WITTEN COMPANY INC.

Engineering and Manufacturing

High Performance Fasteners and Hardware Products

Manufactured in the USA

CAGE CODE: 0JHK5

WITTEN COMPANY, INC.

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OWASSO, OK 74055

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WITTEN CROSS-REFERENCE LIST

Monday, November 10, 2025

WITTEN COMPANY INC.

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)			
2253H **2253HE** **2253S** **2253SE**	17-1-6655 (NATICK)		TYE1400 TYE1400H	400H SERIES 400HE SERIES 400S SERIES 400SE SERIES
2395			TYE2161	
2402 **W2334** **2402SF**	CDSP5907	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
W2444		SL6288	TYE2050	
2471	CDIN13 (C&D ZODIAC)	SL2748 SL2899	TYE2048	
2483			TYE2068	
2487		SL2808 SL2668		
2491		SL5107	TYE5107	
W2494	CDIN12	SL644	TYE2044	
2497		SL6096	TYE2046	
2507		SL2899		
2517	CDIN16 (C&D ZODIAC)	SL10631	TYE2069	
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 **NAS1834K** **181 SERIES**	NAS1834 SERIES CDSP5904 (C&D ZODIAC) CDSP5903 (C&D ZODIAC)	SL603 SL604 SL604	TYE2003 TYE2004 TYE4004	D1834 SERIES D1834K 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)			
W704	CDIN11 (C&D ZODIAC)	SL6089	TYE2043	
W708	CDSP5905 (C&D ZODIAC)	SL6520	TYE2161	

WITTEN COMPANY INC.

MANUFACTURING/ QUALITY ASSURANCE

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, AND ENGINEERING

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
CAGE CODE: 0JHK5

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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

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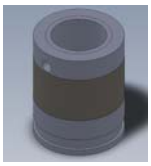
Light Duty Fasteners

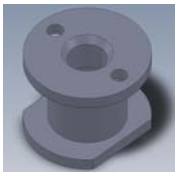


120 Series, Blind, Press-In/Molded-In

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.

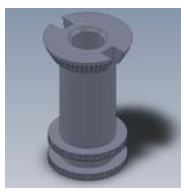
Medium Duty Fasteners

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.

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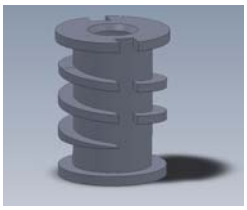
Heavy Duty Fasteners

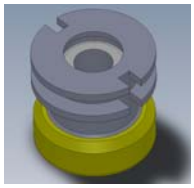


150 Series, "Spiral Rib" Blind, Molded/Potted Inserts

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.

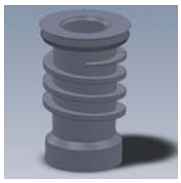
151 Series, "Spiral Rib" Blind, Potted Inserts, Snap-in Type

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.

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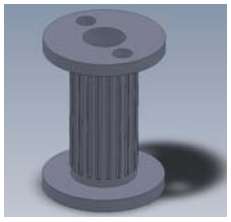
PRODUCT DESCRIPTION & APPLICATIONS

NAS Fasteners and NAS Equivalent

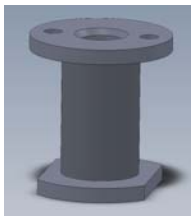
180 Series, Thru-Hole Threaded Insert, Regular Head Style Molded/Potted-In (NAS1833 Equivalent)

Once 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)



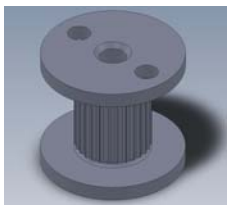
181 Series , Thru-Hole Insert, Regular Head Style Molded/ Potted-In (NAS1834 Equivalent)

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)



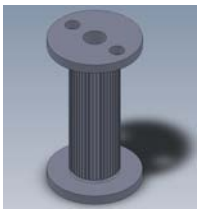
NAS1832 Series, Blind Threaded, Self Locking/Non-self Locking, Molded/Potted, Sandwich Panel Insert.

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.



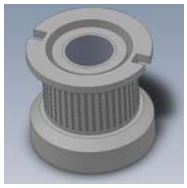
NAS1833 Series, Thru Hole, Threaded, Self-Locking/Non-self Locking, Molded/Potted, Sandwich Panel Insert.

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.

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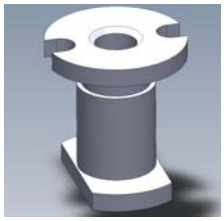
NAS Fasteners and NAS Equivalent continued



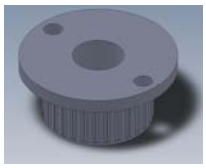
NAS1836 Series, Blind Threaded, Self Locking/Non-self Locking, Molded/Potted, Lightweight, Sandwich Panel Insert.

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

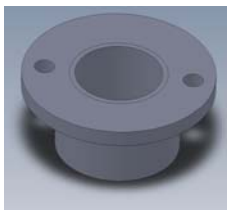
2235 Series, Potted Rivet Nut, Blind Insert

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.

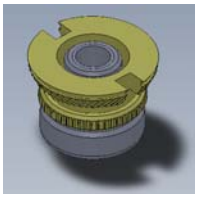


354 Series, Thru-Hole Threaded Insert with Flange, Molded/Potted

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.

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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

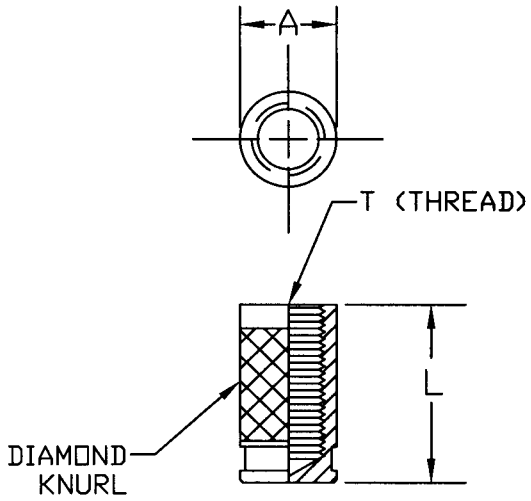
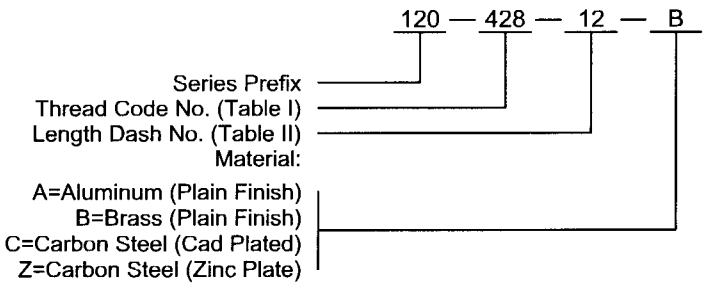


TABLE II

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 COMPANY, INC.
918-272-9567

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

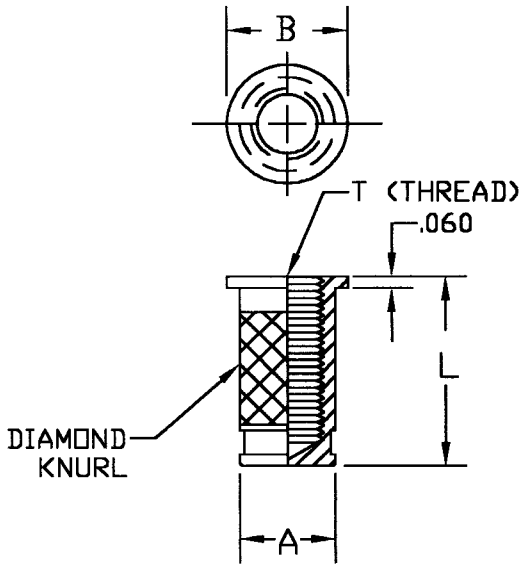


TABLE II

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

121 — 428 — 12 — B

Series Prefix

Thread Code No. (Table I)

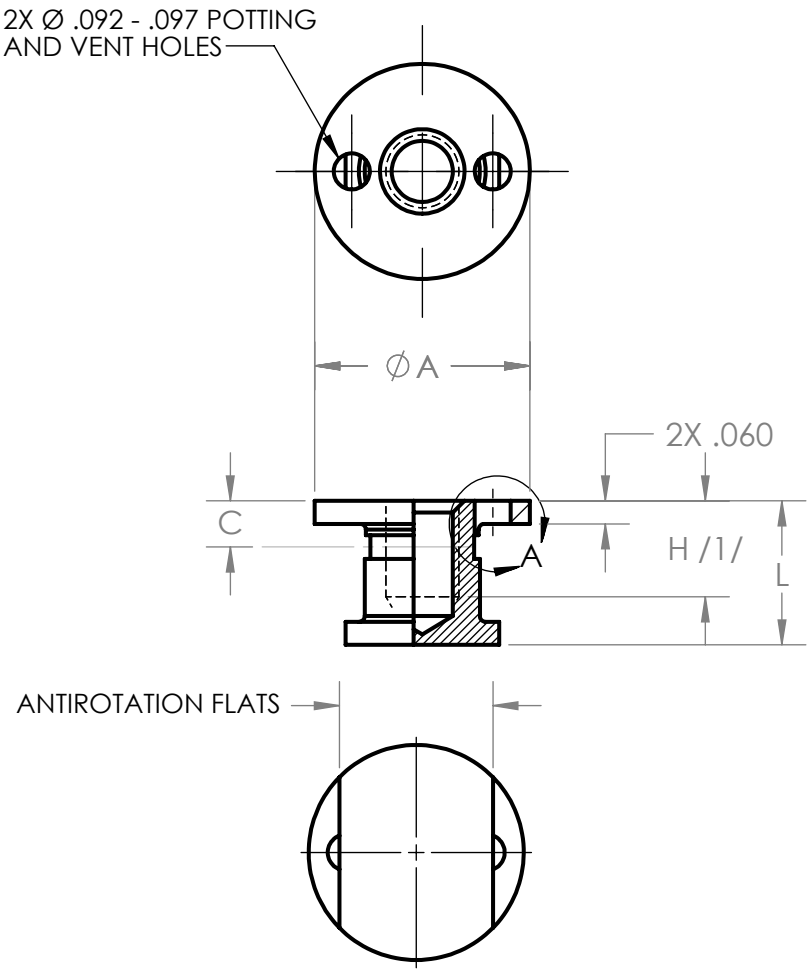
Length Dash No. (Table II)

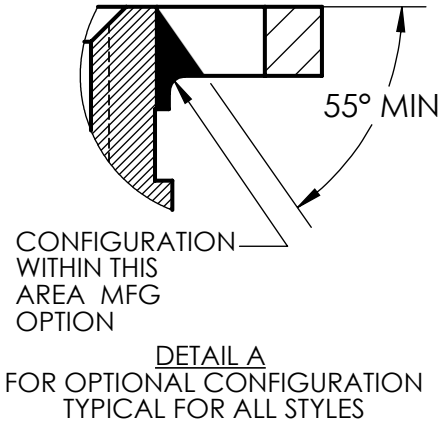
Material:

A=Aluminum (Plain Finish)
B=Brass (Plain Finish)
C=Carbon Steel (Cad Plated)
Z=Carbon Steel (Zinc Plate)

WITTEN COMPANY, INC.
918-272-9567

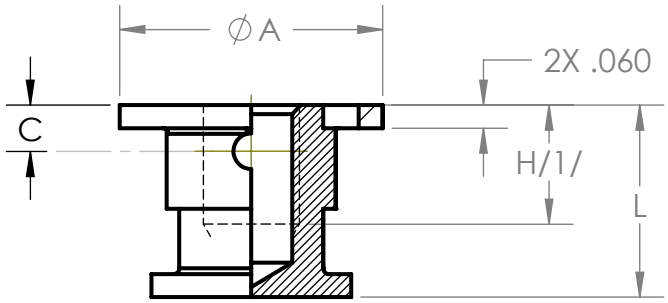
130 SERIES
THREADED INSERT, BLIND, REGULAR HEAD STYLE
MEDIUM DUTY





DETAIL A
FOR OPTIONAL CONFIGURATION
TYPICAL FOR ALL STYLES

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 4/21/2022

CAGE CODE: 0JHK5

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

TABLE I - DIMENSIONS

SIZE DASH NO	T THREAD	ØA +.000 -.010	C SELF-LK ±.06	H MIN /1/	L MIN	INSTL HOLE +.005/ -.000
632	6-32 UNJC -3B	.577	.12	.25	.37	.578
832	8-32 UNJC -3B	.577	.12	.25	.37	.578
1032	10-32 UNJF - 3B	.577	.12	.25	.37	.578
420	1/4-20 UNJC-3B	.685	.16	.31	.50	.686
428	1/4-28 UNJF-3B	.685	.16	.31	.50	.686
518	5/16-18 UNJC-3B	.685	.20	.31	.50	.686
524	5/16-24 UNJF-3B	.685	.20	.31	.50	.686
616	3/8-16 UNJC-3B	.811	.20	.37	.50	.812
624	3/8-24 UNJF-3B	.811	.20	.37	.50	.812

TABLE II

DASH NO.	L±.010 LENGTH	MINIMUM THREAD DEPTH		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

CODE:

130 - 428 - L - 12 - SS

- 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)
- 12 = LENGTH DASH NO. (TABLE II)
- L = ADD "LK" FOR SELF-LOCK (NYLON)
  ADD "L" FOR SELF-LOCK (METALLIC CRIMP)
- 428 = THREAD CODE NO. (TABLE I)
- 130 = SERIES PREFIX

MATERIAL:

CARBON STEEL:
PER ASTM A108.

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.

FINISH:

CARBON STEEL:
CADMIUM PLATE PER AMS QQ-P-416, TYPE II, CLASS 2.
ZINC PLATE PER ASTM-B633, SC2, TYPE I.

AL ALLOY:
CHEM-FILM PER MIL-DTL-5541F, CLASS 1A.
CHEM-FILM PER MIL-DTL-5541F, CLASS 3.

CRES:
PASSIVATE PER ASTM-A967, CITRIC 1.

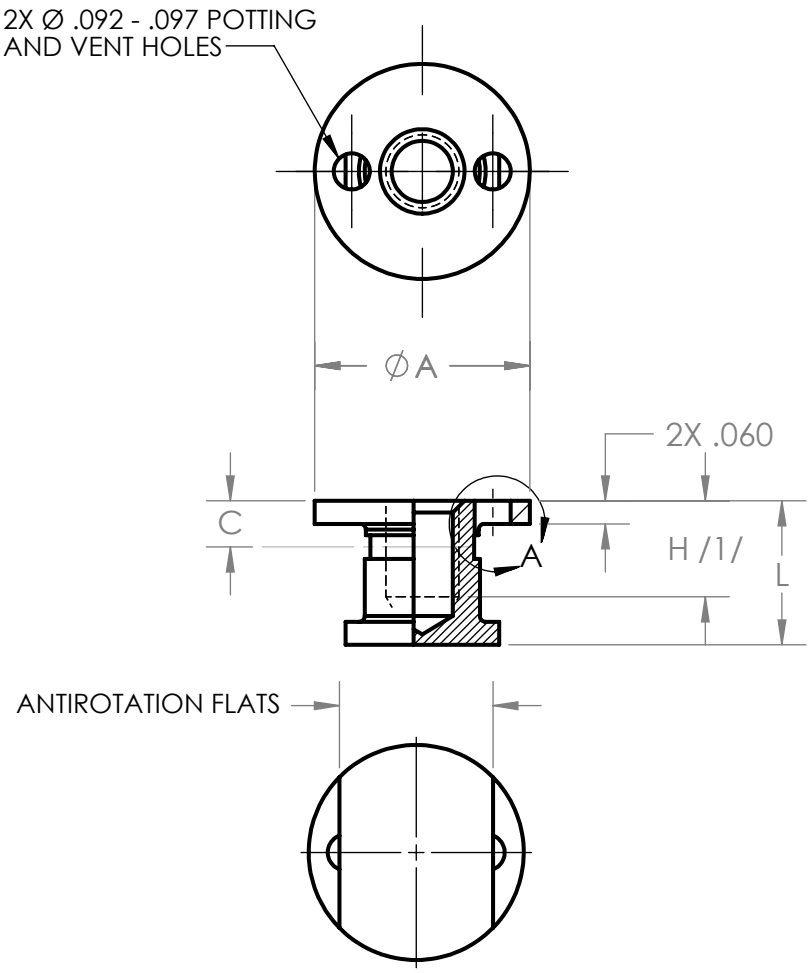
NOTES:
/1/ MINIMUM THREAD DEPTH "H" WHERE LENGTH PERMITS SHALL BE 2X DIAMETER OF THREAD.
2. THREADS PER AS8879, CLASS 3B.
3. INSTALLATION TABS ARE INCLUDED.

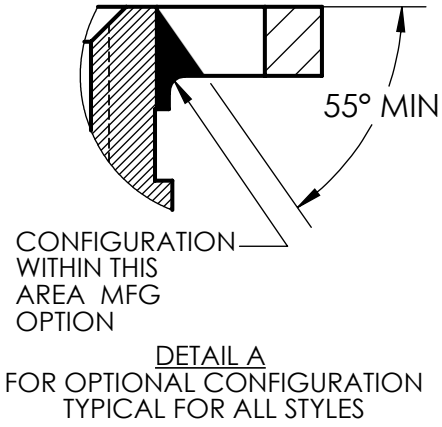
WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 4/21/2022

CAGE CODE: 0JHK5

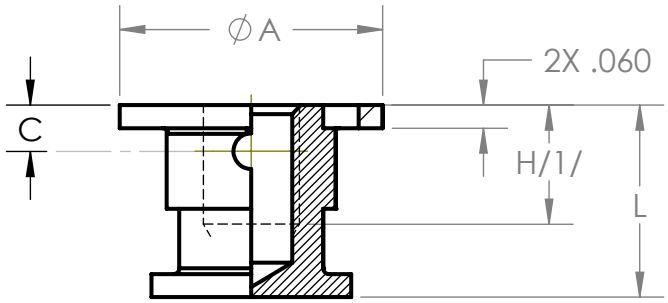
METRIC 130 SERIES
THREADED INSERT, BLIND, REGULAR HEAD STYLE
MEDIUM DUTY





DETAIL A
FOR OPTIONAL CONFIGURATION
TYPICAL FOR ALL STYLES

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 4/21/2022

CAGE CODE: 0JHK5

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

TABLE I - DIMENSIONS

SIZE DASH NO	T THREAD	ØA +.000 -.010	C SELF-LK ±.06	H MIN /1/	L MIN	INSTL HOLE +.005/ -.000
M3	M3X.5	.577	.12	.25	.37	.578
M3.5	M3.5X.6	.577	.12	.25	.37	.578
M4	M4X.7	.577	.12	.25	.37	.578
M5	M5X.8	.577	.12	.25	.37	.578
M6	M6X1	.685	.16	.31	.50	.686
M8X1	M8X1	.685	.20	.31	.50	.686
M8X1.25	M8X1.25	.685	.20	.31	.50	.686
M10X1.25	M10X1.25	.811	.20	.37	.50	.812
M10X1.5	M10X1.5	.811	.20	.37	.50	.812

TABLE II

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

CODE:

130 - M6 - L - 12 - SS

- 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)
- 12 — LENGTH DASH NO. (TABLE II)
- L — ADD "LK" FOR SELF-LOCK (NYLON)
  ADD "L" FOR SELF-LOCK (METALLIC CRIMP)
- M6 — THREAD CODE NO. (TABLE I)
- 130 — SERIES PREFIX

MATERIAL:

CARBON STEEL:
PER ASTM A108.

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.

FINISH:

CARBON STEEL:
CADMIUM PLATE PER AMS QQ-P-416, TYPE II, CLASS 2.
ZINC PLATE PER ASTM-B633, SC2, TYPE I.

AL ALLOY:
CHEM-FILM PER MIL-DTL-5541F, CLASS 1A.
CHEM-FILM PER MIL-DTL-5541F, CLASS 3.

CRES:
PASSIVATE PER ASTM-A967, CITRIC 1.

NOTES:
/1/ MINIMUM THREAD DEPTH "H" WHERE LENGTH PERMITS SHALL BE 2X DIAMETER OF THREAD.
2. INSTALLATION TABS ARE INCLUDED.

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	INSTL 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

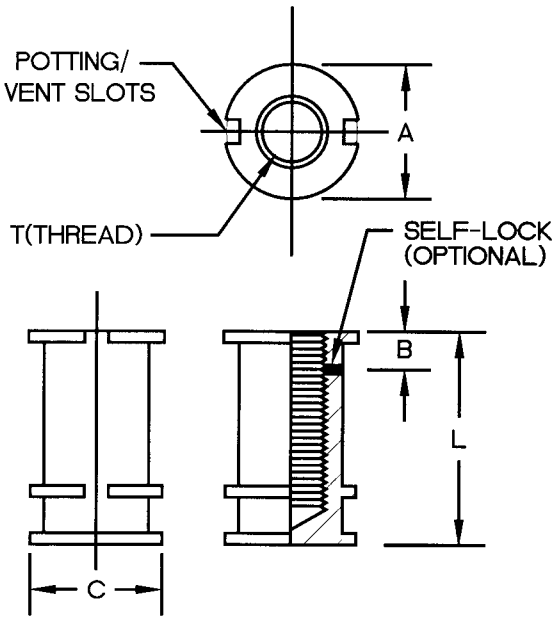


TABLE II

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

140 — 428 — L — 12 — SS

Series Prefix

Thread Code No. (Table I)

Add "LK" for Self-Lock (Nylon)
Add "L" for Self-Lock (Metallic Crimp)

Length Dash No. (Table II)

Material:
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)

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

WITTEN COMPANY, INC.
918-272-9567

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	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

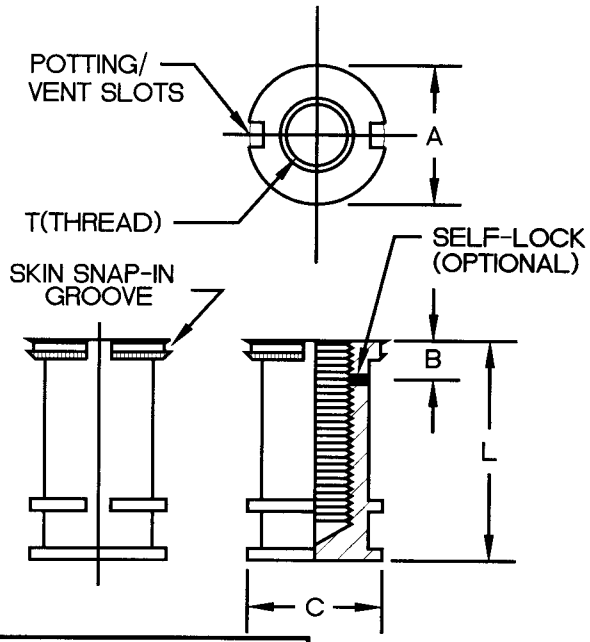


TABLE II

DASH NO.	L ±.03 LENGTH	MINIMUM #6	#8	FULL #10	THREAD 1/4	DEPTH 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
-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

141 – 428 – L – 12 – SS – 1

- 141 — Series Prefix
- 428 — Thread Code No. (Table I)
- L — Add "L" for Self-Lock (Metallic Crimp)
- 12 — Length Dash No. (Table II)
- SS — Material:
  - 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)
- 1 — Skin Thickness (Table III)

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 COMPANY, INC.
918-272-9567

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	INSTL 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

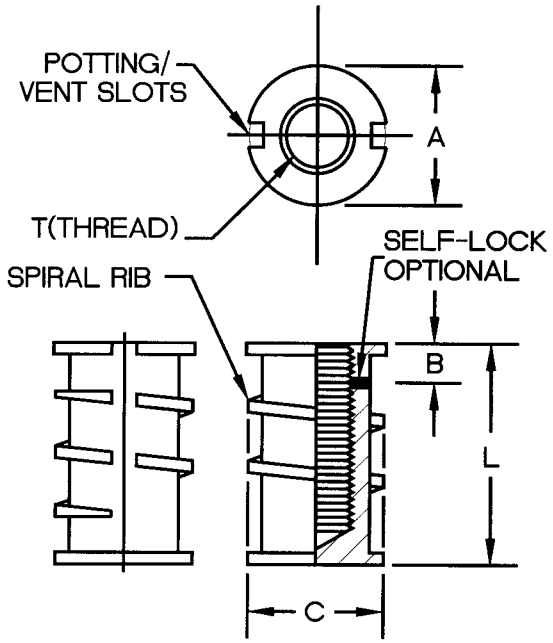


TABLE II

DASH NO.	L ±.03 LENGTH	MINIMUM #6	#8	#10	FULL 1/4	THREAD 5/16	DEPTH 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

150 — 428 — L — 12 — SS

- 150 — Series Prefix
- 428 — Thread Code No. (Table I)
- L — Add "LK" for Self-Lock (Nylon) / Add "L" for Self-Lock (Metallic Crimp)
- 12 — Length Dash No. (Table II)
- SS — Material:
  - 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)

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

WITTEN COMPANY INC.

METRIC 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	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

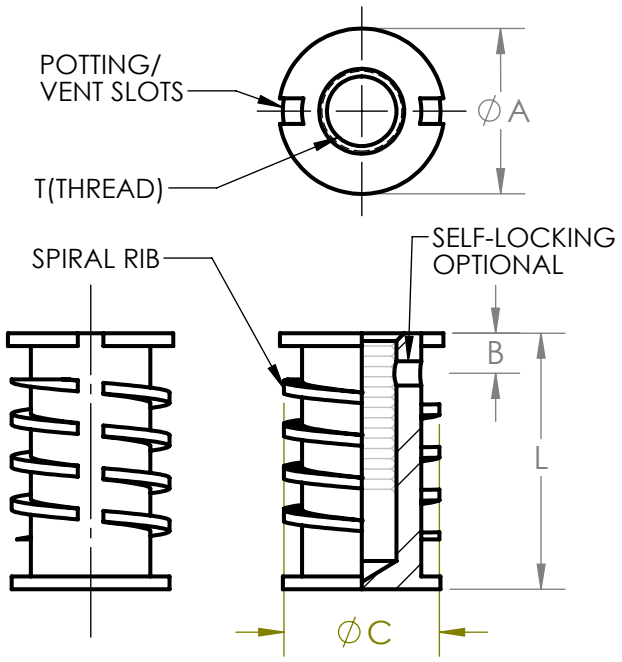


TABLE II

DASH NO.	L±.030 LENGTH	MINIMUM FULL THREAD DEPTH								
		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

- 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)
- 12 — LENGTH DASH NO. (TABLE II)
- L — ADD "LK" FOR SELF-LOCK (NYLON)
  ADD "L" FOR SELF-LOCK (METALLIC CRIMP)
- M5 — THREAD CODE NO. (TABLE I)
- 150 — SERIES PREFIX

NOTES:
1. THREADS PER FED-STD-H28/21
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:B 5/11/2023
CAGE CODE: 0JHK5

WITTEN COMPANY INC.

