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INCH-POUND

AN924 Rev 13
14 April 2014
SUPERSEDING
AN924 Rev 12
w/AMENDMENT 1
23 January 2013

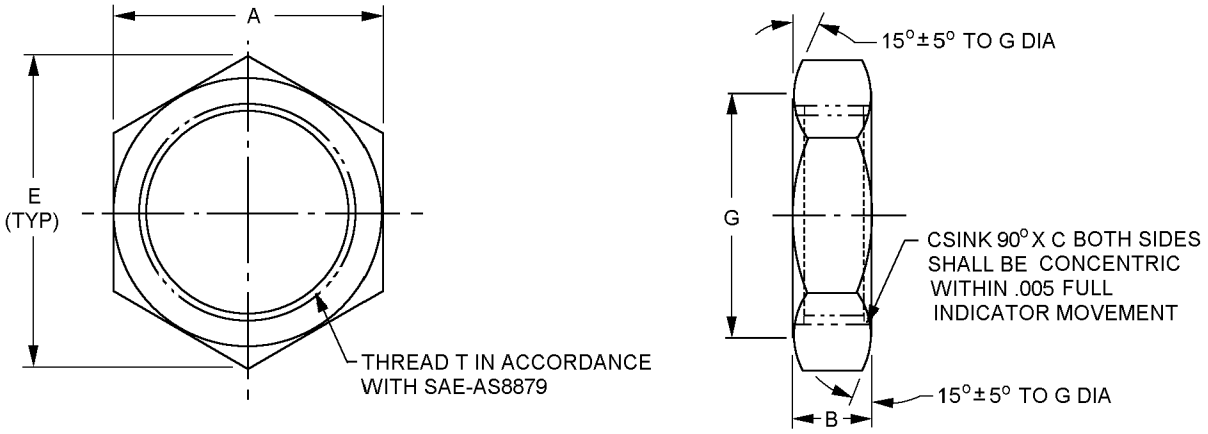
DETAIL SPECIFICATION SHEET

NUT, TUBE, BULKHEAD AND UNIVERSAL FITTING

Reinstated after 14 June 2012. Inactive for new design.
For new design, use SAE-AS5178.

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and SAE-AS4841.



Inch	mm
.005	0.13

FIGURE 1. Tube nut dimensions and configurations.

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Dash number	Tubing OD	Thread T (Ref) SAE-AS8879	A (mm)		B (mm)
-2	.125	.3125-24UNJF-3B	.563 (14.30)	+.003 (0.08) -.004 (0.10)	.219 (5.56)
-3	.188	.3750-24UNJF-3B	.625 (15.88)		.219 (5.56)
-4	.250	.4375-20UNJF-3B	.688 (17.48)		.250 (6.35)
-5	.313	.5000-20UNJF-3B	.750 (19.05)		.250 (6.35)
-6	.375	.5625-18UNJF-3B	.813 (20.65)		.266 (6.76)
-8	.500	.7500-16UNJF-3B	1.000 (25.40)		.313 (7.95)
-10	.628	.8750-14UNJF-3B	1.125 (28.58)		.359 (9.12)
-12	.750	1.0625-12UNJ-3B	1.375 (34.93)		.406 (10.31)
-16	1.000	1.3125-12UNJ-3B	1.625 (41.28)	±.016 (0.41)	
-20	1.250	1.6250-12UNJ-3B	1.938 (49.23)		
-24	1.500	1.875-12UNJ-3B	2.188 (55.58)	±.020 (0.51)	
-28	1.750	2.250-12UNJ-3B	2.563 (65.10)		
-32	2.000	2.500-12UNJ-3B	2.813 (71.45)		
-40	2.500	3.000-12UNJ-3B	3.312 (84.12)		
-48	3.500	3.500-12UNJ-3B	3.812 (96.82)		

Dash number	C Dia.	E Min.	G ±.010 (0.25) mm)	H Max (see note 5) (mm)
-2	.313 (7.95)	.629 (15.98)	.500 (12.70)	.005 (0.13)
-3	.375 (9.53)	.699 (17.75)	.562 (14.27)	
-4	.438 (11.13)	.771 (19.58)	.625 (15.88)	
-5	.500 (12.70)	.842 (21.39)	.687 (17.45)	
-6	.563 (14.30)	.914 (23.22)	.750 (19.05)	
-8	.750 (19.05)	1.127 (28.63)	.937 (23.80)	
-10	.875(22.23)	1.270 (32.26)	1.052 (26.72)	
-12	1.063 (27.00)	1.555 (39.50)	1.274 (32.36)	.008 (0.20)
-16	1.313 (33.35)	1.827 (46.41)	1.524 (38.71)	
-20	1.625 (41.28)	2.184 (55.47)	1.838 (46.69)	
-24	1.875 (47.63)	2.465 (62.61)	2.093 (53.16)	
-28	2.250 (57.15)	2.892 (73.46)	2.468 (62.69)	
-32	2.500 (63.50)	3.178 (80.72)	2.718 (69.04)	
-40	3.000 (76.20)	3.747 (95.17)	3.218 (81.74)	
-48	3.500 (88.90)	4.318 (109.68)	3.718 (94.44)	

