FEDERAL SUPPLY CLASS
4730

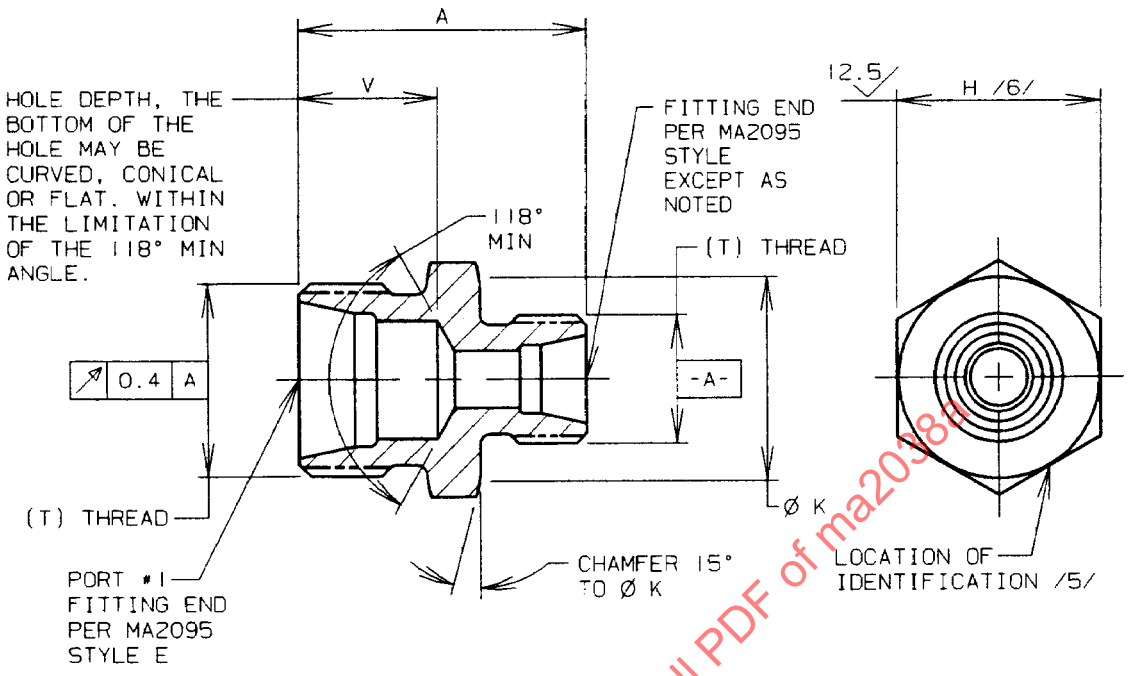


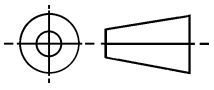

FIGURE 1 - UNION, REDUCER

TABLE 1 - DIMENSIONS, OVERALL LENGTH

| PORT #2 SIZE | A PORT #1 SIZE 6 | A PORT #1 SIZE 08 | A PORT #1 SIZE 10 | A PORT #1 SIZE 12 | A PORT #1 SIZE 14 | A PORT #1 SIZE 16 | A PORT #1 SIZE 20 | A PORT #1 SIZE 25 | A PORT #1 SIZE 32 | A PORT #1 SIZE 40 |
|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 23.0 | 24.0 | 26.0 | 26.0 | 27.0 | 27.0 | 27.0 | 28.0 | 29.0 | 31.0 |
| 06 | - | 25.0 | 27.0 | 27.0 | 28.0 | 28.0 | 28.0 | 29.0 | 30.0 | 32.0 |
| 08 | - | - | 28.0 | 28.0 | 29.0 | 29.0 | 29.0 | 30.0 | 31.0 | 33.0 |
| 10 | - | - | - | 29.0 | 30.0 | 30.0 | 30.0 | 31.0 | 32.0 | 34.0 |
| 12 | - | - | - | - | 30.0 | 30.0 | 30.0 | 31.0 | 32.0 | 34.0 |
| 14 | - | - | - | - | - | 30.0 | 30.0 | 31.0 | 32.0 | 34.0 |
| 16 | - | - | - | - | - | - | 30.0 | 31.0 | 32.0 | 34.0 |
| 20 | - | - | - | - | - | - | - | 31.0 | 32.0 | 34.0 |
| 25 | - | - | - | - | - | - | - | - | 33.0 | 35.0 |
| 32 | - | - | - | - | - | - | - | - | - | 36.0 |



