



Engineering and Manufacturing

*High Performance Fasteners
and Hardware Products*

Manufactured in the USA



CAGE CODE: 0JHK5

WITTEN COMPANY, INC.

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WITTEN CROSS-REFERENCE LIST

Tuesday, February 15, 2022



WITTEN	STANDARDS/ OTHER	SHUR-LOK	YOUNG ENGINEERS	ALCOA/ TRIDAIR
141 SERIES	17-1-5540 (NATICK) 17-1-6655 (NATICK)			
151 SERIES	17-1-4718 (NATICK)			
2235	17-1-6611 (NATICK) AK515 (AVIBANK)			
2253	17-1-6655 (NATICK)	SL2251	TYE1400 TYE3400	400HE SERIES 400SE SERIES
2395			TYE2161	
2402 W2334 2402SF		SL618 SL2334	TYE2018 TYE2334 TYE3006 TYE3600	D137HF SERIES D147HF SERIES 400SF SERIES 400HF SERIES
W101 W102 W103 W104 W106 2445	GAS501A SERIES	SL101 SL102 SL103 SL104 SL106 SL5182	TYE101 TYE102 TYE103 TYE104 TYE106 TYE5182	101 SERIES 102 SERIES 103 SERIES 104 SERIES 106 SERIES
2471	CDIN13 (C&D ZODIAC)	SL2748 SL2899	TYE2048	
2483			TYE2068	
2487		SL2808 SL2668		
2491		SL5107	TYE5107	
2494		SL644	TYE2044	
2497		SL6096	TYE2046	
2498 & 2506	CDIN11 (C&D ZODIAC)	SL6089	TYE2043	
2507		SL2899		
2517	CDIN16 (C&D ZODIAC)	SL10631	TYE2069	
MS35914				
NA0241				
NA0242				
NA0243				
NA0244				
NA0245				
NAS1056	NAS1056 SERIES			
NAS1057	NAS1057 SERIES			
NAS1832 W1832	NAS1832 SERIES CDIN08 (C&D ZODIAC)	SL601	TYE2002	D1832 SERIES
NAS1833 180 SERIES	NAS1833 SERIES CDIN09 (C&D ZODIAC)	SL602	TYE2007	D1833 SERIES
NAS1834 181 SERIES	NAS1834 SERIES	SL603 SL604	TYE2003 TYE2004	D1834 SERIES
NAS1835	NAS1835 SERIES	SL606	TYE1835	D1835 SERIES
NAS1836 W1836	NAS1836 SERIES CDIN07 (C&D ZODIAC)	SL607	TYE2001	D1836 SERIES
WBN360	BN360 (LISI AEROSPACE) 3264499 (RAYTHEON) 11438039 (RAYTHEON) VALA2B5 (WEST COAST)	EXCLUSIVELY DISTRIBUTED BY ENFASCO, INC. www.enfasco.com sales@enfasco.com		
WBN388	BN388 (LISI AEROSPACE) 10274114 (RAYTHEON) VALA2B6 (WEST COAST)			
WBN566	BN566 (LISI AEROSPACE)			

COMMITMENT TO QUALITY

“Witten Company, Inc is continually improving our products and exceeding customer satisfaction through a tradition of quality excellence.” We are ISO9001 certified, AS9100 certified, QSLM Class 2&3 certified and a preferred supplier of several companies.

All of our manufacturing is performed in-house (In the USA!) to maintain high quality control standards.

STATE-OF-THE-ART MANUFACTURING

Our state-of-the-art manufacturing facility is committed to meeting your production requirements. CNC turning & CNC milling are manufacturing processes that are used on a majority of our products.

We have the capability of manufacturing our fasteners from aluminum, brass, carbon steel, stainless steel and other alloy steels. We also manufacture non-metallic

RESEARCH, DEVELOPMENT & ENGINEERING

We are an engineering and manufacturing company specializing in fastening devices for composite structures. Witten Company, Inc. has been performing research, development, engineering and manufacturing of fasteners for the composites industry for over 31 years.

Our engineering team is constantly working on new challenges and concepts to meet the needs and requirements of our customers. Our engineers will work with the customer to provide a conceptual design and prototypes for testing and evaluation to meet the necessary requirements. We are dedicated to serving your needs and providing practical solutions for your fastening applications. Witten Fasteners are utilized on a variety of products ranging from electric buses to jet aircraft engines.

CUSTOMER SERVICE

We strive to keep a large inventory of fasteners available for immediate shipment, as well as “Just-In-Time” deliveries for annual procurements. Our customer service department can provide prompt quotations for all of your fastener requirements.

KEY PRODUCTS

High-Performance Threaded Inserts
Thru-Hole Inserts
NAS Panel Fasteners
MS Fasteners
Spacers
Sleeves
Two-piece Inserts
Floating Inserts



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HubZone Certified
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▶ APPLICATIONS



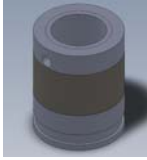
▶ Fastener Applications

Ground Support Equip.	RPV's	Galleys	Prosthetics
Aircraft Interiors	Cargo Pallets	Floor Panels	All Composite Structures
Partitions	Flight Simulators	Ships	Aerospace
Military Shelters	Bulkheads	Railcars	Satellite Receivers
Recreation Equipment	Military Vehicles	Fiberglass Products	Race Cars
Electronic Cabinetry	Automobiles	Snowmobiles	Boats
Flight Control Surface	Helicopters	UAV	Trucks

▶ Fastener Products

Blind, Threaded Inserts	Thru-Hole Inserts	Flanged-Head Inserts	Spacers
	Hardpoints	Internal/External Threads	Knurled Bushings
Two-piece Inserts	Grommets	Core Bushings	NAS Equivalent
Floating Inserts		Press-In Inserts	Panel Thru-hole
Press In Stud	Receptacles	Plug/Sleeve-Type Insert	Sleeves

▶ Light Duty Fasteners



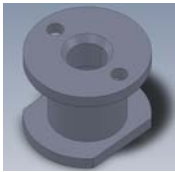
120 Series, Blind, Press-In/Molded-In

One piece blind threaded fastener to be pressed/molded into any honeycomb or composite panel. A diamond knurl provides both torque out and pullout capability. Can be installed with or without epoxy adhesive.



121 Series, Blind, Press-In/Molded-In

One piece blind threaded fastener similar to the 120 series but with a flanged head which provides bearing surface for the composite panel.



130 Series, Blind, Molded/Potted In

One piece blind threaded fastener to be molded-in/potted into honeycomb panels or other composite panels. The anti-rotational flats provide torque out capability. Potting/vent holes are optional and self-locking features are optional. Installation tabs are provided for potted-in installations.

▶ Medium Duty Fasteners



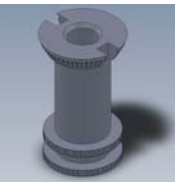
140 Series, Blind, Molded/Potted-In

One piece blind threaded fastener to be molded-in/potted into honeycomb panels or other composite panels. An annular ring around the body of the insert and longitudinal slots provide pull-out and torque-out capability. Potting/vent holes are standard and self-locking features are optional. Installation tabs are provided for potted-in installation.



141 Series, Blind, Potted Inserts, Snap-In Type

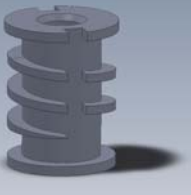
One piece blind threaded fastener similar to the 140 series but with a groove that allows the fastener to snap into the top skin for retention during potting. Includes all features of the 140 series insert.



2253 S,SE Series, Blind, Potted Insert, Snap-In Type

One piece blind threaded fastener to be molded/potted into a honeycomb panel. An annular ring around the body and longitudinal slots provide pull-out and torque-out capability. A groove in the upper flange allows the fastener to snap into the top skin for retention during potting.

▶ Heavy Duty Fasteners



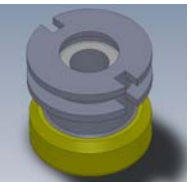
150 Series, "Spiral Rib" Blind, Molded/Potted Inserts

One piece blind threaded fastener to be molded-in/potted into honeycomb panels or other composite panels. The external spiral ribs provide maximum pull-out and torque-out strength. Potting/vent holes are standard and the self-locking features are optional. Minimum potting material is required. Installation tabs are provided for the potted-in installations. This is a "high performance" insert.



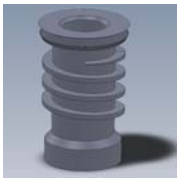
151 Series, "Spiral Rib" Blind, Potted Inserts, Snap-in Type

One piece blind threaded fastener similar to 150 series, but with a groove that allows the fastener to snap into the top skin for retention during potting. Includes all features of the 150 series insert. This is a "High performance" insert.



155 Series Inserts- Blind, Potted, Floating 1/32 Radial

This blind floating insert has a 1/32 radial float. These are commonly used when additional tolerances are required. This is a "high performance" insert.



156 Series Inserts- Potted, Quick Release Pin Receptacle

Quick release pin receptacle for ball-lock pin. Snap-in type with a groove allowing the receptacle to snap into the top skin for retention during potting. Typically, these are used in conjunction with a quick release pin to provide tie-downs, which can be removed very rapidly.



2004 Series Insert- "Spiral Rib", Thru-hole, Threaded Insert

One-piece threaded thru-hole insert. Can be molded/potted-in flush mounted on both sides. External spiral ribs provide maximum pull-out and torque-out strength. Potting slots are optional. This is a "high performance" insert.

2005 Series Insert- "Spiral Rib", Thru-hole, Threaded Insert with Flange

One-piece threaded thru-hole insert. Can be molded/potted-in, with flange bottom. External spiral ribs provide maximum pull-out and torque-out strength. Potting slots are optional. This is a "high performance" insert.

▶ **NAS Fasteners and NAS Equivalent**



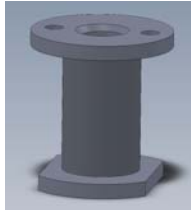
180 Series, Thru-Hole Threaded Insert, Regular Head Style Molded/Potted-In (NAS1833 Equivalent)

One piece thru-hole threaded insert. Can be molded/potted-in. A straight knurl provides torque out capabilities. Potting/vent holes and/or self-locking features are optional. Installation tabs are provided for potted-in installations. (NAS1833 Equivalent)



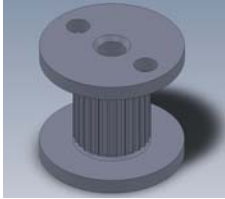
181 Series, Thru-Hole Insert, Regular Head Style Molded/Potted-In (NAS1834 Equivalent)

One piece thru-hole insert. Can be molded/potted-in. A straight knurl provides torque out capabilities. Potting/vent holes are optional. Thru-hole countersunk on flange. Installation tabs are provided for potted-in installations. (NAS1834 Equivalent)



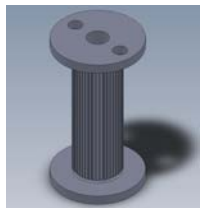
NAS1832 Series, Blind Threaded, Self Locking/Non-self Locking, Molded/Potted, Sandwich Panel Insert.

One piece blind threaded insert manufactured in accordance with the requirements of National Aerospace standard NAS1832. Anti-rotational flat on the lower flange provides torque out capability. Offered with or without self locking feature and in a variety of materials and finishes.



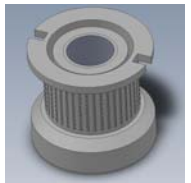
NAS1833 Series, Thru Hole, Threaded, Self-Locking/Non-self Locking, Molded/Potted, Sandwich Panel Insert.

One piece thru hole threaded insert manufactured in accordance with the requirements of National Aerospace Standard NAS1833. Anti-rotational knurl on the insert body provides torque out capability. Offered with or without self locking feature and in a variety of materials and finishes.



NAS1834 Series, Thru Clearance Hole, Countersunk/Flush, Molded/Potted, Sandwich Panel Insert.

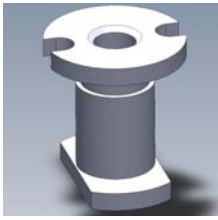
One piece thru clearance hole insert manufactured in accordance with the requirements of National Aerospace standard NAS1834. Anti-rotational knurl on the insert body provides torque out capability. Offered in a variety of materials and finishes.



NAS1835 Series, Blind Threaded, Self Locking/Non-self Locking, Molded/Potted, Floating Sandwich Panel Insert.

Floating insert with a 1/32" radial float. These inserts are commonly used when additional tolerances are required. Anti-rotational knurl on the insert body provides torque out capability. Offered in a variety of materials and finish combinations. Manufactured in accordance with the requirements of National Aerospace Standard NAS1835.

▶ **NAS Fasteners and NAS Equivalent continued**



NAS 1836 Series, Blind Threaded, Self Locking/Non-self Locking, Molded/Potted, Lightweight, Sandwich Panel Insert.

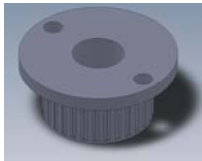
One piece blind threaded insert intended for use in thin sandwich panels. Manufactured in accordance with the requirements of National Aerospace Standard NAS1832. Anti-rotational flat on the lower flange provides torque out capability. Offered with or without self locking feature and in a variety of materials and finishes.

▶ **Other Industrial Hardware Products**



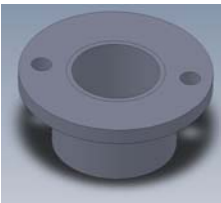
2235 Series, Potted Rivet Nut, Blind Insert

This closed end insert provides excellent torque and pull out loads. The insert is inserted in an epoxy filled cavity in the honeycomb panel and pulled much like a pop-rivet using a pneumatic or manual installation tool. A variety of thread sizes and lengths are available.



352 Series, Thru-Hole Sleeve, Protruding, Molded/Potted-In

One piece thru-hole sleeve fastener allowing a bolt to pass thru panel with a flange head for increased compression loading. Potting holes are optional. Installation tabs are provided for potted-in installations.



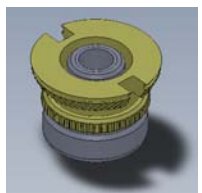
354 Series, Thru-Hole Threaded Insert with Flange, Molded/Potted

One piece threaded sleeve, allowing a bolt to pass thru panel with a flange head for increased compression loading. Potting holes are optional. Installation tabs are provided for potted-in installations.



355 Series, Thru-Hole Threaded Insert with Flange, Molded/Potted

One piece thru-hole threaded insert with flange. A straight knurl provides torque out capabilities. Potting holes are optional. Installation tabs are provided for potted-in installations.



2402SF Series, Blind, Potted, Floating 1/32" Radial Snap-In Style

This style insert is commonly used when additional tolerances are required. Center knurled flange offers increased rotational and pull out resistance. A variety of materials and finishes are available.

WITTEN FASTENERS

120 SERIES THREADED INSERT, BLIND, REGULAR HEAD STYLE LIGHT DUTY - PRESS IN

TABLE I

CODE NO.	T THREAD	A DIA +.005/-.000	INSTL HOLE +.005/-.000
632	6-32 UNC	.245	.250
832	8-32 UNC	.245	.250
1032	10-32 UNF	.307	.312
420	1/4-20 UNC	.370	.375
428	1/4-28 UNF	.370	.375
518	5/16-18 UNC	.432	.437
524	5/16-24 UNF	.432	.437
616	3/8-16 UNC	.495	.500
624	3/8-24 UNF	.495	.500

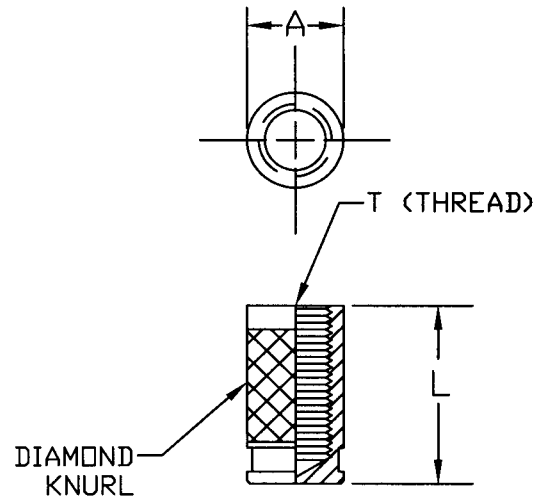
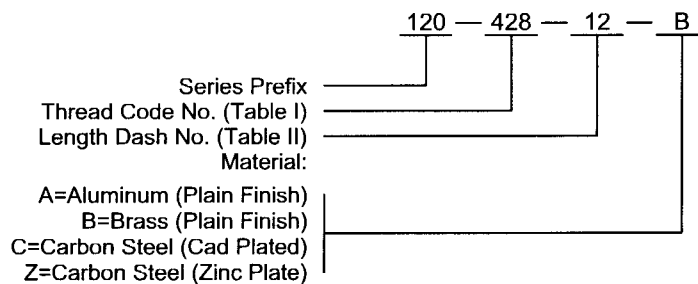


TABLE II

DASH NO.	L ±.03 LENGTH	MINIMUM FULL THREAD DEPTH					
		#6	#8	#10	1/4	5/16	3/8
-6	.375	.225	.225	.175	--	--	--
-7	.437	.276	.287	.237	--	--	--
-8	.500	.276	.328	.300	.225	--	--
-10	.625	.276	.328	.375	.350	.350	.350
-12	.750	.276	.328	.375	.475	.475	.475
-14	.875	.276	.328	.375	.500	.600	.600
-16	1.000	.276	.328	.375	.500	.625	.725

EXAMPLE: PART NUMBERING SYSTEM



WITTEN FASTENERS

121 SERIES

THREADED INSERT, BLIND, FLANGED HEAD STYLE
LIGHT DUTY - PRESS IN

TABLE I

CODE NO.	T THREAD	A DIA +.005/-.000	B DIA	INSTL HOLE +.005/-.000
632	6-32 UNC	.245	.375	.250
832	8-32 UNC	.245	.375	.250
1032	10-32 UNF	.307	.437	.312
420	1/4-20 UNC	.370	.500	.375
428	1/4-28 UNF	.370	.500	.375
518	5/16-18 UNC	.432	.562	.437
524	5/16-24 UNF	.432	.562	.437
616	3/8-16 UNC	.495	.625	.500
624	3/8-24 UNF	.495	.625	.500

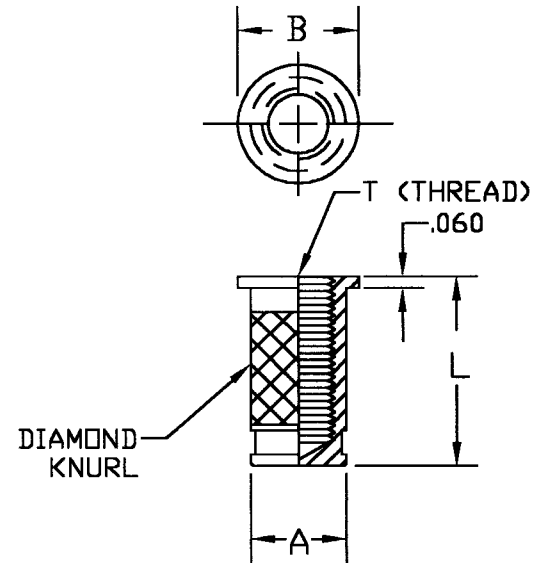
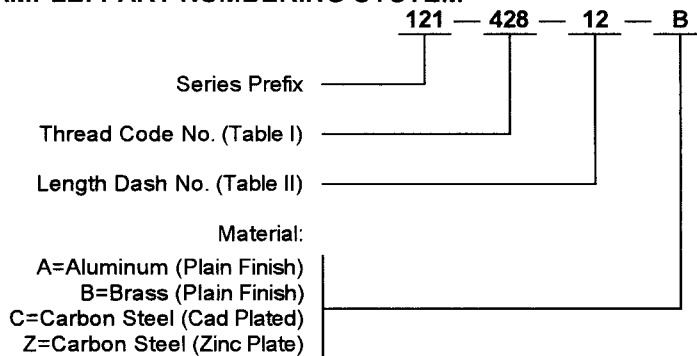


TABLE II

DASH NO.	L ±.03 LENGTH	MINIMUM FULL THREAD DEPTH					
		#6	#8	#10	1/4	5/16	3/8
-6	.375	.225	.225	.175	--	--	--
-7	.437	.276	.287	.237	--	--	--
-8	.500	.276	.328	.300	.225	--	--
-10	.625	.276	.328	.375	.350	.350	.350
-12	.750	.276	.328	.375	.475	.475	.475
-14	.875	.276	.328	.375	.500	.600	.600
-16	1.000	.276	.328	.375	.500	.625	.725

EXAMPLE: PART NUMBERING SYSTEM



WITTEN FASTENERS

130 SERIES

THREADED INSERT, BLIND, REGULAR HEAD STYLE

LIGHT DUTY

TABLE I

CODE NO.	T THREAD	A DIA +.000/-0.010	B SELF-LK ±.06	INSTL HOLE +.005/-0.000
632	6-32 UNC	.577	.12	.578
832	8-32 UNC	.577	.12	.578
1032	10-32 UNF	.577	.12	.578
420	1/4-20 UNC	.685	.16	.686
428	1/4-28 UNF	.685	.16	.686
518	5/16-18 UNC	.685	.20	.686
524	5/16-24 UNF	.685	.20	.686
616	3/8-16 UNC	.811	.20	.812
624	3/8-24 UNF	.811	.20	.812

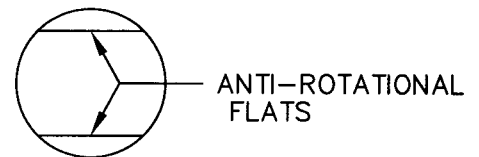
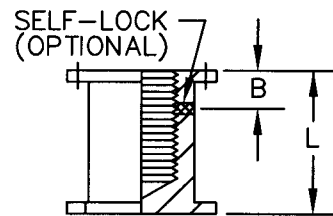
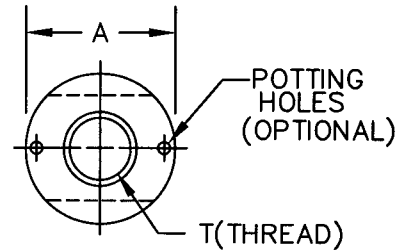
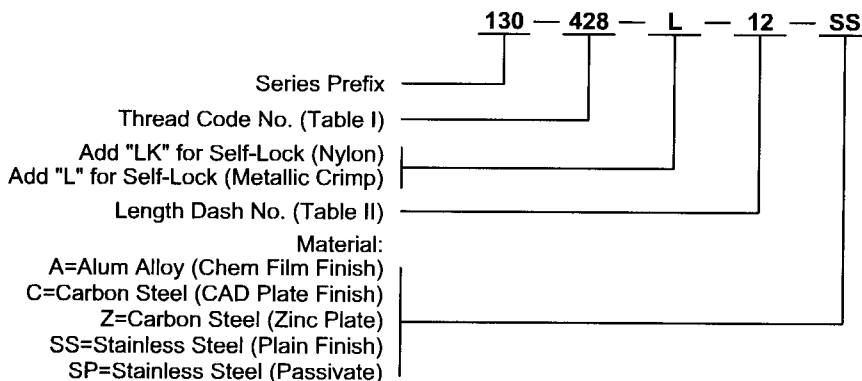


TABLE II

DASH NO.	L ±.03 LENGTH	MINIMUM FULL THREAD DEPTH					
		#6	#8	#10	1/4	5/16	3/8
-6	.375	.225	.225	.175	--	--	--
-7	.437	.276	.287	.237	--	--	--
-8	.500	.276	.328	.300	.225	--	--
-10	.625	.276	.328	.375	.350	.350	.350
-12	.750	.276	.328	.375	.475	.475	.475
-14	.875	.276	.328	.375	.500	.600	.600
-16	1.000	.276	.328	.375	.500	.625	.725

EXAMPLE: PART NUMBERING SYSTEM



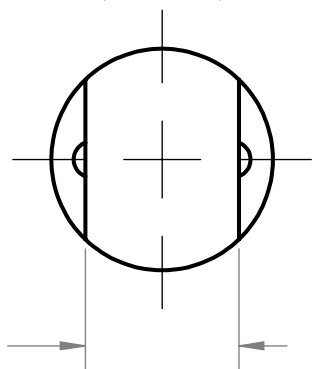
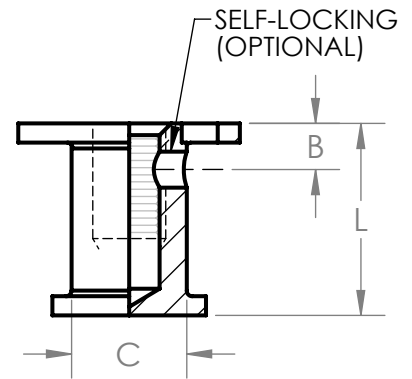
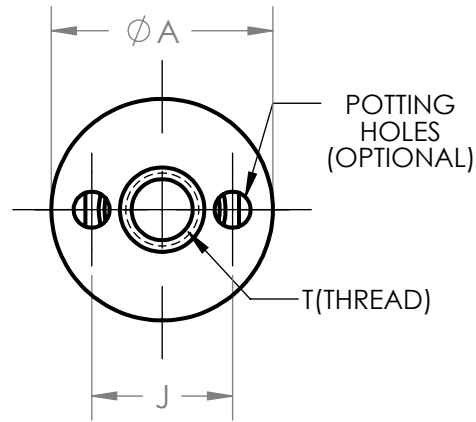
Notes:

1. Threads per MIL-S-7742
2. Installation tabs are available

METRIC 130 SERIES THREADED INSERT, BLIND, REGULAR HEAD STYLE MEDIUM DUTY

CODE NO.	T THREAD	A DIA +.000/ -.010	B SELF-LK ±.06	C DIA ±.010	J DIA	INSTL HOLE +.005/ -.000
M3	M3X.5	.577	.12	.300	.367	.578
M3.5	M3.5X.6	.577	.12	.300	.367	.578
M4	M4X.7	.577	.12	.300	.367	.578
M5	M5X.8	.577	.12	.300	.367	.578
M6	M6X1	.685	.16	.375	.467	.686
M8X1	M8X1	.685	.20	.475	.467	.686
M8X1.25	M8X1.25	.685	.20	.475	.467	.686
M10X1.25	M10X1.25	.811	.20	.500	.591	.812
M10X1.5	M10X1.5	.811	.20	.500	.591	.812

DASH NO.	L±.010 LENGTH	MINIMUM FULL THREAD DEPTH					
		M3.5	M4	M5	M6	M8	M10
-6	.375	.225	.225	.175	-	-	-
-7	.437	.276	.287	.237	-	-	-
-8	.500	.276	.328	.300	.225	-	-
-10	.625	.276	.328	.375	.350	.350	.350
-12	.750	.276	.328	.375	.475	.475	.475
-14	.875	.276	.328	.375	.500	.600	.600
-16	1.000	.276	.328	.375	.500	.625	.725



130 - M6 - L - 12 - SS

MATERIAL & FINISH:
 A = ALUM ALLOY (CHEM FILM FINISH, CL 1A)
 A3 = ALUM ALLOY (CHEM FILM FINISH, CL 3)
 C = CARBON STEEL (CAD PLATE FINISH)
 Z = CARBON STEEL (ZINC PLATE)
 SS = STAINLESS STEEL (PLAIN FINISH)
 SP = STAINLESS STEEL (PASSIVATE)

LENGTH DASH NO. (TABLE II)

ADD "LK" FOR SELF-LOCK (NYLON)
 ADD "L" FOR SELF-LOCK (METALLIC CRIMP)

THREAD CODE NO. (TABLE I)

SERIES PREFIX

ANTI-ROTATIONAL FLATS

NOTES:
 1. INSTALLATION TABS ARE AVAILABLE

WITTEN FASTENERS

140 SERIES THREADED INSERT, BLIND, REGULAR HEAD STYLE MEDIUM DUTY

TABLE I

CODE NO.	T THREAD	A DIA ±.010	B SELF-LK ±.06	C DIA ±.010	INSTR HOLE +.010/-0.000
632	6-32 UNC	.490	.12	.460	.500
832	8-32 UNC	.490	.12	.460	.500
1032	10-32 UNF	.520	.12	.490	.530
420	1/4-20 UNC	.583	.16	.553	.593
428	1/4-28 UNF	.583	.16	.553	.593
518	5/16-18 UNC	.646	.20	.616	.656
524	5/16-24 UNF	.646	.20	.616	.656
616	3/8-16 UNC	.708	.20	.678	.718
624	3/8-24 UNF	.708	.20	.678	.718

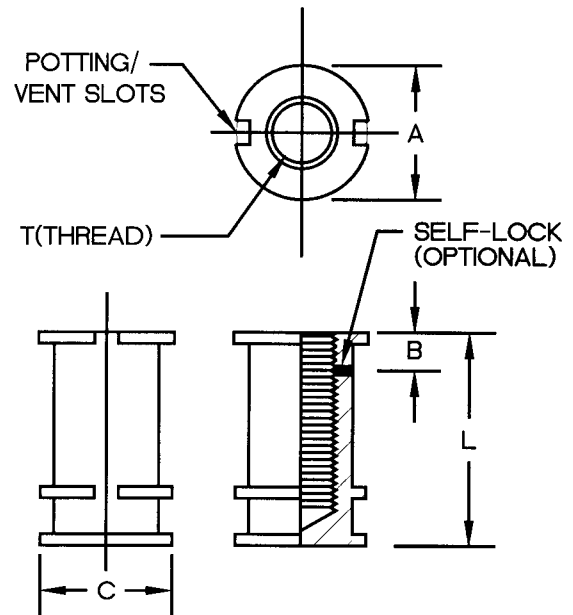
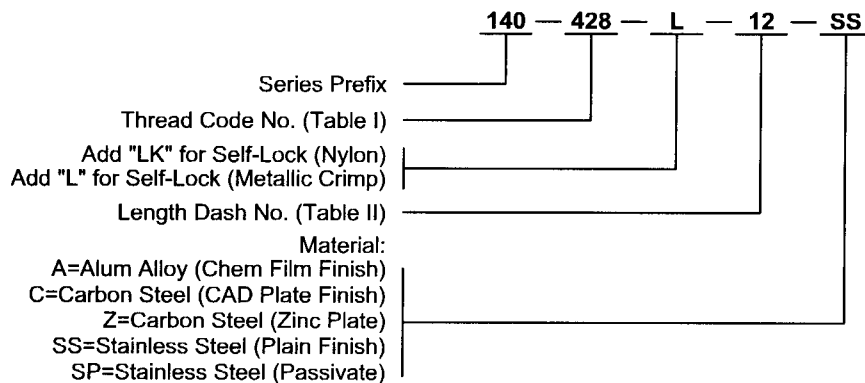


TABLE II

DASH NO.	L ±.03 LENGTH	MINIMUM FULL THREAD DEPTH					
		#6	#8	#10	1/4	5/16	3/8
-5	.312	.162	.162	--	--	--	--
-6	.375	.225	.225	.175	--	--	--
-7	.437	.276	.287	.237	--	--	--
-8	.500	.276	.328	.300	.225	--	--
-10	.625	.276	.328	.375	.350	.350	.350
-12	.750	.276	.328	.375	.475	.475	.475
-14	.875	.276	.328	.375	.500	.600	.600
-16	1.000	.276	.328	.375	.500	.625	.725
-18	1.125	.276	.328	.375	.500	.625	.750

EXAMPLE: PART NUMBERING SYSTEM



Notes:

1. Threads per MIL-S-7742
2. Installation tabs are available

141 SERIES

MOLDED/POTTED INSERTS, SNAP-IN TYPE

MEDIUM DUTY

TABLE I

CODE NO.	T THREAD	A DIA ±.010	B SELF-LK ±.06	C DIA ±.010	INSL HOLE +.010/-.000
632	6-32 UNC	.500	.12	.427	.468
832	8-32 UNC	.500	.12	.427	.468
1032	10-32 UNF	.531	.12	.458	.500
420	1/4-20 UNC	.594	.16	.521	.562
428	1/4-28 UNF	.594	.16	.521	.562
518	5/16-18 UNC	.656	.20	.583	.625
524	5/16-24 UNF	.656	.20	.583	.625
616	3/8-16 UNC	.719	.20	.646	.687
624	3/8-24 UNF	.719	.20	.646	.687

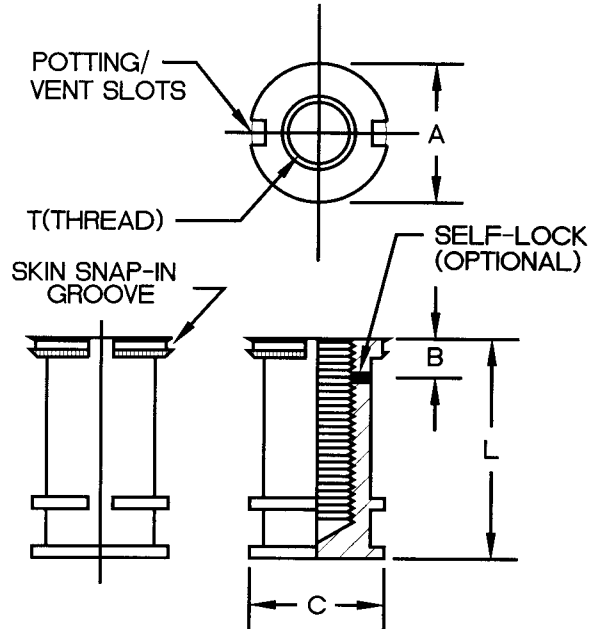


TABLE II

DASH NO.	L ±.03 LENGTH	MINIMUM			FULL	THREAD DEPTH		
		#6	#8	#10		1/4	5/16	3/8
-5	.312	.162	.162	--	--	--	--	--
-6	.375	.225	.225	.175	--	--	--	--
-7	.437	.276	.287	.237	--	--	--	--
-8	.500	.276	.328	.375	.225	--	--	--
-10	.625	.276	.328	.375	.350	.350	.350	.350
-12	.750	.276	.328	.375	.475	.475	.475	.475
-14	.875	.276	.328	.375	.500	.600	.600	.600
-16	1.000	.276	.328	.375	.500	.625	.725	.725
-18	1.125	.276	.328	.375	.500	.625	.750	.750

EXAMPLE: PART NUMBERING SYSTEM

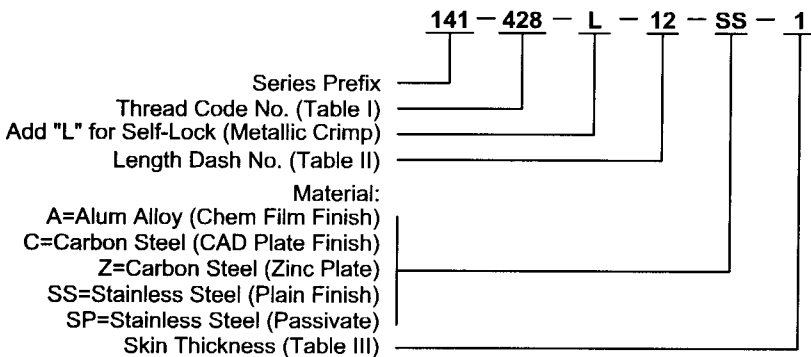


TABLE III

DASH NO.	SKIN THICKNESS INSTALL SIDE
-1	.010-.019
-2	.020-.029
-2	.030-.039
-4	.040-.049
-5	.050-.059
-6	.060-.069
-7	.070-.079
-8	.080-.089
-9	.090-.099

Notes:
1. Threads per MIL-S-7742
2. Installation tabs are available

WITTEN FASTENERS

150 SERIES - "SPIRAL RIB" THREADED INSERT, BLIND, REGULAR HEAD STYLE HEAVY DUTY, "HIGH PERFORMANCE"

TABLE I

CODE NO.	T THREAD	A DIA ±.010	B SELF-LK ±.06	C DIA ±.010	INSTR HOLE +.010/-.000
632	6-32 UNC	.490	.12	.460	.500
832	8-32 UNC	.490	.12	.460	.500
1032	10-32 UNF	.520	.12	.490	.530
420	1/4-20 UNC	.583	.16	.553	.593
428	1/4-28 UNF	.583	.16	.553	.593
518	5/16-18 UNC	.646	.20	.616	.656
524	5/16-24 UNF	.646	.20	.616	.656
616	3/8-16 UNC	.708	.20	.678	.718
624	3/8-24 UNF	.708	.20	.678	.718
714	7/16-14 UNC	.771	.20	.741	.781
720	7/16-20 UNF	.771	.20	.741	.781
813	1/2-13 UNC	.833	.20	.803	.843
820	1/2-20 UNF	.833	.20	.803	.843

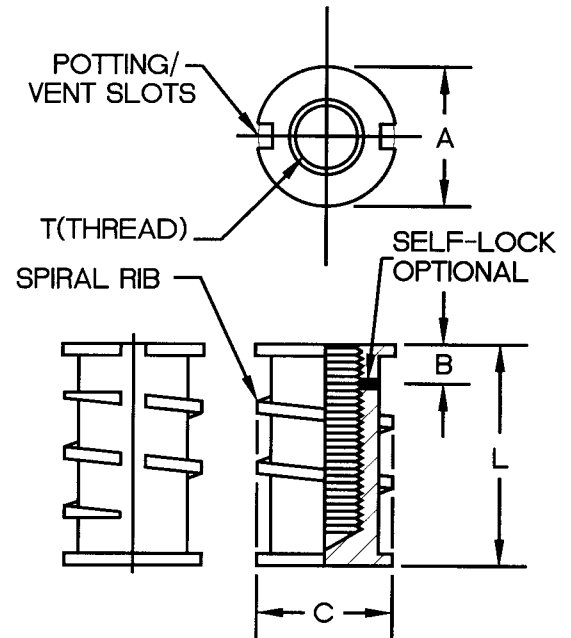
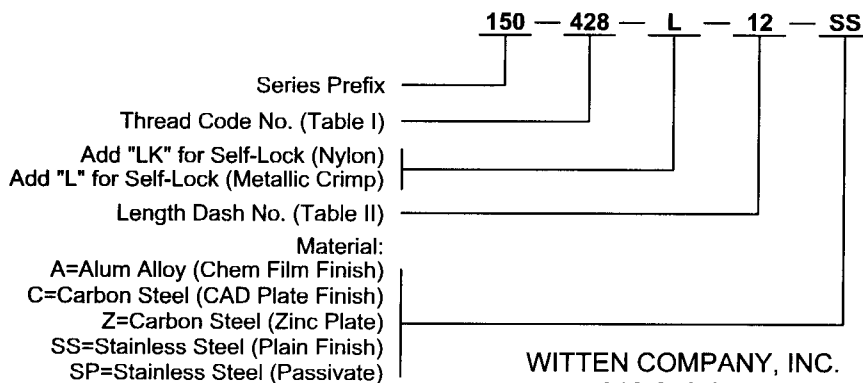


TABLE II

DASH NO.	L ±.03 LENGTH	MINIMUM FULL THREAD DEPTH							
		#6	#8	#10	1/4	5/16	3/8	7/16	1/2
-5	.312	.162	.162	--	--	--	--	--	--
-6	.375	.225	.225	.175	--	--	--	--	--
-7	.437	.276	.287	.237	--	--	--	--	--
-8	.500	.276	.328	.300	.225	--	--	--	--
-10	.625	.276	.328	.375	.350	.350	.350	--	--
-12	.750	.276	.328	.375	.475	.475	.475	.400	.400
-14	.875	.276	.328	.375	.500	.600	.600	.525	.525
-16	1.000	.276	.328	.375	.500	.625	.725	.650	.650
-18	1.125	.276	.328	.375	.500	.625	.750	.775	.775
-20	1.250	.276	.328	.375	.500	.625	.750	.874	.900
-22	1.375	.276	.328	.375	.500	.625	.750	.874	1.000
-24	1.500	.276	.328	.375	.500	.625	.750	.874	1.000

EXAMPLE: PART NUMBERING SYSTEM



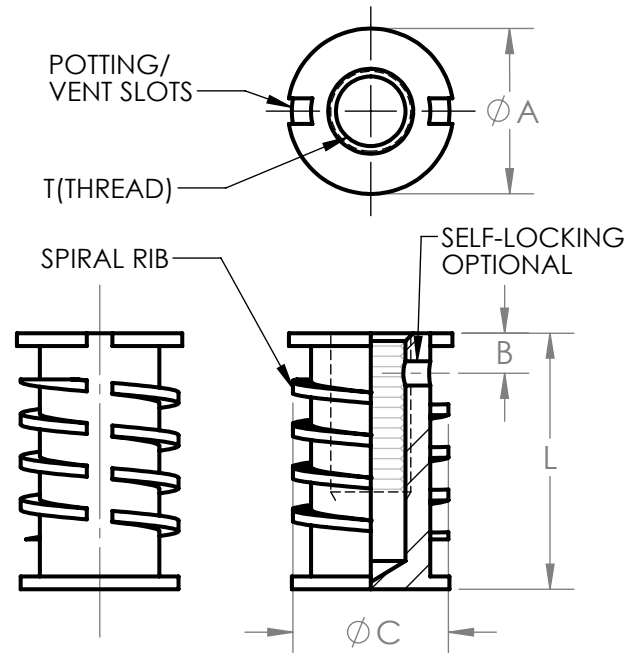
Notes:

1. Threads per MIL-S-7742
2. Patent No. 4,941,785 and 5,082,405
3. No. of Spiral Ribs varies with length
4. Installation tabs are available

WITTEN COMPANY, INC.
918-272-9567

METRIC 150 SERIES - "SPIRAL RIB" THREADED INSERT, BLIND, REGULAR HEAD STYLE HEAVY DUTY, "HIGH PERFORMANCE"

CODE NO.	T THREAD	A DIA ±.010	B SELF-LK ±.06	C DIA ±.010	INSTL HOLE +.010/ -.000
M3.5	M3.5X.6	.490	.12	.460	.500
M4	M4X.7	.490	.12	.460	.500
M5	M5X.8	.520	.12	.490	.530
M6	M6X1	.583	.16	.553	.593
M8X1	M8X1	.646	.20	.616	.656
M8X1.25	M8X1.25	.646	.20	.616	.656
M10X1.25	M10X1.25	.708	.20	.678	.718
M10X1.5	M10X1.5	.708	.20	.678	.718
M12X1.5	M12X1.5	.833	.20	.803	.843
M12X1.75	M12X1.75	.833	.20	.803	.843
M14X1.5	M14X1.5	.895	.20	.862	.906
M14X2.0	M14X2.0	.895	.20	.862	.906
M16X1.5	M16X1.5	.958	.22	.924	.968
M16X2	M16X2	.958	.22	.924	.968



DASH NO.	L ±.030 LENGTH	M3.5	M4	M5	M6	M8	M10	M12	M14	M16
		-5	.312	.162	.162	-	-	-	-	-
-6	.375	.225	.225	.175	-	-	-	-	-	
-7	.437	.276	.287	.237	-	-	-	-	-	
-8	.500	.276	.315	.300	.225	-	-	-	-	
-10	.625	.276	.315	.375	.350	.350	.350	-	-	
-12	.750	.276	.315	.393	.472	.475	.475	.400	.400	.350
-14	.875	.276	.315	.393	.472	.600	.600	.525	.525	.475
-16	1.000	.276	.315	.393	.472	.625	.725	.650	.650	.600
-18	1.125	.276	.315	.393	.472	.629	.750	.775	.775	.725
-20	1.250	.276	.315	.393	.472	.629	.786	.874	.900	.850
-22	1.375	.276	.315	.393	.472	.629	.786	.944	1.000	.975
-24	1.500	.276	.315	.393	.472	.629	.786	.944	1.000	1.150

150 - M5 - L - 12 - SS

MATERIAL & FINISH:

- A = ALUM ALLOY (CHEM FILM FINISH)
- C = CARBON STEEL (CAD PLATE FINISH)
- Z = CARBON STEEL (ZINC PLATE)
- SS = STAINLESS STEEL (PLAIN FINISH)
- SP = STAINLESS STEEL (PASSIVATE)