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Unless otherwise specified tolerances are ±.016 inch (0.41 mm) angles ±0.5°.
4. Break sharp edges .and remove all hanging burrs and slivers.
5. Squareness between thread and face of hex shall not exceed H when measured at diameter G, both sides.
6. Machined surfaces shall be finished to 125µin Ra, forged surfaces shall be 250µin Ra, unless otherwise specified on the figures. Surface finish shall be in accordance with ASME B46.1.
7. For design features purposes, this standard takes precedence over documents referenced herein.
8. Referenced documents shall be of the issue in effect on date of invitation for bid.

FIGURE 1. Tube nut dimensions and configurations - Continued.

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REQUIREMENTS:

Dimensions and configuration shall be in accordance with figure 1.

Installation shall be in accordance with MS21344.

Materials shall be in accordance with SAE-AS4841, see table I for material and finish code.

Finishes shall be in accordance with SAE-AS4841, unless otherwise indicated in table I.

TABLE I. Material and finish identification codes.

Material and finish code	Material	Plating finish
Blank	Steel	Cadmium plating in accordance with SAE-AS4841. 1/
CN		Cadmium plating in accordance with SAE-AS4841 with NAVAIR trivalent chromium pretreatment (TCP) in accordance with MIL-DTL-81706, type II, class 1A.
E		NAVAIR TCP in accordance with MIL-DTL-81706, type II, class 1A.
F	Steel	Zinc plate (finish J, P, or R) with NAVAIR TCP in accordance with MIL-DTL-81706, type II, class 1A.
G	Steel	Zinc plating in accordance with ASTM B633; type VI, Fe/Zn 5. 2/
H	Steel	Aluminum-nickel in accordance with ASTM F1136/F1136M, grade 3, NC.
J	CRES type 304	In accordance with SAE-AS4841
K	CRES, type 316	In accordance with SAE-AS4841
L	Steel	Zinc-nickel in accordance with SAE-AMS2417, type 2, grade B.
M	Nickel-copper alloy UNS N04400	No additional finish.
N	High-chromium nickel alloy UNS N06690	No additional finish.
P	Steel	Zinc phosphate finish in accordance MIL-DTL-16232 type Z, class1.
R	CRES, type 321	In accordance with SAE-AS4841
S	CRES	In accordance with SAE-AS4841
T	Titanium 4/	Anodize in accordance with SAE-AMS2488 type 2.
W	Aluminum alloy 7075-T73	In accordance with SAE-AS4841
Z	Steel	Zinc plating in accordance with ASTM B633; type II or III, Fe/Zn 5, or ASTM B695, type II, class 5. 3/
ZN	Steel	Zinc plating in accordance with ASTM B633; type II or III, Fe/Zn 5, or ASTM B695, type II, class 5 with NAVAIR TCP in accordance with MIL-DTL-81706, type II, class 1A. 3/

1/ Embrittlement test need not be run.
2/ Hexavalent chromium free.
3/ Not for use in aircraft.
4/ Not for use in oxygen systems.

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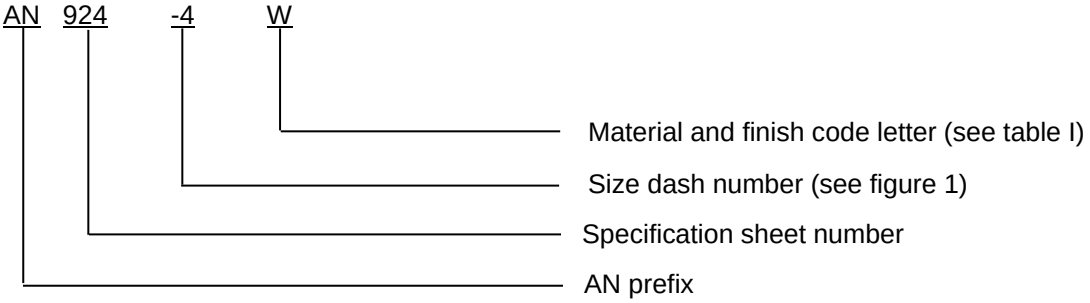
Trivalent wrenchability. When the finish has been damaged due to poor wrenchability, the surface of the connector shall be touched up using the brush plating process below. The term “trivalent wrenchability” is used to evaluate the ability of the finish to withstand abrasion from an excessive amount of wrenching.

a. Brush plating of hard chromium by electrodeposition shall be in accordance with SAE-AMS-2451/5.
b. Brush plating of medium-hardness, low stress nickel by electrodeposition shall be in accordance with SAE-AMS-2451/9.
c. Brush plating of NAVAIR TCP shall be in accordance with MIL-DTL-81706, type II, class 1A, material form 1 through 6, application method B. Example of a PIN: M817062A6B.