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 UNJC -3B	.500	.12	.427	.468
832	8-32 UNJC -3B	.500	.12	.427	.468
1032	10-32 UNJF - 3B	.531	.12	.458	.500
420	1/4-20 UNJC-3B	.594	.16	.521	.562
428	1/4-28 UNJF-3B	.594	.16	.521	.562
518	5/16-18 UNJC-3B	.656	.20	.583	.625
524	5/16-24 UNJF-3B	.656	.20	.583	.625
616	3/8-16 UNJC-3B	.719	.20	.646	.687
624	3/8-24 UNJF-3B	.719	.20	.646	.687
714	7/16-14 UNJC-3B	.781	.20	.708	.750
720	7/16-20 UNJF-3B	.781	.20	.708	.750
813	1/2-13 UNJC-3B	.844	.20	.771	.812
820	1/2-20 UNJF-3B	.844	.20	.771	.812

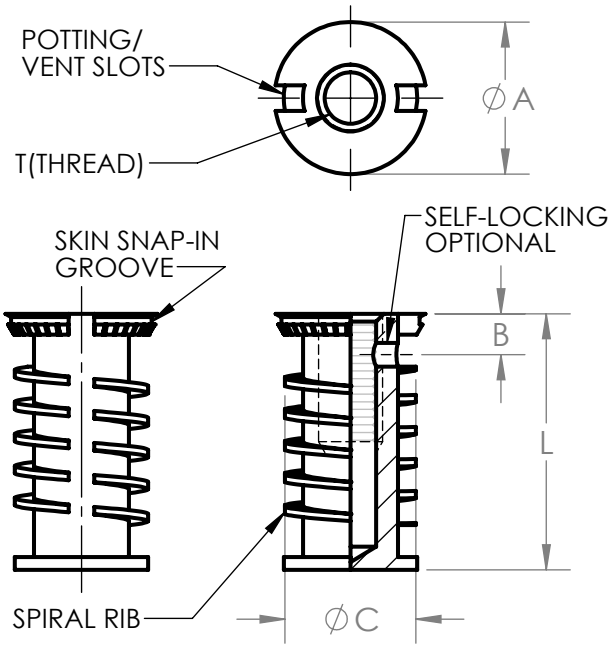


TABLE II

DASH NO.	L±.030 LENGTH	MINIMUM 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

151 - 428 - L - 12 - SS - 1

- 1 — SKIN THICKNESS (TABLE III)
- 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)
- 12 — LENGTH DASH NO. (TABLE II)
- L — ADD "L" FOR SELF-LOCK (METALLIC CRIMP)
  ADD "LK" FOR SELF-LOCK (NYLON)
- 428 — THREAD CODE NO. (TABLE I)
- 151 — SERIES PREFIX

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

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 5/11/2023

CAGE CODE: 0JHK5

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

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

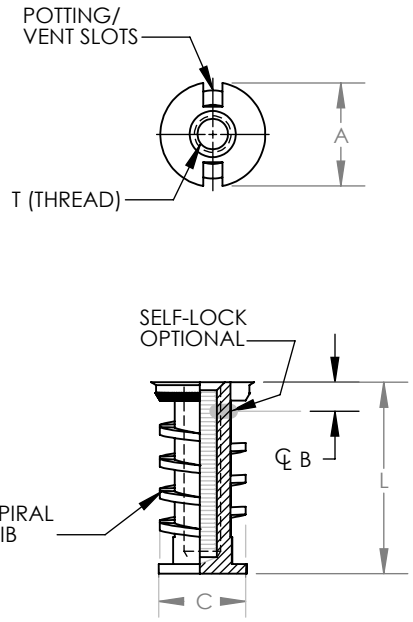


TABLE II

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

- SERIES PREFIX
- THREAD CODE NO. (TABLE I)
- ADD "LK" FOR SELF LOCK (NYLON)
  ADD "L" FOR SELF-LOCK (METALLIC CRIMP)
- LENGTH DASH NO. (TABLE II)
- MATERIAL:
  A=ALUMINUM ALLOY (CHEM FILM FINISH)
  C=CARBON STEEL (CAD PLATE FINISH)
  Z=CARBON STEEL (ZINC PLATED)
  SS=STAINLESS STEEL (PLAIN FINISH)
  SP=STAINLESS STEEL (PASSIVATED)
- SKIN THICKNESS (TABLE III)

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

WITTEN COMPANY
918-272-9567
REV:A 8/17/09

WITTEN FASTENERS

155 SERIES
FLOATING INSERTS

TABLE I

CODE NO.	T THREAD	A DIA +.000 -.010	INSTL 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

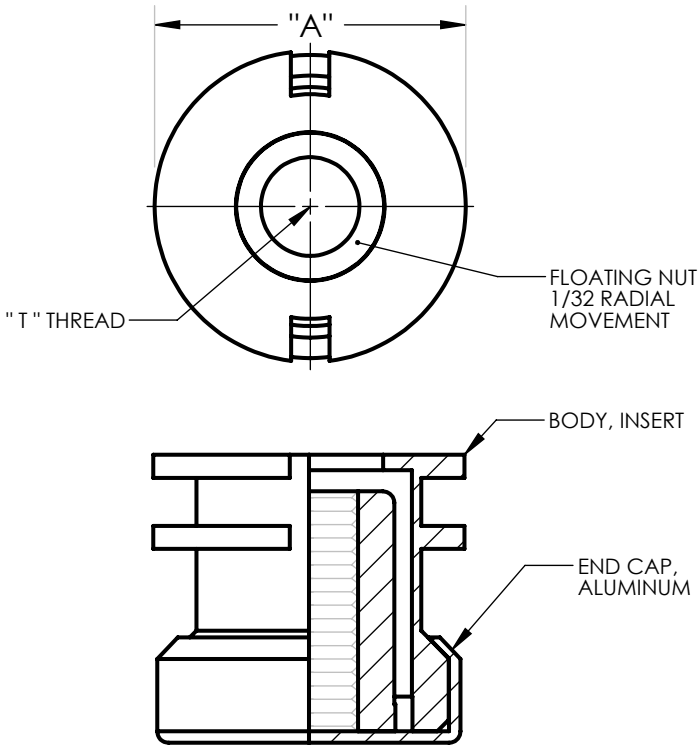


TABLE II

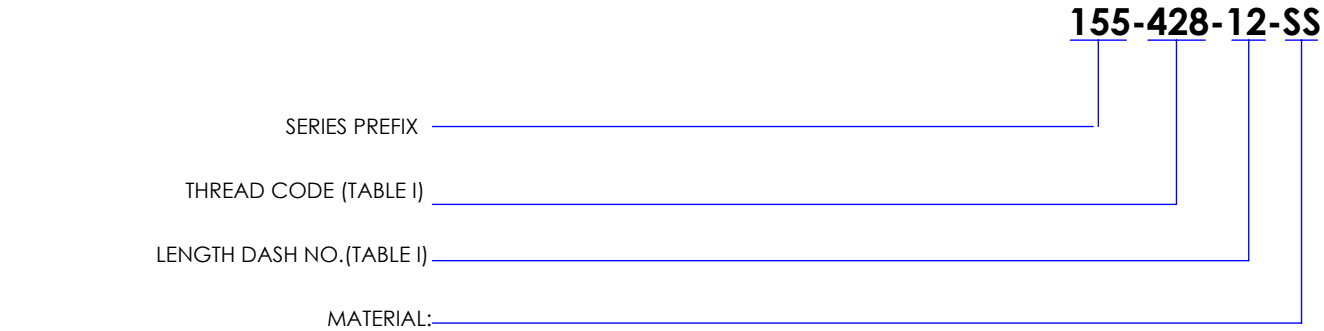
DASH NO.	L±.03 LENGTH	*MINIMUM FULL THREAD DEPTH*						
		#8	#10	1/4	5/16	3/8	7/16	1/2
-7	.437	.287	.237	-	-	-	-	-
-8	.500	.328	.300	.225	-	-	-	-
-10	.625	.328	.375	.350	.350	.350	-	-
-12	.750	.328	.375	.475	.475	.475	.400	.400
-14	.875	.328	.375	.500	.600	.600	.525	.525
-16	1.000	.328	.375	.500	.625	.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

WITTEN COMPANY
918-272-9567
REV: A 8/18/09

WITTEN FASTENERS

155 SERIES
FLOATING INSERTS

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:

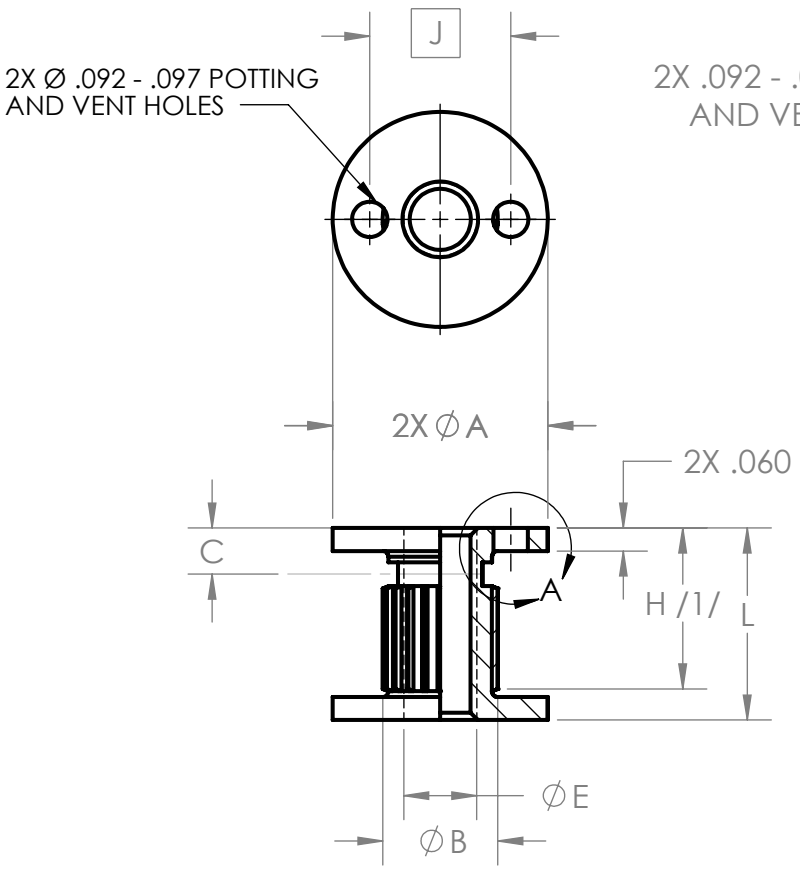
1.THREADS PER SAE-AS8879

2.PATENT NO. 4,941,765 AND 5,082,405

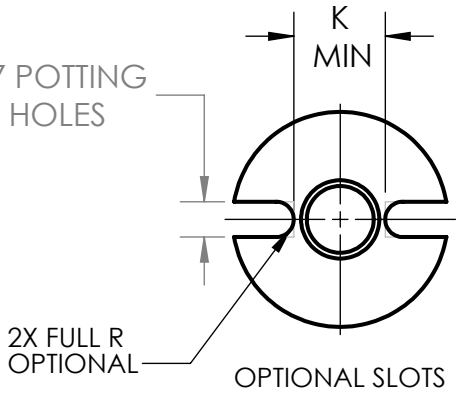
3. NO. OF RIBS VARY WITH LENGTH.

4. INSTALLATION TABS ARE AVAILABLE.

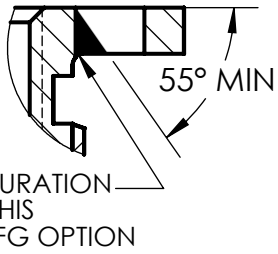
180 SERIES
THREADED INSERT, THRU, REGULAR HEAD STYLE
(NAS 1833 TYPE)



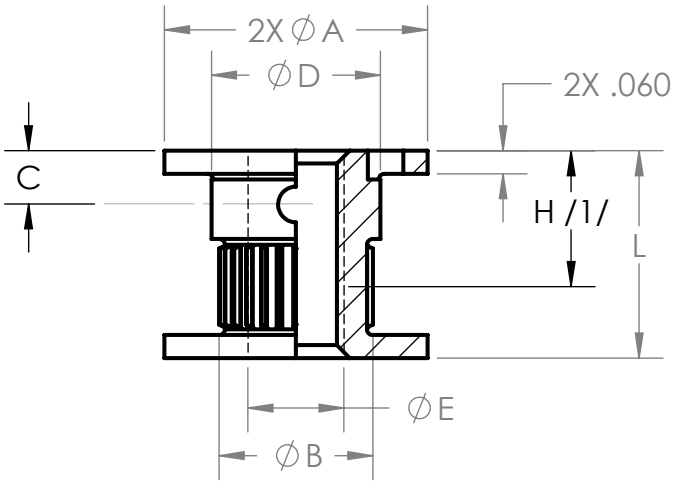
ALL STEEL AND CRES SELF-LOCKING AND NONSELF-LOCKING
OR NONSELF-LOCKING ALUMINUM STYLE INSERTS



OPTIONAL SLOTS



DETAIL A
FOR OPTIONAL CONFIGURATION
TYPICAL FOR ALL STYLES



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

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 4/21/2022

CAGE CODE: 0JHK5

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

TABLE I - DIMENSIONS

CODE NO.	T THREAD	ØA +.000 -.010	ØB	C SELF-LK ±.06	ØD	ØE /1/	H MIN /1/	J BASIC	K MIN	L MIN /2/	INSTALLATION HOLE SIZE
632	6-32 UNJC -3B	.560	.300	.12	.375	.139 - .145	.276	.367	.260	.250	.561 - .566
832	8-32 UNJC -3B	.560	.300	.12	.375	.168 - .174	.328	.367	.260	.250	.561 - .566
1024	10-24 UNJC - 3B	.560	.300	.12	.375	.195 - .201	.380	.367	.260	.250	.561 - .566
1032	10-32 UNJF - 3B	.560	.300	.12	.375	.195 - .201	.380	.367	.260	.250	.561 - .566
420	1/4-20 UNJC-3B	.685	.375	.14	.440	.256 - .263	.500	.467	.360	.312	.686 - .691
428	1/4-28 UNJF-3B	.685	.375	.14	.440	.256 - .263	.500	.467	.360	.312	.686 - .691
518	5/16-18 UNJC-3B	.685	.475	.16	.500	.315 - .322	.625	.467	.360	.312	.686 - .691
524	5/16-24 UNJF-3B	.685	.475	.16	.500	.315 - .322	.625	.467	.360	.312	.686 - .691
616	3/8-16 UNJC-3B	.841	.500	.22	.550	.376 - .383	.750	.591	.484	.375	.842 - .847
624	3/8-24 UNJF-3B	.841	.500	.22	.550	.376 - .383	.750	.591	.484	.375	.842 - .847

MATERIAL:

CARBON STEEL: PER ASTM A108.

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.

FINISH:

CARBON STEEL: CADMIUM PLATE PER AMS QQ-P-416, TYPE II, CLASS 2.
ZINC PLATE PER ASTM-B633, SC2, TYPE I.

AL ALLOY: ANODIZE PER MIL-A-8625, TYPE I, CLASS OPTIONAL
CHEM-FILM PER MIL-DTL-5541F, CLASS 1A.
CHEM-FILM PER MIL-DTL-5541F, CLASS 3.

CRES: PASSIVATE PER ASTM-A967.

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

TABLE II	
SEE NOTE 4	
DASH NO.	L±.010 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 SERIES
THREADED INSERT, THRU, REGULAR HEAD STYLE
(NAS 1833 TYPE)

CODING:

180 - 428 - L - 12 - SS

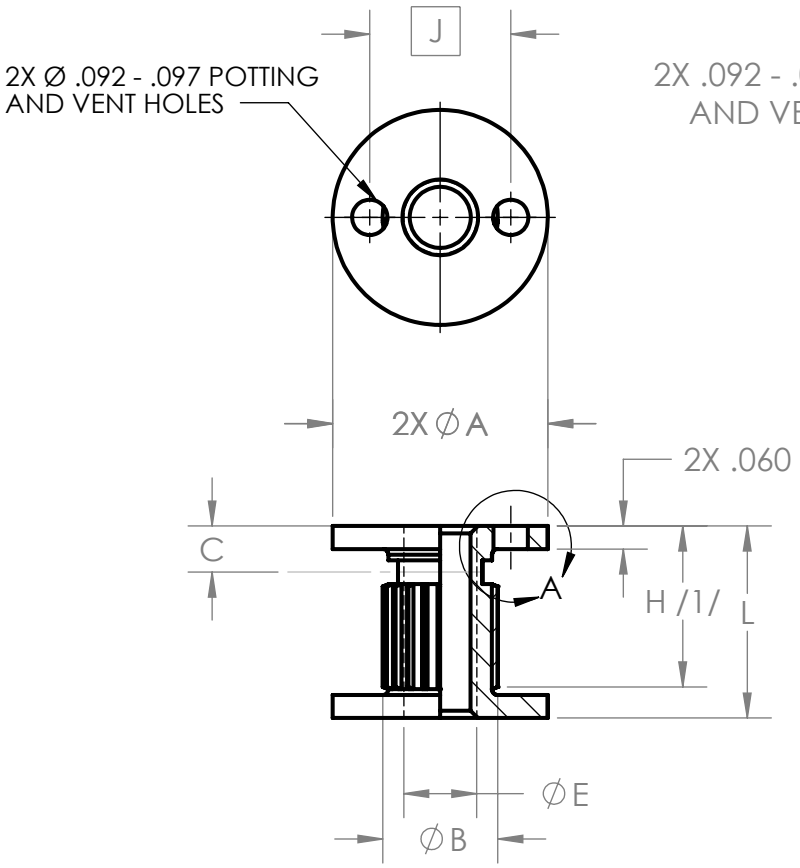
- 180 — SERIES PREFIX
- 428 — THREAD CODE NO. (TABLE I)
- L — ADD "LK" FOR SELF-LOCK (NYLON)
  ADD "L" FOR SELF-LOCK (METALLIC CRIMP)
- 12 — LENGTH DASH NO. (TABLE II)
- SS — MATERIAL & FINISH:
  - A = ALUM ALLOY (PLAIN FINISH)
  - AA = ALUM ALLOY (ANODIZE)
  - A3 = ALUM ALLOY (CHEM-FILM CL3)
  - C = 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

NOTES:

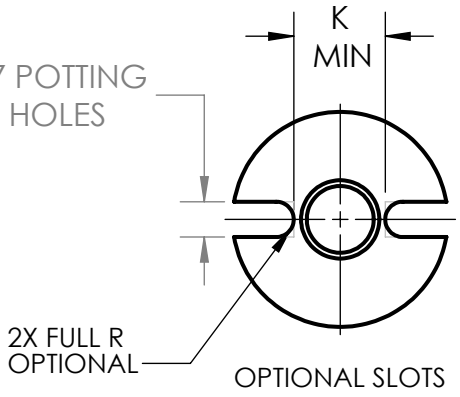
/1/ MINIMUM THREAD DEPTH "H" WHERE LENGTH PERMITS SHALL BE 2X DIAMETER OF THREAD. LENGTHS SHORTER THAN 2X DIAMETER OF THREAD SHALL BE THREADED THE ENTIRE LENGTH. LENGTHS LONGER THAN 2X DIAMETER MAY HAVE A THREAD RELIEF SHOWN BY "∅E" AND "H" OR MAY BE THREADED THE ENTIRE LENGTH (MANUFACTURER'S OPTION).

2. THREADS PER AS8879, CLASS 3B
3. INSTALLATION TABS ARE INCLUDED.
4. TOLERANCES .XXX = ±.010
   .XX = ±.02
5. FOR OTHER LENGTHS USE .XXX CALLOUT AS SHOWN:
   180-428-.400-SS
   - .400 — LENGTH

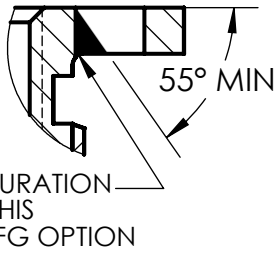
METRIC 180 SERIES
THREADED INSERT, THRU, REGULAR HEAD STYLE
(NAS 1833 TYPE)



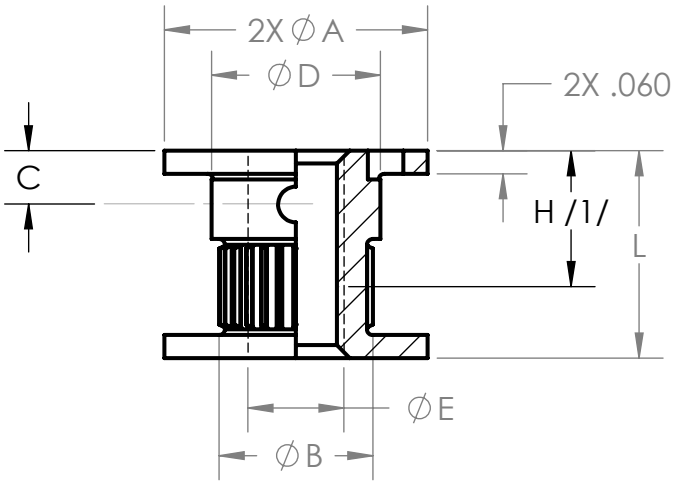
ALL STEEL AND CRES SELF-LOCKING AND NONSELF-LOCKING
OR NONSELF-LOCKING ALUMINUM STYLE INSERTS



OPTIONAL SLOTS



DETAIL A
FOR OPTIONAL CONFIGURATION
TYPICAL FOR ALL STYLES



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

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 4/21/2022

CAGE CODE: 0JHK5

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

TABLE I - DIMENSIONS

CODE NO.	T THREAD	ØA +.000 -.010	ØB	C SELF-LK ±.06	ØD	ØE /1/	H MIN /1/	J BASIC	K MIN	L MIN /2/	INSTALLATION HOLE SIZE
M3.5	M3.5X.6	.560	.300	.12	.375	.139 - .145	.276	.367	.260	.250	.561 - .566
M4	M4X.7	.560	.300	.12	.375	.168 - .174	.328	.367	.260	.250	.561 - .566
M5	M5X.8	.560	.300	.12	.375	.195 - .201	.380	.367	.260	.250	.561 - .566
M6	M6X1	.685	.375	.14	.440	.256 - .263	.500	.467	.360	.312	.686 - .691
M8X1	M8X1	.685	.475	.16	.500	.315 - .322	.625	.467	.360	.312	.686 - .691
M8X1.25	M8X1.25	.685	.475	.16	.500	.315 - .322	.625	.467	.360	.312	.686 - .691
M10X1.25	M10X1.25	.841	.500	.22	.550	.376 - .383	.750	.591	.484	.375	.842 - .847
M10X1.5	M10X1.5	.841	.500	.22	.550	.376 - .383	.750	.591	.484	.375	.842 - .847

MATERIAL:

CARBON STEEL:
PER ASTM A108.

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.

FINISH:

CARBON STEEL:
CADMIUM PLATE PER AMS QQ-P-416, TYPE II, CLASS 2.
ZINC PLATE PER ASTM-B633, SC2, TYPE I.

AL ALLOY:
ANODIZE PER MIL-A-8625, TYPE I, CLASS OPTIONAL
CHEM-FILM PER MIL-DTL-5541F, CLASS 1A.
CHEM-FILM PER MIL-DTL-5541F, CLASS 3.

CRES:
PASSIVATE PER ASTM-A967.

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

TABLE II
SEE NOTE 4

DASH NO.	L±.010 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

CODING:

180 - M6 - L - 12 - SS

- SERIES PREFIX
- THREAD CODE NO. (TABLE I)
- ADD "LK" FOR SELF-LOCK (NYLON)
  ADD "L" FOR SELF-LOCK (METALLIC CRIMP)
- LENGTH DASH NO. (TABLE II)
- 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

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. INSTALLATION TABS ARE INCLUDED.
3. TOLERANCES .XXX = ±.010
   .XX = ±.02
4. FOR OTHER LENGTHS USE .XXX CALLOUT AS SHOWN:
   180-M6-.400-SS
   - LENGTH

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 4/21/2022

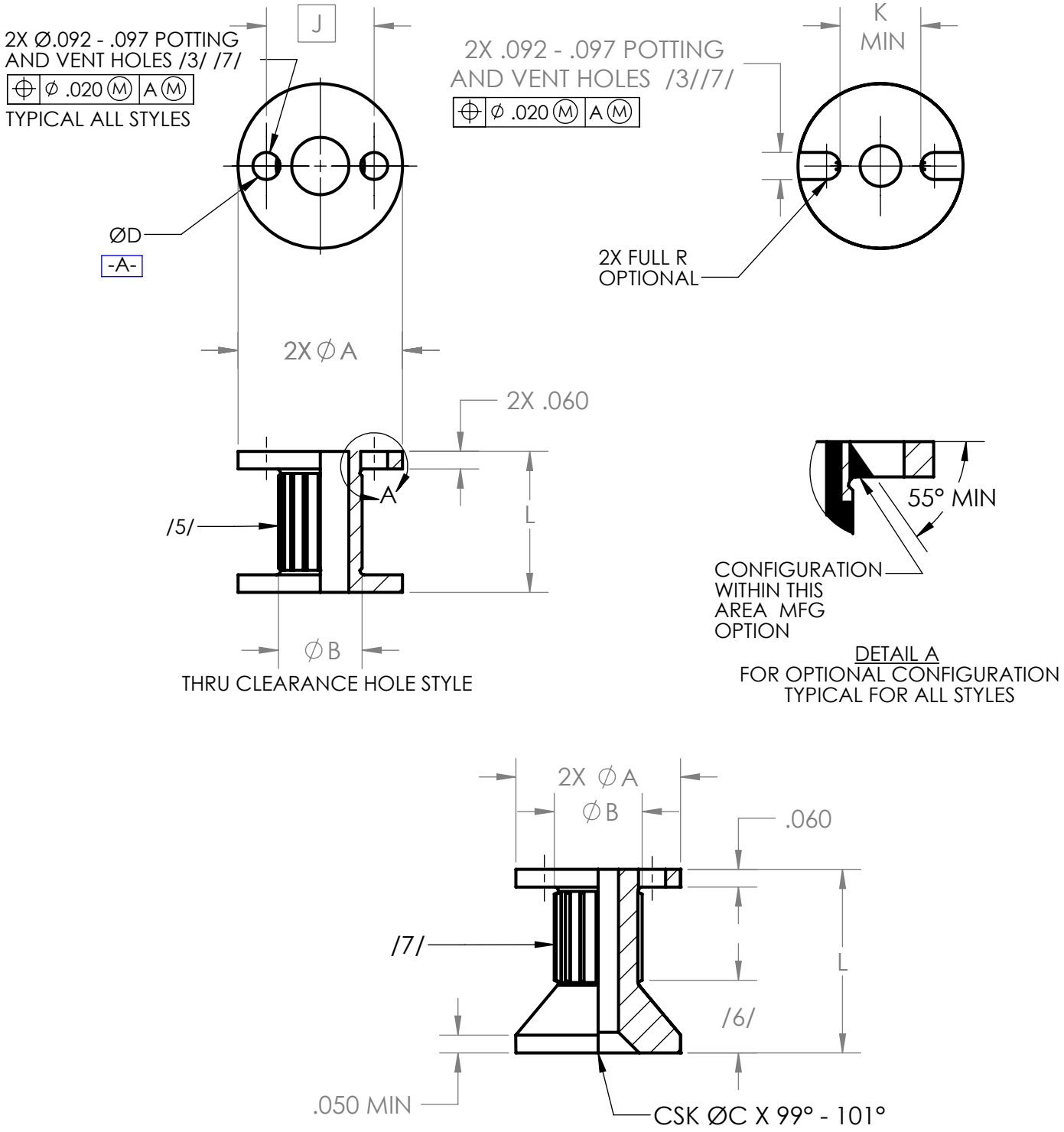
CAGE CODE: 0JHK5

181 SERIES

INSERT, THRU REGULAR HEAD STYLE

CROSS REFERENCE

WITTEN	STANDARDS/OTHER	SHUR-LOK	THE YOUNG ENGINEERS	ALCOA/TRIDAIR
181 SERIES	NAS1834 SERIES CDSP5904 & CDSO5903	SL603 SL604	TYE2003 TYE2004 TYE4004	D1834 SERIES D1834K SERIES



WITTEN COMPANY
info@wittenco.com

REVISED: 11/20/2025

CAGE CODE: 0JHK5

181 SERIES

INSERT, THRU REGULAR HEAD STYLE

CROSS REFERENCE

WITTEN	STANDARDS/OTHER	SHUR-LOK	THE YOUNG ENGINEERS	ALCOA/TRIDAIR
181 SERIES	NAS1834 SERIES CDSP5904 & CDSO5903	SL603 SL604	TYE2003 TYE2004 TYE4004	D1834 SERIES D1834K SERIES

TABLE 1 DIMENSIONS

SIZE DASH NO.	Ø A +.000 -.010	Ø B	ØC	ØD CLEARANCE HOLE	J BASIC	K MIN	L MIN	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

TABLE 2
SEE NOTE 4

DASH NO.	L±.010 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

MATERIAL: CARBON STEEL PER ASTM A108, 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.

EXAMPLE PART NUMBERING SYSTEM

181- 4 - K - 12- SS

- SS — MATERIAL AND FINISH
  A= ALUM ALLOY (PLAIN FINISH)
  AA= ALUM W/ANODIZE
  C= CARBON STEEL W/ CAD PLATE
  SS= STAINLESS STEEL
  SP= STAINLESS STEEL W/PASSIVATE
  SV= STAINLESS W/ SILVER
  CF1= ALUM, CHEM-FILM CL 1
  A3= ALUM, CHEM-FILM C 3
- 12 — LENGTH DASH NO (TABLE 2 INCREMENTS OF 1/16") ALT LENGTHS SEE NOTE 4
- K — ADD "K" FOR 100° CSK
- 4 — D CLEARANCE HOLE (TABLE 1) ALT CLEARANCE HOLE SEE NOTE 8
- 181- — SERIES PREFIX

GENERAL NOTES:

1. INSTALLATION TABS ARE INCLUDED.
2. TOLERANCES .XXX = ±.010
   .XX = ±.02
/3/ BURRS AROUND POTTING HOLES OR SLOTS PERMISSIBLE UNDER FLANGE
4. FOR OTHER LENGTHS USE .XXX CALLOUT AS SHOWN:
   181-4-.400-SS
   (.400 — LENGTH)

/5/ STRAIGHT OR DIAMOND ANTIROTATIONAL KNURL, SHORTER LENGTHS KNURL OPTIONAL (MANUFACTURER'S OPTION).
/6/ EXTERNAL CONFIGURATION OPTIONAL IN THIS AREA.
/7/ POTTING AND VENT HOLES OR SLOTS (MANUFACTURER'S OPTION)
8. FOR ALTERNATE CLEARANCE HOLE USE .XXX CALLOUT AS SHOWN:
   181-.439-16-SS
   (.439 — HOLE)
   (TOLERANCES MAY VARY ON ALTERNATE HOLE SIZES)

WITTEN COMPANY
info@wittenco.com

REVISED: 11/20/2025

CAGE CODE: 0JHK5

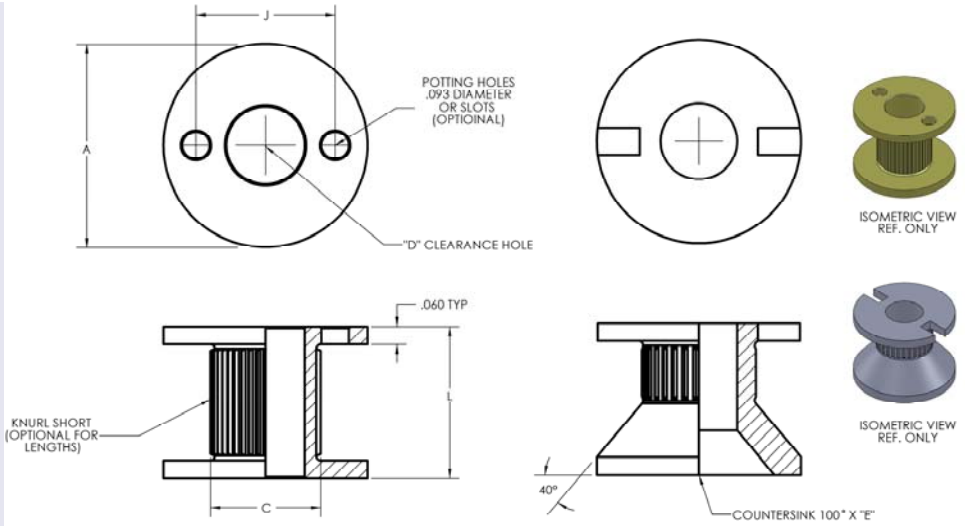
METRIC 181 SERIES
INSERT, THRU, REGULAR HEAD STYLE

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
   LENGTH

EXAMPLE: PART NUMBERING SYSTEM

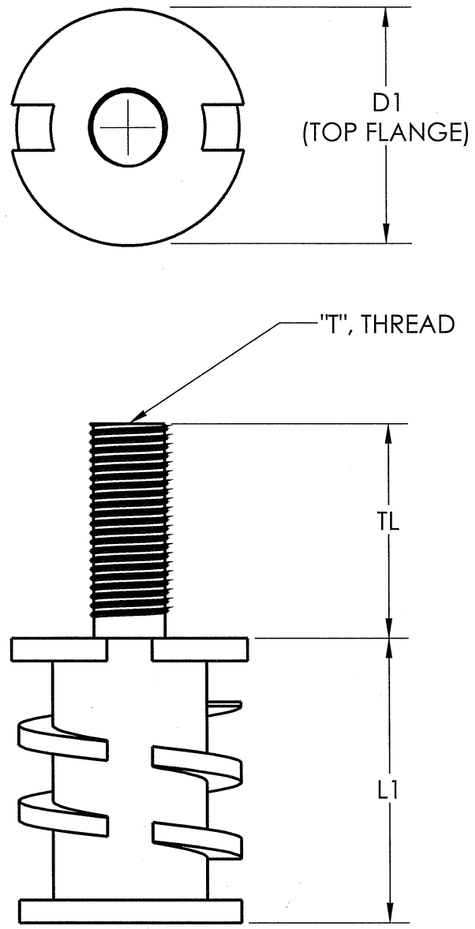
181- M5 - K - 12 - SS

- Series Prefix
- D Clearance Hole (Table I)
- Add "K" for 100° CSK
- Length Dash No. (Table II)
- Material (Finish):
  - A= Aluminum Alloy (Plain Finish)
  - AA= Aluminum (Anodize)
  - C= Carbon Steel (Cadmium Plate)
  - SS= Stainless Steel (Plain Finish)
  - SP = Stainless Steel (Passivate)
  - CF1= Aluminum Alloy (ChemFilm CL 1A)

METRIC 181 SERIES

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)

TECH DATA SHEET

3. CUSTOM SIZES AVAILABLE UPON REQUEST.

2. TOLERANCES: .XXX = ±.010

1. ONE PIECE MACHINED PART.

NOTES

ISOMETRIC VIEW
REF. ONLY

CAGE: 0JHK5	NAME	DATE
DRAWN	J.HERRIMAN	3/30/2016
CHECKED		
ENG APP		

COMMENTS:

SOLIDWORKS STANDARD 2009 SP4.1

THIRD ANGLE PROJECTION

WITTEN COMPANY INC.

