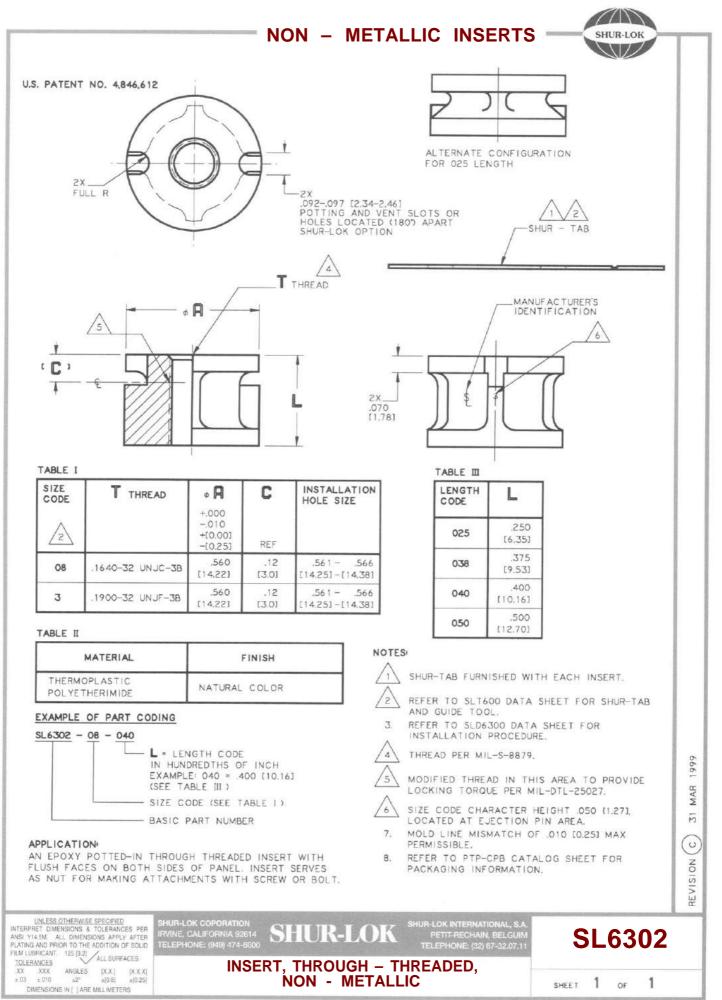
Other-Soap solution, Naphtha

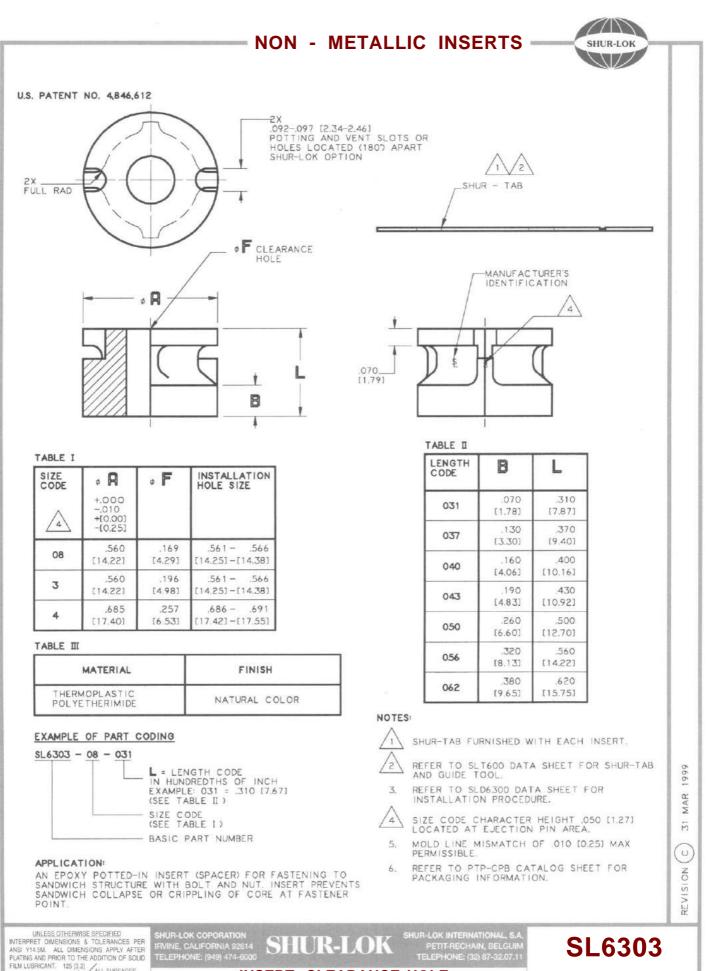
Note: Composite inserts should not be cleaned with partially halogenated hydrocarbons such as 1,1,1-Trichloroethane or with ketones such as MEK.

