

	PRODUCT STANDARD CONTROL EQUIPMENT ENGG. DIVISION	CG 06503
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Standard for untoleranced dimensions in Traction, Industrial & Plant Control Product Drgs.

1.0 INTRODUCTION:

This standard is applicable for components sub assemblies and assemblies of traction , industrial & plant control products and relates to all dimensions for which no limits are specified on the drawings either in the form of allowance or tolerance symbols. The standard specifies class of deviation / degree of accuracy with reference to various type of components and relevant corporate standards.

2.0 Applicable Standards:

2.1 Allowable deviation for dimensions without specified tolerance of Machined components - "MEDIUM-AA0230208"

2.1.1. Table 2.1.1. Given on page 3 for ready reference.

2.2 Permissible deviation for Untoleranced dimensions of castings. - " AA0230402"
CLASS 1 – Investment castings"
"CLASS 2 – gravity die metal pattern – Shell molding"
"CLASS 3 – Sand casting "

2.2.1 Table 2.2.1. Given on page 4 for ready reference.

2.3 General tolerances for welding Constructions for length and angles. - "CLASS A of AA0621104"

2.3.1 Table 2.3.1. Given on page 3 for ready reference.

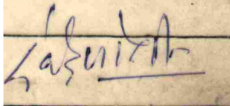
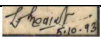
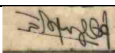
2.4 General tolerances for welded Structures – form and position - "CLASS E of AA0621105".

2.4.1 Table 2.4.1. Given on page 3 for ready reference.

2.5 Tolerances of dimensions of sheared plates. - "AA0230409"

2.5.1 Table 2.5.1. Given on page 3 for ready reference.

2.6 General tolerances for welding construction for length and angles- Class A of AA0621104

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2.6.1 Table 2.6.1 given on page 5 for ready reference.

2.7 General tolerances for welding construction for length and angles- Class C of
AA0621104

2.7.1 Table 2.7.1 given on page 5 for ready reference.

3.0 TOLERANCES

3.1 Unless & otherwise specified in the drawings above mentioned degree/class of accuracy is considered to be applicable.

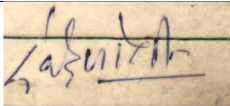
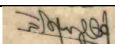
3.2 SCR (Tech.) will take due care while deciding the process of manufacture of various components/subassemblies as per this standard and SWM (planning / RFM (planning) will specify the class of deviation / degree of accuracy as applicable for manufacture of all components/subassemblies either in house or bought out.

3.3 This method will be followed for all old drawings where class/degree of tolerances are not specified for open dimensions.

3.4 These details will be now specified on all new drawings henceforth issued by CEE as applicable in the form of preferably the very first note on the drawings , reference of this note will be given on UNTOL DIMS GR. Column of the drg.

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CEE	PCDO`	1
CEE	1CDO	1
CEE	TCDO	1
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RFM	PLG	1
SWM	QC	1
RFM	QC	1
QC	(B&C)GPC	1
STANDARDS	FOLDER	1

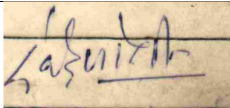
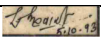
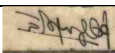
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TABLE 2.1.1 DEVIATION FOR LINEAR DIMENSIONS FOR MACHINED & COMPONENTS (ALL DIMENSIONS ARE IN MM)													
CLASS OF DEVIATION	RANGE OF NOMINAL DIMENSIONA												
	ABOVE	0.5	3	6	30	120	315	1000	2000	4000	8000	12000	16000
	UPTO & INCLUDING	3	6	30	120	315	1000	2000	4000	8000	12000	16000	20000
MEDIUM		± 0.1	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2	± 3	± 4	± 5	± 6

TABLE 2.3.1 PERMISSIBLE VARIATIONS IN LINEAR DIMENSIONS FOR WELDING CONSTRUCTIONS											
Degree of accuracy	NOMINAL DIMENSION RANGE (mm)										
	Over 30 Up to 120	Over 120 Up to 315	Over 315 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	
	A	± 1	± 1	± 2	± 3	± 4	± 5	± 6	± 7	± 8	± 9

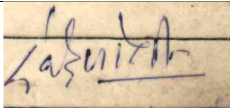
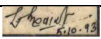
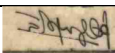
TABLE 2.4.1 TOLERANCES ON STRAIGHTNESS, FLATNESS AND PARALLELISM FOR WELDED STRUCTURES										
Grade of accuracy	NOMINAL DIMENSION RANGE (Larger side length of surface) - mm									
	above 30 to 120	above 120 to 315	above 315 to 1000	above 1000 to 2000	above 2000 to 4000	above 4000 to 8000	above 8000 to 12000	above 12000 to 16000	above 16000 to 20000	above 20000
	E	0.5	1	1.5	2	3	4	5	6	7

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TABLE 2.5.1 TOLERANCES OF DIMENSION FOR SHEARED PLATES (ALL DIMENSION IN MILLIMETRES)						MAX INCLINATION
THICKNESS "t"		NOMINAL DIMENSION				a
ABOVE	TO	TO 250	Above 250 TO 1000	Above1000 TO 2500	Above 2500 TO 5000	-
-	3					
TOLERANCE §						
3	6	± 0.5	± 1	± 1.5	± 2	± 1
		± 1	± 1.5	± 2	± 2.5	
6	10	± 1.5	± 2	± 2.5	± 3	
10	18	± 2	± 2.5	± 3	± 4	± 1.5
ABOVE 18		TOLERANCE SHALL DEPEND ON THE MATERIAL OF PLATE AND THE END USE FOR WHICH THE PLATE IS PREPARED.				

