MITSUBISHI HITACHI POWER SYSTEMS

Chapter 4-3

Induced 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)

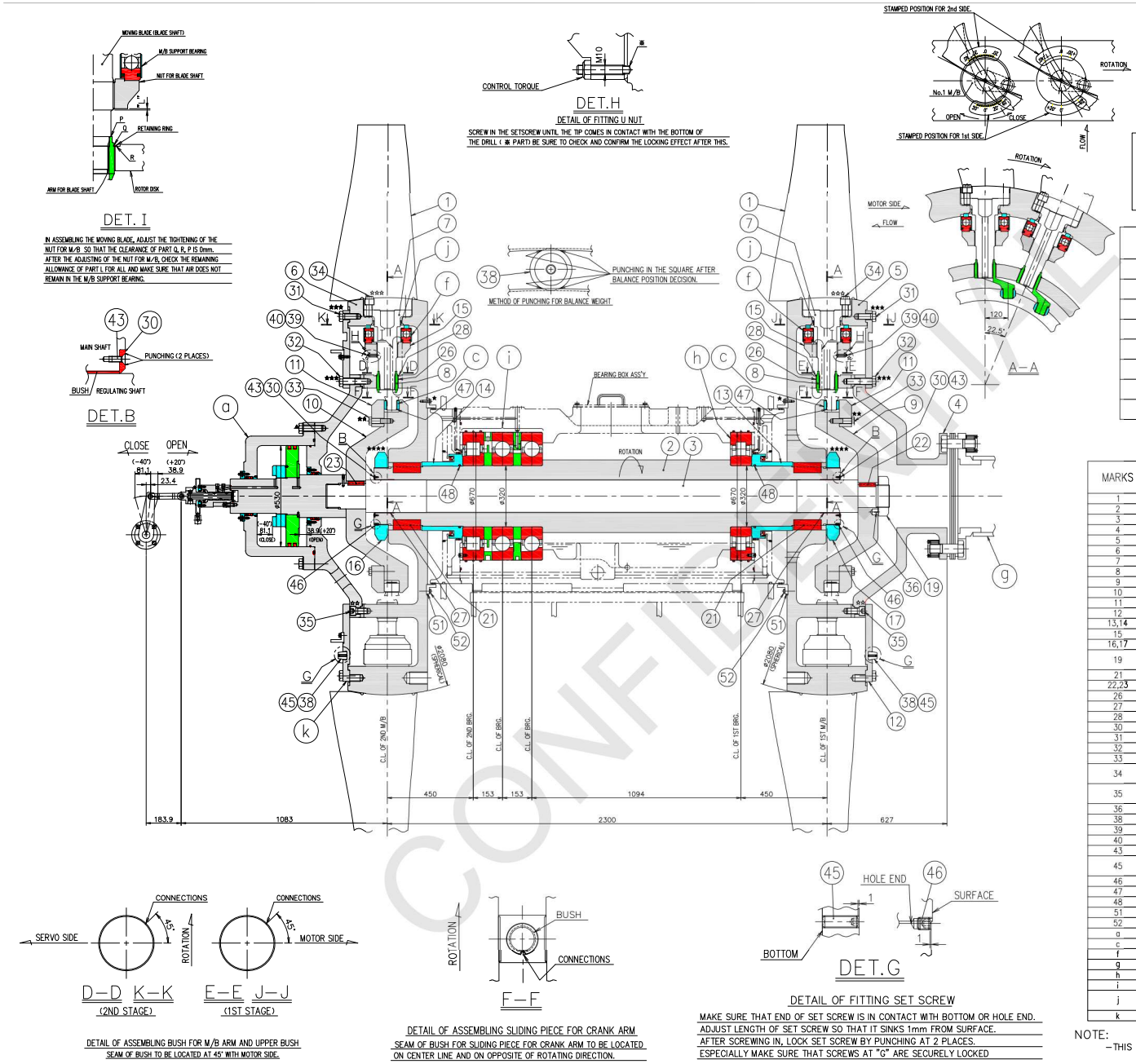
4-3 Induced Draft Fan

4-3.1 Fan Specification and Construction Details

4-3.1.1 Specification

TABLE 4-3.1.1 INDUCED DRAFT FAN

Subject		Specifications
Equipment number		Unit5:50HNC01AN101,50HNC11AN101 Unit6:60HNC01AN101,60HNC11AN101
Quantity		Two (2) per unit
Fan	Manufacturer	MHPS
	Model	ML-H2-R208/390
	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 steel
	Rotor	Forged steel
	Main Shaft	Forged steel
	Bearing (Box/Body)	Cast iron/bearing steal & carburizing steel
	Coupling	General carbon steel
Synchronous speed		750 min^{-1}
Blades/stage		16/2
Design performance characteristics		
Direction of Rotation		Clockwise (Viewed from motor side)
Capacity (each fan)		51,700 m^3/min
Suction Press		-45.1.mbar (g)
Discharge Press		60.8 mbar (g)
Fluid		GAS
Fluid temperature at inlet (design)		150°C
Fluid density (design)		0.7925 kg/m^3



