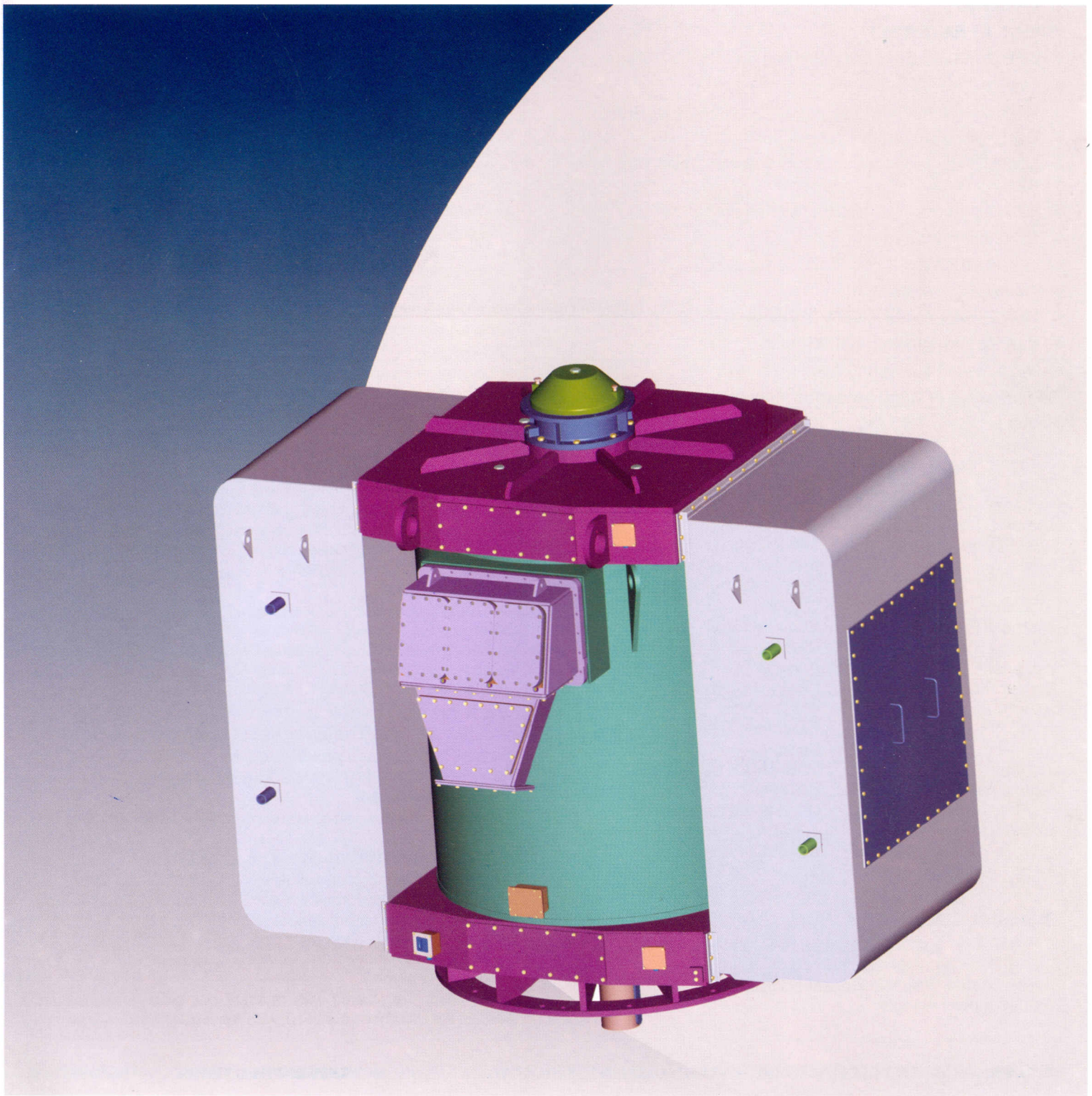
TÜV CERT
ISO 9001 : 2000
RWTÜV

Jyoti Ltd.

65 YEARS OF ENGINEERING EXCELLENCE

'Jyoti' High Voltage Induction Motors (CACW Series)

Designed for the performance you insist



INTRODUCTION

The 'Jyoti' High Voltage Induction Motors are used for numerous and varied applications in the industries. It is necessary to carefully match the design parameters of the motors with the requirements of driven equipment to ensure satisfactory operation and performance.