LENGTH DASH NO. (TABLE II)

ADD "LK" FOR SELF-LOCK (NYLON)
ADD "L" FOR SELF-LOCK (METALLIC CRIMP)

THREAD CODE NO. (TABLE I)

SERIES PREFIX

NOTES:

1. THREADS PER AS8879, CLASS 3B
2. PATENT NO. 4,941,785 AND 5,082,405
3. NO. OF SPIRAL RIBS VARIES WITH LENGTH
4. INSTALLATION TABS ARE AVAILABLE

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 7/2/2021

GAGE CODE: 0JHK5

WITTEN FASTENERS

151 SERIES - "SPIRAL RIB" THREADED INSERT, BLIND, SNAP-IN HEAD STYLE HEAVY DUTY, "HIGH PERFORMANCE"

TABLE I

CODE NO.	T THREAD	A DIA ±.010	B SELF-LK ±.06	C DIA ±.010	INSTL HOLE +.010/-.000
632	6-32 UNC	.500	.12	.427	.468
832	8-32 UNC	.500	.12	.427	.468
1032	10-32 UNF	.531	.12	.458	.500
420	1/4-20 UNC	.594	.16	.521	.562
428	1/4-28 UNF	.594	.16	.521	.562
518	5/16-18 UNC	.656	.20	.583	.625
524	5/16-24 UNF	.656	.20	.583	.625
616	3/8-16 UNC	.719	.20	.646	.687
624	3/8-24 UNF	.719	.20	.646	.687
714	7/16-14 UNC	.781	.20	.708	.750
720	7/16-20 UNF	.781	.20	.708	.750
813	1/2-13 UNC	.844	.20	.771	.812
820	1/2-20 UNF	.844	.20	.771	.812

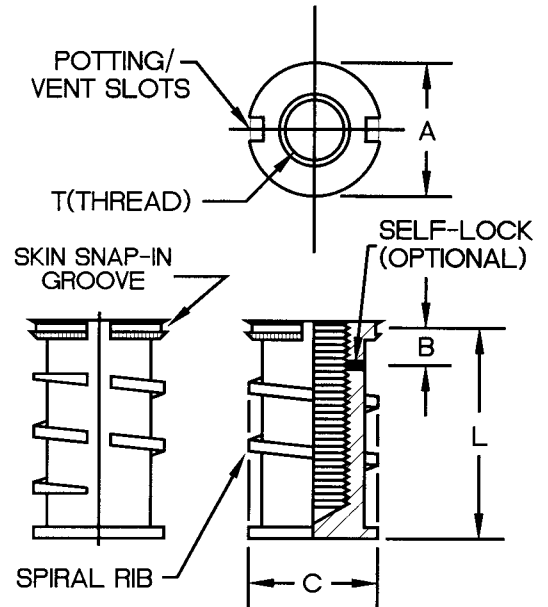


TABLE II

DASH NO.	L ±.03 LENGTH	MINIMUM FULL THREAD DEPTH							
		#6	#8	#10	1/4	5/16	3/8	7/16	1/2
-5	.312	.162	.162	--	--	--	--	--	--
-6	.375	.225	.225	.175	--	--	--	--	--
-7	.437	.276	.287	.237	--	--	--	--	--
-8	.500	.276	.328	.300	.225	--	--	--	--
-10	.625	.276	.328	.375	.350	.350	.350	--	--
-12	.750	.276	.328	.375	.475	.475	.475	.400	.400
-14	.875	.276	.328	.375	.500	.600	.600	.525	.525
-16	1.000	.276	.328	.375	.500	.625	.725	.650	.650
-18	1.125	.276	.328	.375	.500	.625	.750	.775	.775
-20	1.250	.276	.328	.375	.500	.625	.750	.874	.900
-22	1.375	.276	.328	.375	.500	.625	.750	.874	1.000
-24	1.500	.276	.328	.375	.500	.625	.750	.874	1.000

EXAMPLE: PART NUMBERING SYSTEM

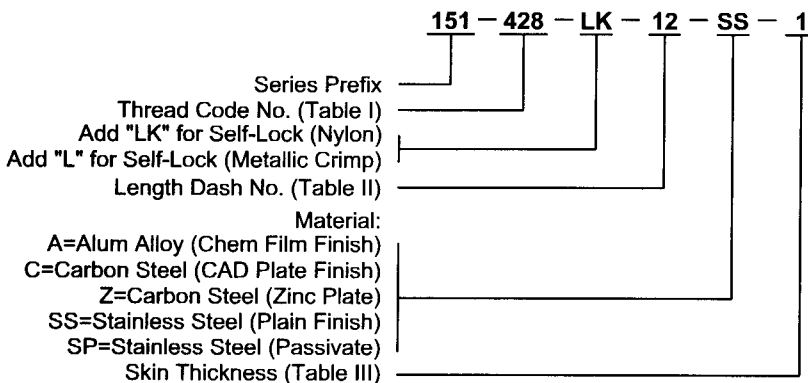


TABLE III

DASH NO.	SKIN THICKNESS INSTALL SIDE
-1	.010-.019
-2	.020-.029
-3	.030-.039
-4	.040-.049
-5	.050-.059
-6	.060-.069
-7	.070-.079
-8	.080-.089
-9	.090-.099

Notes:

1. Threads per MIL-S-7742
2. Patent No. 4,941,785 and 5,082,405
3. No. of Spiral Ribs varies with length

METRIC 151 SERIES - "SPIRAL RIB" THREADED INSERT, BLIND, SNAP-IN HEAD STYLE HEAVY DUTY, "HIGH PERFORMANCE"

TABLE I

CODE NO.	T THREAD	A DIA ±.010	B SELF- LOCK ±.06	C DIA ±.010	INSTALLATION HOLE +.010 /-.000
M3.5	M3.5x.6	.500	.12	.427	.468
M4	M4x.7	.500	.12	.427	.468
M5	M5x.8	.531	.12	.458	.500
M6	M6x1	.594	.16	.521	.562
M8x1	M8x1	.656	.20	.583	.625
M8x1.25	M8x1.25	.656	.20	.583	.625
M10x1.25	M10x1.25	.719	.20	.646	.687
M10x1.5	M10x1.5	.719	.20	.646	.687
M12x1.5	M12x1.5	.844	.20	.771	.812
M12x1.75	M12x1.75	.844	.20	.771	.812

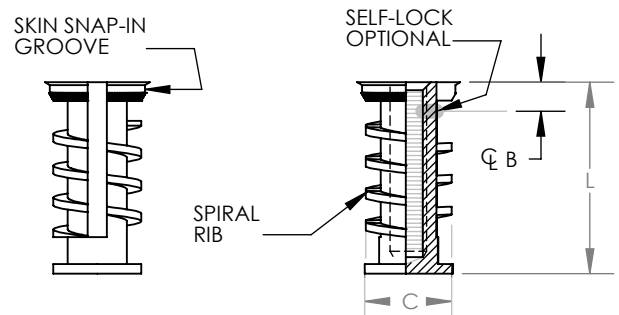
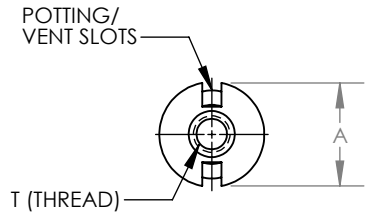


TABLE II

DASH NO.	L ±.03 LENGTH	MINIMUM FULL THREAD DEPTH						
		M 3.5	M 4	M 5	M 6	M 8	M 10	M 12
-5	.312	.162	.162	-	-	-	-	-
-6	.375	.225	.225	.175	-	-	-	-
-7	.437	.276	.287	.237	-	-	-	-
-8	.500	.276	.328	.300	.225	-	-	-
-10	.625	.276	.328	.375	.350	.350	.350	-
-12	.750	.276	.328	.375	.475	.475	.475	.400
-14	.875	.276	.328	.375	.500	.600	.600	.525
-16	1.000	.276	.328	.375	.500	.625	.725	.650
-18	1.125	.276	.328	.375	.500	.625	.750	.775
-20	1.250	.276	.328	.375	.500	.625	.750	.900
-22	1.375	.276	.328	.375	.500	.625	.750	1.000
-24	1.500	.276	.328	.375	.500	.625	.750	1.000

EXAMPLE: PART NUMBERING SYSTEM

151-M5-LK-12-SS-1

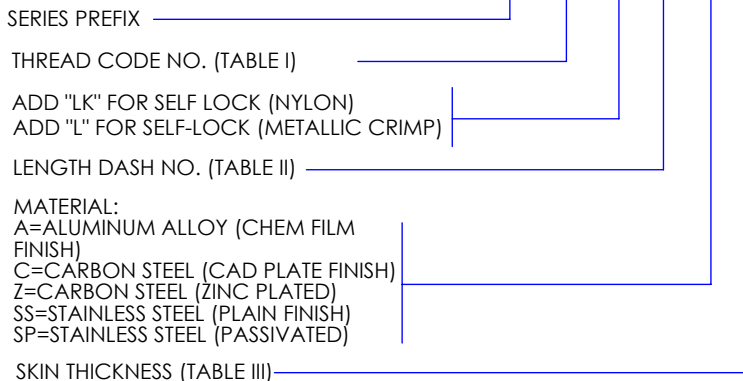


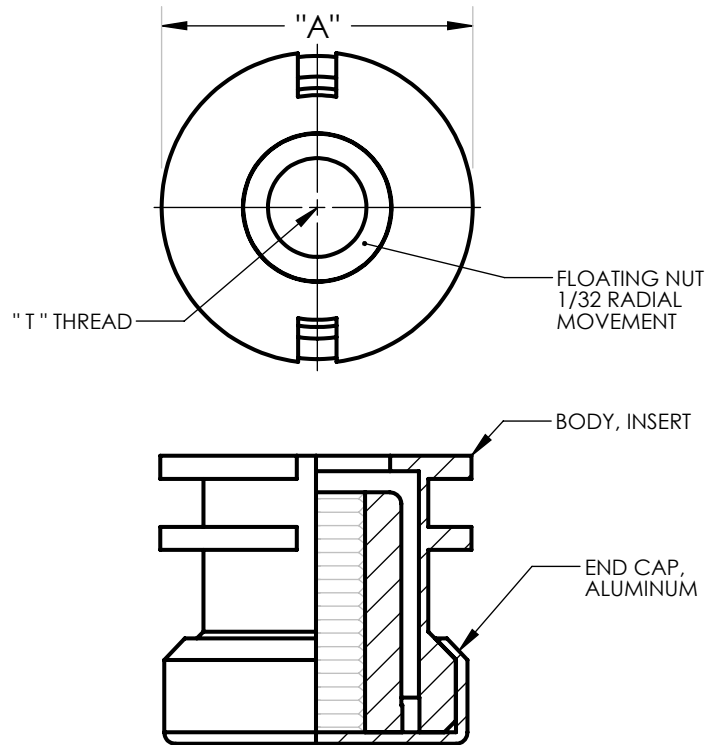
TABLE III

DASH NO.	SKIN THICKNESS INSTALLATION SIDE
-1	.010 - .019
-2	.020 - .029
-3	.030 - .039
-4	.040 - .049
-5	.050 - .059
-6	.060 - .069
-7	.070 - .079
-8	.080 - .089
-9	.090 - .099

NOTES:
1.THREADS PER MIL-S-7742
2.PATENT NO. 4,941,785 & 5,082,405
3.NO. OF SPIRAL RIBS VARY WITH LENGTH

155 SERIES FLOATING INSERTS

CODE NO.	T THREAD	A DIA +.000 -.010	INSTEAD HOLE DIA
832	8-32 UNC	.685	.686 - .691
1032	10-32 UNF	.685	.686 - .691
420	1/4-20 UNC	.748	.749 - .755
428	1/4-28 UNF	.748	.749 - .755
518	5/16-18 UNC	.810	.811 - .817
524	5/16-24 UNF	.810	.811 - .817
616	3/8-16 UNC	.873	.874 - .880
624	3/8-24 UNF	.873	.874 - .880
714	7/16-14 UNC	.936	.937 - .943
720	7/16-20 UNF	.936	.937 - .943
813	1/2-13 UNC	1.061	1.062 - 1.068
820	1/2-20 UNF	1.061	1.062 - 1.068

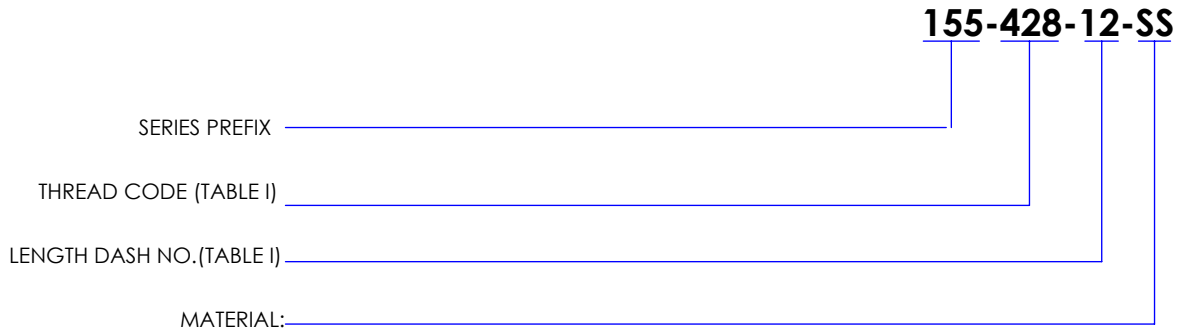


DASH NO.	L±.03 LENGTH	MINIMUM FULL THREAD DEPTH						
		#8	#10	1/4	5/16	3/8	7/16	1/2
-7	.437	.287	.237	-	-	-	-	-
-8	.500	.328	.300	.225	-	-	-	-
-10	.625	.328	.375	.350	.350	.350	-	-
-12	.750	.328	.375	.475	.475	.475	.400	.400
-14	.875	.328	.375	.500	.600	.600	.525	.525
-16	1.000	.328	.375	.500	.625	.725	.650	.650
-18	1.125	.328	.375	.500	.625	.750	.775	.775
-20	1.250	.328	.375	.500	.625	.750	.874	.900
-22	1.375	.328	.375	.500	.625	.750	.874	1.000
-24	1.500	.328	.375	.500	.625	.750	.874	1.000

155 SERIES FLOATING INSERTS

SHEET 2 OF 2

EXAMPLE: PART NUMBERING SYSTEM



A= ALUMINUM(CHEM FILM FINISH)HOUSING & CAP WITH CARBON STEEL NUT (CADMIUM PLATED).

C=CARBON STEEL(CAD PLATE FINISH)HOUSING & NUT WITH ALUMINUM(CHEM FILM FINISH) CAP.

Z=CARBOM STEEL(ZINC PLATE FINISH) HOUSING & NUT WITH ALUMINUM (CHEM FILM FINISH) CAP.

SS=STAINLESS STEEL (NO FINISH) HOUSING & NUT WITH ALUMINUM (CHEM FILM FINISH) CAP.

SP=STAINLESS STEEL(PASIVATE) HOUSING & NUT WITH ALUMINUM (CHEM FILM FINISH) CAP.

NOTES:

- 1.THREADS PER SAE-AS8879
- 2.PATENT NO. 4,941,765 AND 5,082,405
3. NO. OF RIBS VARY WITH LENGTH.
4. INSTALLATION TABS ARE AVAILABLE.

WITTEN FASTENERS

180 SERIES THREADED INSERT, THRU, REGULAR HEAD STYLE (NAS 1833 EQUIVALENT)

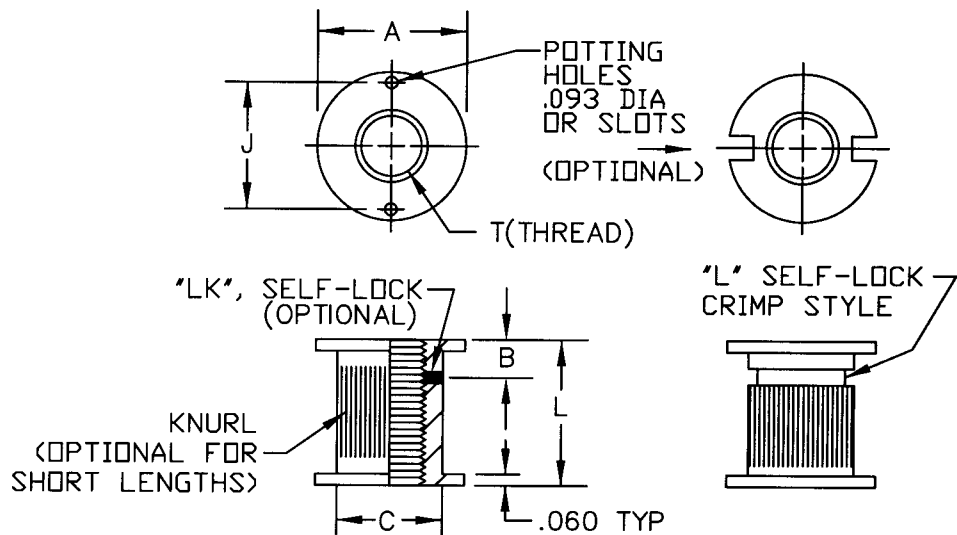
TABLE I

CODE NO.	T THREAD	A DIA +.000/-.010	B SELF-LK ±.06	C DIA	J DIA	INSTL HOLE
632	6-32 UNC	.560	.12	.300	.367	.561-.566
832	8-32 UNC	.560	.12	.300	.367	.561-.566
1032	10-32 UNF	.560	.12	.300	.367	.561-.566
428	1/4-28 UNF	.685	.14	.375	.467	.686-.691
524	5/16-24 UNF	.685	.16	.475	.467	.686-.691
624	3/8-24 UNF	.841	.22	.500	.591	.842-.847

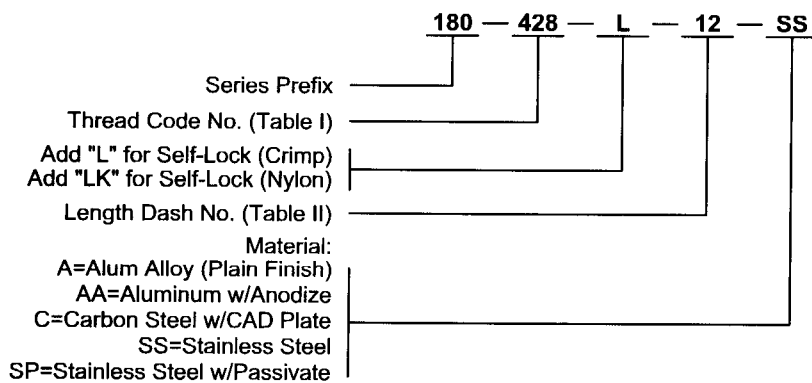
TABLE II

SEE NOTE 4

DASH NO.	"L", LENGTH ±.010
-4	.250
-5	.312
-6	.375
-7	.437
-8	.500
-9	.563
-10	.625
-11	.687
-12	.750
-13	.812
-14	.875
-15	.937
-16	1.000



EXAMPLE: PART NUMBERING SYSTEM



Notes:

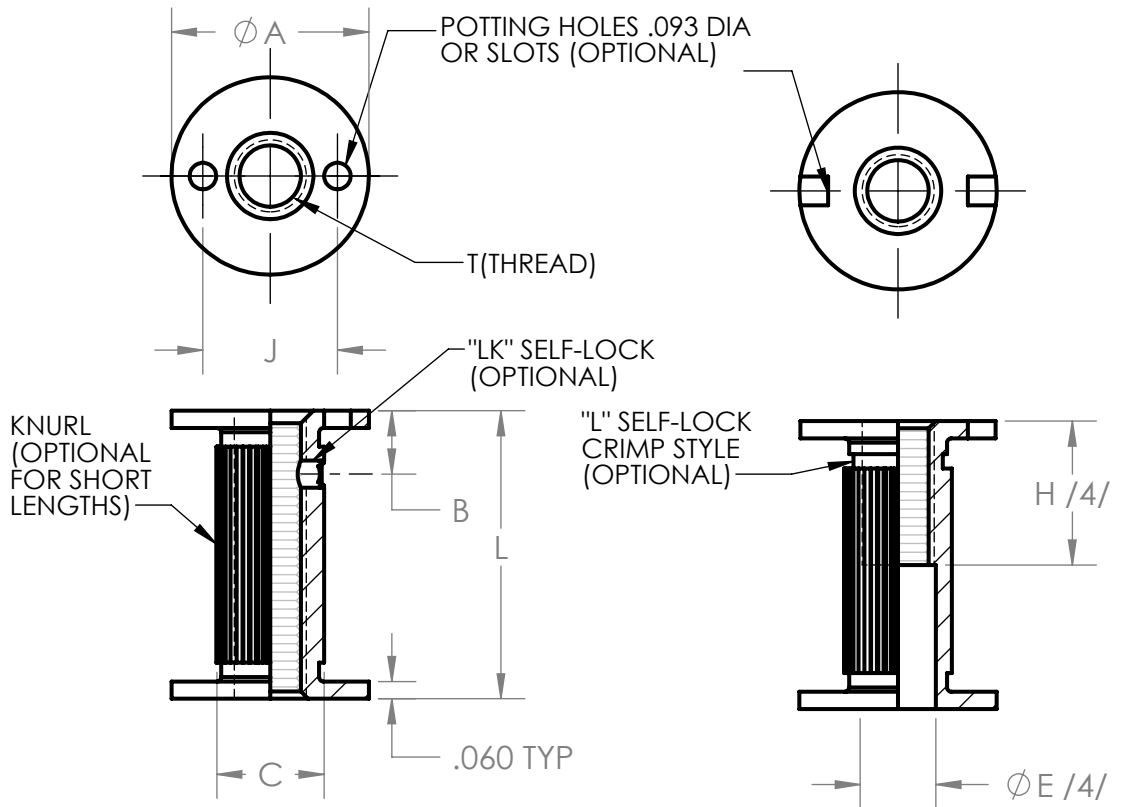
1. Installation tabs provided
2. Revision "A" dated 7-21-98
3. Tolerances .XXX±.010
.XX±.02
4. For other lengths use .XXX callout as shown:
180 - 428 - .400 - SS

Length

METRIC 180 SERIES THREADED INSERT, THRU, REGULAR HEAD STYLE (NAS 1833 TYPE)

TABLE I								
CODE NO.	T THREAD	A DIA +.000/ -.010	B SELF-LK ±.06	C DIA	E DIA /4/	H MIN /4/	J DIA	INSTL HOLE
M3.5	M3.5X.6	.560	.12	.300	.139 - .145	.276	.367	.561 - .566
M4	M4X.7	.560	.12	.300	.168 - .174	.328	.367	.561 - .566
M5	M5X.8	.560	.12	.300	.195 - .201	.380	.367	.561 - .566
M6	M6X1	.685	.14	.375	.256 - .263	.500	.467	.686 - .691
M8X1	M8X1	.685	.16	.475	.315 - .322	.625	.467	.686 - .691
M8X1.25	M8X1.25	.685	.16	.475	.315 - .322	.625	.467	.686 - .691
M10X1.25	M10X1.25	.841	.22	.500	.376 - .383	.750	.591	.842 - .847
M10X1.5	M10X1.5	.841	.22	.500	.376 - .383	.750	.591	.842 - .847

TABLE II SEE NOTE 3	
DASH NO.	L±.030 LENGTH
-4	.250
-5	.312
-6	.375
-7	.437
-8	.500
-9	.563
-10	.625
-11	.687
-12	.750
-13	.812
-14	.875
-15	.937
-16	1.000



180 - M6 - L - 12 - SS

MATERIAL & FINISH:
 A = ALUM ALLOY (PLAIN FINISH)
 AA = ALUM ALLOY (ANODIZE)
 A3 = ALUM ALLOY (CHEM-FILM CL3)
 C = CARBON STEEL (CAD PLATE FINISH)
 CF1 = ALUM ALLOY (CHEM-FILM CL1)
 Z = CARBON STEEL (ZINC PLATE)
 SS = STAINLESS STEEL (PLAIN FINISH)
 SP = STAINLESS STEEL (PASSIVATE)
 M = SOLID FILM LUBE TO THREADS ONLY

LENGTH DASH NO. (TABLE II)

ADD "LK" FOR SELF-LOCK (NYLON)
 ADD "L" FOR SELF-LOCK (METALLIC CRIMP)

THREAD CODE NO. (TABLE I)

SERIES PREFIX

NOTES:

1. INSTALLATION TABS ARE AVAILABLE
2. TOLERANCES .XXX = ±.010
.XXX = ±.02
3. FOR OTHER LENGTHS USE .XXX
CALLOUT AS SHOWN:
180-428-.400-SS

LENGTH

/4/ LENGTHS LONGER THAN 2X DIAMETER
 MAY HAVE A THREAD RELIEF SHOWN BY
 " ϕE " AND "H" OR MAY BE THREADED THE
 ENTIRE LENGTH (MANUFACTURER'S OPTION).

WITTEN COMPANY
918-272-9567

APPROVAL DATE: 3/3/2022

CAGE CODE: 0JHK5

WITTEN FASTENERS

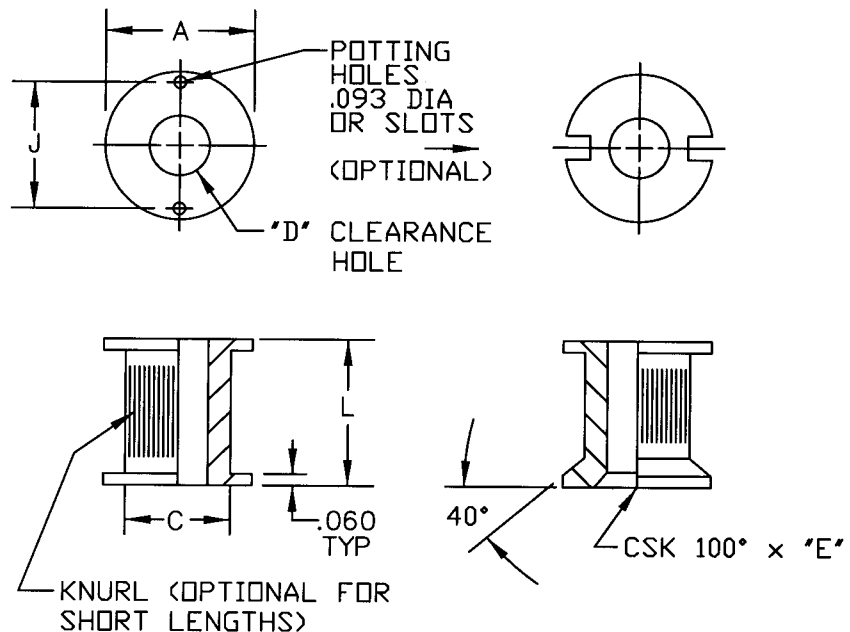
181 SERIES INSERT, THRU, REGULAR HEAD STYLE (NAS 1834 EQUIVALENT)

TABLE I

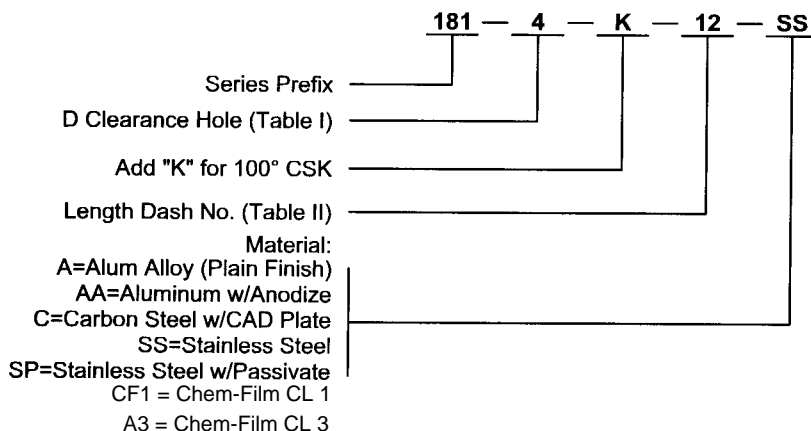
CODE NO.	D, DIA CLEARANCE HOLE +.005/-0.001	A DIA +.000/-0.010	C DIA	E DIA	J DIA	INSTL HOLE
-06	.140	.560	.300	.280	.367	.561-.566
-08	.169	.560	.300	.332	.367	.561-.566
-3	.196	.560	.300	.385	.367	.561-.566
-4	.257	.685	.375	.507	.467	.686-.691
-5	.316	.685	.475	.625	.467	.686-.691
-6	.377	.841	.500	.750	.591	.842-.847

TABLE II
SEE NOTE 4

DASH NO.	"L", LENGTH ±.010
-4	.250
-5	.312
-6	.375
-7	.437
-8	.500
-9	.563
-10	.625
-11	.687
-12	.750
-13	.812
-14	.875
-15	.937
-16	1.000



EXAMPLE: PART NUMBERING SYSTEM



Notes:

1. Installation tabs provided
2. Revision "A" dated 7-21-98
3. Tolerances .XXX=±.010
.XX=±.02
4. For other lengths use .XXX
callout as shown:
181 - 4 - .400 - SS

Length

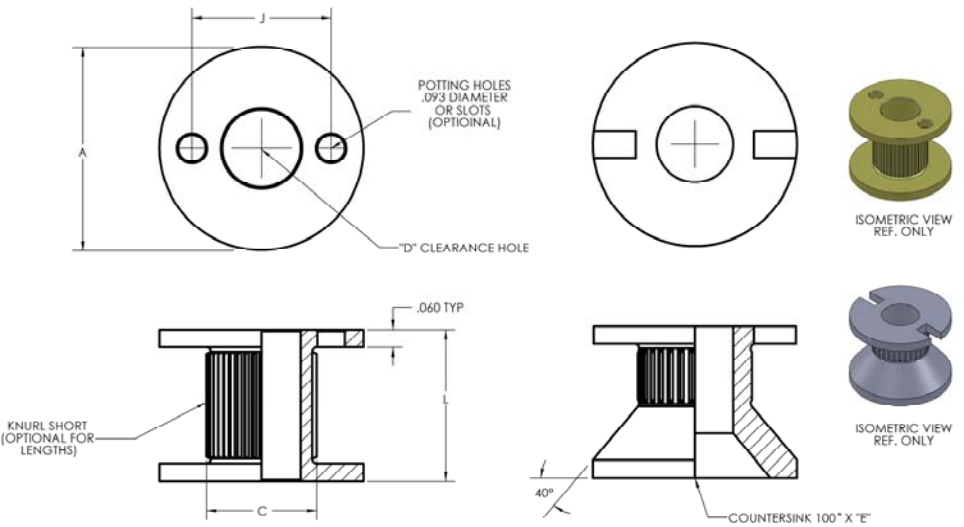
METRIC I8I SERIES INSERT, THRU, REGULAR HEAD STYLE

TABLE I

CODE NO.	D, DIA CLEARANCE HOLE	A DIA +.000/- .010	C DIA	E DIA	J DIA	INSTL HOLE
M3	.122 - .127	.560	.300	.280	.367	.561 - .566
M4	.160 - .166	.560	.300	.332	.367	.561 - .566
M5	.204 - .210	.560	.300	.385	.367	.561 - .566
M6	.243 - .249	.685	.370	.507	.467	.686 - .691
M8	.322 - .329	.685	.470	.625	.467	.686 - .691
M10	.405 - .412	.841	.500	.750	.591	.842 - .847

TABLE II
SEE NOTE 4

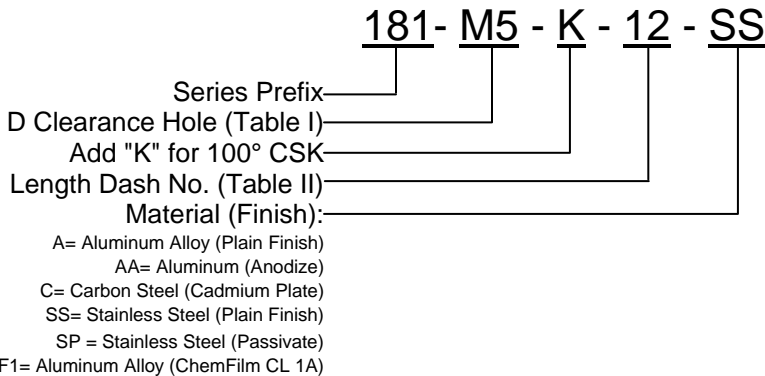
DASH NO.	"L", LENGTH ±.010
-4	.250
-5	.312
-6	.375
-7	.437
-8	.500
-9	.563
-10	.625
-11	.687
-12	.750
-13	.812
-14	.875
-15	.937
-16	1.000



NOTES:

1. INSTALLATION TABS PROVIDED
2. REVISION "NC" 12/1/2016
3. TOLERANCES .XXX = ± .010
.XX = ± .02
4. FOR OTHER LENGTHS USE .XXX CALLOUT AS SHOWN:
181 - M5 - .400 - SS

EXAMPLE: PART NUMBERING SYSTEM

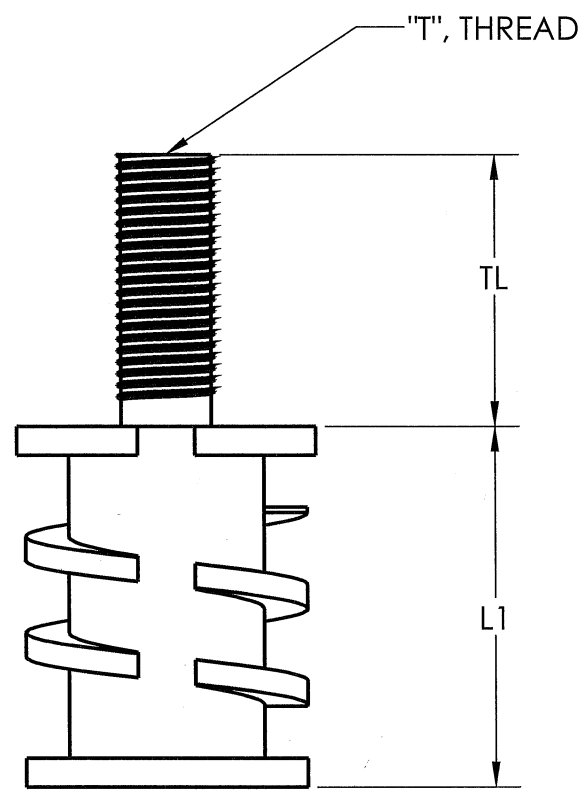
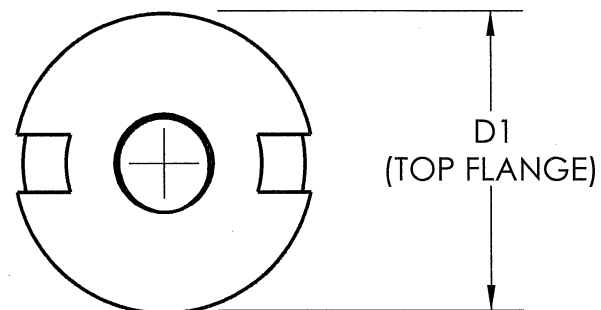


LENGTH

Phone: 918-272-9567
Fax: 918-272-9411
E-mail: info@wittenco.com
http://www.wittenco.com

Witten Company, Inc.
8199 N. 116th E. Ave.
Owasso, OK 74055





CODE	"L1", LENGTH
8	.500
9	.562
10	.625
11	.687
12	.750
13	.812
14	.875
15	.937
16	1.000
17	1.062
18	1.125
19	1.187
20	1.250

CODE	"TL", THREAD LENGTH
6TL	.375
7TL	.437
8TL	.500
9TL	.562
10TL	.625
11TL	.687
12TL	.750
13TL	.812
14TL	.875
15TL	.937
16TL	1.000
17TL	1.062
18TL	1.125
19TL	1.187
20TL	1.250

AMERICAN NATIONAL STANDARD			
CODE	"T", THREAD	MAX THREAD LENGTH	D1
0832	.164 - 32 UNJC - 3A	.375	.490
1024	.190 - 24 UNJC - 2A	.450	.520
1032	.190 - 32 UNJF - 3A	.450	.520
420	.250 - 20 UNJC - 2A	1.187	.583
428	.250 - 28 UNJF - 3A	1.187	.583
518	.312 - 18 UNJC - 2A	1.375	.646
524	.312 - 24 UNJF - 3A	1.375	.646
616	.375 - 16 UNJC - 2A	1.500	.708
624	.375 - 24 UNJF - 3A	1.500	.708
714	.437 - 14 UNJC - 2A	1.625	.771
720	.437 - 20 UNJF - 3A	1.625	.771
813	.500 - 13 UNJC - 2A	1.750	.833
820	.500 - 20 UNJF - 3A	1.750	.833

CODE	MATERIAL	FINISH
C	CARBON STEEL	CAD PLATE
SS	STAINLESS STEEL	NO FINISH
SP	STAINLESS STEEL	PASSIVATE

METRIC			
CODE	"T", THREAD	MAX THREAD LENGTH	D1
M4	M4 X 0.7 - 6G	.375	.490
M5	M5 X 0.8 - 6G	.450	.520
M6	M6 X 1.0 - 6G	1.187	.583
M8X1	M8 X 1.0 - 6G	1.375	.646
M8X1.25	M8 X 1.25 - 6G	1.375	.646
M10X1.25	M10 X 1.25 - 6G	1.500	.708
M10X1.50	M10 X 1.50 - 6G	1.500	.708
M12X1.5	M12 X 1.50 - 6G	1.750	.833
M12X1.75	M12 X 1.75 - 6G	1.750	.833

EXAMPLE: PART NUMBERING SYSTEM

250 - 428 - 16 - 14TL - SP

SERIES PREFIX
 THREAD CODE
 "L1", BODY LENGTH
 "TL", THREAD LENGTH

MATERIAL:
 C = CARBON STEEL (CAD PLATE)
 SS = STAINLESS STEEL (PLAIN FINISH)
 SP = STAINLESS STEEL (PASSIVATE)



ISOMETRIC VIEW REF. ONLY

- 3. CUSTOM SIZES AVAILABLE UPON REQUEST.
- 2. TOLERANCES: .XXX = ±.010
- 1. ONE PIECE MACHINED PART.

NOTES

PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF WITTEN COMPANY INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF WITTEN COMPANY INC. IS PROHIBITED.

