



HYDERABAD

**PRODUCT STANDARD  
TURBINES & COMPRESSORS**

**TC 5 1609**

**REV 03**

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**MAINTENANCE FREE LEVER JOINTING HEAD WITH  
EXTERNAL THREADS (TYPE DURAL EM)**

**1.0 : SCOPE :** The standard specifies the requirement of maintenance free lever jointing head with external threads (Type : DURAL EM) to be used in governing system components of steam turbines.

**2.0 : TECHNICAL REQUIREMENTS :**

**2.1 : MATERIAL :**

**2.1.1 : JOINTING HEAD :** 6S-Head from size 6 to 30 in blank form.

**2.1.2 : SURFACE :** Galvanised

**2.1.3 : SPHERICAL BALL :** Hardened ball bearing steel; outer surface of ball should be hard chrome plated.

**2.1.4 : SLIDING BUSH :** Glass fibre reinforced Nylon with teflon filling.

**2.2 : DESIGN & DIMENSIONS :** As shown in figure - I and as per variant table.

**3.0 : TEST & GUARANTEE CERTIFICATE :**

**3.1 : TEST CERTIFICATES :** Type / Routine test certificates as per manufacture's practice to be furnished.

**3.2 : GUARANTEE CERTIFICATES:** A guarantee certificate for 24 months of trouble free performance from the date of shipment or 12 months from the date of commissioning whichever is earlier shall be furnished.

|   |   |                                       |                        |
|---|---|---------------------------------------|------------------------|
| <b>FORMAT</b><br>TD-201<br>REV -00<br>REF DOC | <b>PREPARED BY:</b> - SD -<br>VVNR  | <b>APPROVED BY:</b> - SD -<br>A.GUPTA | <b>DATE :</b> 05.05.79 |
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**4.0 : DOCUMENTS :** Technical literature, dimensional drg. & catalogues giving full details of maintenance free lever jointing head with external threads (Type : Durbal EM) shall be furnished alongwith offer and also with consignment.

**5.0 : PACKING :** The material shall be properly packed to ensure it is capable of withstanding transit risks without damage.

**6.0 : MARKING :**

**6.1 :** A tag bearing the relevant 12 digit material code of BHEL shall be attached to each item.

**6.2 :** The following details shall be marked on the packing case.

- A) Manufacture's Name
- B) BHEL Order Number
- C) BHEL Standard Number
- D) BHEL Material Code : TC9751609XXX

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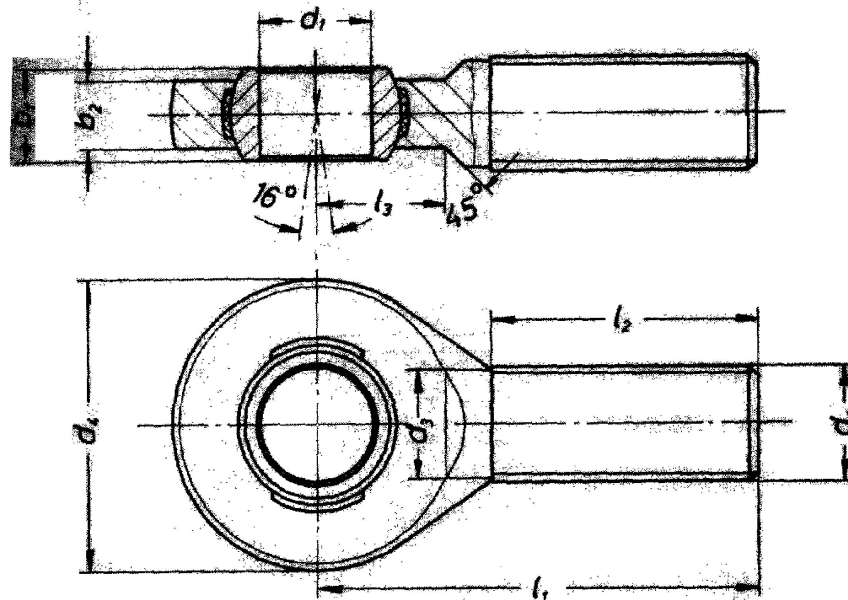
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**7.0 VARIANT - TABLE**

| VAR | Nominal Size | Weight in Gms. | Bearings Capacity in Kgs . |
|-----|--------------|----------------|----------------------------|
| 01  | EM 6         | 14             | 1000                       |
| 02  | EM 6L        | 14             | 1000                       |
| 03  | EM 8         | 27             | 1600                       |
| 04  | EM 8L        | 27             | 1600                       |
| 05  | EM 10        | 46             | 2360                       |
| 06  | EM 10L       | 46             | 2360                       |
| 07  | EM 12        | 73             | 3100                       |
| 08  | EM 12L       | 73             | 3100                       |
| 09  | EM 15        | 118            | 4900                       |
| 10  | EM 15L       | 118            | 4900                       |
| 11  | EM 17        | 180            | 6200                       |
| 12  | EM 17L       | 180            | 6200                       |
| 13  | EM 20        | 290            | 8650                       |

| VAR | Nominal Size | Weight in Gms. | Bearings Capacity in Kgs . |
|-----|--------------|----------------|----------------------------|
| 14  | EM 20L       | 290            | 8650                       |
| 15  | EM 25        | 565            | 14000                      |
| 16  | EM 25L       | 565            | 14000                      |
| 17  | EM 30        | 890            | 18300                      |
| 18  | EM 30L       | 890            | 18300                      |
| 19  | EM 35        | 1340           | 23600                      |
| 20  | EM 35L       | 1340           | 23600                      |
| 21  | EM 40        | 1940           | 25000                      |
| 22  | EM 40L       | 1940           | 25000                      |
| 23  | EM 45        | 2520           | 37500                      |
| 24  | EM 45L       | 2520           | 37500                      |
| 25  | EM 50        | 3950           | 45500                      |
| 26  | EM 50L       | 3950           | 45500                      |



