



## Chapter 4-2

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# Primary Air Fan

### Contact Address

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## 4-2 Primary Air Fan

### 4-2.1 Fan Specification and Construction Details

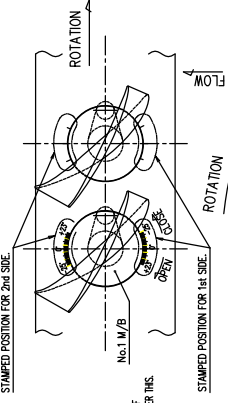
#### 4-2.1.1 Specification

**TABLE 4-2.1.1 PRIMARY AIR FAN**

| Subject                                   |                    | Specifications   |
|---|--------------------|--|
| Equipment number                          |                    | Unit5:50HFE01AN101,50HFE11AN101<br>Unit6:60HFE01AN101,60HFE11AN101 |
| Quantity                                  |                    | Two (2) per unit   |
| Fan                                       | Manufacturer       | MHPS   |
|   | Model              | ML-H2-R125/204   |
|   | Type               | Indoor type Axial Fan with Blade Pitch Control                     |
| Coupling                                  | Manufacturer       | KTR  |
|   | Type               | Flexible Coupling  |
| Bearing                                   | Manufacturer       | JTEKT Corporation  |
|   | Type               | Anti-Friction bearing (MHPS special type)                          |
| Major Material                            | Casing             | General carbon steel   |
|   | Moving Blade       | Forged aluminum  |
|   | Rotor              | Forged steel   |
|   | Main Shaft         | Forged steel   |
|   | Bearing (Box/Body) | Cast iron/bearing steal & carburizing steel                        |
|   | Coupling           | General carbon steel   |
| Synchronous speed                         |                    | 1,500min <sup>-1</sup>   |
| Blades/stage                              |                    | 16/2   |
| <b>Design performance characteristics</b> |                    |  |
| Direction of Rotation                     |                    | Clockwise (Viewed from motor side)                                 |
| Capacity (each fan)                       |                    | 11,400 m <sup>3</sup> /min   |
| Suction Press                             |                    | -4.9 mbar (g)  |
| Discharge Press                           |                    | 162.8 mbar (g)   |
| Fluid                                     |                    | Air  |
| Fluid temperature at inlet (design)       |                    | 35°C   |
| Fluid density (design)                    |                    | 1.128 kg/m <sup>3</sup>  |

| NO.   | MARKS     | TIGHTENING TORQUE VALUE     | SIZE OF SCREW |
|-------|-----------|-----------------------------|---------------|
| 16,17 | ★ ★ ★ ★ ★ | 1815.0 <sup>+0.85</sup> N-m | M16x4         |
| 32,34 | ★ ★ ★ ★   | 294.0 <sup>+2</sup> N-m     | M20           |
| 33    | ★ ★ ★     | 147.0 <sup>+0.5</sup> N-m   | M16           |
| 31    | ★         | 58.8 <sup>+0</sup> N-m      | M12           |
| 39,40 | ☆         | 21.0 <sup>+2</sup> N-m      | M10           |
| -     | ▲         | 147.0 N-m                   | M16           |

**BOLT TIGHTENING TORQUE**



**DETAIL I**

DURING THE ASSEMBLY OF MOVING BLADE, ADJUST ITS THICKNESS SO THAT THE CLEARANCE OF PART A AND F IS 0mm. AFTER ADJUSTMENT OF G, CHECK THE REMAINING ALLOWANCE OF PART L. FOR ALL AND MAKE SURE THAT AIR DOES NOT REMAIN IN Q.



**DETAIL B**

MAIN SHAFT  
BEARING REGULATING SHAFT  
PUNCHING (2 PLACES)

**DETAIL C**

METHOD OF PUNCHING FOR BALANCING WEIGHT

**DETAIL D**

BEARING BOX ASSY.