Long experience in design, development and manufacturing of rotating electrical machines has enabled Jyoti to successfully design, manufacture and deliver H.T. Motors for various applications in thermal and nuclear power stations, cement plants, coal industries, fertilizer plants and water supply and irrigation projects, etc. The H.T. Motors are designed for high operating efficiency to reduce the operating cost and conserve energy.

These motors adopt quality materials skilled workmanship resulting in low operation cost, low noise, low vibration, high reliability and ease of convenience, for installation and maintenance.

SPECIAL FEATURES :

Jyoti H.T. Motors have the following Special Features :

- Type tested PSTB
- Robust Coils wound stator using proven insulation system.
- Design Ambient Temperature of 50°C
- Stator Coil type tested for impulse level, as per IEC 60034-15.
- Winding bracing suitable for out-of-phase reclosing.
- Modular construction.
- Low vibration level
- Optimized performance
- Special cage bar for low starting current
- Bearing life more than 40,000 hours
- 'Jyoti' make T&J Bearings when required.

Specification of 'Jyoti Induction Motors'

Rating	:	180 to 2500 kW
Voltage	:	3300 / 6600 / 11000 Volts,
Voltage variation	:	±10%
Frequency	:	50 Hz
Freuency variation	:	±5%
Combined variation	:	10%
Sync.Speed	:	1500/1000/750/600/500 rpm
Type	:	Squirrel cage / Wound rotor
Mounting	:	Horizontal / Vertical
Enclosure	:	CACW
Degree of Protection	:	IP-54 / IP-55
Cooling Type	:	IC-81W
Insulation	:	Class-F
Temperature Rise	:	Limited to Class-B
Bearing	:	Antifriction Ball / Roller Bearings / Tilting Pad type T&J Bearing
Lubrication	:	Grease / Oil Lubricated
Slipring and Brush Gears	:	Suitable for Continuous operation
Accessories	:	1. RTDs for winding & bearings 2.Anti-Condensation Heaters 3. Dial Type Thermometer 4. Water-flow switch for CACW

TERMINAL BOX :

1. Phase Segregated Terminal Box (Mains)
2. Star Point terminal Box
3. Accessories Terminal Box for RTD, BTD, Anti Condensation Heaters

BRIEF CONSTRUCTIONAL DETAILS

The motors are of box type construction, and frame is steel fabricated, thus motors are light in weight and rigid in construction. The frame construction is such that it provides convenience for repair and maintenance.

STATOR :

The stator stack is built from high permeability, low loss, both side insulated silicon steel lamination. The stator stack assembled with coils to form an individual assembly, which is then hydraulically pressed into the stator housing and welded with the steel ribs and stacking rings.

The windings are of class F insulation, but used in accordance with temperature rise limitation of Class-B insulation. Epoxy mica glass and flexible mica composite is used for coils straight and overhang portion. Insulation for coils are resin rich or resin poor. For total winding stress grading, conducting tapes are used for coils rated voltage 6.6 kV and above. The stator winding overhangs are rigidly supported and braced at the end portion. The stator stack with winding is impregnated under vacuum and pressure (VPI) to make the stack and winding assembly rigid with varnish filling the voids. Therefore, the motor is reliable in insulation properties, good in electrical and mechanical strength and protected against humid environment.

ROTOR :

Squirrel-cage rotors are made with different types of rotor bar sections, depending upon starting torque requirements. Rotor is either aluminum die-cast or of fabricated construction having copper bars brazed to S.C. rings using high silver content brazing alloys. Complete rotor is then impregnated using class F varnish and baked.

Insulation system of the rotor winding is similar to the one used for stator winding. Rotor winding overhang is banded using res-i-glass / polyglass tape under tension and then baked to form solid bonding, which prevents flaring of overhangs due to centrifugal force in operation.

Rotor is balanced dynamically on precision balancing machine.

BEARINGS :

In general, horizontal motors are provided with anti-friction ball / roller bearings. In case of vertical motors, roller bearing is used at DE side and thrust bearing is used on NDE side. Thrust bearing size is selected considering thrust load from driven equipment. The bearings are lubricated using lithium base high temperature grease or oil-bath lubricated.

Considering operating speed and load carrying requirements, when it is not possible to use antifriction type bearing, 'Jyoti' make tilting-pad type T&J bearings are used. These bearings are oil lubricated and water-jacket cooled. These bearings have long operating life, theoretically infinite.

TERMINAL BOX :

The main lead terminal box is of phase-segregated type with IP-55 protection. It is type tested for 500/750 MVA at 6.6 / 11 kV respectively for 0.25 seconds at CPRI. For star point and rotor terminal box bushing and stud construction are used. Separate terminal boxes are provided for all accessories.