THIRD ANGLE PROJECTION



ISSUED 1986-03 REVISED 1992-12 REAFFIRMED 2000-10

CUSTODIAN: SAE G-3/G-3B

PROCUREMENT SPECIFICATION: /4/ MIL-F-18280

SAE The Engineering Society For Advancing Mobility Land Sea Air and Space® INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

# AEROSPACE STANDARD

UNION, REDUCER, FLARELESS TUBE, METRIC

**MA2038**
SHEET 1 OF 4

**REV. A**



**TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790 SAE WEB ADDRESS: http://www.sae.org**

TABLE 2 - DIMENSION, HOLE DEPTH

| PORT #2 SIZE | V +0/-0.5 PORT #1 SIZE 6 | V +0/-0.5 PORT #1 SIZE 08 | V +0/-0.5 PORT #1 SIZE 10 | V +0/-0.5 PORT #1 SIZE 12 | V +0/-0.5 PORT #1 SIZE 14 | V +0/-0.5 PORT #1 SIZE 16 | V +0/-0.5 PORT #1 SIZE 20 | V +0/-0.5 PORT #1 SIZE 25 | V +0/-0.5 PORT #1 SIZE 32 | V +0/-0.5 PORT #1 SIZE 40 |
|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 12.0 | 12.5 | 13.5 | 13.0 | 13.5 | 13.0 | 12.0 | 12.0 | 11.0 | 10.5 |
| 06 | - | 13.0 | 13.5 | 13.0 | 13.5 | 13.0 | 12.5 | 12.0 | 11.0 | 11.0 |
| 08 | - | - | 14.0 | 13.5 | 14.0 | 13.5 | 13.0 | 12.5 | 11.5 | 11.5 |
| 10 | - | - | - | 14.0 | 14.5 | 14.0 | 13.5 | 13.0 | 12.0 | 12.0 |
| 12 | - | - | - | - | 15.0 | 14.5 | 14.0 | 13.5 | 12.5 | 12.5 |
| 14 | - | - | - | - | - | 15.0 | 14.5 | 14.0 | 13.5 | 13.0 |
| 16 | - | - | - | - | - | - | 15.0 | 14.5 | 14.0 | 13.0 |
| 20 | - | - | - | - | - | - | - | 16.0 | 15.0 | 14.5 |
| 25 | - | - | - | - | - | - | - | - | 17.0 | 16.0 |
| 32 | - | - | - | - | - | - | - | - | - | 18.0 |

TABLE 3 - PORT SIZES, CORRESPONDING THREADS, HEX SIZES, AND WEIGHTS

| BASIC NO. MA2038 /11/ SIZE CODE | (NOMINAL TUBE SIZE DN) /3/ | T PER MA1370 | H | K ±0.2 | KG/EA MAX ALUM | KG/EA MAX CRES | KG/EA MAX TI |
|---|---|---|---|---|---|---|---|
| 06 | 06 | MJ12 X 1.25 | 13.73-14.00 | 13.71 | 0.00576 | 0.0160 | 0.00913 |
| 08 | 08 | MJ14 X 1.5 | 16.73-17.00 | 16.71 | 0.00779 | 0.0216 | 0.0123 |
| 10 | 10 | MJ16 X 1.5 | 16.73-17.00 | 16.71 | 0.00970 | 0.0269 | 0.0154 |
| 12 | 12 | MJ18 X 1.5 | 18.67-19.00 | 18.65 | 0.0117 | 0.0323 | 0.0185 |
| 14 | 14 | MJ20 X 1.5 | 21.67-22.00 | 21.65 | 0.0156 | 0.0432 | 0.0247 |
| 16 | 16 | MJ22 X 1.5 | 23.67-24.00 | 23.65 | 0.0176 | 0.0487 | 0.0278 |
| 20 | 20 | MJ27 X 1.5 | 29.67-30.00 | 29.65 | 0.0274 | 0.0759 | 0.0434 |
| 25 | 25 | MJ33 X 1.5 | 35.38-36.00 | 35.36 | 0.0426 | 0.118 | 0.0675 |
| 32 | 32 | MJ42 X 2 | 45.38-46.00 | 45.36 | 0.0692 | 0.192 | 0.110 |
| 40 | 40 | MJ50 X 2 | 54.26-55.00 | 54.24 | 0.0965 | 0.268 | 0.153 |