CAGE: OJHK5	NAME	DATE
DRAWN	J.HERRIMAN	3/30/2016
CHECKED		
ENG APP		

COMMENTS:
 SOLIDWORKS STANDARD 2009 SP4.1
 THIRD ANGLE PROJECTION

TECH DATA SHEET



TITLE:
HEAVY DUTY, POTTED STUD

SIZE B	DWG. NO. 250 SERIES	REV -
SCALE: NONE		SHEET 1 OF 1

WITTEN FASTENERS

352 SERIES THRU-HOLE SLEEVE, PROTRUDING

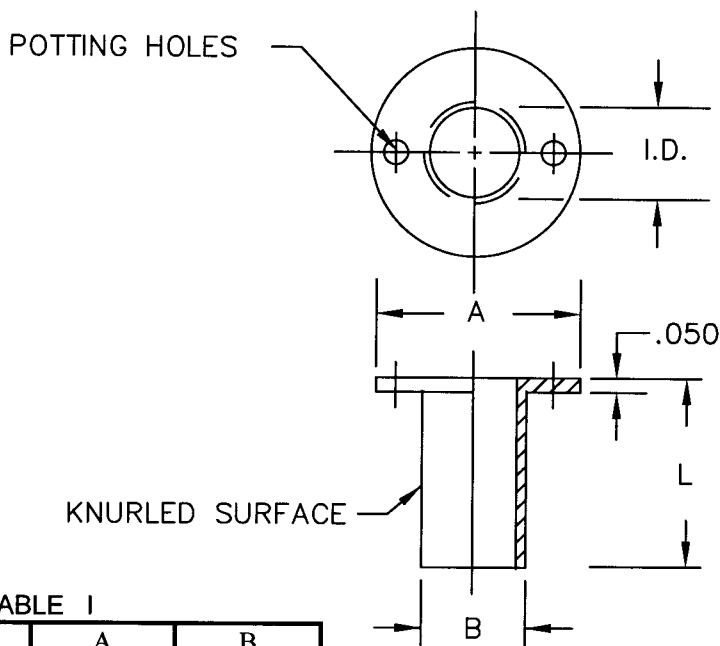


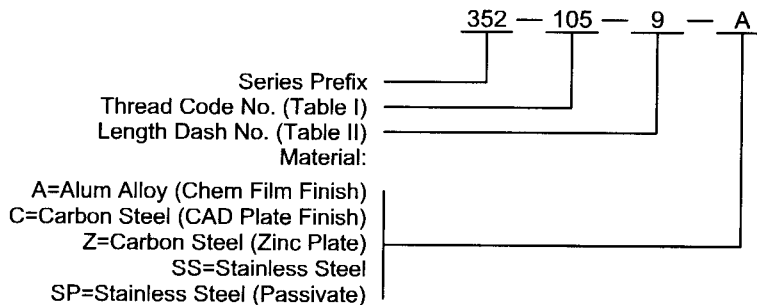
TABLE I

DASH NO.	I.D. ±.005	A ±.020	B ±.010
-101	.153	.550	.253
-103	.179	.550	.379
-105	.202	.600	.302
-107	.217	.600	.317
-109	.265	.670	.365
-111	.280	.670	.380
-113	.327	.730	.427
-115	.342	.730	.442
-117	.390	.800	.490
-119	.405	.800	.505
-121	.452	.850	.552
-123	.467	.850	.567
-125	.515	.920	.615
-127	.530	.920	.630
-129	.640	1.050	.740
-131	.655	1.050	.755
-133	.765	1.170	.865
135	.780	1.170	.880

TABLE II

DASH NO.	L ±.030
-4	.250
-5	.312
-6	.375
-7	.437
-8	.500
-9	.562
-10	.625
-11	.687
-12	.750
-13	.812
-14	.875
-15	.937
-16	1.000
-18	1.125
-20	1.250
-22	1.375
-24	1.500
-28	1.750

EXAMPLE: PART NUMBERING SYSTEM



WITTEN FASTENERS

354 SERIES THRU-HOLE THREADED INSERT W/ FLANGE

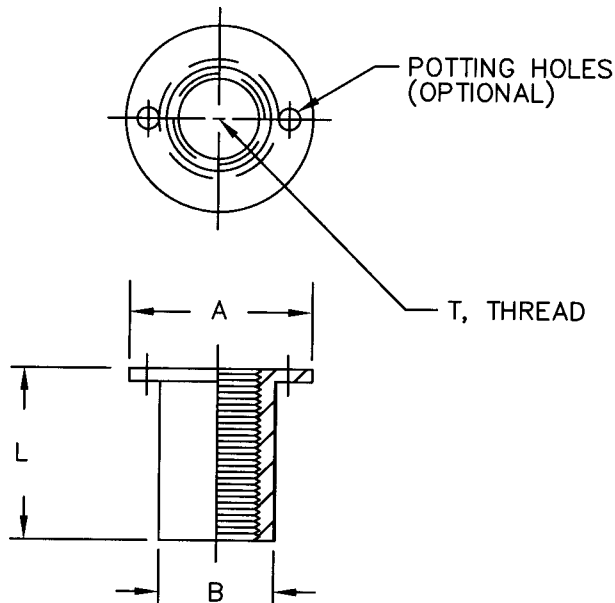


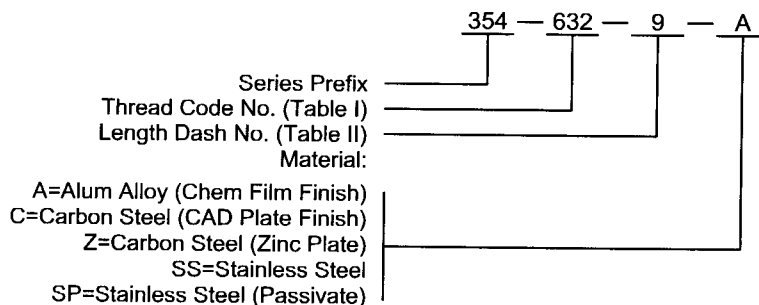
TABLE I

CODE NO.	T THREAD	A DIA ±.010	B DIA +.010 -.000	INSTALL HOLE +.010 -.000
440	4-40 UNC	.487	.177	.187
632	6-32 UNC	.518	.208	.218
832	8-32 UNC	.550	.240	.250
1032	10-32 UNF	.581	.271	.281
420	1/4-20 UNC	.643	.333	.343
428	1/4-28 UNF	.643	.333	.343
518	5/16-18 UNC	.737	.427	.437
524	5/16-24 UNF	.737	.427	.437
616	3/8-16 UNC	.800	.490	.500
624	3/8-24 UNF	.800	.490	.500
714	7/16-14 UNC	.862	.552	.562
720	7/16-20 UNF	.862	.552	.562
813	1/2-13 UNC	.925	.615	.625
820	1/2-20 UNF	.925	.615	.625

TABLE II

DASH NO.	L ±.030
-4	.250
-5	.312
-6	.375
-7	.437
-8	.500
-9	.562
-10	.625
-11	.687
-12	.750
-13	.812
-14	.875
-15	.937
-16	1.000
-18	1.125
-20	1.250
-22	1.375
-24	1.500
-28	1.750

EXAMPLE: PART NUMBERING SYSTEM



WITTEN COMPANY, INC.
918-272-9567

WITTEN FASTENERS

355 SERIES THRU-HOLE THREADED INSERT W/ FLANGE

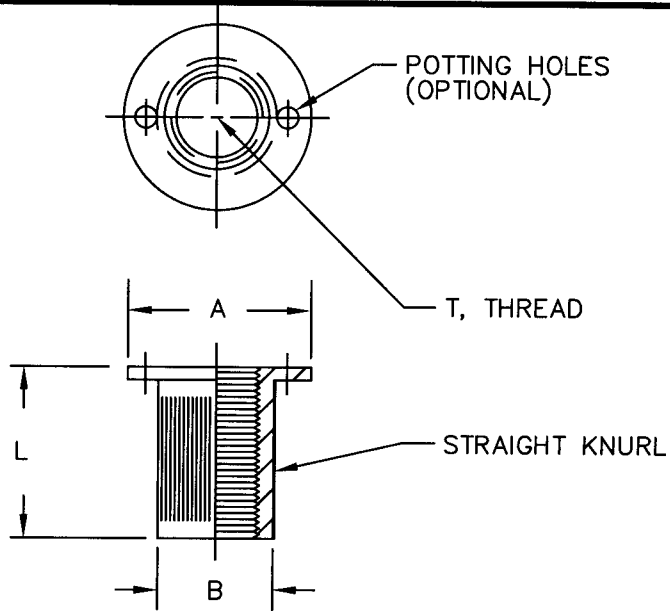


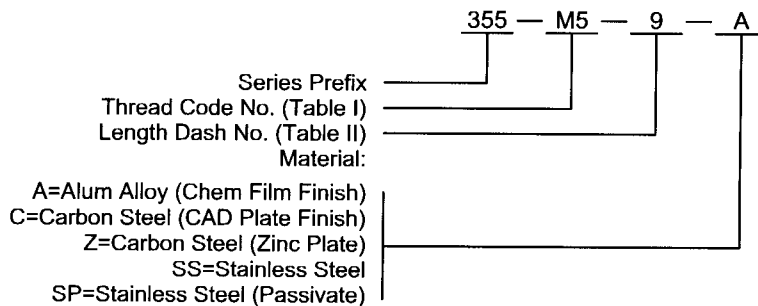
TABLE I

CODE NO.	T THREAD	A DIA ±.010	B DIA +.010 -.000	INSTALL HOLE +.010 -.000
440	4-40 UNC	.487	.177	.187
632	6-32 UNC	.518	.208	.218
832	8-32 UNC	.550	.240	.250
1032	10-32 UNF	.581	.271	.281
420	1/4-20 UNC	.643	.333	.343
428	1/4-28 UNF	.643	.333	.343
518	5/16-18 UNC	.737	.427	.437
524	5/16-24 UNF	.737	.427	.437
616	3/8-16 UNC	.800	.490	.500
624	3/8-24 UNF	.800	.490	.500
714	7/16-14 UNC	.862	.552	.562
720	7/16-20 UNF	.862	.552	.562
813	1/2-13 UNC	.925	.615	.625
820	1/2-20 UNF	.925	.615	.625

TABLE II

DASH NO.	L ±.030
-4	.250
-5	.312
-6	.375
-7	.437
-8	.500
-9	.562
-10	.625
-11	.687
-12	.750
-13	.812
-14	.875
-15	.937
-16	1.000
-18	1.125
-20	1.250
-22	1.375
-24	1.500
-28	1.750

EXAMPLE: PART NUMBERING SYSTEM



WITTEN FASTENERS

355 SERIES-METRIC THRU-HOLE THREADED INSERT W/ FLANGE

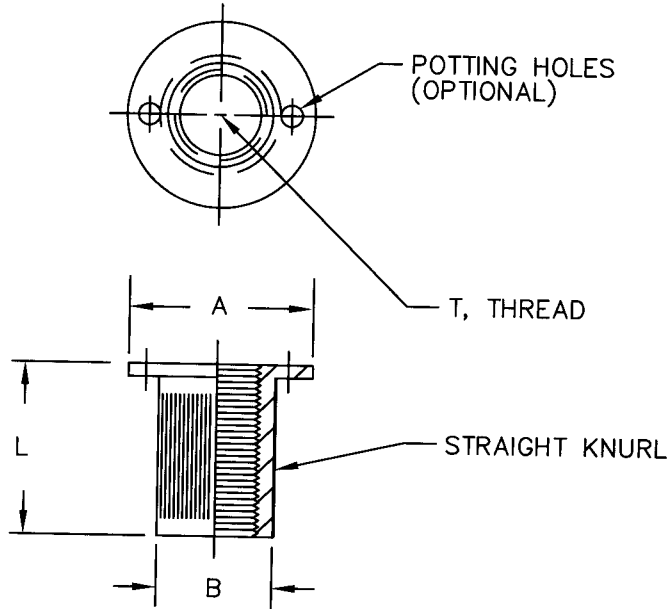


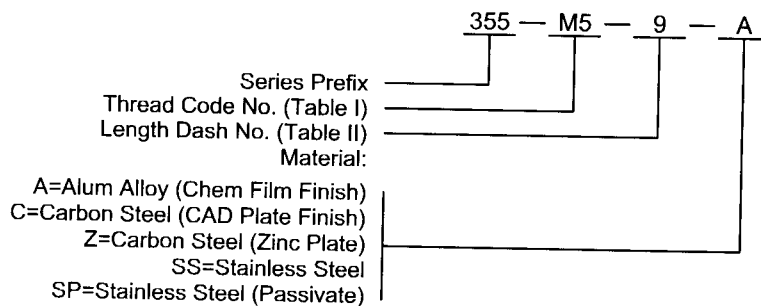
TABLE I

CODE NO.	T THREAD	A DIA ±.010	B DIA +.010 -.000	INSTALL HOLE +.010 -.000
M2.5	M2.5 X .45	.487	.177	.187
M3	M3 X .5	.518	.208	.218
M4	M4 X .7	.550	.240	.250
M5	M5 X .8	.581	.271	.281
M6	M6 X 1	.643	.333	.343
M8	M8 X 1.25	.737	.427	.437
M10	M10 X 1.5	.800	.490	.500
M12	M12 X 1.75	.862	.552	.562
M14	M14 X 2.0	.925	.615	.625

TABLE II

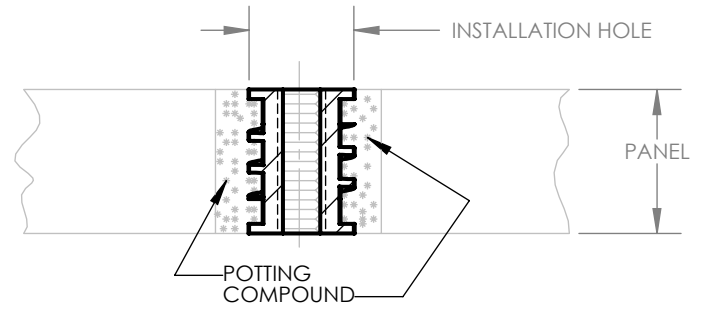
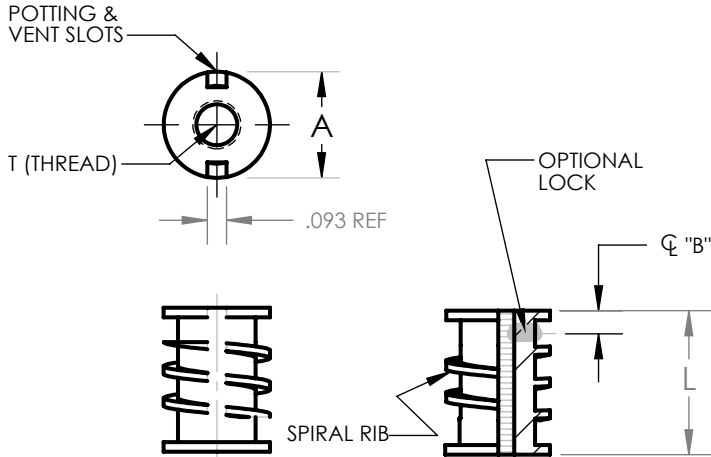
DASH NO.	L ±.030
-4	.250
-5	.312
-6	.375
-7	.437
-8	.500
-9	.562
-10	.625
-11	.687
-12	.750
-13	.812
-14	.875
-15	.937
-16	1.000
-18	1.125
-20	1.250
-22	1.375
-24	1.500
-28	1.750

EXAMPLE: PART NUMBERING SYSTEM



2004 SERIES - "SPIRAL RIB" THRU - HOLE

MOLDED-IN OR POTTED-IN INSERT, FLUSH MOUNTED BOTH SIDES



CODE NO.	T THREAD	A DIA ±.010	B SELF-LK ±.06	INSTR HOLE SIZE +.010/- .000
632	6-32 UNJC	.490	.12	.500
832	8-32 UNJC	.490	.12	.500
1032	10-32 UNJF	.520	.12	.530
420	1/4-20 UNJC	.583	.16	.593
428	1/4-28 UNJF	.583	.16	.593
518	5/16-18 UNJC	.646	.20	.656
524	5/16-24 UNJF	.646	.20	.656
616	3/8-16 UNJC	.708	.20	.718
624	3/8-24 UNJF	.708	.20	.718
714	7/16-14 UNJC	.771	.20	.781
720	7/16-20 UNJF	.771	.20	.781
813	1/2-13 UNJC	.833	.20	.843
820	1/2-20 UNJF	.833	.20	.843

DASH NO.	L±.03 LENGTH
-5	.312
-6	.375
-7	.437
-8	.500
-10	.625
-12	.750
-14	.875
-16	1.000
-18	1.125
-20	1.250
-22	1.375
-24	1.500

EXAMPLE PART NUMBERING SYSTEM:

2004 - 420 - L - 12 - SS

SERIES PREFIX

THREAD CODE (TABLE I)

ADD LK FOR SELF-LOCK (NYLON)
ADD L FOR SELF-LOCK (METALLIC CRIMP)

LENGTH DASH NUMBER (TABLE II)

MATERIAL:

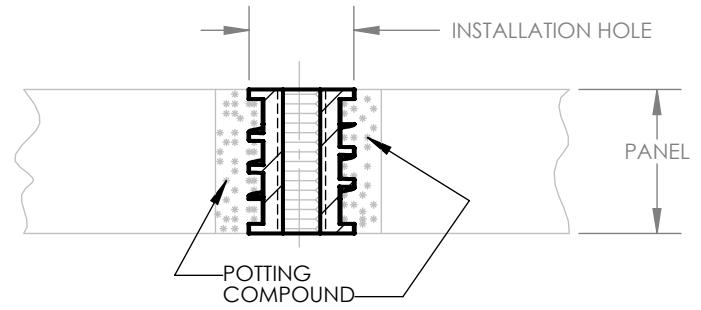
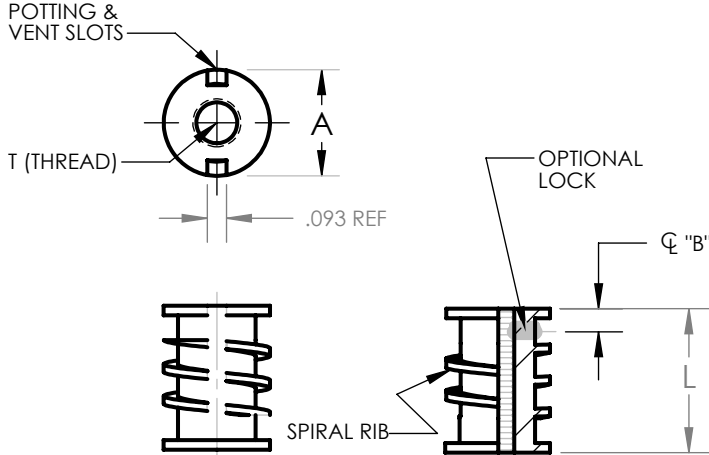
A = ALUMINUM ALLOY (CHEM FILM FINISH)
C = CARBON STEEL (CAD PLATE FINISH)
Z = CARBON STEEL (ZINC PLATE)
SS = STAINLESS STEEL (PLAIN FINISH)
SP = STAINLESS STEEL (PASSIVATED)

NOTE:

1. ALL DIMENSIONS ARE IN INCHES EXCEPT THREAD SIZE.
2. FOR PARTS .625 & SHORTER THE OD HAS CIRCULAR RIBS IN LIEU OF SPIRAL RIBS.

METRIC 2004 SERIES - "SPIRAL RIB" THRU - HOLE

MOLDED-IN OR POTTED-IN INSERT, FLUSH MOUNTED BOTH SIDES



CODE NO.	T THREAD	A DIA ±.010	B SELF-LK ±.06	INSTL HOLE SIZE +.005/- .000
M3.5	M3.5X.6	.490	.12	.500
M4	M4X.7	.490	.12	.500
M5	M5X.8	.520	.12	.530
M6	M6X1	.583	.16	.593
M8	M8X1.25	.646	.20	.656
M10X1.25	M10X1.25	.708	.20	.718
M10X1.5	M10X1.5	.708	.20	.718
M12X1.5	M12X1.5	.833	.20	.843
M12X1.75	M12X1.75	.833	.20	.843
M14X1.5	M14X1.5	.895	.20	.906
M14X2.0	M14X2.0	.895	.20	.906
M16X1.5	M16X1.5	.958	.22	.968
M16X2	M16X2	.958	.22	.968

DASH NO.	L±.03 LENGTH
-5	.312
-6	.375
-7	.437
-8	.500
-10	.625
-12	.750
-14	.875
-16	1.000
-18	1.125
-20	1.250
-22	1.375
-24	1.500

EXAMPLE PART NUMBERING SYSTEM:

2004 - M6 - L - 12 - SS

SERIES PREFIX

THREAD CODE (TABLE I)

ADD LK FOR SELF-LOCK (NYLON)
ADD L FOR SELF-LOCK (METALLIC CRIMP)

LENGTH DASH NUMBER (TABLE II)

MATERIAL:

A = ALUMINUM ALLOY (CHEM FILM FINISH)
C = CARBON STEEL (CAD PLATE FINISH)
Z = CARBON STEEL (ZINC PLATE)
SS = STAINLESS STEEL (PLAIN FINISH)
SP = STAINLESS STEEL (PASSIVATED)

NOTE:

1. ALL DIMENSIONS ARE IN INCHES EXCEPT THREAD SIZE.
2. FOR PARTS .625 & SHORTER THE OD HAS CIRCULAR RIBS IN LIEU OF SPIRAL RIBS.

WITTEN COMPANY, INC.

2005 SERIES INSERT THRU-HOLE W/ FLANGE

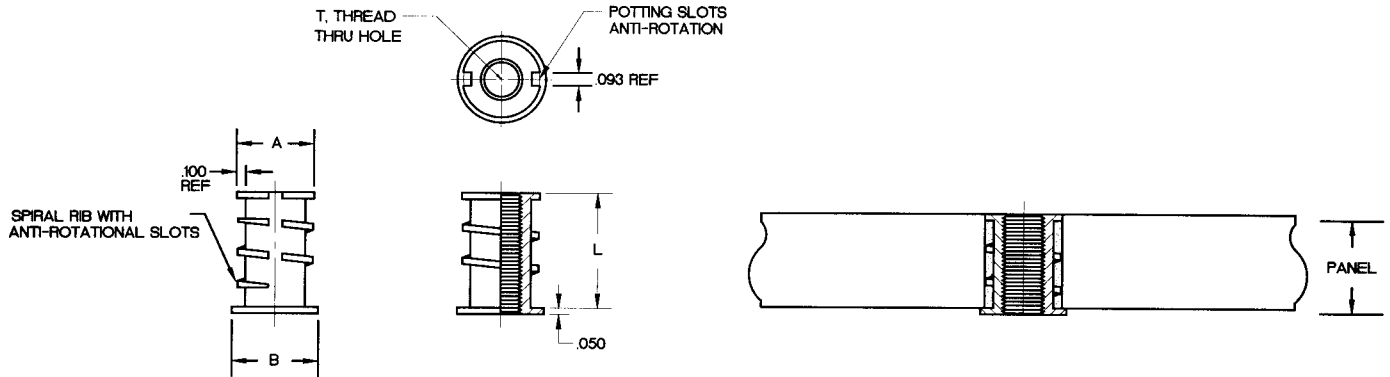


TABLE I

CODE NO.	T THREAD	A DIA ±.010	B DIA	L LENGTH +.010 -.000	INSTALL HOLE +.010 -.000	MATERIAL	FINISH
-1	.375-16 UNC-3B	.708	.830	.500	.718	303 STAINLESS	NONE
-2	.250-20 UNC-3B	.600	.722	.500	.609	303 STAINLESS	NONE
-3	.375-16 UNC-3B	.708	.830	.500	.718	12L14 CARBON STL	CAD-PLATE
-4	.250-20 UNC-3B	.600	.722	.750	.609	303 STAINLESS	NONE
-5	.250-20 UNC-3B	.600	.722	1.000	.609	303 STAINLESS	NONE
-6	.250-28 UNF-3B	.600	.722	.750	.609	303 STAINLESS	NONE
-7	.250-20 UNC-3B	.600	.722	1.500	.609	303 STAINLESS	NONE
-8	.375-16 UNC-3B	.708	.830	1.000	.718	303 STAINLESS	NONE
-9	M8x1.25mm	.660	.780	.500	.671	303 STAINLESS	NONE
-10							
-11	.250-20 UNC-3B	.600	.722	1.250	.609	303 STAINLESS	PASSIVATE
-12	.437-14 UNC-3B	.771	.895	1.250	.781	303 STAINLESS	PASSIVATE
-13	.375-16 UNC-3B	.708	.830	1.250	.718	303 STAINLESS	PASSIVATE
-14	.500-13 UNC-3B	.833	.955	1.250	.843	303 STAINLESS	PASSIVATE

NOTE: 1. BOTTOM SIDE OF INSTALLATION HOLE COULD BE COUNTERBORED FOR FLUSH INSTALLATION IF DESIRED.

2. PATENT NO'S 4,941,785 & 5,082,405.

WITTEN FASTENERS

2235 SERIES POTTED RIVET NUT

APPLICATION - "THESE FASTENERS ARE DESIGNED TO BE PULLED AND EPOXIED IN PLACE."

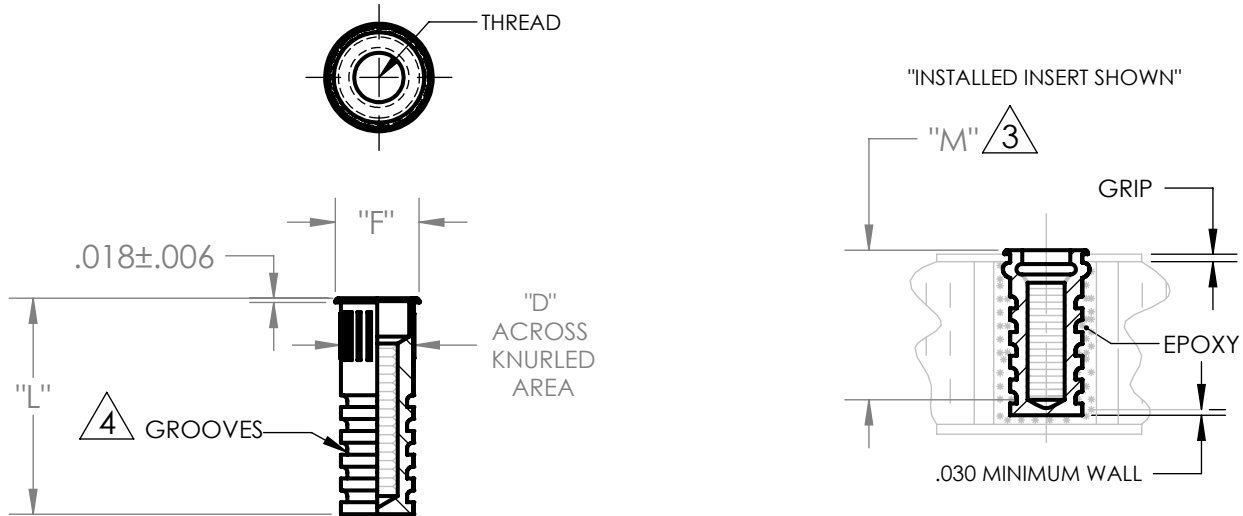


TABLE I

THREAD CODE	THREAD SIZE	"D" +.000/-0.006	"F" +.030/-0.000	M $\triangle 3$	INSTALLATION HOLE
1032	.190-32UNJF-3B	.296	.326	.330	.297 - .303
420	.250-20UNJC-3B	.390	.420	.390	.390 - .396
428	.250-28UNJF-3B	.390	.420	.390	.390 - .396
518	.312-18UNJC-3B	.530	.560	.370	.531 - .537
524	.312-24UNJF-3B	.530	.560	.370	.531 - .537
616	.375-16UNJC-3B	.530	.560	.370	.531 - .537
624	.375-24UNJF-3B	.530	.560	.370	.531 - .537

(EXAMPLE) **PART NUMBER CODE:**

SERIES _____ 2235-428-1.125-C-060
THREAD CODE _____
INSERT LENGTH _____
FINISH (TO BE SPECIFIED) _____
 (C=CAD PLATE)
GRIP LENGTH (TO BE SPECIFIED) _____
 (TOLERANCE ± 0.025 ")

NOTES:

- MATERIAL IS 1008 CARBON STEEL PER ASTM-A-108
- GRIP RANGE :
MINIMUM SKIN THICKNESS = .030
MAXIMUM SKIN THICKNESS = .300

$\triangle 3$ "M" DENOTES MINIMUM THREAD DEPTH, BASED ON .030 GRIP & .75 LONG INSERT

$\triangle 4$ NUMBER OF GROOVES VARY WITH LENGTH

2253-S,SE

INSERT, BLIND, SNAP-IN, THREADED, SELF-LOCKING
NONSELF-LOCKING, SANDWICH PANEL

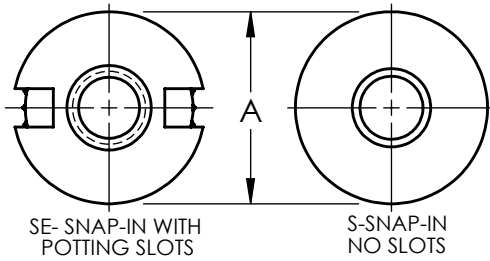
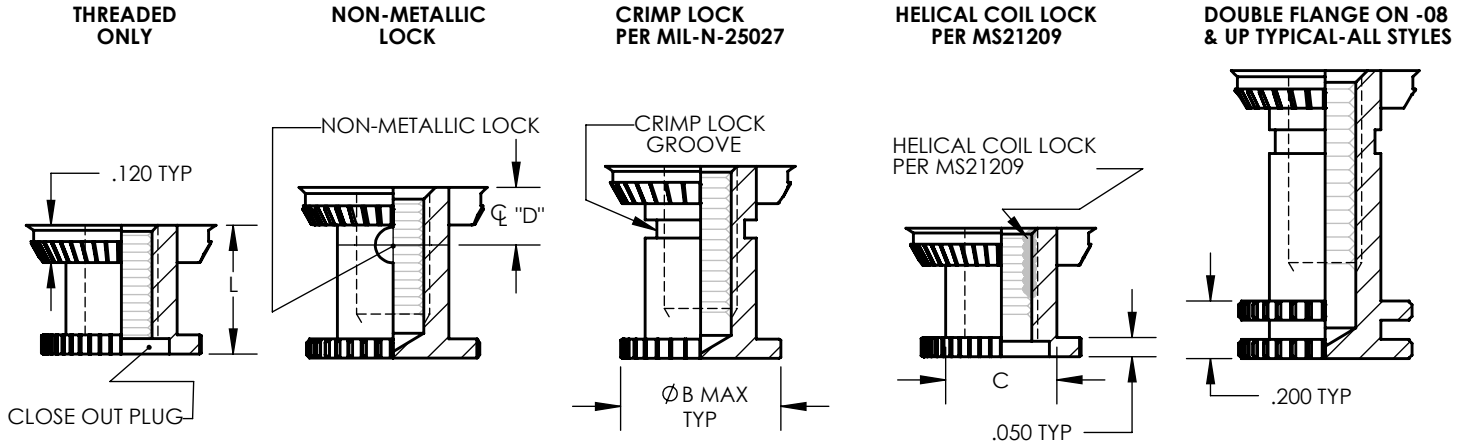


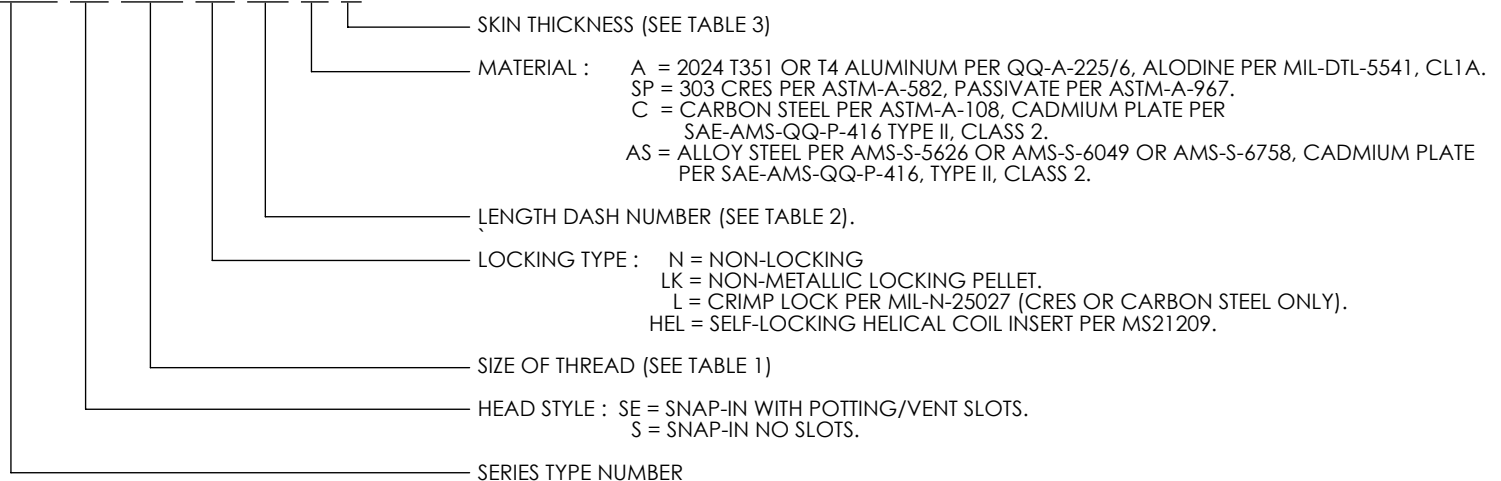
TABLE 1

SIZE	THREAD SIZE PER MIL-S-8879	A HEAD DIA	B FLANGE DIA	C BODY DIA	D LOCK CENTERLINE
440	.1120-40 UNJC-3B	.375	.312	.195	.165*
632	.1380-32 UNJC-3B	.437	.375	.230	.175*
832	.1640-32 UNJC-3B	.500	.437	.290	.185*
1032	.1900-32 UNJF-3B	.500	.437	.290	.185*
428	.2500-28 UNJF-3B	.562	.500	.353	.190
524	.3125-24 UNJF-3B	.687	.625	.460	.200
624	.3750-24 UNJF-3B	.812	.687	.550	.200

*REDUCE "D" DIMENSION BY .030 WHEN ORDERING -04 LENGTHS IN SIZES 440 - 1032

PART NUMBER SELECTION EXAMPLE:

2253-SE-832-LK-10-A-2

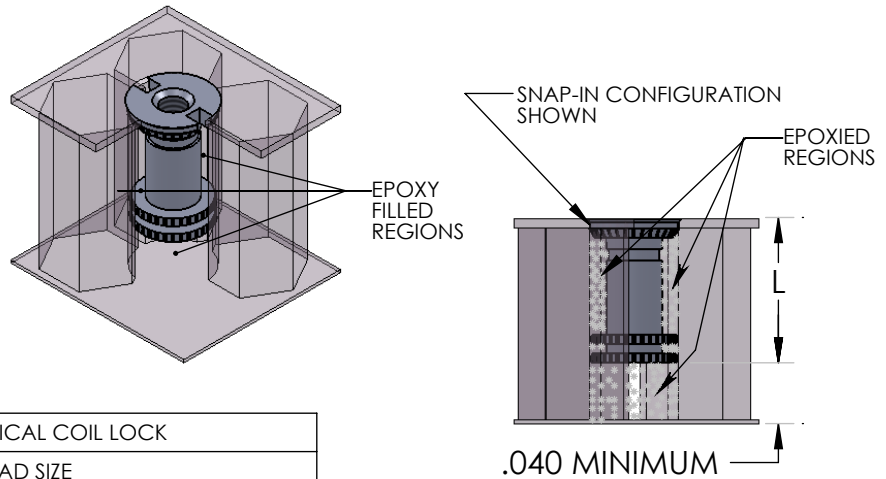


2253-S,SE

INSERT, SNAP-IN, THREADED, SELF-LOCKING NONSELF-LOCKING, SANDWICH PANEL

TYPICAL INSTALLATION SHOWN:

" TYPICAL 2253-S, SE SNAP-IN INSERT INSTALLED IN HONEY-COMB SANDWICH PANEL. INSERT IS RETAINED BY CURED EPOXY COMPOUND."



"MINIMUM CLEARANCE IS REQUIRED BETWEEN INSERT & INSIDE PANEL SKIN FOR PROPER BONDING AROUND BOTTOM OF INSERT."

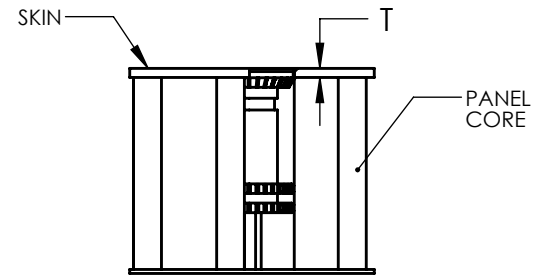


TABLE 2

ALL THREADED TYPES EXCEPT HELICAL COIL LOCK								
LENGTH DASH NUMBER	L	THREAD SIZE						
		440	632	832	1032	428	524	624
-04*†	.220	.170	.170	.170	.170	-	-	-
-05*	.285	.190	.190	.190	.190	.235	-	-
-06*	.335	.225	.235	.235	.235	.250	-	-
-07	.395	.250	.280	.280	.280	.250	-	-
-08	.455	.250	.280	.330	.330	.330	.320	-
-10	.565	.250	.280	.330	.380	.420	.430	.425
-12	.690	.250	.280	.330	.380	.500	.550	.550
-14	.815	.250	.280	.330	.380	.500	.625	.750
-16	.935	.250	.280	.330	.380	.500	.625	.750

*CLOSE OUT PLUG REQUIRED TO PROVIDE MINIMUM FULL THREAD.
† AVAILABLE IN -1, -2, AND -3 SKIN THICKNESS ONLY; SEE TABLE 3 BELOW.

TABLE 3

HELICAL COIL LOCK TYPE								
LENGTH DASH NUMBER	L	THREAD SIZE						
		440	632	832	1032	428	524	624
-06	.335	.112	-	-	-	-	-	-
-07	.395	.168	.138	-	-	-	-	-
-08	.455	.224	.207	.164	.190	-	-	-
-10	.565	.224	.276	.246	.235	.250	-	-
-12	.690	.224	.276	.328	.380	.375	.312	-
-14	.815	.224	.276	.328	.380	.500	.469	.375
-16	.935	.224	.276	.328	.380	.500	.469	.562

SKIN DASH NUMBER	T (THICKNESS)
-1	.010 - .019
-2	.020 - .029
-3	.030 - .039
-4	.040 - .049
-5	.050 - .059
-6	.060 - .069

2402 SF SERIES FLOATING INSERT, SNAP-IN HEAD STYLE

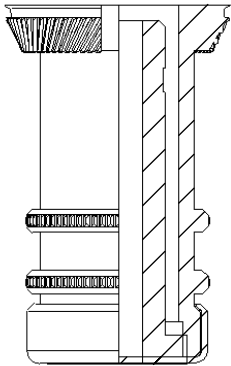
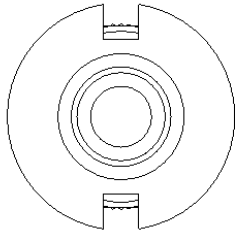


TABLE I

CODE	T THREAD	A DIA	B DIA	C DIA	INSTALLATION HOLE
440	4-40 UNJC-3B	.531	.489	.323	.500-.505
632	6-32 UNJC-3B	.531	.489	.323	.500-.505
832	8-32 UNJC-3B	.593	.551	.323	.562-.567
1032	10-32 UNJF-3B	.593	.551	.323	.562-.567
420	.25-20 UNJC-3B	.718	.676	.437	.687-.692
428	.25-28 UNJF-3B	.718	.676	.437	.687-.692
518	.312-18 UNJC-3B	.843	.801	.437	.812-.817
524	.312-24 UNJF-3B	.843	.801	.437	.812-.817
616	.375-16 UNJC-3B	.968	.926	.515	.937-.942
624	.375-24 UNJF-3B	.968	.926	.515	.937-.942

TABLE II

DASH NO.	SKIN THICKNESS "T"
-1	.010 - .019
-2	.020 - .029
-3	.030 - .039
-4	.040 - .049
-5	.050 - .059
-6	.060 - .069

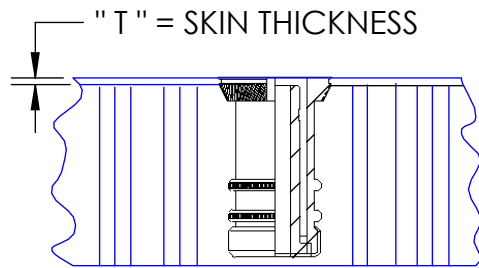
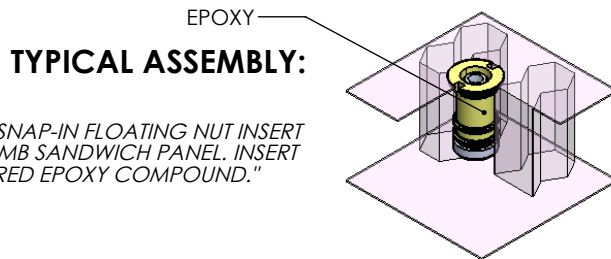
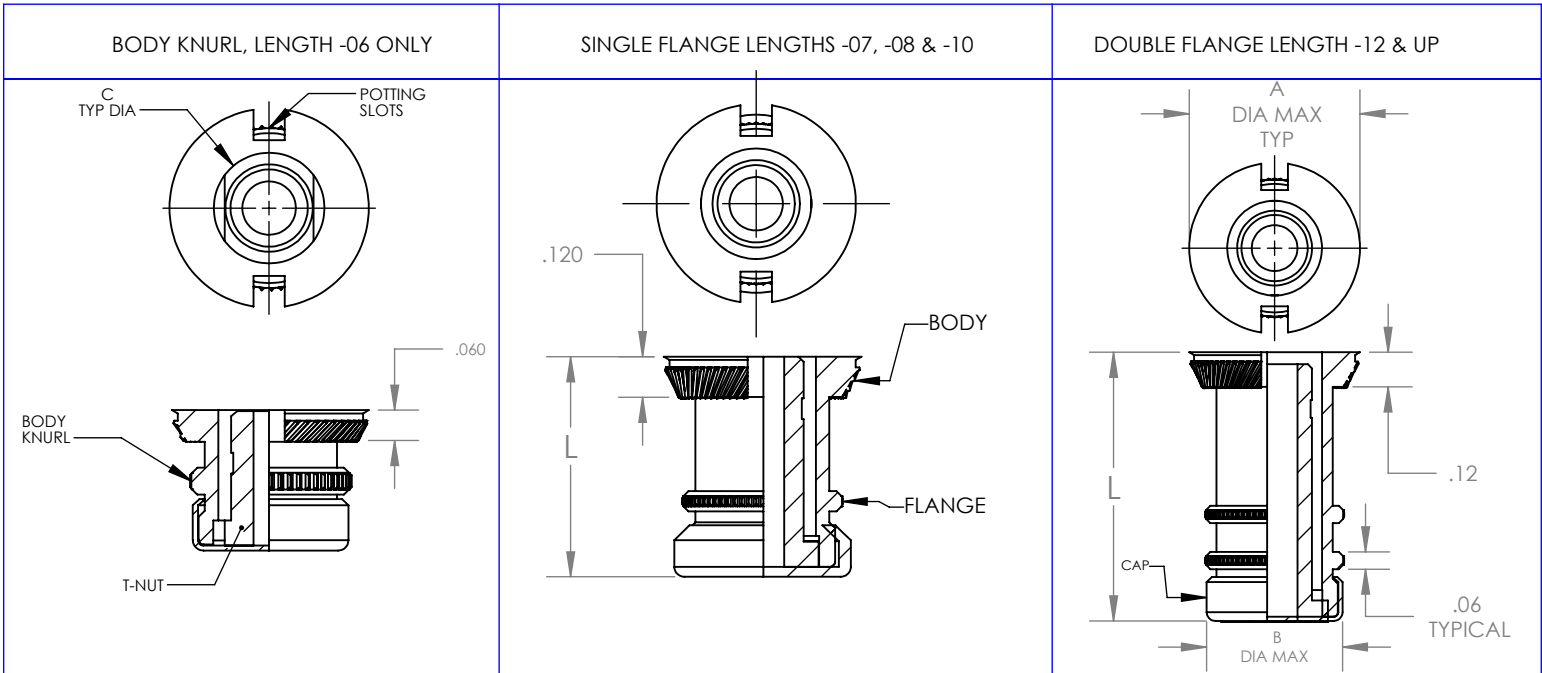


TABLE III (MINIMUM FULL THREAD)

LENGTH DASH NUMBER	L	THREAD SIZE						
		440	632	832	1032	420 428	518 524	616 624
-06	.335	.224	.276	.292	.292	-	-	-
-07	.395	.224	.276	.328	.350	.350	.350	.350
-08	.455	.224	.276	.328	.380	.410	.410	.410
-10	.565	.224	.276	.328	.380	.500	.520	.520
-12	.690	.224	.276	.328	.380	.500	.625	.645
-14	.812	.224	.276	.328	.380	.500	.625	.750
-16	.935	.224	.276	.328	.380	.500	.625	.750

2402 SF SERIES FLOATING INSERT, SNAP-IN HEAD STYLE



" TYPICAL SERIES 2402SF SNAP-IN FLOATING NUT INSERT INSTALLED IN HONEYCOMB SANDWICH PANEL. INSERT IS HELD IN PLACE BY CURED EPOXY COMPOUND."

PART NUMBER EXAMPLE:

2402SF6-1032-08 2

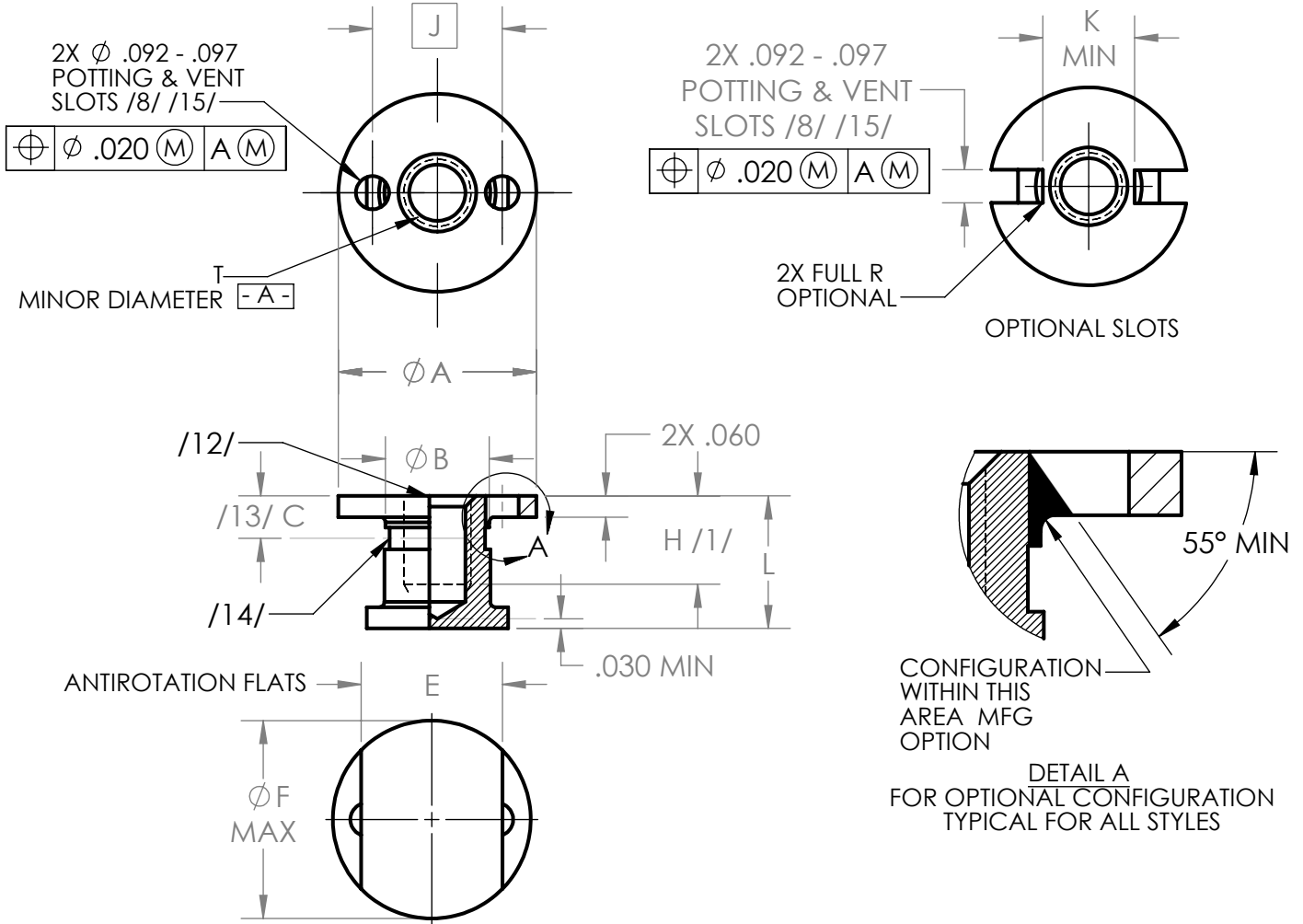
- ADD "NS" IF POTTING SLOTS ARE NOT REQUIRED
- SKIN THICKNESS, TABLE II
- LENGTH, TABLE III
- ADD "M" FOR SOLIDFILM LUBE ON THREADS
- THREAD SIZE, TABLE I
- THREAD TYPE: N = THREADED ONLY
- = CRIMP LOCK PER MIL-N-25027
- MATERIAL FOR NUT
- "6"=303 STAINLESS STEEL PER ASTM-A-582, PASSIVATE PER ASTM-A-967
- "9"=1215 CARBON STEEL PER ASTM-A-108, CAD PLATE PER SAE-AMS-QQ-P-416 TYPE 2, CLASS 2.
- FLUSH HEAD STYLE, SNAP-IN, FLOATING NUT, POTTING SERIES
- SERIES DESIGNATION

NOTE: 1. MINIMUM RADIAL FLOAT IS .031"

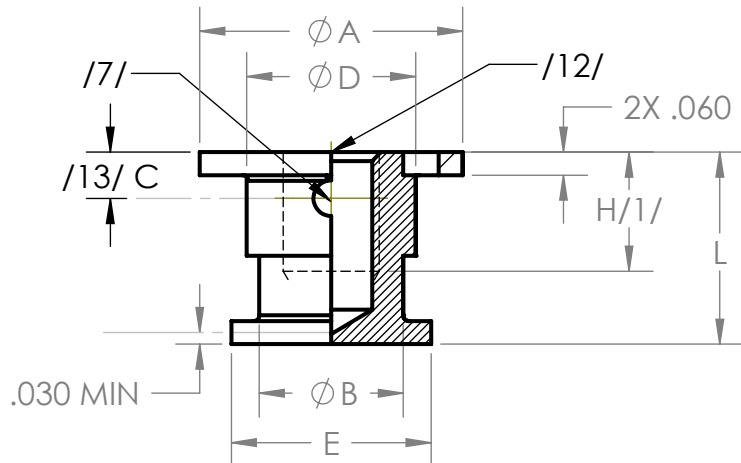
2. TOLERANCES: XXX = +/- .010
3. MATERIAL FOR BODY IS 2024 T351 OR T4 ALUMINUM PER QQ-A-225/6 WITH CHEM FILM PER MIL-DTL-5541F CLASS 1A.
4. MATERIAL FOR CAP IS 2024 T351 OR T4 OR 6061 T6511 ALUMINUM WITH CHEM FILM PER MIL-DTL-5541F CLASS 1A.