Important:

The introduction provided about Shur-Lok's composite inserts may be considered to be indicative of representative properties obtainable. Shur-Lok cannot accept responsibility for the misapplication of this product or for its use under uncontrolled conditions. Further, Shur-Lok makes no warranties, whether expressed or implied, including warranties of merchantability or of fitness for a particular purpose. It is recommended that the user develop application techniques and generate data consistent with specific applications.





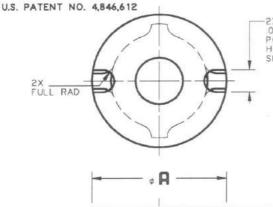


NTERP NSI Y PLATINO FILM LU TOLES	TELEPH				
.XX.	XXX.	ANGLES	[X.X.]	[X.X.X]	
D	MENSION	SINT LARE	MILL IMPTR	RS	

INSERT. CLEARANCE HOLE. NON - METALLIC

SHEET OF - 1

NON - METALLIC INSERTS



-2X 1092-1097 [2.34-2.46] POTTING AND VENT SLOTS OR HOLES LOCATED (180) APART SHUR-LOK OPTION

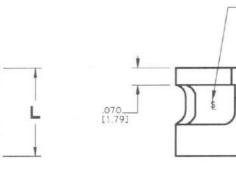
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MANUFACTURER'S

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SHUR-LOK



- - ✓ ¢ D X 100'

TABLE 1

SIZE	• 🖪	* D	۰F	INSTALLATION HOLE SIZE
A	+,000 -,010 +[0.00] -[0.25]			
08	.560	.332	.169	.561566
	[14.22]	[8.43]	[4.29]	[14.25] -[14.38]
3	.560	.385	.196	.561566
	[14.22]	[9.78]	[4.98]	[14.25] -[14.38]
4	.685	.507	.257	.686691
	[17.40]	[12.88]	[6.53]	[17.42] -[17.55]

TABLE III

MATERIAL	FINISH
THERMOPLASTIC POLYETHERIMIDE	NATURAL COLOR

EXAMPLE OF PART CODING

<u>SL6304</u> - <u>08</u> - <u>031</u>	L = LENGTH CODE IN HUNDREDTHS OF INCH EXAMPLE: 031 =.310 [7.87] (SEE TABLE 11)
	- SIZE CODE (SEE TABLE 1) - BASIC PART NUMBER

APPLICATION

AN EPOXY POTTED-IN INSERT (SPACER) FOR FASTENING TO SANDWICH STRUCTURES WITH PROVISION TO RECEIVE FLUSH HEAD SCREW. INSERT PREVENTS SANDWICH COLLAPSE OR CRIPPLING OF CORE AT FASTENER POINT.

ANSI Y PLATINO FILM LU	RET DIM 14.5M. A 3 AND PR	OTHERWISE ENSIGNS & LL DIMENSK IOR TO THE A 125 [3.2]	TOLERAN	DES PER Y AFTER DF SOLID	SHI IRV TEL
XX	.XXX	ANGLES	[X X.]	[X.X.X]	
±.03	±.010	±2°	±[0.8]	±[0.25]	

LENGTH CODE	8	L
031	070 [1.78]	.310 [7.87]
037	.130 [3.30]	.370 [9.40]
040	.160 [4.06]	.400 [10.16]
043	.190 [4.83]	.430 [10.92]
050	260 [6.60]	.500 [12.70]
056	.320 [8.13]	.560 [14.22]
062	.380 [9.65]	.620 [15.75]

TABLE II

NOTES.

2

- SHUR-TAB FURNISHED WITH EACH INSERT.
- REFER TO SLT600 DATA SHEET FOR SHUR-TAB AND GUIDE TOOL. 3.
 - REFER TO SLD6300 DATA SHEET FOR INSTALLATION PROCEDURE.
- SIZE CODE CHARACTER HEIGHT .050 [1.27] 4 LOCATED AT EJECTION PIN AREA.
- MOLD LINE MISMATCH OF .010 [0.25] MAX 5. PERMISSIBLE.
- REFER TO PTP-CPB CATALOG SHEET FOR 6. PACKAGING INFORMATION.

