SLIDING PLATES

1. SCOPE

This "Product Standard" deals with sliding plates used in "Steam Turbine" for supporting heavy loads where smooth movement of casings/pedestals is required during operation which occurs due to thermal expansion.

2. FUNCTION

These are solid–lubricant embedded self–lubricating copper alloy plates. The solid lubricant is densely embedded in blind holes provided uniformly on one side of the plate which acts as the sliding surface. These plates are placed between the stationary supporting member and the component which expands due to heating during operation. The expanding/moving surface of the component mates with the sliding surface of the plate which facilitates smooth movement arising due to expansion/contraction caused by temperature fluctuations during start–up/shut–down.

3. CONSTRUCTIONAL DETAILS

3.1 MATERIAL

Base Metal – High strength Brass Alloy 424 or CuAl-10 Ni5Fe4 or equivalent to SAE C86300.

Solid Lubricant – As per supplier's design, compressed into the blind holes of the plates. No extra coating shall be provided on the sliding or supporting surfaces.

3.2 SIZE OF BLIND HOLES

The blind holes for embedding solid–lubricant shall normally be of Ø10 to Ø12 mm, uniformly distributed on one side of the plate (refer Figure –1). The size & depth of blind holes shall, however, depend on the size of plate as per supplier's design. In case through holes (for mounting/tightening purposes) are required in the sliding plates as per any specific drawing requirement, the spacing of these lubricating blind holes shall be suitably adjusted to avoid opening out of lubricant holes.

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BASED ON BHEL'S OWN EXPERIENCE

SUPERSEDES INVENTORY No.

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AGREED

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APPROVED (S.C.AGRAWAL) AGM (STE) 30.9.99 (HEAD STE)

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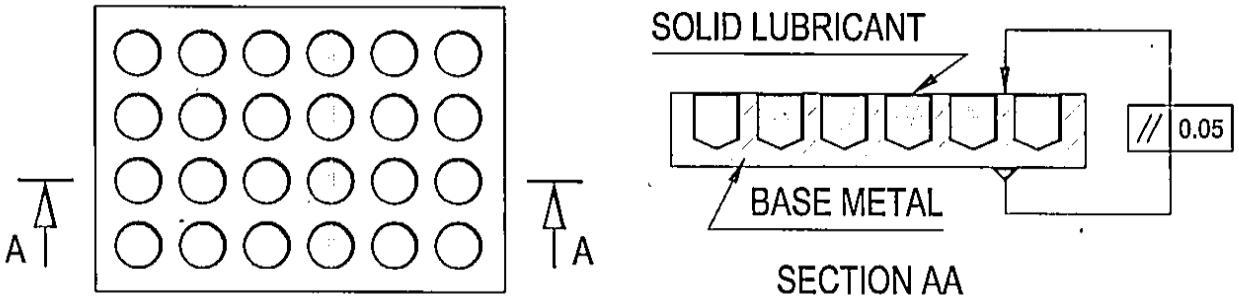

FIGURE - 1

3.3 SPACING OF HOLES

The size and spacing of holes shall be such that it normally covers an approximate area of 25–30 % of the plate's sliding surface. This shall, however, depend on the supplier's design and manufacturing practices.

4. WORKING CONDITIONS

The sliding plates should be designed & supplied by the supplier to withstand the following working conditions:

- Maximum working pressure – 98 N/mm^2
- Maximum surface speed – 2 mm/min (during start–up or shut–down)
- Coefficient of friction ≈ 0.1
- Working conditions – The sliding plate shall be able to perform satisfactorily up to a temperature of 300℃ and should have no effect of saturated steam or oil.

5. DIMENSIONAL VARIATION

Until unless specified on the drawings the dimensional variation of the plate shall not exceed the following –

- External dimensions – – 0.2
- Internal dimensions – + 0.2
- Parallelity of bearing surface – < 0.05
- The sharp edges should be blended smooth.

6. IDENTIFICATION

The sliding plates shall have durable marking on the back side of the sliding surface (not on the sliding surface) showing component code, drawing number, work order number and composition of base alloy used. In case these marking give rise to swelling at the peripheral edges, the surface is to be refinished.

7. PACKING

The sliding plates are to be packed such that there is adequate protection from contamination and mechanical damage during transportation through sea, air or surface.

8. CROSS REFERRED STANDARDS : None

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