FED. SUP CLASS
4730

FLEXIBILITY AND STRESS INTENSIFICATION FACTORS

DESCRIPTION	FLEXIBILITY FACTOR k	STRESS INTENS. FACTOR i
BUTT WELDED JOINT, REDUCER, OR WELDING NECK FLANGE	1	1.0
DOUBLE-WELDED SLIP-ON OR SOCKET WELDING FLANGE	1	1.2
FILLET WELDED JOINT, OR SINGLE-WELDED SOCKET WELDING FLANGE	1	1.3
LAP JOINT FLANGE (WITH USAS B16.9 LAP JOINT STUB)	1	1.6

DESCRIPTION	FLEXIBILITY FACTOR k	STRESS INTENS. FACTOR i	CHARACTERISTIC h	SKETCH
WELDING ELBOW, OR PIPE BEND SEE NOTE 3	$\frac{1.65}{h}$	$\frac{0.9}{h^{2/3}}$	$\frac{tR}{r^2}$	
WELDING TEE PER USAS B16.9	1	$\frac{0.9}{h^{2/3}}$	$4.4\frac{t}{r}$	
REINFORCED FABRICATED TEE WITH PAD OR SADDLE	1	$\frac{0.9}{h^{2/3}}$	$\frac{(t+\frac{1}{2}T)^{5/2}}{t^{3/2}\,r}$	PAD SADDLE
UNREINFORCED FABRICATED TEE	1	$\frac{0.9}{h^{2/3}}$	$\frac{t}{r}$	

NOTES:

1. THE FLEXIBILITY FACTORS k AND STRESS INTENSIFICATION FACTORS i IN THE TABLE APPLY TO BENDING IN ANY PLANE FOR FITTINGS OF THE SAME NOMINAL WEIGHT OR SCHEDULE AS THE PIPE USED IN THE SYSTEM, AND SHALL IN NO CASE BE TAKEN LESS THAN UNITY; FACTORS FOR TORSION EQUAL UNITY. FACTORS APPLY OVER THE EFFECTIVE ARC LENGTH (SHOWN BY DASH-DOT LINES IN THE SKETCHES) FOR CURVED ELBOWS, AND TO THE INTERSECTION POINT FOR TEE'S.

2. THE VALUES OF k AND i CAN BE READ DIRECTLY FROM SHEET 2, ENTERING WITH THE CHARACTERISTIC h COMPUTED FROM THE FORMULAE GIVEN WHERE:
   R = BEND RADIUS OF WELDING ELBOW OR PIPE BEND. r = MEAN RADIUS OF MATCHING PIPE.
   T = PAD OR SADDLE THICKNESS. t = WALL THICKNESS OF MATCHING PIPE.
   THE VALUES OF k AND i SHALL NEVER BE TAKEN AS LESS THAN 1.00

3. WHERE FLANGES ARE ATTACHED TO ONE OR BOTH ENDS, THE VALUES OF k AND i IN THE TABLE SHALL BE CORRECTED BY THE FACTORS GIVEN BELOW, WHICH CAN BE READ DIRECTLY FROM SHEET 2, ENTERING WITH THE COMPUTED h:
   ONE END FLANGED: $h^{1/6}$ BOTH ENDS FLANGED: $h^{1/3}$

4. WHEN STRENGTH WELDS IN CARBON STEEL PIPES, TUBES, OR TUBING OVER 2 INCHES IN DIAMETER ARE NOT STRESS RELIEVED, A 1.3 STRESS INTENSIFACTION FACTOR SHALL BE USED FOR THE WELDS IN THE FLEXIBILITY CALCULATIONS. THE LOCATION OF THE WELDS AND STRESSES AT THE WELDS SHALL BE INCLUDED IN THE CALCULATIONS. STRESS INTENSIFICATION FACTOR APPLIES TO S_b ONLY.

5. THE STRESS INTENSIFACTION FACTORS "i" IN THE TABLES WERE OBTAINED FROM TESTS ON FULL SIZE OUTLET CONNECTIONS. FOR LESS THAN FULL SIZE OUTLETS, THE FULL SIZE VALUES SHOULD BE USED UNTIL MORE APPLICABLE VALUES ARE DEVELOPED.