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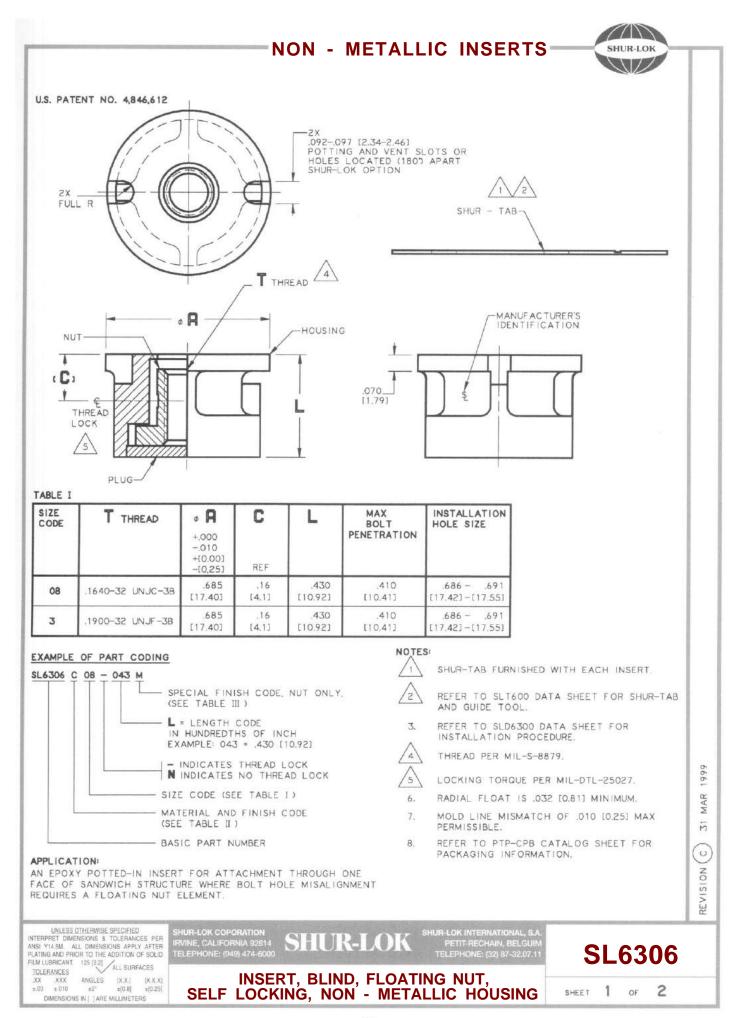
SL6304

- 1

SHEET OF

1999

EPHONE: (949) 474-6000	OUNTERSUNK CLE NON - METALL	ARANCE HOLE,
R-LOK COPORATION NE, CALIFORNIA 92614	SHUR-LOK	SHUR-LOK INTERNATIONAL, S.A PETIT-RECHAIN, BELGUIN



NON - METALLIC INSERTS



TABLE I

CODE ITEM		MATERIAL	FINISH	
	HOUSING	THERMOPLASTIC POLYETHERIMIDE	NATURAL COLOR	
-	PLUG	THERMOPLASTIC POLYETHERIMIDE	NATURAL COLOR	
	NUT	CARBON STEEL PER ASTM A108 ULTIMATE STRENGTH 85 KSI MIN	CAD PLATE PER QQ-P-416. TYPE II. CLASS 2	
с	HOUSING	THERMOPLASTIC	NATURAL COLOR	
	PLUG	THERMOPLASTIC	NATURAL COLOR	
	NUT	CRES 303 PER ASTM A582 OR MIL-S-7720	PASSIVATE PER AMS-QQ-P-35	

TABLE I

SPECIAL FINISH CODE	SPECIAL FINISH (NUT ONLY)	
с	CAD PLATE PER QQ-P-416, TYPE II. CLASS 2 ON CRES NUT ONLY	
м	SOLID FILM LUBRICANT PER AS5272, TYPE I	
S	SILVER PLATE PER AMS2410	

UNLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI Y14 M ALL DIMENSIONS APPLY AFTER PLATING AND PPIDR TO THE ADDITION OF SOLID FILM LUBRICANT. 125 [32] ALL SURFACES TOLEPANCES XX XXX ANGLES [XX] [XXX] ±.03 ±.010 ±2" ±[0.8] ±[0.25] DIMENSIONS IN [] ARE MILLIMETERS



SL6306

SHEET 2 OF 2

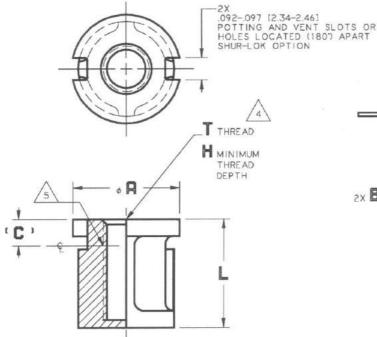
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NON - METALLIC INSERTS -