NAS1832

**INSERT, MOLDED IN, BLIND THREADED, LOCKING,
NON-LOCKING, SANDWICH PANEL**



ALL STEEL AND CRES LOCKING AND NON-LOCKING OR NON-LOCKING ALUMINUM STYLE



ALUMINUM LOCKING STYLE OR ALTERNATE NON-LOCKING ALUMINUM STYLE

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 9/13/2021

GAGE CODE: 0JHK5

NAS1832

INSERT, MOLDED IN, BLIND THREADED, LOCKING, NON-LOCKING, SANDWICH PANEL

TABLE I - DIMENSIONS

SIZE DASH NO	T THREAD /3/	ØA +.000 -.010	ØB	C	ØD	E	ØF MAX	H MIN /1/	J BASIC	K MIN	L MIN /2/
06	.1380-32 UNJC	.560	.300	.12	.375	.400	.560	.25	.367	.260	.37
08	.1640-32 UNJC	.560	.300	.12	.375	.400	.560	.25	.367	.260	.37
3	.1900-32 UNJF	.560	.300	.12	.375	.400	.560	.25	.367	.260	.37
4	.2500-28 UNJF	.685	.375	.14	.440	.520	.685	.31	.467	.360	.50
5	.3125-24 UNJF	.685	.475	.16	.500	.520	.685	.31	.467	.360	.50
6	.3750-24 UNJF	.841	.500	.22	.550	.560	.841	.37	.591	.484	.50

TABLE II - INSTALLATION DATA

SIZE DASH NO	INSTALLATION TAB P/N /6/	ALIGNMENT TOOL /25/	INSTALLATION HOLE SIZE
06	NAS1837T3	NAS1837G3	.561-.566
08	NAS1837T3	NAS1837G3	.561-.566
3	NAS1837T3	NAS1837G3	.561-.566
4	NAS1837T6	NAS1837G6	.686-.691
5	NAS1837T6	NAS1837G6	.686-.691
6 /26/	NAS1837T9	NAS1837G9	.842-.847

MATERIAL:

CARBON STEEL:

PER ASTM A108. ASTM A576, ULTIMATE TENSILE STRENGTH 85 KSI MINIMUM.

AL ALLOY:

GRADE 2024 (UNS A92024), TEMPER T4 OR T351 PER AMS-QQ-A-225/6.

CRES:

TYPE 303 (UNS S30300) PER ASTM A582/A582M.

LOCKING ELEMENT:

POLYAMIDE PER L-P-410.

FINISH:

CARBON STEEL:

CADMIUM PLATE PER AMS QQ-P-416, TYPE II, CLASS 2.

AL ALLOY:

ANODIZE PER MIL-A-8625, TYPE 1, CLASS OPTIONAL.

CRES:

 PASSIVATE PER AMS2700, METHOD 1, TYPE 2, CLASS 4.
 PASSIVATE PER AMS2700, METHOD 2, CLASS 4.
 SILVER PLATE PER AMS2410 OR AMS2411.
 CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2.

 WITTEN COMPANY
 918-272-9567

APPROVAL DATE: REV:A 9/13/2021

GAGE CODE: 0JHK5

NAS1832

INSERT, MOLDED IN, BLIND THREADED, LOCKING, NON-LOCKING, SANDWICH PANEL

LUBRICATION: SOLID FILM LUBRICANT PER AS5272, TYPE OPTIONAL, APPLIED TO THREADS ONLY.

CODE:

NAS1832 C 5 N 4 G M

LUBRICANT:

NO CODE = NO LUBRICANT
"M" = SOLID FILM LUBE

FINISH:

IF CARBON STEEL:
NO CODE = CADIUM PLATED

IF AL ALLOY:
NO CODE = ANODIZED

IF CRES:

NO CODE = PASSIVATE PER AMS2700, METHOD 1, TY2, CL4
"G" = PASSIVATE PER AMS2700, METHOD 2, CL 4

"P" = CADIUM PLATE

"S" = SILVER PLATE

LENGTH DASH NUMBER:

(INCREMENTS OF .125) /10/

LOCKING:

"L" = LOCKING

"N" = NON-LOCKING

SIZE DASH NUMBER:

(SEE TABLE I)

MATERIAL:

"-" = CARBON STEEL, CADIUM PLATED

"A" = AL ALLOY, ANODIZED

"C" = CRES, PASSIVATED

BASIC PART NUMBER

NAS1832**INSERT, MOLDED IN, BLIND THREADED, LOCKING,
NON-LOCKING, SANDWICH PANEL****EXAMPLE OF PART NUMBER:**

NAS1832C5N4GMT	= INSERT, CRES, .3125-24 UNJF THREAD, NON-LOCKING, .500 LONG, PASSIVATED PER AMS2700, METHOD 2, CL 4, SOLID FILM LUBRICATED.
NAS1832-3-4M	= INSERT, CARBON STEEL, .1900-32 UNJF-3B THREAD, LOCKING, .500 LONG, CADMIUM PLATED, SOLID FILM LUBRICATED.
NAS1832A3N4	= INSERT, AL ALLOY, .1900-32 UNJF-3B THREAD, NON-LOCKING, .500 LONG, ANODIZED, NON-LOCKING, NO LUBRICATION.
NAS1832C06-6G	= INSERT, CRES, .1380-32 UNJC-3B THREAD, LOCKING, .750 LONG, PASSIVATED PER AMS2700, METHOD 2, CL 4, NO LUBRICATION.
NAS1832C08-3S	= INSERT, CRES, .1640-32 UNJC-3B THREAD, LOCKING, .375 LONG, SILVER PLATED, NO LUBRICATION.
NAS1832C08-3P	= INSERT, CRES, .1640-32 UNJC-3B THREAD, LOCKING, .375 LONG, CADMIUM PLATED, NO LUBRICATION.
NAS1832C4N5	= INSERT, CRES, .2500-28 UNJF-3B THREAD, NON-LOCKING, .625 LONG, PASSIVATED PER AMS2700, METHOD 1, TY2, CL 4, NO LUBRICATION.
NAS1832C5N4	= INSERT, CRES, .3125-24 UNJF-3B THREAD, NON-LOCKING, .500 LONG, PASSIVATED PER AMS2700, METHOD 1, TY2, CL 4, NO LUBRICATION.
NAS1832-3-4M	= INSERT, CARBON STEEL, .1900-32 UNJF-3B THREAD, LOCKING, .500 LONG, CADMIUM PLATED, SOLID FILM LUBRICATED.
NAS1832C6-4G	= INSERT, CRES, .3750-24 UNJF-3B THREAD, LOCKING, .500 LONG, PASSIVATED PER AMS2700, METHOD 2, CL 4, NO LUBRICATION.

NOTES:

- /1/ THE MINIMUM FULL THREAD DEPTH "H" SHALL BE TWO TIMES THE NOMINAL THREAD DIAMETER WHERE LENGTH PERMITS.
- /2/ MINIMUM LENGTH WHICH MAY BE SPECIFIED.
- /3/ THREADS PER AS8879, CLASS 3B.
- (4) LOCKING TORQUE PER NASM25027 EXCEPT LOCKING, CORROSION RESISTANT STEEL INSERT WITHOUT PLATING OR LUBRICANT WILL BE TESTED USING A SILVER PLATED BOLT OR SCREW.
- (5) TOLERANCES UNLESS OTHERWISE SPECIFIED: .XXX ± .010 .XX ± .02.
- (6) WHEN APPLICABLE, AN NAS1837 ADHESIVE-BACKED INSTALLATION TAB WILL BE FURNISHED WITH EACH INSERT. THE INSTALLATION TAB SUPPORTS THE INSERT DURING THE POTTING PROCESS AND IS REMOVED AND DISCARDED ONCE POTTING IS CURED.
- /7/ NONMETALLIC THREAD LOCK WHEN APPLICABLE. LOCATE PELLET NO CLOSER THAN 10° FROM EDGE OF EITHER POTTING HOLE OR SLOT.
- /8/ BURRS AROUND POTTING HOLES OR SLOTS PERMISSIBLE UNDER FLANGE.
- (9) PLATING OR SOLID FILM LUBRICANT IS RECOMMENDED ON LOCKING CRES INSERTS.
- /10/ SELECT A LENGTH WHICH WILL ALLOW A MINIMUM OF .040 CLEARANCE BETWEEN BOTTOM OF INSERT AND INSIDE SURFACE OF BOTTOM SKIN.
- (11) DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.

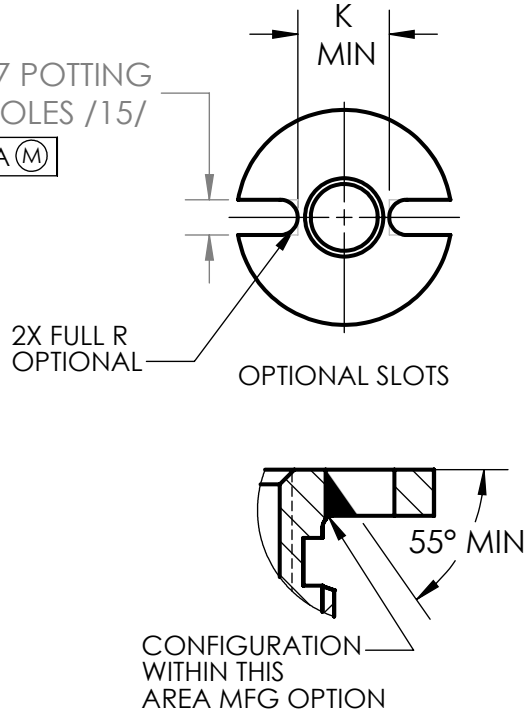
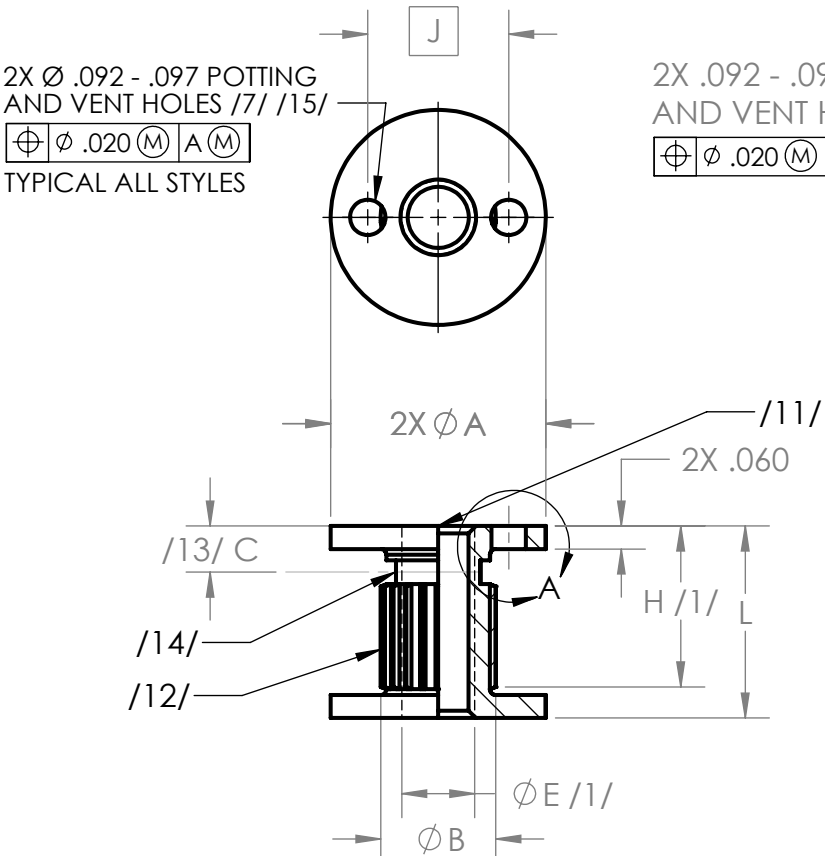
NAS1832

INSERT, MOLDED IN, BLIND THREADED, LOCKING, NON-LOCKING, SANDWICH PANEL

NOTES:

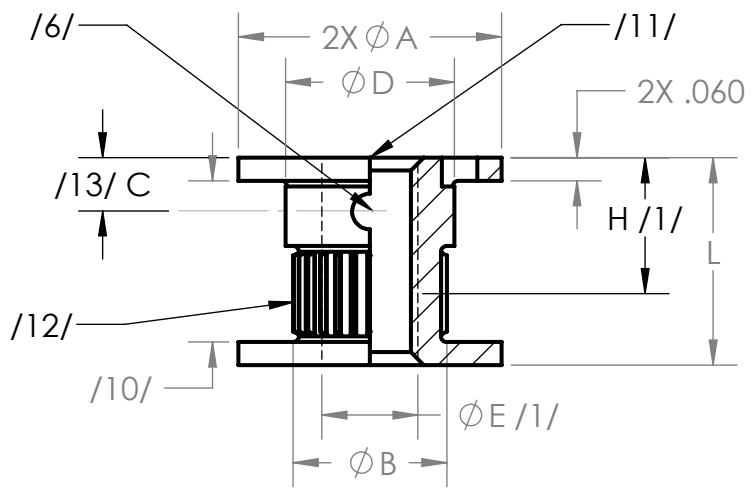
- /12/ MINIMUM "GO" THREAD GAGE PENETRATION SHALL BE ONE HALF REVOLUTION BEFORE LUBRICATION. MINIMUM BOLT THREAD PENETRATION SHALL BE THREE QUARTER REVOLUTION AFTER LUBRICATION.
- /13/ CENTERLINE OF THREAD LOCK WHEN APPLICABLE.
- /14/ SHANK DEFORMED THIS AREA TO PROVIDE THREAD LOCK WHEN APPLICABLE.
- /15/ ORIENTATION OF POTTING AND VENT HOLES OR SLOTS RELATIVE TO THE ANTI ROTATION FLAT IS MANUFACTURER'S OPTION.
- (16) DIMENSIONS IN INCHES.
- /17/ NOT USED.
- (18) ALL DIAMETERS SHALL BE WITHIN .010 CIRCULAR RUNOUT TO DATUM A.
- (19) DIMENSIONS APPLY AFTER FINISH AND PRIOR TO APPLICATION OF LUBRICATION UNLESS OTHERWISE SPECIFIED.
- (20) UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.
- (21) REMOVE ALL BURRS AND SHARP EDGES.
- (22) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.
- (23) UNLESS OTHERWISE SPECIFIED HEREIN, REFERENCED DOCUMENTS SHALL BE THE ISSUE IN EFFECT ON DATE OF MANUFACTURE. HOWEVER, EXISTING MATERIAL INVENTORY CERTIFIED TO A PREVIOUS REVISION OF THE APPLICABLE MATERIAL SPECIFICATION(S) IS ACCEPTABLE FOR USE UNTIL DEPLETION.
- (24) FOR DESCRIPTION OF STATUS NOTES SEE NAS380.
- /25/ AN ADHESIVE-BACKED INSTALLATION TAB PER NAS1837 (PLASTIC PER WITTEN 2007) SHALL BE FURNISHED WITH INSERT.

NAS1833
INSERT, MOLDED IN, THREADED,
SELF-LOCKING, NONSELF LOCKING, SANDWICH PANEL



DETAIL A
 FOR OPTIONAL CONFIGURATION
 TYPICAL FOR ALL STYLES

ALL STEEL AND CRES SELF-LOCKING AND NONSELF-LOCKING
 OR NONSELF-LOCKING ALUMINUM STYLE INSERTS



ALUMINUM SELF-LOCKING STYLE OR ALTERNATE
 NONSELF-LOCKING ALUMINUM STYLE

NAS1833

INSERT, MOLDED IN, THREADED, SELF-LOCKING, NONSELF LOCKING, SANDWICH PANEL

TABLE I - DIMENSIONS

FIRST DASH NO.	THREAD CLASS 3B MINOR DIA [A-]	ØA +.010 -.010	ØB	C	ØD	ØE /1/	H MIN /1/	J BASIC	K MIN	L MIN /2/	INSTALLATION HOLE SIZE
06	.1380 - 32 UNJC	.560	.30	.12	.375	.139 - .145	.276	.367	.260	.250	.561 - .566
08	.1640 - 32 UNJC	.560	.30	.12	.375	.168 - .174	.328	.367	.260	.250	.561 - .566
3	.1900 - 32 UNJF	.560	.30	.12	.375	.195 - .201	.380	.367	.260	.250	.561 - .566
4	.2500 - 28 UNJF	.685	.37	.14	.440	.256 - .263	.500	.467	.360	.312	.686 - .691
5	.3125 - 24 UNJF	.685	.47	.16	.500	.315 - .322	.625	.467	.360	.312	.686 - .691
6	.3750 - 24 UNJF	.841	.50	.22	.550	.376 - .383	.750	.591	.484	.375	.842 - .847

MATERIAL:

CARBON STEEL PER ASTM A 108, ASTM A 576, OR MATERIAL COMPOSITION PER AIR4127. ULTIMATE TENSILE STRENGTH, 85 KSI MINIMUM.

AL ALLOY, GRADE 2024 (UNS A92024) TEMPER T4 OR T351 PER AMS-QQ-A-225/6.

CORROSION RESISTANT STEEL, TYPE 303 (UNS S30300) PER ASTM A 582/A 582M.

NONMETALLIC LOCKING ELEMENT - POLYAMIDE PER L-P-410.

FINISH:

CARBON STEEL - CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2.

AL ALLOY - ANODIZE PER MIL-A-8625, TYPE I, CLASS OPTIONAL.

CRES - PASSIVATE PER ASM2700, METHOD1, CLASS 4; SILVER PLATE PER AMS2410 OR AMS2411; OR CADMIUM PLATE PER AMS- QQ-P-416 TYPE II, CLASS 2.

SOLID FILM LUBRICANT PER AS5272, TYPE I, APPLIED TO THREADS ONLY.

CODING:

NO LETTER AFTER BASIC NUMBER INDICATES CARBON STEEL, CADMIUM PLATED.

SUFFIX "A" TO BASIC NUMBER INDICATES AL ALLOY, ANODIZED.

SUFFIX "C" TO BASIC NUMBER INDICATES CRES, PASSIVATED.

FIRST DASH NUMBER INDICATES NOMINAL THREAD SIZE, SEE TABLE I.

SUFFIX "N" TO FIRST DASH NUMBER INDICATES NONSELF-LOCKING.

SECOND DASH NUMBER INDICATES LENGTH IN THOUSANDTHS.

NO LETTER AFTER SECOND DASH NUMBER FOR CRES INDICATES PASSIVATE ONLY. /9/

SUFFIX "M" TO SECOND DASH NUMBER INDICATES SOLID FILM LUBRICANT. /9/

SUFFIX "P" TO SECOND DASH NUMBER INDICATES CADMIUM PLATE ON CRES INSERT. /9/

SUFFIX "S" TO SECOND DASH NUMBER INDICATES SILVER PLATE ON CRES INSERT. /9/

EXAMPLE OF PART NUMBER:

NAS1833-3-500M	.1900-32 UNJF -3B THREAD, CARBON STEEL, CADMIUM PLATED WITH SOLID FILM LUBRICANT, .500 LONG, SELF-LOCKING.
NAS1833A3N500	.1900-32 UNJF -3B THREAD, AL ALLOY, ANODIZED, .500 LONG, NONSELF-LOCKING.
NAS1833C08-375S	.1640-32 UNJC -3B THREAD, CRES, SILVER PLATED, .375 LONG, SELF-LOCKING.
NAS1833C08-375P	.1640-32 UNJC -3B THREAD, CRES, CADMIUM PLATED, .375 LONG, SELF-LOCKING.
NAS1833C4N625	.2500-28 UNJF -3B THREAD, CRES, PASSIVATED, .625 LONG NONSELF-LOCKING
NAS1833-4-1250	.2500-28 UNJF -3B THREAD, CARBON STEEL, CADMIUM PLATED, 1.250 LONG, SELF-LOCKING.

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 9/13/2021

GAGE CODE: 0JHK5

NAS1833

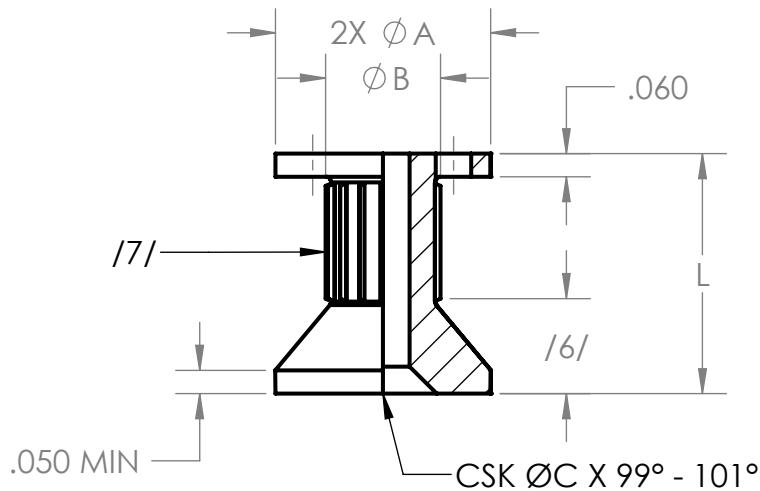
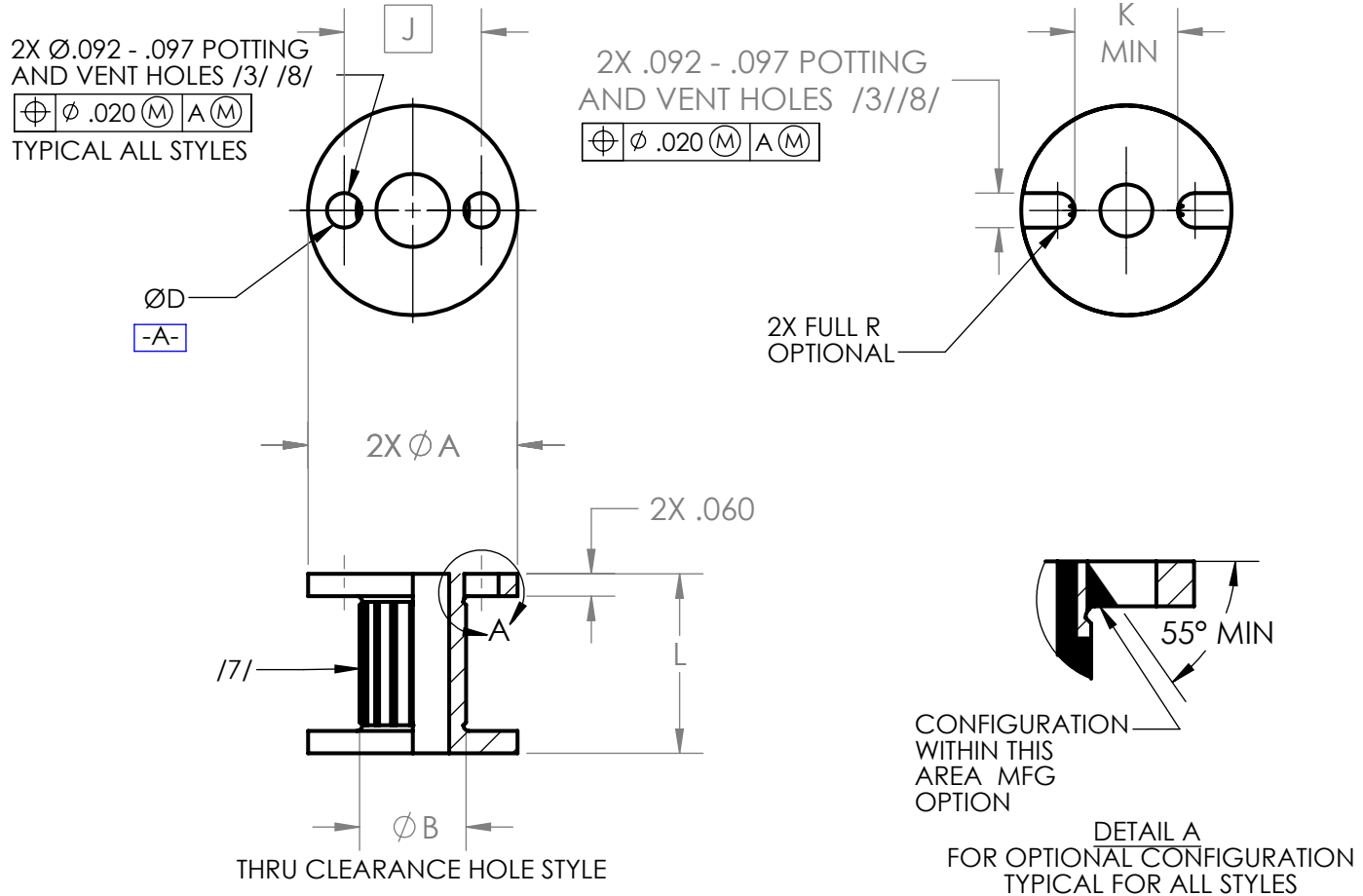
INSERT, MOLDED IN, THREADED, SELF-LOCKING, NONSELF LOCKING, SANDWICH PANEL

NOTES:

- /1/ MINIMUM THREAD DEPTH "H" WHERE LENGTH PERMITS SHALL BE 2X DIAMETER OF THREAD. LENGTHS SHORTER THAN 2X DIAMETER OF THREAD SHALL BE THREADED THE ENTIRE LENGTH. LENGTHS LONGER THAN 2X DIAMETER MAY HAVE A THREAD RELIEF SHOWN BY "Ø E" AND "H" OR MAY BE THREADED THE ENTIRE LENGTH (MANUFACTURER'S OPTION).
- /2/ MINIMUM LENGTH WHICH MAY BE SPECIFIED.
- (3) THREADS PER AS8879.
- (4) LOCKING TORQUE PER NASM25027 EXCEPT SELF-LOCKING, CORROSION RESISTANT STEEL INSERT WITHOUT PLATING OR LUBRICANT WILL BE TESTED USING A SILVER PLATED BOLT OR SCREW.
- (5) TOLERANCES UNLESS OTHERWISE SPECIFIED: .XXX ± .010, .XX ± .02.
- /6/ NONMETALLIC THREAD LOCK WHEN APPLICABLE. LOCATE PELLET NO CLOSER THAN 10° FROM EDGE OF EITHER POTTING HOLE OR SLOT.
- /7/ BURRS CAUSED BY MACHINING POTTING HOLES OR SLOTS PERMISSIBLE UNDER FLANGE.
- (8) AN ADHESIVE-BACKED INSTALLATION TAB NAS1837 (PLASTIC) SHALL BE FURNISHED WITH EACH INSERT.
- /9/ PLATING OR SOLID FILM LUBRICANT IS RECOMMENDED ON SELF-LOCKING CRES INSERTS.
- /10/ EXTERNAL CONFIGURATION OPTIONAL IN THIS AREA FOR SHORT LENGTHS THROUGH .375.
- /11/ MINIMUM "GO" THREAD GAGE PENETRATION SHALL BE ONE HALF REVOLUTION BEFORE LUBRICATION. MINIMUM BOLT THREAD PENETRATION SHALL BE THREE QUARTER REVOLUTION AFTER LUBRICATION.
- /12/ STRAIGHT OR DIAMOND ANTIROTATIONAL KNURL (MANUFACTURER'S OPTION) .
- /13/ CENTERLINE OF THREAD LOCK WHEN APPLICABLE.
- /14/ SHANK DEFORMED THIS AREA TO PROVIDE THREAD LOCK WHEN APPLICABLE.
- /15/ POTTING AND VENT HOLES OR SLOTS (MANUFACTURER'S OPTION).
- (16) DIMENSIONS IN INCHES. DIMENSIONAL LIMITS APPLY AFTER PLATING, AND PRIOR TO SOLID FILM LUBE.
- (17) ALL DIAMETERS SHALL BE WITHIN .010 CIRCULAR RUNOUT TO DATUM A.
- (18) UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.
- (19) REMOVE ALL BURRS AND SHARP EDGES EXCEPT AS NOTED IN NOTE /7/.
- (20) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.
- (21) DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
- (22) UNLESS OTHERWISE SPECIFIED HEREIN, REFERENCED DOCUMENTS SHALL BE THE ISSUE IN EFFECT ON DATE OF MANUFACTURE. HOWEVER, EXISTING MATERIAL INVENTORY CERTIFIED TO A PREVIOUS REVISION OF THE APPLICABLE MATERIAL SPECIFICATION(S) IS ACCEPTABLE FOR USE UNTIL DEPLETION.

NAS1834

INSERT, MOLDED IN, CSK AND THRU CLEARANCE HOLE, SANDWICH PANEL



COUNTERSINK CLEARANCE HOLE STYLE

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 9/13/2021

GAGE CODE: 0JHK5

NAS1834

INSERT, MOLDED IN, CSK AND THRU CLEARANCE HOLE, SANDWICH PANEL

TABLE I DIMENSIONS

SIZE DASH NO.	Ø A +.000 -.010	Ø B	Ø C	Ø D CLEARANCE HOLE	J BASIC	K MIN	L MIN /1/	INSTALLATION HOLE SIZE
06	.560	.30	.280	.139 - .145	.367	.260	.250	.561 - .566
08	.560	.30	.332	.168 - .174	.367	.260	.250	.561 - .566
3	.560	.30	.385	.195 - .201	.367	.260	.250	.561 - .566
4	.685	.37	.507	.256 - .263	.467	.360	.312	.686 - .691
5	.685	.47	.625	.315 - .322	.467	.360	.312	.686 - .691
6	.841	.50	.750	.376 - .383	.591	.484	.375	.842 - .847

MATERIAL: CARBON STEEL PER ASTM A108, ASTM A576, OR MATERIAL COMPOSITION PER AIR4127, ULTIMATE TENSILE STRENGTH 85 KSI MINIMUM.
AL ALLOY, GRADE 2024 (UNS A92024), TEMPER T4 OR T351 PER AMS-QQ-A-225/6.
CORROSION RESISTANT STEEL, TYPE 303 (UNS S30300) PER ASTM A582/ASTM582M.

FINISH: CARBON STEEL - CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2.
AL ALLOY - ANODIZE PER MIL-A-8625, TYPE I, CLASS OPTIONAL.
CRES - PASSIVATE PER AMS2700, METHOD 1, TYPE 2, CLASS 4 OR PASSIVATE PER AMS2700, METHOD 2, CLASS 4.

CODE:

NAS1834 C 3 - 800 G

FINISH (CRES ONLY):
 NO CODE = PASSIVATE PER AMS2700, METHOD 1, TY2, CL4
 "G" = PASSIVATE PER AMS2700, METHOD 2, CL 4

LENGTH DASH NUMBER:
 (IN THOUSANDTHS) /10/

TYPE:
 NO CODE = NO COUNTERSINK
 "K" = COUNTERSINK

SIZE DASH NUMBER:
 (SEE TABLE I)

MATERIAL AND FINISH:
 "-" = CARBON STEEL, CADMIUM PLATED
 "A" = AL ALLOY, ANODIZED
 "C" = CRES, PASSIVATED

BASIC PART NUMBER

NAS1834**INSERT, MOLDED IN, CSK AND THRU CLEARANCE HOLE, SANDWICH PANEL****EXAMPLE OF PART NUMBER:**

- NAS1834-3-500 = CARBON STEEL, CADMIUM PLATED, .500 LONG, WITH THRU CLEARANCE HOLE FOR Ø .1900 BOLT.
- NAS1834C4-500 = CRES, PASSIVATED, PER AMS2700, METHOD 1, TYPE 2, CLASS 4, .500 LONG, WITH THRU CLEARANCE HOLE FOR Ø .2500 BOLT.
- NAS1834C4K1250 = CRES, PASSIVATED, PER AMS2700, METHOD 1, TYPE 2, CLASS 4, 1.250 LONG, WITH COUNTERSUNK THRU CLEARANCE HOLE FOR Ø .2500 BOLT.
- NAS1834C5-800G = CRES, PASSIVATED, PER AMS2700, METHOD 2, CLASS 4, .800 LONG, WITH THRU CLEARANCE HOLE FOR Ø .3125 BOLT.

NOTES:

- /1/ MINIMUM LENGTH WHICH MAY BE SPECIFIED.
- (2) TOLERANCES UNLESS OTHERWISE SPECIFIED: .XXX ± .010 .XX ± .02.
- /3/ BURRS AROUND POTTING HOLES OR SLOTS PERMISSIBLE UNDER FLANGE.
- (4) DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
- (5) DIMENSIONS IN INCHES.
- /6/ EXTERNAL CONFIGURATION OPTIONAL IN THIS AREA.
- /7/ STRAIGHT OR DIAMOND ANTIROTATIONAL KNURL (MANUFACTURER'S OPTION).
- /8/ POTTING AND VENT HOLES OR SLOTS (MANUFACTURER'S OPTION).
- (9) ALL DIAMETERS SHALL BE WITHIN .010 CIRCULAR RUNOUT TO DATUM A.
- (10) DIMENSIONAL LIMITS APPLY AFTER PLATING.
- (11) UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.
- (12) AN ADHESIVE BACKED INSTALLATION TAB NAS1837 (PLASTIC) SHALL BE FURNISHED WITH EACH INSERT.
- (13) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.
- (14) UNLESS OTHERWISE SPECIFIED HEREIN, REFERENCED DOCUMENTS SHALL BE THE ISSUE IN EFFECT ON DATE OF MANUFACTURE. HOWEVER, EXISTING MATERIAL INVENTORY CERTIFIED TO A PREVIOUS REVISION OF THE APPLICABLE MATERIAL SPECIFICATION(S) IS ACCEPTABLE FOR USE UNTIL DEPLETION.

NAS1835

INSERT, MOLDED IN, BLIND THREADED, LOCKING, NONSELF-LOCKING, FLOATING, SANDWICH PANEL

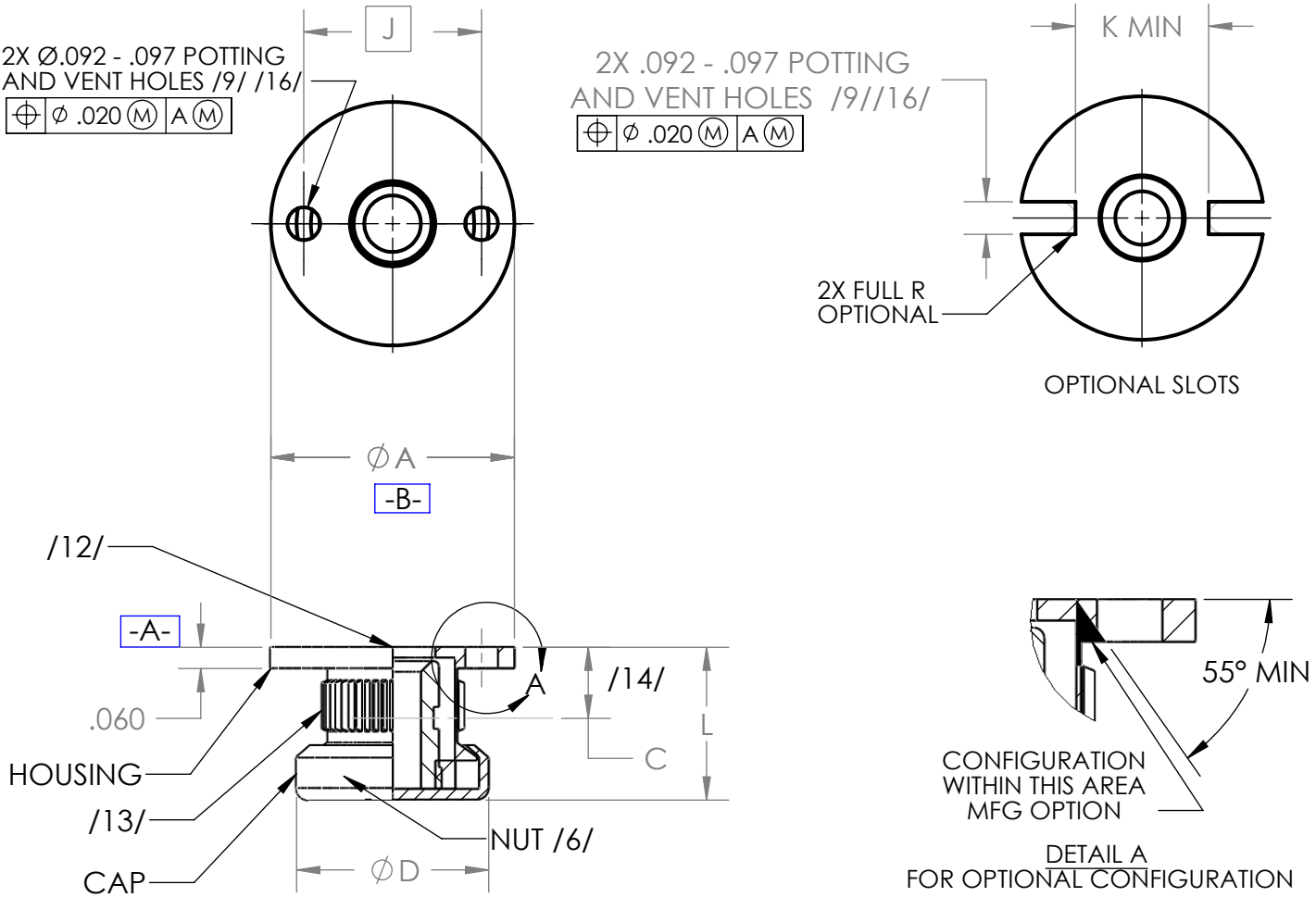


TABLE I - DIMENSIONS

SIZE DASH NO.	THREAD CLASS 3B /1/	$\varnothing A$ +.000 - .010	C	$\varnothing D$ MAX	J BASIC	K MIN	L /7/	INSTALLATION HOLE SIZE
08	.1640-32 UNJC	.685	.16	.545	.500	.393	.37	.686 - .691
3	.1900-32 UNJF	.685	.16	.545	.500	.393	.43	.686 - .691
4	.2500-28 UNJF	.748	.18	.735	.591	.484	.56	.749 - .755
5	.3125-24 UNJF	.810	.20	.800	.655	.548	.75	.811 - .817
6	.3750-24 UNJF	.873	.22	.865	.718	.611	.81	.874 - .880

NAS1835

INSERT, MOLDED IN, BLIND THREADED, LOCKING, NONSELF-LOCKING, FLOATING, SANDWICH PANEL

MATERIAL:

- NUT:** CARBON STEEL PER ASTM A108, ASTM A576, OR MATERIAL COMPOSITION PER AIR4127. ULTIMATE TENSILE STRENGTH 85 KSI MINIMUM. CORROSION RESISTANT STEEL TYPE 303 (UNS S30300) PER ASTM A582/A582M.
- HOUSING:** CARBON STEEL PER ASTM A108, ASTM A576, OR MATERIAL COMPOSITION PER AIR4127. ULTIMATE TENSILE STRENGTH 85 KSI MINIMUM. AL ALLOY, GRADE 2024 (UNS A92024) TEMPER T4 OR T351 PER AMS-QQ-A-225/6. CORROSION RESISTANT STEEL, TYPE 303 (UNS S30300) PER ASTM A582/A582M.
- CAP:** AL ALLOY, GRADE 3003-O, 3003-H14 (UNS A93003) PER ASTM B209, 5052-O, 5052-H32 (UNS A95052) PER AMS-QQ-A-250/8, OR 6061-O (UNS A96061) PER AMS-QQ-A-200/8.

