

MIL-STD-22D
NOTICE 2
31 January 1984

MILITARY STANDARD
WELDED JOINT DESIGN

TO ALL HOLDERS OF MIL-STD-22D:

1. THE FOLLOWING PAGES OF MIL-STD-22D HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
5	25 May 1979	(REPRINTED WITHOUT CHANGE)	
6	31 January 1984	6	25 May 1979
49	25 May 1979	(REPRINTED WITHOUT CHANGE)	
50	31 January 1984	50	25 May 1979
67	31 January 1984	67	25 May 1979
68	25 May 1979	(REPRINTED WITHOUT CHANGE)	

2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

3. Holders of MIL-STD-22D will verify that the page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the Military Standard is completely revised or canceled.

Custodians:

Navy - SH
Army - MR
Air Force - 11

Review activities:

Navy - YD
Army - ER, CR

User activities:

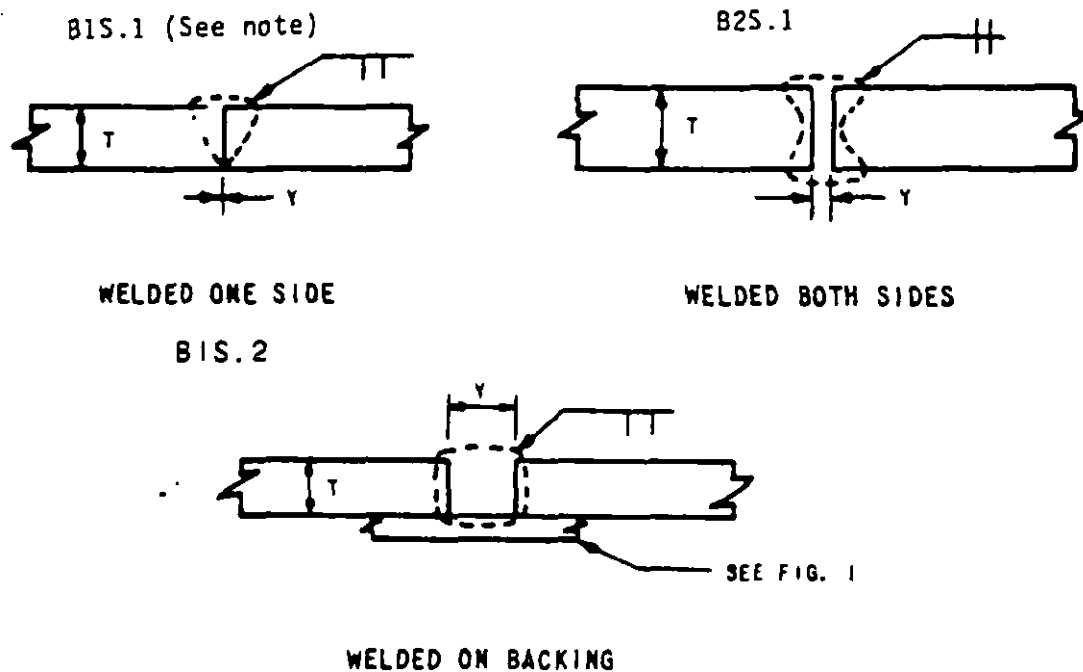
Navy - MC, OS

Preparing activity:

Navy - SH
(Project THJM-0217)