TITLE:

HEAVY DUTY, POTTED STUD

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

WITTEN FASTENERS

352 SERIES
THRU-HOLE SLEEVE, PROTRUDING

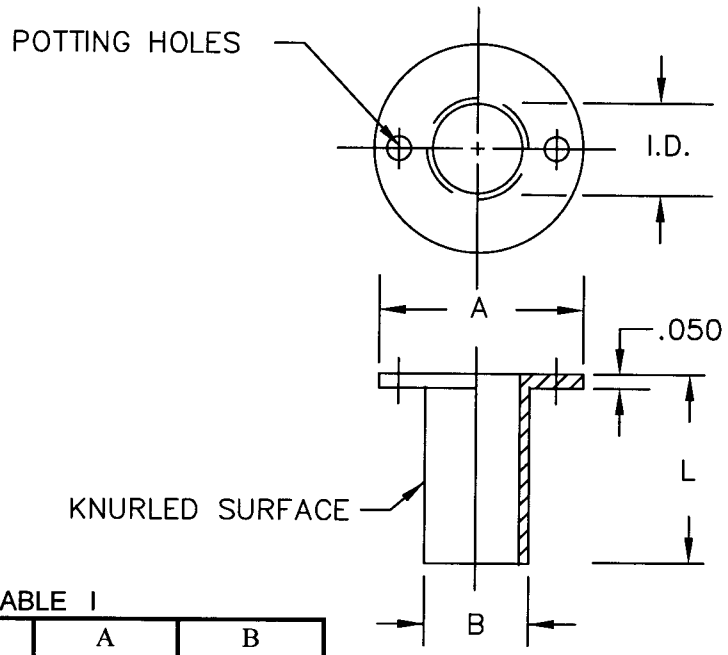


TABLE I

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

352 — 105 — 9 — A

Series Prefix
Thread Code No. (Table I)
Length Dash No. (Table II)
Material:
A=Alum Alloy (Chem Film Finish)
C=Carbon Steel (CAD Plate Finish)
Z=Carbon Steel (Zinc Plate)
SS=Stainless Steel
SP=Stainless Steel (Passivate)

WITTEN COMPANY, INC.
918-272-9567

WITTEN FASTENERS

354 SERIES
THRU-HOLE THREADED INSERT W/ FLANGE

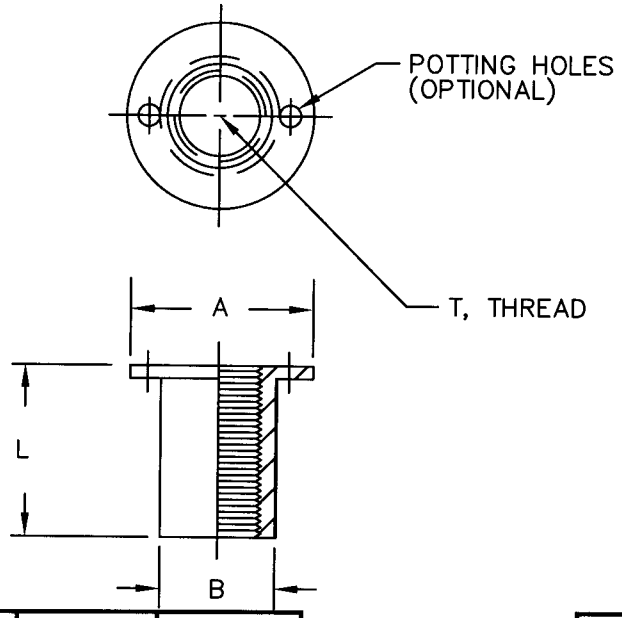


TABLE 1

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

354 — 632 — 9 — A

Series Prefix
Thread Code No. (Table I)
Length Dash No. (Table II)
Material:
A=Alum Alloy (Chem Film Finish)
C=Carbon Steel (CAD Plate Finish)
Z=Carbon Steel (Zinc Plate)
SS=Stainless Steel
SP=Stainless Steel (Passivate)

WITTEN COMPANY, INC.
918-272-9567

WITTEN FASTENERS

355 SERIES
THRU-HOLE THREADED INSERT W/ FLANGE

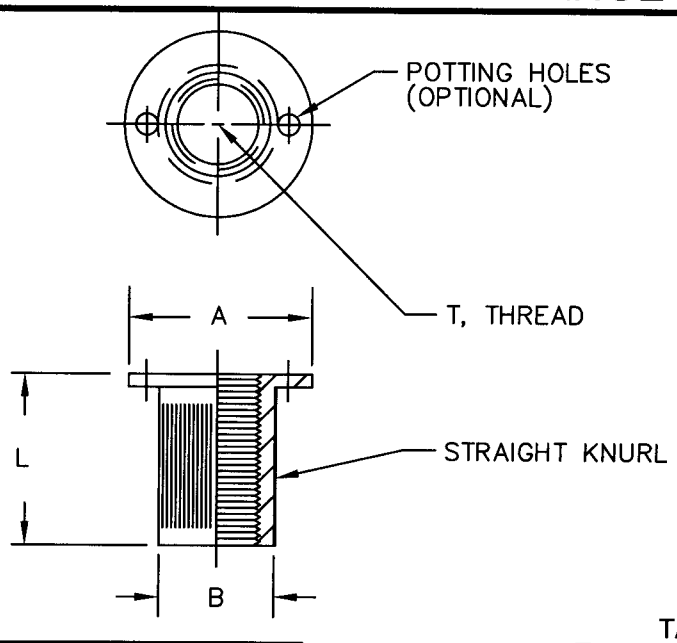


TABLE I

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

355 — M5 — 9 — A

Series Prefix
Thread Code No. (Table I)
Length Dash No. (Table II)
Material:

A=Alum Alloy (Chem Film Finish)
C=Carbon Steel (CAD Plate Finish)
Z=Carbon Steel (Zinc Plate)
SS=Stainless Steel
SP=Stainless Steel (Passivate)

WITTEN COMPANY, INC.
918-272-9567

WITTEN FASTENERS

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

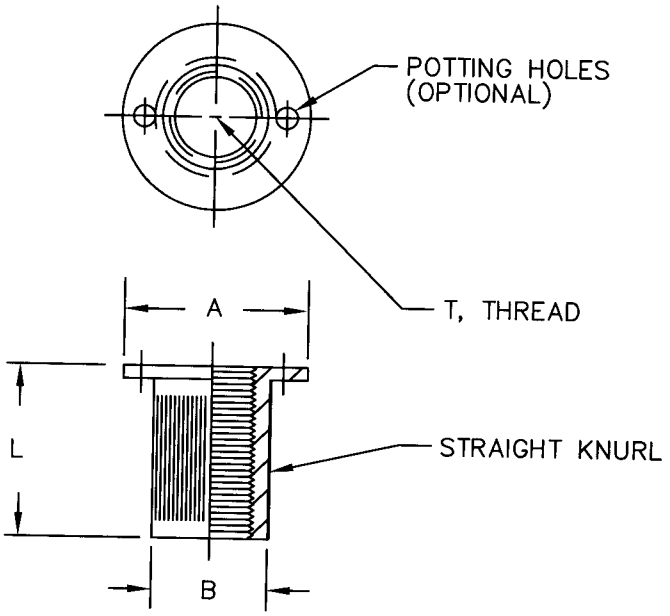


TABLE I

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

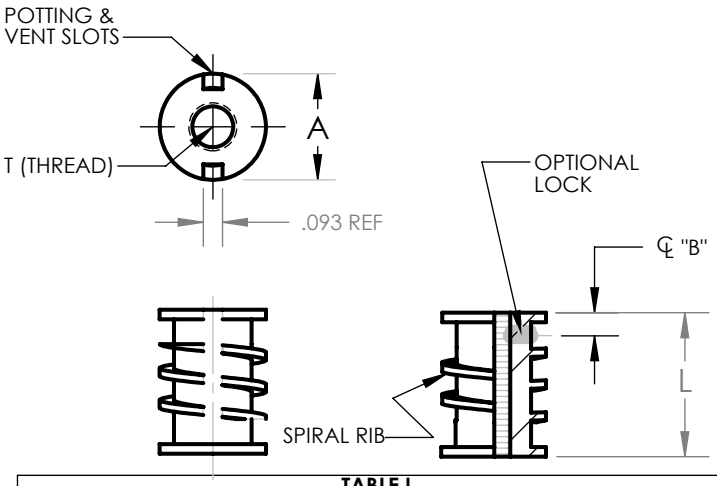
EXAMPLE: PART NUMBERING SYSTEM

355 — M5 — 9 — A

Series Prefix
Thread Code No. (Table I)
Length Dash No. (Table II)
Material:
A=Alum Alloy (Chem Film Finish)
C=Carbon Steel (CAD Plate Finish)
Z=Carbon Steel (Zinc Plate)
SS=Stainless Steel
SP=Stainless Steel (Passivate)

WITTEN COMPANY, INC.
918-272-9567

2004 SERIES - "SPIRAL RIB"
THRU - HOLE
MOLDED-IN OR POTTED-IN INSERT, FLUSH MOUNTED BOTH SIDES



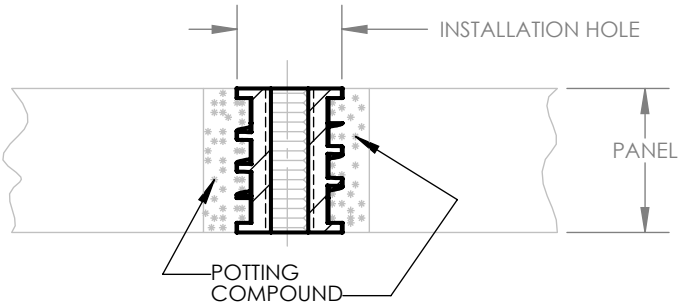


TABLE I

CODE NO.	T THREAD	A DIA ±.010	B SELF-LK ±.06	INSTL 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

TABLE II

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 1)

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

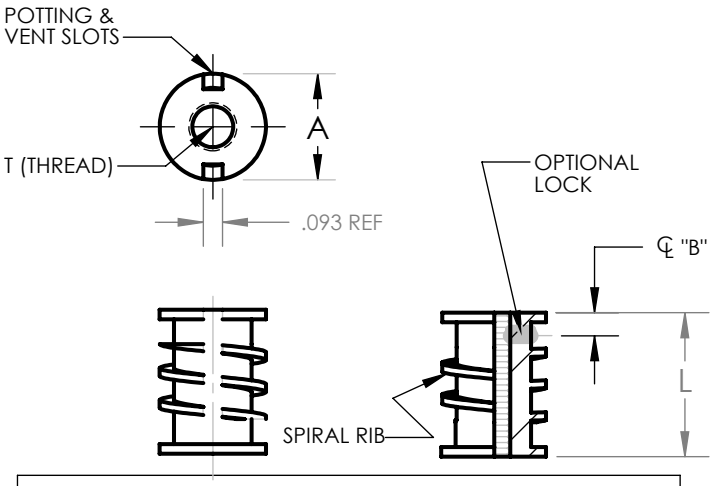
LENGTH DASH NUMBER(TABLE II)

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
918-272-9567
REVISED 8/20/09

METRIC 2004 SERIES - "SPIRAL RIB"
THRU - HOLE
MOLDED-IN OR POTTED-IN INSERT, FLUSH MOUNTED BOTH SIDES



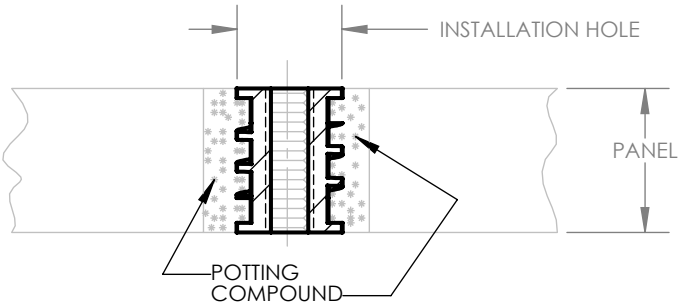


TABLE I				
CODE NO.	T THREAD	A DIA ±.010	B SELF-LK ±.06	INSTL HOLE SIZE +.005/-.000
M3.5	M3.5X.6	.490	.12	.500
M4	M4X.7	.490	.12	.500
M5	M5X.8	.520	.12	.530
M6	M6X1	.583	.16	.593
M8	M8X1.25	.646	.20	.656
M10X1.25	M10X1.25	.708	.20	.718
M10X1.5	M10X1.5	.708	.20	.718
M12X1.5	M12X1.5	.833	.20	.843
M12X1.75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

TABLE II	
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 1)
- 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
918-272-9567
REVISED 8/20/09

WITTEN COMPANY, INC.

2005 SERIES
INSERT THRU-HOLE W/ FLANGE

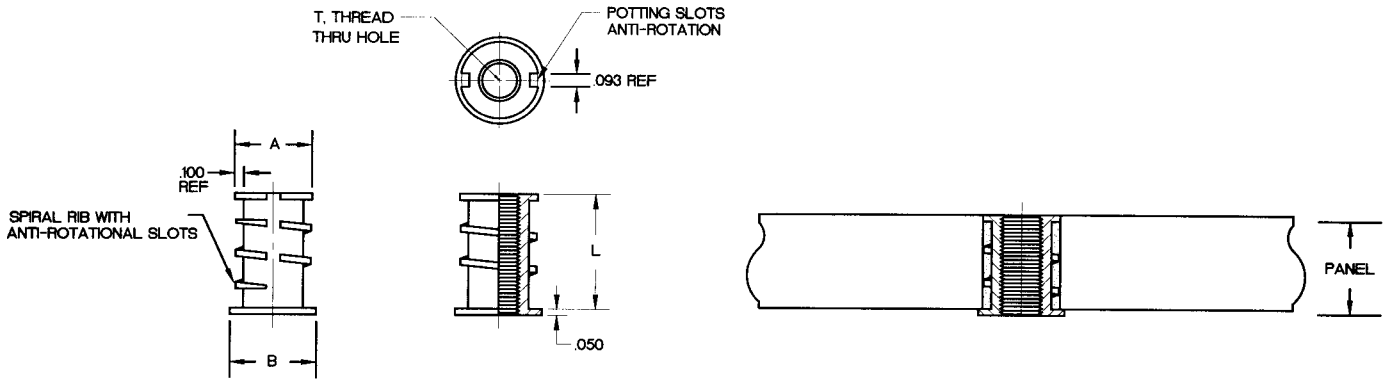


TABLE I

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.

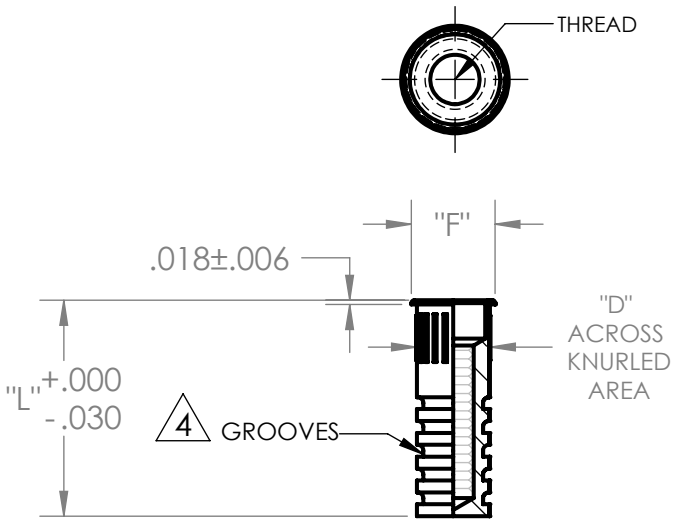
WITTEN COMPANY, INC.
918-272-9567

WITTEN COMPANY INC.

2235 SERIES

POTTED RIVET NUT

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



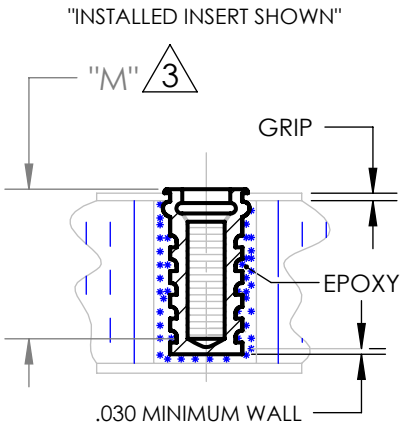


TABLE I

THREAD CODE	THREAD SIZE	"D" +.000/-.006	"F" +.030/-.000	M 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:**

2235-428-1.125-C-060

SERIES

THREAD CODE

INSERT LENGTH

FINISH (TO BE SPECIFIED)
(C=CAD PLATE)

GRIP LENGTH (TO BE SPECIFIED)
(TOLERANCE ±.025")

NOTES:

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

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

4 NUMBER OF GROOVES VARY WITH LENGTH

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APPROVAL DATE: REV A 5/22/2023

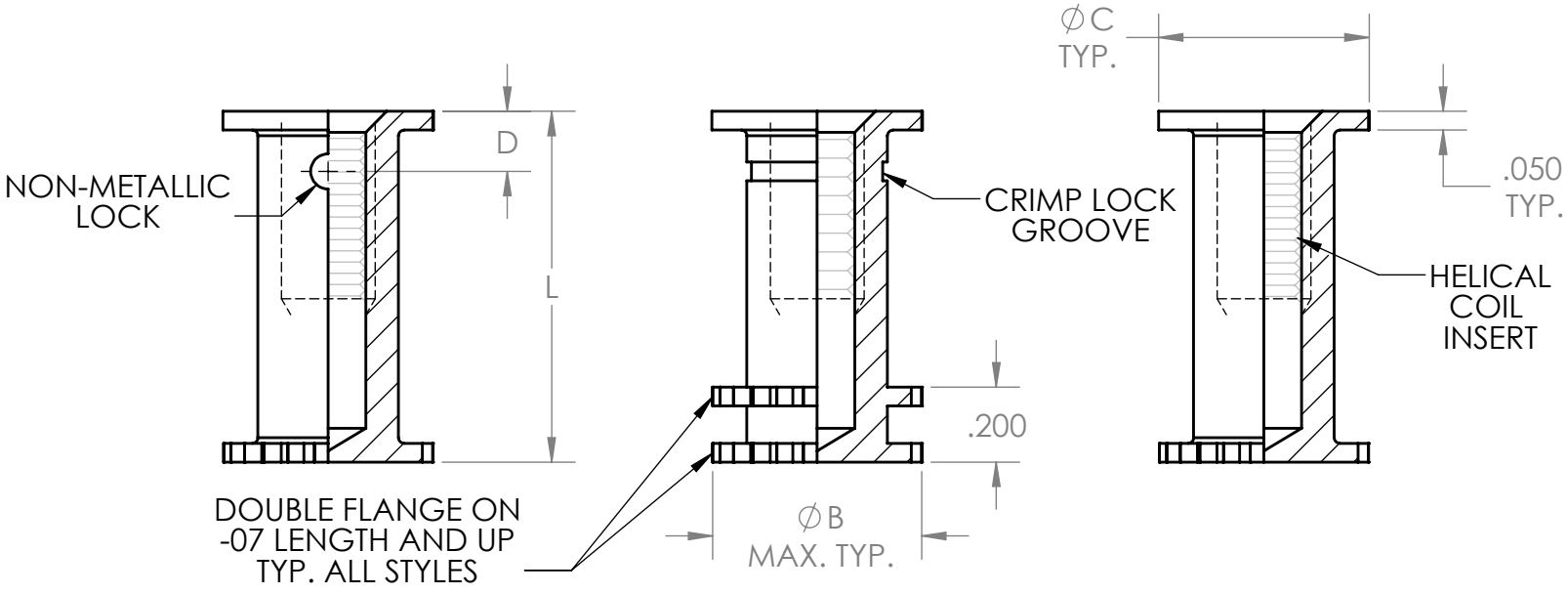
CAGE CODE 0JHK5

2253H
2253HE

INSERT, POTTED-IN BLIND THREADED

CROSS REFERENCE

WITTEN	STANDARDS/OTHER	SHUR-LOK	THE YOUNG ENGINEERS	ALCOA/TRIDAIR
2253H 2253HE			TYE1400 TYE1400H	400H 400HE



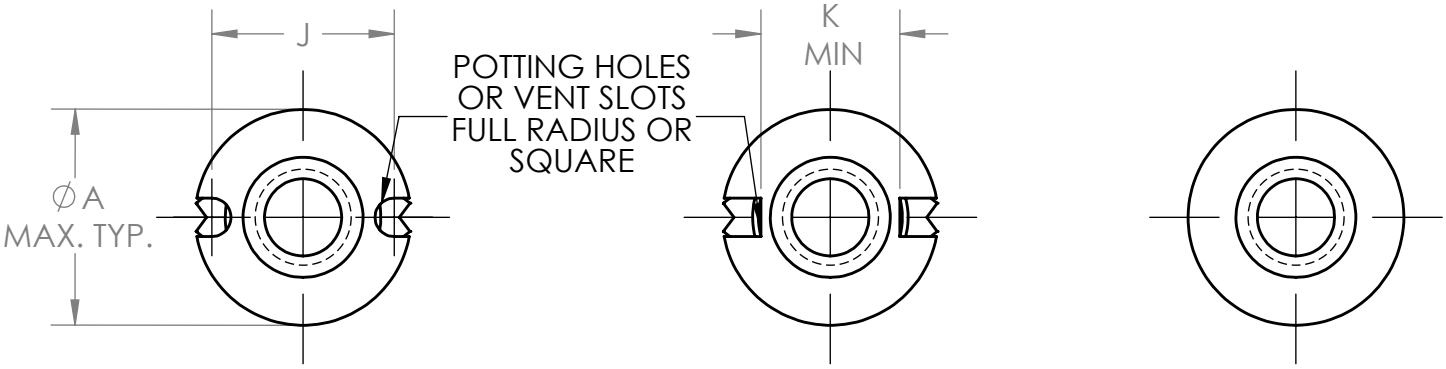
NON-METALLIC LOCK

CRIMP LOCK <3>

HELICAL COIL LOCK PER NASM21209

HEAD STYLES:

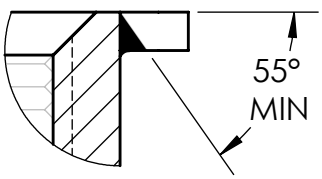
SLOT STYLE AT MFG OPTION



HE-FLUSH WITH POTTING SLOTS

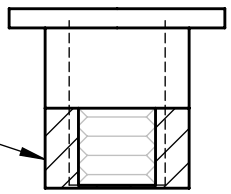
H-STANDARD FLUSH HEAD

DETAIL SLOT OPTION



OPTION FOR SHORT PARTS:

SHORT LENGTH INSERTS MAY INCORPORATE SAME MATERIAL AND FINISH SHIM OR DISK TO PROVIDE FULL THREADS



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REVISED: 11/10/2025

CAGE CODE: 0JHK5

2253H
2253HE

INSERT, POTTED-IN BLIND THREADED

CROSS REFERENCE

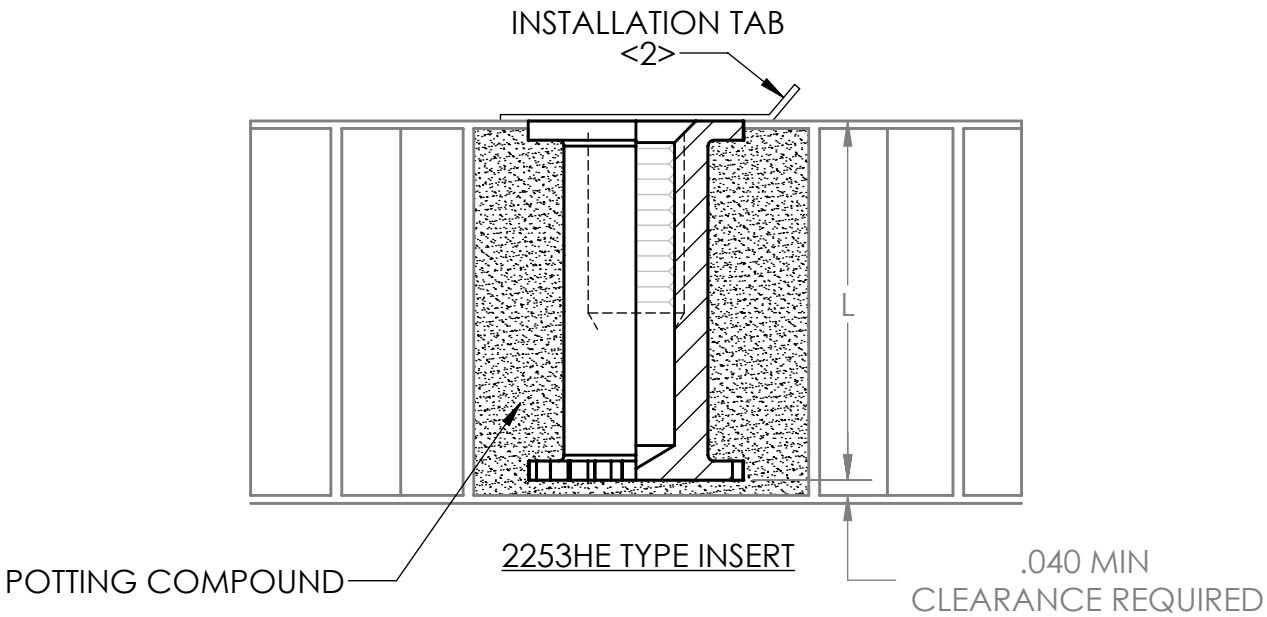
WITTEN	STANDARDS/OTHER	SHUR-LOK	THE YOUNG ENGINEERS	ALCOA/TRIDAIR
2253H 2253HE			TYE1400 TYE1400H	400H 400HE

TABLE 1

SIZE	THREAD	A DIA MAX	B DIA MAX	C DIA REF	D	J	K MIN	INSTALLATION TAB NO.	INSTALLATION DRILL DIA. +.005 -.000
440	.1120-40 UNJC - 3B	.374	.322	.195	.100	.280	.173	2007-280	.375
632	.1380-32 UNJC - 3B	.436	.385	.230	.120	.343	.236	2007-343	.437
832	.1640-32 UNJC - 3B	.499	.447	.290	.120	.405	.298	2007-405	.500
1032	.1900-32 UNJF - 3B	.499	.447	.290	.120	.405	.298	2007-405	.500
428	.2500-28 UNJF - 3B	.561	.510	.353	.140	.467	.360	2007-467	.562
524	.3125-24 UNJF - 3B	.686	.635	.460	.150	.591	.484	2007-591	.687
624	.3750-24 UNJF - 3B	.811	.697	.550	.160	.718	.611	2007-718	.812

GENERAL NOTES:

1. BURRS PERMISSIBLE AT KNURLED AREAS AND ON UNDERSIDE OF HEAD AROUND POTTING SLOTS.
<2> ADHESIVE BACKED INSTALLATION TABS PER TABLE 1 ARE FURNISHED WITH INSERTS.
<3> CRIMP LOCK AVAILABLE IN 303 CRES AND CARBON STEEL ONLY.
4. PLATING OR SOLID FILM LUBE IS RECOMMENDED ON SELF-LOCKING CRES INSERTS.
<5> CLOSE OUT DISC MAY BE REQUIRED IN SOME LENGTHS TO PROVIDE MINIMUM FULL THREAD.
6. LOCATE LOCKING PELLET NO CLOSER THAN 10° FROM EDGE OF EITHER POTTING SLOT.
7. CONSULT WITTEN ENGINEERING DEPARTMENT FOR AVAILABILITY OR OPTIONAL MATERIALS, FINISHES OR SIZES.
8. SURFACE FINISH TO BE 125 MICROINCHES.