**DETAIL E**

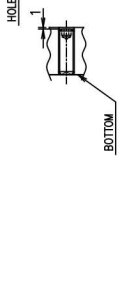
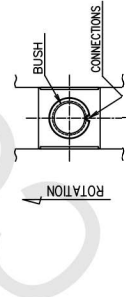
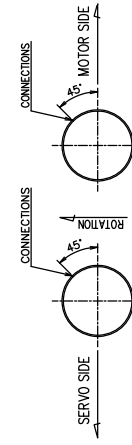
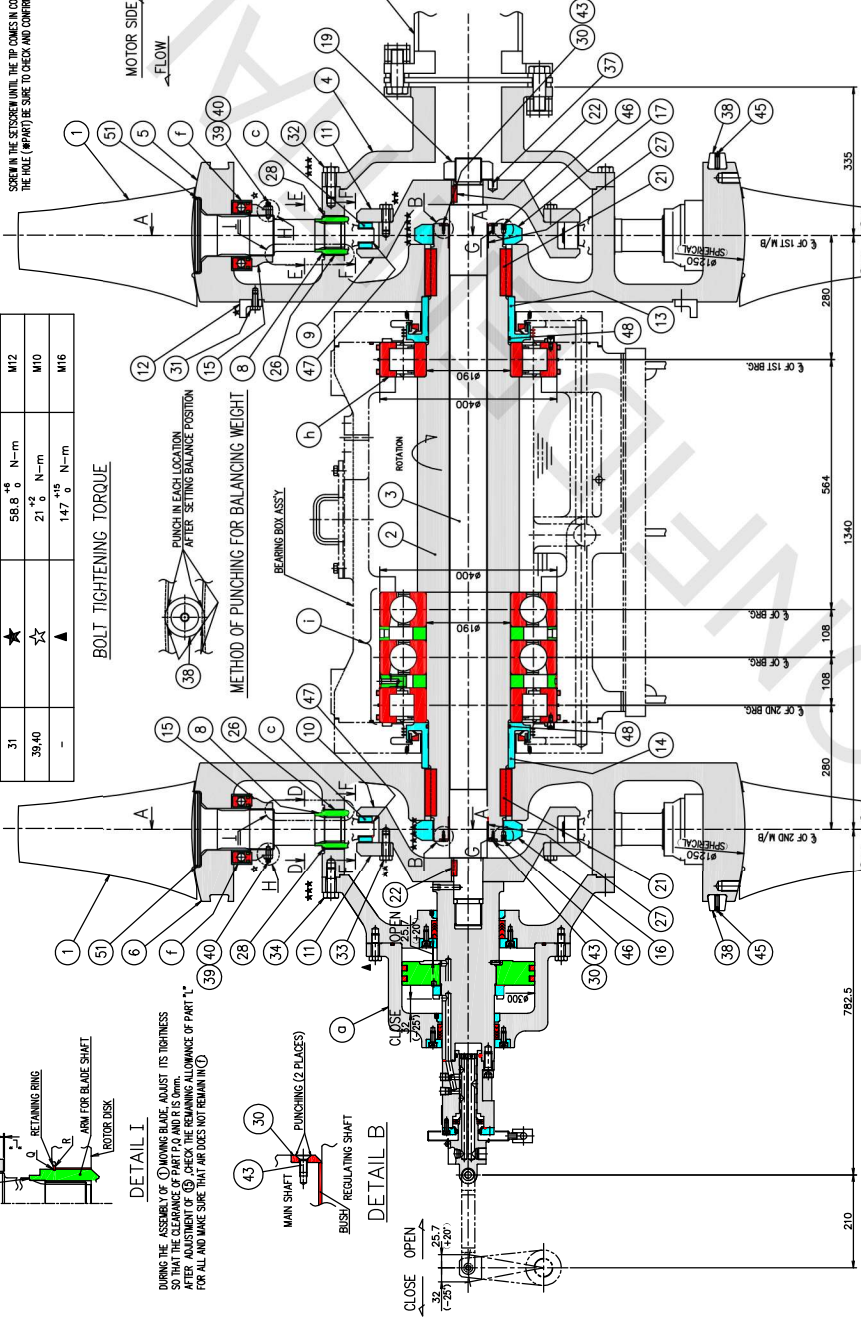
DETAIL OF ASSEMBLING SLIDING PIECE FOR CRANK ARM