NO.	MARKS	TIGHTENING TORQUE VALUE	SIZE OF SCREW
16,17	★★★★	7355^{+7355}_{0} N·m	M300×6
31,32	★★★	1124^{+112}_{0} N·m	M30
33	★★	591^{+59}_{0} N·m	M24
52	★	81^{+8}_{0} N·m	M12
34	☆☆☆	892^{+89}_{0} N·m	M32×2
35	☆☆	1124^{+112}_{0} N·m	M30
39	☆	21^{+2}_{0} N·m	M10
–	▲	981^{+98}_{0} N·m	M30

BOLT TIGHTENING TORQUE

MARKS	DESCRIPTION	MATERIALS (ASTM/JIS)	1–PC WEIGHT (kg)
1	MOVING BLADE	A105/SFVC2A	97.3
2	MAIN SHAFT	A576 G10450–QT/S45C–QT	1302
3	REGULATING SHAFT	A193 Gr.B7–QT/SCM435–QT	486.4
4	DRIVE COUPLING	A536 Gr.80–55–6/FCD500	749
5	1ST ROTOR DISK	A576 G10450–N/S45C–N	3645
6	2ND ROTOR DISK	A576 G10450–N/S45C–N	3653
7	MOVING BLADE SHAFT	A193 Gr.B7–QT/SCM435–QT	32.6
8	ARM FOR BLADE SHAFT	A576 G10450–QT/S45C–QT	6.3
9	1ST REGULATING DISK	A536 Gr.80–55–6/FCD500	313
10	2ND REGULATING DISK	A536 Gr.80–55–6/FCD500	315
11	REGULATING PLATE	A36/SS400	185
12	SIDE PLATE(1ST SIDE)	A36/SS400	489.5
13,14	SLEEVE FOR BRG.KEEP	A576 G10450/S45C–QT	59.3
15	NUT FOR BLADE SHAFT	A576 G10450–N/S45C–N	16.5
16,17	FASTENING NUT FOR ROTOR DISK	A576 G10350–QT/S35C–QT	39.5
19	FASTENING NUT FOR REGULATING SHAFT	A576 G10450–QT/S45C–QT	7.1
21	KEY FOR ROTOR DISK	A576 G10450–QT/S45C–QT	3.3
22,23	KEY FOR REGULATING DISK	A576 G10450–QT/S45C–QT	0.38
26	BUSH FOR M/B ARM	FR936	0.49
27	BUSH FOR REGULATING SHAFT	FR936	1.06
28	RETAINING RING 110	A686 TYPE W1,Gr C/SK5M	0.094
30	STOPPER PLATE FOR BUSH	B36 C2600/C2801	0.78
31	BOLT M30×75	–	0.59
32	BOLT M30×135	–	0.86
33	BOLT M24×100	–	0.41
34	BOLTS FOR MOVING BLADE M32×2	A193 Gr.B7–QT/SCM435–QT	1.08
35	HEX. SOCKET HEAD BOLT M30×65	–	0.58
36	WASHER	A109/SPCC	0.36
38	BALANCING WEIGHT	A36/SS400	0.40
39	U NUT M10	A576 G10450/S45C	0.012
40	SET SCREWS M10×55	A193 Gr.B7–QT/SCM435–QT	0.034
43	MACHINE SCREW M6×14	A548 G10130/SWRM12	0.005
45	HEXAGON SOCKET HEADLESS SET SCREW M10×45	A193 Gr.B7/SCM435	0.024
46	SET SCREWS M12×16	A193 Gr.B7/SCM435	0.016
47	RETAINING RING 50	A686 TYPE W1,Gr C/SK5M	0.011
48	O–RING P315	RUBBER	0.052
51	SEAL PLATE OF ROTOR DISK	A36/SS400	30.3
52	BOLT M12×35	–	0.050
a	HYDRAULIC MECHANISM ASS'Y	–	1423
c	SLIDING PIECE	–	1.72
f	M/B SUPPORT BEARING	–	19.4
g	FLEXIBLE COUPLING	–	–
h	1ST BEARING	–	200
i	2ND BEARING	–	714
j	UPPER BUSH FOR M/B SHAFT	–	0.6
k	SIDE PLATE ASS'Y	–	534

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

FIGURE 4-3.1.5 ROTOR ASSEMBLY