Part or Identifying Number (PIN): The PIN consists of the letters “AN” the specification sheet number, a dash number for pipe nut tube size, and a material and finish code letter. Unassigned PIN’s shall not be used.



PIN example: AN924-4W indicates nut 1/4 inch tubing with aluminum alloy 7075-T73.

Marking: Part shall be impression stamped with the AN PIN, and include the manufacturers CAGE, name, or trademark on the hex side only.

Cadmium is not recommended. To the users of this document, it is recommended that the use of carbon steel material with cadmium plating be used only when other materials and finishes specified in this document cannot meet performance requirements.

Supersession data:

Due to stress corrosion cracking aluminum alloys 2014 and 2024 “D” designator has been replaced by aluminum alloy 7075 “W” designator example: AN924-4D use AN924-4W.

Metal cracking due to high temperatures CRES alloy 347 “S” designator has been replaced by CRES alloy 321 “R” designator. Example: AN9244S use AN924-4R.

AN924 and MS24400 CRES nuts of like size are physically interchangeable; however MS24400 nuts coded C cannot always replace AN924 nuts coded J or K and MS24400 nuts coded S cannot always replace AN924 nuts coded S.

Table II provides a detailed cross-reference of AN924 PINs and replacement SAE-AS5178 PINs. Users are cautioned to evaluate replacements for their particular application.

CAUTION: The superseding information is valid as of the date of this specification and may be superseded by subsequent revisions of the superseding document.

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TABLE II. AN924 to SAE- AS5178 cross-reference data. 1/ 2/

AN PIN inactive for new design	Canceled AN PIN	Tube Size	Replacement AN PIN	AS PIN for new design
AN924-2		.125		AS5178-02
	AN924-2D	.125	AN924-2W	AS5178W02
AN924-2J		.125		AS5178J02
AN924-2K		.125		AS5178K02
AN924-2R		.125	AN924-2R	AS5178R02
	AN924-2S	.125		AS5178S02
AN924-2T		.125		AS5178T02
AN924-2W		.125		AS5178W02
AN924-3		.188		AS5178-03
	AN924-3D	.188	AN924-3W	AS5178W03
AN924-3J		.188		AS5178J03
AN924-3K		.188		AS5178K03
AN924-3R		.188		AS5178R03
	AN924-3S	.188	AN924-3R	AS5178S03
AN924-3T		.188		AS5178T03
AN924-3W		.188		AS5178W03
AN924-4		.250		AS5178-04
	AN924-4D	.250	AN924-4W	AS5178W04
AN924-4J		.250		AS5178J04
AN924-4K		.250		AS5178K04
AN924-4R		.250		AS5178R04
	AN924-4S	.250	AN924-4R	AS5178S04
AN924-4T		.250		AS5178T04
AN924-4W		.250		AS5178W04
AN924-5		.312		AS5178-05
	AN924-5D	.312	AN924-5W	AS5178W05
AN924-5J		.312		AS5178J05
AN924-5K		.312		AS5178K05
AN924-5R		.312		AS5178R05
	AN924-5S	.312	AN924-5R	AS5178S05
AN924-5T		.312		AS5178T05
AN924-5W		.312		AS5178W05
AN924-6		.375		AS5178-06
	AN924-6D	.375	AN924-6W	AS5178W06
AN924-6J		.375		AS5178J06
AN924-6K		.375		AS5178K06
AN924-6R		.375		AS5178R06
	AN924-6S	.375	AN924-6R	AS5178S06
AN924-6T		.375		AS5178T06
AN924-6W		.375		AS5178W06

See notes at end of table.

