INCH-POUND

AN838 Rev 9
w/AMENDMENT 1
27 February 2013
SUPERSEDING
AN838 Rev 9
7 June 2011

DETAIL SPECIFICATION SHEET

ELBOW, TUBE TO HOSE, 90°

Reinstated after 7 June 2011. Inactive for new design.
For new design, use SAE-AS5181.

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-AS4843/1.

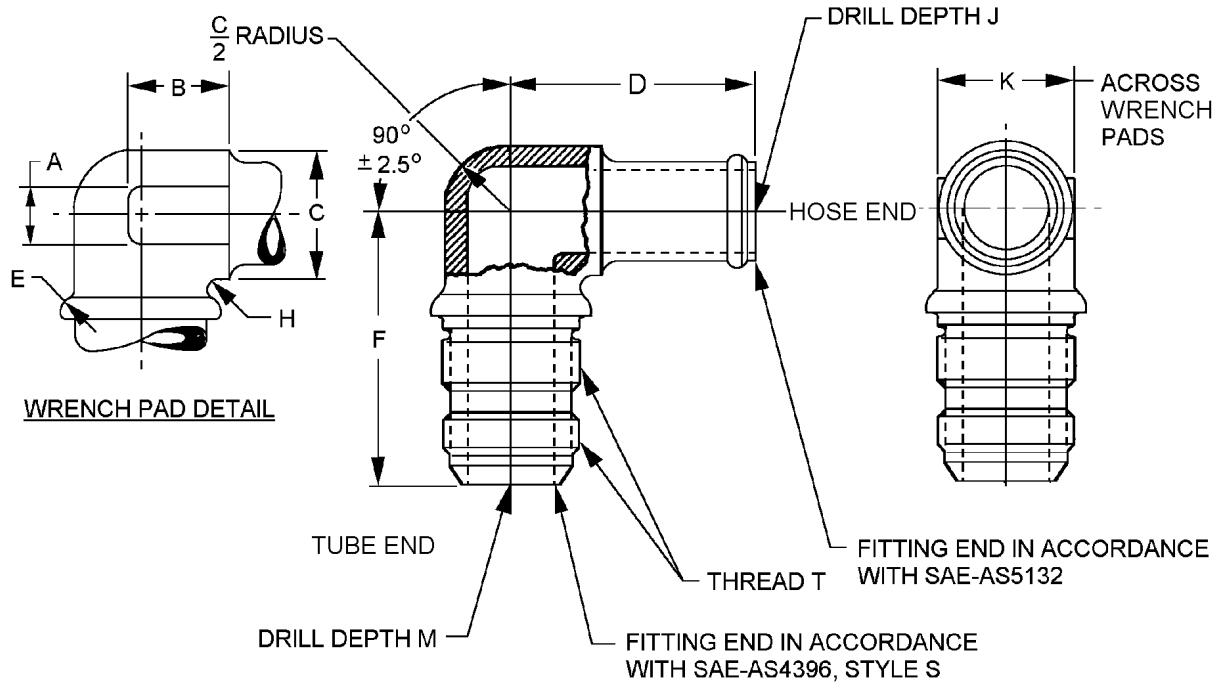


FIGURE 1. 90°Elbow.

Dash number	Hose ID inches (mm)	Tube size inches (mm)	Thread T SAE-AS8879	A Approx inches (mm)	B Approx inches (mm)
4	.250 (6.35)	.250 (6.35)	.4375-20UNJF-3A	.250 (6.25)	.313 (7.95)
6	.375 (9.53)	.375 (9.53)	.5625-18UNJF-3A	.313 (7.95)	.500 (12.70)
8	.500 (12.70)	.500 (12.70)	.7500-16UNJF-3A	.438 (11.13)	.625 (15.88)
10	.625 (15.88)	.625 (15.88)	.8750-14UNJF-3A	.438 (11.13)	.750 (19.05)
12	.750 (19.05)	.750 (19.05)	1.0625 -12UNJ-3A	.500 (12.70)	.938 (23.83)
16	1.000 (25.40)	1.000 (25.40)	1.3125 -12UNJ-3A	.563 (14.30)	1.000 (25.40)
20	1.250 (31.75)	1.250 (31.75)	1.6250 -12UNJ-3A	.563 (14.30)	1.250 (37.75)
24	1.500 (38.10)	1.500 (38.10)	1.8750 -12UNJ-3A	.625 (15.88)	1.500 (38.10)

