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Specification of Phosphor Bronze Bushes, Pistons, Glands Etc. of Tamping Machines			



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**SPECIFICATION NO. TM/HM/6/383**

**SPECIFICATION OF PHOSPHOR BRONZE BUSHES, PISTONS, GLANDS, ETC USED IN  
 TRACK MACHINES**

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Prepared By:	Issued By:	

## SPECIFICATION NO. TM/HM/6/383

### SPECIFICATION OF PHOSPHOR BRONZE BUSHES, PISTONS, GLANDS, ETC USED IN TRACK MACHINES

#### 1. SCOPE

This specification covers material requirements with testing criteria of Phosphor Bronze bushes, pistons, Glands etc used in Track Machines. This specification may be treated as provisional and is subject to modifications based on service performance.

#### 2. REFERENCE DOCUMENTS

Relevant RDSO Drg. of individual items.

#### 3. DIMENSION & TOLERANCE

Dimensions and tolerances of the component shall be as mentioned in the relevant RDSO drawing.

#### 4. MATERIAL

Each Component shall be made of phosphor copper alloy of following material composition.

S.no.	Description of material	Percentage
1.	Cu	86.0-89.0
2.	Sn	9.0-11.0
3.	Pb	1.0 -2.5
4.	Zn	1.0-3.0
5.	Fe	0.25 max
6.	Sb	0.25 max
7.	Ni (incl. Co)	1.0 max
8.	S	0.05 max
9.	P <sup>d</sup>	0.05 max
10.	AL	0.005 max
11.	Si	0.005 max
12.	Mn	-
13.	Other Named Elements	-

Cu + sum of named element - 99.3% minimum.

In determining Cu min. Cu may be calculated as Cu + Ni

Ni value includes Co.

For Continuous casting P shall be 1.5% max. for Centrifugal casting P shall be 0.5 max.

Hardness shall not be less than 50 HRb

#### 5. MANUFACTURING PROCESS

Each component shall be manufactured by preferably centrifugal casting or any suitable casting method. Final product shall be free from casting defects like cracks, mis-runs, cold shuts, porosity and surface flow.

#### 6. MARKING

Month and year of manufacture and manufacturer's code / identification shall be engraved / embossed on the non functional surface of the bush

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## 7. INSPECTION AND ACCEPTANCE CRITERIA

- i) Each component offered by manufacturer shall be checked visually for its surface finish, freedom from defects like porosity, cracks, improper edges etc. Machined surfaces shall be checked by any suitable pneumatic or electronic equipment.
- ii) The component found suitable after visual inspection shall be checked for their dimensions as per relevant drawing.
- iii) Supplier shall produce the certificate that the raw material used for manufacturing of the component conforms to the specified material as mentioned in Para 4.0.
- iv) Minimum one no or 2 % sample of the components randomly picked up out of each lot of consignment and shall be subjected to chemical composition and hardness test. The consignee shall test the material for chemical composition at his laboratory or get the material tested in a reputed laboratory having proper facilities for testing. Before sending the samples for testing, the same shall be duly sealed and secret coding shall be done.
- v) Any deviations in the test result from the requirement of the specification and drawing shall be the cause of rejection.

## 8. PACKING AND PROTECTION

Each component shall be protected with wrapper paper and shall be packed in card board case.

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