U.S. PATENT NO. 4,846,612



	MANUFACTURER'S
+	

SHUR - TAB

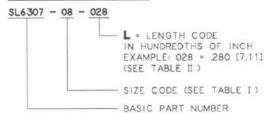
SHUR-LOK

	T THREAD	¢ R +.000 010	INSTALLATION HOLE SIZE
<u> </u>		+[0.00] -[0.25]	
08	.1640-32 UNJC-38	.451 [11.46]	.452457 [11.48] -[11.61]
3	.1900-32 UNJF-38	.451 [11.46]	.452457 [11.48] -[11.61]

TABLE III

MATERIAL	FINISH	
THERMOPLASTIC	NATURAL COLOR	

EXAMPLE OF PART CODING



APPLICATION

A LIGHTWEIGHT EPOXY POTTED-IN INSERT FOR ATTACHMENTS TO THIN SANDWICH STRUCTURES OR WHERE MODERATE TENSILE AND SHEAR LOADS ARE ENCOUNTERED.

LENGTH	B	C REF	H	L
022	.060	.06	.187	.220
	[1.52]	[1.5]	[4.75]	[5.59]
028	.070	.12	.245	.280
	[1.78]	[3.0]	[6.22]	[7.11]
031	.070	.12	.281	.310
	[1.78]	[3.0]	[7.14]	[7.87]
045	.070	.12	.420	.450
	[1.78]	[3.0]	[10.67]	[11.43]

NOTES:

2

3.

4

5

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TABLE I

SHUR-TAB FURNISHED WITH EACH INSERT.

REFER TO SLIGOO DATA SHEET FOR SHUR-TAB AND GUIDE TOOL.

REFER TO SLD6300 DATA SHEET FOR INSTALLATION PROCEDURE.

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THREAD PER MIL-S-8879.

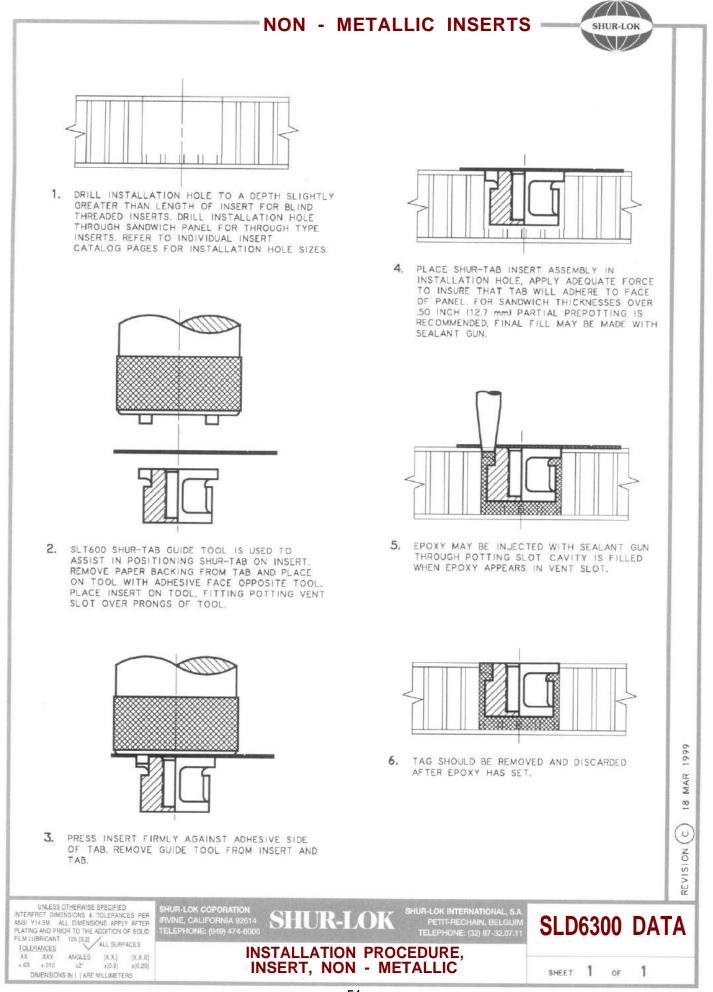
MODIFIED THREAD IN THIS AREA TO PROVIDE LOCKING TORQUE PER MIL-DTL-25027.