The cable entry can be turned to 180° position. The number of cable glands will be given as per customer requirement.

Ground terminals are provided on motor body as well as both inside and outside the main lead terminal box.

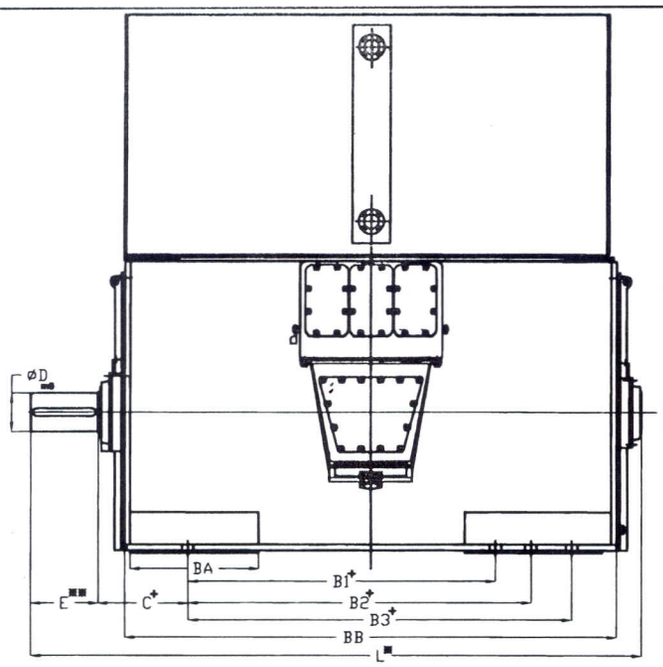
HEAT EXCHANGER :

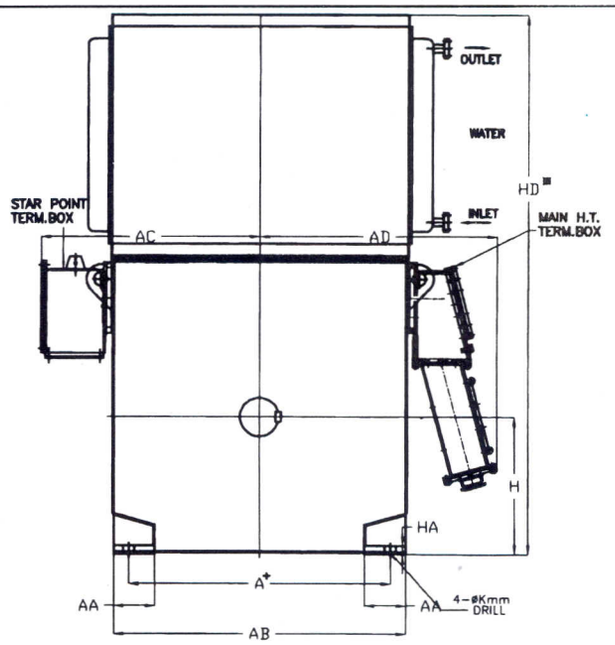
For CACW motors, air-to-water heat exchanger (Radiator) is used.

SLIPRING AND BRUSH-GEAR ASSEMBLY

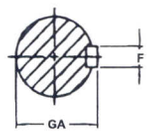
Slipring and brush gear assembly of sufficient capacities are selected for wound rotor motors. Suitably insulated copper conductor is used for bringing rotor lead to slipring assembly. The slipring and brush gear assembly are suitable for continuous operation and housed in separate enclosure having proper cooling arrangement.

The motors are treated with relevant corrosion protection and painted with colour as per IS : 5, with required shade.





FRAME	A+	AA	AB	B+	BB	BA	C+	Dm6	E**	F	GA	H	HA	HD*	AD	AC	L*	K
CHW-355	670	120	750	800-900-1000	1260	325	254	100	210	28	106	355	28	1450	715	650	1680	28
CHW-400	750	150	910	900-1000-1120	1400	375	280	110	210	28	116	400	28	1650	800	725	1830	35
CHW-450	850	150	1000	1000-1120-1250	1600	425	315	120	210	28	132	450	30	1800	840	770	2050	35
CHW-500	950	150	1060	1120-1250-1400	1600	475	335	140	250	36	148	500	30	1950	870	800	2270	42
CHW-560	1060	150	1200	1250-1400-1600	1950	475	355	160	300	40	170	560	30	2100	940	875	2470	42
CHW-630	1180	180	1350	1400-1600-1800	2200	525	375	180	300	45	191	630	30	2400	1015	950	2730	48