AREA THJM

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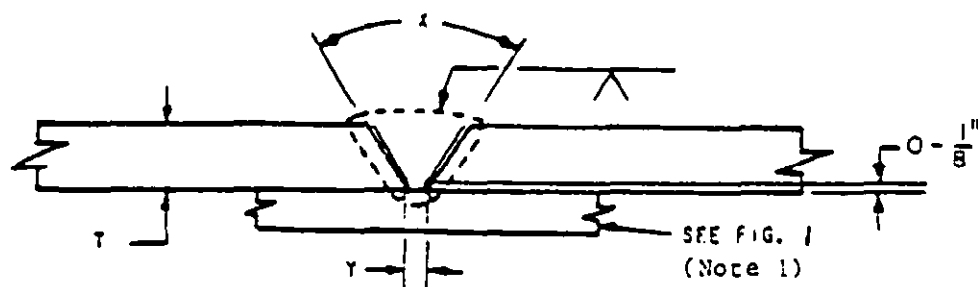
Joint number	Dim Y inch	Dim T inch, max
B1S.1	0 to 1/32	1/16
B2S.1	0 to T	1/4
B1S.2	T min	3/16

NOTE: Joints welded from one side without a backing, shall not be used when root of weld is subject to bending tension stress equivalent to one-half the yield strength of the base metal or greater.

FIGURE 2. Butt joints, square, B1S.1, B2S.1, B1S.2.

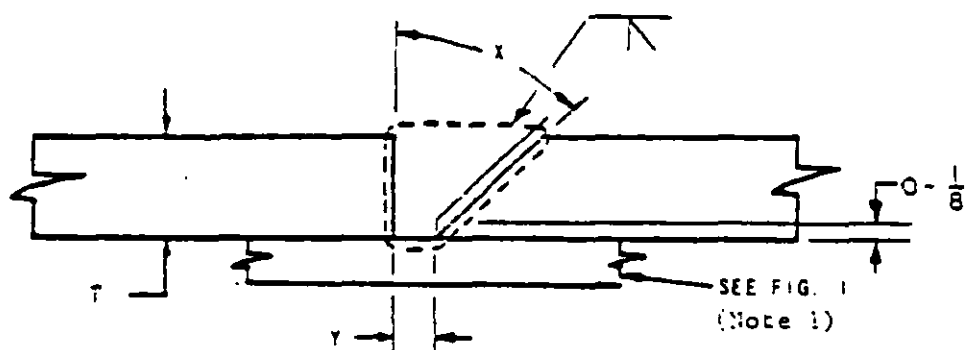
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BIV.1
 BIV.2
 BIV.3
 BIV.4 (note 2)



SINGLE-V

BIV.5
 BIV.6
 BIV.7



SINGLE BEVEL

SH 14988

Joint number	Angle X min or range where indicated (degrees)	Dim Y min inch	Dim T inches	Welding position
BIV.1	45	3/16	Unlimited	All
BIV.2	35	1/4		All
BIV.3	20	3/8		Flat, vert, over
BIV.4	0 - 25	1/4		All
BIV.5	45	1/4		All
BIV.6	25	3/8		Flat, vert, over
BIV.7	35	3/8		All

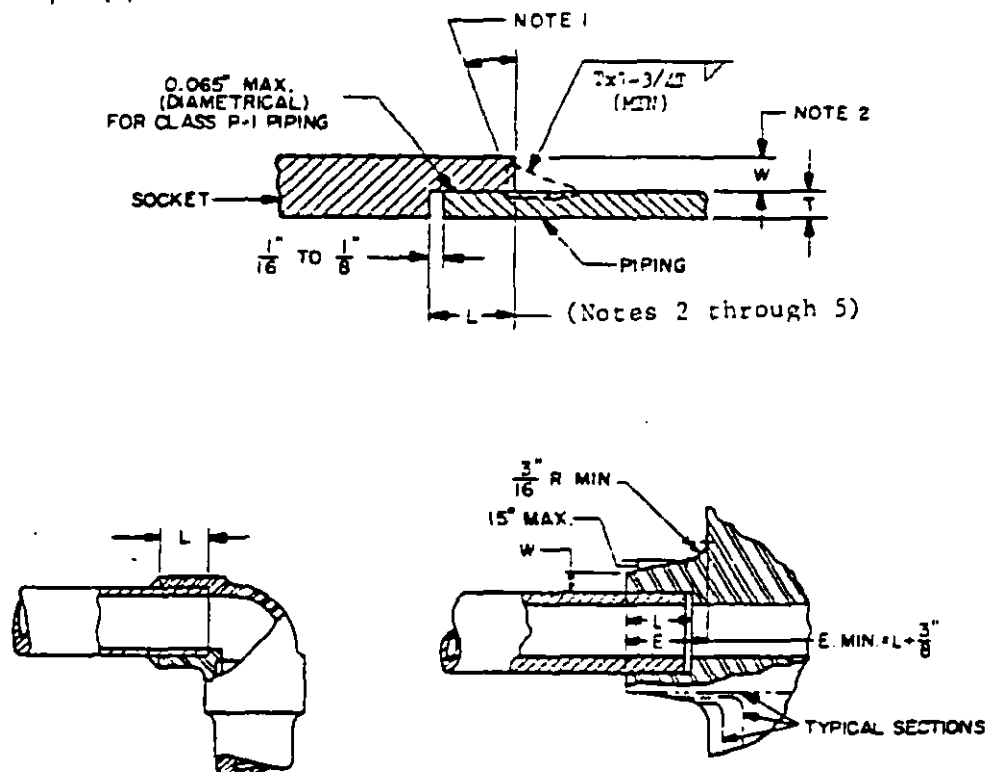
NOTES:

1. Ceramic or other non-metallic backing may be used subject to prior NAVSEA approval.
2. The use of BIV.4 requires prior NAVSEA approval.

FIGURE 3. Butt joints, welded on backing, BIV.1, BIV.2, BIV.3, BIV.4, BIV.5, BIV.6, BIV.7.

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P-14



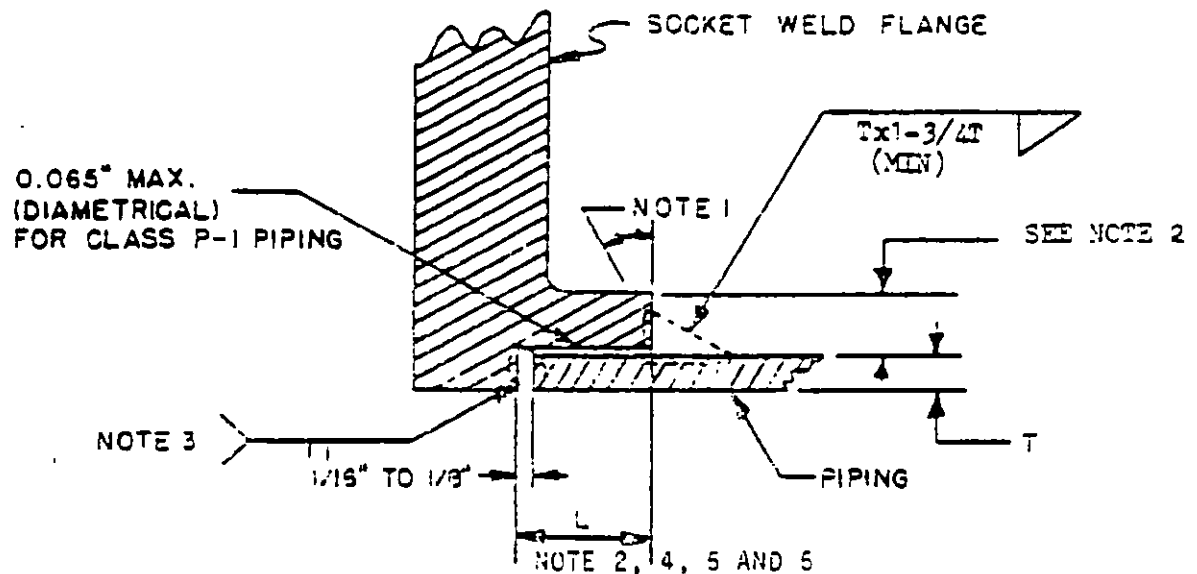
SH 11189

NOTES:

1. Up to 22 degree bevel may be used.
2. Wall thickness (W) and minimum socket depth (L) shall be in accordance with the applicable specification for the fittings.
3. For repairs where the weldment and the pipe must be removed, the existing fitting, with reduced socket depth, may be reused under the following conditions:
 - (a) The pipe end gap clearance shall be held to 1/16 inch maximum.
 - (b) If the diametrical clearance between the pipe and the fitting is 0.025 inch and less, the L dimension may be reduced by 50 percent of the specified dimension.
 - (c) If the diametrical clearance is greater than 0.025 inch, but is within 0.065 inch, the L dimension may be reduced by 25 percent of the specified dimension.
4. The provisions of note 3 do not apply if the diametrical clearance exceeds 0.065 inch.
5. The provisions of note 3 are not applicable to systems classified under "SUBSAFE". For SUBSAFE systems, fittings with reduced socket depth shall not be used without specific approval by NAVSEA.

FIGURE 46. Socket, fillet welded, P-14.

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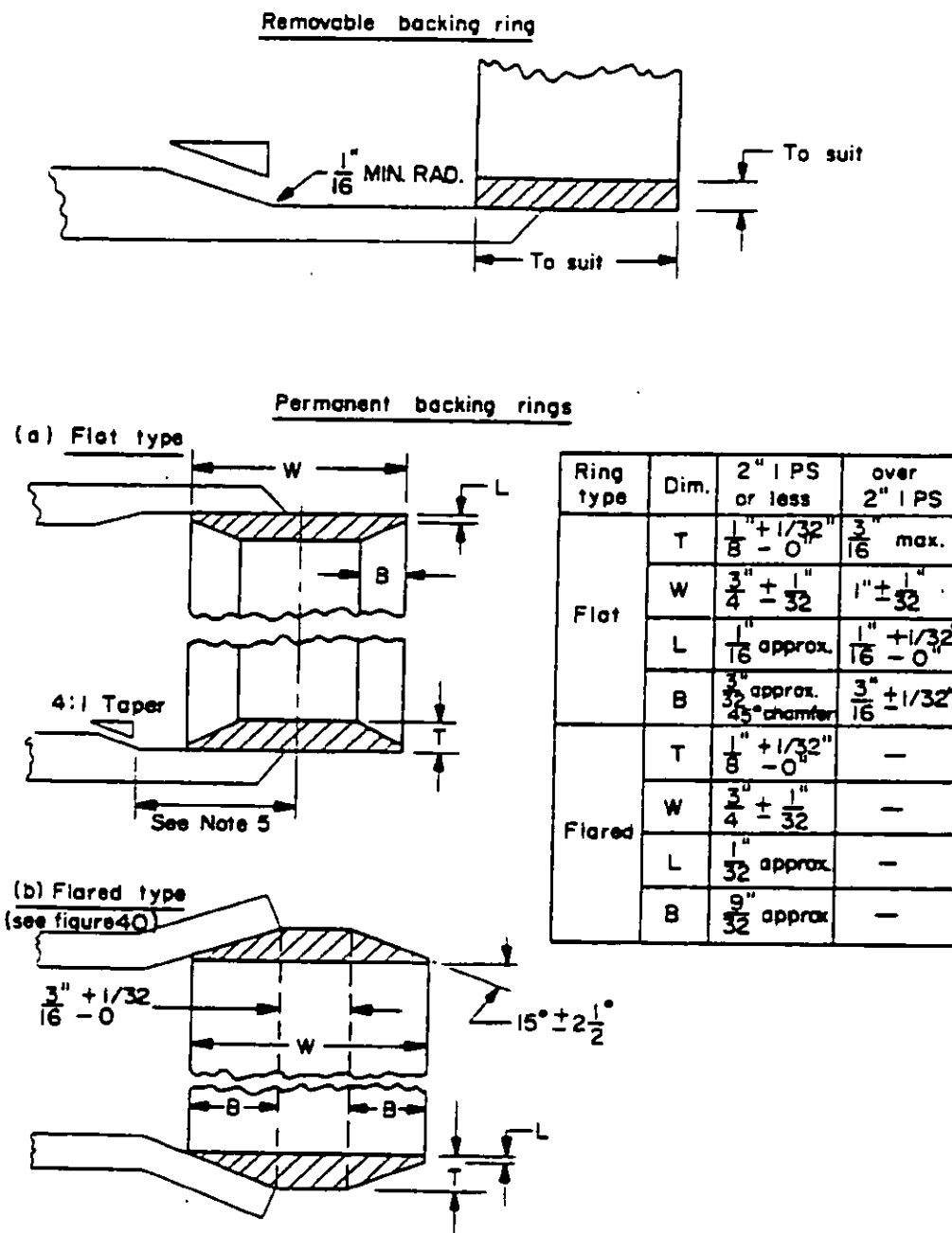
SH 9701