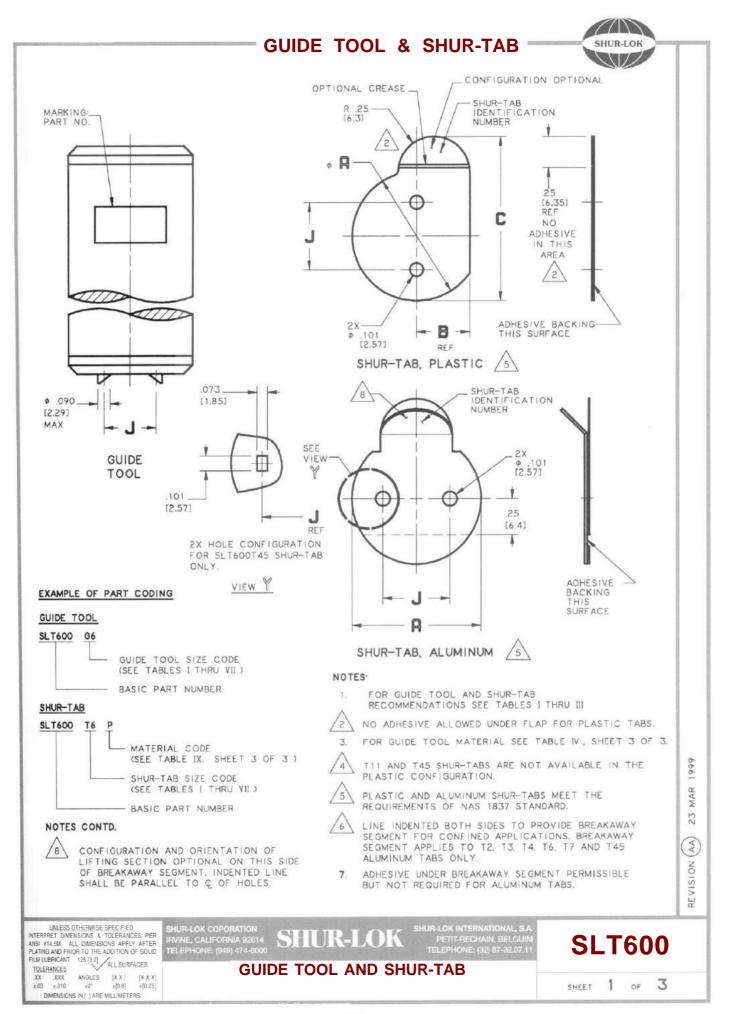
SIZE CODE CHARACTER HEIGHT .050 [1.27] LOCATED AT EJECTION PIN AREA.

7. MOLD LINE MISMATCH OF .010 [0.25] MAX PERMISSIBLE.

 REFER TO PTP-CPB CATALOG SHEET FOR PACKAGING INFORMATION.







GUIDE TOOL & SHUR-TAB



TABLE I

USE WITH: SL601, SL602, SL603 AND SL604.

INSERT SIZE CODE	GUIDE TOOL SIZE CODE	SHUR-TAB SIZE CODE	♥ A REF.	B REF.	¢ C	J REF.
-06 M3	G3	T3	.90 [22.9]	.33 [8.4]	1.140 [28.96]	.367 [9.32]
-08 M4	G3	Τ3	.90 [9.55]	.33 [8.4]	1.140 [28.96]	.367 [9.32]
-З M5	G3	T3	.90 [9.55]	.33 [8.4]	1.140 [28.96]	.367 [9.32]
-4 M6	G6	T6	.90 [22.9]	.37 [9.4]	1.140 [28.96]	.467
—5 M8	G6	T6	.90 [22.9]	.37 [9.4]	1.140 [28.96]	.467 [11.86]
6 M10	G9	T 9	1.13 [28.7]	.50 [12.7]	1.52 [38.6]	.591

TABLE I

USE WITH: SL606.

INSERT SIZE CODE	GUIDE TOOL SIZE CODE	SHUR-TAB SIZE CODE	¢ R REF.	B REF.	¢ C	J REF.
-06 M3	G7	Τ7	.90 [22.9]	.37 [9.4]	1.140 [28.96]	.500 [12.70]
08 M4	G7	Τ7	.90. [22.9]	.37 [9.4]	1.140 [28.96]	.500 [12.70]
-3 M5	G7	Τ7	.90 [22.9]	.37 [9.4]	1.140 [28.96]	.500 [12.70]
-4 M6	G9	Τ9	1.13 [28.7]	.50 [12.7]	1.52 [38.6]	.591 [15.01]
-5 M8	G10	T10	1.13 [28.7]	.50 [12.7]	1.52 [38.6]	.655 [16.64]
6 M10	G11	T11/4	1.13 [28.7]			.718 [18.24]

TABLE III USE WITH- SL607 AND SL644.