APPROVED 1 MARCH 1966 REVISED

P.A. SH Other Cust	TITLE FLEXIBILITY AND STRESS INTENSIFICATION FACTORS	MILITARY STANDARD MS 18285(SHIPS)
PROCUREMENT SPECIFICATION	SUPERSEDES:	SHEET 1 OF 2

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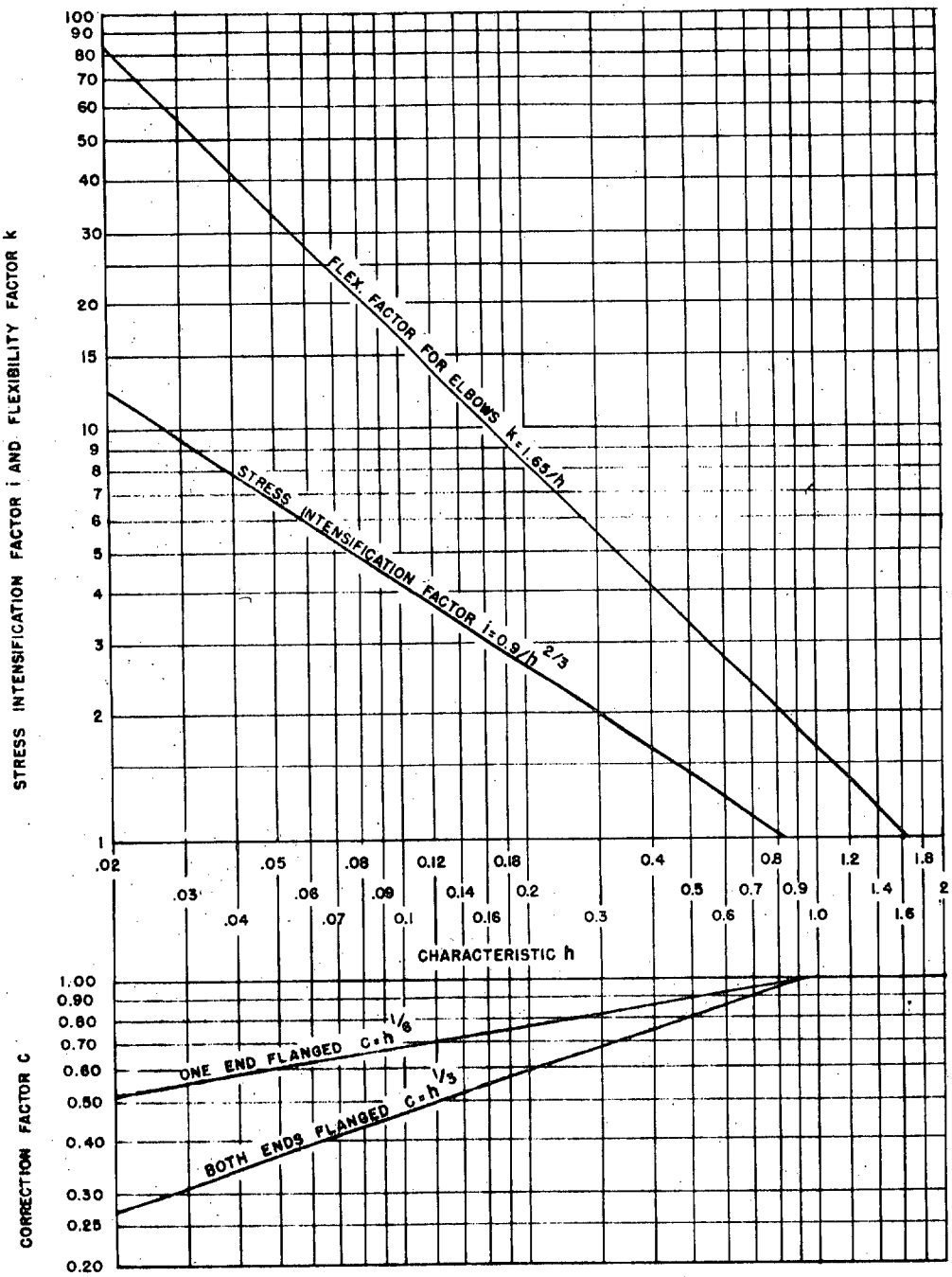

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P.A. SH Other Cust	TITLE FLEXIBILITY AND STRESS INTENSIFICATION FACTORS	MILITARY STANDARD MS 18285 (SHIPS)
PROCUREMENT SPECIFICATION	SUPERSEDES:	SHEET 2 OF 2