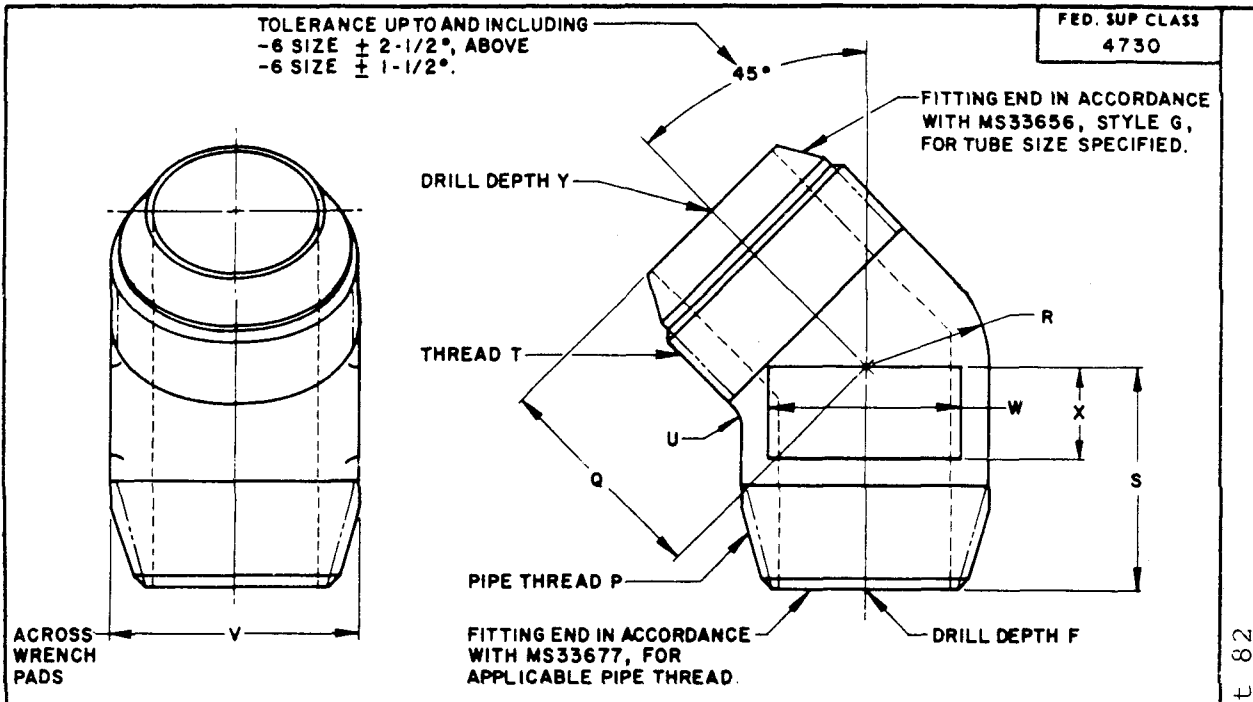


Review activities: ARMY - ME, AV
DLA - CS
User activities:

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D MATERIAL: STEEL; ALUMINUM ALLOY; COPPER ALLOY; CORROSION RESISTANT STEEL (CRES); BARS, SHAPES, OR FORGINGS (SEE PROCUREMENT SPECIFICATION).
 FINISH: SEE PROCUREMENT SPECIFICATION.
 BREAK ALL SHARP EDGES AND REMOVE ALL HANGING BURRS AND SLIVERS.
 DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCE: DECIMALS +.016.
 AT OPTION OF MANUFACTURER THE SMALLER DIA MAY BE DRILLED THROUGH THE FITTING FROM PORT TO PORT.
 NO CODE LETTER IN PART NUMBER FOR CARBON STEEL.
 ADD B AFTER DASH NO. FOR COPPER ALLOY.
 ADD D AFTER DASH NO. FOR ALUMINUM ALLOY (EXCEPT 7075-T73).
 ADD J AFTER DASH NO. FOR CRES, CLASS 304.
 ADD K AFTER DASH NO. FOR CRES, CLASS 316.
 ADD S AFTER DASH NO. FOR CRES, CLASS 347.
 ADD W AFTER DASH NO. FOR 7075-T73 ALUMINUM ALLOY.
 EXAMPLE OF PART NUMBER: MS20823-4 - ELBOW, 1/4 TUBING OD AND 1/8 PIPE THREAD, CARBON STEEL.
 MS20823-4B - ELBOW, 1/4 TUBING OD AND, 1/8 PIPE THREAD, COPPER ALLOY.
 MS20823-4D - ELBOW, 1/4 TUBING OD AND, 1/8 PIPE THREAD, ALUMINUM ALLOY (EXCEPT 7075-T73).
 MS20823-8J - ELBOW, 1/2 TUBING OD AND, 3/8 PIPE THREAD, CRES, CLASS 304.
 MS20823-8K - ELBOW, 1/2 TUBING OD AND, 3/8 PIPE THREAD, CRES, CLASS 316.
 MS20823-8S - ELBOW, 1/2 TUBING OD AND, 3/8 PIPE THREAD, CRES, CLASS 347.
 MS20823-8W - ELBOW, 1/2 TUBING OD AND, 3/8 PIPE THREAD, 7075-T73 ALUMINUM ALLOY.
 CERTAIN PROVISIONS OF THE DESIGN CHARACTERISTICS OF THIS STANDARD (SCREW THREADS, HEXAGON SIZES, AND UNDERCUT DIMENSIONS) ARE THE SUBJECT OF INTERNATIONAL STANDARDIZATION AGREEMENT ABC AIR STD 17/15. WHEN REVISION OR CANCELLATION OF THIS STANDARD IS PROPOSED, THE DEPARTMENTAL CUSTODIANS WILL INFORM THEIR RESPECTIVE DEPARTMENTAL STANDARDIZATION OFFICES SO THAT APPROPRIATE ACTION WILL BE TAKEN RESPECTING THE INTERNATIONAL AGREEMENT CONCERNED.
 FOR DESIGN FEATURE PURPOSES, THIS STANDARD TAKES PRECEDENCE OVER PROCUREMENT DOCUMENTS REFERENCED HEREIN. REFERENCED DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF INVITATIONS FOR BID.
 INACTIVE FOR DESIGN AFTER 9 JAN 64, EXCEPT FOR USE ON OXYGEN SYSTEMS AND GROUND SERVICE EQUIPMENT.
 SEE MIL-STD-962 FOR STATUS CRITERIA.