INSERT SIZE CODE	GUIDE TOOL SIZE CODE	SHUR-TAB SIZE CODE	¢ R REF.	B REF.	¢ C	J REF.
-04	G2	T2	.90 [22.9]	.33 [8.4]	1.140 [28.96]	.358 [9.09]
-06 M3	G2	T2	.90 [22.9]	.33 [8.4]	1.140 [28.96]	.358 [9.09]
-08 M4	G2	T2	.90 [22.9]	.33 [8.4]	1.140 [28.96]	.358 [9.09]
-3 M5	G2	T2	.90 [22.9]	.33 [8.4]	1.140 [28.96]	.358 [9.09]
-4 M6	G4	T4	.90 [22.9]	.33 [8.4]	1.140 [28.96]	.405 [10.29]

UNLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI Y14S ALL DIMENSIONS APPLY AFTER PLATING AND PHIOR TO THE ADDITION OF SOLID FILM LUBRICANT. 125 [32] ALL SURFACES XX XXX ANGLES [XX] [XX,X] ±.03 ±.010 ±2° ±[0.8] ±0.25] DIMENSIONS IN [] ARE MILLIMETERS

GUIDE TOOL AND SHUR-TAB

SHUR-LOK

SHUR-LOK INTERNATIONAL, S.A. PETIT-RECHAIN, BELGUIM TELEPHONE: (32) 87-32.07.11

SLT600

SHEET 2 OF 3

23 MAR 1999

GUIDE TOOL & SHUR-TAB



TABLE IV USE WITH: SL6301 AND SL6302.

INSERT SIZE CODE	GUIDE TOOL SIZE CODE	SHUR-TAB SIZE CODE	¢ A REF.	B REF.	¢ C	J REF.
-08	G6	T6	.90 [22.9]	.37 [9.4]	1.140 [28.96]	.467 [11.86]
-3	G6	T6	.90 [22.9]	.37 [9.4]	1.140 [28.96]	.467 [11.86]

TABLE ¥

USE WITH. SL6303 AND SL6304.

INSERT SIZE CODE	GUIDE TOOL SIZE CODE	SHUR-TAB SIZE CODE	♥ R REF.	B REF.	°C	J REF.
-08	G6	T6	.90 [22.9]	.37 [9.4]	1.140 [28.96]	.467 [11.86]
-3	G6	T6	.90 [22.9]	.37 [9,4]	1.140 [28.96]	.467 [11.86]
-4	G9	Τ9	1.13 [28.7]	.50 [12.7]	1.52 [38.6]	.591 [15.01]

TABLE VI USE WITH SL6306.

INSERT SIZE CODE	GUIDE TOOL SIZE CODE	SHUR-TAB SIZE CODE	¢ R Ref.	B REF.	• C	J REF.
-08	G9	Τ9	1.13 [28.7]	.50 [12.7]	1.52 [38.6]	.591 [15.01]
-3	G9	⊺9	1.13 [28.7]	.50 [12.7]	1.52 [38.6]	.591 [15.01]

TABLE VI

USE WITH: SL6307. INSERT GUIDE TOOL SHUR-TAB B • C J ¢ 8 SIZE SIZE CODE SIZE CODE REF. REF REF. CODE .90 .387 -08 G45 T45 [9.83] [22.9] 4 387 .90 G45 T45 -3 [22.9] [9.83] 4

TABLE YIII

GUIDE TOOL MATERIAL

ITEM	COMPONENT	MATERIAL & FINISH
ALIGNING	HANDLE	AL ALY, ANODIZE PER MIL-A-8625
TOOL	PINS	TOOL STEEL. FINISH: NONE

TABLE DK

SHUR-TAB	MATERIAL

SHUR-LOK COPORATION IRVINE, CALIFORNIA 92614 TELEPHONE: (949) 474-6000

MATL	MATL THK MAX	MATERIAL	
NO LETTER	.020 [0.51]	ALUMINUM ALLOY	
Ρ	.020 [0.51]	PLASTIC MECHANICAL PROPERTIES ONLY OF FEDERAL SPEC L-P-535 COMP. B. TYPE IL CLASS OPTIONAL.	

UNLESS OTHERWISE SPECIFIED INTERPRET DIMENSIONS & TOLERANCES PER ANSI 114 & ALL DIMENSIONS APPLY AFTER PLATING AND PRIOR TO THE ADDITION OF SOLID FILM LUBRICANT 125 [3.2] ALL SURFACES TOLERANCES XX XXX ANGLES [XX] [XXX] ± 03 ± 010 ± 2° ± [0.8] ± [0.25] DIMENSIONS IN [] ARE MILLIMETERS