FINISH:

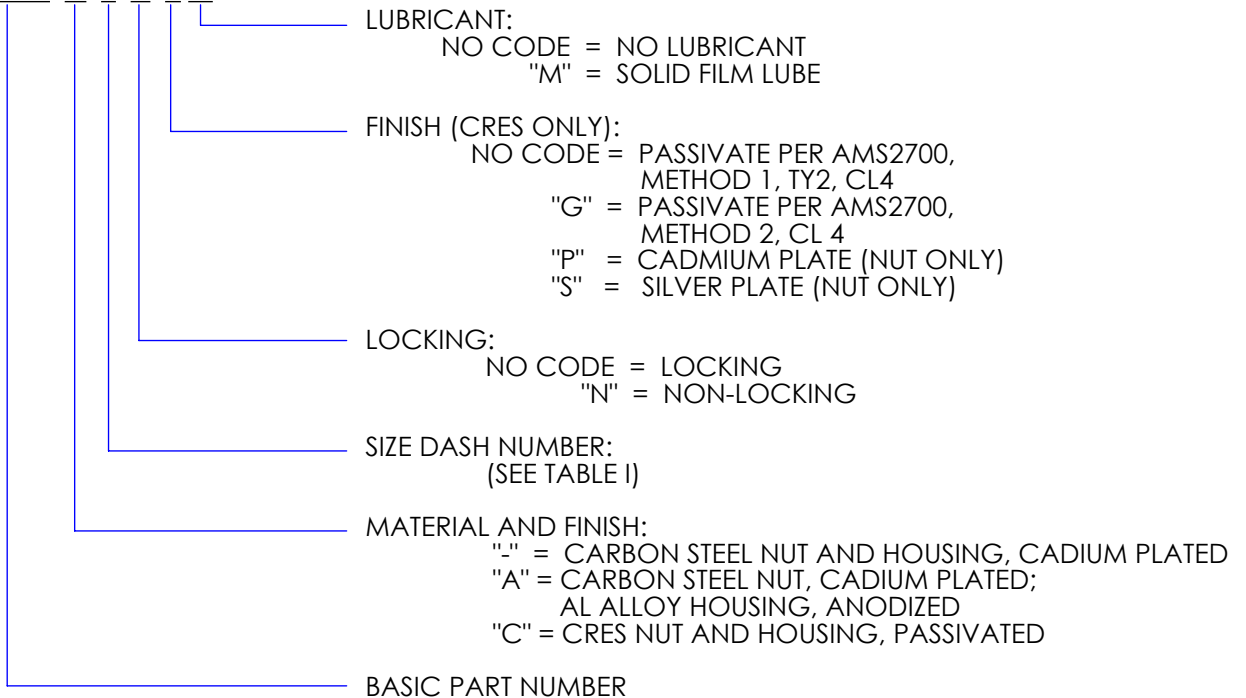
- CARBON STEEL - CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2.
- AL ALLOY - HOUSING - ANODIZE PER MIL-A-8625, TYPE I, CLASS OPTIONAL.
- AL ALLOY - CAP - ANODIZE PER MIL-A-8625, TYPE I, CLASS OPTIONAL OR COAT PER MIL-DTL-5541, CLASS 3 OR CLASS 1A.
- CRES - PASSIVATE PER AMS2700, METHOD 1, TYPE 2, CLASS 4; PASSIVATE PER AMS2700, METHOD 2, CLASS 4; SILVER PLATE PER AMS 2410 OR AMS 2411; OR CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2.

LUBRICANT:

SOLID FILM LUBRICANT PER AS5272, TYPE I OR TYPE III, APPLIED TO NUT ONLY.

CODE:

NAS1835 C 4 N P M



WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 9/13/2021

GAGE CODE: 0JHK5

NAS1835**INSERT, MOLDED IN, BLIND THREADED, LOCKING,
NONSELF-LOCKING, FLOATING, SANDWICH PANEL****EXAMPLE OF PART NUMBER:**

NAS1835-3M	=	.1900-32 UNJF-3B THREAD, CARBON STEEL NUT AND HOUSING, CADMIUM PLATED WITH SOLID FILM LUBRICANT ON NUT, LOCKING.
NAS1835A3N	=	.1900-32 UNJF-3B THREAD CARBON STEEL NUT, CADMIUM PLATED, NON-LOCKING, AL ALLOY ANODIZED HOUSING.
NAS1835C3GN=		.1900-32 UNJF-3B THREAD, CRES NUT AND HOUSING, PASSIVATED PER AMS2700, METHOD 2, CLASS 4, NON-LOCKING.
NAS1835C4S	=	.2500-28 UNJF-3B THREAD, CRES NUT AND HOUSING, PASSIVATED PER AMS2700, METHOD 1, TYPE 2, CLASS 4, SILVER PLATED NUT, LOCKING.
NAS1835C4P	=	.2500-28 UNJF-3B THREAD, CRES NUT AND HOUSING, PASSIVATED PER AMS2700, METHOD 1, TYPE 2, CLASS 4, CADMIUM PLATED NUT, LOCKING.

NOTES:

- /1/ THREADS PER AS8879.
- (2) LOCKING TORQUE PER NASM25027 EXCEPT LOCKING, CORROSION RESISTANT STEEL INSERT WITHOUT PLATING OR LUBRICANT WILL BE TESTED USING A SILVER PLATED BOLT OR SCREW.
- (3) TOLERANCES UNLESS OTHERWISE SPECIFIED: .XXX = ± 0.10 .XX = ± 0.02
- (4) AN ADHESIVE-BACKED INSTALLATION TAB NAS1837 (PLASTIC) SHALL BE FURNISHED WITH EACH INSERT.
- /5/ PLATING OR SOLID FILM LUBRICANT IS RECOMMENDED ON LOCKING CRES INSERTS.
- /6/ MINIMUM RADIAL FLOAT .032.
- /7/ MAXIMUM BOLT ENGAGEMENT SHOULD NOT EXCEED "L" MINUS .060.
- (8) NOT USED.
- /9/ BURRS AROUND POTTING HOLES OR SLOTS PERMISSABLE UNDER FLANGE.
- (10) DIMENSIONING AND TOLERANCING PER ANSI Y14.5M -1982.
- (11) DIMENSIONS IN INCHES.
- /12/ MINIMUM "GO" THREAD GAGE PENETRATION SHALL BE ONE HALF REVOLUTION BEFORE LUBRICATION. MINIMUM BOLT THREAD PENETRATION SHALL BE THREE QUARTER REVOLUTION AFTER LUBRICATION.
- /13/ STRAIGHT OR DIAMOND ANTIROTATIONAL KNURL (MANUFACTURER'S OPTION).
- /14/ CENTERLINE OF THREAD LOCK WHEN APPLICABLE.
- /15/ SHANK DEFORMED IN THIS AREA TO PROVIDE THREAD LOCK WHEN APPLICABLE.
- /16/ POTTING AND VENT HOLES OR SLOTS (MANUFACTURER'S OPTION).
- (17) DIMENSIONAL LIMITS APPLY AFTER PLATING, AND PRIOR TO SOLID FILM LUBE.

NAS1835

INSERT, MOLDED IN, BLIND THREADED, LOCKING,
NONSELF-LOCKING, FLOATING, SANDWICH PANEL

NOTES:

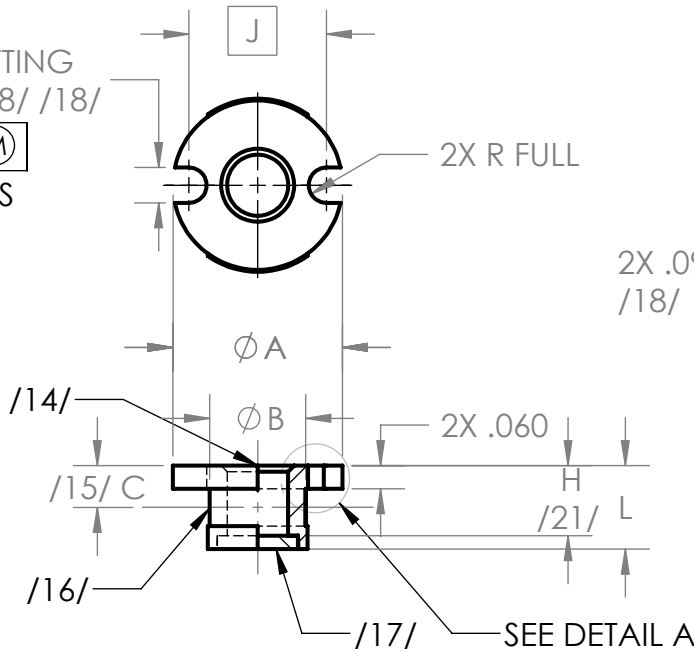
- (18) UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.
- (19) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.
- (20) UNLESS OTHERWISE SPECIFIED HEREIN, REFERENCED DOCUMENTS SHALL BE THE ISSUE IN EFFECT ON DATE OF MANUFACTURE. HOWEVER, EXISTING MATERIAL INVENTORY CERTIFIED TO A PREVIOUS REVISION OF THE APPLICABLE MATERIAL SPECIFICATION(S) IS ACCEPTABLE FOR USE UNTIL DEPLETION.

NAS1836

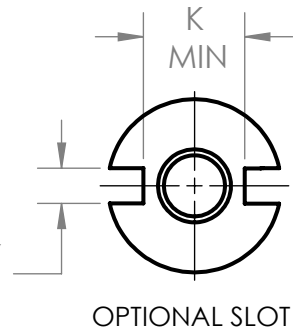
INSERT, MOLDED IN, BLIND THREADED, SELF-LOCKING, NONSELF-LOCKING, LIGHTWEIGHT, SANDWICH PANEL

2X .092 -.097 POTTING AND VENT SLOTS /8/ /18/

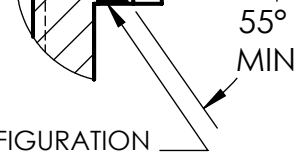
$\oplus \phi .020 \text{ (M)} \text{ A (M)}$
TYPICAL ALL STYLES



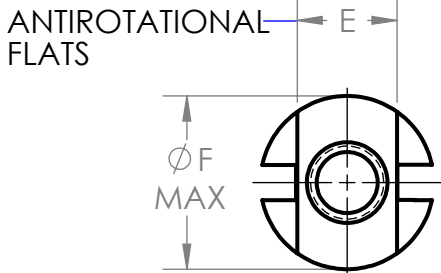
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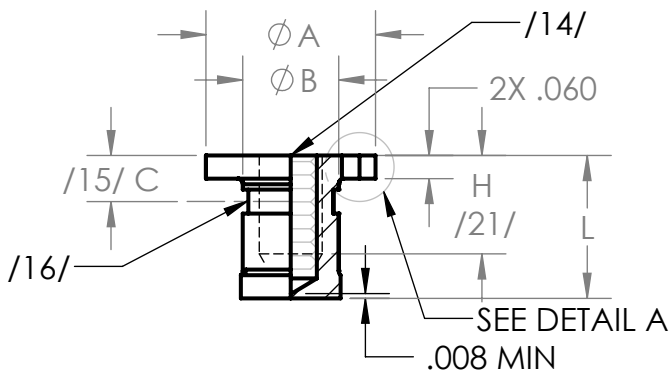
OPTIONAL SLOT



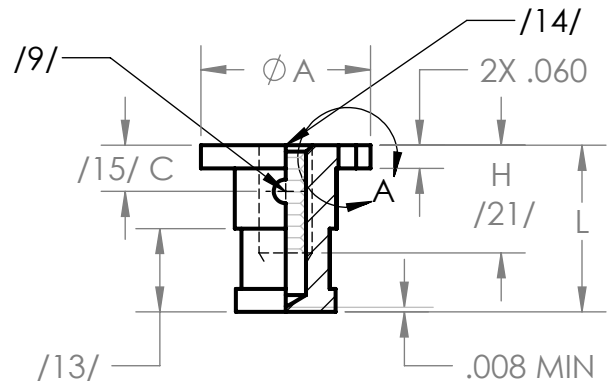
CONFIGURATION WITHIN THIS AREA MFG OPTION
DETAIL A
TYPICAL FOR ALL STYLES



SHIMMED STYLE FOR SHORT LENGTHS (MANUFACTURER'S OPTION)



BLIND TAPPED STYLE FOR LONG LENGTHS ALL STEEL AND CRES SELF-LOCKING AND NONSELF-LOCKING OR NONSELF-LOCKING ALUMINUM STYLE.



ALUMINUM SELF-LOCKING STYLE OR ALTERNATE NONSELF-LOCKING ALUMINUM STYLE

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:B 9/13/2021

GAGE CODE: 0JHK5

NAS1836

INSERT, MOLDED IN, BLIND THREADED, SELF-LOCKING, NONSELF-LOCKING, LIGHTWEIGHT, SANDWICH PANEL

TABLE I - DIMENSIONS

FIRST DASH NO.	THREAD CLASS 3B MINOR DIA <u>-A-</u>	ØA +.000 -.010	ØB	C	E	ØF MAX	H /21/	J BASIC	K MIN	L /22/ MIN	INSTALLATION HOLE SIZE
06	.1380-32 UNJC	.451	.250	.12	.260	.45	.187	.358	.251	.217	.452 - .457
08	.1640-32 UNJC	.451	.250	.12	.260	.45	.187	.358	.251	.217	.452 - .457
3	.1900-32 UNJF	.451	.250	.12	.260	.45	.187	.358	.251	.217	.452 - .457
4	.2500-28 UNJF	.498	.300	.14	.312	.49	.250	.405	.298	.279	.499 - .504

MATERIAL:

CARBON STEEL PER ASTM A108, ASTM A576 OR MATERIAL COMPOSITION PER AIR4127, ULTIMATE TENSILE STRENGTH, 85 KSI MINIMUM.
AL ALLOY, GRADE 2024 (UNS A92024) TEMPER T4 OR T351 PER AMS-QQ-A-225/6.
CRES 303 (UNS S30300) PER ASTM A582/A582M.
NONMETALLIC LOCKING ELEMENT - POLYAMIDE PER FED SPEC L-P-410.

FINISH:

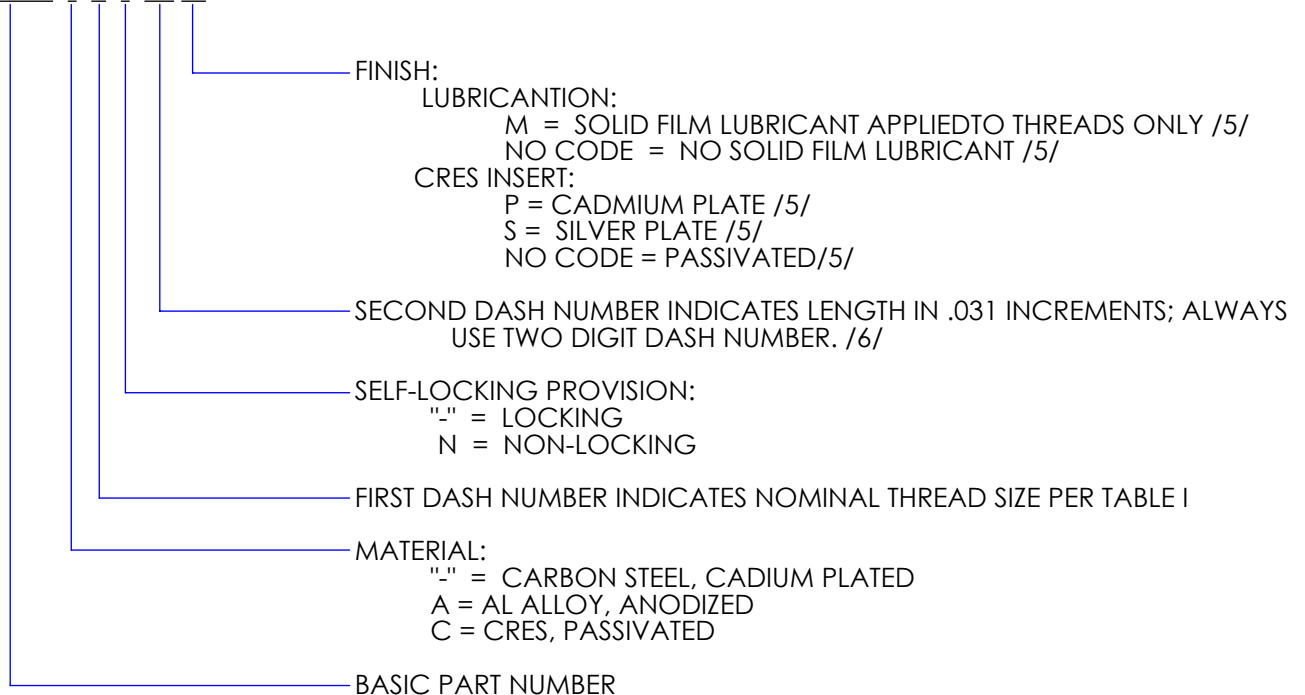
CARBON STEEL - CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2.
AL ALLOY - ANODIZE PER MIL-A-8625, TYPE I, CLASS OPTIONAL.
CRES - PASSIVATE PER AMS2700, METHOD 1, TYPE 2; SILVER PLATE PER AMS 2410 OR AMS 2411; OR CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2.

LUBRICATION:

SOLID FILM LUBRICANT PER AS5272, TYPE I, APPLIED TO THREADS ONLY.

CODE:

NAS1836 - 3 - 08 M



WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:B 9/13/2021

GAGE CODE: 0JHK5

NAS1836

INSERT, MOLDED IN, BLIND THREADED, SELF-LOCKING, NONSELF-LOCKING, LIGHTWEIGHT, SANDWICH PANEL

EXAMPLE OF PART NUMBER:

NAS1836-3-08M	= .1900-32 UNJF-3B THREAD, CARBON STEEL, CADMIUM PLATED, WITH SOLID FILM LUBRICANT, .248 LONG, SELF-LOCKING.
NAS1836A3N09	= .1900-32 UNJF-3B THREAD, AL ALLOY, ANODIZED, .279 LONG, NONSELF-LOCKING.
NAS1836C08-10S	= .1640-32 UNJC-3B THREAD, CRES, SILVER PLATED, .310 LONG, SELF-LOCKING.
NAS1836C08-10P	= .1640-32 UNJC-3B THREAD, CRES, CADMIUM PLATED, .310 LONG, SELF-LOCKING.
NAS1836C4N12	= .2500-28 UNJF-3B THREAD, CRES, PASSIVATED, .372 LONG, NONSELF-LOCKING.

NOTE:

- (1) THREADS PER AS8879.
- (2) LOCKING TORQUE PER NASM25027 EXCEPT SELF-LOCKING, CORROSION RESISTANT STEEL INSERT WITHOUT PLATING OR LUBRICANT WILL BE TESTED USING A SILVER PLATED BOLT OR SCREW.
- (3) TOLERANCES UNLESS OTHERWISE SPECIFIED: .XXX ±.010, .XX ±.02.
- (4) AN ADHESIVE-BACKED INSTALLATION TAB NAS1837 (PLASTIC) SHALL BE FURNISHED WITH EACH INSERT.
- /5/ PLATING OR SOLID FILM LUBRICANT IS RECOMMENDED ON SELF-LOCKING CRES INSERTS.
- /6/ SELECT A LENGTH WHICH WILL ALLOW A MINIMUM OF .040 CLEARANCE BETWEEN BOTTOM OF INSERT AND INSIDE SURFACE OF BOTTOM SKIN.
- (7) MAXIMUM BOLT ENGAGEMENT SHOULD NOT EXCEED "L" MINUS .060.
- /8/ BURRS CAUSED BY MACHINING POTTING HOLES OR SLOTS PERMISSIBLE UNDER FLANGE.
- /9/ NONMETALLIC THREAD LOCK WHEN APPLICABLE. LOCATE PELLET NO CLOSER THAN 10° FROM EDGE OF EITHER POTTING HOLE OR SLOT.
- (10) DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
- (11) DIMENSIONS IN INCHES AND APPLY AFTER FINISH AND PRIOR TO THE APPLICATION OF LUBRICATION UNLESS OTHERWISE SPECIFIED.
- (12) NOT USED.
- /13/ EXTERNAL CONFIGURATION OPTIONAL IN THIS AREA FOR SHORT LENGTHS THROUGH .375.
- /14/ MINIMUM "GO" THREAD GAGE PENETRATION SHALL BE ONE HALF REVOLUTION BEFORE LUBRICATION. MINIMUM BOLT THREAD PENETRATION SHALL BE THREE QUARTER REVOLUTION AFTER LUBRICATION.
- /15/ CENTERLINE OF THREAD LOCK WHEN APPLICABLE.
- /16/ SHANK DEFORMED IN THIS AREA TO PROVIDE THREAD LOCK WHEN APPLICABLE.
- /17/ SHIM TO PROVIDE MAXIMUM THREAD ON SHORT LENGTH INSERT IF NECESSARY.
- /18/ POTTING AND VENT HOLES OR SLOTS (MANUFACTURER'S OPTION).
- (19) ALL DIAMETERS SHALL BE WITHIN .010 CIRCULAR RUNOUT TO DATUM A.
- (20) REMOVE ALL BURRS AND SHARP EDGES.
- /21/ MINIMUM THREAD "H" IN SHORT LENGTHS. MINIMUM THREAD "H" WHERE LENGTH PERMITS SHALL BE 2X DIAMETER OF THREAD.

NAS1836

INSERT, MOLDED IN, BLIND THREADED, SELF-LOCKING,
NONSELF-LOCKING, LIGHTWEIGHT,
SANDWICH PANEL

NOTE:

/22/ MINIMUM LENGTH WHICH MAY BE SPECIFIED.

/23/ NOT USED.

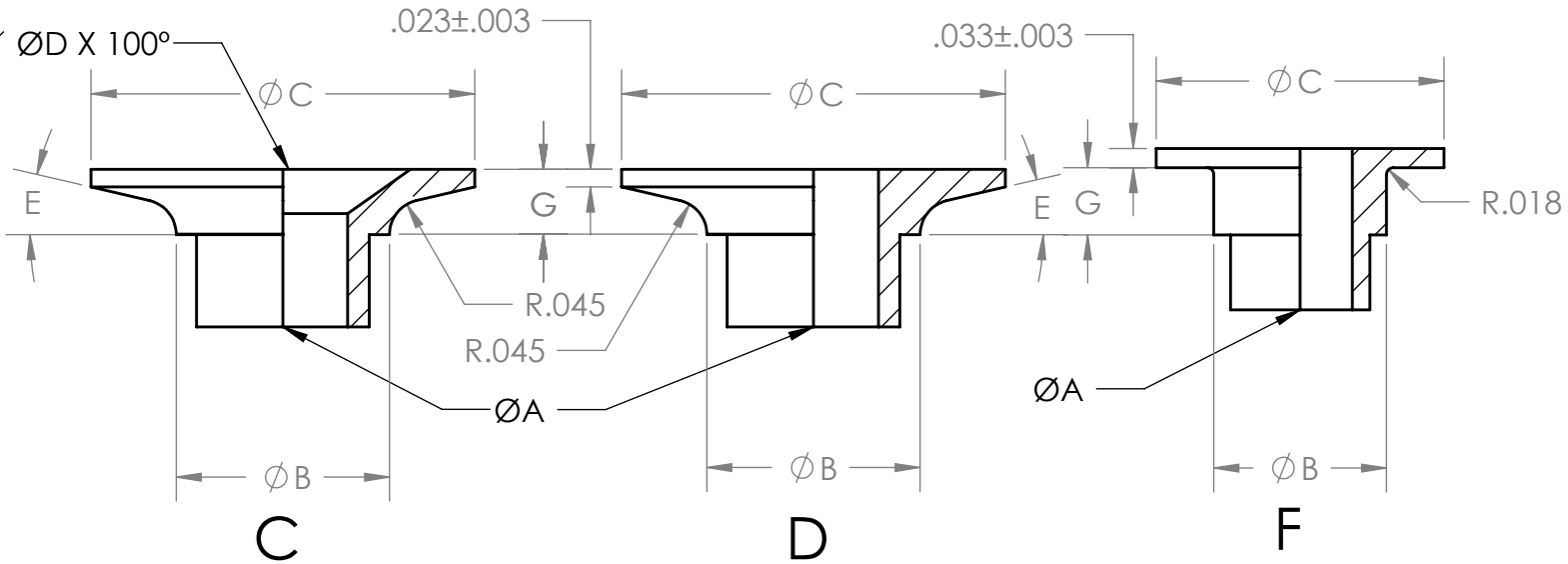
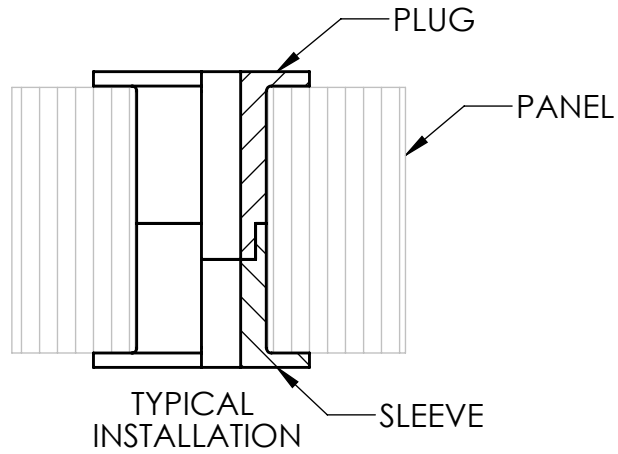
(24) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.

(25) UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.

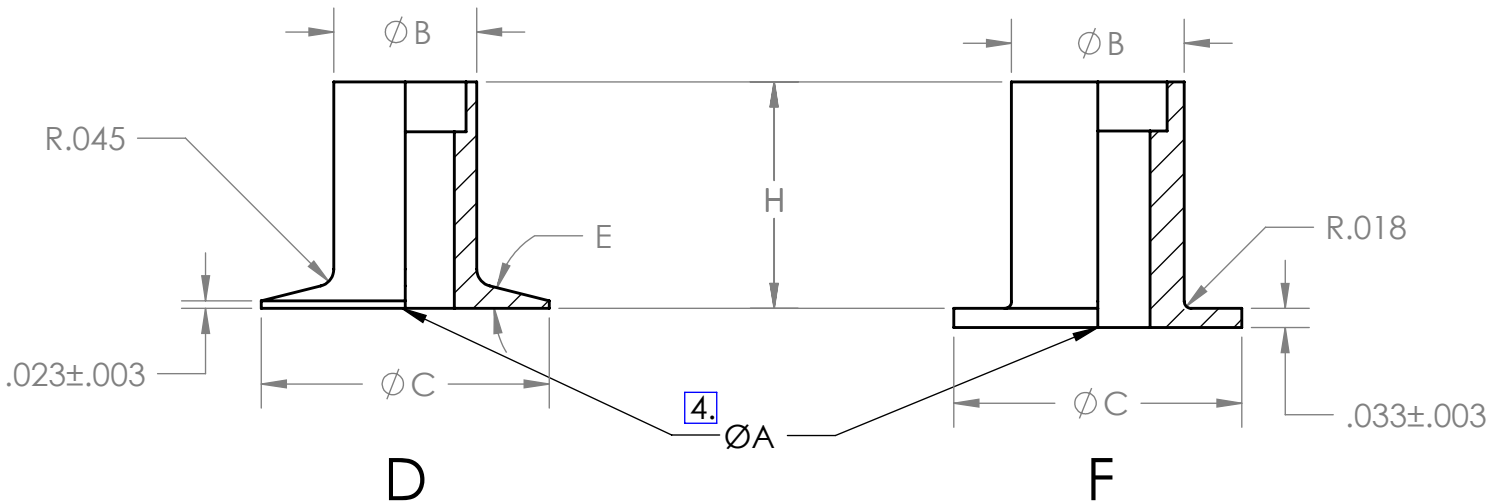
(26) UNLESS OTHERWISE SPECIFIED HEREIN, REFERENCED DOCUMENTS SHALL BE THE ISSUE IN EFFECT ON DATE OF MANUFACTURE. HOWEVER, EXISTING MATERIAL INVENTORY CERTIFIED TO A PREVIOUS REVISION OF THE APPLICABLE MATERIAL SPECIFICATION(S) IS ACCEPTABLE FOR USE UNTIL DEPLETION.

W101

INSERT: GROMMET TYPE, THROUGH-RIVET



PLUG HEAD STYLES



SLEEVE HEAD STYLES

WITTEN COMPANY
918-272-9567

APPROVAL DATE: 11/10/2020

GAGE CODE: 0JHK5

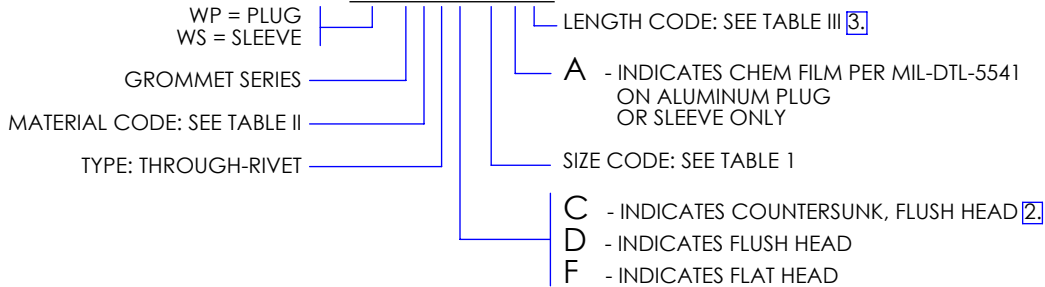
W101

INSERT: GROMMET TYPE, THROUGH-RIVET

PART NUMBER CODING:

WP161D18-0

WS161D18-08


TABLE I

SIZE CODE	$\varnothing A$ +.002 -.003	$\varnothing B$ $\pm .002$	$\varnothing C$ $\pm .005$	$\varnothing D$ +.003 -.004	E $\pm 1^\circ$
12	.133	.278	.500	.233	13°
15	.168	.278	.500	.295	13°
18	.194	.309	.625	.362	13°
25	.256	.372	.750	.486	14°
28	.289	.403	.812	.501	14°
31	.318	.466	.875	.574	14°
37	.381	.622	1.000	.704	14°

TABLE II

MATL CODE	MATERIAL	FINISH
0	AL ALLOY, GRADE 2024, TEMPER T4 OR T351 PER SAE-AMS-QQ-A-225/6	ANODIZE PER MIL-A-8625 TYPE I, CLASS 1
6	CORROSION RESISTANT STEEL, TYPE 303 CRES PER ASTM A 582	PASSIVATE PER ASTM-A967
9	CARBON STEEL PER ASTM A 108	CAD PLATE PER SAE-AMS-QQ-P-416, TYPE II, CLASS 2

NOTES:

1. ANY COMBINATION OF SLEEVE AND PLUG WITHIN RIVET SIZE MAY BE USED.
- [2] 'C' HEAD STYLE IS AVAILABLE IN PLUG CONFIGURATION ONLY.
- [3] REFER TO TABLE III TO SELECT A PLUG/SLEEVE COMBINATION FOR GIVEN PANEL THICKNESS.
- [4] A SINGLE THROUGH HOLE DIAMETER IS USED FOR -.03 AND -.04 SLEEVE LENGTHS IN 25 AND 28 SIZES.
5. THE W101 GROMMETS ARE SELF-RETAINED THROUGH A TELESCOPE FIT.
6. CONSULT THE WITTEN COMPANY ENGINEERING DEPARTMENT FOR OTHER FINISHES, MATERIALS, OR SIZES.

 WITTEN COMPANY
 918-272-9567

APPROVAL DATE: 11/10/2020

GAGE CODE: 0JHK5

W101

INSERT: GROMMET TYPE, THROUGH-RIVET

TABLE III

PANEL THICKNESS MINIMUM	LENGTH CODE	PLUG			LENGTH CODE	SLEEVE		
		G				H		
		SIZE CODE				SIZE CODE		
		12,15,18	25,28	31,37		12,15,18	25,28	31,37
.187	X	.085	.120	NA	03	.103	.067	NA
.250	0	.085	.120	NA	04	.165	.130	NA
.265	01	.100	.135					
.281	1	.116	.151					
.296	11	.131	.167					
.312	2	.147	.183					
.327	21	.163	.198					
.344	3	.179	.214					
.359	31	.194	.230					
.375	0	.085	.120	.190	06	.290	.255	0.185 31 ONLY
.390	01	.100	.135	.206				
.406	1	.116	.151	.221				
.421	11	.131	.167	.237				
.437	2	.147	.183	.252				
.452	21	.163	.198	.268				
.469	3	.179	.214	.283				
.484	31	.194	.230	.298				
.500	0	.085	.120	.190	08	.415	.380	.310
.515	01	.100	.135	.206				
.531	1	.116	.151	.221				
.546	11	.131	.167	.237				
.562	2	.147	.183	.252				
.577	21	.163	.198	.268				
.594	3	.179	.214	.283				
.609	31	.194	.230	.298				
.625	0	.085	.120	.190	10	.540	.505	.435
.640	01	.100	.135	.206				
.656	1	.116	.151	.221				
.672	11	.131	.167	.237				
.687	2	.147	.183	.252				
.702	21	.163	.198	.268				
.719	3	.179	.214	.283				
.734	31	.194	.230	.298				
.750	0	.085	.120	.190	12	.665	.630	.560
.765	01	.100	.135	.206				
.781	1	.116	.151	.221				
.796	11	.131	.167	.237				
.812	2	.147	.183	.252				
.827	21	.163	.198	.268				
.844	3	.179	.214	.283				
.859	31	.194	.230	.298				
.875	0	.085	.120	.190	14	.790	.755	.685
.890	01	.100	.135	.206				
.906	1	.116	.151	.221				
.921	11	.131	.167	.237				
.937	2	.147	.183	.252				
.952	21	.163	.198	.268				
.969	3	.179	.214	.283				
.984	31	.194	.230	.298				

 WITTEN COMPANY
 918-272-9567

APPROVAL DATE: 11/10/2020

GAGE CODE: OJHK5

W101

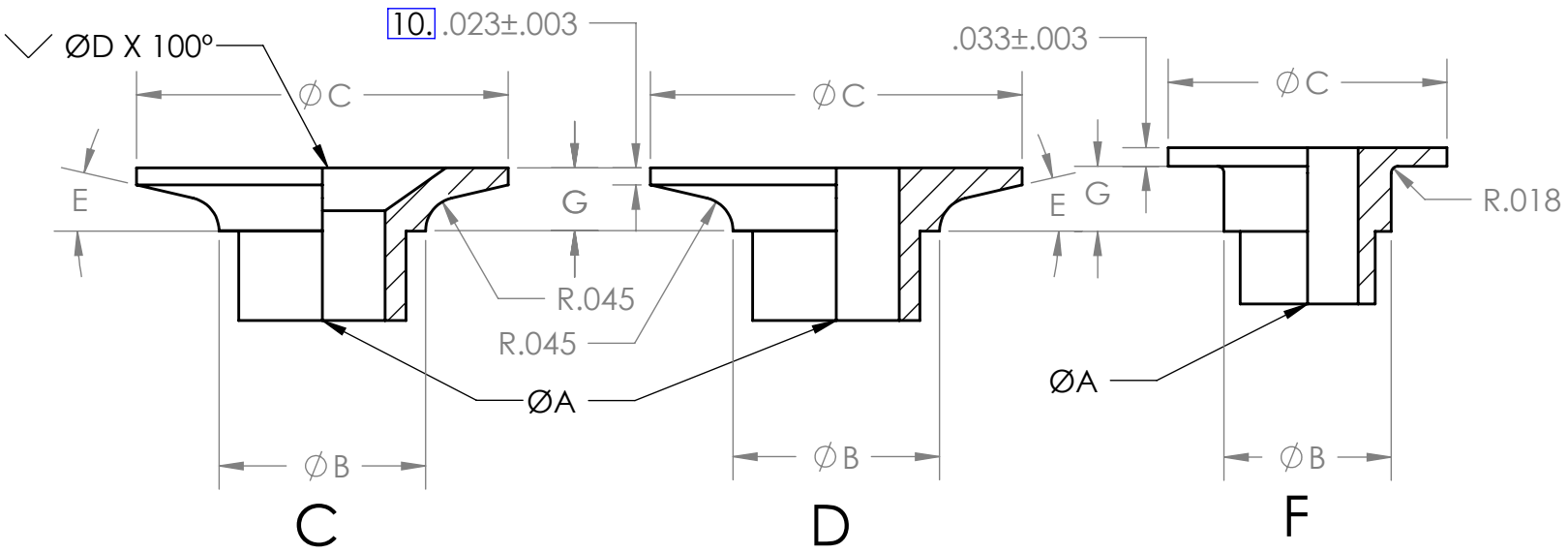
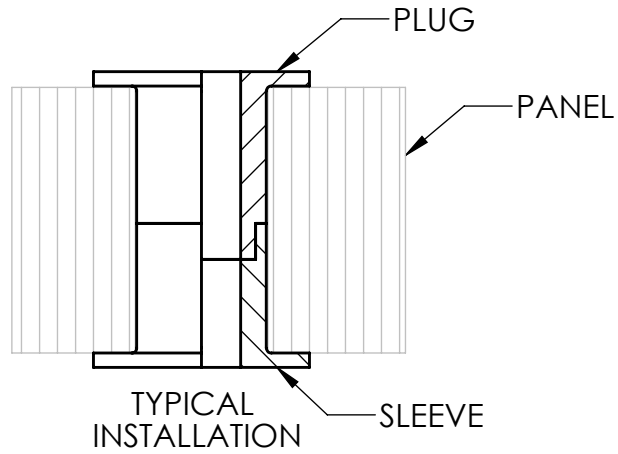
INSERT: GROMMET TYPE, THROUGH-RIVET

TABLE III (CONT.)

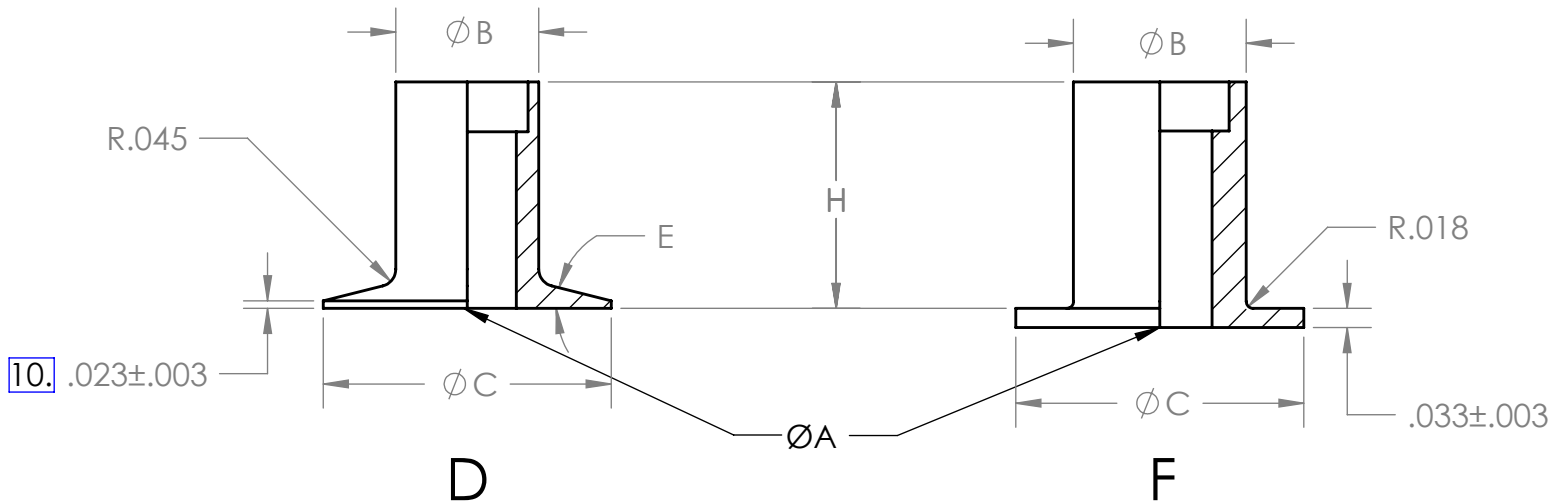
PANEL THICKNESS MINIMUM	LENGTH CODE	PLUG			LENGTH CODE	SLEEVE		
		G				H		
		SIZE CODE				SIZE CODE		
		12,15,18	25,28	31,37		12,15,18	25,28	31,37
1.000	0	.085	.120	.190	16	.915	.880	.810
1.015	01	.100	.135	.206				
1.031	1	.116	.151	.221				
1.046	11	.131	.167	.237				
1.062	2	.147	.183	.252				
1.077	21	.162	.198	.268				
1.094	3	.179	.214	.283				
1.109	31	.194	.230	.298				
1.125	0	.085	.120	.190	18	1.040	1.005	.935
1.140	01	.100	.135	.206				
1.156	1	.116	.151	.221				
1.171	11	.131	.167	.237				
1.187	2	.147	.183	.252				
1.202	21	.162	.198	.268				
1.219	3	.179	.214	.283				
1.234	31	.194	.230	.298				
1.250	0	.085	.120	.190	20	1.165	1.130	1.060
1.265	01	.100	.135	.206				
1.281	1	.116	.151	.221				
1.296	11	.131	.167	.237				
1.312	2	.147	.183	.252				
1.327	21	.162	.198	.268				
1.343	3	.179	.214	.283				
1.359	31	.194	.230	.298				

W102

INSERT: GROMMET TYPE, THROUGH-BOLT



PLUG HEAD STYLES



SLEEVE HEAD STYLES

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 10/27/2020

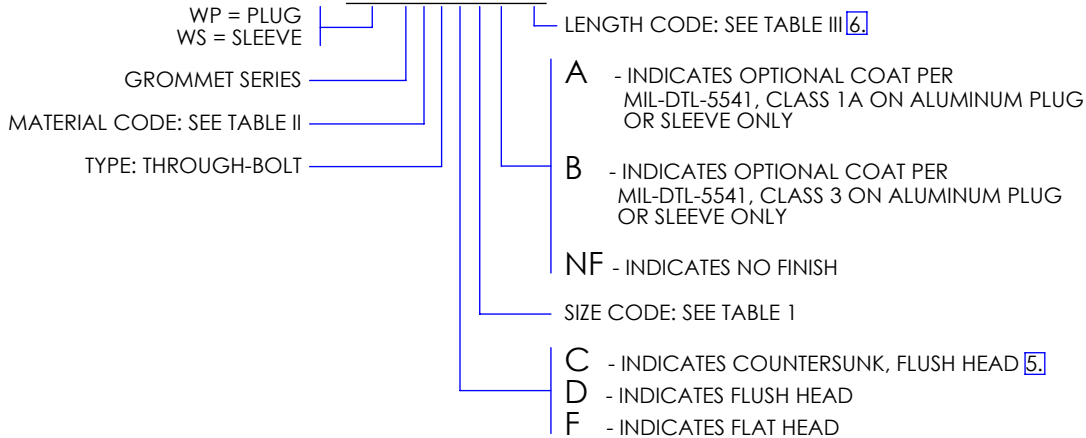
GAGE CODE: 0JHK5

W102

INSERT: GROMMET TYPE, THROUGH-BOLT

PART NUMBER CODING:

WP102F8 - 11
WS102D8A08


TABLE I

SIZE CODE	ØA ±.003	ØB ±.003	ØC	ØD	E	INSTALLATION HOLE Ø
4	.116	.216	.375	.220	13°	.228
6	.144	.278	.500	.274	13°	.290
8	.169	.278	.500	.332	13°	.290
10	.194	.309	.625	.382	13°	.323
25	.257	.372	.750	.505	14°	.390
31	.318	.466	.875	.632	14°	.484
37	.381	.622	1.000	.761	14°	.640

TABLE II

MATL CODE	MATERIAL	FINISH
0	AL ALLOY, GRADE 2024, TEMPER T4 OR T351 PER SAE-AMS-QQ-A-225/6	ANODIZE PER MIL-A-8625 TYPE I, CLASS 1
6	CORROSION RESISTANT STEEL, TYPE 303 CRES PER ASTM A 582	PASSIVATE PER ASTM-A967
9	CARBON STEEL PER ASTM A 108	CAD PLATE PER SAE-AMS-QQ-P-416, TYPE II, CLASS 2

NOTES:

1. DIMENSIONING AND TOLERANCING PRACTICES PER ASME Y14.5M-2018.
2. DIMENSIONAL LIMITS APPLY AFTER PLATING.
3. DEBURR AND BREAK ALL SHARP EDGES .005 - .015.
4. SURFACE TEXTURE: 125 MICROINCHES PER ASME B46.1-2019.
- ⁵ 'C' HEAD STYLE IS AVAILABLE IN PLUG CONFIGURATION ONLY.
- ⁶ REFER TO TABLE III TO SELECT PLUG/SLEEVE COMBINATION FOR A GIVEN PANEL THICKNESS.
7. THE W102 GROMMETS ARE SELF-RETAINED THROUGH A TELESCOPE FIT.
- ⁸ A SINGLE THROUGH HOLE DIAMETER IS USED FOR 03 SLEEVE LENGTH CODE.
- ⁹ A SINGLE THROUGH HOLE DIAMETER IS USED FOR 04 SLEEVE LENGTH CODE IN 26 AND 28 SIZE CODES.
- ¹⁰ PARTS SPECIFIED WITH A 31 OR 37 SIZE CODE HAVE A FLANGE THICKNESS OF .033±.003.
11. CONSULT THE WITTEN COMPANY ENGINEERING DEPARTMENT FOR OTHER FINISHES, MATERIALS, OR SIZES.