2253H
2253HE

INSERT, POTTED-IN BLIND THREADED

CROSS REFERENCE

WITTEN	STANDARDS/OTHER	SHUR-LOK	THE YOUNG ENGINEERS	ALCOA/TRIDAIR
2253H 2253HE			TYE1400 TYE1400H	400H 400HE

TABLE 2		"X" INDICATES NOT AVAILABLE						
LENGTH DASH NO.	L	MIN FULL THREAD LENGTH (EXCEPT HELICAL COIL)						
		440	632	832	1032	428	524	624
-04	.220	.170	.170	.170	.170	X	X	X
-05	.285	.190	.190	.190	.190	.235	X	X
-06	.335	.225	.235	.235	.235	.250	X	X
-07	.395	.250	.280	.280	.280	.250	X	X
-08	.455	.250	.280	.330	.330	.330	.320	X
-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	.625
-16	.935	.250	.280	.330	.380	.500	.625	.750

<5>

TABLE 3		"X" INDICATES NOT AVAILABLE						
LENGTH DASH NO.	L	HELICOIL MIN FULL THREAD LENGTH						
		440	632	832	1032	428	524	624
-04	.220	X	X	X	X	X	X	X
-05	.285	X	X	X	X	X	X	X
-06	.335	.112	X	X	X	X	X	X
-07	.395	.168	.138	X	X	X	X	X
-08	.455	.224	.207	.164	.190	X	X	X
-10	.565	.224	.276	.246	.285	.250	X	X
-12	.690	.224	.276	.328	.380	.375	.312	X
-14	.815	.224	.276	.328	.380	.500	.469	.375
-16	.935	.224	.276	.328	.380	.500	.469	.562

PART CODE AND EXAMPLE: 2253-HE-LK-428-12-SPM

- 2253 — SERIES 2253 POTTED-IN TYPE INSERT
- HE — HEAD STYLE : H = STANDARD FLUSH; HE = FLUSH WITH POTTING SLOTS
- LK — LOCKING TYPE: N = THREADED ONLY; LK = NYLON LOCK; L = CRIMP LOCK PER NASM25027; HEL = SELF-LOCKING HELICAL COIL PER NASM21209
- 428 — THREAD SIZE: (SEE TABLE 1)
- 12 — LENGTH DASH NUMBER(SEE TABLE 2 OR TABLE 3)
- SPM — MATERIAL AND STANDARD FINISH: A = ALUMINUM ALLOY 2024-T4 OR T-351 PER AMS-QQ-A-225/6 CHEM-FILM PER MIL-DTL-5541, CL 1A.; SP = CRES 303 PER ASTM-A582. PASSIVATE PER ASTM-A967; SPC = CRES 303 PER ASTM-A582. CADMIUM PLATE PER AMS-QQ-P-416. TYPE II CLASS 2.; SPS= CRES 303 PER ASTM-A582. SILVER PLATE PER AMS2410.; C = CARBON STEEL PER ASTM-A-108 CADMIUM PLATE PER AMS-QQ-P-416. TYPE II CLASS 2.
- M — LUBRICANT: NO CODE = NO LUBRICANT; M= SOLID FILM LUBE

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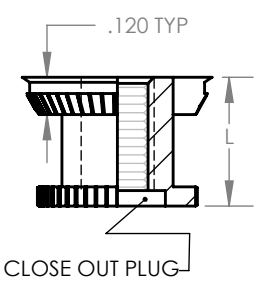
REVISED: 11/10/2025

CAGE CODE: 0JHK5

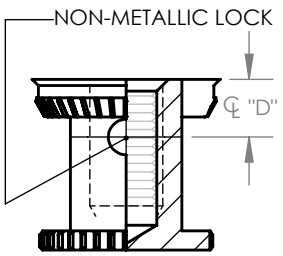
2253-S,SE

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

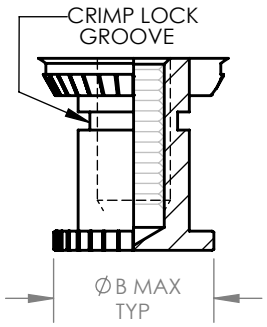
THREADED ONLY



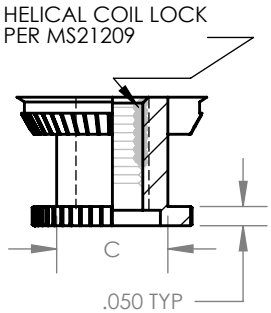
NON-METALLIC LOCK



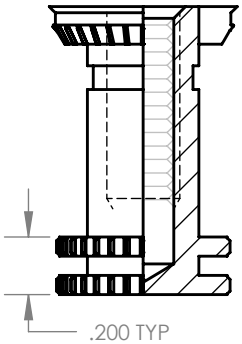
CRIMP LOCK PER MIL-N-25027



HELICAL COIL LOCK PER MS21209



DOUBLE FLANGE ON -08 & UP TYPICAL-ALL STYLES



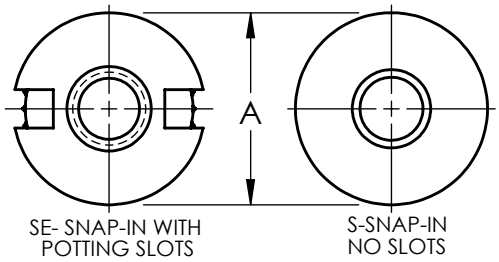


TABLE 1

SIZE	THREAD SIZE PER AS8879, CLASS 3B	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

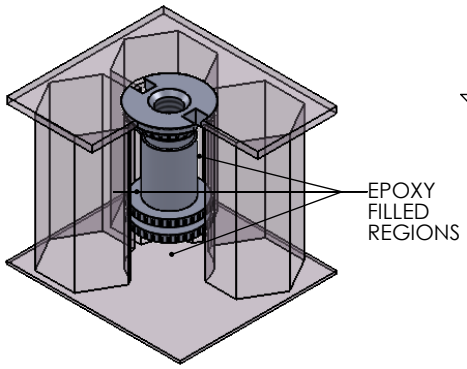
- SKIN THICKNESS (SEE TABLE 3)
- MATERIAL : A = 2024 T351 OR T4 ALUMINUM PER QQ-A-225/6, CHEM-FILM PER MIL-DTL-5541, CL1A.
  SP = 303 CRES PER ASTM-A-582, PASSIVATE PER ASTM-A-967.
  C = CARBON STEEL PER ASTM-A-108, CADMIUM PLATE PER SAE-AMS-QQ-P-416 TYPE II, CLASS 2.
  AS = ALLOY STEEL PER AMS-S-5626 OR AMS-S-6049 OR AMS-S-6758, CADMIUM PLATE PER SAE-AMS-QQ-P-416, TYPE II, CLASS 2.
- LENGTH DASH NUMBER (SEE TABLE 2).
- LOCKING TYPE : N = NON-LOCKING
  LK = NON-METALLIC LOCKING PELLET.
  L = CRIMP LOCK PER NASM25027 (CRES OR CARBON STEEL ONLY).
  HEL = SELF-LOCKING HELICAL COIL INSERT PER MS21209.
  NHEL = NON-LOCKING HELICAL COIL
- SIZE OF THREAD (SEE TABLE 1)
- HEAD STYLE : SE = SNAP-IN WITH POTTING/VENT SLOTS.
  S = SNAP-IN NO SLOTS.
- SERIES TYPE NUMBER

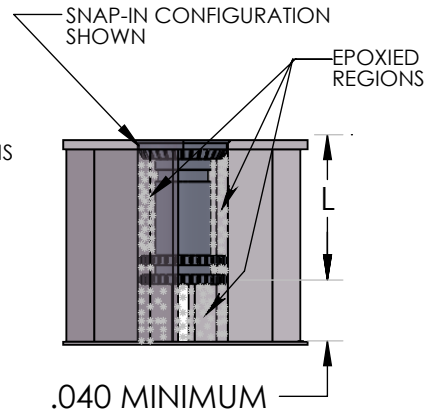
2253-S,SE

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."

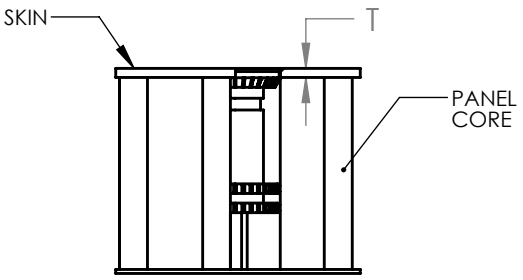


TABLE 2

ALL THREADED TYPES EXCEPT HELICAL COIL LOCK								
		THREAD SIZE						
LENGTH DASH NUMBER	L	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.

HELICAL COIL LOCK TYPE								
		THREAD SIZE						
LENGTH DASH NUMBER	L	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

TABLE 3

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

WITTEN COMPANY INC.

2402 SF SERIES
FLOATING INSERT, SNAP-IN HEAD STYLE

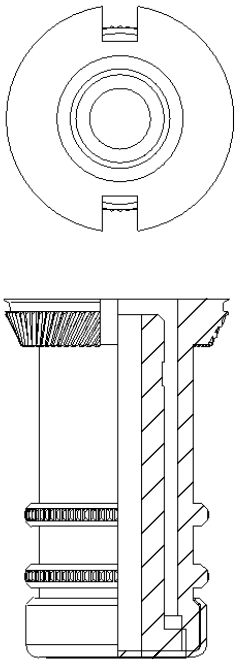


TABLE I

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

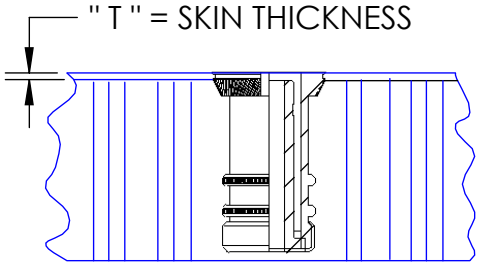


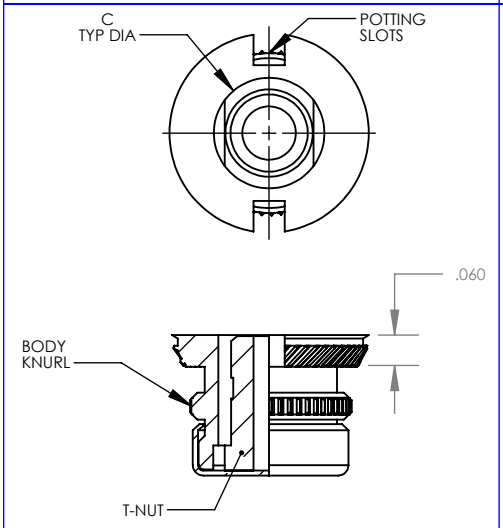
TABLE III (MINIMUM FULL THREAD)

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

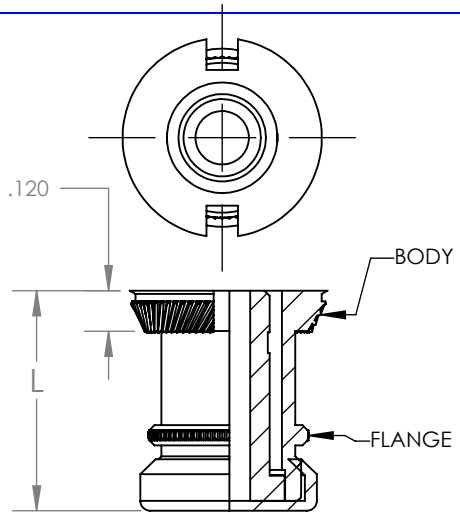
WITTEN COMPANY INC.

2402 SF SERIES
FLOATING INSERT, SNAP-IN HEAD STYLE

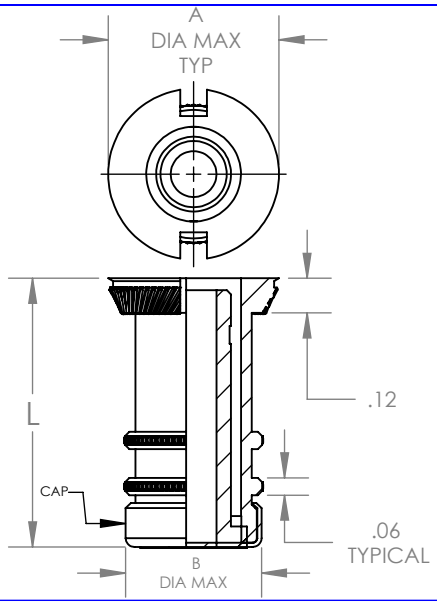
BODY KNURL, LENGTH -06 ONLY



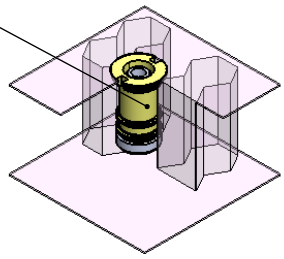
SINGLE FLANGE LENGTHS -07, -08 & -10



DOUBLE FLANGE LENGTH -12 & UP



TYPICAL ASSEMBLY:



" 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.

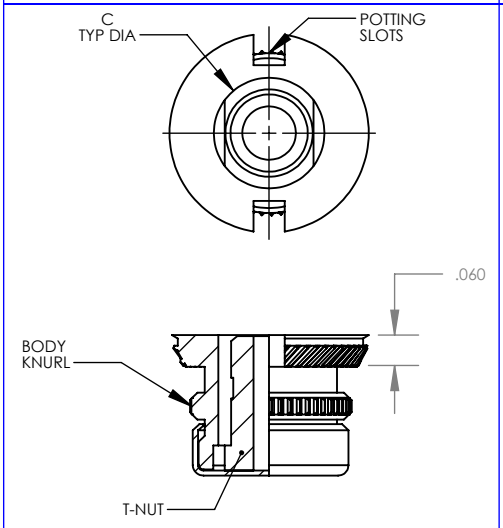
4. MATERIAL FOR CAP IS 2024 T351 OR T4 OR 6061 T6511 ALUMINUM WITH CHEM FILM PER MIL-DTL-5541F CLASS 1A.

WITTEN COMPANY INC
918 -272- 9567
12/01/2020

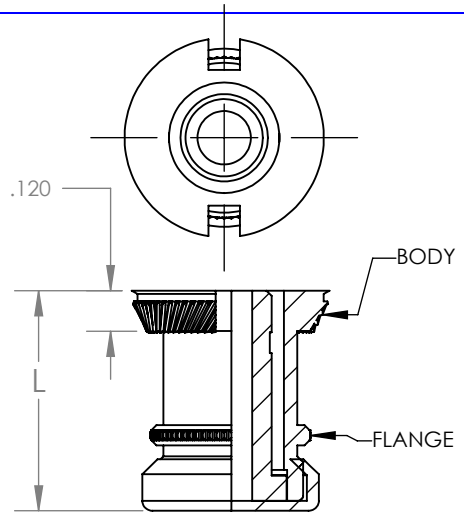
WITTEN COMPANY INC.

METRIC 2402 SF SERIES
FLOATING INSERT, SNAP-IN HEAD STYLE

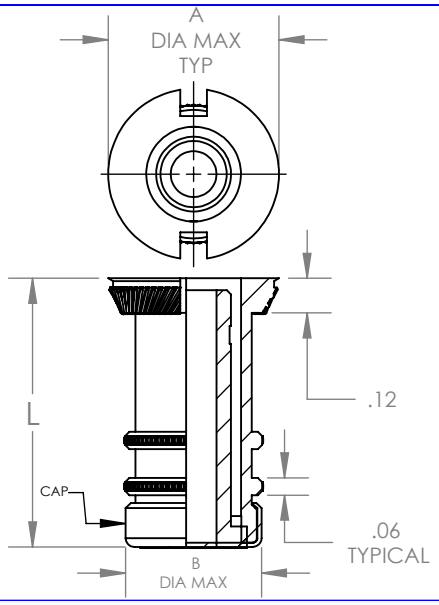
BODY KNURL, LENGTH -06 ONLY



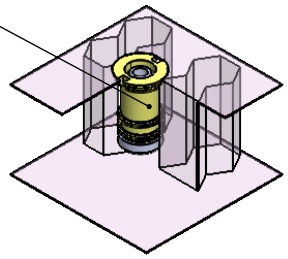
SINGLE FLANGE LENGTHS -07, -08 & -10



DOUBLE FLANGE LENGTH -12 & UP



TYPICAL ASSEMBLY:



" 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-M5-08 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.

WITTEN COMPANY
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METRIC 2402 SF SERIES
FLOATING INSERT, SNAP-IN HEAD STYLE

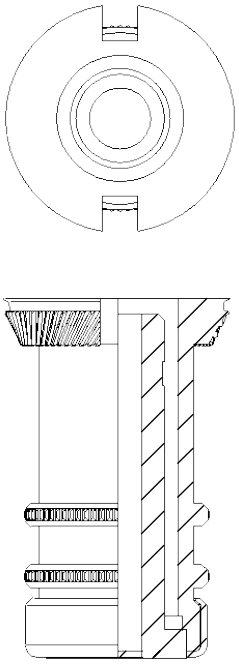

TABLE I

CODE	T THREAD	A DIA	B DIA	C DIA	INSTALLATION HOLE
M3	M3X.05	.531	.489	.323	.500-.505
M3.5	M3.5X.6	.531	.489	.323	.500-.505
M4	M4X.7	.593	.551	.323	.562-.567
M5	M5X.8	.593	.551	.323	.562-.567
M6	M6X1	.718	.676	.437	.687-.692
M8X1	M8X1	.843	.801	.437	.812-.817
M8X1.25	M8X1.25	.843	.801	.437	.812-.817
M10X1.25	M10X1.25	.968	.926	.515	.937-.942
M10X1.5	M10X1.5	.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

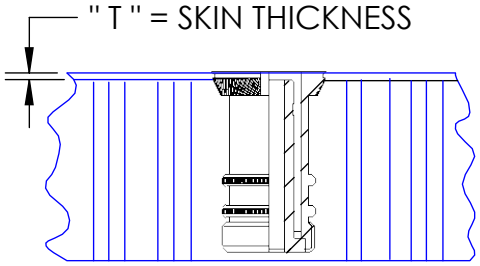

TABLE III (MINIMUM FULL THREAD)

LENGTH DASH NUMBER	L	THREAD SIZE						
		M3	M3.5	M4	M5	M6	M8	M10
-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

WITTEN COMPANY
918-272-9567

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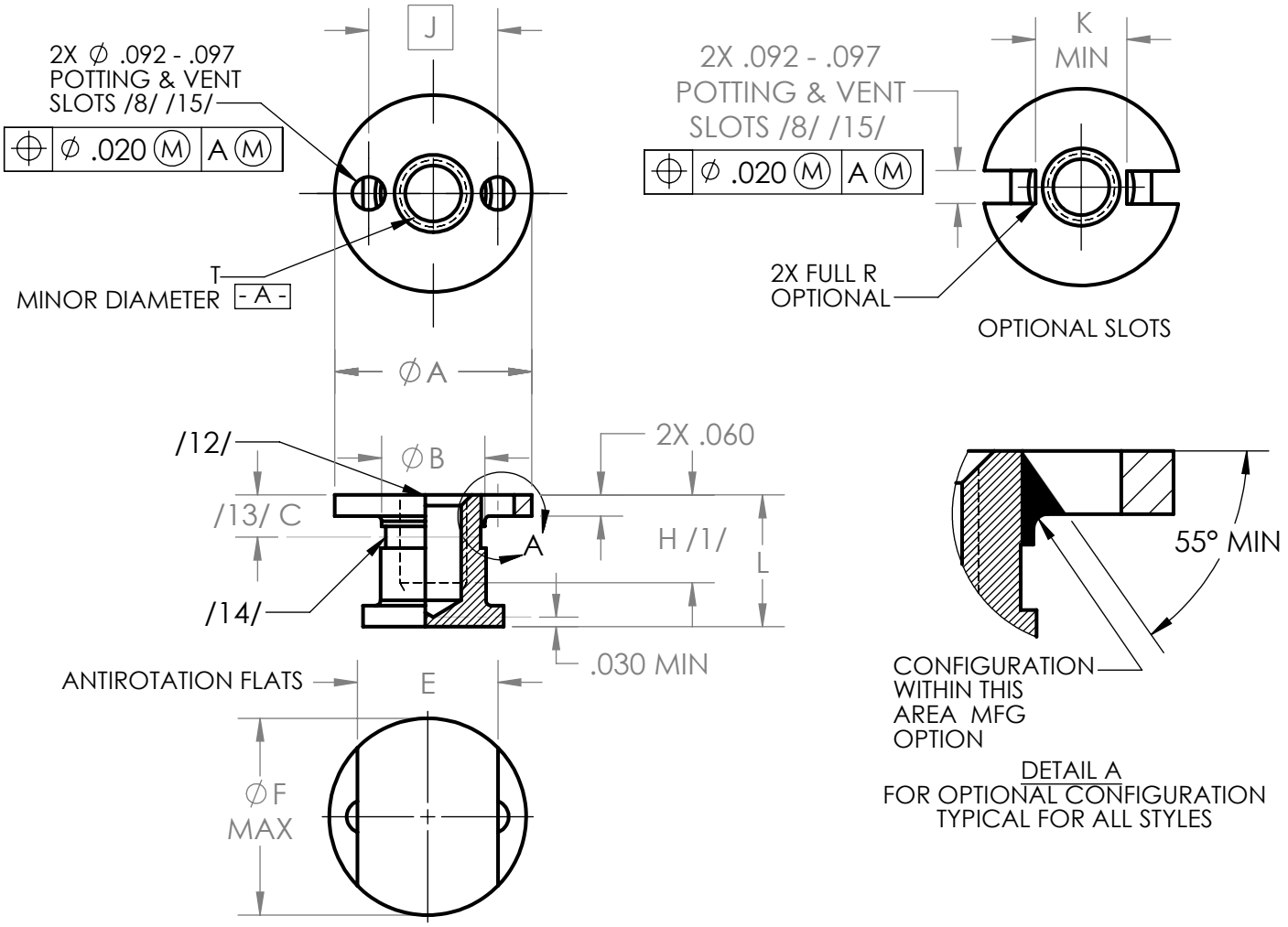
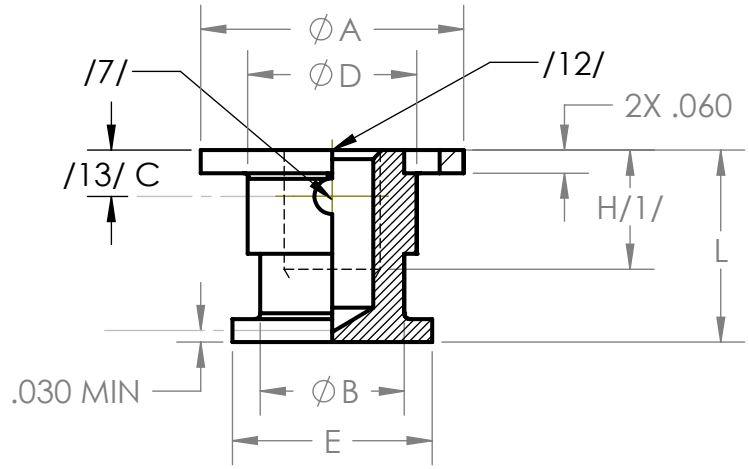
NAS1832

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
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APPROVAL DATE: REV:A 9/13/2021

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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:
  - "-" = 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.

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

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.

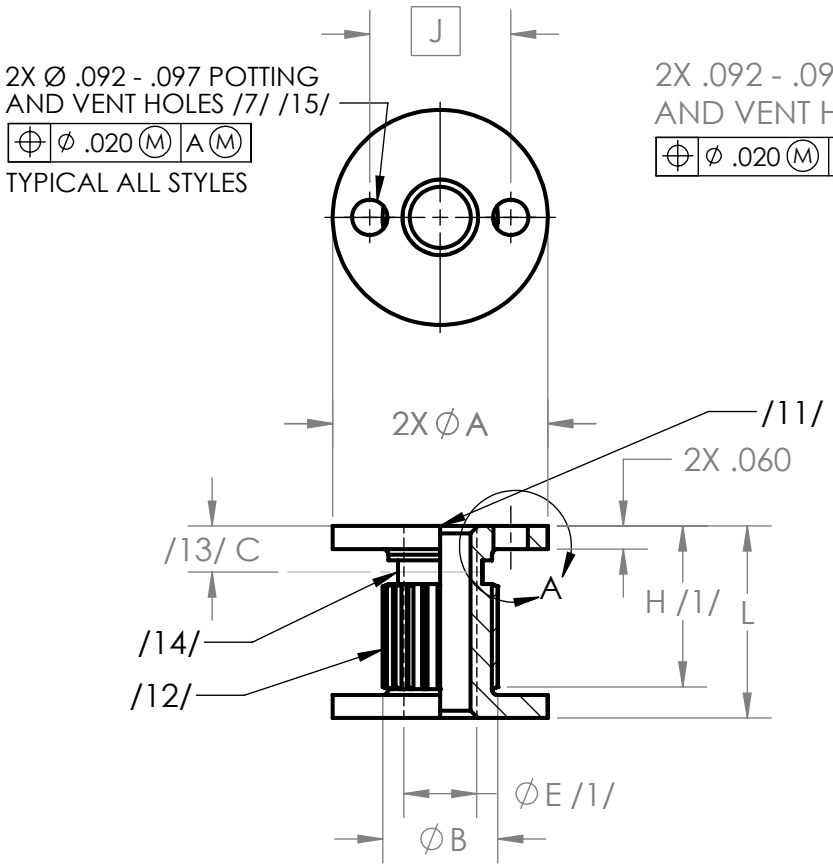
(22) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.

(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.

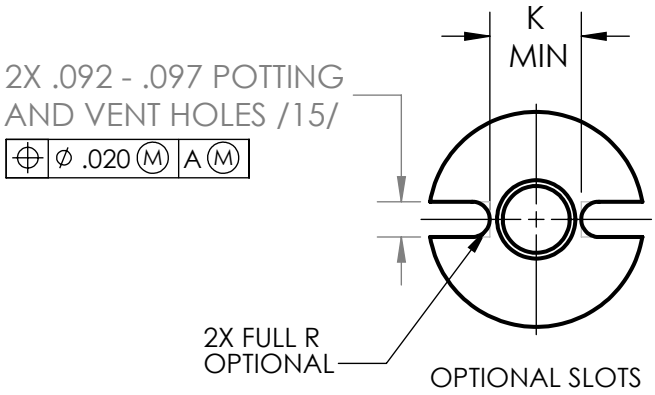
(24) FOR DESCRIPTION OF STATUS NOTES SEE NAS380.

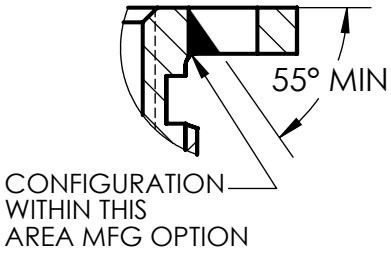
/25/ AN ADHESIVE-BACKED INSTALLATION TAB PER NAS1837 (PLASTIC PER WITTEN 2007) SHALL BE FURNISHED WITH INSERT.

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

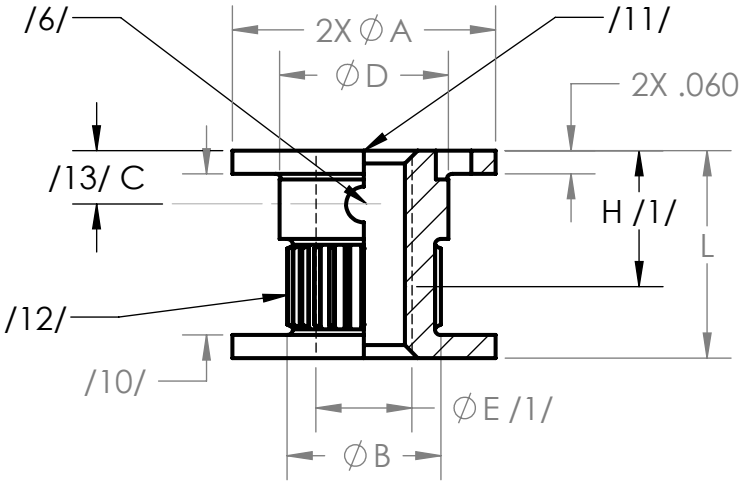


ALL STEEL AND CRES SELF-LOCKING AND NONSELF-LOCKING OR NONSELF-LOCKING ALUMINUM STYLE INSERTS





DETAIL A
FOR OPTIONAL CONFIGURATION
TYPICAL FOR ALL STYLES



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

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:B 10/19/2022

GAGE CODE: 0JHK5

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

TABLE I - DIMENSIONS

FIRST DASH NO.	THREAD CLASS 3B MINOR DIA -A-	ØA +.000 -.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 NOMIMAL 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,1.250LONG, SELF-LOCKING.

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 "∅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/.

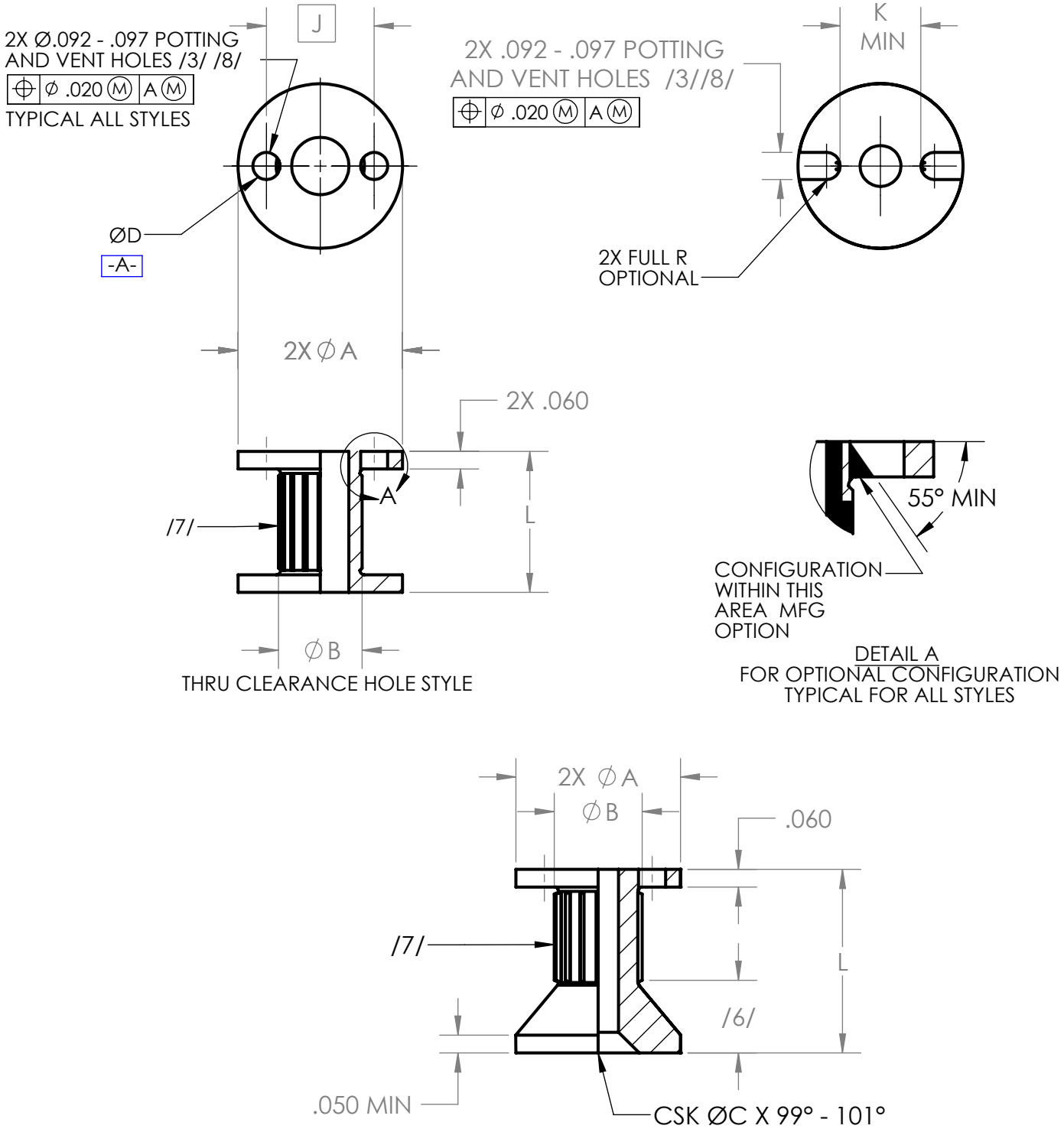
(20) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.

