

BHEL
RANIPET

BHARAT HEAVY ELECTRICALS LTD.
BOILER AUXILIARIES PLANT
RANIPET 632 406

PR:QA:500
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QUALITY DEPARTMENT

PROCEDURE FOR

**ALLOWABLE DEVIATIONS FOR
DIMENSIONS WITHOUT SPECI-
FIED TOLERANCES**

EFFECTIVE DATE

16/01/93

	NAME	SIGNATURE	DATE
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ISSUED BY : **QUALITY ASSURANCE**

REVISION : **NIL**

DATE :

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QUALITY DEPARTMENT

1. Table 1 given below indicates the permissible variation in Linear Dimension of fabricated and machined components. The coarse grade is to be followed for fabricated components and medium grade for machined components.
2. Table 2 given below indicates the permissible deviations for Radii & Chamfers for machined components.
3. Table 3 given below indicates the permissible deviations for Angular dimensions for machined components.
4. Table 4 given below indicates the conditions under which the deviations given in this standard are not applicable.
5. Special rulings may be stated for linear dimensions of welded structures consisting of several assemblies.
6. If closer tolerances than those given in this procedure are necessary, the same shall be indicated in the relevant drawings.

TABLE - 1

Degree of accuracy	Deviations in mm for the nominal size range in mm											
	0.5 * up to 3	Over 3 upto 6	Over 6 upto 30	Over 30 upto 120	Over 120 upto 400	Over 400 upto 1000	Over 1000 upto 2000	Over 2000 upto 4000	Over 4000 upto 8000	Over 8000 upto 12000	Over 12000 upto 16000	Over 16000 upto 20000
f (fine)	± 0.05	± 0.05	± 0.1	± 0.15	± 0.2	± 0.3	± 0.5	± 0.8	-	-	-	-
n (medium)	± 0.1	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.0	± 2	± 3	± 4	± 5	± 6
g (coarse)	± 0.15	± 0.2	± 0.5	± 0.8	± 1.2	± 2	± 3	± 4	± 5	± 6	± 7	± 8
sg (very coarse)	-	± 0.5	± 1	± 1.5	± 2	± 3	± 4	± 6	± 8	± 10	± 12	± 12

* In the case of nominal sizes below 0.5 mm, the deviations must be specified directly by the side of the nominal size.

TABLE - 2

DEVIATIONS FOR RADII & CHAMFERS

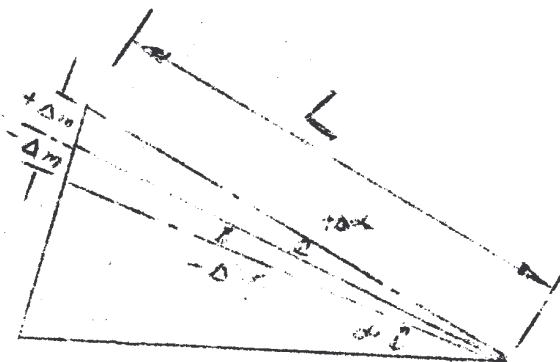
All dimensions are in mm

CLASS OF DEVIATION	RANGE OF NOMINAL DIMENSIONS					
	Above	0.5	3	6	30	120
Fine & Medium	Upto and Including	3	6	30	120	315
		± 0.2	± 0.5	± 1	± 2	± 4

TABLE - 3

DEVIATIONS FOR ANGULAR DIMENSIONS

$\Delta\alpha$ =Angle Tolerance
in angular units
 Δm =Angle Tolerance
in linear units



All Dimensions are in mm

CLASS OF DEVIATIONS	Length (L) of shorter side of angle in mm							
	Above	-	10	50	120	500	800	1250
	Upto & including	10	50	120	500	800	1250	2000
FINE AND MEDIUM	Δm (mm)	± 0.1	± 0.2	± 0.6	± 0.8	± 0.96	± 1.125	± 1.5
	$\Delta\alpha$ (deg or min)	$\pm 1^\circ$	$\pm 30'$	$\pm 20'$	$\pm 10'$	$\pm 4'$	$\pm 3'$	$\pm 2'3''$

TABLE - 4
NON APPLICABILITY OF THE STANDARD

STANDARD SPECIFICATION	CONDITIONS FOR TOLERANCING	DIMENSIONS	PRODUCTION METHOD	SPECIAL AGREEMENTS
Where Permissible deviations have been specified	Where higher values than those specified in Table 1 and 2 may be allowed.	For dimensions required to give a certain class of it	Casting, forging, pressing, rolling, welding, flame cutting	Where variations from this standard are agreed upon between the purchaser and the manufacturer
	Where only positive or only negative deviations are desired	For dimensions resulting after assembly		
	Where parts are manufactured separately and are required to be assembled together without any further treatment (selective assembly, spare parts etc)	Where concentricity between parts is required		
		For angular dimensions of a circular division (For example, angular positioning of teeth of clutches)		
		For angular dimensions in precision taps and in pipe bends		
		For dimensions of welded assemblies (unless the part is to be machined)		