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 10/27/2020

GAGE CODE: 0JHK5

W102

INSERT: GROMMET TYPE, THROUGH-BOLT

TABLE III

PANEL THICKNESS MINIMUM	LENGTH CODE	PLUG			LENGTH CODE	SLEEVE		
		G+.000/- .010				H+.000/- .010		
		SIZE CODE				SIZE CODE		
		4,6,8,10	25	31,37		4,6,8,10	25	31,37
.188	X	.085	.120	NA	03 [8.]	.103	.067	NA
.250	0	.085	.120	NA	04 [9.]	.165	.130	NA
.266	01	.101	.136					
.281	1	.116	.151					
.297	11	.132	.167					
.312	2	.147	.182					
.328	21	.163	.198					
.344	3	.179	.214					
.359	31	.194	.229					
.375	0	.085	.120	.190	06	.290	.255	.185
.391	01	.101	.136	.206				
.406	1	.116	.151	.221				
.422	11	.132	.167	.237				
.438	2	.147	.182	.252				
.453	21	.163	.198	.268				
.469	3	.179	.214	.284				
.484	31	.194	.229	.299				
.500	0	.085	.120	.190	08	.415	.380	.310
.516	01	.101	.136	.206				
.531	1	.116	.151	.221				
.547	11	.132	.167	.237				
.562	2	.147	.182	.252				
.578	21	.163	.198	.268				
.594	3	.179	.214	.284				
.609	31	.194	.229	.299				
.625	0	.085	.120	.190	10	.540	.505	.435
.641	01	.101	.136	.206				
.656	1	.116	.151	.221				
.672	11	.132	.167	.237				
.688	2	.147	.182	.252				
.703	21	.163	.198	.268				
.719	3	.179	.214	.284				
.734	31	.194	.229	.299				
.750	0	.085	.120	.190	12	.685	.630	.560
.766	01	.101	.136	.206				
.781	1	.116	.151	.221				
.797	11	.132	.167	.237				
.812	2	.147	.182	.252				
.828	21	.163	.198	.268				
.844	3	.179	.214	.284				
.859	31	.194	.229	.299				
.875	0	.085	.120	.190	14	.790	.755	.685
.891	01	.101	.136	.206				
.906	1	.116	.151	.221				
.922	11	.132	.167	.237				
.938	2	.147	.182	.252				
.953	21	.163	.198	.268				
.969	3	.179	.214	.284				
.984	31	.194	.229	.299				

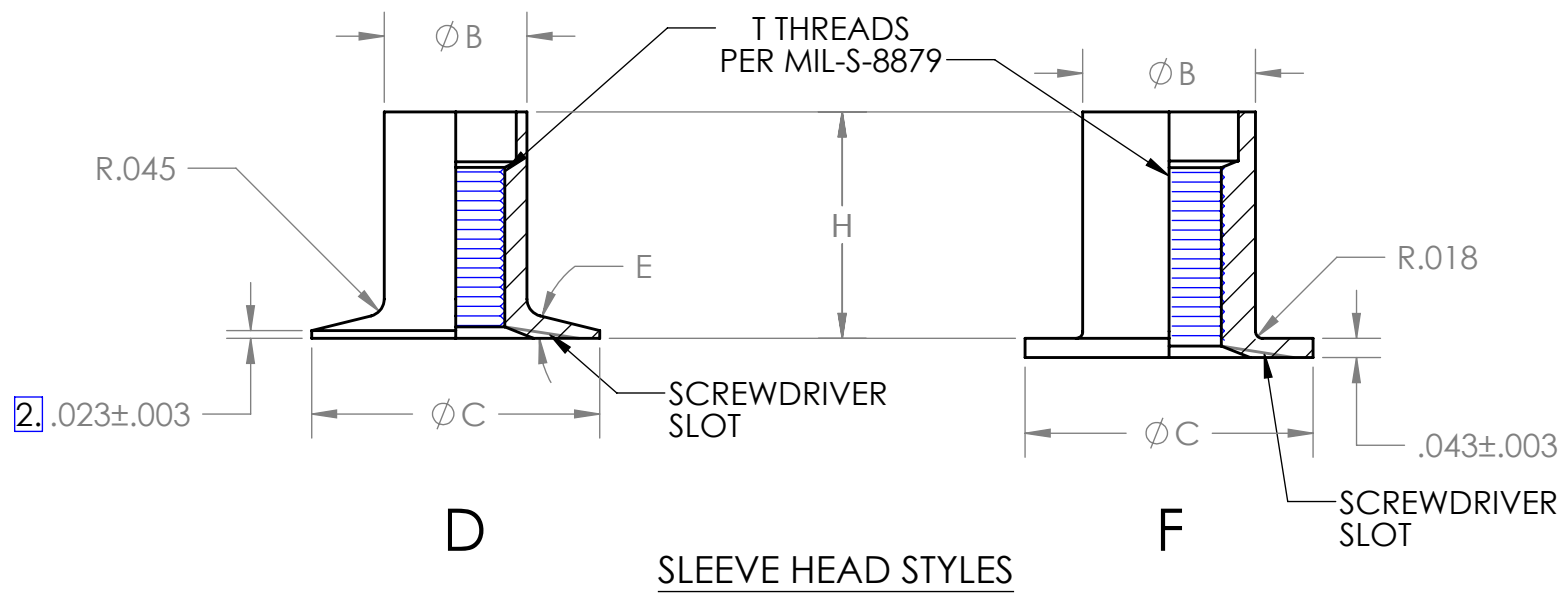
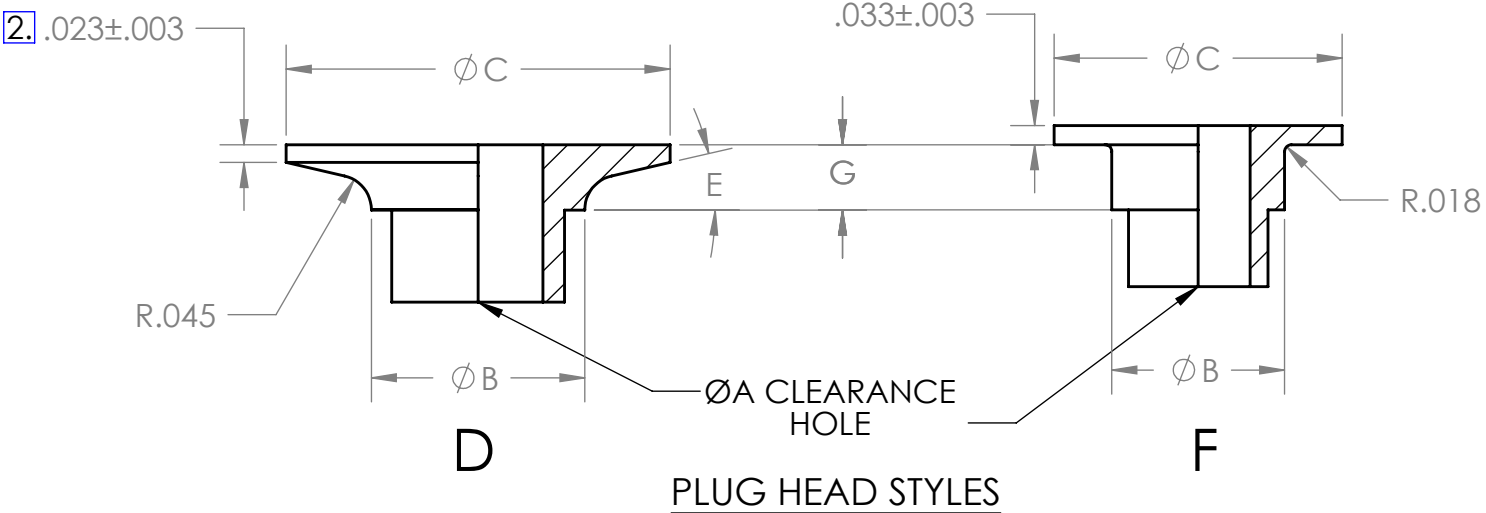
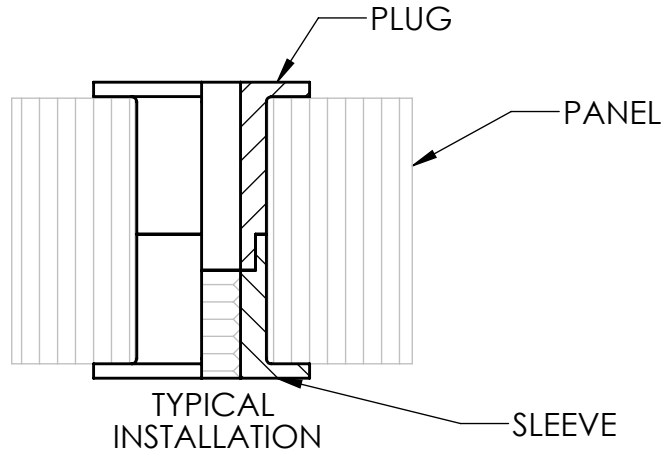
W102

INSERT: GROMMET TYPE, THROUGH-BOLT

TABLE III (CONT.)

PANEL THICKNESS MINIMUM	LENGTH CODE	PLUG			LENGTH CODE	SLEEVE		
		G+.000/- .010				H+.000/- .010		
		SIZE CODE				SIZE CODE		
		4,6,8,10	25	31,37		4,6,8,10	25	31,37
1.000	0	.085	.120	.190	16	.915	.880	.810
1.016	01	.101	.136	.206				
1.031	1	.116	.151	.221				
1.047	11	.132	.167	.237				
1.062	2	.147	.182	.252				
1.078	21	.163	.198	.268				
1.094	3	.179	.214	.284				
1.109	31	.194	.229	.299				
1.125	0	.085	.120	.190	18	1.040	1.005	.935
1.141	01	.101	.136	.206				
1.156	1	.116	.151	.221				
1.172	11	.132	.167	.237				
1.188	2	.147	.182	.252				
1.203	21	.163	.198	.268				
1.219	3	.179	.214	.284				
1.234	31	.194	.229	.299				
1.250	0	.085	.120	.190	20	1.165	1.130	1.060
1.266	01	.101	.136	.206				
1.281	1	.116	.151	.221				
1.297	11	.132	.167	.237				
1.312	2	.147	.182	.252				
1.328	21	.163	.198	.268				
1.344	3	.179	.214	.284				
1.359	31	.194	.229	.299				
1.375	0	.085	.120	.190	22	1.290	1.255	1.185
1.391	01	.101	.136	.206				
1.406	1	.116	.151	.221				
1.422	11	.132	.167	.237				
1.438	2	.147	.182	.252				
1.453	21	.163	.198	.268				
1.469	3	.179	.214	.284				
1.484	31	.194	.229	.299				
1.500	0	.085	.120	.190	24	1.415	1.380	1.310
1.516	01	.101	.136	.206				
1.531	1	.116	.151	.221				
1.547	11	.132	.167	.237				
1.562	2	.147	.182	.252				
1.578	21	.163	.198	.268				
1.594	3	.179	.214	.284				
1.609	31	.194	.229	.299				
1.625	0	.085	.120	.190	26	1.540	1.505	1.435
1.641	01	.101	.136	.206				
1.656	1	.116	.151	.221				
1.672	11	.132	.167	.237				
1.688	2	.147	.182	.252				
1.703	21	.163	.198	.268				
1.719	3	.179	.214	.284				
1.734	31	.194	.229	.299				

W103
INSERT: GROMMET TYPE, THREADED



WITTEN COMPANY
 918-272-9567

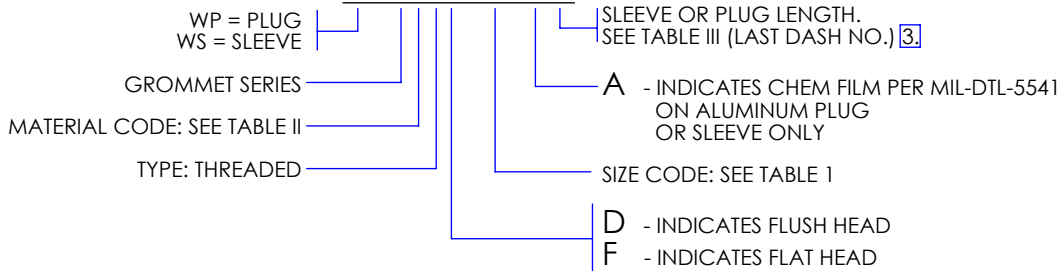
APPROVAL DATE: 11/10/2020

GAGE CODE: 0JHK5

W103

INSERT: GROMMET TYPE, THREADED

PART NUMBER CODING:

 WP193F10-0
 WS193F1032-08

TABLE I

BOLT SIZE	T THREAD CLASS 3B	ØA ±.003	ØB ±.003	ØC	E
440	.112-40UNJC	.116	.216	.375	13°
632	.1380-32UNJC	.142	.278	.500	13°
832	.1640-32UNJC	.168	.278	.500	13°
1032	.1900-32UNJF	.194	.309	.625	13°
428	.2500-28UNJF	.256	.372	.750	14°
524	.3125-24UNJF	.318	.466	.875	14°

TABLE II

MATL CODE	MATERIAL	FINISH
0	AL ALLOY, GRADE 2024, TEMPER T4 OR T351 PER SAE-AMS-QQ-A-225/6	ANODIZE PER MIL-A-8625 TYPE I
6	CORROSION RESISTANT STEEL, TYPE 303 CRES PER ASTM A 582	PASSIVATE PER ASTM-A967
9	CARBON STEEL PER ASTM A 108	CAD PLATE PER SAE-AMS-QQ-P-416, TYPE II, CLASS 2

NOTES:

1. ANY COMBINATION OF SLEEVE AND PLUG WITHIN BOLT SIZE MAY BE USED.
- 2**. .033±.003 ON 524 SIZE.
- 3**. REFER TO TABLE III TO SELECT PLUG/SLEEVE COMBINATION FOR A GIVEN PANEL THICKNESS.
4. THE W103 SERIES GROMMETS ARE SELF-RETAINED THROUGH A TELESCOPIC PRESS FIT.
5. CONSULT THE WITTEN COMPANY ENGINEERING DEPARTMENT FOR OTHER FINISHES, MATERIALS, OR SIZES.

 WITTEN COMPANY
 918-272-9567

 APPROVAL DATE:
 11/10/2020

GAGE CODE: 0JHK5

W103

INSERT: GROMMET TYPE, THREADED

TABLE III

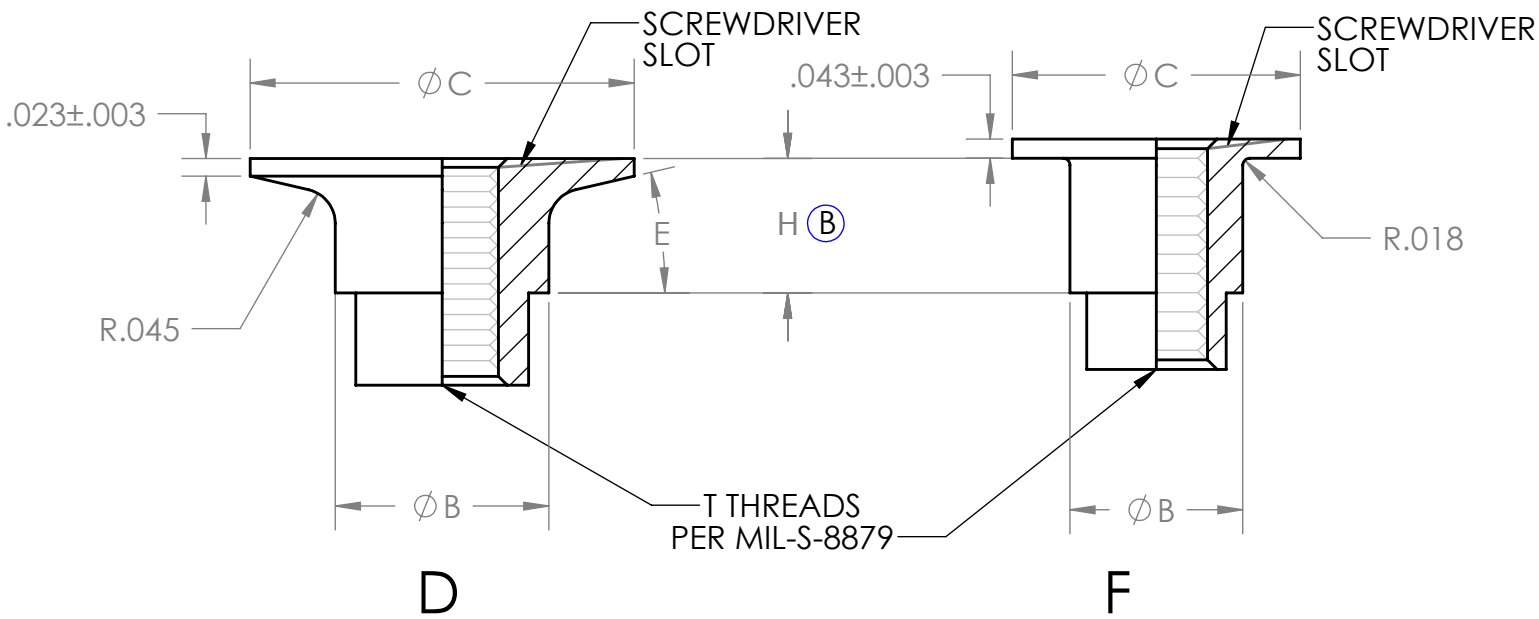
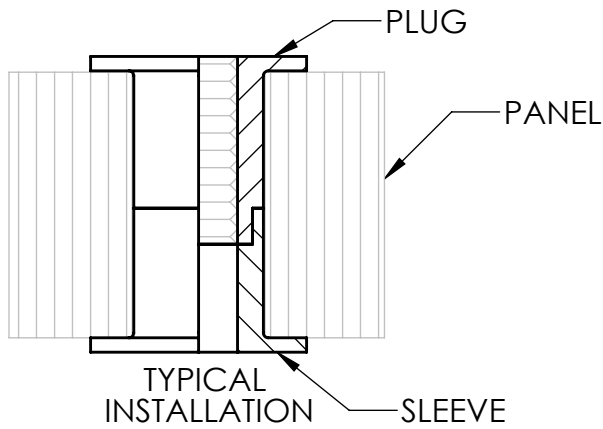
PANEL THICKNESS MINIMUM	LENGTH CODE	PLUG			LENGTH CODE	SLEEVE						
		G				H						
		SIZE CODE				SIZE CODE						
		4, 6, 8, 10	25	31		440, 632, 832, 1032	428	524				
.500	0	.085	.120	.120	08	.415	.380	NA				
.515	01	.100	.135									
.531	1	.116	.151									
.546	11	.131	.167	NA								
.562	2	.147	.183									
.577	21	.162	.198									
.594	3	.179	.214									
.609	31	.194	.230									
.625	0	.085	.120	.190					10	.540	.505	.435
.640	01	.100	.135	.206								
.656	1	.116	.151	.221								
.672	11	.131	.167	.237								
.687	2	.147	.183	.252								
.702	21	.162	.198	.268								
.719	3	.179	.214	.283								
.734	31	.194	.230	.298								
.750	0	.085	.120	.190	12	.665	.630	.560				
.765	01	.100	.135	.206								
.781	1	.116	.151	.221								
.796	11	.131	.167	.237								
.812	2	.147	.183	.252								
.827	21	.162	.198	.268								
.844	3	.179	.214	.283								
.859	31	.194	.230	.298								
.875	0	.085	.120	.190					14	.790	.755	.685
.890	01	.100	.135	.206								
.906	1	.116	.151	.221								
.921	11	.131	.167	.237								
.937	2	.147	.183	.252								
.952	21	.162	.198	.268								
.969	3	.179	.214	.283								
.984	31	.194	.230	.298								
1.000	0	.085	.120	.190	16	.915	.880	.810				
1.015	01	.100	.135	.206								
1.031	1	.116	.151	.221								
1.046	11	.131	.167	.237								
1.062	2	.147	.183	.252								
1.077	21	.162	.198	.268								
1.094	3	.179	.214	.283								
1.109	31	.194	.230	.298								
1.125	0	.085	.120	.190					18	1.040	1.005	.935
1.140	01	.100	.135	.206								
1.156	1	.116	.151	.221								
1.171	11	.131	.167	.237								
1.187	2	.147	.183	.252								
1.202	21	.162	.198	.268								
1.219	3	.179	.214	.283								
1.234	31	.194	.230	.298								
1.250	0	.085	.120	.190	20	1.165	1.130	1.060				
1.265	01	.100	.135	.206								
1.281	1	.116	.151	.221								
1.296	11	.131	.167	.237								
1.312	2	.147	.183	.252								
1.327	21	.162	.198	.268								
1.343	3	.179	.214	.283								
1.359	31	.194	.230	.298								

 WITTEN COMPANY
 918-272-9567

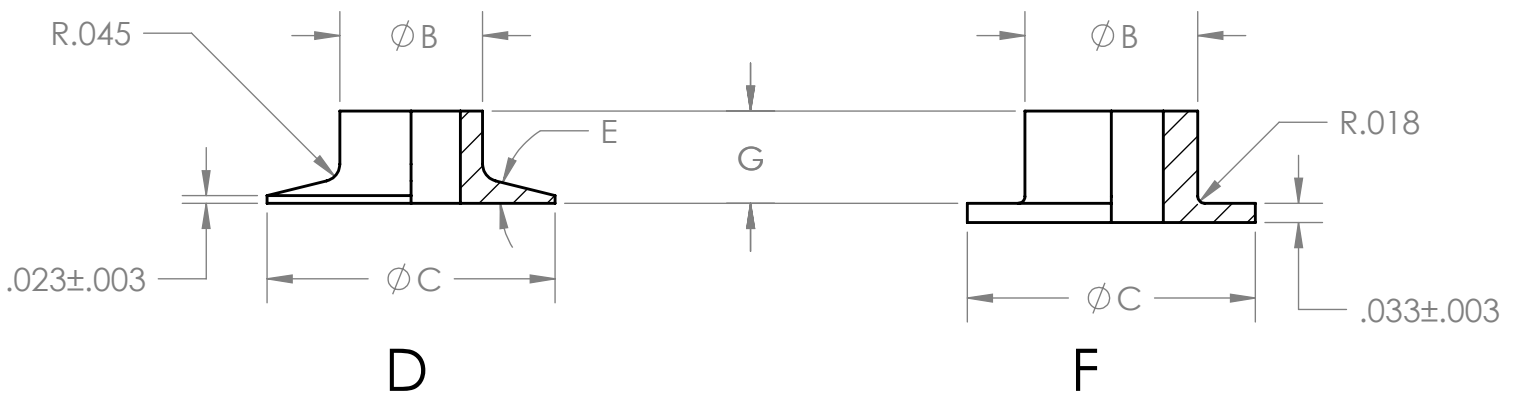
 APPROVAL DATE:
 11/10/2020

GAGE CODE: OJHK5

W103 THIN SERIES
INSERT: GROMMET TYPE, THREADED, THIN PANEL FASTENER



PLUG HEAD STYLES



SLEEVE HEAD STYLES

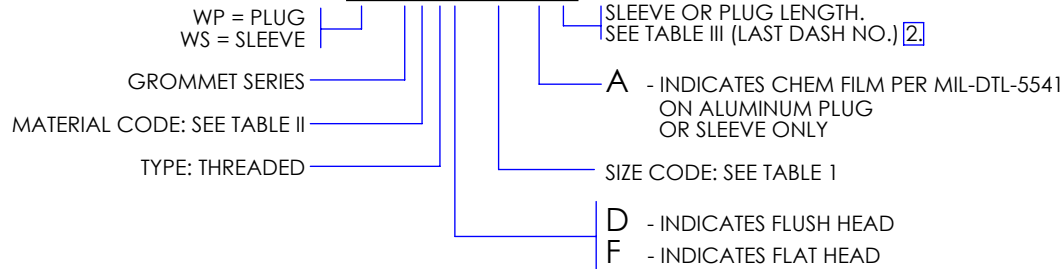
W103 THIN SERIES

INSERT: GROMMET TYPE, THREADED, THIN PANEL FASTENER

PART NUMBER CODING:

WP193F10-0

WS193F1032-06


TABLE I

BOLT SIZE	T THREAD CLASS 3B	ØB ±.003	ØC	E
440	.1120-40UNJC	.216	.375	13°
632	.1380-32UNJC	.278	.500	13°
832	.1640-32UNJC	.278	.500	13°
1032	.1900-32UNJF	.309	.625	13°
428	.2500-28UNJF	.372	.750	14°
524	.3125-24UNJF	.466	.875	14°

TABLE II

MATL CODE	MATERIAL	FINISH
0	AL ALLOY, GRADE 2024, TEMPER T4 OR T351 PER SAE-AMS-QQ-A-225/6	ANODIZE PER MIL-A-8625 TYPE I
6	CORROSION RESISTANT STEEL, TYPE 303 CRES PER ASTM A 582	PASSIVATE PER ASTM-A967
9	CARBON STEEL PER ASTM A 108	CAD PLATE PER SAE-AMS-QQ-P-416, TYPE II, CLASS 2

TABLE III

PANEL THICKNESS MINIMUM	LENGTH CODE	SLEEVE		LENGTH CODE	PLUG	
		G			H	
		SIZE CODE			SIZE CODE	
		4, 6, 8, 10, 25	31		440, 632, 832, 1032, 428	524
.245	0	.094	NA	04	.151	NA
.276	1	.125				
.307	2	.156				
.338	3	.187				
.375	0	.094	.094	06	.281	.281
.406	1	.125	.125			
.437	2	.156	.156			
.468	3	.187	.187			
.495	0	NA	.094	08	NA	.401
.526	1		.125			
.557	2		.156			
.588	3		.187			

NOTES:

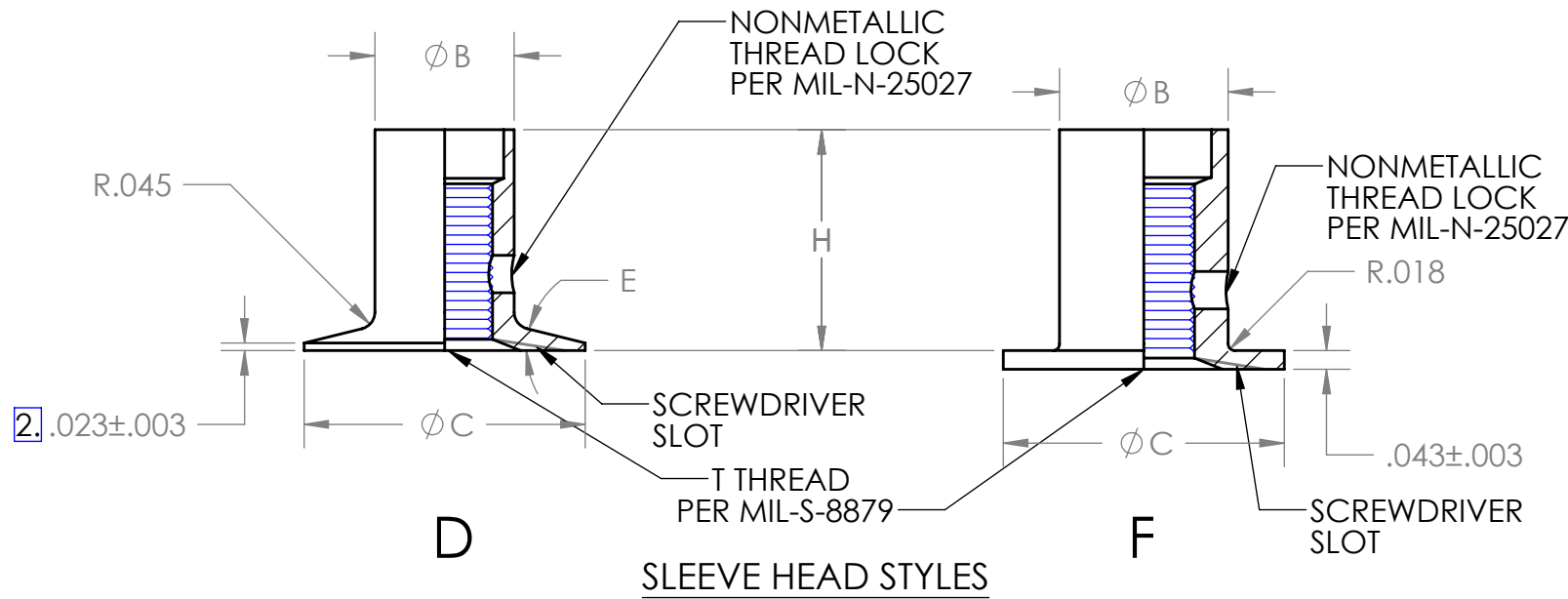
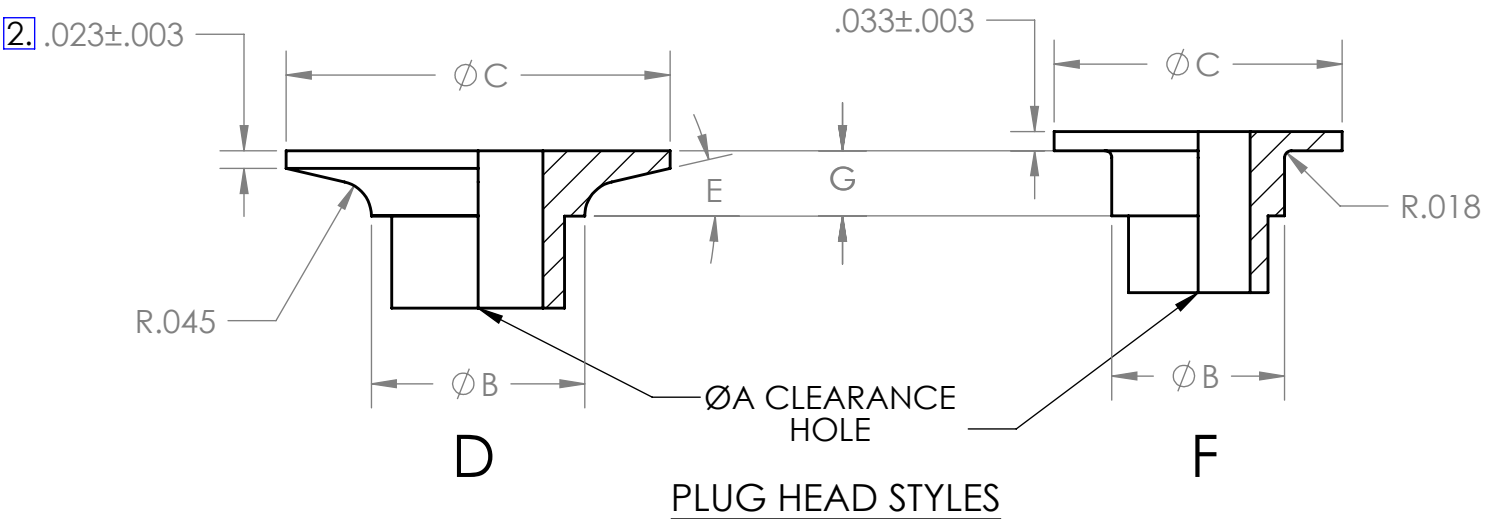
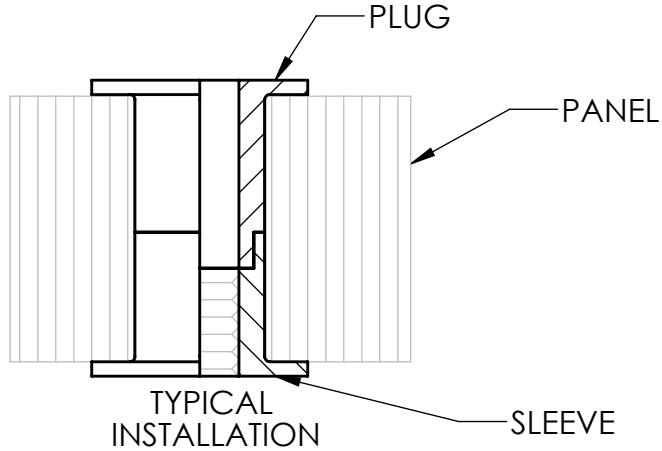
- ANY COMBINATION OF SLEEVE AND PLUG WITHIN BOLT SIZE MAY BE USED.
- REFER TO TABLE III TO SELECT PLUG/SLEEVE COMBINATION FOR A GIVEN PANEL THICKNESS.
- THE W103 THIN SERIES GROMMETS ARE SELF-RETAINED THROUGH A TELESCOPIC PRESS FIT.
- CONSULT THE WITTEN COMPANY ENGINEERING DEPARTMENT FOR OTHER FINISHES, MATERIALS, OR SIZES.

 WITTEN COMPANY
 918-272-9567

APPROVAL DATE: 11/10/2020

GAGE CODE: 0JHK5

W104
INSERT: GROMMET TYPE, THREADED NONMETALLIC THREAD LOCK



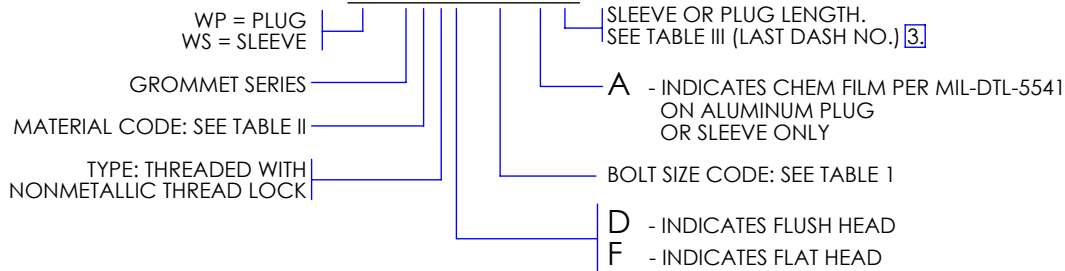
W104

INSERT: GROMMET TYPE, THREADED NONMETALLIC THREAD LOCK

PART NUMBER CODING:

WP164F10-1

WS164F1032-08


TABLE I

BOLT SIZE	T THREAD CLASS 3B	ØA ±.003	ØB ±.003	ØC	E
440	.112-40UNJC	.116	.216	.375	13°
632	.1380-32UNJC	.142	.309	.500	13°
832	.1640-32UNJC	.168	.309	.500	13°
1032	.1900-32UNJF	.194	.341	.625	13°
428	.2500-28UNJF	.256	.403	.750	14°
524	.3125-24UNJF	.318	.497	.875	14°

TABLE II

MATL CODE	MATERIAL	FINISH
0	AL ALLOY, GRADE 2024, TEMPER T4 OR T351 PER SAE-AMS-QQ-A-225/6	ANODIZE PER MIL-A-8625 TYPE I
6	CORROSION RESISTANT STEEL, TYPE 303 CRES PER ASTM A 582	PASSIVATE PER ASTM-A967
9	CARBON STEEL PER ASTM A 108	CAD PLATE PER SAE-AMS-QQ-P-416, TYPE II, CLASS 2

NOTES:

1. ANY COMBINATION OF SLEEVE AND PLUG WITHIN BOLT SIZE MAY BE USED.
2. .033±.003 ON 524 SIZE.
3. REFER TO TABLE III TO SELECT PLUG/SLEEVE COMBINATION FOR A GIVEN PANEL THICKNESS.
4. THE W104 SERIES GROMMETS ARE SELF-RETAINED THROUGH A TELESCOPIC PRESS FIT.
5. CONSULT THE WITTEN COMPANY ENGINEERING DEPARTMENT FOR OTHER FINISHES, MATERIALS, OR SIZES.

 WITTEN COMPANY
918-272-9567

 APPROVAL DATE:
11/10/2020

GAGE CODE: 0JHK5

W104

INSERT: GROMMET TYPE, THREADED, NONMETALLIC THREAD LOCK

TABLE III

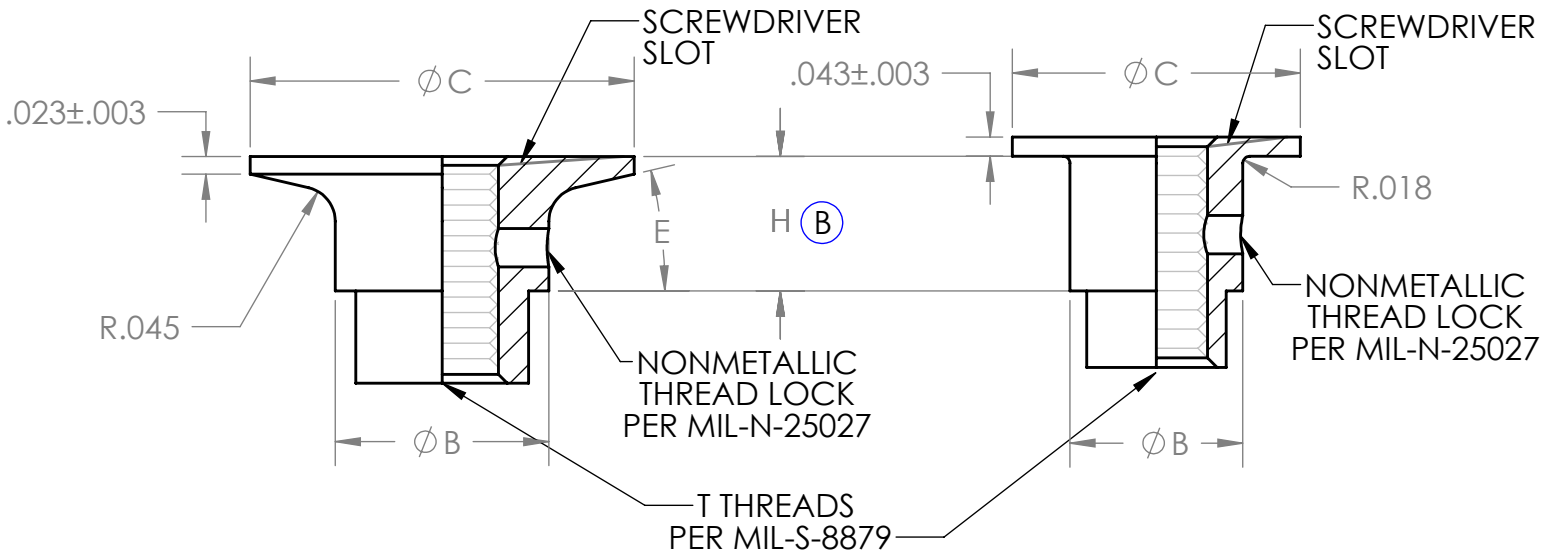
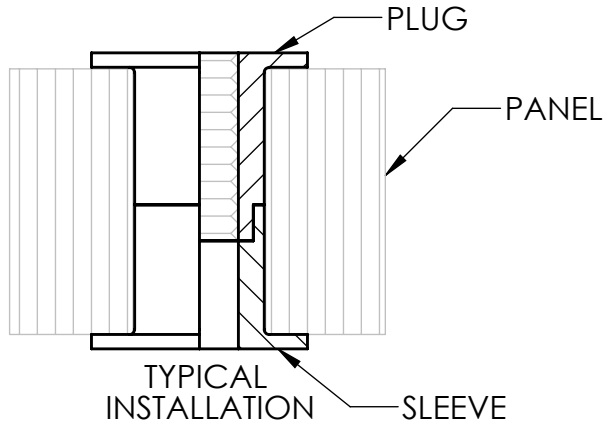
PANEL THICKNESS MINIMUM	LENGTH CODE	PLUG		LENGTH CODE	SLEEVE	
		G			H	
		SIZE CODE			SIZE CODE	
		4, 6, 8, 10, 25	31		440, 632, 832, 1032, 428	524
.500	0	.085				
.515	01	.100				
.531	1	.116				
.546	11	.131				
.562	2	.147			.415	NA
.577	21	.162				
.594	3	.179				
.609	31	.194				
.625	0	.085				
.640	01	.100				
.656	1	.116				
.672	11	.131				
.687	2	.147			.540	NA
.702	21	.162				
.719	3	.179				
.734	31	.194				
.750	0	.085				
.765	01	.100				
.781	1	.116				
.796	11	.131				
.812	2	.147			.665	NA
.827	21	.162				
.844	3	.179				
.859	31	.194				
.875	0	.085	.248			
.890	01	.100	.264			
.906	1	.116	.279			
.921	11	.131	.295			
.937	2	.147	.310		.790	.627
.952	21	.162	.326			
.969	3	.179	.341			
.984	31	.194	.357			
1.000	0	.085	.248			
1.015	01	.100	.264			
1.031	1	.116	.279			
1.046	11	.131	.295			
1.062	2	.147	.310		.915	.752
1.077	21	.162	.326			
1.094	3	.179	.341			
1.109	31	.194	.357			
1.125	0	.085	.248			
1.140	01	.100	.264			
1.156	1	.116	.279			
1.171	11	.131	.295			
1.187	2	.147	.310		1.040	.877
1.202	21	.162	.326			
1.219	3	.179	.341			
1.234	31	.194	.357			
1.250	0	.085	.248			
1.265	01	.100	.264			
1.281	1	.116	.279			
1.296	11	.131	.295			
1.312	2	.147	.310		1.165	1.002
1.327	21	.162	.326			
1.343	3	.179	.341			
1.359	31	.194	.357			

 WITTEN COMPANY
 918-272-9567

 APPROVAL DATE:
 11/10/2020

GAGE CODE: OJHK5

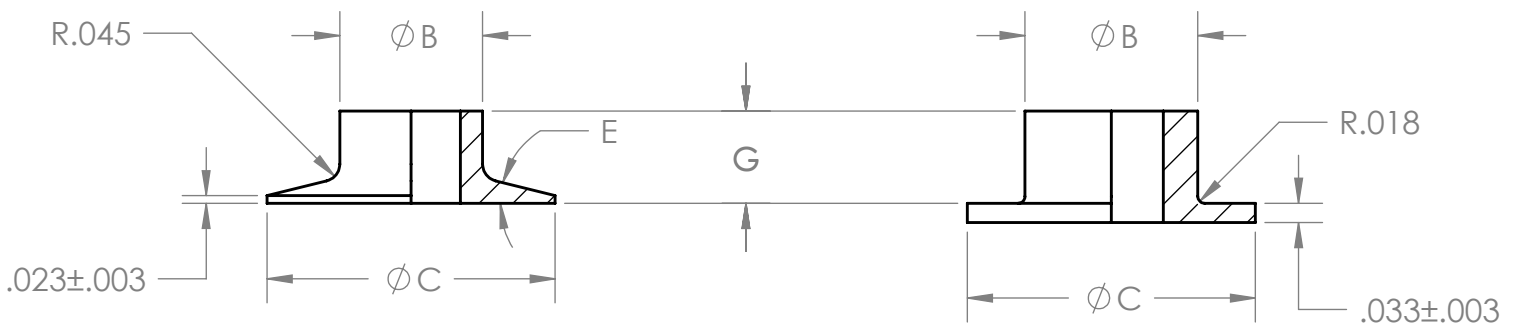
W104 THIN SERIES
INSERT: GROMMET TYPE, THREADED, NONMETALLIC
THREAD LOCK, THIN PANEL FASTENER