**DETAIL F**

DETAIL OF ASSEMBLING BUSH FOR CRANK ARM

**DETAIL G**

DETAIL OF FITTING SET SCREW



| MARKS | DESCRIPTION              | MATERIALS (ASTM / JIS)              | 1-PC WEIGHT (kg) |
|-------|--------------------------|-------------------------------------|------------------|
| 1     | MOVING BLADE             | B247-706 (F 60 2014-16/A2014 F3-16) | 13.1             |
| 2     | MAIN SHAFT               | A576 G10450-07/S45C-01              | 274              |
| 3     | REGULATING SHAFT         | A193 G8187-07/S45C-01               | 88.7             |
| 4     | 1ST ROTOR DISK           | A576 G10450-07/S45C-01              | 165.7            |
| 5     | 2ND ROTOR DISK           | A576 G10450-07/S45C-01              | 165.7            |
| 6     | ARM FOR BLADE SHAFT      | A576 G10450-07/S45C-01              | 106.5            |
| 7     | 1ST REGULATING DISK      | A27 G70-36/S45C-01                  | 72.3             |
| 8     | 2ND REGULATING DISK      | A27 G70-36/S45C-01                  | 72.3             |
| 9     | REGULATING PLATE         | A131 GRADE D/S400A                  | 21.2             |
| 10    | SEAL PLATE OF ROTOR DISK | A36/S400                            | 27.2             |
| 11    | SLIDE FOR BRG KEEP       | A576 G10450-07/S45C-01              | 11.4             |
| 12    | NUT FOR BLADE SUPPORT    | B21 2017-07/A2017B-14               | 1.1              |
| 13    | KEY FOR ROTOR DISK       | A576 G10450-07/S45C-01              | 1.5              |
| 14    | KEY FOR ROTOR DISK       | A576 G10450-07/S45C-01              | 0.83             |
| 15    | KEY FOR REGULATING DISK  | A576 G10450-07/S45C-01              | 0.06             |
| 16    | BUSH FOR M/B ARM         | FR36                                | 0.24             |
| 17    | BUSH FOR M/B ARM         | FR36                                | 0.24             |
| 18    | RETAINING RING 35        | A886 TYPE WLC C/S35M                | 0.045            |
| 19    | STOPPER PLATE FOR BUSH   | B36 G2600/G2801                     | 0.29             |
| 20    | BOLT M12x30              | A193 G8187-07/S45C-01               | 0.041            |
| 21    | BOLT M20x58              | A193 G8187-07/S45C-01               | 0.19             |
| 22    | BOLT M20x61              | A193 G8187-07/S45C-01               | 0.19             |
| 23    | WASHER                   | A109 TEMPER 4/SPCC                  | 0.1              |
| 24    | BALANCING WEIGHT         | A576/S400                           | 0.31             |
| 25    | SET SCREW 35             | A193 G8187-07/S45C-01               | 0.012            |
| 26    | SET SCREW 35             | A193 G8187-07/S45C-01               | 0.012            |
| 27    | MACHINE SCREW M6x12      | A486 G10130/S30412                  | 0.003            |
| 28    | SET SCREWS M10x35        | A193 G8187/S45C-01                  | 0.02             |
| 29    | SET SCREWS M10x10        | A193 G8187/S45C-01                  | 0.005            |
| 30    | RETAINING RING 30        | A886 TYPE WLC C/S30M                | 0.004            |
| 31    | RETAINING RING 35        | FR36                                | 0.02             |
| 32    | HYDRAULIC MECHANISM ASSY | BELOM                               | 30.1             |
| 33    | SLIDING PIECE            | -                                   | 0.63             |
| 34    | M/B SUPPORT BEARING      | -                                   | 3.81             |
| 35    | 1ST BEARING              | -                                   | 18.9             |
| 36    | 2ND BEARING              | -                                   | 46.9             |

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NOTE: - THIS DRAWING SHOWS M/B IN NEUTRAL POSITION (0°)

FIGURE 4-2.1.5 ROTOR ASSEMBLY

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