Dash number	C Dia. inches (mm)	D +.047 (1.19) -.000 inches (mm)	E Radius inches (mm)	F +.047 (1.19) -.000 inches (mm)
4	.438 (11.13)	1.844 (46.84)	.063 (1.60)	1.563 (39.70)
6	.563 (14.30)	1.938 (49.23)		1.734 (44.04)
8	.750 (19.05)	2.031 (51.59)	.094 (2.39)	2.031 (51.59)
10	.875 (22.23)	2.094 (53.19)		2.281 (57.94)
12	1.063 (27.00)	2.250 (57.15)		2.563 (65.10)
16	1.313 (33.35)	2.375 (60.33)	.125 (3.18)	2.688 (68.28)
20	1.625 (41.28)	2.531 (64.29)		2.922 (74.22)
24	1.875 (47.63)	2.656 (67.46)		3.063 (77.80)

Dash number	H Radius inches (mm)	J +.047 (1.19) -.000 inches (mm)	K inches (mm)	M +.047 (1.19) -.000 inches (mm)
4	.063 (1.57)	1.906 (48.41)	.438 (11.13)	1.594 (40.49)
6	.094 (2.39)	2.000 (50.80)	.563 (14.30)	1.766 (44.86)
8		2.109 (53.57)	.750 (19.05)	2.109 (53.57)
10	.125 (3.18)	2.172 (55.17)	.875 (22.23)	2.391 (60.73)
12		2.375 (60.33)	1.063 (27.00)	2.688 (68.28)
16		2.547 (64.69)	1.313 (33.35)	2.875 (73.03)
20	.188 (4.78)	2.766 (70.26)	1.625 (41.28)	3.156 (80.16)
24		2.938 (74.63)	1.875 (47.63)	3.359 (85.32)

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Unless otherwise specified tolerances are ±.010 inch (0.25 mm).
4. Break sharp edges .and remove all hanging burrs and slivers
5. Machined surfaces shall be finished to 125µ in Ra, forged surfaces shall be 250µ inches Ra, unless otherwise specified on the figures. Surface finish shall be in accordance with ASME B46.1.
6. For design features purposes, this standard takes precedence over documents referenced herein.

FIGURE 1. 90° Elbow - Continued.

REQUIREMENTS:

Dimensions and configuration shall be in accordance with figure 1.

Installation shall be in accordance with MS21344.

Materials and finishes shall be in accordance with SAE-AS4843/1, see table I for material and finish code.

TABLE I. Material and finish code letters.

Material code	Material	Protective chemical finish 3/ 4/
No code 1/	Copper alloy, type 377 forging in accordance with ASTM B124/B124M or half hard forging or bar in accordance with ASTM B138/B138M or bar in accordance with SAE-AMS4614	No finish
BC 1/	Copper alloy, type 377 forging in accordance with ASTM B124/B124M or half hard forging or bar in accordance with ASTM B138/B138M or bar in accordance with SAE-AMS4614	Cadmium in accordance with SAE-AMS-QQ-P-416, type II, class 3
D 2/	Type 2014-T6 aluminum alloy forging in accordance with SAE-AMS-QQ-A-367 or SAE-AMS4133, or type 2024-T6 aluminum alloy bar in accordance with SAE-AMS-QQ-A-225/6, or type 2024-T851 aluminum alloy bar in accordance with SAE-AMS-QQ-A-225/6 or SAE-AMS4339	Anodize in accordance with SAE-AMS2472 or MIL-A-8625, type II, class 2, dye blue, duplex seal in accordance with procurement specification.
DV 2/	Type 2014-T6 aluminum alloy forging in accordance with SAE-AMS-QQ-A-367 or SAE-AMS4133, or type 2024-T6 aluminum alloy bar in accordance with SAE-AMS-QQ-A-225/6, or type 2024-T851 aluminum alloy bar in accordance with SAE-AMS-QQ-A-225/6 or SAE-AMS4339	High purity aluminum in accordance with MIL-DTL-83488, class 3, type II with maximum coating thickness of .0005 inch. Glass bead peen pressure shall be 25 psi (1.72 bar) maximum.
J	Type 304 corrosion resistant steel forging or bar in accordance with SAE-AMS-QQ-S-763 or SAE-AMS5639	Passivate in accordance with SAE-AMS2700, type VI or VII
K	Type 316 corrosion resistant steel forging or bar in accordance with SAE-AMS-QQ-S-763 or SAE-AMS5648	Passivate in accordance with SAE-AMS2700, type VI or VII