D

F

PLUG HEAD STYLES



D

F

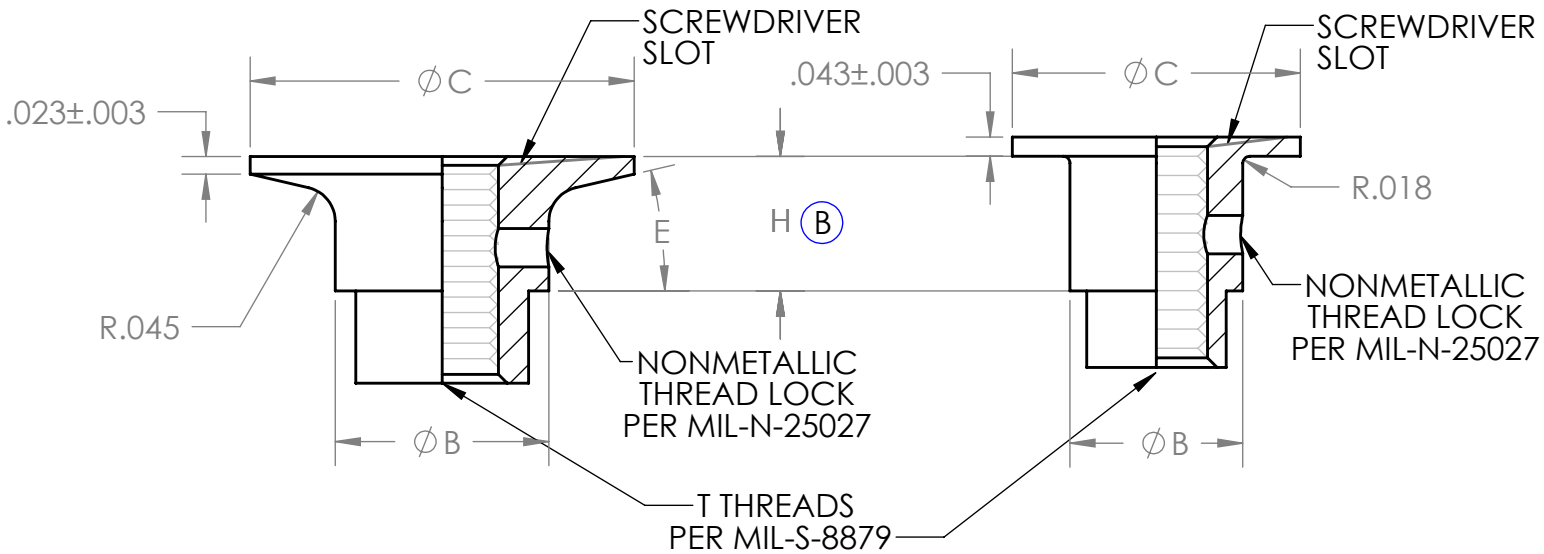
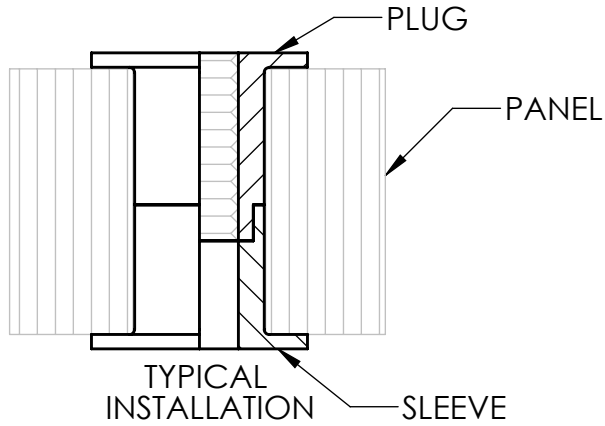
SLEEVE HEAD STYLES

WITTEN COMPANY
 918-272-9567

APPROVAL DATE: 11/10/2020

GAGE CODE: 0JHK5

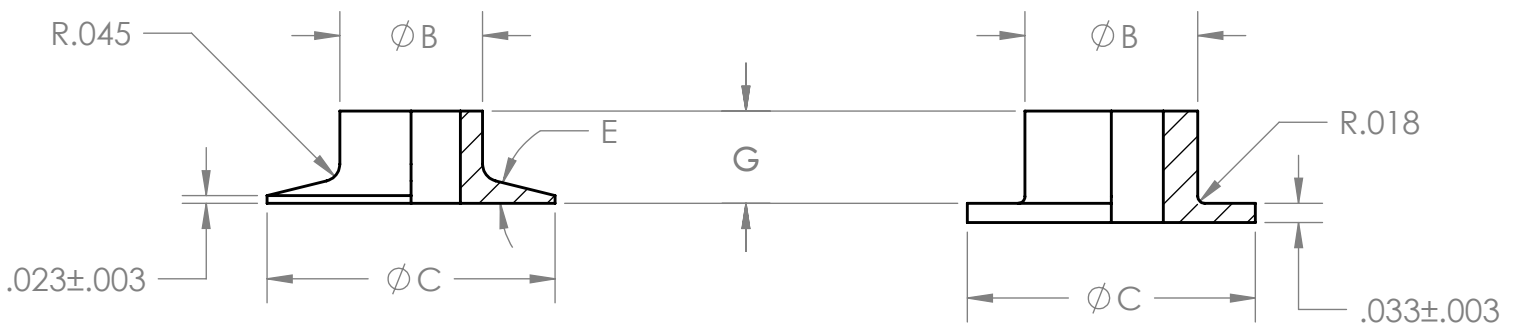
W104 THIN SERIES
INSERT: GROMMET TYPE, THREADED, NONMETALLIC
THREAD LOCK, THIN PANEL FASTENER



D

F

PLUG HEAD STYLES



D

F

SLEEVE HEAD STYLES

WITTEN COMPANY
 918-272-9567

APPROVAL DATE: REV:A 7/2/2021

GAGE CODE: 0JHK5

W104 THIN SERIES

INSERT: GROMMET TYPE, THREADED, NONMETALLIC THREAD LOCK, THIN PANEL FASTENER

PART NUMBER CODING:

WS104D10-0
WP104D1032-06

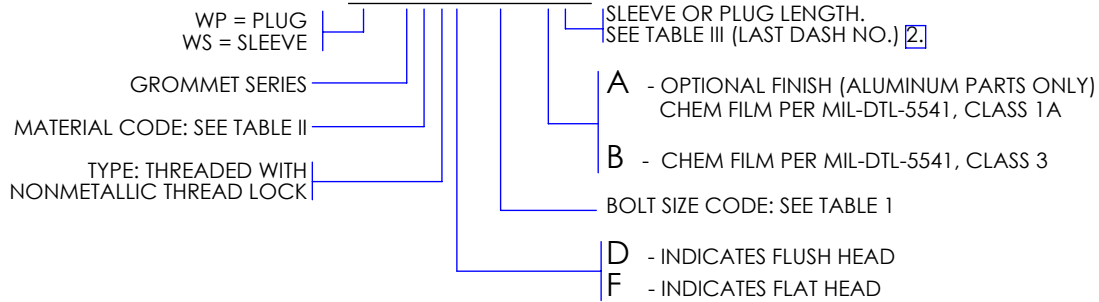


TABLE I

BOLT SIZE	T THREAD CLASS 3B	ØB ±.003	ØC	E
440	.1120-40UNJC	.216	.375	13°
632	.1380-32UNJC	.309	.500	13°
832	.1640-32UNJC	.309	.500	13°
1032	.1900-32UNJF	.341	.625	13°
428	.2500-28UNJF	.403	.750	14°
524	.3125-24UNJF	.497	.875	14°

TABLE II

MATL CODE	MATERIAL	FINISH
0	AL ALLOY, GRADE 2024, TEMPER T4 OR T351 PER SAE-AMS-QQ-A-225/6	ANODIZE PER MIL-A-8625 TYPE I
6	CORROSION RESISTANT STEEL, TYPE 303 CRES PER ASTM A 582	PASSIVATE PER ASTM-A967
9	CARBON STEEL PER ASTM A 108	CAD PLATE PER SAE-AMS-QQ-P-416, TYPE II, CLASS 2

TABLE III

PANEL THICKNESS MINIMUM	LENGTH CODE	SLEEVE		LENGTH CODE	PLUG	
		G			H	
		SIZE CODE			SIZE CODE	
		4, 6, 8, 10, 25	31		440, 632, 832, 1032, 428	524
.245	0	.094	NA	04	.151	NA
.276	1	.125				
.307	2	.156				
.338	3	.187	NA	06	.281	NA
.375	0	.094				
.406	1	.125				
.437	2	.156	NA	08	NA	.401
.468	3	.187				
.495	0	.094				
.526	1	.125	NA	10	NA	.526
.557	2	.156				
.588	3	.187				
.620	0	.094	NA	12	NA	.651
.651	1	.125				
.682	2	.156				
.713	3	.187	NA	12	NA	.651
.745	0	.094				
.776	1	.125				
.807	2	.156	NA	12	NA	.651
.838	3	.187				

NOTES:

1. ANY COMBINATION OF SLEEVE AND PLUG WITHIN BOLT SIZE MAY BE USED.
2. REFER TO TABLE III TO SELECT PLUG/SLEEVE COMBINATION FOR A GIVEN PANEL THICKNESS.
3. THE W104 THIN SERIES GROMMETS ARE SELF-RETAINED THROUGH A TELESCOPIC PRESS FIT.
4. CONSULT THE WITTEN COMPANY ENGINEERING DEPARTMENT FOR OTHER FINISHES, MATERIALS, OR SIZES.

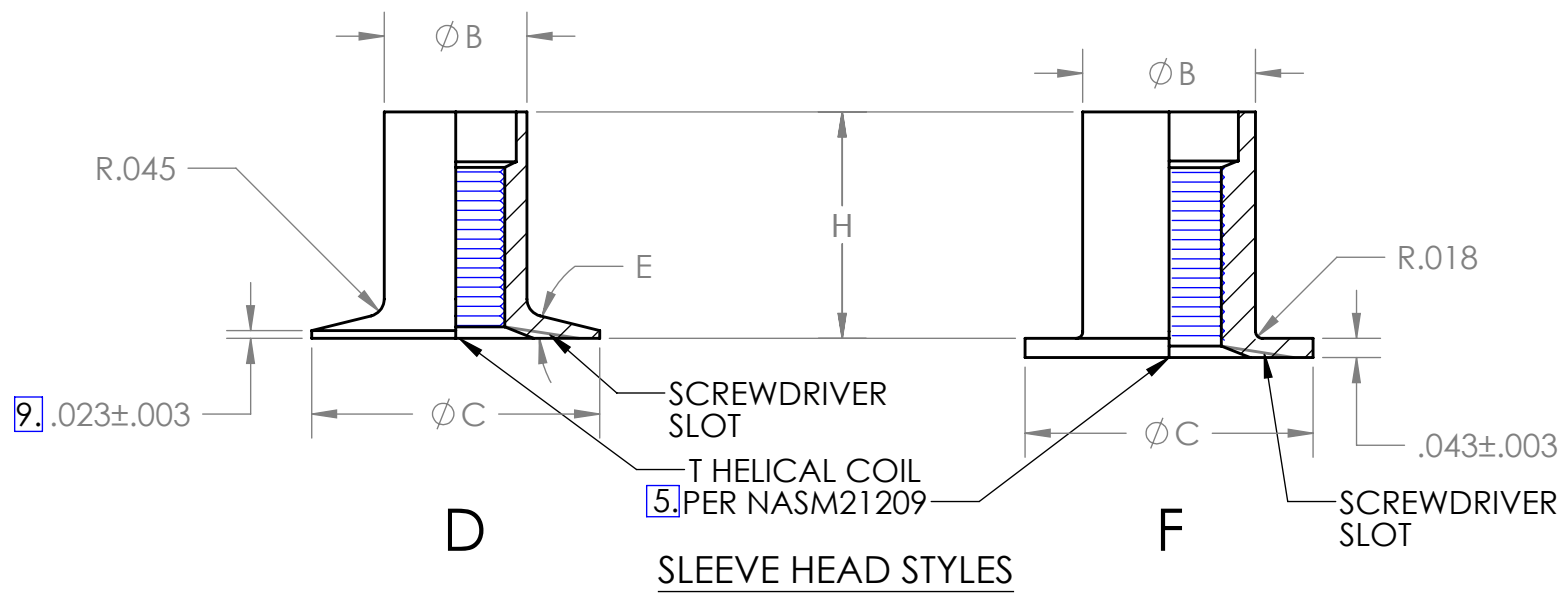
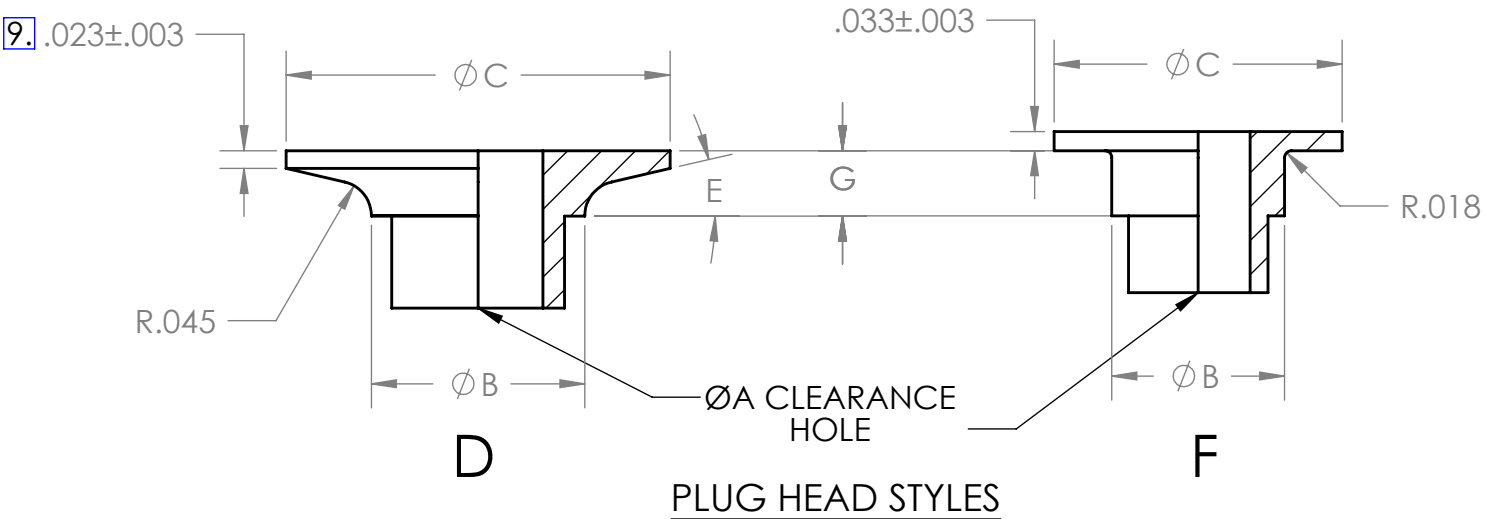
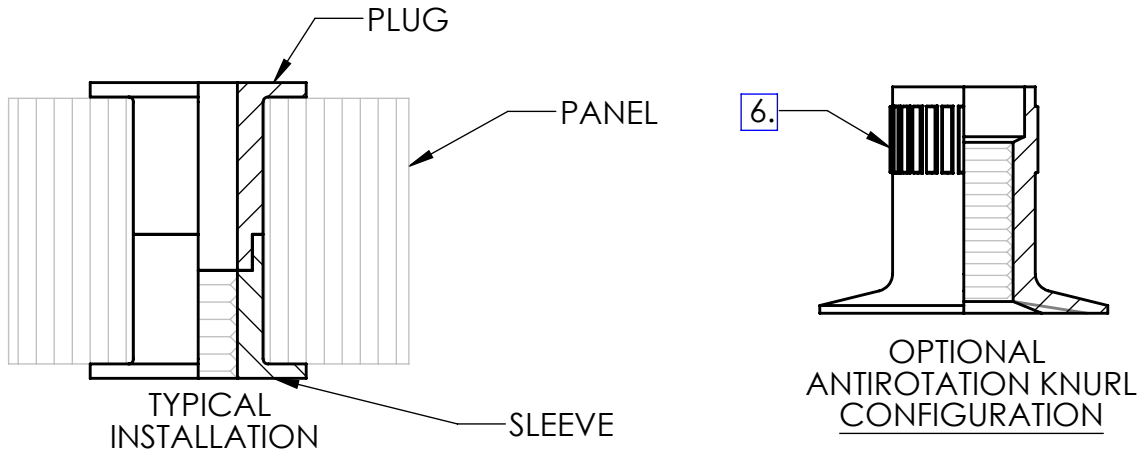
WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 7/7/2021

GAGE CODE: 0JHK5

W106

INSERT: GROMMET TYPE, THREADED, SELF-LOCKING, HELICAL COIL



WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 11/10/2020

GAGE CODE: 0JHK5

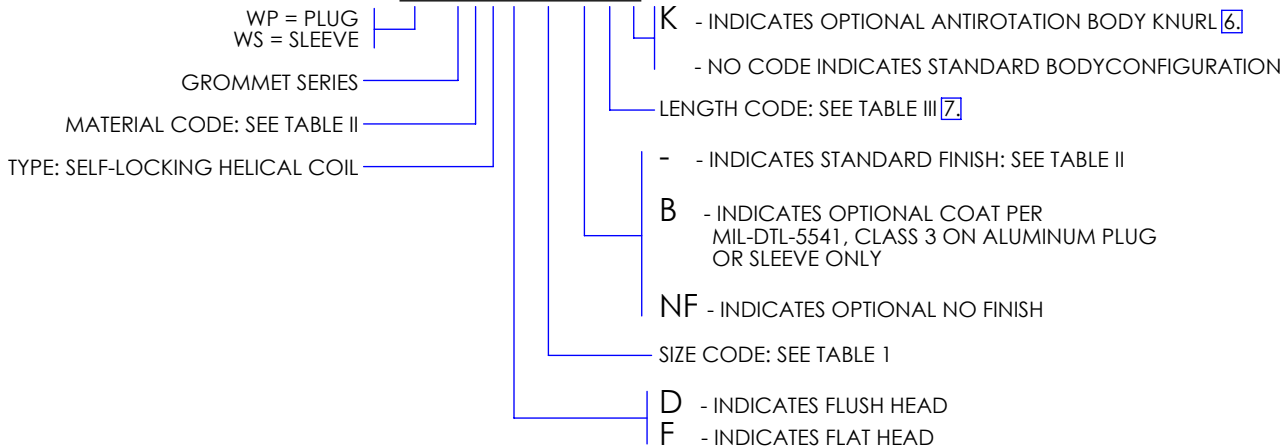
W106

INSERT: GROMMET TYPE, THREADED, SELF-LOCKING, HELICAL COIL

PART NUMBER CODING:

WP106D25 -11

WS106D428-14K


TABLE I

SIZE CODE		T THREAD CLASS 3B	ØA ±.003	ØB ±.003	ØC	E	INSTALLATION HOLE Ø
PLUG	SLEEVE						
6	632	.1380-32UNJC	.144	.309	.500	13°	.323
8	832	.1640-32UNJC	.169	.309	.500	13°	.323
10	1032	.1900-32UNJF	.194	.341	.625	13°	.358
25	428	.2500-28UNJF	.257	.403	.750	14°	.421
31	524	.3125-24UNJF	.318	.497	.875	14°	.515

TABLE II

MATL CODE	MATERIAL	FINISH
0	AL ALLOY, GRADE 2024, TEMPER T4 OR T351 PER SAE-AMS-QQ-A-225/6	COAT PER MIL-DTL-5541 CLASS 1A
6	CORROSION RESISTANT STEEL, TYPE 303 CRES PER ASTM A 582/582M	PASSIVATE PER ASTM-A967
9	CARBON STEEL PER ASTM A 108	CAD PLATE PER SAE-AMS-QQ-P-416, TYPE II, CLASS 2

NOTES:

1. DIMENSIONING AND TOLERANCING PRACTICES PER ASME Y14.5M-2018.
2. DIMENSIONAL LIMITS APPLY AFTER PLATING.
3. DEBURR AND BREAK ALL SHARP EDGES .005 - .015.
4. SURFACE TEXTURE: 125 MICROINCHES PER ASME B46.1-2019.
- [5](#). THREADS PER AS8879.
- [6](#). WHEN APPLICABLE, STRAIGHT OR DIAMOND KNURL ANTIROTATION KNURL ON SLEEVE ONLY (MANUFACTURER'S OPTION).
- [7](#). REFER TO TABLE III TO SELECT PLUG/SLEEVE COMBINATION FOR A GIVEN PANEL THICKNESS.
8. THE W106 GROMMETS ARE SELF-RETAINED THROUGH A TELESCOPE FIT.
- [9](#). 'D' HEAD STYLE PARTS SPECIFIED WITH A 31 OR 524 SIZE CODE REQUIRE A FLANGE THICKNESS OF .033±.003.
- [10](#). INSERTS WITH LENGTH CODES 22 OR GREATER MAY USE FACTORY INSTALLED SLEEVE EXTENSIONS (TWO PIECE SLEEVES).
11. CONSULT THE WITTEN COMPANY ENGINEERING DEPARTMENT FOR OTHER FINISHES, MATERIALS, OR SIZES.

 WITTEN COMPANY
 918-272-9567

 APPROVAL DATE:
 REV:A 11/10/2020

GAGE CODE: 0JHK5

W106

INSERT: GROMMET TYPE, THREADED, SELF-LOCKING, HELICAL COIL

TABLE III

PANEL THICKNESS MINIMUM	LENGTH CODE	PLUG			LENGTH CODE	SLEEVE						
		G+.000/- .010				H+.000/- .010						
		SIZE CODE				SIZE CODE						
		6,8,10	25	31		632, 832, 1032	428	524				
.500	0	.085			08	.415	NA	NA				
.516	01	.101										
.531	1	.116										
.547	11	.132										
.562	2	.147	NA	NA								
.578	21	.163										
.594	3	.179										
.609	31	.194										
.625	0	.085	.085		10	.540	.540	NA				
.641	01	.101	.101									
.656	1	.116	.116									
.672	11	.132	.132	NA								
.688	2	.147	.147									
.703	21	.163	.163									
.719	3	.179	.179									
.734	31	.194	.194									
.750	0	.085	.085		12	.665	.665	NA				
.766	01	.101	.101									
.781	1	.116	.116									
.797	11	.132	.132	NA								
.812	2	.147	.147									
.828	21	.163	.163									
.844	3	.179	.179									
.859	31	.194	.194									
.875	0	.085	.085	.248					14	.790	.790	.627
.891	01	.101	.101	.264								
.906	1	.116	.116	.279								
.922	11	.132	.132	.295								
.938	2	.147	.147	.311								
.953	21	.163	.163	.326								
.969	3	.179	.179	.342								
.984	31	.194	.194	.357								
1.000	0	.085	.085	.248	16	.915	.915	.752				
1.016	01	.101	.101	.264								
1.031	1	.116	.116	.279								
1.047	11	.132	.132	.295								
1.062	2	.147	.147	.311								
1.078	21	.163	.163	.326								
1.094	3	.179	.179	.342								
1.109	31	.194	.194	.357								

 WITTEN COMPANY
 918-272-9567

 APPROVAL DATE: REV:A
 11/10/2020

GAGE CODE: OJHK5

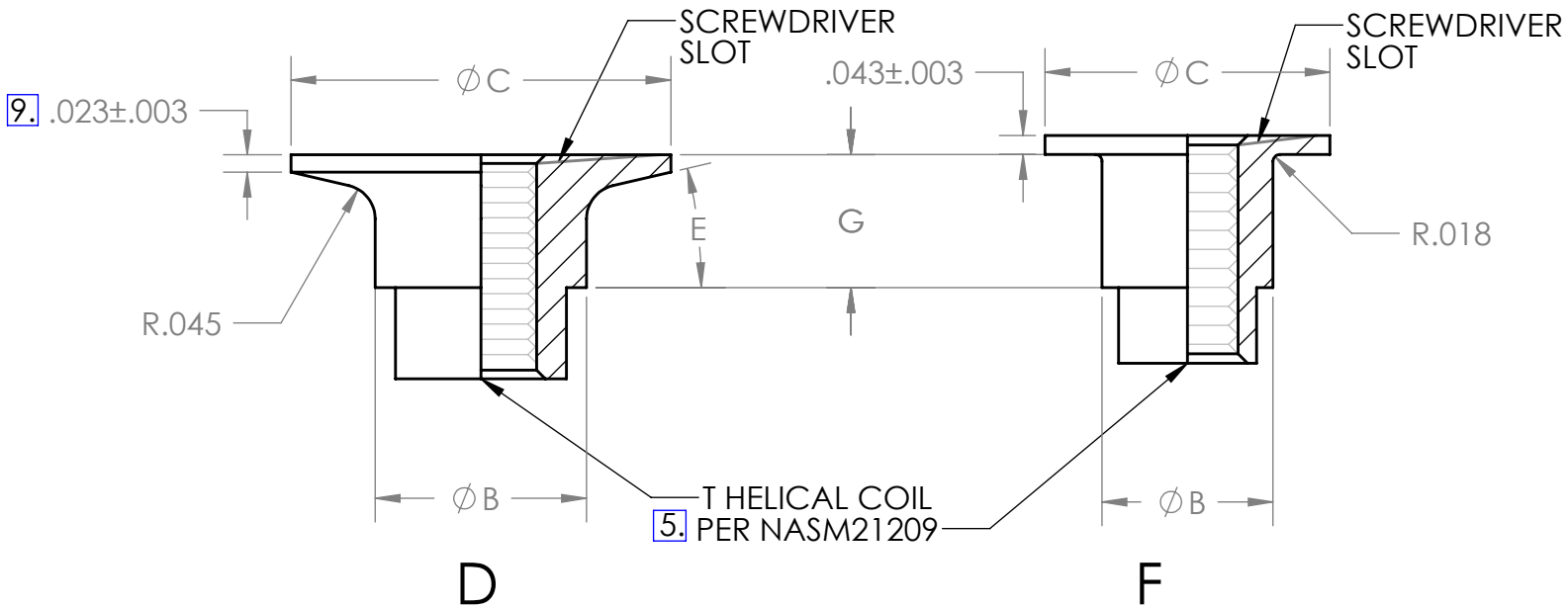
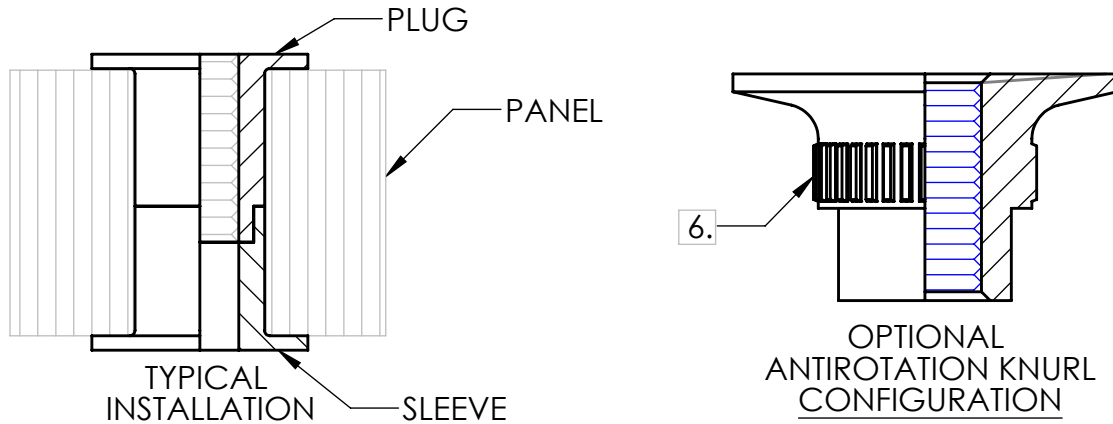
W106

INSERT: GROMMET TYPE, THREADED, SELF-LOCKING, HELICAL COIL

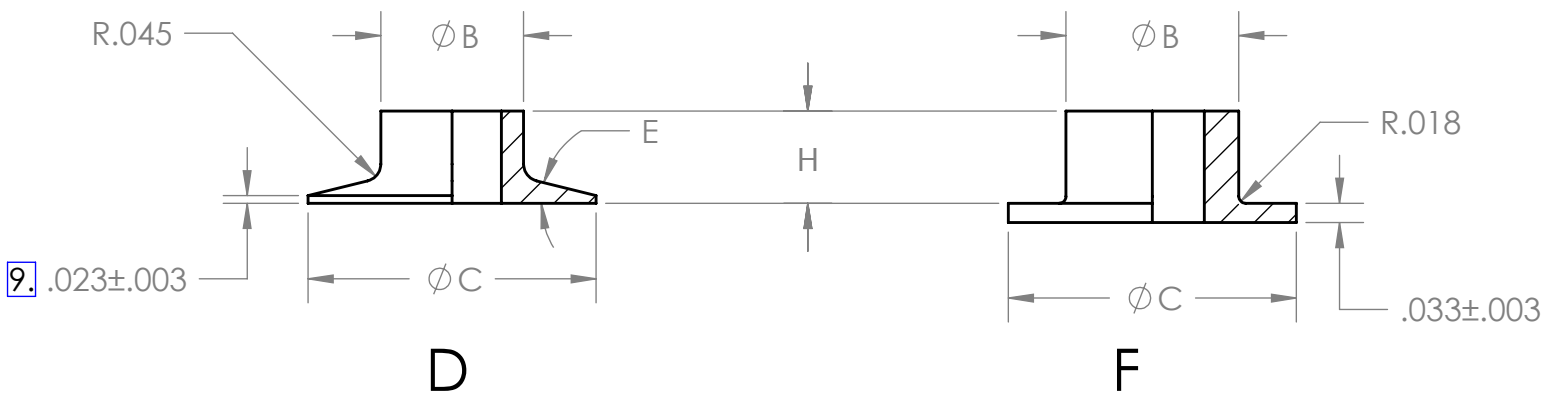
TABLE III (CONT.)

PANEL THICKNESS MINIMUM	LENGTH CODE	PLUG			LENGTH CODE	SLEEVE		
		G+.000/- .010				H+.000/- .010		
		SIZE CODE				SIZE CODE		
		6,8,10	25	31		632, 832, 1032	428	524
1.125	0	.085	.085	.248	18	1.040	1.040	.877
1.141	01	.101	.101	.264				
1.156	1	.116	.116	.279				
1.172	11	.132	.132	.295				
1.188	2	.147	.147	.311				
1.203	21	.163	.163	.326				
1.219	3	.179	.179	.342				
1.234	31	.194	.194	.357				
1.250	0	.085	.085	.248	20	1.165	1.165	1.002
1.266	01	.101	.101	.264				
1.281	1	.116	.116	.279				
1.297	11	.132	.132	.295				
1.312	2	.147	.147	.311				
1.328	21	.163	.163	.326				
1.344	3	.179	.179	.342				
1.359	31	.194	.194	.357				
1.375	0	.085	.085	.248	22 10	1.290	1.290	1.127
1.391	01	.101	.101	.264				
1.406	1	.116	.116	.279				
1.422	11	.132	.132	.295				
1.438	2	.147	.147	.311				
1.453	21	.163	.163	.326				
1.469	3	.179	.179	.342				
1.484	31	.194	.194	.357				
1.500	0	.085	.085	.248	24 10	1.415	1.415	1.252
1.516	01	.101	.101	.264				
1.531	1	.116	.116	.279				
1.547	11	.132	.132	.295				
1.562	2	.147	.147	.311				
1.578	21	.163	.163	.326				
1.594	3	.179	.179	.342				
1.609	31	.194	.194	.357				
1.625	0	.085	.085	.248	26 10	1.540	1.540	1.377
1.641	01	.101	.101	.264				
1.656	1	.116	.116	.279				
1.672	11	.132	.132	.295				
1.688	2	.147	.147	.311				
1.703	21	.163	.163	.326				
1.719	3	.179	.179	.342				
1.734	31	.194	.194	.357				

W106 THIN SERIES
 INSERT: GROMMET TYPE, THREADED, SELF-LOCKING,
 HELICAL COIL, THIN PANEL



PLUG HEAD STYLES



SLEEVE HEAD STYLES

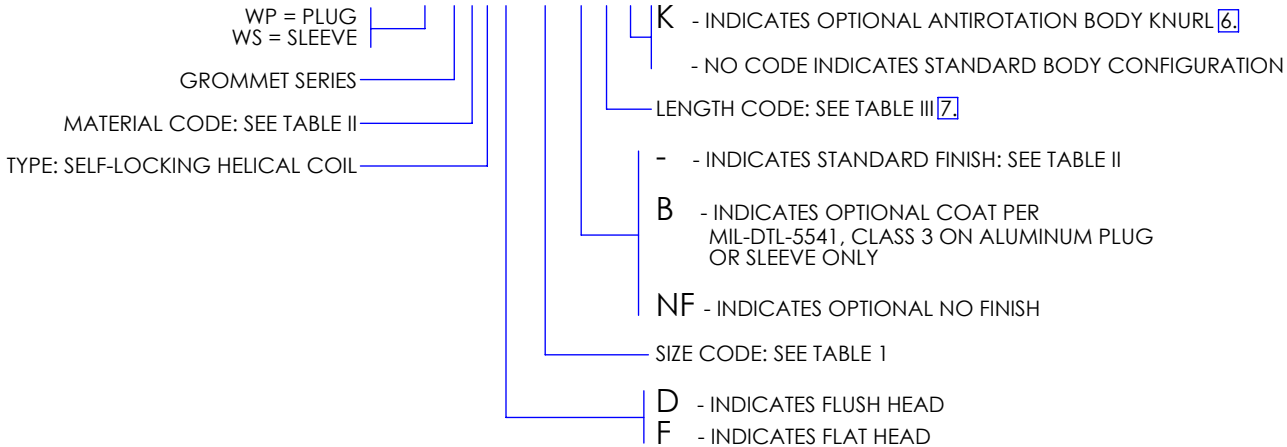
W106 THIN SERIES

INSERT: GROMMET TYPE, THREADED, SELF-LOCKING, HELICAL COIL, THIN PANEL

PART NUMBER CODING:

WP106D832-06K

WS106D 8 -11


TABLE I

SIZE CODE		T THREAD CLASS 3B	ØB ±.003	ØC	E	INSTALLATION HOLE Ø
PLUG	SLEEVE					
632	6	.1380-32UNJC	.309	.500	13°	.323
832	8	.1640-32UNJC	.309	.500	13°	.323
1032	10	.1900-32UNJF	.341	.625	13°	.358
428	25	.2500-28UNJF	.403	.750	14°	.421
524	31	.3125-24UNJF	.497	.875	14°	.515

TABLE II

MATL CODE	MATERIAL	FINISH
0	AL ALLOY, GRADE 2024, TEMPER T4 OR T351 PER SAE-AMS-QQ-A-225/6	COAT PER MIL-DTL-5541 CLASS 1A
6	CORROSION RESISTANT STEEL, TYPE 303 CRES PER ASTM A 582/582M	PASSIVATE PER ASTM-A967
9	CARBON STEEL PER ASTM A 108	CAD PLATE PER SAE- AMS-QQ-P- 416, TYPE II, CLASS 2

NOTES:

1. DIMENSIONING AND TOLERANCING PRACTICES PER ASME Y14.5M-2018.
2. DIMENSIONAL LIMITS APPLY AFTER PLATING.
3. DEBURR AND BREAK ALL SHARP EDGES .005 - .015.
4. SURFACE TEXTURE: 125 MICRONS PER ASME B46.1-2019.
- [\[5\]](#) THREADS PER AS8879.
- [\[6\]](#) WHEN APPLICABLE, STRAIGHT OR DIAMOND KNURL ANTIROTATION KNURL ON PLUG ONLY (MANUFACTURER'S OPTION).
- [\[7\]](#) REFER TO TABLE III TO SELECT PLUG/SLEEVE COMBINATION FOR A GIVEN PANEL THICKNESS.
8. THE W106 THIN GROMMETS ARE SELF-RETAINED THROUGH A TELESCOPE FIT.
- [\[9\]](#) 'D' HEAD STYLE PARTS SPECIFIED WITH A 31 OR 524 SIZE CODE REQUIRE A FLANGE THICKNESS OF .033±.003.
10. CONSULT THE WITTEN COMPANY ENGINEERING DEPARTMENT FOR OTHER FINISHES, MATERIALS, OR SIZES.

 WITTEN COMPANY
 918-272-9567

APPROVAL DATE: REV:A 11/10/2020

GAGE CODE: 0JHK5

W106 THIN SERIES

INSERT: GROMMET TYPE, THREADED, SELF-LOCKING, HELICAL COIL, THIN PANEL

TABLE III (CONT.)

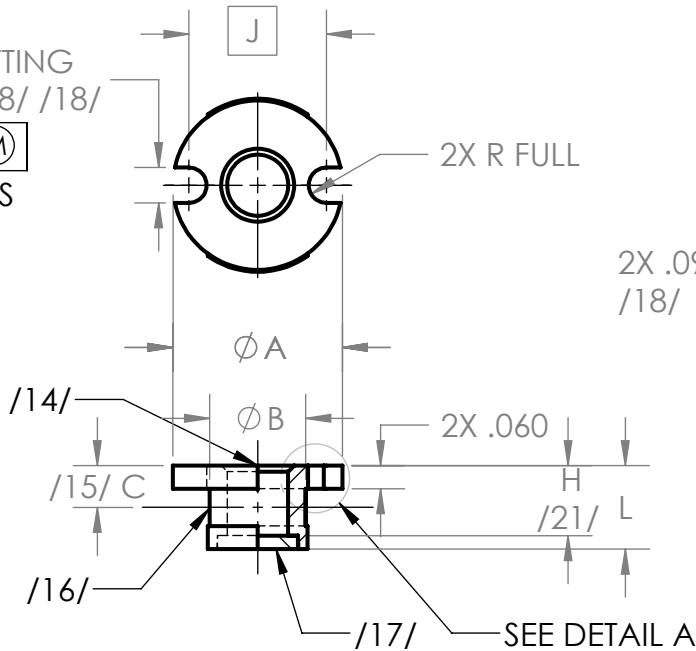
PANEL THICKNESS MINIMUM	LENGTH CODE	SLEEVE			LENGTH CODE	PLUG		
		H+.000/- .010				G+.000/- .010		
		SIZE CODE				SIZE CODE		
		6,8,10	25	31		632, 832, 1032	428	524
.250	0	.094						
.266	01	.109						
.281	1	.125						
.297	11	.140						
.312	2	.156	NA	NA	04	.151	NA	NA
.328	21	.171						
.344	3	.187						
.359	31	.202						
.375	0	.094	.094					
.391	01	.109	.109					
.406	1	.125	.125					
.422	11	.140	.140	NA	06	.281	.281	NA
.438	2	.156	.156					
.453	21	.171	.171					
.469	3	.187	.187					
.484	31	.202	.202					
.500	0		.094	.094				
.516	01		.109	.109				
.531	1		.125	.125				
.547	11	NA	.140	.140	08	NA	.401	.401
.562	2		.156	.156				
.578	21		.171	.171				
.594	3		.187	.187				
.609	31		.202	.202				
.625	0			.094				
.641	01			.109				
.656	1			.125				
.672	11	NA	NA	.140	10	NA	NA	.526
.688	2			.156				
.703	21			.171				
.719	3			.187				
.734	31			.202				
.750	0			.094				
.766	01			.109				
.781	1			.125				
.797	11	NA	NA	.140	12	NA	NA	.651
.812	2			.156				
.828	21			.171				
.844	3			.187				
.859	31			.202				

W1836

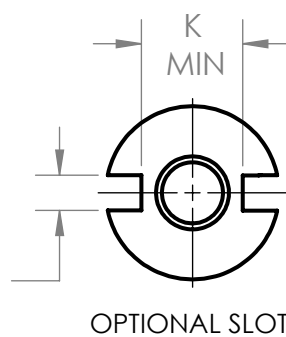
INSERT, MOLDED IN, BLIND THREADED, SELF-LOCKING, NONSELF-LOCKING, LIGHTWEIGHT, SANDWICH PANEL

2X .092 -.097 POTTING AND VENT SLOTS /8/ /18/

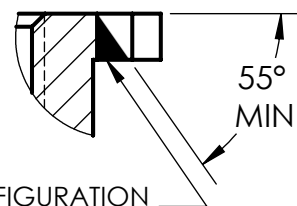
$\oplus \phi .020 \text{ (M)} \text{ A (M)}$
TYPICAL ALL STYLES



2X .092 -.097 /18/

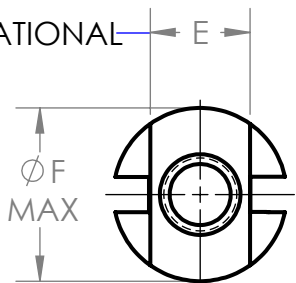


OPTIONAL SLOT

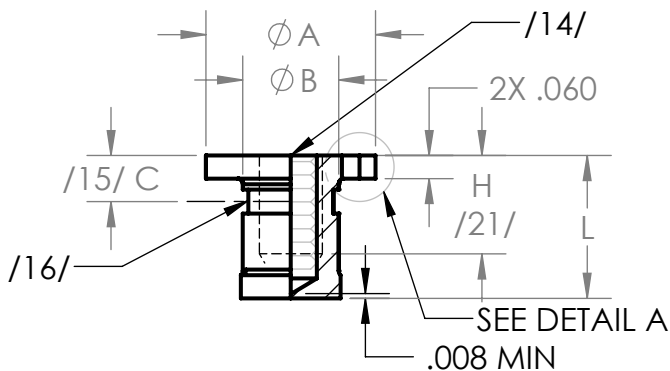


CONFIGURATION WITHIN THIS AREA MFG OPTION
DETAIL A
TYPICAL FOR ALL STYLES

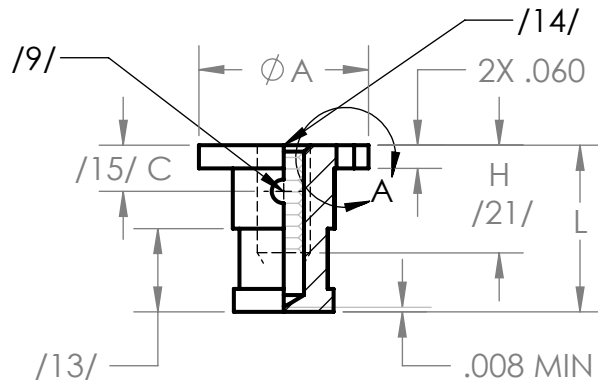
ANTIROTATIONAL FLATS



SHIMMED STYLE FOR SHORT LENGTHS (MANUFACTURER'S OPTION)



BLIND TAPPED STYLE FOR LONG LENGTHS ALL STEEL AND CRES SELF-LOCKING AND NONSELF-LOCKING OR NONSELF-LOCKING ALUMINUM STYLE.



ALUMINUM SELF-LOCKING STYLE OR ALTERNATE NONSELF-LOCKING ALUMINUM STYLE

WITTEN COMPANY
918-272-9567

APPROVAL DATE: 11/04/2021

GAGE CODE: 0JHK5

W1836

INSERT, MOLDED IN, BLIND THREADED, SELF-LOCKING, NONSELF-LOCKING, LIGHTWEIGHT, SANDWICH PANEL

TABLE I - DIMENSIONS

FIRST DASH NO.	THREAD CLASS 3B MINOR DIA -A-	ØA +.000 -.010	ØB	C	E	ØF MAX	H /21/	J BASIC	K MIN	L /22/ MIN	INSTALLATION HOLE SIZE
04	.1120-40 UNJC	.451	.250	.10	.260	.45	.130	.358	.251	.217	.452 - .457
06	.1380-32 UNJC	.451	.250	.12	.260	.45	.187	.358	.251	.217	.452 - .457
08	.1640-32 UNJC	.451	.250	.12	.260	.45	.187	.358	.251	.217	.452 - .457
3	.1900-32 UNJF	.451	.250	.12	.260	.45	.187	.358	.251	.217	.452 - .457
4	.2500-28 UNJF	.498	.300	.14	.312	.49	.250	.405	.298	.279	.499 - .504

MATERIAL:

CARBON STEEL PER ASTM A108, ASTM A576 OR MATERIAL COMPOSITION PER AIR4127, ULTIMATE TENSILE STRENGTH , 85 KSI MINIMUM.
AL ALLOY, GRADE 2024 (UNS A92024) TEMPER T4 OR T351 PER AMS-QQ-A-225/6.
CRES 303 (UNS S30300) PER ASTM A582/A582M.
NONMETALLIC LOCKING ELEMENT - POLYAMIDE PER FED SPEC L-P-410.