GUIDE TOOL AND SHUR-TAB

SHUR-LOK

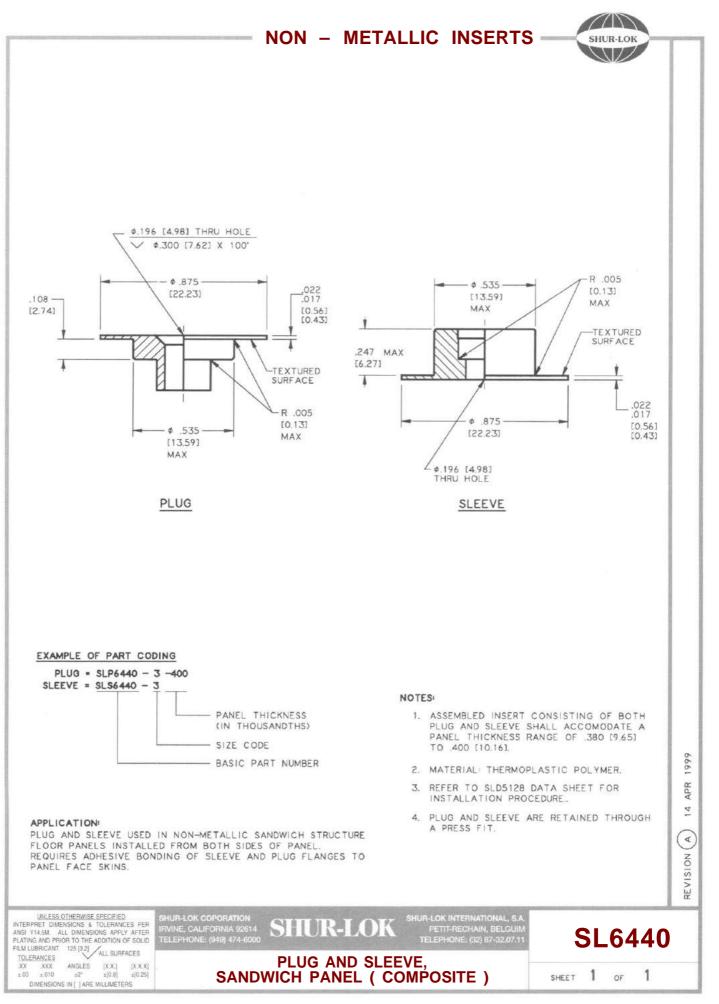
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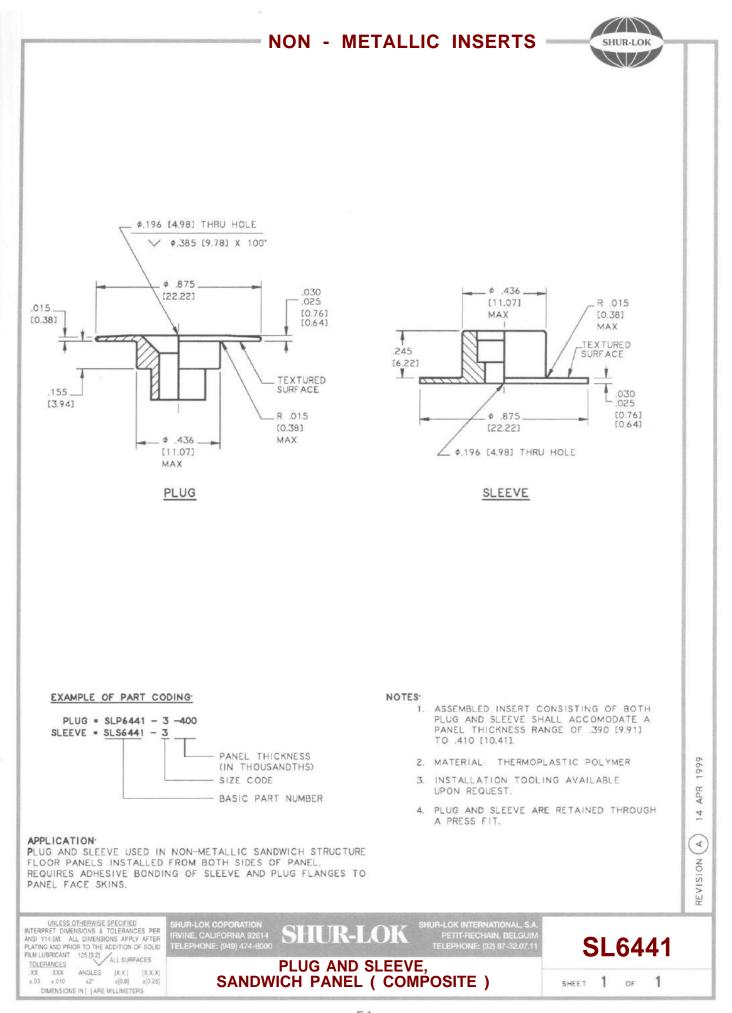
23 MAR