(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



THRU CLEARANCE HOLE STYLE

DETAIL A
FOR OPTIONAL CONFIGURATION
TYPICAL FOR ALL STYLES

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	ØC	ØD 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, CADIUM PLATED
  - "A" = AL ALLOY, ANODIZED
  - "C" = CRES, PASSIVATED
- BASIC PART NUMBER

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

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

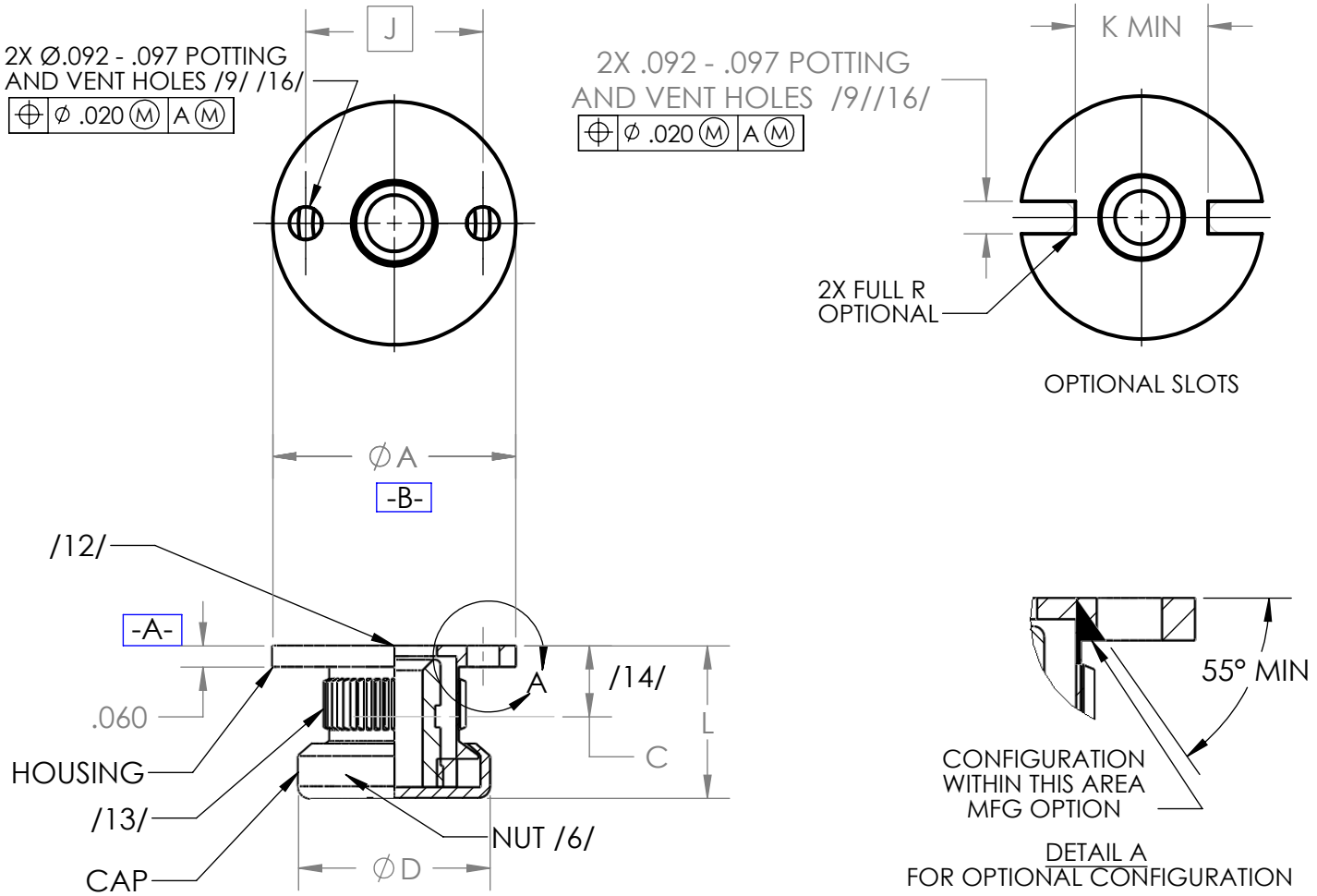


TABLE I - DIMENSIONS								
SIZE DASH NO.	THREAD CLASS 3B /1/	Ø A +.000 -.010	C	Ø D MAX	J BASIC	K MIN	L /7/	INSTALLATION HOLE SIZE
08	.1640-32 UNJC	.685	.16	.545	.500	.393	.37	.686 - .691
3	.1900-32 UNJF	.685	.16	.545	.500	.393	.43	.686 - .691
4	.2500-28 UNJF	.748	.18	.735	.591	.484	.56	.749 - .755
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 COMPOSTION 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 COMPOSTION 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

- LUBRICANT:
  - NO CODE = NO LUBRICANT
  - "M" = SOLID FILM LUBE
- FINISH (CRES ONLY):
  - NO CODE = PASSIVATE PER AMS2700, METHOD 1, TY2, CL4
  - "G" = PASSIVATE PER AMS2700, METHOD 2, CL 4
  - "P" = CADMIUM PLATE (NUT ONLY)
  - "S" = SILVER PLATE (NUT ONLY)
- LOCKING:
  - NO CODE = LOCKING
  - "N" = NON-LOCKING
- SIZE DASH NUMBER:
  - (SEE TABLE I)
- MATERIAL AND FINISH:
  - "-" = CARBON STEEL NUT AND HOUSING, CADIUM PLATED
  - "A" = CARBON STEEL NUT, CADIUM PLATED; AL ALLOY HOUSING, ANODIZED
  - "C" = CRES NUT AND HOUSING, PASSIVATED
- BASIC PART NUMBER

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 = ±.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 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:

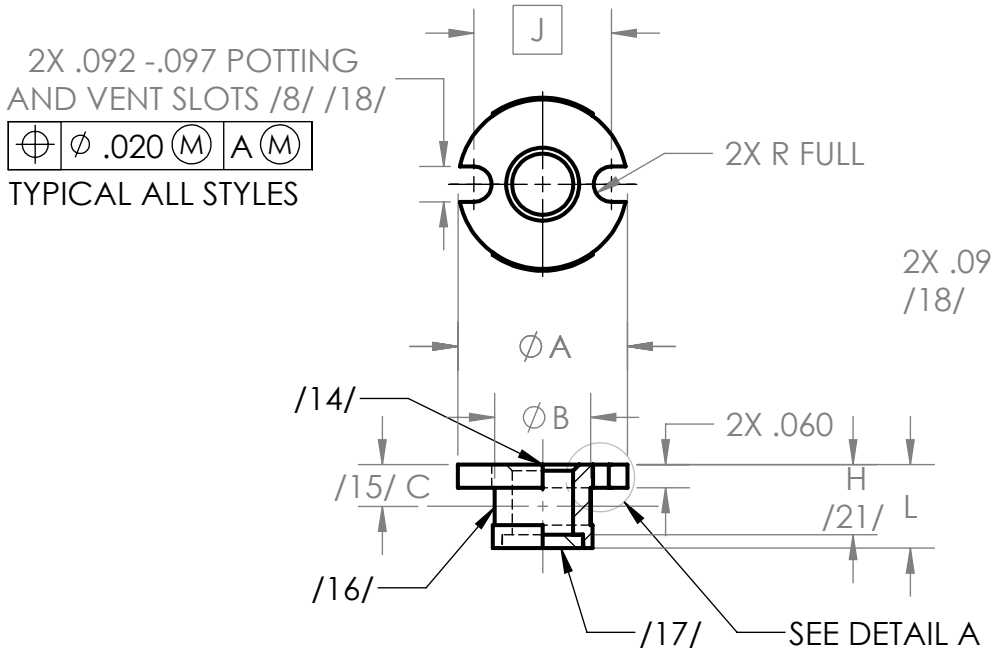
(18) UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.

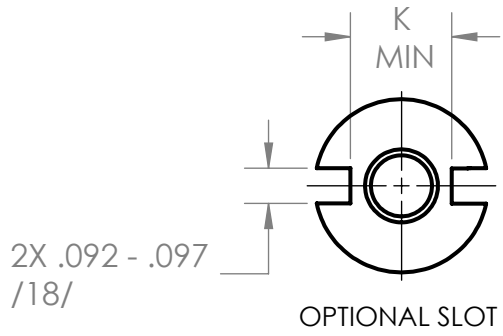
(19) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.

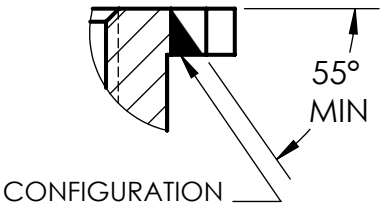
(20) UNLESS OTHERWISE SPECIFIED HEREIN, REFERENCED DOCUMENTS SHALL BE THE ISSUE IN EFFECT ON DATE OF MANUFACUTRE. HOWEVER, EXISTING MATERIAL INVENTORY CERTIFIED TO A PREVIOUS REVISION OF THE APPLICABLE MATERIAL SPECIFICATION(S) IS ACCEPTABLE FOR USE UNTIL DEPLETION.

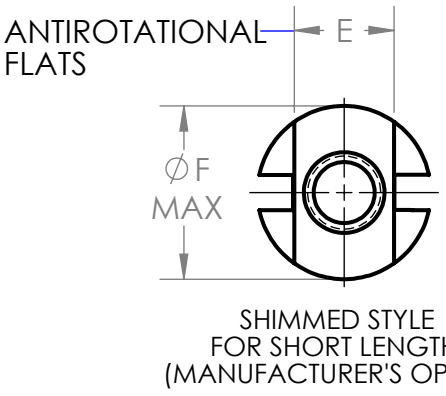
NAS1836

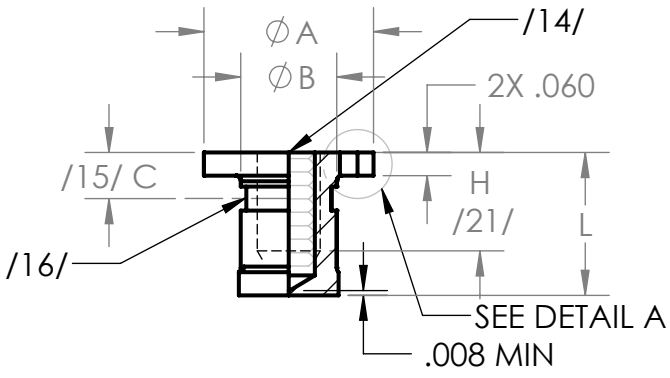
INSERT, MOLDED IN, BLIND THREADED, SELF-LOCKING, NONSELF-LOCKING,LIGHTWEIGHT, SANDWICH PANEL

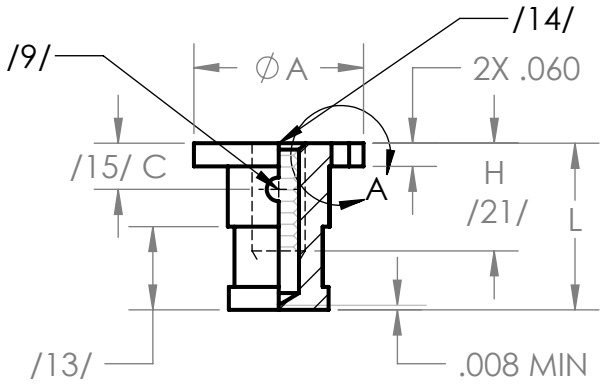












WITTEN COMPANY
918-272-9567

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 -A-	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

- FINISH:
  - LUBRICANTION:
    - M = SOLID FILM LUBRICANT APPLIEDTO THREADS ONLY /5/
    - NO CODE = NO SOLID FILM LUBRICANT /5/
  - CRES INSERT:
    - P = CADMIUM PLATE /5/
    - S = SILVER PLATE /5/
    - NO CODE = PASSIVATED/5/
- SECOND DASH NUMBER INDICATES LENGTH IN .031 INCREMENTS; ALWAYS USE TWO DIGIT DASH NUMBER. /6/
- SELF-LOCKING PROVISION:
  - "-" = LOCKING
  - N = NON-LOCKING
- FIRST DASH NUMBER INDICATES NOMINAL THREAD SIZE PER TABLE I
- MATERIAL:
  - "-" = CARBON STEEL, CADIUM PLATED
  - A = AL ALLOY, ANODIZED
  - C = CRES, PASSIVATED
- BASIC PART NUMBER

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 WI THOUT 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 CLEARENCE 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.

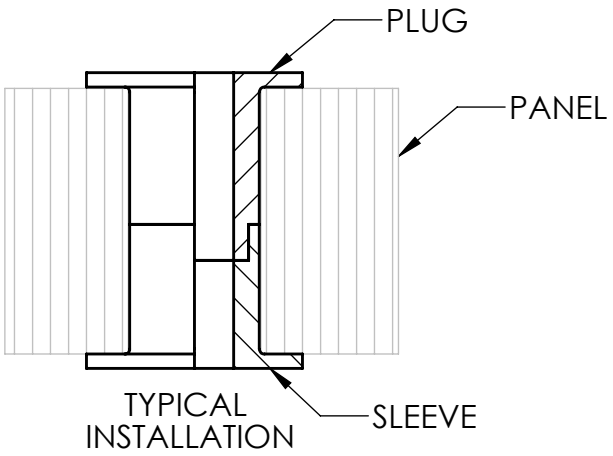
(24) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.

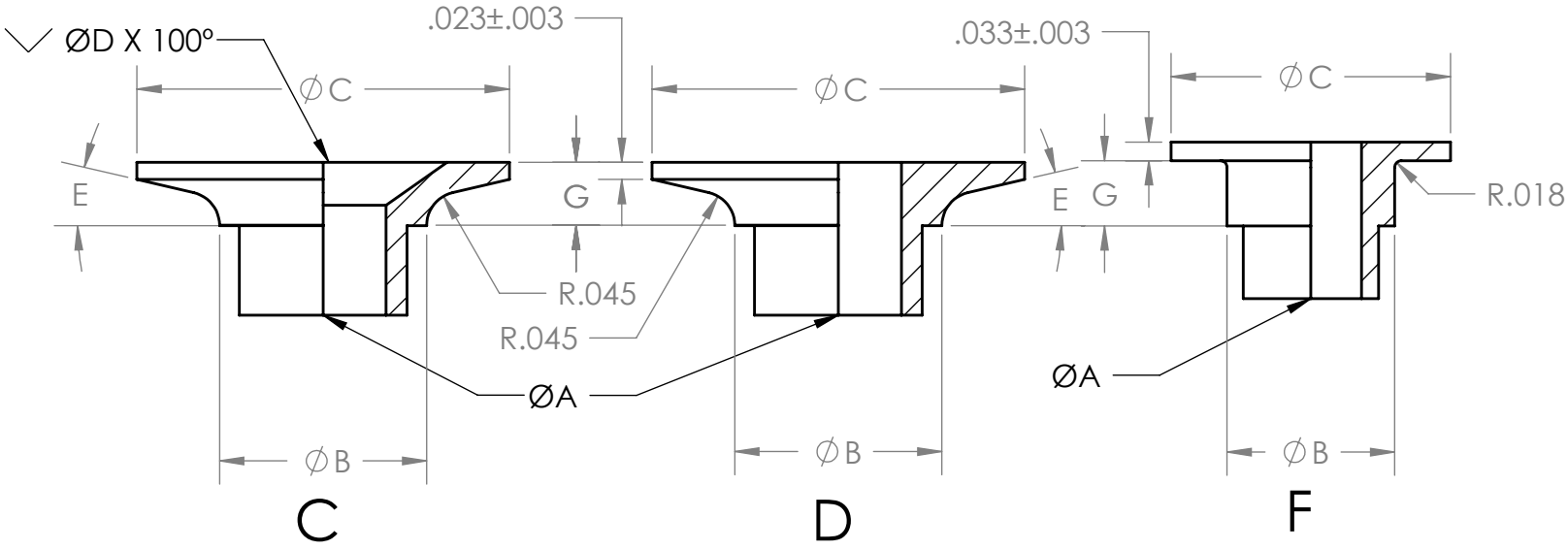
(25) UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.

(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.

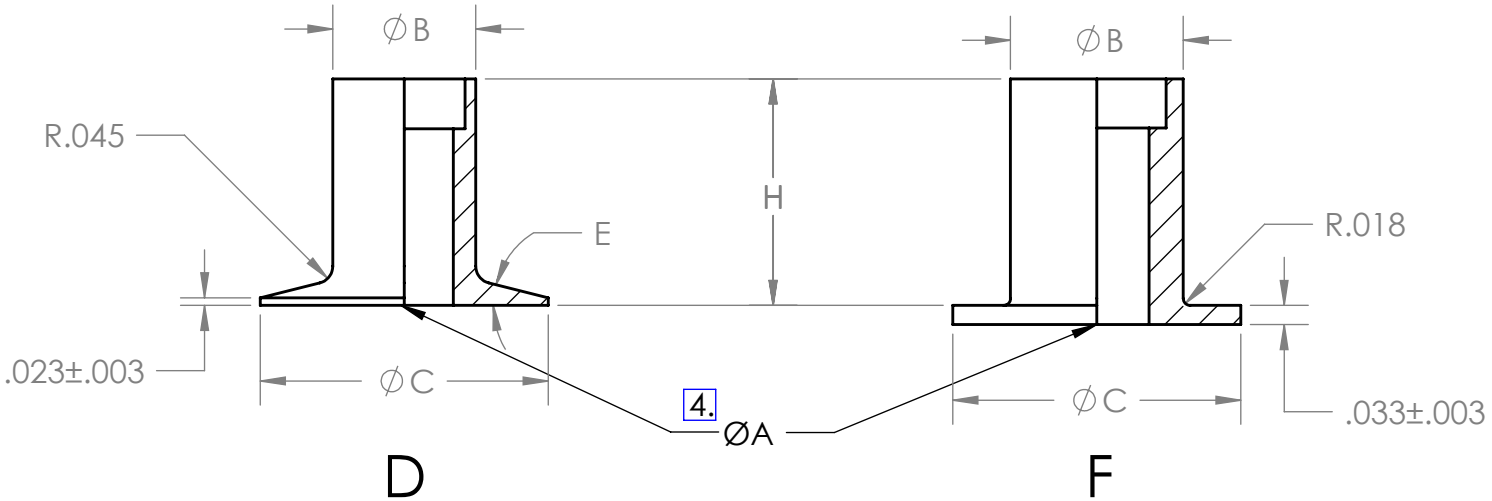
W101

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

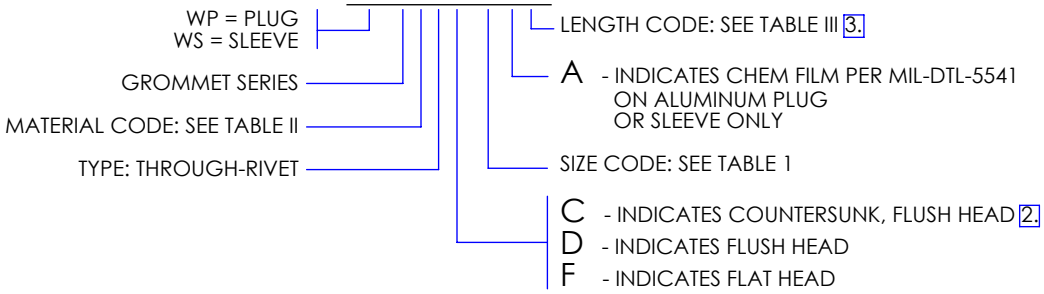


TABLE I

SIZE CODE	ØA +.002 -.003	ØB ±.002	ØC ±.005	ØD +.003 -.004	E ±1°
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	PLUG				SLEEVE			
		G				H		
	LENGTH CODE	SIZE CODE			LENGTH 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					
.265	01	.100	.135					
.281	1	.116	.151					
.296	11	.131	.167	NA	04	.165	.130	NA
.312	2	.147	.183					
.327	21	.163	.198					
.344	3	.179	.214					
.359	31	.194	.230					
.375	0	.085	.120	.190				
.390	01	.100	.135	.206				
.406	1	.116	.151	.221				0.185
.421	11	.131	.167	.237	06	.290	.255	31
.437	2	.147	.183	.252				ONLY
.452	21	.163	.198	.268				
.469	3	.179	.214	.283				
.484	31	.194	.230	.298				
.500	0	.085	.120	.190				
.515	01	.100	.135	.206				
.531	1	.116	.151	.221				
.546	11	.131	.167	.237	08	.415	.380	.310
.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				
.640	01	.100	.135	.206				
.656	1	.116	.151	.221				
.672	11	.131	.167	.237	10	.540	.505	.435
.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				
.765	01	.100	.135	.206				
.781	1	.116	.151	.221				
.796	11	.131	.167	.237	12	.665	.630	.560
.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				
.890	01	.100	.135	.206				
.906	1	.116	.151	.221				
.921	11	.131	.167	.237	14	.790	.755	.685
.937	2	.147	.183	.252				
.952	21	.163	.198	.268				
.969	3	.179	.214	.283				
.984	31	.194	.230	.298				

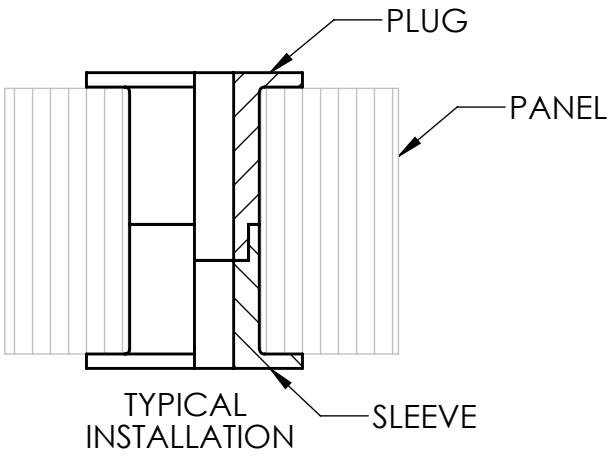
W101
INSERT: GROMMET TYPE, THROUGH-RIVET

TABLE III (CONT.)

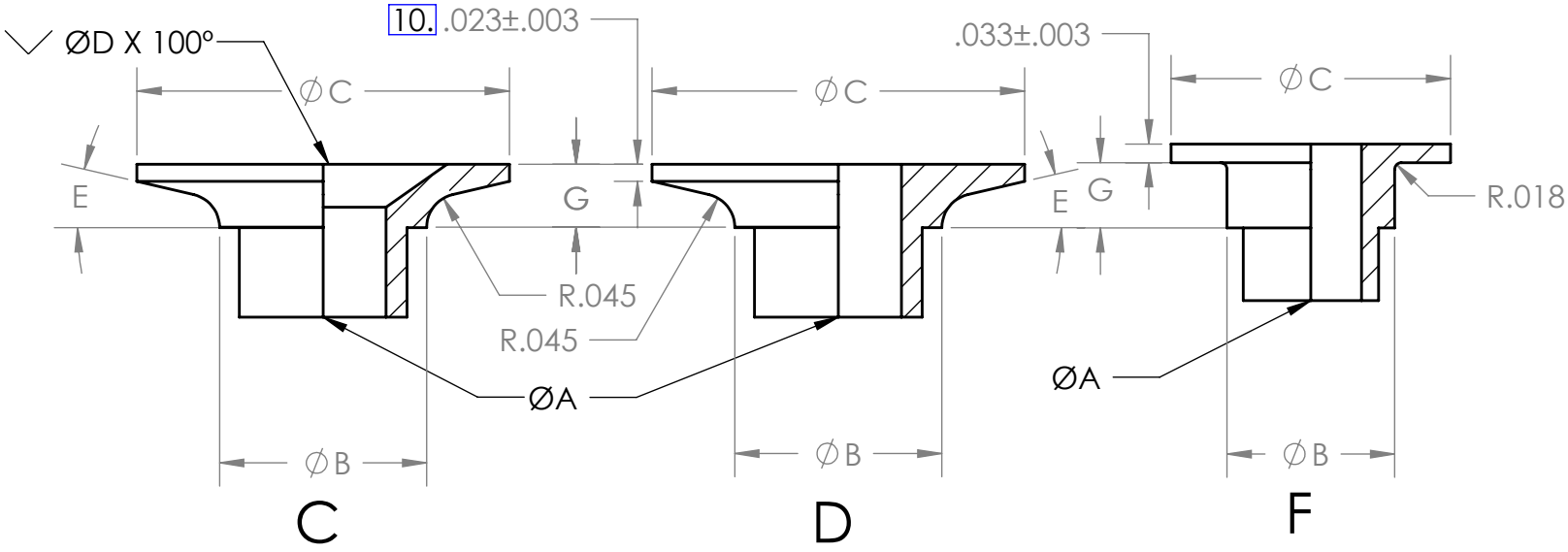
PANEL THICKNESS MINIMUM		PLUG				SLEEVE		
		G				H		
	LENGTH	SIZE CODE			LENGTH	SIZE CODE		
	CODE	12,15,18	25,28	31,37	CODE	12,15,18	25,28	31,37
1.000	0	.085	.120	.190	16	.915	.880	.810
1.015	01	.100	.135	.206				
1.031	1	.116	.151	.221				
1.046	11	.131	.167	.237				
1.062	2	.147	.183	.252				
1.077	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

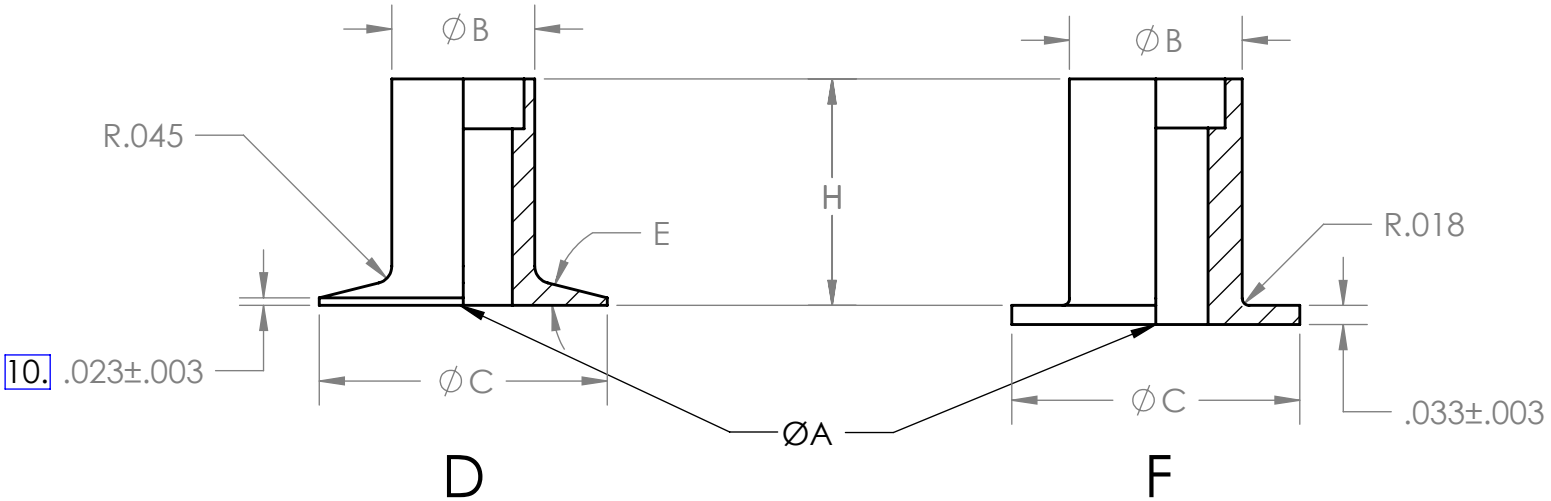
INSERT: GROMMET TYPE, THROUGH-BOLT



TYPICAL INSTALLATION



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

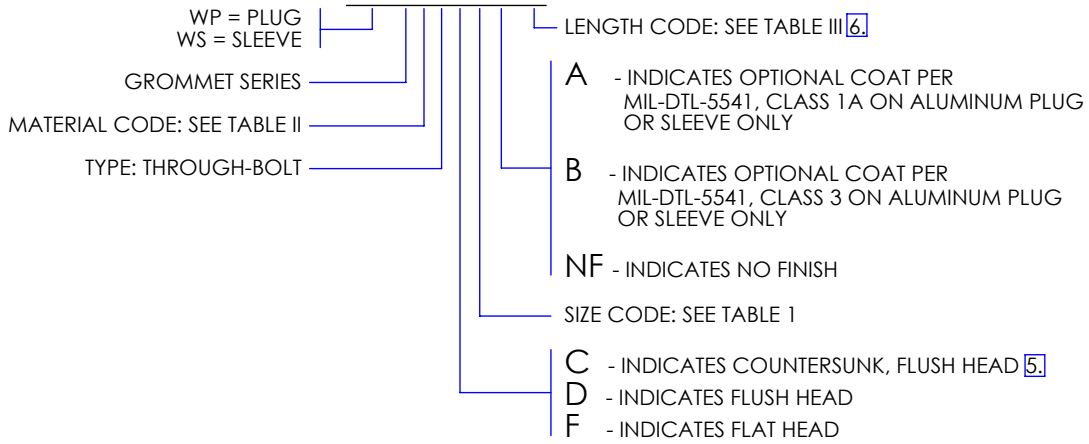


TABLE I

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

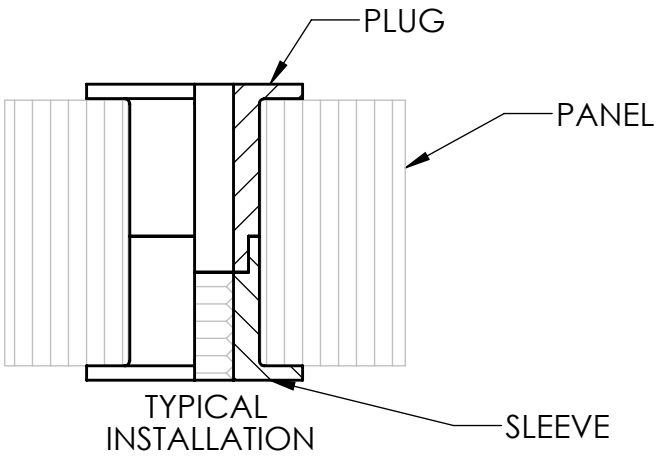
PANEL THICKNESS MINIMUM	PLUG				SLEEVE			
		G+.000/-.010				H+.000/-.010		
	LENGTH CODE	SIZE CODE			LENGTH CODE	SIZE CODE		
		4,6,8,10	25	31,37		4,6,8,10	25	31,37
.188	X	.085	.120	NA	03 8.	.103	.067	NA
.250	0	.085	.120					
.266	01	.101	.136					
.281	1	.116	.151					
.297	11	.132	.167	NA	04 9.	.165	.130	NA
.312	2	.147	.182					
.328	21	.163	.198					
.344	3	.179	.214					
.359	31	.194	.229					
.375	0	.085	.120	.190				
.391	01	.101	.136	.206				
.406	1	.116	.151	.221				
.422	11	.132	.167	.237	06	.290	.255	.185
.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				
.516	01	.101	.136	.206				
.531	1	.116	.151	.221				
.547	11	.132	.167	.237	08	.415	.380	.310
.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				
.641	01	.101	.136	.206				
.656	1	.116	.151	.221				
.672	11	.132	.167	.237	10	.540	.505	.435
.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				
.766	01	.101	.136	.206				
.781	1	.116	.151	.221				
.797	11	.132	.167	.237	12	.685	.630	.560
.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				
.891	01	.101	.136	.206				
.906	1	.116	.151	.221				
.922	11	.132	.167	.237	14	.790	.755	.685
.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

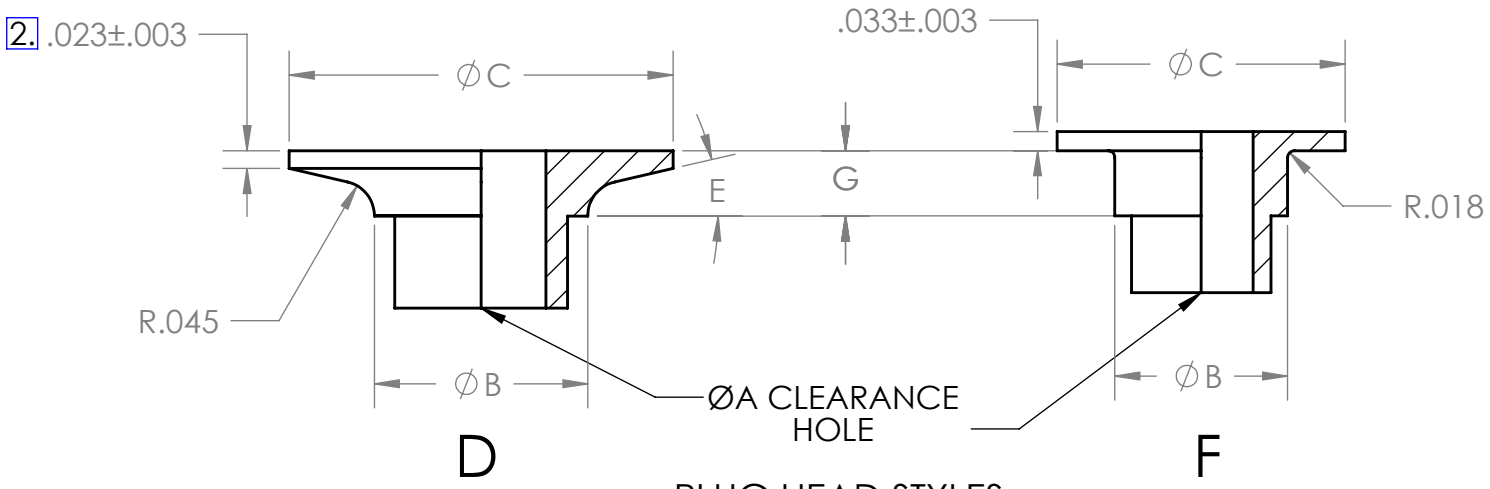
TABLE III (CONT.)

