MITSUBISHI HITACHI POWER SYSTEMS

# Chapter 4-1

# Forced Draft Fan



Contact Address

For any question or any clarification required, please do not hesitate to contact Mitsubishi Heavy Industries, Ltd. (MHI) through the following address.

Mitsubishi Heavy Industries, Ltd.
Energy Transition & Power Headquarters, Energy Systems,
Steam Power Maintenance Innovation Business Division,
Nagasaki Solution Business Department, Overseas Business Group C,
1-1, Akunoura Machi, Nagasaki 850-8610.
Japan.
Tel. No: +81-80-9938-0035
Working Hours: 08.30 hrs. to 17.30 hrs. JPT (Except on Saturdays, Sundays and Holidays)

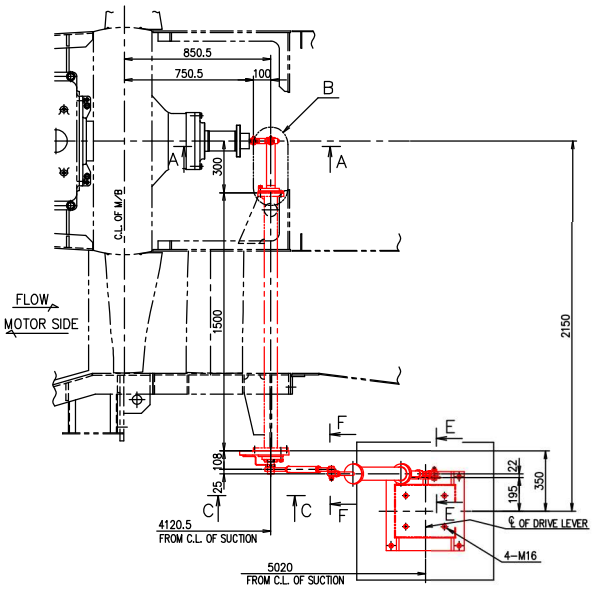
# 4-1 Forced Draft Fan

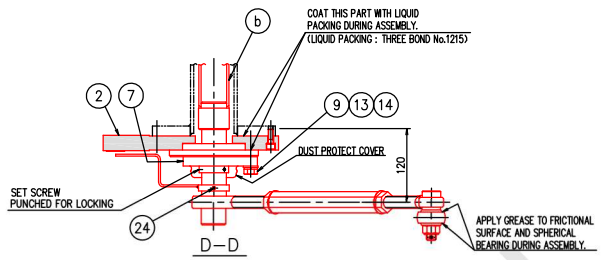
## 4-1.1 Fan Specification and Construction Details

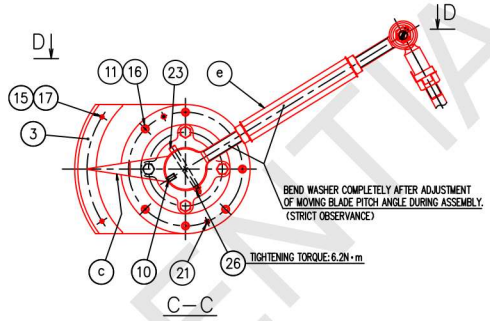
### 4-1.1.1 Specification

**TABLE 4-1.1.1 FORCED DRAFT FAN**

| Subject | | Specifications |
|---|---|---|
| Equipment number | | Unit 5: 50HLB01AN101, 50HLB11AN101<br>Unit 6: 60HLB01AN101, 60HLB11AN101 |
| Quantity | | Two (2) per Unit |
| Fan | Manufacturer | MHPS |
| | Model | ML-H1-R132/270 |
| | Type | Axial Fan, Variable Blade Control |
| Coupling | Manufacturer | MHPS |
| | Type | Rigid coupling (with intermediate shaft) |
| Bearing | Manufacturer | JTEKT Corporation |
| | Type | Anti-Friction bearing (MHPS special type) |
| Major material | Casing | Rolled Steel for General Structure |
| | Rotor | Forged Steel |
| | Moving Blade | Forged Aluminum |
| | Main Shaft | Forged Steel |
| | Bearing (Box/Body) | Cast Iron / Bearing Steel & Carburizing Steel |
| | Coupling | General Carbon Steel |
| Rotating Speed (Synchronous) | | $1000min^{-1}$ |
| Blade | | 14 |
| **Performance Characteristics** | | |
| Direction of Rotation | | Clockwise (Viewed from motor side) |
| Capacity (each fan) | | 20,600 $m^3$/min |
| Suction press. | | -4.9 mbar(g) |
| Discharge press. | | 44.1 mbar(g) |
| Fluid | | Air |
| Fluid temperature at inlet | | 35°C |
| Fluid density (design) | | 1.128 $kg/m^3$ |