See notes at end of table

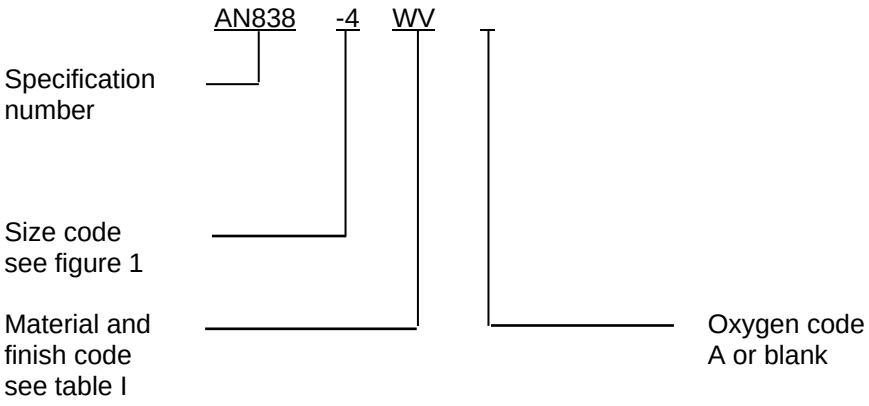
TABLE I. Material and finish code letters - Continued.

Material code	Material	Protective chemical finish 3/ 4/
R	Type 321 corrosion resistant steel forging or bar in accordance with SAE-AMS-QQ-S-763 or SAE-AMS5645.	Passivate in accordance with SAE-AMS2700, type VI or VII
W 2/	Type 7075-T73 aluminum alloy forging in accordance with SAE-AMS-QQ-A-367 or SAE-AMS4141, or type 7075-T73 aluminum alloy bar in accordance with SAE-AMS-QQ-A-225/9, in accordance with type 7075-T7351 Aluminum alloy bar in accordance with SAE-AMS4124.	Anodize in accordance with SAE-AMS2472 or MIL-A-8625, type II, class 2, dye brown similar to color 10080 in accordance with FED-STD-595, duplex seal in accordance with procurement specification.
WV 2/	Type 7075-T73 aluminum alloy forging in accordance with SAE-AMS-QQ-A-367 or SAE-AMS4141, or type 7075-T73 aluminum alloy bar in accordance with SAE-AMS-QQ-A-225/9, in accordance with type 7075-T7351 Aluminum alloy bar in accordance with SAE-AMS4124.	High purity aluminum in accordance with MIL-DTL-83488, class 3, type II with maximum coating thickness of .0005 inch. Glass bead peen pressure shall be 25 psi (1.72 bar) maximum
T 3/	Titanium	Anodize in accordance with SAE-AMS2488, type 2

1/ Material code was dash on previous revisions, changed to agree with SAE-ARP1590.
2/ Aluminum code D is inactivated, use code W.
3/ Titanium and cadmium shall not be used in oxygen systems.
4/ Cadmium shall not be used in potable water systems.

Oxygen systems for aerospace, shipboard, and ground support equipment. Parts for use on oxygen systems shall be identified in the PIN as code “A” and shall be furnished cleaned, packaged, and labeled in accordance with SAE-AS611 to a process approved by the user.

PIN: The PIN consists of the prefix “AN” the specification sheet number, a dash number for tube and hose size, material code letter, finish code, and oxygen code. Unassigned PIN’s shall not be used.



PIN examples:

AN838-4W indicates a 90° elbow 1/4 inch tube and hose size, aluminum alloy 7075-T73.

AN838-4WV indicates a 90° elbow 1/4 inch tube and hose size, aluminum alloy 7075-T73 finish with high purity aluminum.

AN838-4WA indicates a 90° elbow 1/2 inch tube and hose size, aluminum alloy 7075-T73 for use on oxygen systems.

Marking: Part shall be permanently marked with the AN PIN, and include the manufacturers CAGE, name, or trademark.

Table II provides a detailed cross-reference of AN838 PINs and replacement SAE-AS5181 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.