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TABLE II. AN924 to SAE- AS5178 cross-reference data - Continued. 1/ 2/

AN PIN inactive for new design	Canceled AN PIN	Tube Size	Replacement AN PIN	AS PIN for new design
AN924-8		.500		AS5178-08
	AN924-8D	.500	AN924-8W	AS5178W08
AN924-8J		.500		AS5178J08
AN924-8K		.500		AS5178K08
AN924-8R		.500		AS5178R08
	AN924-8S	.500	AN924-8R	AS5178S08
AN924-8T		.500		AS5178T08
AN924-8W		.500		AS5178W08
AN924-10		.625		AS5178-10
	AN924-10D	.625	AN924-10W	AS5178W10
AN924-10J		.625		AS5178J10
AN924-10K		.625		AS5178K10
AN924-10R		.625		AS5178R10
	AN924-10S	.625	AN924-10R	AS5178S10
AN924-10T		.625		AS5178T10
AN924-10W		.625		AS5178W10
AN924-12		.750		AS5178-12
	AN924-12D	.750	AN924-12W	AS5178W12
AN924-12J		.750		AS5178J12
AN924-12K		.750		AS5178K12
AN924-12R		.750		AS5178R12
	AN924-12S	.750	AN924-12R	AS5178S12
AN924-12T		.750		AS5178T12
AN924-12W		.750		AS5178W12
AN924-16		1.000		AS5178-16
	AN924-16D	1.000	AN924-16W	AS5178W16
AN924-16J		1.000		AS5178J16
AN924-16K		1.000		AS5178K16
AN924-16R		1.000		AS5178R16
	AN924-16S	1.000	AN924-16R	AS5178S16
AN924-16T		1.000		AS5178T16
AN924-16W		1.000		AS5178W16
AN924-20		1.250		AS5178-20
	AN924-20D	1.250	AN924-20W	AS5178W20
AN924-20J		1.250		AS5178J20
AN924-20K		1.250		AS5178K20
AN924-20R		1.250		AS5178R20
	AN924-20S	1.250	AN924-20R	AS5178S20
AN924-20T		1.250		AS5178T20
AN924-20W		1.250		AS5178W20

See notes at end of table.

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TABLE II. AN924 to SAE- AS5178 cross-reference data - Continued. 1/ 2/

AN PIN inactive for new design	Canceled AN PIN	Tube Size	Replacement AN PIN	AS PIN for new design
AN924-24		1.500		AS5178-24
	AN924-24D	1.500	AN924-24W	AS5178D24
AN924-24J		1.500		AS5178J24
AN924-24K		1.500		AS5178K24
AN924-24R		1.500		AS5178R24
	AN924-24S	1.500	AN924-24R	AS5178S24
AN924-24T		1.500		AS5178T24
AN924-24W		1.500		AS5178W24
AN924-28		1.750		AS5178-28
	AN924-28D	1.750	AN924-28W	AS5178W28
AN924-28J		1.750		AS5178J28
AN924-28K		1.750		AS5178K28
AN924-28R		1.750		AS5178R28
	AN924-28S	1.750	AN924-28R	AS5178R28
AN924-28T		1.750		AS5178T28
AN924-28W		1.750		AS5178W28
AN924-32		2.000		AS5178-32
	AN924-32D	2.000	AN924-32W	AS5178W32
AN924-32J		2.000		AS5178J32
AN924-32K		2.000		AS5178K32
AN924-32R		2.000		AS5178R32
	AN924-32S	2.000	AN924-32R	AS5178R32
AN924-32T		2.000		AS5178T32
AN924-32W		2.000		AS5178W32
AN924-40		2.500		AS5178-40
	AN924-40D	2.500	AN924-40W	AS5178D40
AN924-40J		2.500		AS5178J40
AN924-40K		2.500		AS5178K40
AN924-40R		2.500		AS5178R40
	AN924-40S	2.500	AN924-40R	AS5178S40
AN924-40T		2.500		AS5178T40
AN924-40W		2.500		AS5178W40
AN924-48		3.000		AS5178-48
	AN924-48D	3.000	AN924-48W	AS5178D48
AN924-48J		3.000		AS5178J48
AN924-48K		3.000		AS5178K48
AN924-48R		3.000		AS5178R48
	AN924-48S	3.000	AN924-48R	AS5178S48
AN924-48T		3.000		AS5178T48
AN924-48W		3.000		AS5178W48

1/ For new design use material designator R and W.
2/ SAE does not have plating finish designators for the following types: CN, E, F, G, H, L, M, N, P, Z, and ZN.

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Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

Referenced documents shall be of the issue in effect on date of invitations for bid.

Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue, due to the extent of the changes.

Referenced documents. In addition to SAE-AS4841, this document references the following:

MIL-DTL-16232	SAE-AMS2417
MIL-DTL-81706	SAE-AMS-2451/5
MS21344	SAE-AMS-2451/9
ASME B46.1	SAE-AMS2488
ASTM B633	SAE-AS5178
ASTM B695	SAE-AS8879
ASTM F1136/F1136M	

CONCLUDING MATERIAL

Custodians:
Army - AV
Navy - AS
Air Force - 99
DLA - CC

Review activities:
Navy - SA
Air Force - 71

Preparing activity:
DLA - CC

(Project 4730-2014-007)

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