ASME B31.3 ACCEPTANCE CRITERIA FOR WELDS
Table 341.3.2A

CRITERION		
Symbol	**Measure**	**Acceptable Value Limit [Note (6)]**
A	Extent of imperfection	Zero (no evident imperfection)
B	Depth of incomplete penetration Cumulative length of incomplete penetration	≤1mm(1/32 in.) and ≤0.2 Tw ≤ 38mm(1.5in.) in any 152 mm (6 in.) weld length
C	Depth of lack of fusion and incomplete penetration [Note (7)] Cumulative length of lack of fusion and incomplete penetration [Note(7)]	≤0.2Tw ≤38mm (1.5in.) in any 152 mm weld length
D	Size and distribution of internal porosity	See BPV Code, Section VIII, Division 1, Appendix 4
E	Size and distribution of internal porosity	For Tw ≤ 6mm (1/4in.) limit is same as D For Tw ≤ 6mm (1/4in.) limit is 1.5 X D
F	Slag inclusion, tungsten inclusion, or elongated indication Individual length Individual width Cumulative length	≤Tw/3 ≤2.5mm (3/32 in.) and ≤Tw/3 ≤Tw in any 12Tw weld length
G	Slag inclusion, tungsten inclusion, or elongated indication Individual length Individual width Cumulative length	≤2Tw ≤3mm (1/8 in.) and ≤Tw/2 ≤ 4Tw in any 152mm (6 in.) weld length
H	Depth of undercut	≤ 1mm (1/32 in.) and ≤Tw/4
I	Depth of undercut	≤ 1.5mm (1/16 in.) and ≤Tw/4 or 1mm (1/32 in.)
J	Surface roughness	≤ 500 min. Ra per ASME B46.1
K	Depth of root surface concavity	Total joint thickness, incl. weld reinforcement., ≥Tw
L	Height of reinforcement or internal protrusion (Note 8) in any plane through the weld shall be within the limits of the applicable height value in the tabulation at right, except as provided in Note (9). Weld metal shall merge smoothly into the component surface	For Tw, mm (in.) — Height, mm (in.) ≤ 6mm (1/4) — ≤ 1.5 mm (1/16) > 6mm (1/4),≤13mm (1/2) — ≤ 3.0mm (1/8) > 3mm (1/2), ≤ 25mm (1) — ≤ 4.0mm (5/32) > 25mm (1) — ≤ 5.0mm (3/16)
M	Height of reinforcement or internal protrusion (Note 8) as described in L. Note (9) does not apply	Limit is twice the value applicable for L above

X = required examination NA = not applicable … = not required

Notes:

(1) Criteria given are for required examination. More stringent criteria may be specified in the engineering design. See also paras. 341.5 and 341.5.3

(2) Longitudinal groove weld includes straight and spiral seams. Criteria are not intended to apply to welds made in accordance with a standard listed in Table A-1 or Table 326.1.

(3) Fillet weld includes socket and seal welds, and attachment welds for slip-on flanges, branch reinforcement, and supports.

(4) Branch connection weld includes pressure containing welds in branches and fabricated laps.

(5) These imperfections are evaluated only for welds ≤ 3/16 in. (5mm) in nominal thickness.

(6) Where two limiting values are separated by "and" the lesser of the values determines acceptance. Where two sets of values are separated by "or" the larger value is acceptable. *Tw* is the nominal wall thickness of the thinner of the two components joined by a butt weld.

(7) Tightly butted unfused root faces are unacceptable.

(8) For groove welds, height is the lesser of the measurements made from the surfaces of the adjacent components; both reinforcement and internal protrusion are permitted in a weld. For fillet welds, height is measured from the theoretical throat, Fig. 328.5.2A; internal protrusion does not apply.

(9) For welds in aluminum alloy only, internal protrusion shall not exceed the following values:

(a) for thickness ≤ 5/64 in. (2mm) : 1/16 in. (1.6 mm)

(b) for thickness > 5/64 in. and ≤ ¼ in. (6.4 mm): 3/32 in. (2.4mm).

For external reinforcement and for greater thickness, the tabulation for Symbol L.

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344.6.2 Acceptance Criteria.

A linear – type discontinuity is unacceptable if the amplitude of the indication exceeds the reference level and its length exceeds:

(1) ¼ in. (6.4 mm) for Tw ≤ ¾ in. (19 mm);

(2) Tw/3 for ¾ in. < Tw ≤ 2 ¼ in. (57mm);

(3) ¾ in. for Tw > 2 ¼ in.