TABLE II. Cross-reference data. 1/

AN PIN inactive for new design	Hose Size	Tube Size	Replacement AS PIN for new design
AN838-4	0.250	0.250	AS5181B04
AN838-4D	0.250	0.250	AS5181W04
AN838-4J	0.250	0.250	AS5181J04
AN838-4K	0.250	0.250	AS5181K04
AN838-4R	0.250	0.250	AS5181R04
AN838-4S	0.250	0.250	AS5181R04
AN838-4W	0.250	0.250	AS5181W04
AN838-6	0.375	0.375	AS5181B06
AN838-6D	0.375	0.375	AS5181W06
AN838-6J	0.375	0.375	AS5181J06
AN838-6K	0.375	0.375	AS5181K06
AN838-6R	0.375	0.375	AS5181R06
AN838-6S	0.375	0.375	AS5181R06
AN838-6W	0.375	0.375	AS5181W06
AN838-8	0.500	0.500	AS5181B08
AN838-8D	0.500	0.500	AS5181W08
AN838-8J	0.500	0.500	AS5181J08
AN838-8K	0.500	0.500	AS5181K08
AN838-8R	0.500	0.500	AS5181R08
AN838-8S	0.500	0.500	AS5181R08
AN838-8W	0.500	0.500	AS5181W08
AN838-10	0.625	0.625	AS5181B10
AN838-10D	0.625	0.625	AS5181W10
AN838-10J	0.625	0.625	AS5181J10
AN838-10K	0.625	0.625	AS5181K10
AN838-10R	0.625	0.625	AS5181R10
AN838-10S	0.625	0.625	AS5181R10
AN838-10W	0.625	0.625	AS5181W10

See note at end of table.

TABLE II. Cross-reference data - Continued. 1/

AN PIN inactive for new design	Hose Size	Tube Size	Replacement AS PIN for new design
AN838-12	0.750	0.750	AS5181B12
AN838-12D	0.750	0.750	AS5181W12
AN838-12J	0.750	0.750	AS5181J12
AN838-12K	0.750	0.750	AS5181K12
AN838-12R	0.750	0.750	AS5181R12
AN838-12S	0.750	0.750	AS5181R12
AN838-12W	0.750	0.750	AS5181W12
AN838-16	1.000	1.000	AS5181B16
AN838-16D	1.000	1.000	AS5181W16
AN838-16J	1.000	1.000	AS5181J16
AN838-16K	1.000	1.000	AS5181K16
AN838-16R	1.000	1.000	AS5181R16
AN838-16S	1.000	1.000	AS5181R16
AN838-16W	1.000	1.000	AS5181W16
AN838-20	1.250	1.250	AS5181B20
AN838-20D	1.250	1.250	AS5181W20
AN838-20J	1.250	1.250	AS5181J20
AN838-20K	1.250	1.250	AS5181K20
AN838-20R	1.250	1.250	AS5181R20
AN838-20S	1.250	1.250	AS5181R20
AN838-20W	1.250	1.250	AS5181W20
AN838-24	1.500	1.500	AS5181B24
AN838-24D	1.500	1.500	AS5181W24
AN838-24J	1.500	1.500	AS5181J24
AN838-24K	1.500	1.500	AS5181K24
AN838-24R	1.500	1.500	AS5181R24
AN838-24S	1.500	1.500	AS5181R24
AN838-24W	1.500	1.500	AS5181W24

1/ For new design use material designators R and W.

Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Referenced documents. In addition to SAE-AS4843/1, this document references the following:

FED-STD-595/10080	SAE-AMS-QQ-S-763	SAE-AMS4614
MIL-A-8625	SAE-AMS-QQ-P-416	SAE-AMS5639
MIL-DTL-83488	SAE-ARP1590	SAE-AMS5645
MS21344	SAE-AMS2472	SAE-AMS5648
ASME B46.1	SAE-AMS2488	SAE-AS611
ASTM B138/B138M	SAE-AMS2700	SAE-AS4396
ASTM B124/B124M	SAE-AMS4124	SAE-AS5132
SAE-AMS-QQ-A-225/6	SAE-AMS4133	SAE-AS5181
SAE-AMS-QQ-A-225/9	SAE-AMS4141	SAE-AS8879
SAE-AMS-QQ-A-367	SAE-AMS4339	

CONCLUDING MATERIAL

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

Preparing activity:
DLA - CC

(Project 4730-2013-010)

Review activities:
Navy - SA
Air Force - 71

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