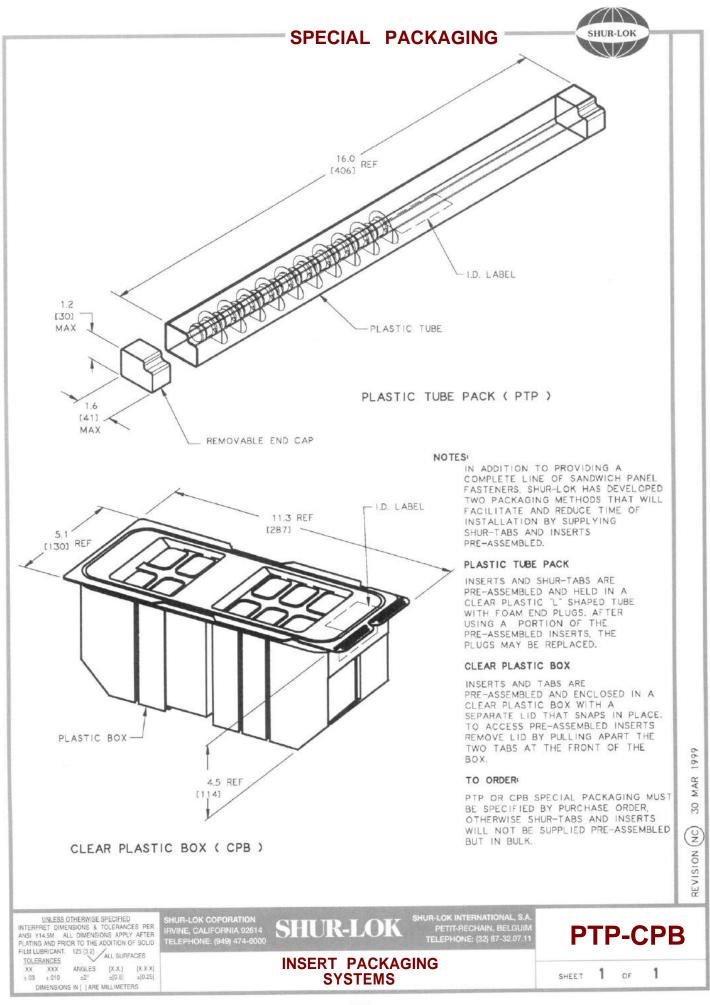
REVISION (AA)

SHUR-LOK

SHUR-LOK INTERNATIONAL, S.A. PETIT-RECHAIN, BELGUIN TELEPHONE: (32) 87-32.07.1







<u>APPENDIX B</u> INTERNATIONAL SPECIFICATIONS FOR STEELS

USA	FRANCE	EUR		GERMANY	GREAT	COMMERCIAL
		AECMA	EN	-	BRITAIN	SPECIFICATION
STAINLESS STE	EELS					
303	Z10CNF18.09			1.4305		
304	Z6CN18.09			1.4301		
(AISI 431) MIL-S-18732	Z15CN17-03 AIR 9160	FE-PM 42	2136	1.4044	5580	A.P.X.
	Z8CND17-04 AIR 9160					A.P.X.4
15-5 PH AMS 5659		FE-PM 64		1.4546		
17-4 PH AMS 5643	Z6CNU17-0 4 AIR9160	FE-PM 61		1.4548		X17U4
17-7 PH MIL-S-25043						
13-8 Mo AMS 5629				1.4534		
		FE-PM 66	prEN 2506		2 S 145	
A 286 AMS 5737 (Bars) AMS 5525(Tubes)	E-Z6NCT25 AIR9165	FE-PA 92 HT	prEN 2303 prEN 2304	1 .4944 (Bars)	BSHR51 DTD 5076	
INCONEL718 AMS 5662	NC19FeNb AIR9165	NI-P 100 HT	prEN 2404 prEN 2405	2.4668		
STRUCTURAL S	STEELS					
	30NCD16 AIR9160					
	E30NCD16 AIR 9160					
(SAE 4135)	35CD4 AIR 9160	FE-PL 45		1.7220	708H37 ?	
	35NCD16 AIR 9160					
	E 35NCD16 AIR9160					
SAE 4140 MIL-S-5626	40CD4 AIR9160					
SAE 4130 MIL-S-6758 (Bars) MIL-S-1872 9(Tubes)	25CD4S AIR9160	FE-PL 43S	2206	1.7214	S-142(Bars) S-534(Tubes)	
SAE 4340 MIL-S-8844 AMS 6414	(40NCD7) AIR 9160			1.6944	817M40? 3S99?	
MACHINING ST	TEELS					
12L14 FED-STD 66 ASTM-A-108				1.0737		9SMnPb36
1117						
1137						
1140				1.0726		35820