NOTES:

/1/ MATERIAL:

a. NO CODE LETTER (USE HYPHEN): TYPE 1137 STEEL BAR PER ASTM A 108 OR TYPE 4130 STEEL BAR PER MIL-S-6758
b. CODE LETTER D: TYPE 2024-T6 ALUMINUM ALLOY BAR PER AMS 4112 OR TYPE 2024-T851 ALUMINUM ALLOY BAR PER QQ-A-225/6
c. CODE LETTER J: TYPE 304 CORROSION RESISTANT STEEL BAR PER QQ-S-763, CLASS 304
d. CODE LETTER K: TYPE 316 CORROSION RESISTANT STEEL BAR PER QQ-S-763, CLASS 316
e. CODE LETTER R: TYPE 321 CORROSION RESISTANT STEEL BAR PER QQ-S-763, CLASS 321
f. CODE LETTER S (INACTIVE FOR USE): TYPE 347 CORROSION RESISTANT STEEL BAR PER QQ-S-763, CLASS 347
g. CODE LETTER T: TYPE 6AL-4V TITANIUM ALLOY BAR PER AMS 4928
h. CODE LETTER W: TYPE 7075-T7351 ALUMINUM ALLOY BAR PER AMS 4124
i. CODE S MATERIAL MAY BE USED UNTIL STOCK IS DEPLETED, CODE R MATERIAL MAY BE SUBSTITUTED WHENEVER CODE S MATERIAL IS SPECIFIED.

2. FINISH:

a. NO MATERIAL CODE LETTER (HYPHEN): CADMIUM PLATE PER QQ-P-416, TYPE II, CLASS 2. DIP IN OIL PER MIL-H-6083 OR MIL-H-46170.
b. MATERIAL CODE LETTER T: FLUORIDE PHOSHATE CONVERSION COAT PER AMS 2486.
c. MATERIAL CODE LETTER D AND W: ANODIZE PER AMS 2471.
d. MATERIAL CODE LETTER J, K, R, AND S: PASSIVATE PER QQ-P-35, TYPE VI OR VII.

/3/ DN = NOMINAL TUBE OUTSIDE DIAMETER

/4/ PROCUREMENT SPECIFICATION: MA2005 (ISO 7169) THIS PART SHALL BE QUALIFIED TO THE PROCUREMENT SPECIFICATION AS APPLICABLE IN A COMPLETE ASSEMBLY. USERS OF THIS STANDARD ARE ADVISED TO CONTROL SOURCE APPROVAL(S) BY STANDARD PAGE SUPPLEMENT SHEET OR SIMILAR MEANS.

/5/ IDENTIFICATION AT LOCATION SHOWN:

a. MARK PER AS478 CLASS C OR D OR METHOD 7A3, 15A3, OR 15B.
b. MANUFACTURER'S NAME, TRADEMARK OR CAGE CODE, BASIC PART NUMBER, AND MATERIAL CODE LETTER.

/6/ PORT #1 DETERMINES HEX SIZE.

7. THIS PART IS DESIGNED FOR USE IN SYSTEMS AT TYPE II TEMPERATURE (-55 TO 135 °C) WITH OPERATING PRESSURES AS FOLLOWS:

a. ALL SIZES TITANIUM ALLOY AND CORROSION RESISTANT STEEL AND SIZES -05 THROUGH -20 ALUMINUM ALLOY AT CLASS E (21 000 kPa)
b. SIZES -25 AND -32 ALUMINUM ALLOY AT CLASS B (10 500 kPa)
c. SIZE -40 ALUMINUM ALLOY AT CLASS A (4000 kPa)
d. TYPE AND CLASSES PER MA2001 (ISO 6771)

8. SURFACE TEXTURE: SYMBOLS PER ANSI Y14.36; REQUIREMENTS PER ANSI/ASME B46.1. UNLESS OTHERWISE SPECIFIED, SURFACES TO BE 3.2 µm Ra.

9. BREAK EDGES 0.1 TO 0.4 UNLESS OTHERWISE SPECIFIED.