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REV.  
B

MA2048

FEDERAL SUPPLY CLASS  
4730

# RATIONALE

MA2048B HAS BEEN REAFFIRMED TO COMPLY WITH THE SAE FIVE-YEAR REVIEW POLICY.

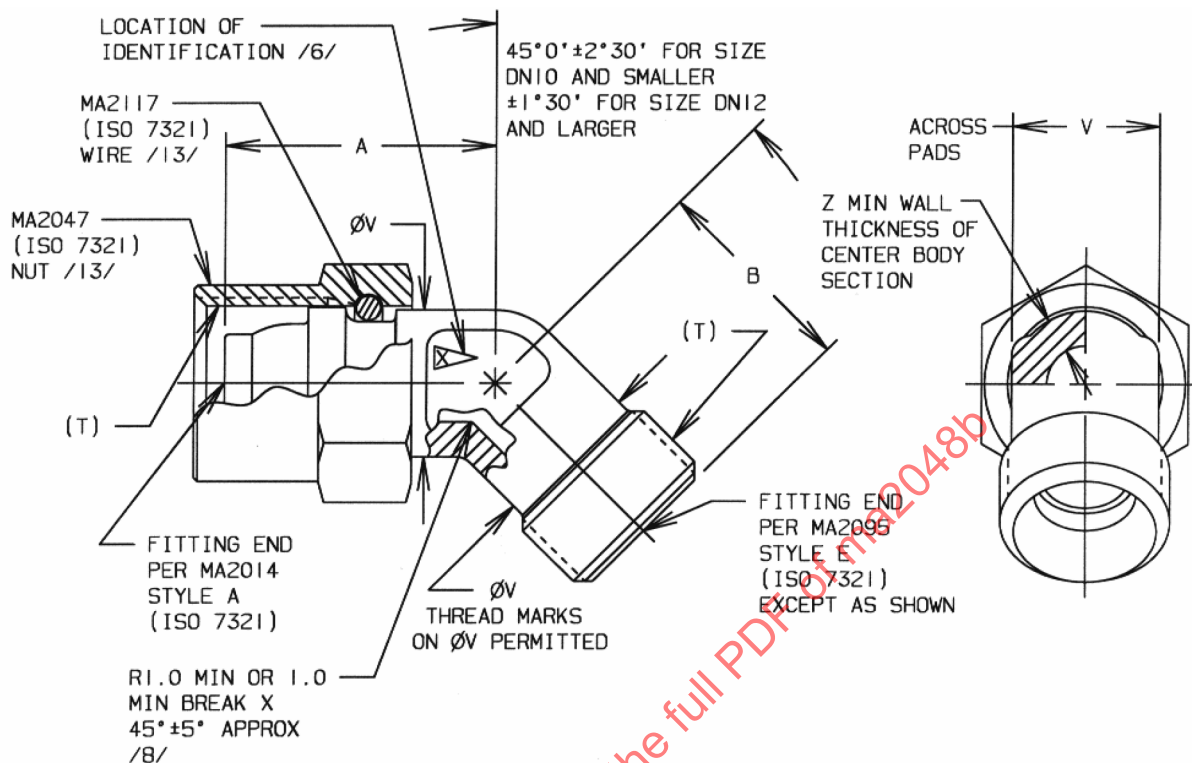


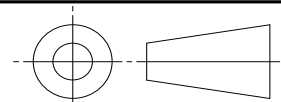
FIGURE 1 - ELBOW, 45°, FLARELESS

TABLE 1 - DIMENSIONS AND WEIGHTS

| BASIC NO.<br>MA2048<br>/19/<br>SIZE CODE | (NOMINAL<br>TUBE<br>SIZE DN)<br>/1/<br>SIZE | T THREAD<br>PER MA1370<br>(ISO 5855-3) |             | A    | B  | V           | Z   | Kg/100<br>APPROX,<br>REF<br>CRES | Kg/100<br>APPROX,<br>REF<br>TI |
|------------------------------------------|---------------------------------------------|----------------------------------------|-------------|------|----|-------------|-----|----------------------------------|--------------------------------|
|                                          |                                             | EXT<br>4g6g                            | INT<br>4H5H |      |    |             |     |                                  |                                |
| 05                                       | 5                                           | MJ 10 X 1                              |             | 20.5 | 15 | 7.50-8.06   | 1.3 | 1.96                             | 1.12                           |
| 06                                       | 6                                           | MJ 12 X 1.25                           |             | 21.0 | 16 | 9.50-10.06  | 1.8 | 2.99                             | 1.70                           |
| 08                                       | 8                                           | MJ 14 X 1.5                            |             | 21.8 | 17 | 11.40-12.06 | 1.8 | 4.35                             | 2.46                           |
| 10                                       | 10                                          | MJ 16 X 1.5                            |             | 24.0 | 20 | 13.40-14.06 | 2.0 | 5.84                             | 3.30                           |
| 12                                       | 12                                          | MJ 18 X 1.5                            |             | 26.5 | 21 | 15.4 -16.1  | 2.0 | 7.70                             | 4.37                           |
| 14                                       | 14                                          | MJ 20 X 1.5                            |             | 28.5 | 23 | 17.4 -18.1  | 2.0 | 9.39                             | 5.32                           |
| 16                                       | 16                                          | MJ 22 X 1.5                            |             | 30.5 | 24 | 19.4 -20.1  | 2.0 | 11.6                             | 6.57                           |
| 20                                       | 20                                          | MJ 27 X 1.5                            |             | 36.0 | 28 | 23.4 -24.1  | 2.5 | 18.2                             | 10.3                           |
| 25                                       | 25                                          | MJ 33 X 1.5                            |             | 40.0 | 32 | 29.4 -30.1  | 2.5 | 31.4                             | 17.7                           |
| 32                                       | 32                                          | MJ 42 X 2                              |             | 46.0 | 36 | 38.2 -39.2  | 3.5 | 51.4                             | 28.8                           |