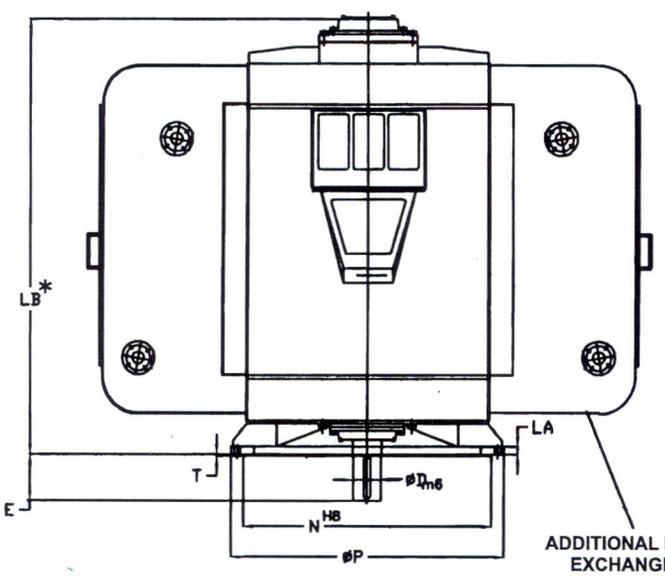


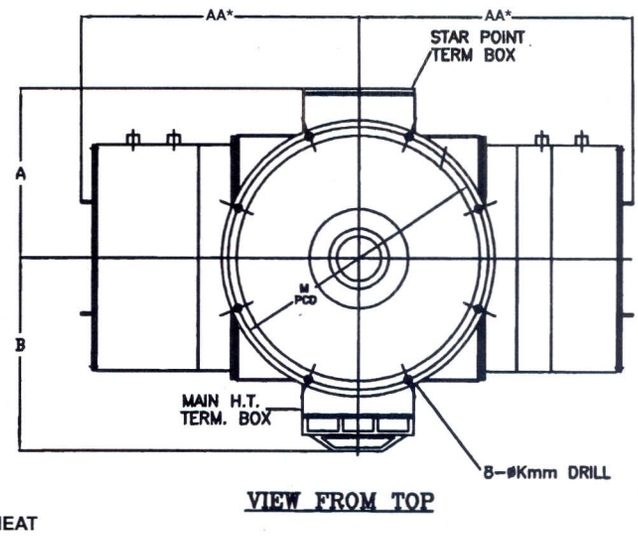
All dimensions are in mm.

** These dimensions may vary by ±0.5mm

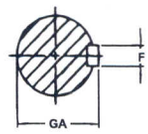
* These dimensions may vary by ±15mm

+ These dimensions may vary by ±1.5mm





CUW-630	1250	1320	1150	8/6	160	300	40	169	32	2500	1050	950	1350	28
CUW-560	1180	1250	1135	8/6	125	210	32	132	32	2200	950	900	1400	28
CUW-500	1080	1150	1000	8/6	125	210	32	132	32	2100	900	850	1450	28
CUW-450	940	1000	880	8/6	125	210	32	132	28	2100	880	850	1300	28
CUW-400	940	1000	880	6	100	210	28	106	25	1850	750	700	750	28
CUW-355	740	800	680	6	90	170	25	95	25	1650	700	650	750	24
FRAME	M	P	N H7	T	D	E	F	GA	LA	LB*	B*	A*	AA*	K



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RELATIONSHIP OF OUTPUT TO FRAME SIZE AND SPEED (3.3 / 6.6 kV)
CACW ENCLOSURE

FRAME SIZE	SPEED (R.P.M)				
	1500 (4P)	1000 (6P)	750 (8P)	600 (10P)	500 (12P)
	OUTPUT (kW)				
355	180 200 220 250 280	180 200			
400	315 355 400 450 500	220 250 280 315 355	180 200 220 250	180 200	
450	560 630 710 800	400 450 500 560	280 315 355 400	220 250 280 315	180 200 220
500	900 1000 1120 1250	630 710 800 900	450 500 560 630	355 400 450 500	250 280 315 355
560	1400 1600 1800	1000 1120 1250	710 800 900	560 630 710 800	400 450 500 560
630	2000 2240 2500	1400 1600 1800	1000 1120 1250	900 1000 1120 1250	630 710 800 900

Jyoti Ltd. VADODARA (INDIA)

® 65 Years of Engineering Excellence

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In keeping with the technological strides the world is making inthe engineering field, we introduce changes in the design of our products. Hence, the products as actually supplied might have features varying herefrom.