NOTES:

1. Up through 22 degree bevel may be permitted.
2. Flange thickness and minimum socket depth (L) shall be in accordance with the applicable specification for the flange.
3. Seal weld required when used for salt water and other corrosive fluids, and base material is not resistant to crevice corrosion.
4. For repairs where the weldment and the pipe must be removed, the existing fitting, with reduced socket depth, may be reused under the following conditions:
 - (a) The pipe end gap clearance shall be held to 1/16 inch maximum.
 - (b) If the diametrical clearance between the pipe and the fitting is 0.025 inch and less, the L dimension may be reduced by 50 percent of the specified dimension.
 - (c) If the diametrical clearance is greater than 0.025 inch, but is within 0.065 inch, the L dimension may be reduced by 25 percent of the specified dimension.
5. The provisions of note 3 do not apply if the diametrical clearance exceeds 0.065 inch.
6. The provisions of note 3 are not applicable to systems classified under "SUBSAFE". For SUBSAFE systems, fittings with reduced socket depth shall not be used without specific approval by NAVSEA.

FIGURE 47. Socket flange, fillet-welded, P-15.

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SH 11191

FIGURE 63. Backing rings for welded pipe joints.

Supersedes page 67 of 25 May 1979.

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Notes to figure 63:

1. Rings may be solid or split type. For class P-1 piping, permanent split type rings, if used, shall be welded after fitting and prior to final insertion in the pipe. (When split type rings are welded, defects that can be identified as being in the backing ring butt weld shall not be cause for rejection.) For class P-2 piping, backing ring butts need not be welded.
2. Backing rings may be furnished with spacers as follows:
 - (a) A minimum of 3 spacers shall be located around the outer surface of the backing ring to maintain a minimum root opening.
 - (b) No portion of the ring other than the spacers shall project beyond the outer surface of the backing ring.
 - (c) Removable spacers shall not require, or result, in removal of material from the backing ring for a depth of more than one-half the thickness of the ring.
 - (d) When used, non-removable spacers shall be constructed to permit complete fusion of the spacers into the backing ring and the welding groove without causing weld defects. A spacer having a cross-sectional area greater than 0.125 square inches and a height of more than one-half thickness of the ring shall not be permitted. (Push-out type spacers shall show blank dots on radiograph.)
3. Backing rings may be tack welded inside or outside.
4. Backing rings shall not have a diametrical clearance of more than 0.045 inch for pipe sizes 2 inch IPS and smaller and 0.065 inch for pipe sizes 2-1/2 inch IPS and larger.
5. The depth of counterbore may be obtained by machining, expanding, or forming and shall be 1/2 inch (minimum) or T (minimum) whichever is larger to insure proper pipe inside diameter in way of joint. Counterbore for elbows shall be limited to a depth which will not reduce wall thickness below design minimum.
6. Pipe tapers less than 4:1 are acceptable provided they meet the requirements of approved ANSI fittings or applicable drawings.

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