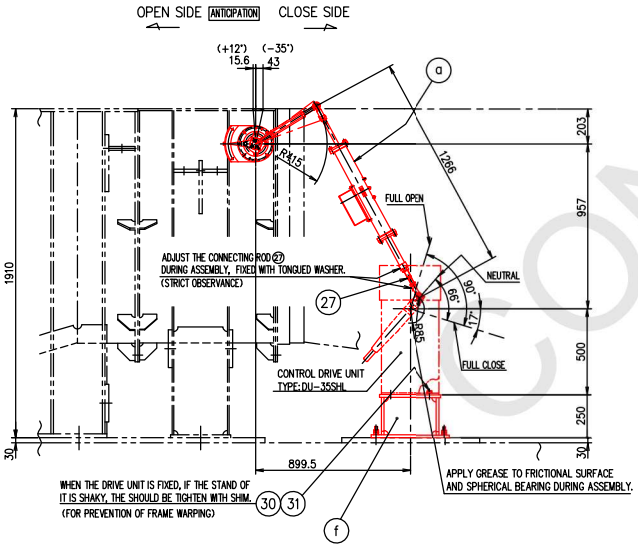



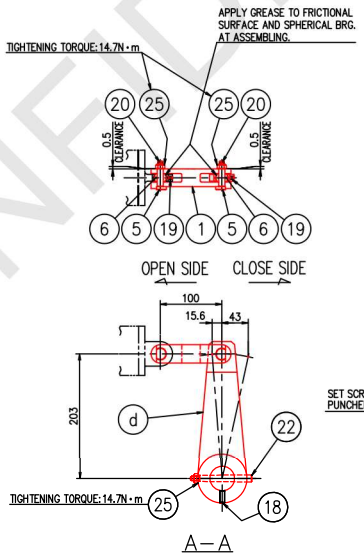



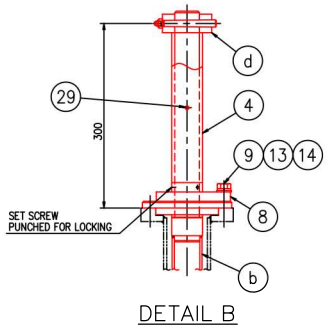

| MARKS | DESCRIPTION | MATERIALS (ASTM/JIS) | 1–PC WEIGHT (kg) |
|---|---|---|---|
| 1 | LEVER | A36/SS400 | 0.53 |
| 2 | STAND FOR SCALE PLATE | A36/SS400 | 8.2 |
| 3 | SCALE PLATE | B36 UNS No.C26000/C2600P-1/2H | 0.16 |
| 4 | PIECE 40×S4 | A53 GRADE A/STPT370 | 1.0 |
| 5 | PIN 10×42 | A576 G10450–QT/S45C–QT | 0.033 |
| 6 | SPHERICAL BEARING PB10 | – | 0.039 |
| 7 | BALL BEARING UNIT UCFC208C H7 | – | 2.0 |
| 8 | BALL BEARING UNIT UCFC208 H7 | – | 2.0 |
| 9 | BOLT M12×45 | A36/SS400 | 0.059 |
| 10 | SET SCREW M8×14 | A479 TYPE 304/SUS304–S | 0.006 |
| 11 | SOCKET HEAD BOLT M8×25 | A193 Gr.B7–QT/SCM435–QT | 0.017 |
| 13 | WASHER M12 | A36/SS400 | 0.006 |
| 14 | SPRING WASHER M12 | A713 G10640/SWRH62 | 0.007 |
| 15 | SPRING WASHER M4 | A713 G10640/SWRH62 | 0.001 |
| 16 | WASHER M8 | W1–7/S50CM | 0.001 |
| 17 | SCREW M4×6 | A548 G10130/SWRM12 | 0.001 |
| 18 | SET SCREW M8×20 | A479 TYPE 304/SUS304–S | 0.008 |
| 19 | SET SCREW M5×6 | A479 TYPE 304/SUS304–S | 0.001 |
| 20 | SPLIT PIN 2×16 | A548 G10130/SWRM12 | 0.001 |
| 21 | TAPER PIN 8×36 | A576 G10450–N/S45C–N | 0.015 |
| 22 | THREAD END TAPER PIN 10×85 | A576 G10350–N/S35C–N | 0.06 |
| 23 | THREAD END TAPER PIN 8×75 | A576 G10350–N/S35C–N | 0.04 |
| 24 | SPRING PIN 5×50 | A686 TYPE W1 Gr.C/SK5M | 0.005 |
| 25 | U–NUT M8 | A36/SS400 | 0.005 |
| 26 | U–NUT M6 | A36/SS400 | 0.002 |
| 27 | CONNECTING ROD | A193 Gr.B7/SCM435 | 0.51 |
| 28 | PIN 20×63 | A576 G10450–QT/S45C–QT | 0.18 |
| 29 | SET SCREW M6×6 | A479 TYPE 304/SUS304–S | 0.001 |
| 30 | BOLT M16×35 | A36/SS400 | 0.095 |
| 31 | WASHER M16 | A36/SS400 | 0.011 |
| a | DETECTIVE CYLINDER ASS'Y | – | 21.9 |
| b | OPERATING SHAFT | – | 11.8 |
| c | POINTER | – | 0.65 |
| d | LEVER | – | 2.1 |
| e | LEVER | – | 1.8 |
| f | STAND FOR DRIVE UNIT | – | 66.0 |

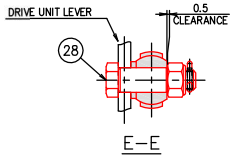
NOTES

–THIS DRAWING SHOWS NEUTRAL POSITION OF MOVING BLADE AT ANGLE 0°, BUT ASSEMBLY WORK SHOULD BE PERFORMED ON A FULL CLOSE BLADE POSITION.
–OPERATING DIRECTION OF DRIVE UNIT LEVER
VIEW FROM LEVER SIDE : A–FAN CW (CLOSE–OPEN)
B–FAN CCW (CLOSE–OPEN)
–DURING ASSEMBLY PUNCHED SET SCREWS AND TAPER PINS IN 2 PLACES ON THE CIRCUMFERENCE . (STRICT OBSERVANCE)
–APPLY GREASE TO FRICTIONAL SURFACE AND SPHERICAL DURING ASSEMBLY.



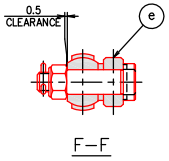






FIGURE 4-1.1.8 PILOT VALVE DRIVE LINKAGE MECHANISM ASSEMBLY