PANEL THICKNESS MINIMUM		PLUG				SLEEVE		
		G+.000/-.010				H+.000/-.010		
	LENGTH	SIZE CODE			LENGTH	SIZE CODE		
	CODE	4,6,8,10	25	31,37	CODE	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				

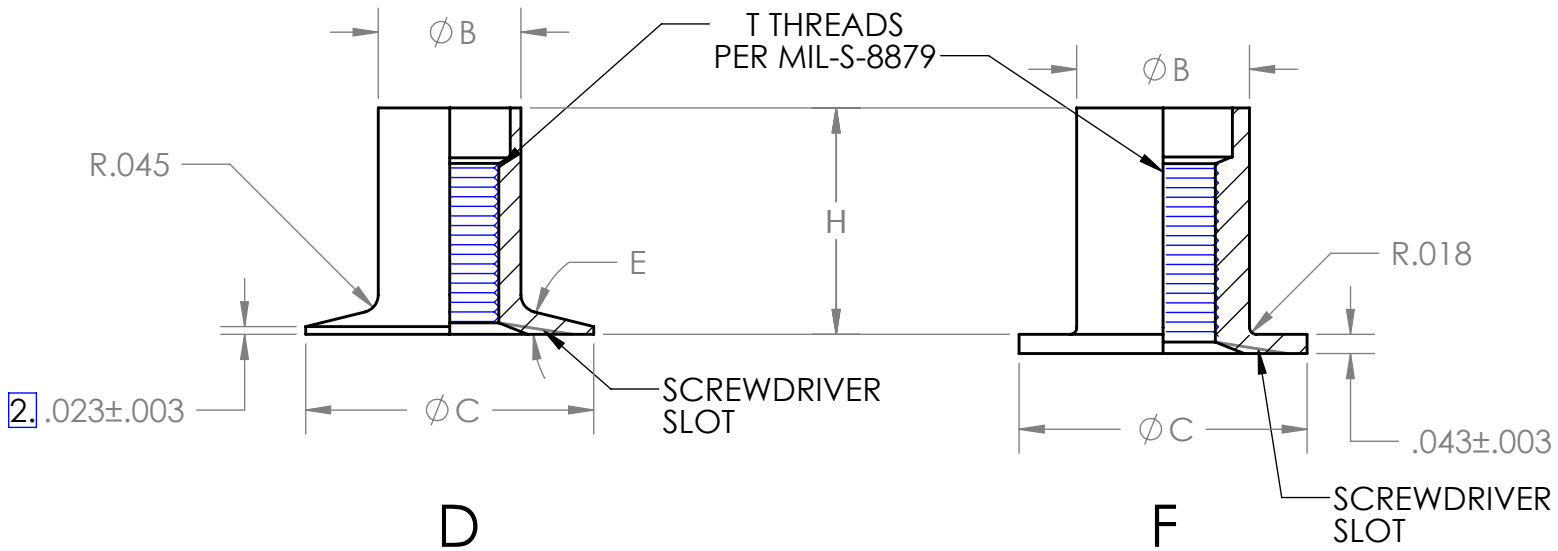
W103
INSERT: GROMMET TYPE, THREADED



TYPICAL INSTALLATION



PLUG HEAD STYLES



SLEEVE HEAD STYLES

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

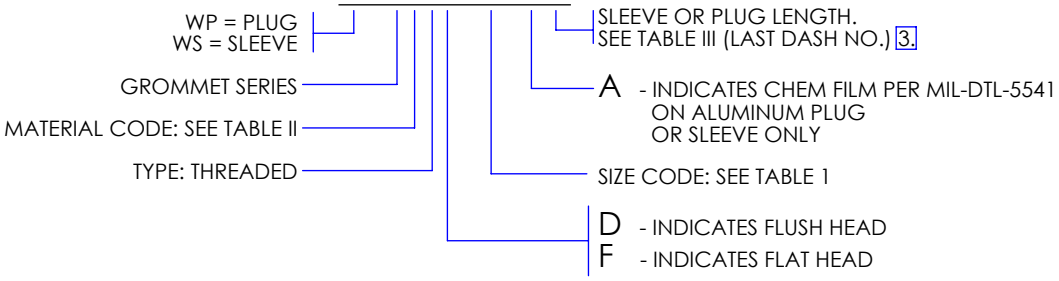


TABLE I

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	PLUG				SLEEVE			
		G				H		
	LENGTH	SIZE CODE			LENGTH	SIZE CODE		
	CODE	4, 6, 8, 10	25	31	CODE	440, 632, 832, 1032	428	524
.500	0	.085	.120					
.515	01	.100	.135					
.531	1	.116	.151					
.546	11	.131	.167	NA	08	.415	.380	NA
.562	2	.147	.183					
.577	21	.162	.198					
.594	3	.179	.214					
.609	31	.194	.230					
.625	0	.085	.120	.190				
.640	01	.100	.135	.206				
.656	1	.116	.151	.221				
.672	11	.131	.167	.237	10	.540	.505	.435
.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				
.765	01	.100	.135	.206				
.781	1	.116	.151	.221				
.796	11	.131	.167	.237	12	.665	.630	.560
.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				
.890	01	.100	.135	.206				
.906	1	.116	.151	.221				
.921	11	.131	.167	.237	14	.790	.755	.685
.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				
1.015	01	.100	.135	.206				
1.031	1	.116	.151	.221				
1.046	11	.131	.167	.237	16	.915	.880	.810
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				
1.140	01	.100	.135	.206				
1.156	1	.116	.151	.221				
1.171	11	.131	.167	.237	18	1.040	1.005	.935
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				
1.265	01	.100	.135	.206				
1.281	1	.116	.151	.221				
1.296	11	.131	.167	.237	20	1.165	1.130	1.060
1.312	2	.147	.183	.252				
1.327	21	.162	.198	.268				
1.343	3	.179	.214	.283				
1.359	31	.194	.230	.298				

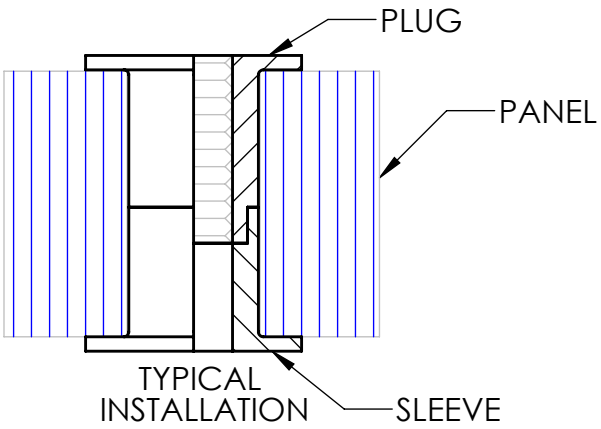
WITTEN COMPANY
918-272-9567

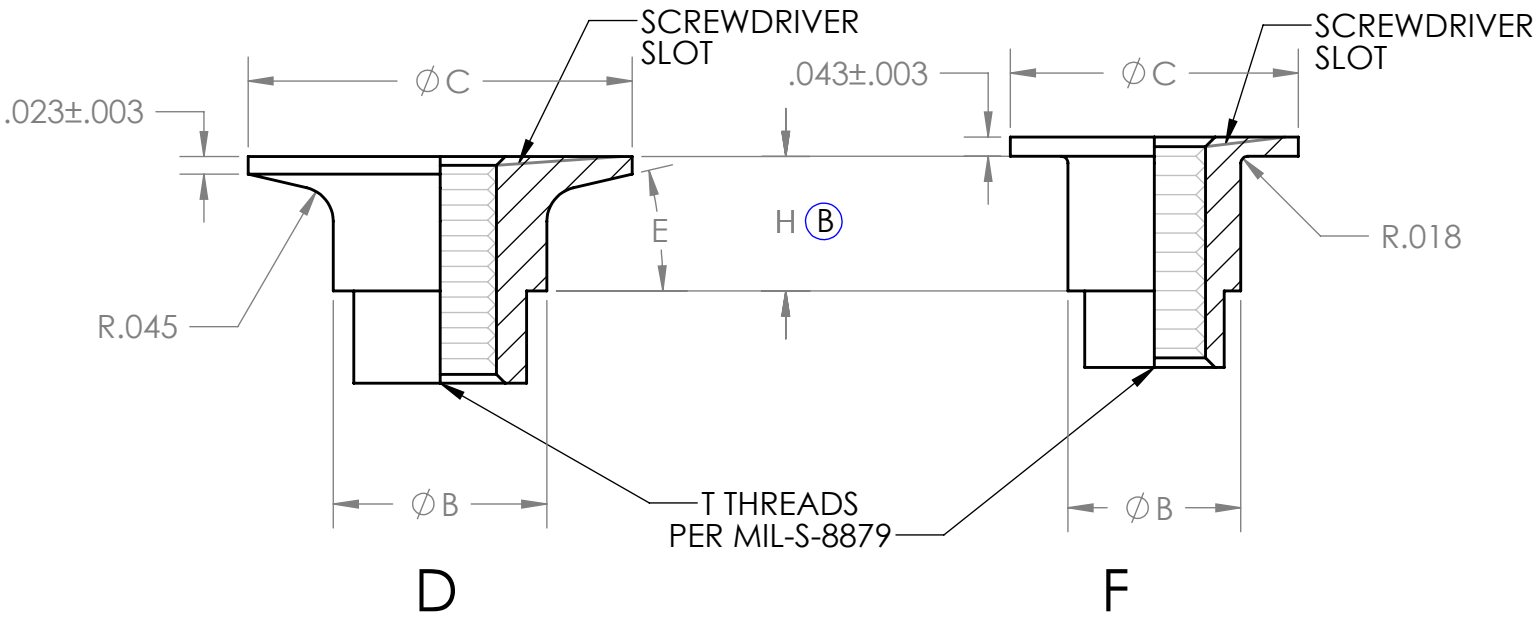
APPROVAL DATE:
11/10/2020

GAGE CODE: 0JHK5

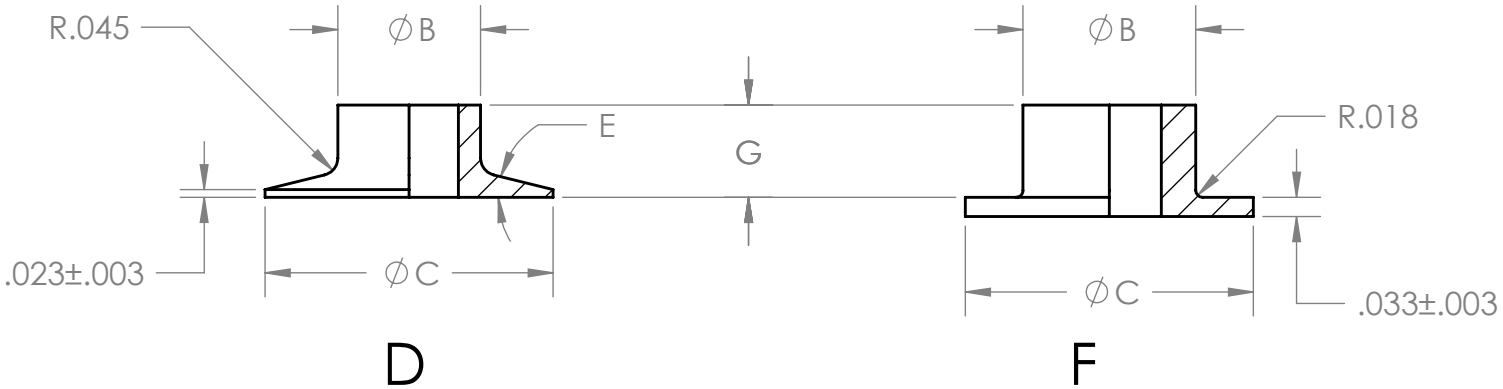
W103 THIN SERIES

INSERT: GROMMET TYPE, THREADED, THIN PANEL FASTENER





PLUG HEAD STYLES



SLEEVE HEAD STYLES

WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 7/1/2022

GAGE CODE: 0JHK5

W103 THIN SERIES

INSERT: GROMMET TYPE, THREADED, THIN PANEL FASTENER

PART NUMBER CODING:

WS193F10-0

WP193F1032-06

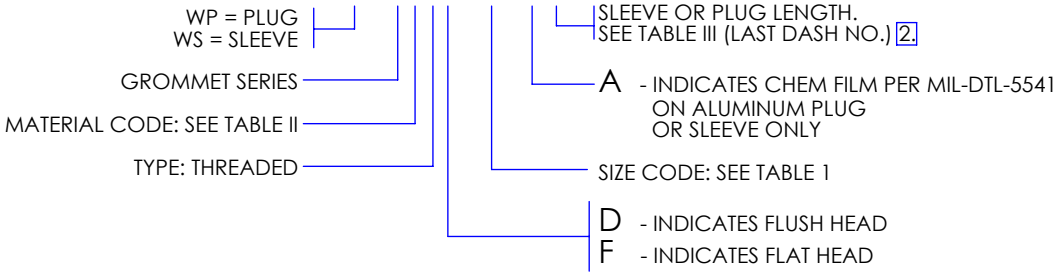


TABLE I

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	SLEEVE G			PLUG H		
	LENGTH CODE	SIZE CODE		LENGTH 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:

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 W103 THIN SERIES GROMMETS ARE SELF-RETAINED THROUGH A TELESCOPIC PRESS FIT.
4. CONSULT THE WITTEN COMPANY ENGINEERING DEPARTMENT FOR OTHER FINISHES, MATERIALS, OR SIZES.

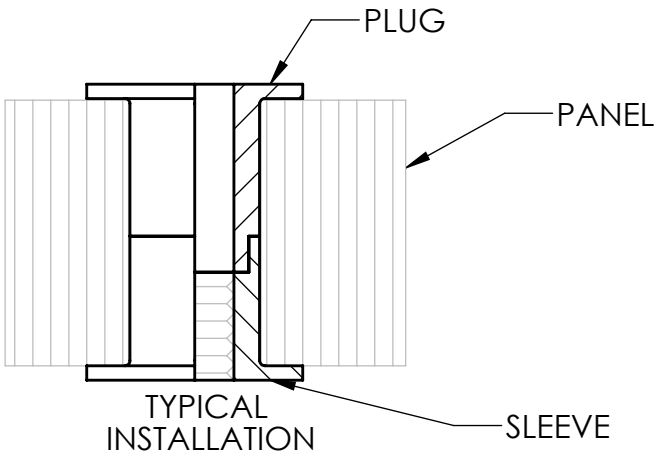
WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 7/1/2022

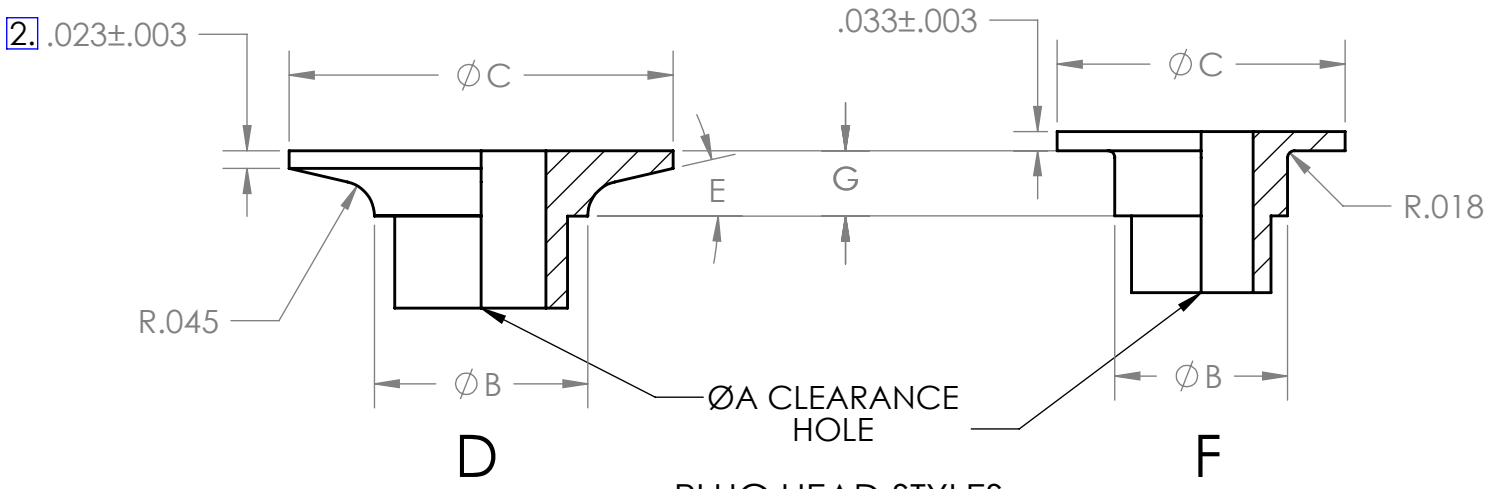
GAGE CODE: 0JHK5

W104

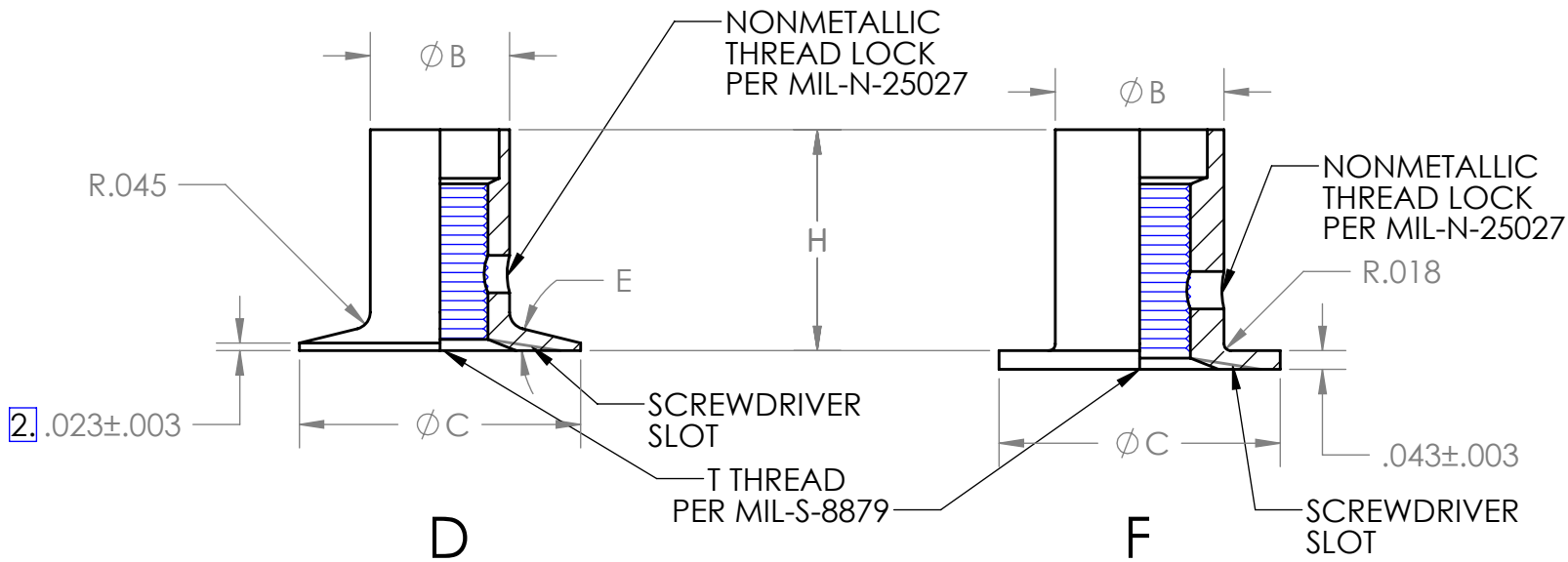
INSERT: GROMMET TYPE, THREADED NONMETALLIC THREAD LOCK



TYPICAL INSTALLATION



PLUG HEAD STYLES



SLEEVE HEAD STYLES

WITTEN COMPANY
918-272-9567

APPROVAL DATE: 11/10/2020

GAGE CODE: 0JHK5

W104

INSERT: GROMMET TYPE, THREADED NONMETALLIC THREAD LOCK

PART NUMBER CODING:

WP164F10-1

WS164F1032-08

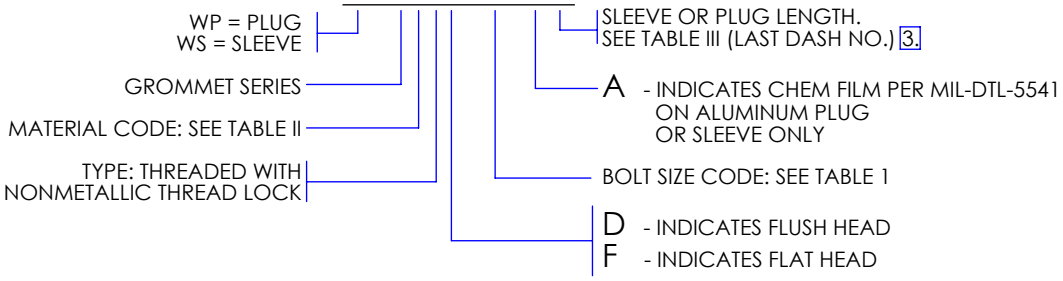


TABLE I

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	PLUG G			SLEEVE H		
	LENGTH CODE	SIZE CODE 4, 6, 8, 10, 25	SIZE CODE 31	LENGTH CODE	SIZE CODE 440, 632, 832, 1032, 428	SIZE CODE 524
.500	0	.085	NA	08	.415	NA
.515	01	.100				
.531	1	.116				
.546	11	.131				
.562	2	.147				
.577	21	.162				
.594	3	.179				
.609	31	.194				
.625	0	.085	NA	10	.540	NA
.640	01	.100				
.656	1	.116				
.672	11	.131				
.687	2	.147				
.702	21	.162				
.719	3	.179				
.734	31	.194				
.750	0	.085	NA	12	.665	NA
.765	01	.100				
.781	1	.116				
.796	11	.131				
.812	2	.147				
.827	21	.162				
.844	3	.179				
.859	31	.194				
.875	0	.085	.248	14	.790	.627
.890	01	.100	.264			
.906	1	.116	.279			
.921	11	.131	.295			
.937	2	.147	.310			
.952	21	.162	.326			
.969	3	.179	.341			
.984	31	.194	.357			
1.000	0	.085	.248	16	.915	.752
1.015	01	.100	.264			
1.031	1	.116	.279			
1.046	11	.131	.295			
1.062	2	.147	.310			
1.077	21	.162	.326			
1.094	3	.179	.341			
1.109	31	.194	.357			
1.125	0	.085	.248	18	1.040	.877
1.140	01	.100	.264			
1.156	1	.116	.279			
1.171	11	.131	.295			
1.187	2	.147	.310			
1.202	21	.162	.326			
1.219	3	.179	.341			
1.234	31	.194	.357			
1.250	0	.085	.248	20	1.165	1.002
1.265	01	.100	.264			
1.281	1	.116	.279			
1.296	11	.131	.295			
1.312	2	.147	.310			
1.327	21	.162	.326			
1.343	3	.179	.341			
1.359	31	.194	.357			

WITTEN COMPANY
918-272-9567

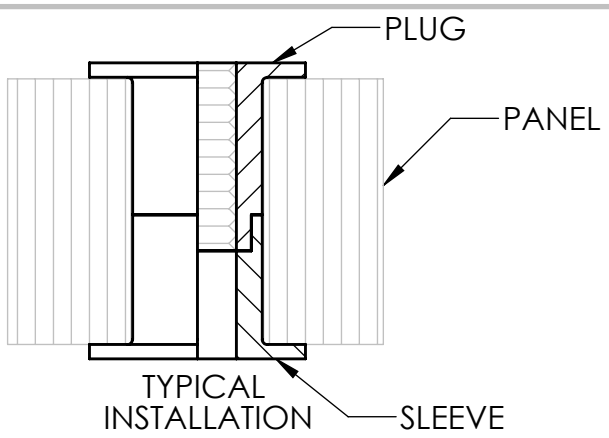
APPROVAL DATE:
11/10/2020

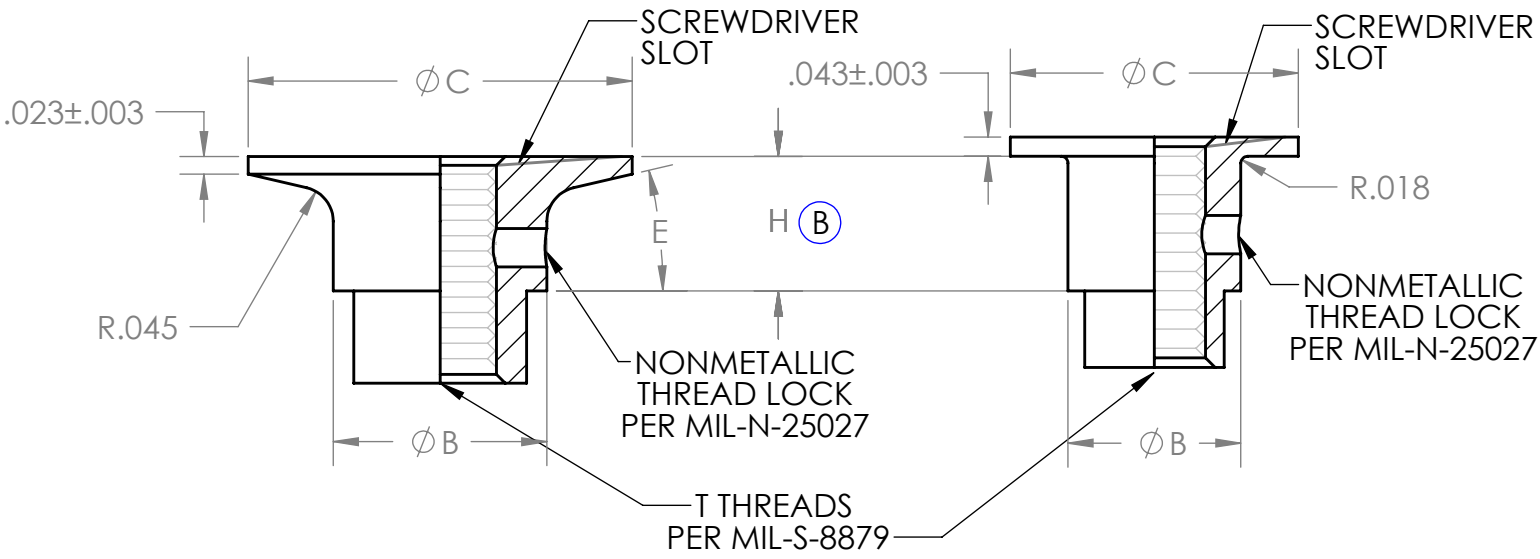
GAGE CODE: 0JHK5

WITTEN COMPANY INC.

