

	CORPORATE STANDARD	AA0621105
		Rev. No. 01
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GENERAL TOLERANCES FOR WELDED STRUCTURES - FORM AND POSITION

1.0 GENERAL

- 1.1** Tolerances on form and position as defined in this standard are permissible variations from the geometrically ideal form and position corresponding to the accuracies commonly obtained in workshops. This standard covers tolerances on straightness, flatness and parallelism.
- 1.2** This standard is based on BS EN ISO 13920-1997
- 1.3** General tolerances for machined components are covered in corporate standard AA0230208.
- 1.4** Refer Corporate Standard AA0621104 for general tolerances for lengths and angles of welded-components, assemblies and structures.

2.0 SCOPE

- 2.1** This standard prescribes four degrees of accuracies taking into account the function dependent and the fabrication dependent differences along with appearance aspects of welded components, assemblies and structures.
- 2.2** For technical and economic reasons other degrees of accuracy may be appropriate which have to be specifically stated.

3.0 DEVIATIONS

The values of deviations for different classes of accuracies of straightness, flatness and parallelism are given in TABLE 1. These values apply to overall dimensions and to part lengths.

4.0 REPRESENTATION ON DRAWINGS

The required degree of accuracy shall be specified in all fabrication drawings. For example Class E of AA0621105 (BS EN ISO 13920).

TABLE 1 TOLERANCE ON STRAIGHTNESS, FLATNESS AND PARALLELISM

Range of nominal sizes l in mm (relates to longer side of the surface)										
Tolerance Class	Over 30 up to 120	Over 120 up to 400	Over 400 up to 1000	Over 1000 up to 2000	Over 2000 up to 4000	Over 4000 up to 8000	Over 8000 up to 12000	Over 12000 up to 16000	Over 16000 up to 20000	Over 20000
Tolerance t in mm										
E	0.5	1	1.5	2	3	4	5	6	7	8
F	1	1.5	3	4.5	6	8	10	12	14	16
G	1.5	3	5.5	9	11	16	20	22	25	25
H	2.5	5	9	14	18	26	32	36	40	40

Revisions: Clause 1.2, 4, Table-1

APPROVED:

INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC (W)

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5.0 TESTING**5.1** Figures 1 to 3 illustrate the mode of testing for straightness, flatness and parallelism.

The test method should be selected on the basis of current measuring practice.

There should be no unusual temperature or weather conditions e.g. strong sunshine. The measured values apply to the conditions on the day of testing.

5.2 STRAIGHTNESS

The edge of the welded component and the straight - edge can be arranged in relation to each other so that the end points of the measured length are the same distance apart from the ends of the straight edge. The distances between the edge and the straight-edge should be measured.

5.3 FLATNESS

A measuring plane can be set up outside the welded component parallel to the limiting planes at any desired distance. For example this can be done with optical instruments, flexible tube liquid levels, tension wires, clamp plates, surface plates and machine beds.

5.4 PARALLELISM

Any of the measuring devices mentioned above can be used to set up a measuring plane outside the welded component parallel to its reference plane. The distance from the actual surface to the measuring plane is measured.

The position of the reference surface (= surface after machining) is dimensionally determined.

Dimension a_1 gives the required finished height of the foundation.

Dimension a_2 gives the minimum thickness of the support.

The distance between the reference plane and the measuring plane is greater than $h_{\max}$ by the minimum possible thickness of the machining allowance "b". The variation of the actual surface (= surface before machining) from the reference plane must be within the tolerance on parallelism. Maximum variation is

$$h_{\max} - h_{\min} \leq t$$

Note:

The tolerance on form and position as per this standard may be mentioned on the drawing in addition to the linear tolerances as per AA0621104 wherever required.

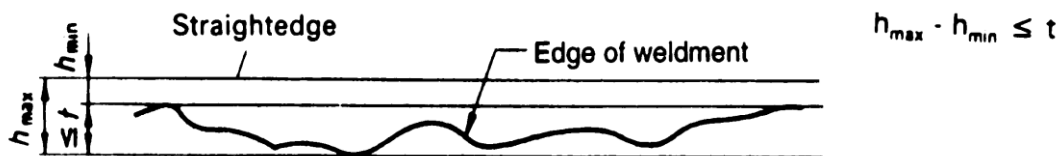


Figure-1 Straightness Test

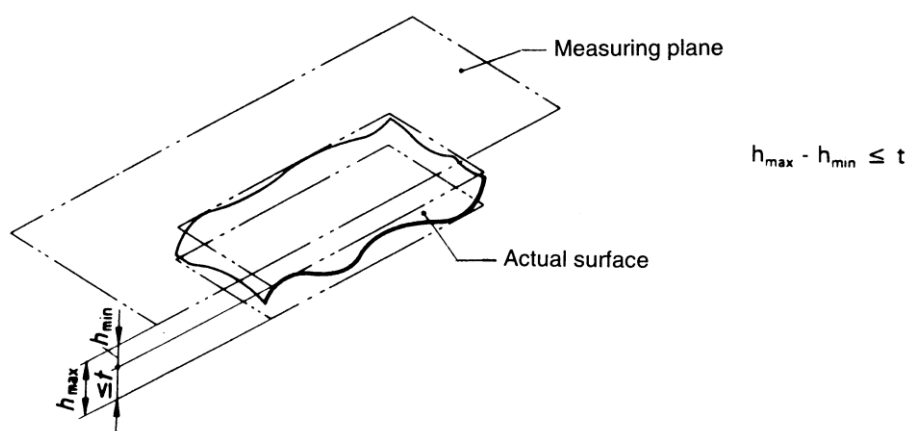


Figure-2 Flatness Test

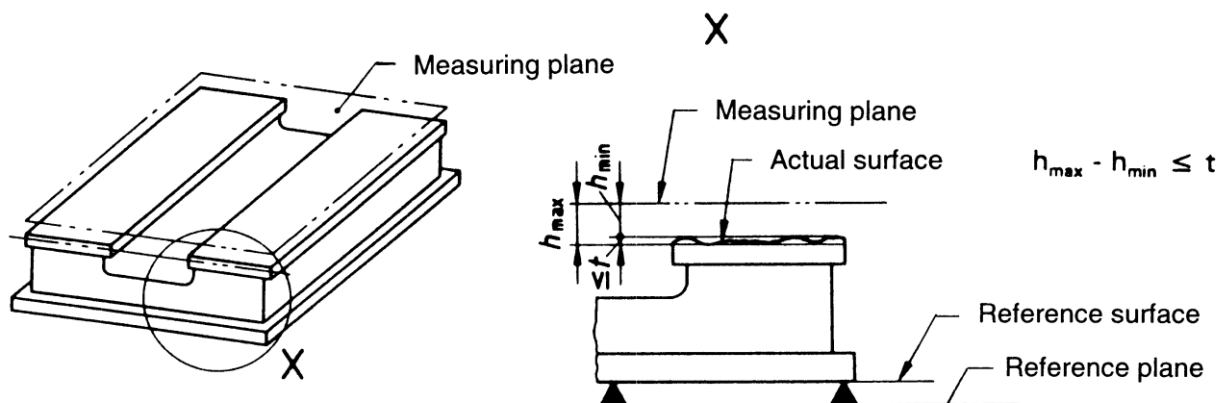


Figure-3 Parallelism Test