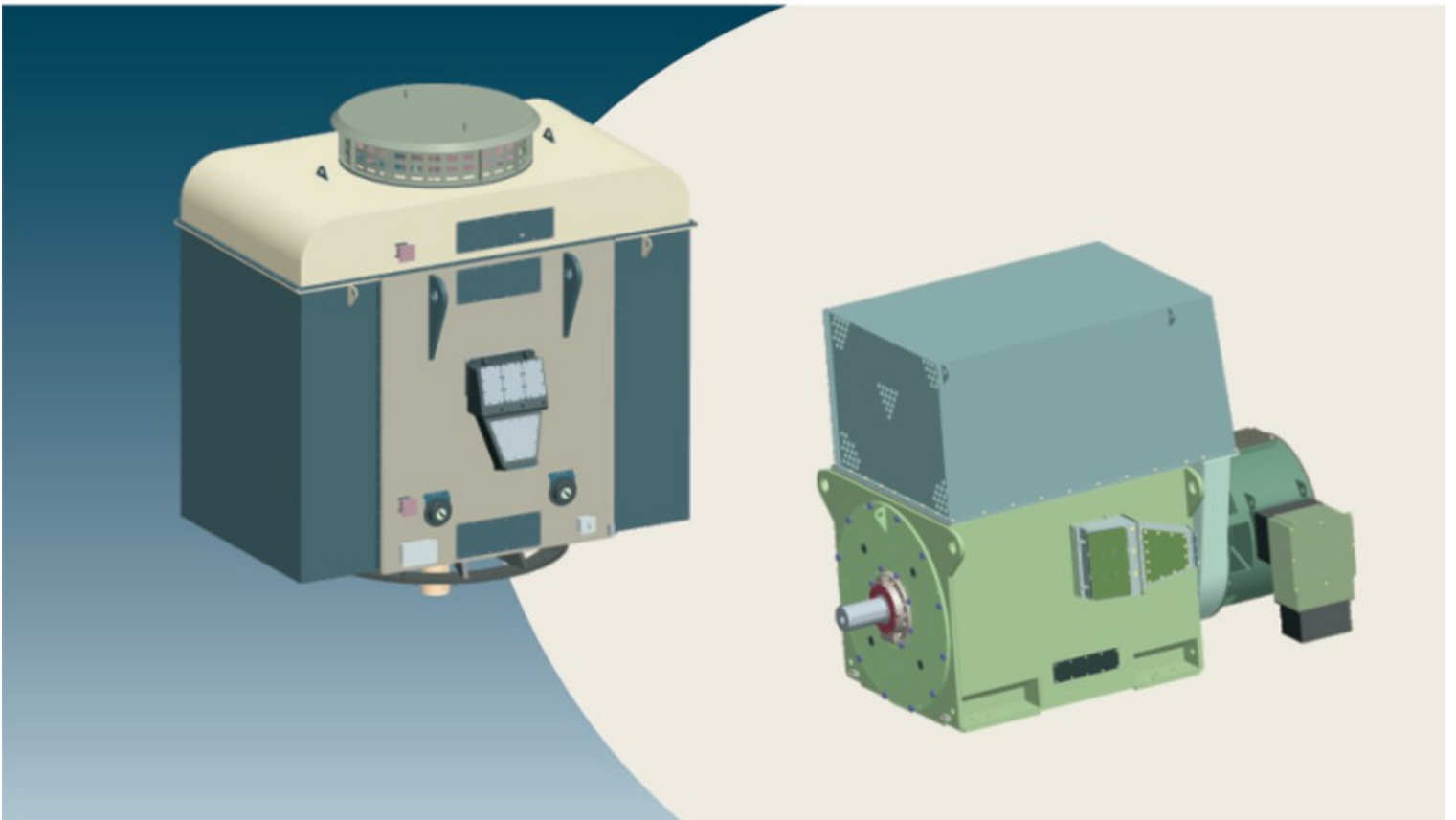




Jyoti Ltd.
Water • Power • Progress

'Jyoti'
High Voltage Induction Motors
(CACA 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 4500 kW
Voltage	: 3300 / 6600 / 11000 Volts,
Voltage variation	: ±10%
Frequency	: 50 Hz
Frequency variation	: ±5%
Combined variation	: ±10%
Sync.Speed	: 1500/1000/750/600/500 rpm
Type	: Squirrel cage / Wound rotor
Mounting	: Horizontal / Vertical
Enclosure	: CACA
Degree of Protection	: IP-54 / IP-55
Cooling Type	: IC-0161
Insulation	: Class-F
Temperature Rise	: Limited to Class-B
Bearing	: Antifriction Ball / Roller Bearings / Tilting Pad type T&J Bearing
Lubrication	: Grease / Oil Lubricated
Slip-ring and Brush Gears	: Suitable for Continuous operation (Wound rotor motors)