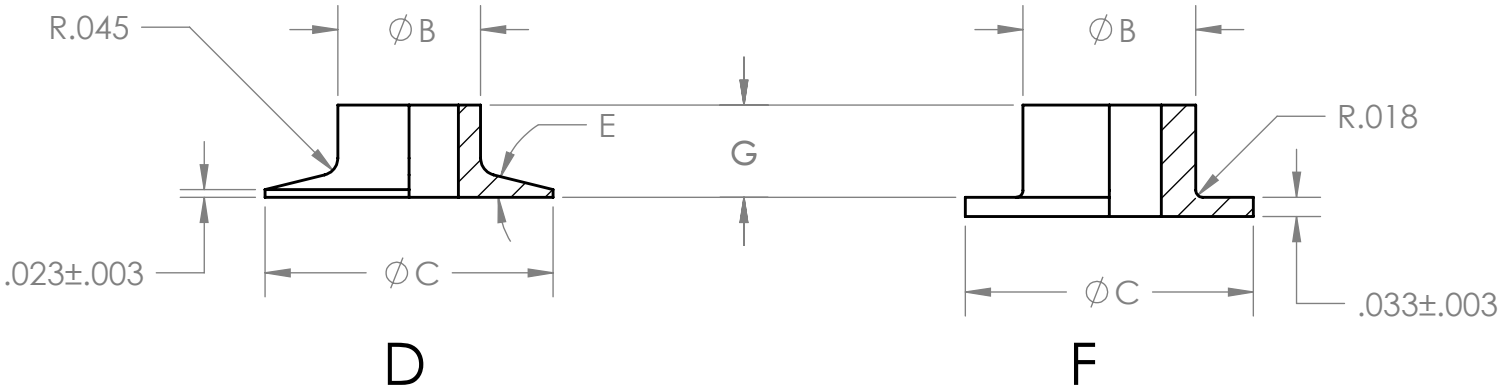
W104 THIN SERIES

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





PLUG HEAD STYLES



SLEEVE HEAD STYLES

WITTEN COMPANY
918-272-9567

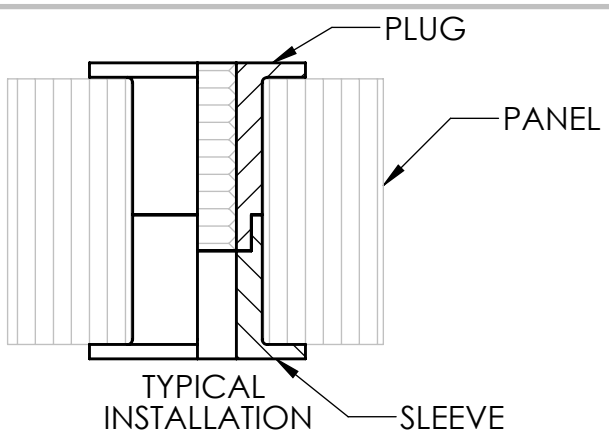
APPROVAL DATE: 11/10/2020

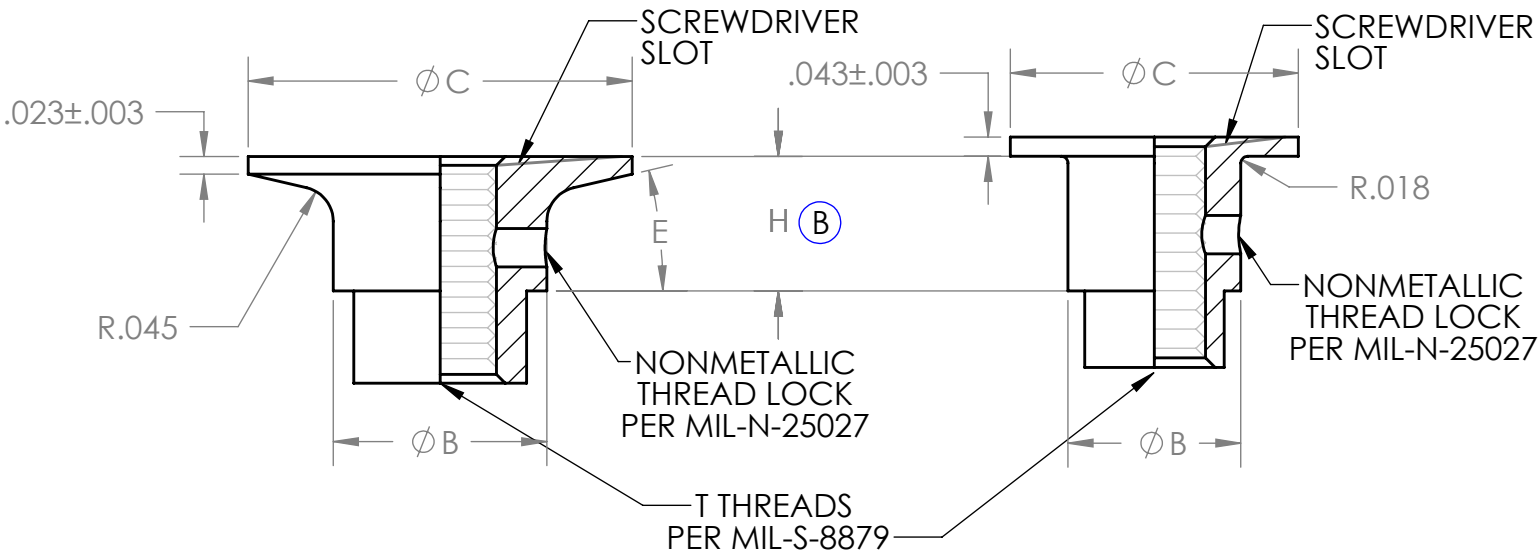
GAGE CODE: 0JHK5

WITTEN COMPANY INC.

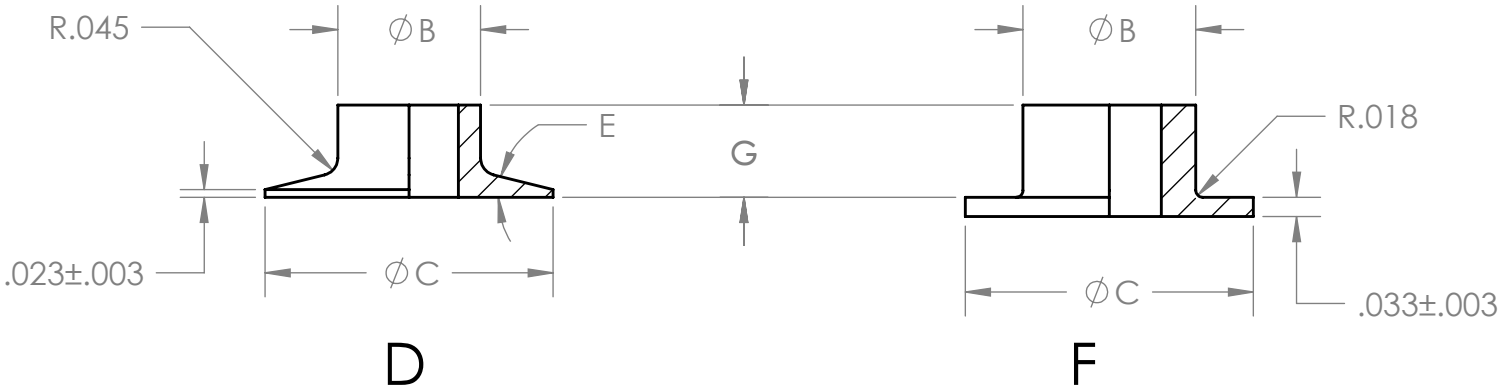
W104 THIN SERIES

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





PLUG HEAD STYLES



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

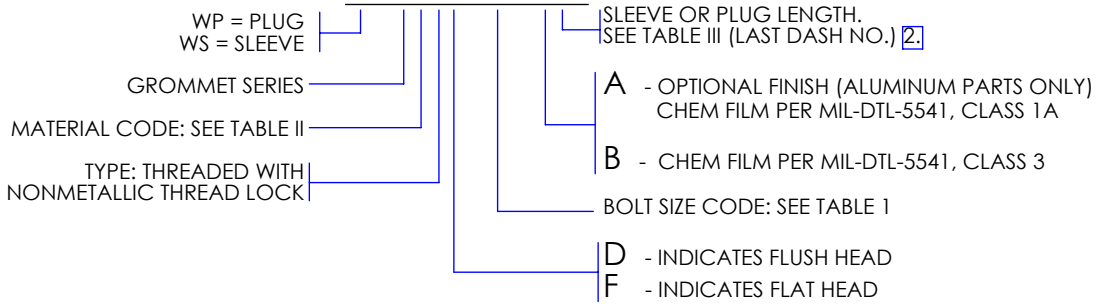


TABLE I

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

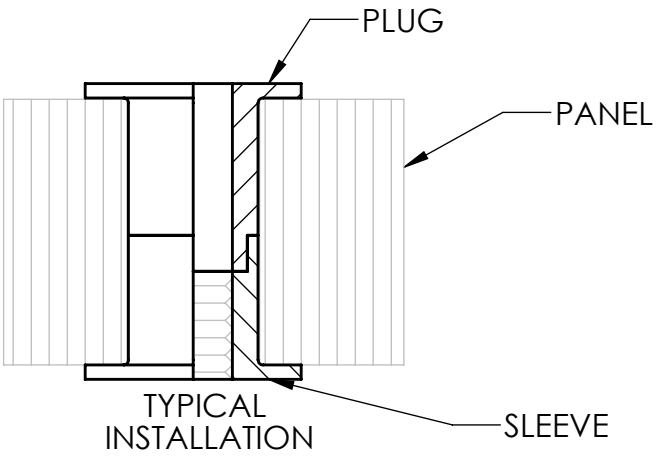
WITTEN COMPANY
918-272-9567

APPROVAL DATE: REV:A 7/7/2021

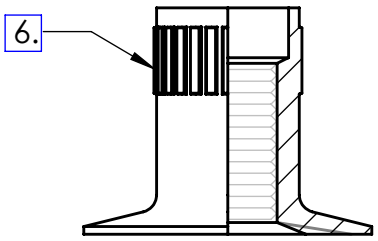
GAGE CODE: 0JHK5

W106

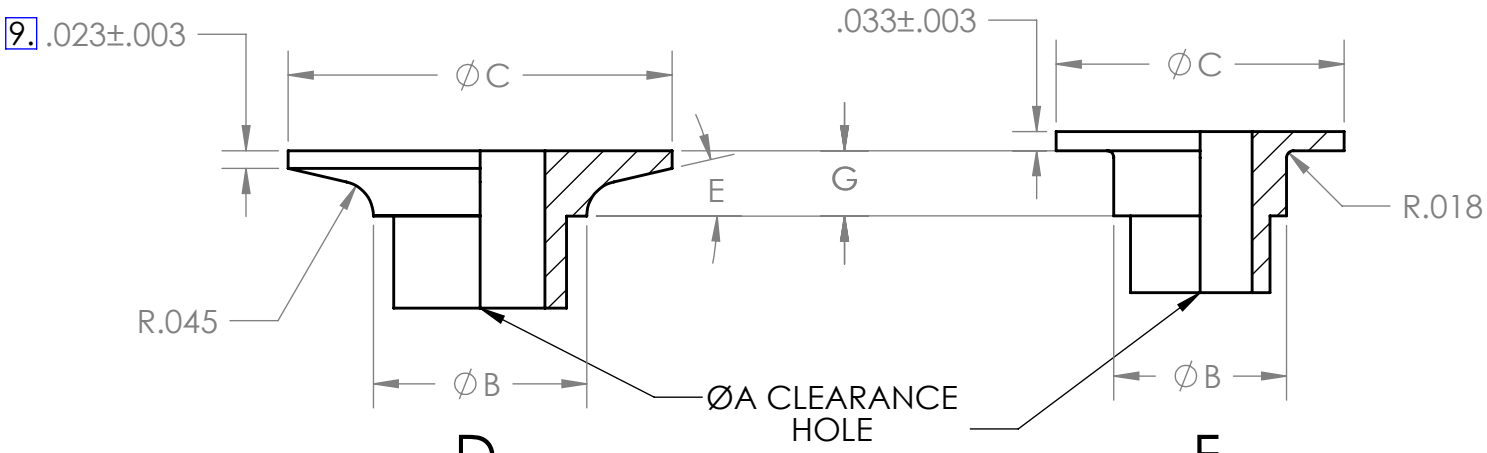
INSERT: GROMMET TYPE, THREADED, SELF-LOCKING, HELICAL COIL



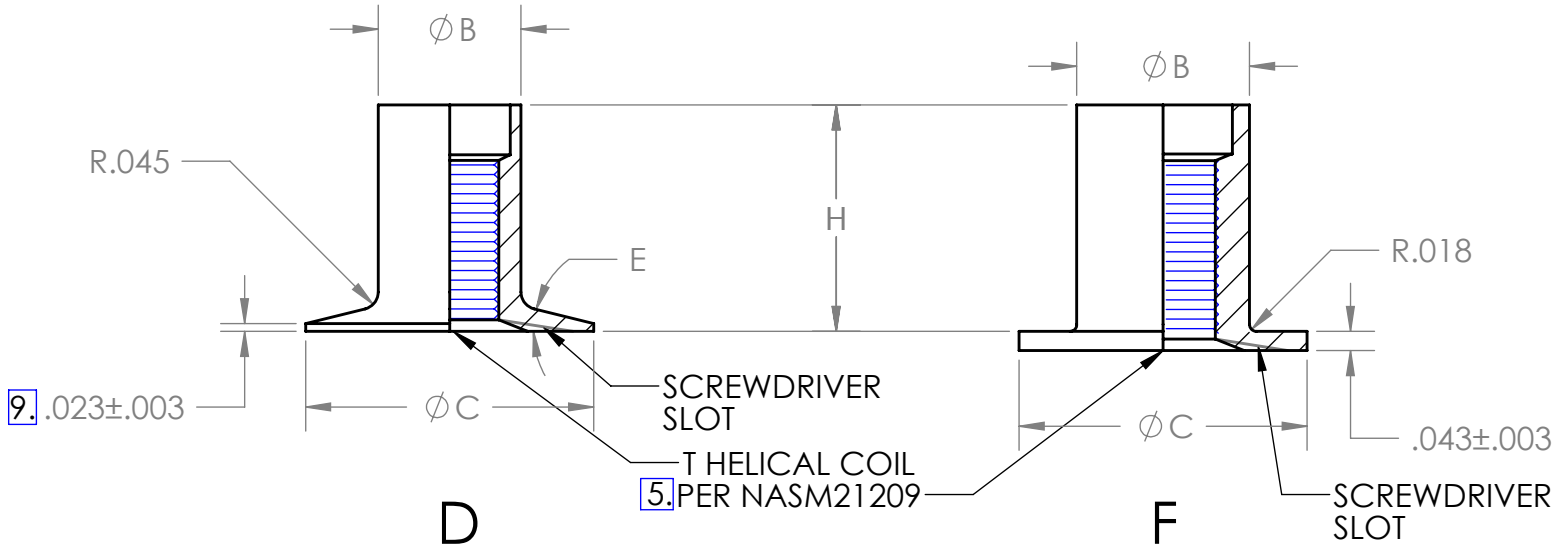
TYPICAL INSTALLATION



OPTIONAL ANTIROTATION KNURL CONFIGURATION



PLUG HEAD STYLES



SLEEVE HEAD STYLES

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

- WP = PLUG, WS = SLEEVE
- GROMMET SERIES
- MATERIAL CODE: SEE TABLE II
- TYPE: SELF-LOCKING HELICAL COIL
- K - INDICATES OPTIONAL ANTIROTATION BODY KNURL 6.
- - NO CODE INDICATES STANDARD BODYCONFIGURATION
- LENGTH CODE: SEE TABLE III 7.
- \- - INDICATES STANDARD FINISH: SEE TABLE II
- B - INDICATES OPTIONAL COAT PER MIL-DTL-5541, CLASS 3 ON ALUMINUM PLUG OR SLEEVE ONLY
- NF - INDICATES OPTIONAL NO FINISH
- SIZE CODE: SEE TABLE 1
- D - INDICATES FLUSH HEAD
- F - INDICATES FLAT HEAD

TABLE I

SIZE CODE		T	ØA	ØB	ØC	E	INSTALLATION
PLUG	SLEEVE	THREAD CLASS 3B	±.003	±.003			HOLE Ø
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		PLUG				SLEEVE		
		G+.000/-.010				H+.000/-.010		
	LENGTH	SIZE CODE			LENGTH	SIZE CODE		
	CODE	6,8,10	25	31	CODE	632, 832, 1032	428	524
.500	0	.085						
.516	01	.101						
.531	1	.116						
.547	11	.132	NA	NA	08	.415	NA	NA
.562	2	.147						
.578	21	.163						
.594	3	.179						
.609	31	.194						
.625	0	.085	.085					
.641	01	.101	.101					
.656	1	.116	.116					
.672	11	.132	.132	NA	10	.540	.540	NA
.688	2	.147	.147					
.703	21	.163	.163					
.719	3	.179	.179					
.734	31	.194	.194					
.750	0	.085	.085					
.766	01	.101	.101					
.781	1	.116	.116					
.797	11	.132	.132	NA	12	.665	.665	NA
.812	2	.147	.147					
.828	21	.163	.163					
.844	3	.179	.179					
.859	31	.194	.194					
.875	0	.085	.085	.248				
.891	01	.101	.101	.264				
.906	1	.116	.116	.279				
.922	11	.132	.132	.295				
.938	2	.147	.147	.311	14	.790	.790	.627
.953	21	.163	.163	.326				
.969	3	.179	.179	.342				
.984	31	.194	.194	.357				
1.000	0	.085	.085	.248				
1.016	01	.101	.101	.264				
1.031	1	.116	.116	.279				
1.047	11	.132	.132	.295				
1.062	2	.147	.147	.311	16	.915	.915	.752
1.078	21	.163	.163	.326				
1.094	3	.179	.179	.342				
1.109	31	.194	.194	.357				

W106

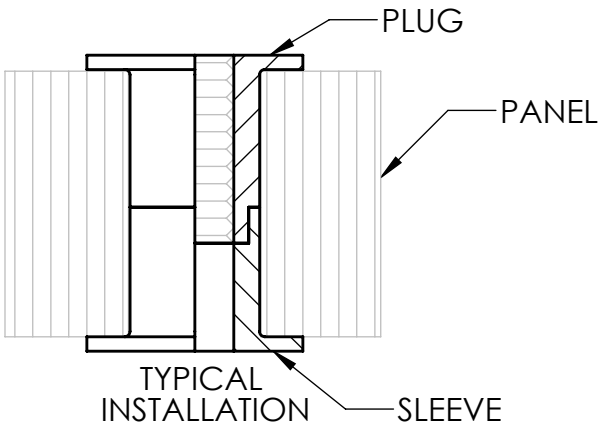
INSERT: GROMMET TYPE, THREADED, SELF-LOCKING, HELICAL COIL

TABLE III (CONT.)

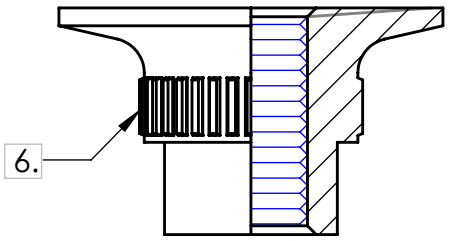
PANEL THICKNESS MINIMUM		PLUG				SLEEVE		
		G+.000/-.010				H+.000/-.010		
	LENGTH	SIZE CODE			LENGTH	SIZE CODE		
	CODE	6,8,10	25	31	CODE	632, 832, 1032	428	524
1.125	0	.085	.085	.248	18	1.040	1.040	.877
1.141	01	.101	.101	.264				
1.156	1	.116	.116	.279				
1.172	11	.132	.132	.295				
1.188	2	.147	.147	.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

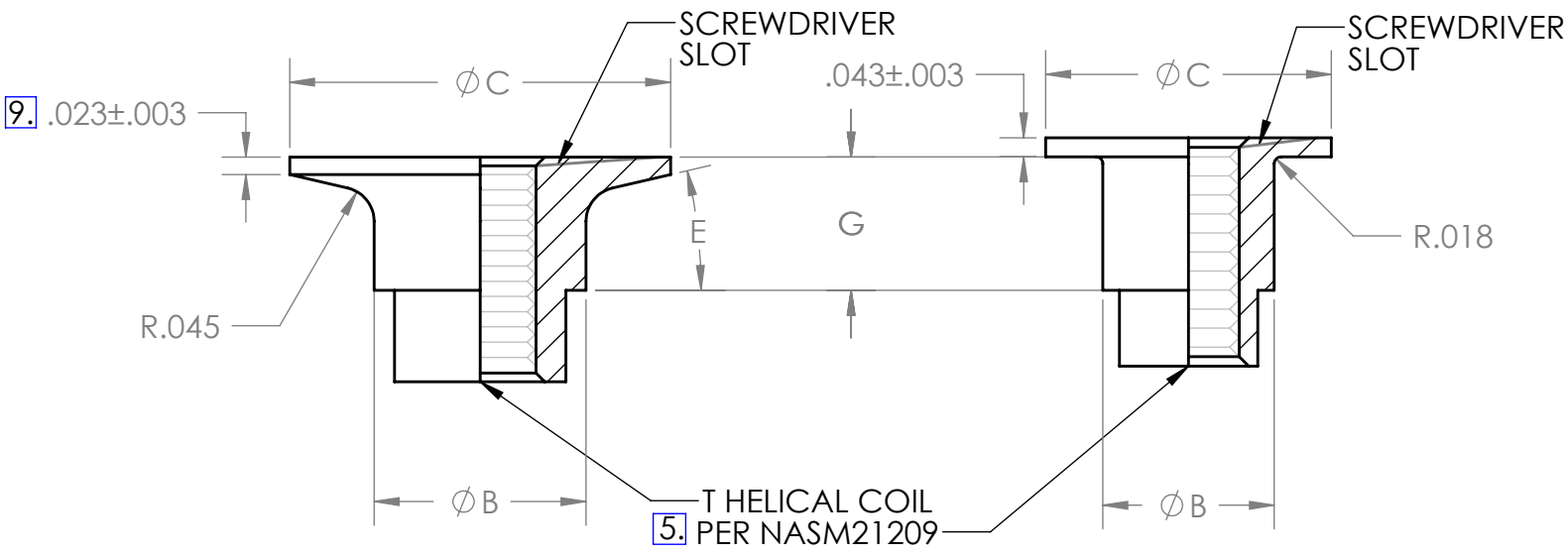
INSERT: GROMMET TYPE, THREADED, SELF-LOCKING, HELICAL COIL, THIN PANEL



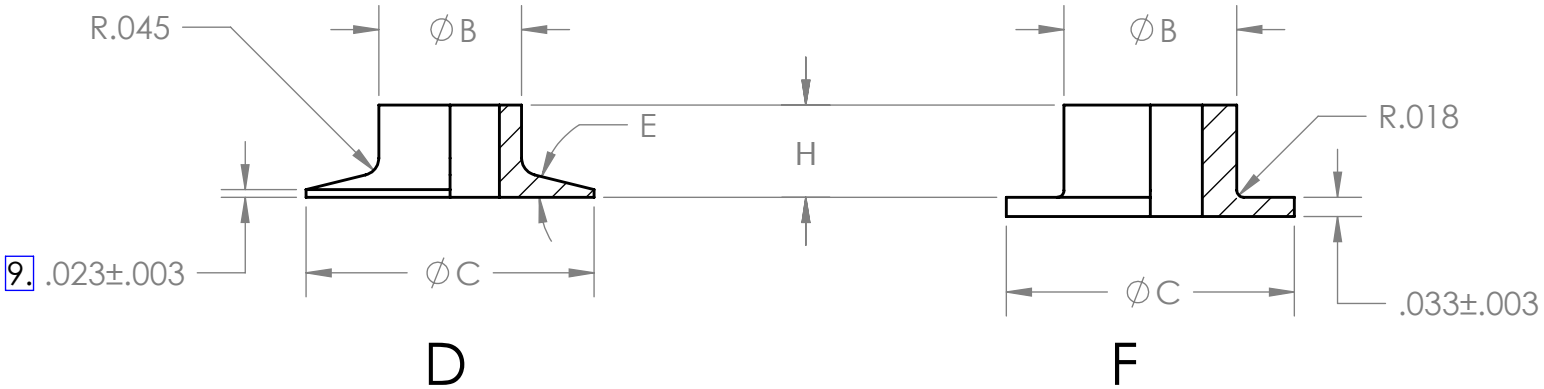
TYPICAL INSTALLATION



OPTIONAL ANTIROTATION KNURL CONFIGURATION



PLUG HEAD STYLES



SLEEVE HEAD STYLES

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

PART NUMBER CODING:

WP106D832-06K

WS106D 8 -11

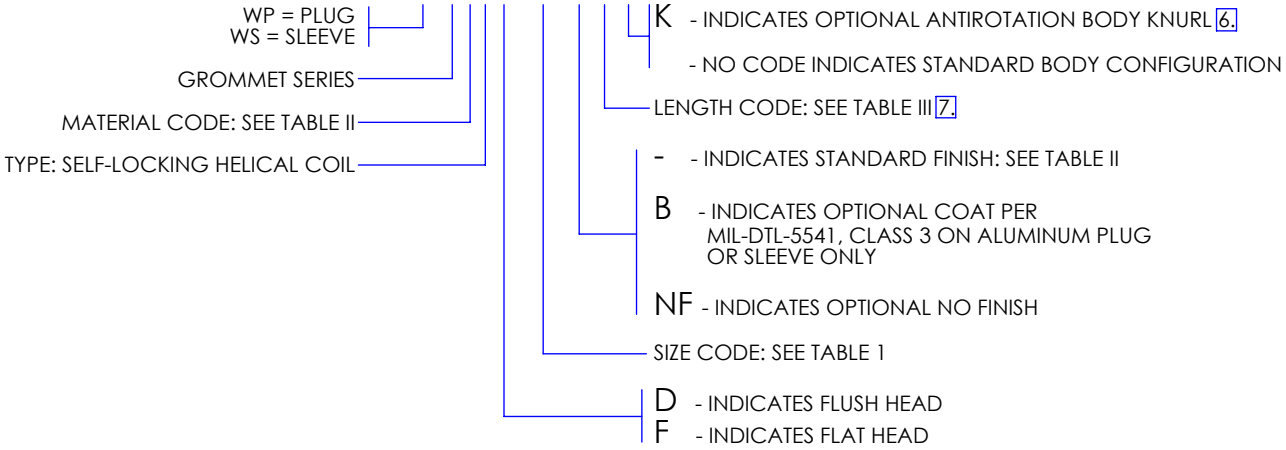


TABLE I

SIZE CODE		T	ØB ±.003	ØC	E	INSTALLATION HOLE Ø
PLUG	SLEEVE	THREAD CLASS 3B				
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 MICROINCHES 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 ENGEERING DEPARTMENT FOR OTHER FINISHES, MATERIALS, OR SIZES.

W106 THIN SERIES

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

TABLE III (CONT.)