D DENOTES CHANGES

CANCELLED

P.A. AIR FORCE - 82 D Other Cust ARMY - AR NAVY - AS AIR FORCE - 99	TITLE	MILITARY STANDARD
	ELBOW, PIPE TO TUBE, 45°	MS 20823
PROCUREMENT SPECIFICATION MIL - F - 5509	SUPERSEDES: AN823	SHEET 1 OF 2

APPROVED 24 MAY 61 REVISED (A) 9 JAN 64 (B) 16 JUN 76 (C) 21 MAR 79 (D) 2 Sept 82

ⓓ

DASH NO	THREAD (REF)	F +.047 -.000
2	5/16-24UNJF-3A	.500
3	3/8 -24UNJF-3A	
4	7/16-20UNJF-3A	.641
5	1/2 -20UNJF-3A	.688
6	9/16-18UNJF-3A	.906
8	3/4 -16 UNJF-3A	1.016
10	7/8 -14UNJF-3A	
12	1-1/16-12UNJ -3A	1.250
16-12	1-5/16-12UNJ -3A	1.484
16		1.594
20	1-5/8 -12UNJ -3A	1.781
21		1.813
25	1-7/8 -12UNJ -3A	1.953
28	2-1/4 -12UNJ -3A	2.344
32	2-1/2 -12UNJ -3A	2.391

Review activities: ARMY - ME, AV
BLA - CS

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DASH NO	TUBING OD	PIPE THREAD END		Q +.047 -.000	R RAD	S	U RAD	V	W APPROX	X APPROX	Y								
		THD P NPT	MS33677 STYLE																
2	1/8	1/8	B	.641	.156	.500	.062	.312	.219	.188	.719								
3	3/16			.703	.219	.625		.438			.312	.219	.766						
4	1/4			.750	.250	.625		.500	.500	.781									
5	5/16			.812	.281	.844		.562	.375	.250	.875								
6	3/8	1/4	A	.969	.375	.938	.094	.750	.500	.312	1.047								
8	1/2	3/8		1.094	.438	1.156		.875	.625	.375	1.172								
10	5/8	1/2		1.266	.531	1.188		1.062	.812		1.484								
12	3/4	3/4		1.453	.656	1.250		1.312	.875	.438	1.547								
16-12		1	A	1.453	.656	1.469	.125	1.312	1.000	.562	1.703								
16												1	1.578	.812	1.656	1.625	1.250	.688	1.938
20	1-1/4	1-1/4	A	1.766	.938	1.656	.188	1.875	1.500	.750	2.016								
21	1-1/4	1										1.953	1.125	2.000	2.250	1.750	.812	2.250	
25	1-1/2	1-1/4										2.203	1.250	2.094	2.250	2.562	2.000	.875	2.672
28	1-3/4	1-1/2																	
32	2	2																	

APPROVED 24 MAY 62 REVISED C FOR CHANGES SEE PAGES 1 & 2. 21 MAR 79 D FOR CHANGES SEE PAGES 1 & 2. 2 Sept 62

P.A. AIR FORCE-82 ⓓ Other Cast	TITLE ELBOW, PIPE TO TUBE, 45°	MILITARY STANDARD
ARMY - AR NAVY - AS AIR FORCE - 99		MS 20823
PROCUREMENT SPECIFICATION MIL - F - 5509	SUPERSEDES: AN823	SHEET 2 OF 2