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<http://www.sae.org/technical/standards/MA2048B>

THIRD ANGLE PROJECTION



CUSTODIAN: G-3/G-3B

PROCUREMENT SPECIFICATION: /5/ MA2005 (ISO 7169)



## AEROSPACE STANDARD

(R) FITTING ASSEMBLY, ELBOW, 45°,  
THIN WALL, RETAINED NUT,  
FLARELESS, METRIC

MA2048  
SHEET 1 OF 3

REV.  
B

NOTES:

- /1/ DN = NOMINAL TUBE OUTSIDE DIAMETER.
- /2/ MATERIAL:
- a. CODE LETTER J -
    - ELBOW - TYPE 304 CORROSION RESISTANT STEEL PER AMS 5639 OR AMS-QQ-S-763.
    - NUT - CODE LETTER J OF MA2047 REFERENCE (TYPE 304 CORROSION RESISTANT STEEL).
    - WIRE - PER MA2117 REFERENCE (TYPE 302 OR 305 CORROSION RESISTANT STEEL).
  - b. CODE LETTER K -
    - ELBOW - TYPE 316 CORROSION RESISTANT STEEL PER AMS 5648 OR AMS-QQ-S-763.
    - NUT - CODE LETTER K OF MA2047 REFERENCE (TYPE 316 CORROSION RESISTANT STEEL).
    - WIRE - PER MA2117 REFERENCE (TYPE 302 OR 305 CORROSION RESISTANT STEEL).
  - c. CODE LETTER R -
    - ELBOW - TYPE 321 CORROSION RESISTANT STEEL PER AMS 5645 OR AMS-QQ-S-763.
    - NUT - CODE LETTER R OF MA2047 REFERENCE (TYPE 321 CORROSION RESISTANT STEEL).
    - WIRE - PER MA2117 REFERENCE (TYPE 302 OR 305 CORROSION RESISTANT STEEL).
  - d. CODE LETTER T -
    - ELBOW - TYPE 6AL-4V TITANIUM ALLOY PER AMS 4928.
    - NUT - CODE LETTER T OF MA2047 REFERENCE (TYPE 6AL-4V TITANIUM ALLOY).
    - WIRE - PER MA2117 REFERENCE (TYPE 302 OR 305 CORROSION RESISTANT STEEL).
3. HEAT TREATMENT: NONE.
4. FINISH:
- a. MATERIAL CODE LETTERS J, K OR R -
    - ELBOW - PASSIVATE PER AMS-QQ-P-35, TYPE VI OR VII.
    - NUT - MATERIAL CODE LETTERS J, K OR R OF MA2047 REFERENCE (PASSIVATE).
    - WIRE - PER MA2117 REFERENCE (PASSIVATE AND COAT WITH SOLID FILM LUBRICANT).
  - b. MATERIAL CODE LETTER T -
    - ELBOW - FLUORIDE PHOSPHATE CONVERSION COAT PER AMS 2486.
    - NUT - MATERIAL CODE LETTER T OF MA2047 REFERENCE (FLUORIDE PHOSPHATE CONVERSION COAT).
    - WIRE - PER MA2117 REFERENCE (PASSIVATE AND COAT WITH SOLID FILM LUBRICANT).
- /5/ PROCUREMENT SPECIFICATION: MA2005 (ISO 7169) EXCEPT AS SPECIFIED ON THIS STANDARD. 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 BY STANDARD PAGE SUPPLEMENT SHEETS OR SIMILAR MEANS.
- /6/ IDENTIFICATION AT LOCATION SHOWN: MARK PER AS478 CLASS C OR METHOD 7A3, 15A3, OR 15B.
- a. FOR SIZES DN10 AND SMALLER: MANUFACTURER'S NAME, CAGE CODE OR TRADEMARK AND MATERIAL CODE LETTER.
  - b. FOR SIZES DN12 AND LARGER: MANUFACTURER'S NAME, CAGE CODE OR TRADEMARK, BASIC PART NUMBER AND MATERIAL CODE LETTER.
7. THIS PART IS DESIGNED FOR USE IN SYSTEMS AT TYPE II TEMPERATURE (-55° TO 135°C) WITH OPERATING PRESSURE AS FOLLOWS:
- a. SIZES DN05 THROUGH DN25 AT 28,000 kPa.
  - b. SIZE DN32 AT 14,000 kPa.
- /8/ RADIUS OR BREAK APPLICABLE FOR TITANIUM PARTS ONLY.

|                                                                                     |                                                                                    |                               |                         |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------|-------------------------|
|  | <b>AEROSPACE STANDARD</b>                                                          | <b>MA2048</b><br>SHEET 2 OF 3 | <b>REV.</b><br><b>B</b> |
|                                                                                     | (R) FITTING ASSEMBLY, ELBOW, 45°,<br>THIN WALL, RETAINED NUT,<br>FLARELESS, METRIC |                               |                         |