**FIGURE - I**

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| VAR | d1<br>Tolerance<br>DIN 620 | d2                 | d3   | d4 | b1 h12 | b2 h12 | l1  | l2 | l3 | Material<br>Code |
|-----|----------------------------|--------------------|------|----|--------|--------|-----|----|----|------------------|
| 01  | 6                          | M6x1               | 5.35 | 20 | 6      | 4      | 36  | 22 | 11 | TC9051609019     |
| 02  | 6                          | M6x1<br>(LEFT)     | 5.35 | 20 | 6      | 4      | 36  | 22 | 11 | TC9051609027     |
| 03  | 8                          | M8x1.25            | 7.18 | 23 | 8      | 5      | 42  | 25 | 12 | TC9051609035     |
| 04  | 8                          | M8x1.25<br>(LEFT)  | 7.18 | 23 | 8      | 5      | 42  | 25 | 12 | TC9051609043     |
| 05  | 10                         | M10x1.5            | 9.0  | 28 | 9      | 6      | 48  | 29 | 13 | TC9051609051     |
| 06  | 10                         | M10x1.5<br>(LEFT)  | 9.0  | 28 | 9      | 6      | 48  | 29 | 13 | TC9051609060     |
| 07  | 12                         | M12x1.75           | 10.8 | 32 | 10     | 7      | 54  | 33 | 15 | TC9051609078     |
| 08  | 12                         | M12x1.75<br>(LEFT) | 10.8 | 32 | 10     | 7      | 54  | 33 | 15 | TC9051609086     |
| 09  | 15                         | M14x2              | 12.7 | 38 | 12     | 9      | 60  | 36 | 18 | TC9051609094     |
| 10  | 15                         | M14x2<br>(LEFT)    | 12.7 | 38 | 12     | 9      | 60  | 36 | 18 | TC9051609108     |
| 11  | 17                         | M16x2              | 14.7 | 44 | 14     | 10     | 66  | 40 | 20 | TC9051609116     |
| 12  | 17                         | M16X2<br>(LEFT)    | 14.7 | 44 | 14     | 10     | 66  | 40 | 20 | TC9051609124     |
| 13  | 20                         | M20X1.5            | 19.0 | 51 | 16     | 12     | 78  | 47 | 23 | TC9051609132     |
| 14  | 20                         | M20x1.5<br>(LEFT)  | 19.0 | 51 | 16     | 12     | 78  | 47 | 23 | TC9051609140     |
| 15  | 25                         | M24x2<br>R         | 22.7 | 62 | 20     | 16     | 94  | 57 | 30 | TC9051609159     |
| 16  | 25                         | M24X2<br>(LEFT)    | 22.7 | 63 | 20     | 16     | 94  | 57 | 30 | TC9051609167     |
| 17  | 30                         | M30x2<br>R         | 28.7 | 70 | 22     | 18     | 110 | 66 | 32 | TC9051609175     |
| 18  | 30                         | M30x2<br>(LEFT)    | 28.7 | 70 | 22     | 18     | 110 | 66 | 32 | TC9051609183     |

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**7.0 VARIANT - TABLE**

| <b>VAR</b> | <b>d1<br/>Tolerance<br/>DIN 620</b> | <b>d2</b>       | <b>d3</b> | <b>d4</b> | <b>b1 h12</b> | <b>b2 h12</b> | <b>l1</b> | <b>l2</b> | <b>l3</b> | <b>Material<br/>Code</b> |
|------------|-------------------------------------|-----------------|-----------|-----------|---------------|---------------|-----------|-----------|-----------|--------------------------|
| 19         | 35                                  | M36x3           | 34        | 82        | 25            | 20            | 130       | 82        | 38        | TC9051609191             |
| 20         | 35                                  | M36x3<br>(LEFT) | 34        | 82        | 25            | 20            | 130       | 82        | 38        | TC9051609205             |
| 21         | 40                                  | M42x3           | 40        | 92        | 28            | 22            | 145       | 94        | 42        | TC9051609213             |
| 22         | 40                                  | M42x3<br>(LEFT) | 40        | 92        | 28            | 22            | 145       | 94        | 42        | TC9051609221             |
| 23         | 45                                  | M45x3           | 43        | 102       | 32            | 25            | 165       | 100       | 50        | TC9051609230             |
| 24         | 45                                  | M45x3<br>(LEFT) | 43        | 102       | 32            | 25            | 165       | 100       | 50        | TC9051609248             |
| 25         | 50                                  | M52x3           | 50        | 112       | 35            | 28            | 195       | 120       | 60        | TC9051609256             |
| 26         | 50                                  | M52x3<br>(LEFT) | 50        | 112       | 35            | 28            | 195       | 120       | 60        | TC9051609264             |

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**RECORD OF REVISIONS**

| REV NO. | DATE     | REVISION DETAILS   | REVISED                        | APPROVED                      |
|---------|----------|--------------------|--------------------------------|-------------------------------|
| 00      | 07.79    | FIRST LIST MADE    | VVNR                           | A.GUPTA                       |
| 01      | 01.11.91 | CURRENT LIST TAKEN | A.GUPTA                        | A.GUPTA                       |
| 02      | 01.06.97 | FIGURE ADDED       | T.S.SINGH<br><i>T.S. Singh</i> | P.S.BABU<br><i>P. S. Babu</i> |
| 03      | 09.02.21 | REAFFIRMED         | PATIL                          | RATHOD                        |
|         |          |                    |                                |                               |
|         |          |                    |                                |                               |
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