TABLE 2.2.1 TOLERANCES OF DIMENSION FOR CASTINGS TOLERANCE CLASS 1									
NOMINAL DIMENSION		Governing Dimension, mm							
(ROUGH CASTING MM)		FROM							
		6	10	18	30	80	180	315	
		TO							
FROM	TO	6	10	18	30	80	180	315	500
	6	± 0.08	± 0.10	± 0.12	± 0.12	± 0.15	± 0.15	± 0.20	± 0.25
6	10	± 0.10	± 0.12	± 0.12	± 0.15	± 0.15	± 0.20	± 0.25	± 0.30
10	18	± 0.12	± 0.12	± 0.15	± 0.15	± 0.20	± 0.25	± 0.30	± 0.30
18	30	± 0.12	± 0.15	± 0.15	± 0.20	± 0.25	± 0.30	± 0.40	± 0.40
30	80		± 0.15	± 0.20	± 0.25	± 0.30	± 0.40	± 0.40	± 0.50
80	180			± 0.20	± 0.25	± 0.30	± 0.40	± 0.50	± 0.50
180	315			± 0.25	± 0.25	± 0.30	± 0.40	± 0.50	± 0.60
315	500			± 0.25	± 0.30	± 0.40	± 0.50	± 0.60	± 0.60

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TOLERANCE CLASS 2

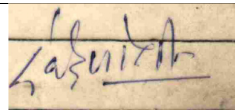
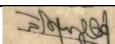
	6	± 0.20	± 0.25	± 0.30	± 0.30	± 0.35	± 0.40	± 0.50	± 0.60
6	10	± 0.25	± 0.30	± 0.30	± 0.35	± 0.40	± 0.50	± 0.60	± 0.80
10	18	± 0.30	± 0.30	± 0.35	± 0.40	± 0.50	± 0.60	± 0.80	± 0.80
18	30	± 0.30	± 0.35	± 0.40	± 0.50	± 0.60	± 0.80	± 1.00	± 1.00
30	80	± 0.35	± 0.40	± 0.50	± 0.60	± 0.80	± 1.00	± 1.00	± 1.20
80	180			± 0.50	± 0.60	± 0.80	± 1.00	± 1.20	± 1.20
180	315			± 0.60	± 0.60	± 0.80	± 1.00	± 1.20	± 1.40
315	500			± 0.60	± 0.80	± 1.00	± 1.20	± 1.40	± 1.60

TOLERANCE CLASS 3

NOMINAL DIMENSION		GOVERNING DIMENSION MM							
(ROUGH CASTING MM)		FROM							
		18	30	80	180	315	500	800	
		TO							
FROM	TO	18	30	80	180	315	500	800	1250
	6	± 0.5	± 0.5	± 0.5	± 0.8	± 0.8	± 0.1	± 1.2	± 1.5
6	10	± 0.5	± 0.5	± 0.6	± 0.8	± 1.0	± 1.2	± 1.5	± 2.0
10	18	± 0.5	± 0.6	± 0.8	± 1.0	± 1.2	± 1.2	± 1.5	± 2.0
18	30	± 0.6	± 0.8	± 1.0	± 1.2	± 1.5	± 1.5	± 2.0	± 2.5
30	80	± 0.8	± 1.0	± 1.2	± 1.5	± 1.5	± 2.0	± 2.0	± 2.5
80	180	± 0.8	± 1.0	± 1.2	± 1.5	± 2.0	± 2.0	± 2.5	± 2.5
180	315	± 1.0	± 1.0	± 1.2	± 1.5	± 2.0	± 2.5	± 2.5	± 2.5
315	500	± 1.0	± 1.2	± 1.5	± 2.0	± 2.0	± 2.5	± 2.5	± 3.0
500	800	± 1.2	± 1.2	± 1.5	± 2.0	± 2.5	± 2.5	± 3.0	± 3.0
800	1250	± 1.2	± 1.5	± 2.0	± 2.5	± 2.5	± 3.0	± 3.0	± 3.0

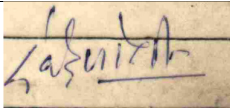
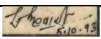
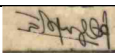
TABLE 2.6.1 TOLERANCES FOR MOUNTING PITCHES

Degree of accuracy	NOMINAL DIMENSION RANGE (mm)									
	Over 30 Up to 120	Over 120 Up to 315	Over 315 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

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A	± 1	± 1	± 2	± 3	± 4	± 5	± 6	± 7	± 8	± 9
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TABLE 2.7.1 TOLERANCES FOR GENERAL ARRANGEMENT DIMENSIONS										
Degree of accuracy	NOMINAL DIMENSION RANGE (mm)									
	Over 30 Up to 120	Over 120 Up to 315	Over 315 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
C	± 3	± 4	± 6	± 8	± 11	± 14	± 18	± 21	± 24	± 27

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