FINISH:

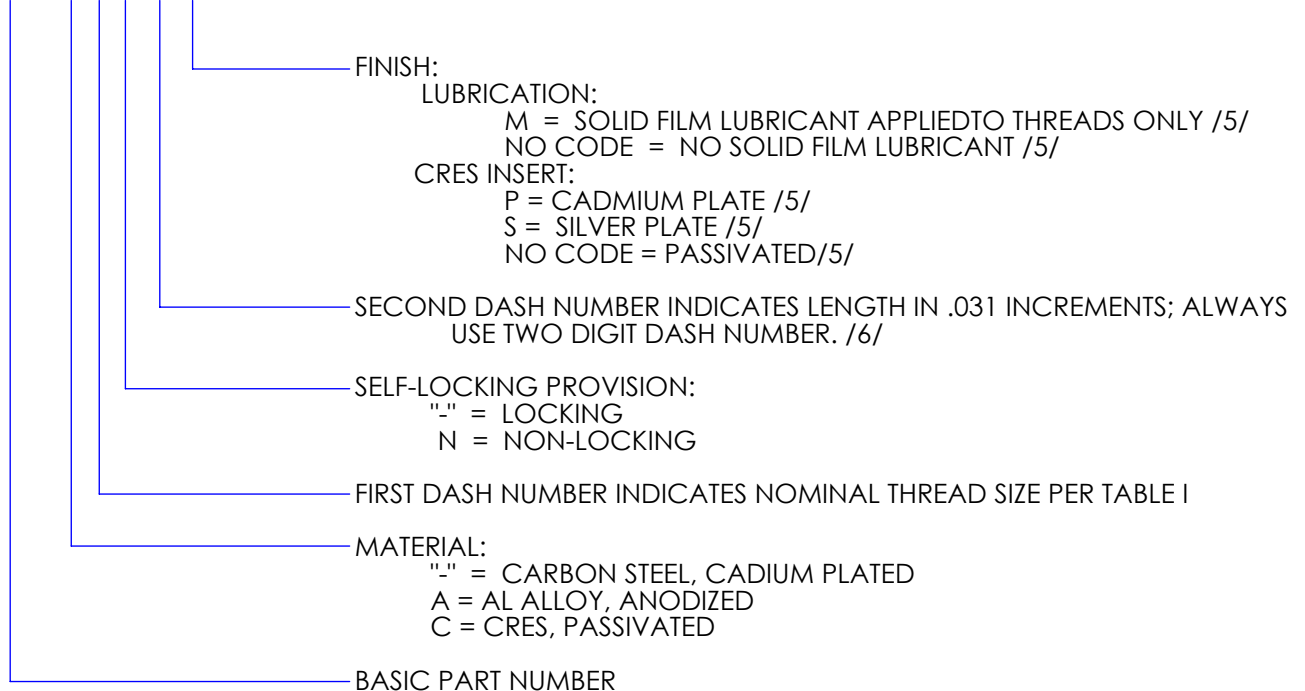
CARBON STEEL - CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2.
AL ALLOY - ANODIZE PER MIL-A-8625, TYPE I, CLASS OPTIONAL.
CRES - PASSIVATE PER ASTM-A967; SILVER PLATE PER AMS 2410 OR AMS 2411; OR CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2.

LUBRICATION:

SOLID FILM LUBRICANT PER AS5272, TYPE I, APPLIED TO THREADS ONLY.

CODE:

W1836 - 3 - 08 M



WITTEN COMPANY
918-272-9567

APPROVAL DATE: 11/04/2021

GAGE CODE: 0JHK5

W1836**INSERT, MOLDED IN, BLIND THREADED, SELF-LOCKING,
NONSELF-LOCKING, LIGHTWEIGHT,
SANDWICH PANEL****EXAMPLE OF PART NUMBER:**

W1836-3-08M	= .1900-32 UNJF-3B THREAD, CARBON STEEL, CADMIUM PLATED, WITH SOLID FILM LUBRICANT, .248 LONG, SELF-LOCKING.
W1836A3N09	= .1900-32 UNJF-3B THREAD, AL ALLOY, ANODIZED, .279 LONG, NONSELF-LOCKING.
W1836C08-10S	= .1640-32 UNJC-3B THREAD, CRES, SILVER PLATED, .310 LONG, SELF-LOCKING.
W1836C08-10P	= .1640-32 UNJC-3B THREAD, CRES, CADMIUM PLATED, .310 LONG, SELF-LOCKING.
W1836C4N12	= .2500-28 UNJF-3B THREAD, CRES, PASSIVATED, .372 LONG, NONSELF-LOCKING.

NOTE:

- (1) THREADS PER AS8879.
- (2) LOCKING TORQUE PER NASM25027 EXCEPT SELF-LOCKING, CORROSION RESISTANT STEEL INSERT WITHOUT PLATING OR LUBRICANT WILL BE TESTED USING A SILVER PLATED BOLT OR SCREW.
- (3) TOLERANCES UNLESS OTHERWISE SPECIFIED: .XXX ±.010, .XX ±.02.
- (4) AN ADHESIVE-BACKED INSTALLATION TAB (PLASTIC) SHALL BE FURNISHED WITH EACH INSERT.
- /5/ PLATING OR SOLID FILM LUBRICANT IS RECOMMENDED ON SELF-LOCKING CRES INSERTS.
- /6/ SELECT A LENGTH WHICH WILL ALLOW A MINIMUM OF .040 CLEARANCE BETWEEN BOTTOM OF INSERT AND INSIDE SURFACE OF BOTTOM SKIN.
- (7) MAXIMUM BOLT ENGAGEMENT SHOULD NOT EXCEED "L" MINUS .060.
- /8/ BURRS CAUSED BY MACHINING POTTING HOLES OR SLOTS PERMISSIBLE UNDER FLANGE.
- /9/ NONMETALLIC THREAD LOCK WHEN APPLICABLE. LOCATE PELLET NO CLOSER THAN 10° FROM EDGE OF EITHER POTTING HOLE OR SLOT.
- (10) DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
- (11) DIMENSIONS IN INCHES AND APPLY AFTER FINISH AND PRIOR TO THE APPLICATION OF LUBRICATION UNLESS OTHERWISE SPECIFIED.
- (12) NOT USED.
- /13/ EXTERNAL CONFIGURATION OPTIONAL IN THIS AREA FOR SHORT LENGTHS THROUGH .375.
- /14/ MINIMUM "GO" THREAD GAGE PENETRATION SHALL BE ONE HALF REVOLUTION BEFORE LUBRICATION. MINIMUM BOLT THREAD PENETRATION SHALL BE THREE QUARTER REVOLUTION AFTER LUBRICATION.
- /15/ CENTERLINE OF THREAD LOCK WHEN APPLICABLE.
- /16/ SHANK DEFORMED IN THIS AREA TO PROVIDE THREAD LOCK WHEN APPLICABLE.
- /17/ SHIM TO PROVIDE MAXIMUM THREAD ON SHORT LENGTH INSERT IF NECESSARY.
- /18/ POTTING AND VENT HOLES OR SLOTS (MANUFACTURER'S OPTION).
- (19) ALL DIAMETERS SHALL BE WITHIN .010 CIRCULAR RUNOUT TO DATUM A.
- (20) REMOVE ALL BURRS AND SHARP EDGES.
- /21/ MINIMUM THREAD "H" IN SHORT LENGTHS. MINIMUM THREAD "H" WHERE LENGTH PERMITS SHALL BE 2X DIAMETER OF THREAD.

W1836**INSERT, MOLDED IN, BLIND THREADED, SELF-LOCKING,
NONSELF-LOCKING, LIGHTWEIGHT,
SANDWICH PANEL****NOTE:**

/22/ MINIMUM LENGTH WHICH MAY BE SPECIFIED.

/23/ NOT USED.

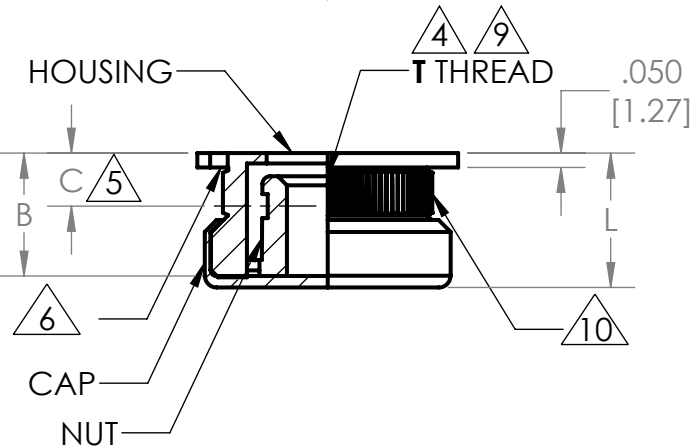
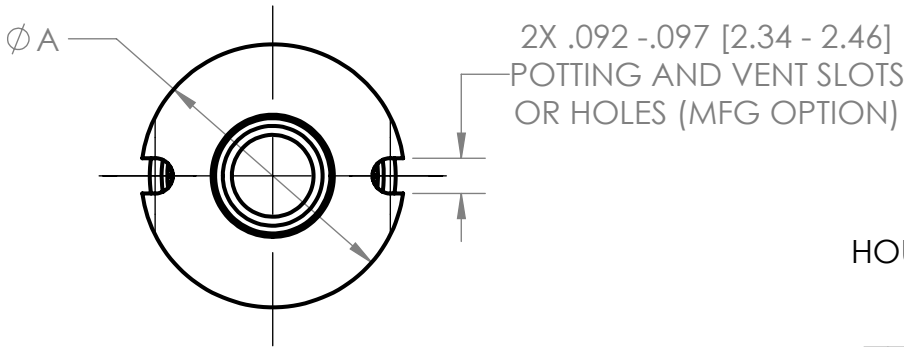
(24) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.

(25) UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.

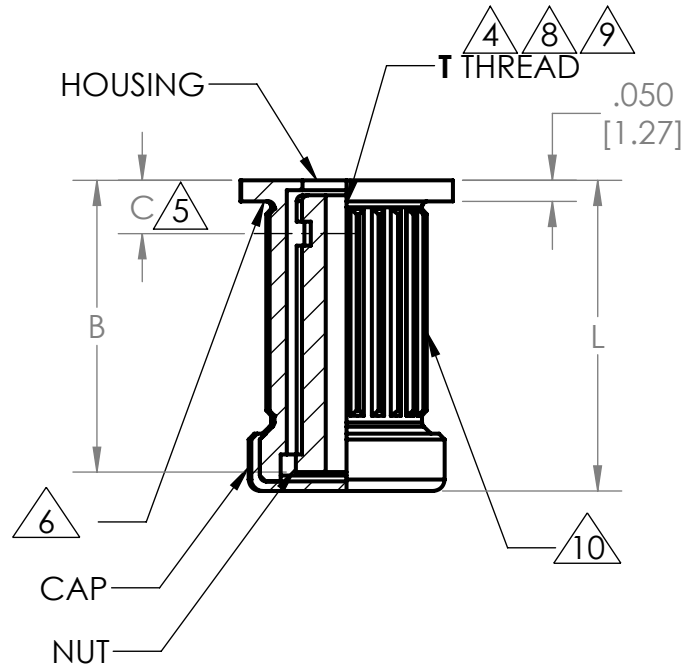
(26) UNLESS OTHERWISE SPECIFIED HEREIN, REFERENCED DOCUMENTS SHALL BE THE ISSUE IN EFFECT ON DATE OF MANUFACTURE. HOWEVER, EXISTING MATERIAL INVENTORY CERTIFIED TO A PREVIOUS REVISION OF THE APPLICABLE MATERIAL SPECIFICATION(S) IS ACCEPTABLE FOR USE UNTIL DEPLETION.

W2334

INSERT, MOLDED IN, BLIND THREADED, LOCKING, NONSELF-LOCKING, FLOATING, SANDWICH PANEL



STANDARD MANUFACTURING CONFIGURATION FOR -3 AND SHORTER

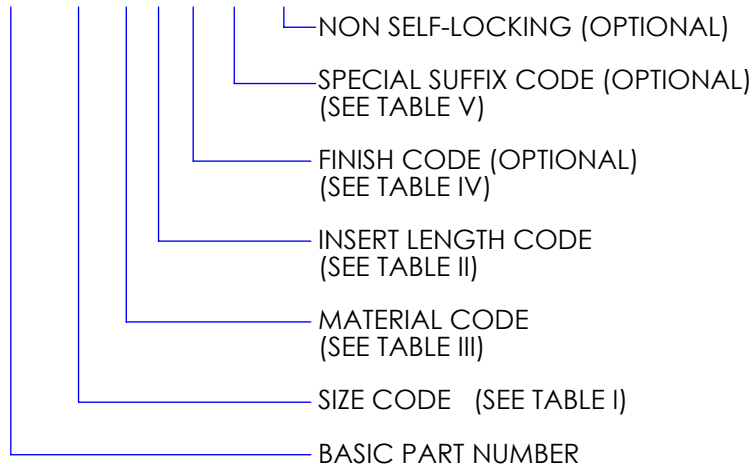


OPTIONAL MANUFACTURING CONFIGURATION FOR -4 LENGTHS AND LONGER

EXAMPLE OF PART CODING:

W2334 - 3 A 3 M SP5 N (INCH)

W2334 M5 A 3 M SP5 N [METRIC]



NOTES:

1. INSTALLATION TAB FURNISHED WITH EACH INSERT.
2. DELETED.
3. DELETED.
4. INCH THREAD PER AS8879. METRIC THREAD PER MA1370 OR ISO5855. FUNCTIONAL MINOR DIAMETER IS ACCEPTABLE.
5. LOCKING TORQUE. INCH THREAD PER NASM25027. METRIC THREAD PER NA0009. SELF-LOCKING CORROSION RESISTANT STEEL INSERT WITHOUT PLATING OR LUBRICANT SHALL BE TESTED WITH SILVER PLATED BOLT OR SCREW.
6. BURRS PERMISSIBLE UNDER POTTING HOLES OR SLOTS AS LONG AS HOLES OR SLOTS ARE NOT RESTRICTED.

APPLICATION

AN EPOXY POTTED-IN INSERT FOR PANEL ATTACHMENTS WHERE BOLT HOLE MISALIGNMENT REQUIRES A FLOATING NUT ELEMENT.

WITTEN COMPANY
918-272-9567



APPROVAL DATE: 02/10/2022

CAGE CODE: 0JHK5

W2334

INSERT, MOLDED IN, BLIND THREADED, LOCKING, NONSELF-LOCKING, FLOATING, SANDWICH PANEL

TABLE I - SIZE CODE

SIZE CODE	T THREAD 	A +.000 -.010 +[0.00] -[0.25]	C REF	INSTALLATION HOLE SIZE 
04	.1120-40 UNJC-3B	.561 [14.25]	.14 [3.6]	.562 - .565 [14.27] - [14.35]
06	.1380-32 UNJC-3B	.561 [14.25]	.14 [3.6]	.562 - .565 [14.27] - [14.35]
M3	M3 X 0.5-4H6H			
08	.1640-32 UNJC-3B	.561 [14.25]	.16 [4.1]	.562 - .565 [14.27] - [14.35]
M4	M4 X 0.7-4H6H			
3	.1900-32 UNJF-3B	.561 [14.25]	.16 [4.1]	.562 - .565 [14.27] - [14.35]
M5	M5 X 0.8-4H6H			
4	.2500-28 UNJF-3B	.686 [17.40]	.18 [4.6]	.687 - .690 [14.27] - [14.35]
M6	M6 X 1-4H5H			
5	.3125-24 UNJF-3B	.811 [20.60]	.20 [5.1]	.812 - .815 [20.62] - [20.70]
M8	M8 X 1.25-4H5H			
6	.3750-24 UNJF-3B	.937 [23.80]	.22 [5.6]	.937 - .940 [23.80] - [23.88]
M10	M10 X 1.5-4H5H			

NOTES CONTINUED:

7. INSERT NUT MINIMUM RADIAL FLOAT INSIDE THE HOUSING IS .032 [0.81].

 THREAD MAY NOT BE THROUGH ON -4 LENGTHS AND LONGER. (MANUFACTURES OPTION).

 MINIMUM "GO" THREAD GAGE PENETRATION SHALL BE ONE HALF REVOLUTION BEFORE LUBRICATION. MINIMUM BOLT THREAD PENETRATION SHALL BE THREE QUARTER REVOLUTION AFTER LUBRICATION.




 STRAIGHT OR DIAMOND ANTIROTATIONAL KNURL (WITTEN OPTION).

 LIGHT WEIGHT INSERT FOR SIZE CODE 3 (.1900-32 THREAD), MATERIAL CODE "A" AND INSERT LENGTH CODE 1,2, AND 3.



TABLE II - INSERT LENGTH CODE

INSERT LENGTH CODE	L MAX	B MAXIMUM RECOMMENDED BOLT ENGAGEMENT LENGTH													
		SIZE CODE													
		04	06	M3	08	M4	3	M5	4	M6	5	M8	6	M10	
1	.310 [7.87]	.250 [6.35]	.250 [6.35]	.250 [6.35]	.250 [6.35]	.250 [6.35]	.250 [6.35]	.250 [6.35]							
2	.350 [8.89]	.250 [6.35]	.281 [7.14]	.281 [7.14]	.281 [7.14]	.281 [7.14]	.281 [7.14]	.281 [7.14]	.281 [7.14]	.281 [7.14]	.281 [7.14]	.281 [7.14]	.281 [7.14]	.281 [7.14]	
3	.375 [9.52]	.250 [6.35]	.281 [7.14]	.281 [7.14]	.281 [7.14]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	
4	.455 [11.56]	.250 [6.35]	.281 [7.14]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	.312 [7.92]	
5	.565 [14.35]	.250 [6.35]	.281 [7.14]	.312 [7.92]	.312 [7.92]	.375 [9.52]	.375 [9.52]	.437 [11.10]	.437 [11.10]	.437 [11.10]	.437 [11.10]	.437 [11.10]	.437 [11.10]	.437 [11.10]	
6	.690 [17.53]	.250 [6.35]	.281 [7.14]	.312 [7.92]	.312 [7.92]	.375 [9.52]	.375 [9.52]	.500 [12.70]	.500 [12.70]	.532 [13.51]	.532 [13.51]	.532 [13.51]	.532 [13.51]	.532 [13.51]	
7	.815 [20.70]	.250 [6.35]	.281 [7.14]	.312 [7.92]	.312 [7.92]	.375 [9.52]	.375 [9.52]	.500 [12.70]	.500 [12.70]	.625 [15.88]	.625 [15.88]	.625 [15.88]	.625 [15.88]	.625 [15.88]	
8	.935 [23.75]	.250 [6.35]	.281 [7.14]	.312 [7.92]	.312 [7.92]	.375 [9.52]	.375 [9.52]	.500 [12.70]	.500 [12.70]	.625 [15.88]	.625 [15.88]	.625 [15.88]	.625 [15.88]	.625 [15.88]	
9	1.060 [26.92]	.250 [6.35]	.281 [7.14]	.312 [7.92]	.312 [7.92]	.375 [9.52]	.375 [9.52]	.500 [12.70]	.500 [12.70]	.625 [15.88]	.625 [15.88]	.625 [15.88]	.625 [15.88]	.625 [15.88]	
10	1.185 [30.10]	.250 [6.35]	.281 [7.14]	.312 [7.92]	.312 [7.92]	.375 [9.52]	.375 [9.52]	.500 [12.70]	.500 [12.70]	.625 [15.88]	.625 [15.88]	.625 [15.88]	.625 [15.88]	.625 [15.88]	

W2334

INSERT, MOLDED IN, BLIND THREADED, LOCKING, NONSELF-LOCKING, FLOATING, SANDWICH PANEL

TABLE III - MATERIAL CODE



MATL CODE	ITEM, MATERIAL, AND STANDARD FINISH		
	NUT	HOUSING	CAP
A	CARBON OR ALLOY STEEL ULTIMATE STRENGTH 85 KSI MIN. CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2	AL ALLOY 2024-T4. ANODIZE PER AMS-A-8625 TYPE I OR CHEM-FILM PER AMS-C-5541	AL ALLOY 6061-O, FINISH CHEM FILM PER MIL-DTL-5541. CLASS 1A OR CLASS 3.
B	CARBON OR ALLOY STEEL ULTIMATE STRENGTH 85 KSI MIN. CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2	CARBON OR ALLOY STEEL CAD PLATE PER SAE-AMS-QQ-P-416, TYPE II, CLASS 2	AL ALLOY 6061-O, FINISH CHEM FILM PER MIL-DTL-5541. CLASS 1A OR CLASS 3.
C	CRES 303 PASSIVATE PER ASTM-A967	CRES 303 PASSIVATE PER ASTM-A967	
D	CRES 303 PASSIVATE PER ASTM-A967	AL ALLOY 2024-T4. ANODIZE PER AMS-A-8625 TYPE I OR CHEM-FILM PER AMS-C-5541	
G	CARBON OR ALLOY STEEL ULTIMATE STRENGTH 85 KSI MIN. CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2	CRES 303 PASSIVATE PER ASTM-A967	

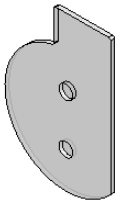
TABLE IV - FINISH CODE OPTIONAL

FINISH CODE	OPTIONAL SPECIAL FINISH
M	SOLID FILM LUBRICANT PER AS5272, TYPE I, NUT ONLY
C	CAD PLATE PER AMS-QQ-P-416 TYPE II, CLASS 2 ON CRES NUT ONLY.
S	SILVER PLATE PER AMS2410, NUT ONLY

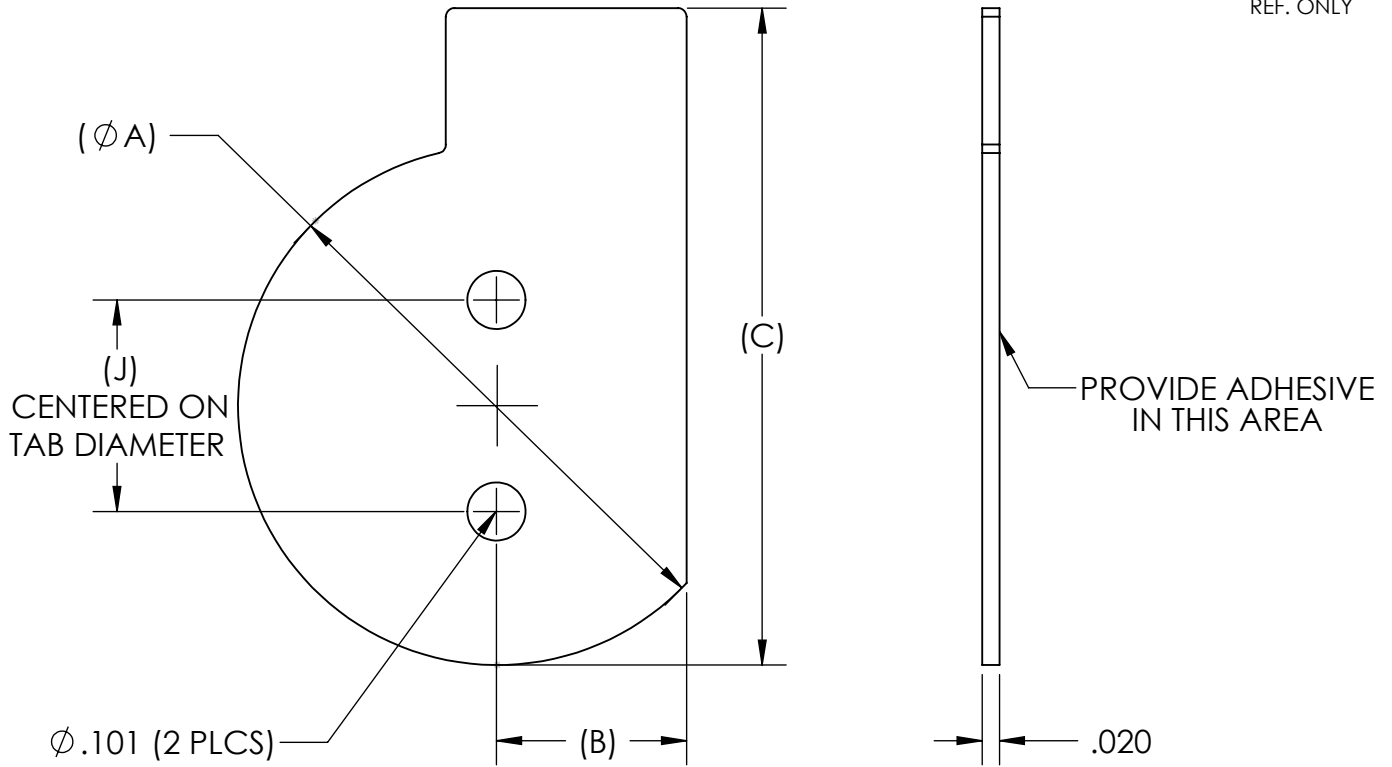
TABLE V - SPECIAL SUFFIX CODE OPTIONAL

SPECIAL SUFFIX CODE	SPECIAL SUFFIX DEFINITION
SP5	NON-LOCKING NUT THREAD
SP16	SILVER PLATE 303 CRES HOUSING (ONLY) PER AMS2410 OR AMS2411 (APPLIES TO ASSY MATL CODES 'C' AND 'G' ONLY)

DATE	SYM	REVISION RECORD	DR	CHK	APP



ISOMETRIC VIEW
REF. ONLY



PLASTIC INSTALLATION TAB

DASH NO.	NAS1837 REF DASH NO.	INSERT FIRST DASH NO.	(J)	(Ø A)	(B)	(C)
FOR NAS1832, NAS1833 AND NAS1834						
-367	T3	-06	.367	.90	.33	1.14
-367	T3	-08	.367	.90	.33	1.14
-367	T3	-3	.367	.90	.33	1.14
-467	T6	-4	.467	.90	.37	1.14
-467	T6	-5	.467	.90	.37	1.14
-591	T9	-6	.591	1.13	.54	1.42
FOR NAS1835						
-500	T7	-08	.500	.90	.37	1.14
-500	T7	-3	.500	.90	.37	1.14
-591	T9	-4	.591	1.13	.54	1.42
-655	T10	-5	.655	1.13	.54	1.42
-718	T11	-6	.718	1.13	.54	1.42
FOR NAS1836						
-358	T2	-06	.358	.90	.33	1.14
-358	T2	-08	.358	.90	.33	1.14
-358	T2	-3	.358	.90	.33	1.14
-405	T4	-4	.405	.90	.33	1.14

2. INSTALLATION TABS ARE FURNISHED WITH INSERTS AS SPECIFIED ON THE APPLICABLE STANDARD.

1. MATERIAL: POLYCARBONATE SHEET PER ASTM D3935 OR L-P-535 WITH ADHESIVE.

NOTES:

INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5M - 1994

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NAME	DATE
DRAWN J.HERRIMAN	1/15/2016
CHECKED	
ENG APP	
COMMENTS: CATALOG SHEET SOLIDWORKS STANDARD 2009 SP4.1	



TITLE:

**NAS TYPE PLASTIC
INSTALLATION TAB**

DWG NO.

2007

SIZE

B

REV

THIRD ANGLE PROJECTON

SCALE: NONE

SHEET 1 OF 1

▶ 120 AND 121 SERIES INSERTS, POTTED-IN METHOD

1. Degrease Inserts using acetone or M.E.K prior to installation to assure proper adhesion.
2. Drill recommended installation hole.
3. Clean core and panel skin residue from installation hole by vacuum or other appropriate means.
4. Prepare potting compound for use in accordance with manufacturer's Instructions.
5. Fill Sealant gun cartridge with potting compound.
6. Partially prepot (approximately 2/3 full) by injecting the potting compound into the installation hole. Do not completely fill the hole.
7. Coat the entire surface of the insert with potting compound.
8. Place the insert into the installation hole by applying sufficient mechanical pressure to provide a flush mount for the 120 series and flange protrusion for the 121 series.
9. Clean excess potting compound from the insert area.
10. Allow the potting compound to cure in accordance with the manufacturer's recommendations.

▶ 130, 140, 141, 150, 151, 155, 156, 2253, NAS1832, NAS1835 AND NAS1836 INSERTS, POTTED-IN METHOD FOR SOLID LAMINATE MATERIALS

1. Degrease Inserts using acetone or M.E.K prior to installation to assure proper adhesion.
2. Drill recommended installation hole. The depth of the hole should be a minimum of .030 deeper than the length of the part.
3. Clean residue from installation hole by vacuum or other appropriate means.
4. Prepare potting compound for use in accordance with manufacturer's Instructions.
5. Fill Sealant gun cartridge with potting compound.
6. Partially prepot (approximately 2/3 full) by injecting the potting compound into the installation hole. Do not completely fill the hole.
7. Place the insert into the installation hole. For 130, 140, 150, 155, NAS1832, NAS1835 and NAS1836 series inserts, use the installation tabs provided to hold the insert in position. Peel off the tab backing and place onto inserts while aligning the holes with the holes or slots of the insert. For 141, 151, 156 and 2253 series, snap-in the insert to retain it in position.
8. Inject the potting compound through on the potting holes until the potting compound flows from the other hole.
9. Clean excess potting compound from the insert area.
10. Allow the potting compound to cure in accordance with the manufacturer's recommendations.
11. After potting compound is cured, remove the installation tabs from the 130, 140, 150, 155, NAS1832, NAS1835 and NAS1836 series inserts.

▶ **130, 140, 141, 150, 151, 155, 156, 2253, NAS1832, NAS1835 AND NAS1836 INSERTS, POTTED-IN METHOD FOR CORE TYPE MATERIALS**

1. Degrease Inserts using acetone or M.E.K prior to installation to assure proper adhesion.
2. Drill recommended installation hole. The depth of the hole should be a minimum of .030 deeper than the length of the part.
3. Undercut the core around the hole approximately .50 inch larger in diameter than the diameter of the installation hole in the panel skin.
4. Clean core and panel skin residue from installation hole by vacuum or other appropriate means.
5. Prepare potting compound for use in accordance with manufacturer's instructions.
6. Fill sealant gun cartridge with potting compound.
7. Partially prepot (approximately 2/3 full) by injecting the potting compound in the installation hole. Do not completely fill the hole.
8. Place the insert into the installation hole. For 130, 140, 150, 155, NAS1832, NAS1835 and NAS1836 series inserts, use the installation tabs provided to hold the insert in position. Peel of the tab backing and place onto insert while aligning holes with the holes or slots in the insert. For 141, 151, 156 and 2253 series, snap-in the insert to retain it in position.
9. Inject the potting compound through one of the potting holes until the potting compound flows from the other hole.
10. Clean excess potting compound from the insert area.
11. Allow the potting compound to cure in accordance with the manufacturer's recommendations.
12. After potting compound is cured, remove the installation tabs from the 130, 140, 150, 155, NAS1832, NAS1835 and NAS1836 series inserts.



352, 354, AND 355 SERIES INSERTS, POTTED-IN METHOD FOR CORE TYPE MATERIALS

1. Degrease Inserts using acetone or M.E.K prior to installation to assure proper adhesion.
2. Drill recommended installation hole.
3. Clean core and panel skin residue from installation hole by vacuum or other appropriate means.
4. Prepare potting compound for use in accordance with manufacturer's Instructions.
5. Fill Sealant gun cartridge with potting compound.
6. Coat the entire surface of the insert with potting compound.
7. Place the insert into the installation hole by applying sufficient mechanical pressure to position the insert.
8. Inject potting compound same as 181.
9. Clean excess potting compound from the insert area.
10. Allow the potting compound to cure in accordance with the manufacturer's recommendations.



352, 354, AND 355 SERIES INSERTS, POTTED-IN METHOD FOR SOLID LAMINATE MATERIALS

1. Degrease Inserts using acetone or M.E.K prior to installation to assure proper adhesion.
2. Drill recommended installation hole.
3. Clean core and panel skin residue from installation hole by vacuum or other appropriate means.
4. Prepare potting compound for use in accordance with manufacturer's Instructions.
5. Fill Sealant gun cartridge with potting compound.
6. Coat the entire surface of the insert with potting compound.
7. Place the insert into the installation hole by applying sufficient mechanical pressure to position the insert.
8. Clean excess potting compound from the insert area.
9. Allow the potting compound to cure in accordance with the manufacturer's recommendations.



180, 181, NASI833 AND NASI834 SERIES INSERTS, POTTED -IN METHOD FOR SOLID LAMINATE MATERIALS

1. Degrease Inserts using acetone or M.E.K prior to installation to assure proper adhesion.
2. Drill recommended installation hole thru the panel.
3. Clean residue from installation hole by vacuum or other appropriate means.
4. Prepare potting compound for use in accordance with manufacturer's instructions.
5. Fill Sealant gun cartridge with potting compound.
6. Place the insert into the installation hole using the installation tabs provided to hold the insert in position. Peel off the tab backing and place onto inserts while aligning the holes with the holes or slots of the insert. Masking tape may be placed over the underside of the insert to avoid adhesive leakage.
7. Inject the potting compound through on the potting holes until the potting compound flows from the other hole.
8. Clean excess potting compound from the insert area.
9. Allow the potting compound to cure in accordance with the manufacturer's recommendations.
10. After potting compound is cured, remove the installation tabs from the inserts.



180, 181, NASI833 and NASI834 SERIES INSERTS, POTTED-IN METHOD FOR CORE TYPE MATERIALS

1. Degrease Inserts using acetone or M.E.K prior to installation to assure proper adhesion.
2. Drill recommended installation hole thru the panel.
3. Undercut the core around the hole approximately 1.00 inch larger in diameter than the diameter of the installation hole in the panel skin.
4. Clean core and panel skin residue from installation hole by vacuum or other appropriate means.
5. Prepare potting compound for use in accordance with manufacturer's instructions.
6. Fill sealant gun cartridge with potting compound.
7. Place the insert into the installation hole using the installation tabs provided to hold the insert in position. Peel of the tab backing and place onto insert while aligning holes with the holes or slots in the insert. Masking tape may be placed over the under side of the insert to avoid adhesive leakage.
8. Inject the potting compound through one of the potting holes until the potting compound flows from the other hole.
9. Clean excess potting compound from the insert area.
11. Allow the potting compound to cure in accordance with the manufacturer's recommendations.
12. After potting compound is cured, remove the installation tabs from the inserts.

▶ 2235 SERIES INSERTS, POTTED RIVET NUT

1. Degrease Inserts using acetone or M.E.K prior to installation to assure proper adhesion.
2. Drill recommended installation hole. The depth should be a minimum of .030 deeper than length of part.
3. Clean residue from installation hole by vacuum or other appropriate means.
4. Prepare potting compound for use in accordance with manufacturer's instructions.
5. Fill sealant gun cartridge with potting compound.
6. Partially prepot (approximately 2/3 full) by injecting the potting compound in the installation hole. Do not completely fill the hole.
7. The fastener is threaded onto the pull-up stud of an installation tool.
8. The fastener , on the pull-up stud, is inserted into the drilled or punched hole.
9. The pull-up stud retracts and bulges the unthreaded portion of the fastener shank against the flat undersurface.
10. The installation tool stud is removed, leaving the fastener secure and ready for the attachment screw.
11. Clean excess potting compound from the insert area.
12. Allow the potting compound to cure in accordance with the manufacturer's recommendations.



2445 SERIES INSERTS FOR METALLIC FACE SHEETS THREADED AND NON-THREADED

1. **PANEL PREPARATION;**

THE WITTEN Co. 2445 SERIES INSERT REQUIRES ONLY A SINGLE DIAMETER HOLE DRILLED THROUGH THE ENTIRE PANEL. THE DIAMETER OF THIS HOLE IS COMPARABLE TO THE BODY DIAMETER OF THE FASTENER.

2. **FASTENER INSTALLATION;**

THERE ARE SEVERAL METHODS OF APPLYING THE NECESSARY PRESSURE TO COMPLETE THE INSTALLATION. THE MOST COMMON IS THE USE OF A SUPPORT BASE AND PNEUMATIC OR HYDRAULIC PUNCH APPLYING PRESSURE TO THE HEAD OF THE FASTENER ONLY. ALIGNMENT TOOLS CAN BE MANUFACTURED TO SUIT INSTALLATION EQUIPMENT.

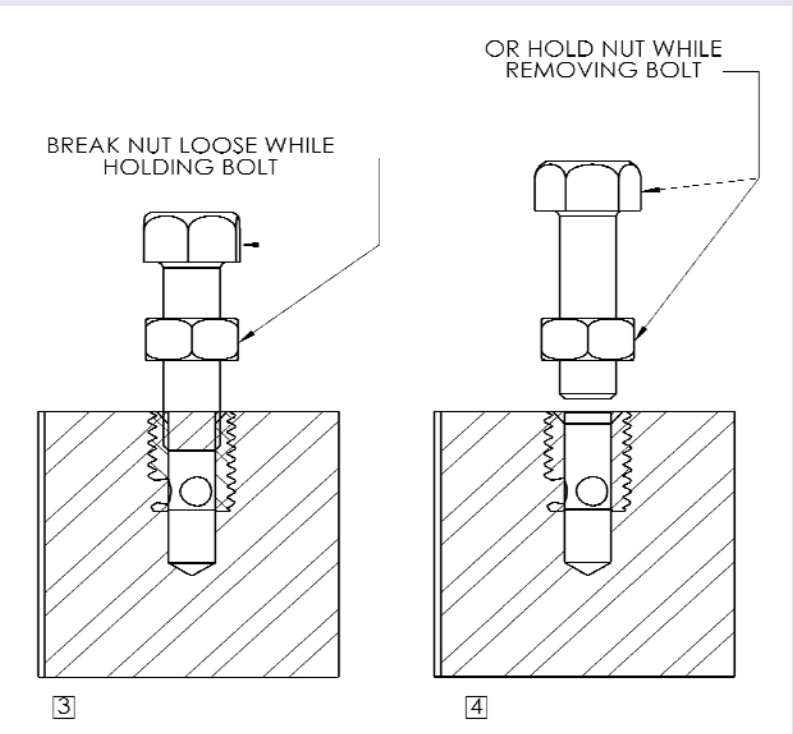
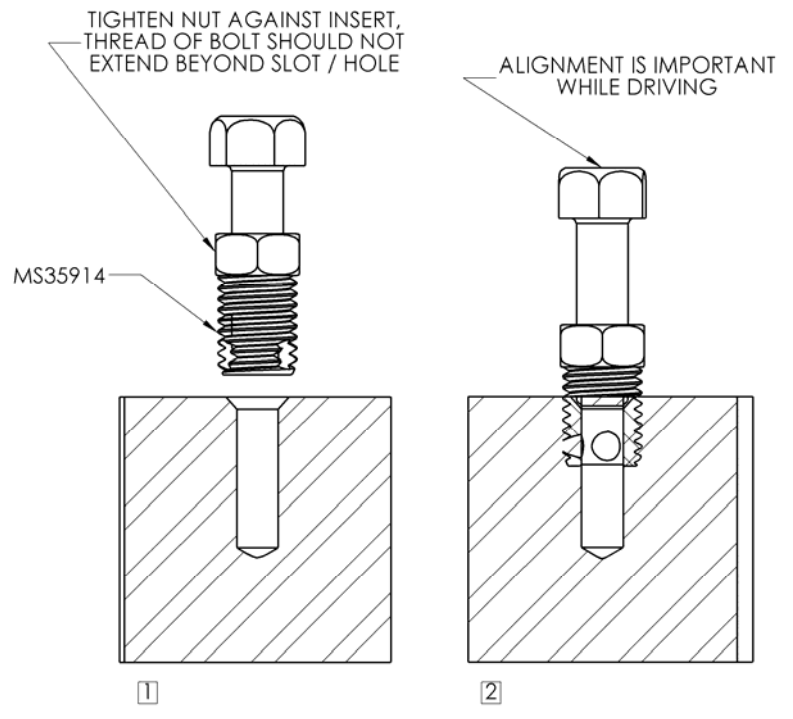
3. **COMPLETED INSTALLATION;**

PERMANENTLY INSTALLED AT SUB-ASSEMBLY. THE 2445 SERIES FASTENERS ARE SELF-RETAINED THROUGH A TELESCOPIC PRESS FIT. A FUNCTION OF THE SLEEVE AND PLUG SECTIONS.

WHEN EXTREMELY HEAVY SHEETS ARE EMPLOYED, THE SPRING BACK MAY FORCE THE HEAD OF THE FASTENER SLIGHTLY ABOVE A FLUSH CONDITION. HOWEVER, WHEN THE COMPONENT IS BOLTED DOWN TO THE PANEL, THE FASTENER WILL AGAIN BECOME FLUSH WITH THE COVER SHEET SURFACE.



MS35914 INSTALLATION PROCEDURE



WITTEN FASTENERS

SUBJECT: POTTING COMPOUNDS (ADHESIVES)

FOR INSTALLATION OF POTTED INSERTS INTO COMPOSITE PANELS

USE HAND HELD GUNS OR PNEUMATIC DISPENSING GUNS FOR INSTALLATION OF FASTENERS AND INSERTS

DESCRIPTION

MANUFACTURER

Two part epoxy adhesive,
room temperature cure.

H.B. Fuller Co.
3530 N. Lexington Ave.
St. Paul, MN 55126
(651)236-3000
www.hbfuller.com

Two part epoxy adhesive,
room temperature cure.

Huntsman Advanced Materials
10003 Woodland Forest Drive
The Woodlands, TX 77381
(800)817-8260
www.huntman.com

Two part epoxy adhesive,
room temperature cure.

Henkel Corporation Aerospace Group
2850 Willow Pass Road
Bay Point, CA 94565-0031
Tel: (925)458-8000
Fax: (925)458-8030
www.hysol.com

Two part epoxy adhesive
room temperature cure

ITW Devcon
30 Endicoot Street
Danvers, MA 01923
Tel: (800)933-8256

Notes:

1. Follow the manufacturer's instructions and safety guidelines.
2. We are not liable for any failures with the adhesives above.

GENERAL DATA

DIMENSIONS/TOLERANCES

All dimensions are in inches (unless otherwise specified).

Tolerances: .xx = .030, .xxx = .010 (unless otherwise specified).

MATERIALS

Unless otherwise noted, materials are: Stainless Steel, 303 series; Carbon Steel, 1215 series; Aluminum, 2024-T351/ T4, or 6061-T6; and Brass, 360 Series.

FINISHES

Typical finishes include cadmium plate, zinc plate, chem-film, anodize and passivation. Special finishes are available upon request.

HOW TO ORDER

When ordering use part numbers as shown. For modifications, additional sizes, or other parts, contact our office for correct part number.

US & CANADA PAYMENT TERMS

All payments are due NET 30 DAYS from date of invoice, with approved credit.

CREDIT CARDS ARE ACCEPTED. There is a 4% charge on all Credit card orders.

THERE IS A 1.5% CARRYING CHARGE ON PAST DUE ACCOUNTS.

\$200 MINIMUM ORDER ON STOCK ITEMS.

US & CANADA SHIPPING TERMS

F.O.B. ORIGIN OR FREIGHT COLLECT. Standard courier is UPS unless customer specifies alternate.

There is a minimum 15% RE-STOCKING fee on all returned parts. A RMA number is required for all returns. Returns accepted only at Witten Company's approval. All returns are issued as a credit toward your next purchase.

INTERNATIONAL PAYMENT/SHIPPING TERMS

\$500 Minimum

Prepaid Credit Card only.

Ship only UPS or FEDEX and Account number is required

No COD

WITTEN COMPANY, INC.
918-272-9567