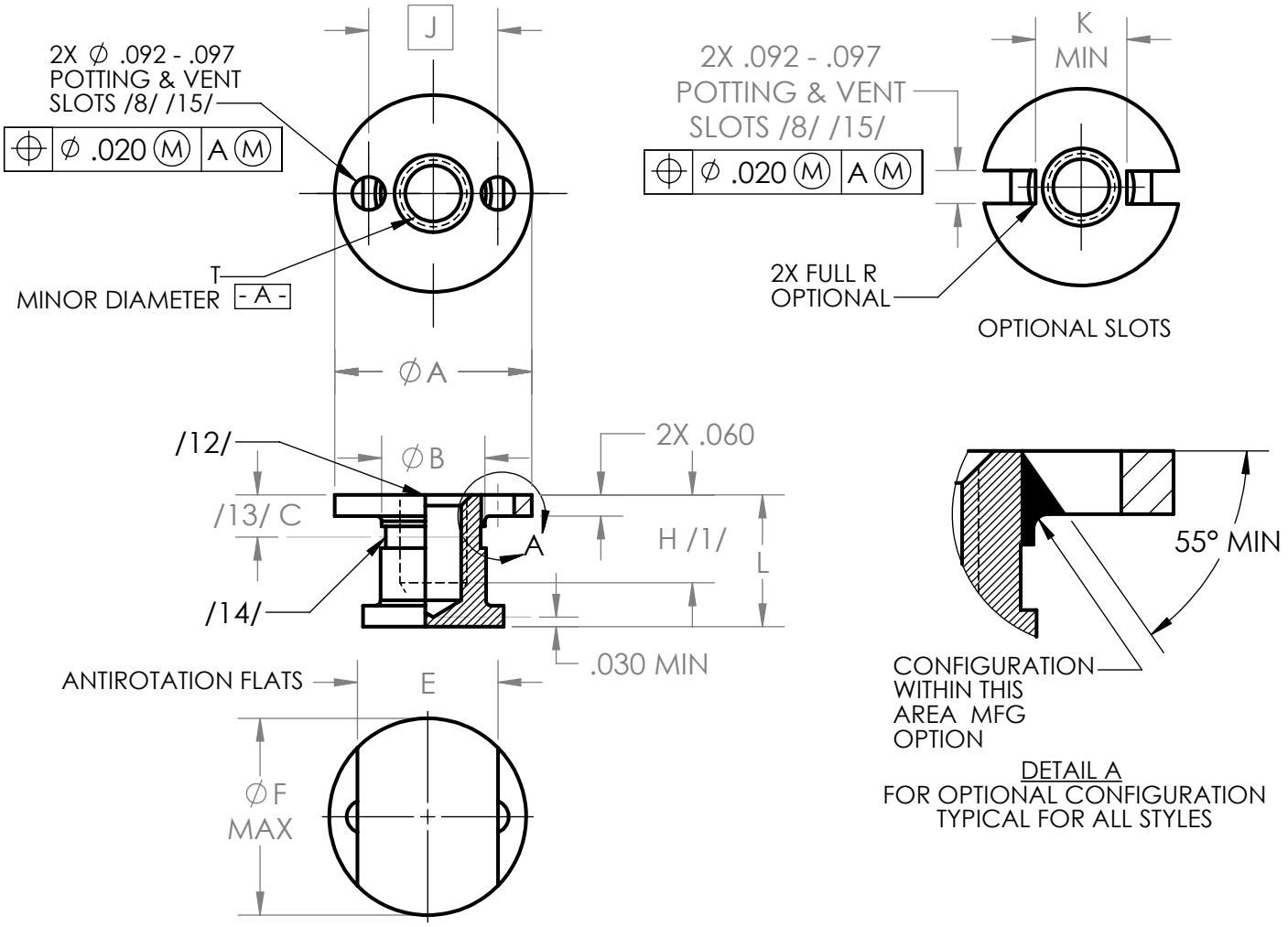
PANEL THICKNESS MINIMUM	SLEEVE H+.000/-.010				PLUG G+.000/-.010			
	LENGTH CODE	SIZE CODE 6,8,10	SIZE CODE 25	SIZE CODE 31	LENGTH CODE	SIZE CODE 632, 832, 1032	SIZE CODE 428	SIZE CODE 524
.250	0	.094	NA	NA	04	.151	NA	NA
.266	01	.109						
.281	1	.125						
.297	11	.140						
.312	2	.156						
.328	21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

W1832

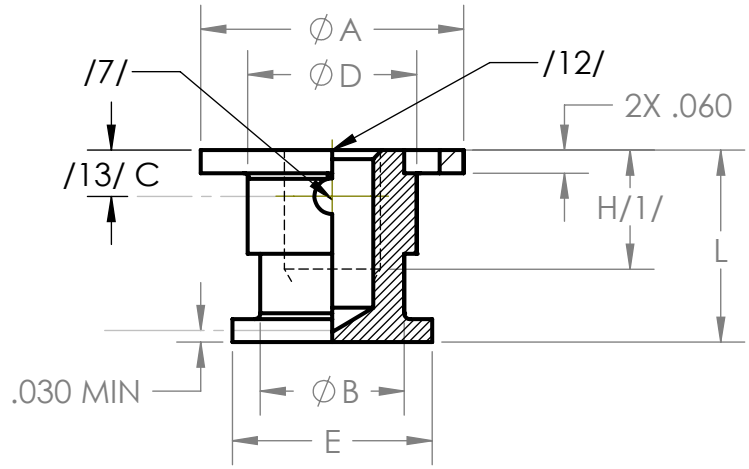
INSERT, MOLDED IN, BLIND THREADED, LOCKING,NON-LOCKING, SANDWICH PANEL

CROSS REFERENCE

WITTEN	STANDARDS/OTHER	SHUR-LOK	THE YOUNG ENGINEERS	ALCOA/TRIDAIR
W1832	NAS1832 / CDIN08 (C&D ZODIAC)	SL602	TYE2002	D1832



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



ALUMINUM LOCKING STYLE OR ALTERNATE NON-LOCKING ALUMINUM STYLE

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REVISED: 3/25/2025

CAGE CODE: 0JHK5

W1832

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

CROSS REFERENCE

WITTEN	STANDARDS/OTHER	SHUR-LOK	THE YOUNG ENGINEERS	ALCOA/TRIDAIR
W1832	NAS1832 / CDIN08 (C&D ZODIAC)	SL602	TYE2002	D1832

TABLE I - IMPERIAL 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/
04	.1120-40 UNJC	.560	.300	.12	.375	.400	.560	.25	.367	.260	.37
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 IA - METRIC DIMENSIONS

SIZE DASH NO	T THREAD /3/	ØA +.000 -.025	ØB	C	ØD	E	ØF MAX	H MIN /1/	J BASIC	K MIN	L MIN /2/
M3	M3X0.5-4H6H	14.22	7.62	3.0	9.52	10.16	14.22	6.4	9.32	6.60	9.5
M3.5	M3.5X0.6-4H6H	14.22	7.62	3.0	9.52	10.16	14.22	6.4	9.32	6.60	9.5
M4	M4X0.7-4H6H	14.22	7.62	3.0	9.52	10.16	14.22	6.4	9.32	6.60	9.5
M5	M5X0.8-4H6H	14.22	7.62	3.0	9.52	10.16	14.22	6.4	9.32	6.60	9.5
M6	M6X1-4H5H	17.40	9.52	3.6	11.18	13.21	17.40	7.9	11.86	9.14	12.7
M8	M8X1.25-4H5H	17.40	12.06	4.1	12.70	13.21	17.40	7.9	11.86	9.14	12.7
M10	M10X1.5-4H5H	21.36	12.70	5.6	13.97	14.22	21.36	9.4	15.01	12.29	12.7

TABLE II - IMPERIAL INSTALLATION DATA

SIZE DASH NO	INSTALLATION TAB P/N /6/	INSTALLATION HOLE SIZE
04	2007-367	.561-.566
06	2007-367	.561-.566
08	2007-367	.561-.566
3	2007-367	.561-.566
4	2007-467	.686-.691
5	2007-467	.686-.691
6 /26/	2007-591	.842-.847

TABLE II A- METRIC INSTALLATION DATA

SIZE DASH NO	INSTALLATION TAB P/N /6/	INSTALLATION HOLE SIZE
M3	2007-367	14.25 - 14.38
M3.5	2007-367	14.25 - 14.38
M4	2007-367	14.25 - 14.38
M5	2007-367	14.25 - 14.38
M6	2007-467	17.42 - 17.55
M8	2007-467	17.42 - 17.55
M10 /26/	2007-591	21.39 - 21.51

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.
ZINC PLATE PER ASTM-B633, SC 2, TYPE I.

AL ALLOY: ANODIZE PER MIL-PRF-8625, TYPE 1, CLASS OPTIONAL.
CHEM-FILM PER MIL-DTL-5541, CLASS 1A
CHEM-FILM PER MIL-DTL-5541, CLASS 2
BARE, NO FINISH

CRES: PASSIVATE PER ASTM-A-967, CITRIC 1.
SILVER PLATE PER AMS2410 OR AMS2411.
CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2.
BARE, NO FINISH

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

W1832

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

CROSS REFERENCE

WITTEN	STANDARDS/OTHER	SHUR-LOK	THE YOUNG ENGINEERS	ALCOA/TRIDAIR
W1832	NAS1832 / CDIN08 (C&D ZODIAC)	SL602	TYE2002	D1832

PART NUMBERING SYSTEM

W1832 C 5 N 4 P M

- LUBRICANT: NO CODE = NO LUBRICANT
  "M" = SOLID FILM LUBE
- FINISH:IF CARBON STEEL:
  NO CODE = CADIUM PLATED
  "Z" = ZINC PLATED
  IF AL ALLOY:
  NO CODE = ANODIZED
  "CF1" = CHEM-FILM, CL 1
  "A3" = CHEM-FILM, CL 3
  "B" = BARE, NO FINISH
  IF CRES:
  NO CODE = PASSIVATE PER ASTM-A-967, CITRIC 1.
  "P" = CADIUM PLATE
  "S" = SILVER PLATE
  "B" = BARE, NO FINISH
- LENGTH DASH NUMBER: /10/
  INCH LENGTH: IN .125 INCREMENTS
  ALT INCH LENGTH: USE THREE DIGIT DECIMAL
  METRIC LENGTH: LENGTH N MILLIMETERS
- LOCKING:
  "-" = LOCKING
  "N" = NON-LOCKING
- SIZE DASH NUMBER:
  (SEE TABLE I FOR IMPERIAL OR TABLE I A FOR METRIC)
- MATERIAL:
  "-" = CARBON STEEL, CADIUM PLATED
  "A" = AL ALLOY, ANODIZED
  "C" = CRES, PASSIVATED
- BASIC PART NUMBER

EXAMPLE OF PART NUMBER:

W1832C5N4M = INSERT, CRES, .3125-24 UNJF THREAD, NON-LOCKING, .500 LONG, PASSIVATE PER ASTM-A-967, CITRIC 1., SOLID FILM LUBRICATED.

W1832-3-4M = INSERT, CARBON STEEL, .1900-32 UNJF-3B THREAD, LOCKING, .500 LONG, CADMIUM PLATED, SOLID FILM LUBRICATED.

W1832A3N4 = INSERT, AL ALLOY, .1900-32 UNJF-3B THREAD, NON-LOCKING, .500 LONG, ANODIZED, NON-LOCKING, NO LUBRICATION.

W1832C06-6 = INSERT, CRES, .1380-32 UNJC-3B THREAD, LOCKING, .750 LONG, PASSIVATE PER ASTM-A-967, CITRIC 1., NO LUBRICATION.

W1832C08-3S = INSERT, CRES, .1640-32 UNJC-3B THREAD, LOCKING, .375 LONG, SILVER PLATED, NO LUBRICATION.

W1832C08-3P = INSERT, CRES, .1640-32 UNJC-3B THREAD, LOCKING, .375 LONG, CADMIUM PLATED, NO LUBRICATION.

W1832C5N4 = INSERT, CRES, .3125-24 UNJF-3B THREAD, NON-LOCKING, .500 LONG, PASSIVATE PER ASTM-A-967, CITRIC 1., NO LUBRICATION.

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REVISED: 3/25/2025

CAGE CODE: 0JHK5

W1832

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

CROSS REFERENCE

WITTEN	STANDARDS/OTHER	SHUR-LOK	THE YOUNG ENGINEERS	ALCOA/TRIDAIR
W1832	NAS1832 / CDIN08 (C&D ZODIAC)	SL602	TYE2002	D1832

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/ IMPERIAL THREADS PER AS8879, CLASS 3B. METRIC THREADS PER FED-STD-H28/21

(4) NOT USED

(5) TOLERANCES UNLESS OTHERWISE SPECIFIED: .XXX ± .010 .XX ± .02.

(6) AN ADHESIVE-BACKED INSTALLATION TAB PER NAS1837 (PLASTIC PER WITTEN 2007) SHALL BE FURNISHED WITH 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.

/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 OR MILLIMETERS.

/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.

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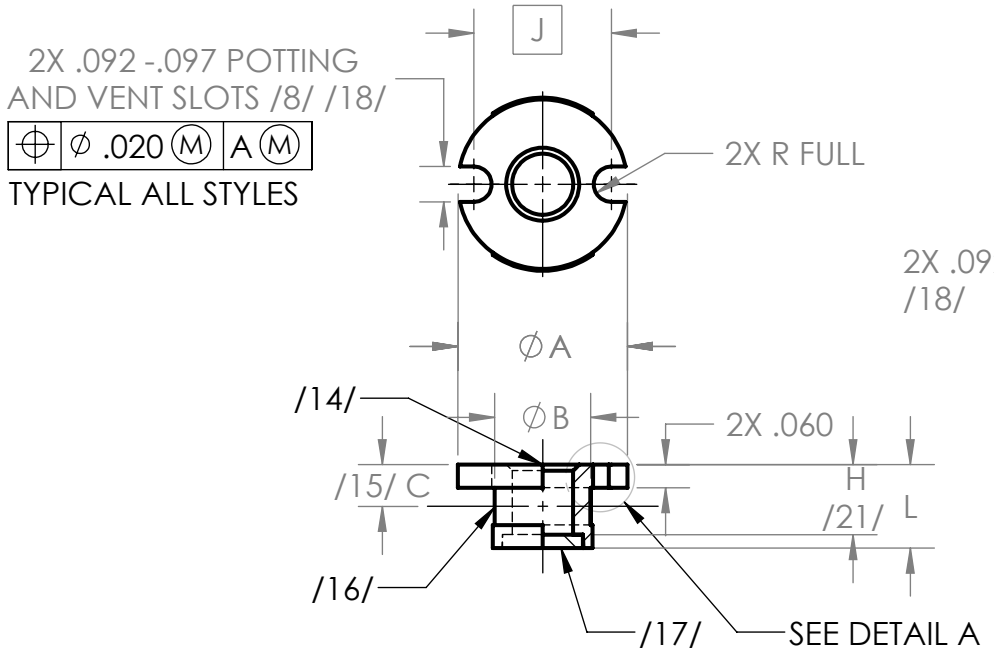
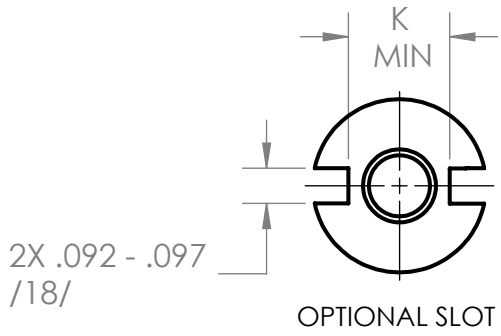
REVISED: 3/25/2025

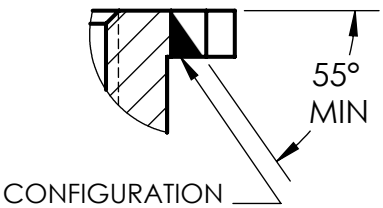
CAGE CODE: 0JHK5

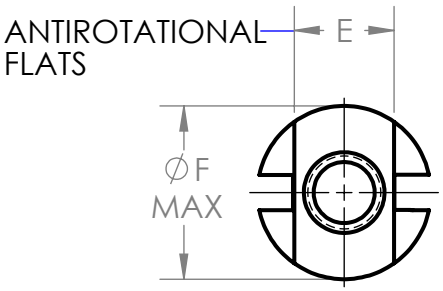
W1836

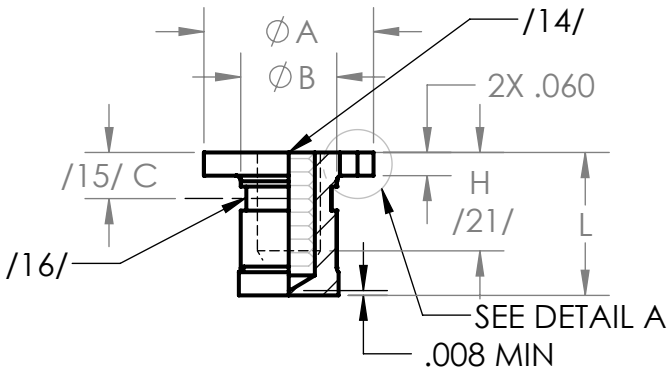
INSERT, MOLDED IN, BLIND THREADED, SELF-LOCKING, NONSELF-LOCKING,LIGHTWEIGHT, SANDWICH PANEL

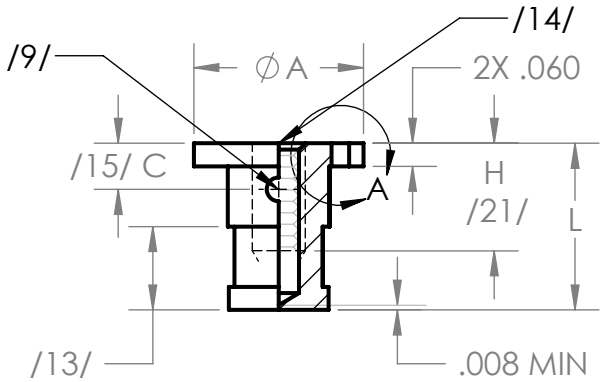












WITTEN COMPANY
918-272-9567

APPROVAL REV:C 3/26/2024

CAGE CODE: 0JHK5

W1836

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

TABLE I - IMPERIAL 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

TABLE IA - METRIC DIMENSIONS

FIRST DASH NO.	THREAD FED-STD-H28/21	ØA +.000 -.010	ØB	C	E	ØF MAX	H /21/	J BASIC	K MIN	L /22/ MIN	INSTALLATION HOLE SIZE
M3	M3X0.5-4H6H	11.46	6.35	3.0	3.30	11.4	4.75	9.09	6.38	5.54	11.48-11.61
M3.5	M3.5X0.6-4H6H	11.46	6.35	3.0	3.30	11.4	4.75	9.09	6.38	5.54	11.48-11.61
M4	M4X0.7-4H6H	11.46	6.35	3.0	3.30	11.4	4.75	9.09	6.38	5.54	11.48-11.61
M5	M5X0.8-4H6H	11.46	6.35	3.0	3.30	11.4	4.75	9.09	6.38	5.54	11.48-11.61
M6	M6X1-4H5H	12.65	7.62	3.6	7.92	12.4	6.35	10.29	7.09	7.14	12.67-12.80
M8	M8X1.25 -4H5H	13.82	8.89	4.2	12.54	13.4	7.35	11.49	7.8	8.74	13.84-13.97

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-PRF-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.

W1836

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

CODE:

W1836 - 3 - 08 M

- **FINISH:**
  - LUBRICATION:
    - M = SOLID FILM LUBRICANT APPLIEDTO THREADS ONLY /5/
    - NO CODE = NO SOLID FILM LUBRICANT /5/
  - CRES INSERT:
    - P = CADMIUM PLATE /5/
    - S = SILVER PLATE /5/
    - NO CODE = PASSIVATED/5/
- ***INCH LENGTH=*** IN .031 INCREMENTS; USE TWO DIGIT DASH NUMBER. /6/
  ALT INCH LENGTH= USE THREE DIGIT DECIMAL
  METRIC LENGTH= LENGTH IN MILLIMETERS
- SELF-LOCKING PROVISION:
  - "-" = LOCKING
  - N = NON-LOCKING
- FIRST DASH NUMBER INDICATES NOMINAL THREAD SIZE PER TABLE I
- MATERIAL:
  - "-" = CARBON STEEL, CADIUM PLATED
  - A = AL ALLOY, ANODIZED
  - C = CRES, PASSIVATED
- BASIC PART NUMBER

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.
W1836CM6N25.4 = M6X1 4H5H THREAD, CRES PASSIVATED, 25.4 MM LONG, NONSELF-LOCKING.

NOTE:

(1) INCH THREADS PER AS8879, CLASS 3B. METRIC THREAD PER FED-STD-H28/21.

(2) NOT USED

(3) TOLERANCES UNLESS OTHERWISE SPECIFIED: .XXX ±.010, .XX ±.02.

W1836

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

NOTE:

(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 CLEARENCE 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.

/22/ MINIMUM LENGTH WHICH MAY BE SPECIFIED.

/23/ NOT USED.

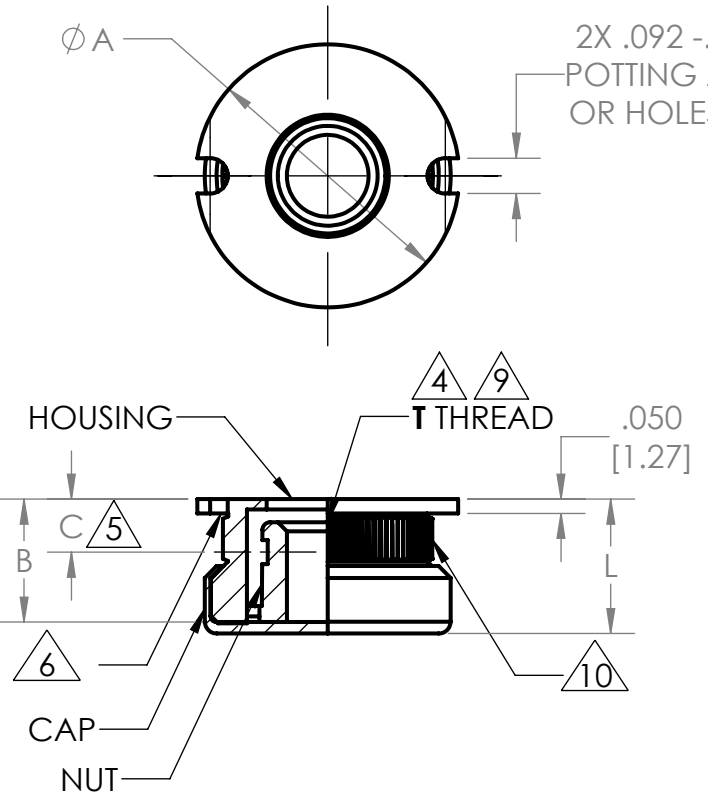
(24) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.

(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.

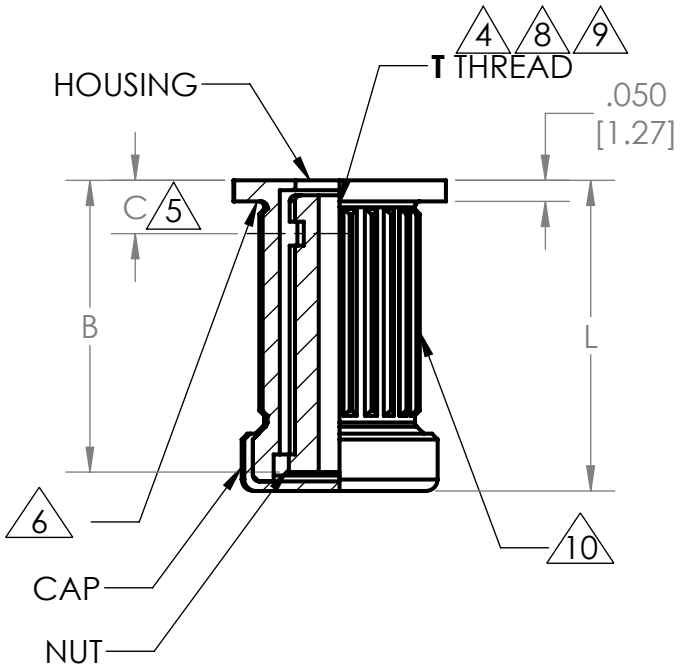
(26) UNLESS OTHERWISE SPECIFIED HEREIN, REFERENCED DOCUMENTS SHALL BE THE ISSUE IN EFFECT ON DATE OF MANUFACTURE. HOWEVER, EXISTING MATERIAL INVENTORY CERTIFIED TO A PREVIOUS REVISION OF THE APPLICABLE MATERIAL SPECIFICATION(S) IS ACCEPTABLE FOR USE UNTIL DEPLETION.

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]

- NON SELF-LOCKING (OPTIONAL)
- SPECIAL SUFFIX CODE (OPTIONAL) (SEE TABLE V)
- FINISH CODE (OPTIONAL) (SEE TABLE IV)
- INSERT LENGTH CODE (SEE TABLE II)
- MATERIAL CODE (SEE TABLE III)
- SIZE CODE (SEE TABLE I)
- BASIC PART NUMBER

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 ATTACHEMENTS 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

NOTES CONTINUED:

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

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

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

△10 STRAIGHT OR DIAMOND ANTIROTATIONAL KNURL (WITTEN OPTION).

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

TABLE I - SIZE CODE

SIZE CODE	**T** THREAD △4	**A** +.000 -.010 +[0.00] -[0.25]	**C** REF	INSTALLATION HOLE SIZE △5
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			
△11 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			

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
△11 1	.310 [7.87]	.250 [6.35]	.250 [6.35]		.250 [6.35]		.250 [6.35]		.250 [6.35]		———		———	
△11 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]	
△11 3	.375 [9.52]	.250 [6.35]	.281 [7.14]		.281 [7.14]		.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]	
5	.565 [14.35]	.250 [6.35]	.281 [7.14]		.312 [7.92]		.375 [9.52]		.437 [11.10]		.437 [11.10]		.437 [11.10]	
6	.690 [17.53]	.250 [6.35]	.281 [7.14]		.312 [7.92]		.375 [9.52]		.500 [12.70]		.532 [13.51]		.532 [13.51]	
7	.815 [20.70]	.250 [6.35]	.281 [7.14]		.312 [7.92]		.375 [9.52]		.500 [12.70]		.625 [15.88]		.656 [16.66]	
8	.935 [23.75]	.250 [6.35]	.281 [7.14]		.312 [7.92]		.375 [9.52]		.500 [12.70]		.625 [15.88]		.718 [18.24]	
9	1.060 [26.92]	.250 [6.35]	.281 [7.14]		.312 [7.92]		.375 [9.52]		.500 [12.70]		.625 [15.88]		.718 [18.24]	
10	1.185 [30.10]	.250 [6.35]	.281 [7.14]		.312 [7.92]		.375 [9.52]		.500 [12.70]		.625 [15.88]		.718 [18.24]	

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	

11

TABLE IV - FINISH CODE OPTIONAL

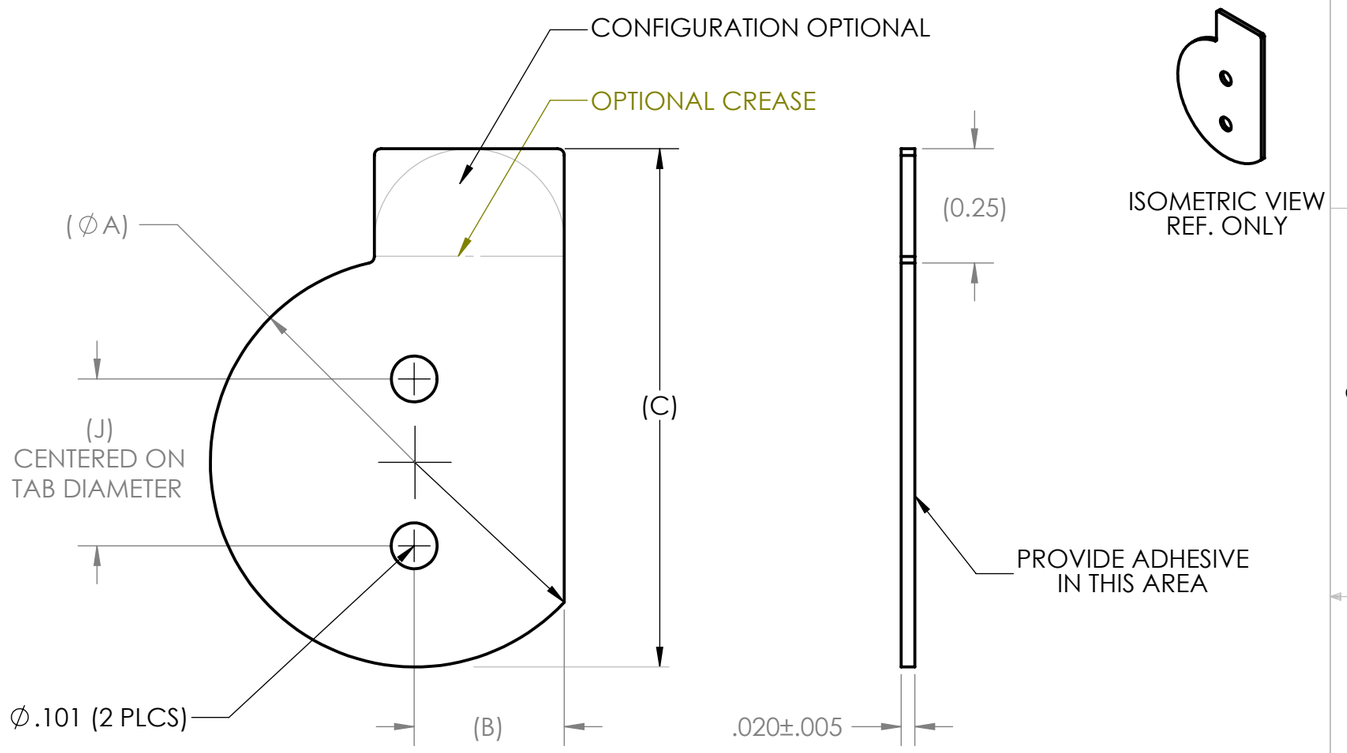
FINISH CODE	OPTIONAL SPECIAL FINISH
M	SOLID FILM LUBRICANT PER AS5272, TYPE I, NUT ONLY
C	CAD PLATE PER AMS-QQ-P-416 TYPE II, CLASS 2 ON CRES NUT ONLY.
S	SILVER PLATE PER AMS2410, NUT ONLY

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
11/12/2025	A	ADDED W1832, 181, W1836, 180 & 130	KL	DW	DW

DASH NO.	NAS1837 REF DASH NO.	INSERT FIRST DASH NO.	(J)	(∅A)	(B)	(C)
FOR NAS1832, NAS1833 AND NAS1834, W1832, 181						
-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, W1836						
-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
FOR 180, 130						
-367	T3	-632	.367	.90	.33	1.14
-367	T3	-832	.367	.90	.33	1.14
-367	T3	-1024/-1032	.367	.90	.33	1.14
-467	T6	-420/-428	.467	.90	.37	1.14
-467	T6	-518/-524	.467	.90	.37	1.14
-591	T9	-616/-624	.591	1.13	.54	1.42



PLASTIC INSTALLATION TAB

10. -367 WAS PREVIOUSLY -23 TAB.
9. REMOVE ALL BURRS AND BREAK SHARP EDGES.
8. ALL FILLET RADII R. .015 MAX.
7. DIMENSION AND TOLERANCING PER ANSI Y14.5M-1982.
6. CONFIGURATION AND ORIENTATION OF THE LIFTING SECTION OPTIONAL.
5. ADHESIVE UNDER BREAKAWAY SEGMENT PERMISSIBLE BUT NOT REQUIRED.
4. INSTALLATION TABS ARE FURNISHED WITH INSERTS AS SPECIFIED ON THE APPLICABLE STANDARD.
3. PART NUMBER EXAMPLE: 2007-500, DESIGNATES T7 INSTALLATION TAB FOR NAS1835 INSERT IN SIZE "08" AND "3".
2. FINISH: NONE SPECIFIED.
1. MATERIAL: POLYCARBONATE SHEET PER ASTM D3935 OR L-P-535, COMPOSTION A OR B TYPE II CLASS OPTIONAL, WITH 3M ADHESIVE.

NOTES:

TECH DATA SHEET

UNLESS OTHERWISE SPECIFIED:	CAGE: 0JHK5	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±2 DEG TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010 SURFACE FINISH 125 RMS	DRAWN	J.HERRIMAN	7/27/2015
	CHECKED	D.WITTEN	7/27/2015
	ENG APP	D.WITTEN	7/27/2015
INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5M - 1994	COMMENTS:		
	SOLIDWORKS STANDARD 2009 SP4.1		
DO NOT SCALE DRAWING	THIRD ANGLE PROJECTION		

WITTEN COMPANY INC.

TITLE: NAS TYPE PLASTIC INSTALLATION TAB

SIZE	DWG. NO.	REV
B	2007	A

SCALE: NONE | SHEET 1 OF 1

INSTALLATION PROCEDURES

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 In-structions.

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 pres-sure 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.

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INSTALLATION PROCEDURES

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.

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INSTALLATION PROCEDURES

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 form 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.

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INSTALLATION PROCEDURES

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 In-structions.

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.

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INSTALLATION PROCEDURES

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 In-structions.

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.

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INSTALLATION PROCEDURES

180, 181, NAS1833 AND NAS1834 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.

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INSTALLATION PROCEDURES

180, 181, NAS1833 and NAS1834 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 form 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.

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2235 SERIES INSERTS, POTTED RIVET NUT

INSTALLATION PROCEDURES

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 thte manufacturer's recommendations.

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INSTALLATION PROCEDURES

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 THR 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.

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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, 1144 or 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 3% 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 within 120 days of shipment. Custom parts are non-cancellable, non-returnable. 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

Our inventory can be found on PartsBase