Accessories	: 1. RTDs for winding & bearings 2. Anti-Condensation Heaters 3. Dial Type Thermometer

TERMINAL BOX :

1. Phase Segregated Terminal Box (Mains)
2. Star Point terminal Box
3. Accessories Terminal Box : 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 & 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 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.

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-bath 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.

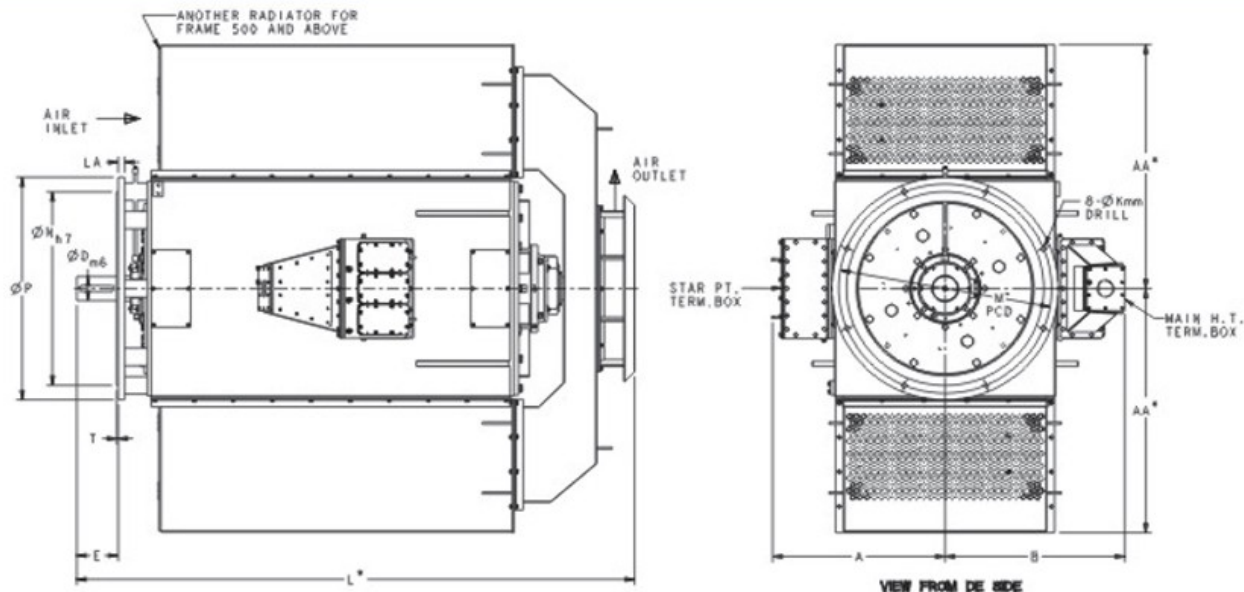
HEAT EXCHANGER :

For CACA motors air-to-air heat exchanger 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 leads 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.

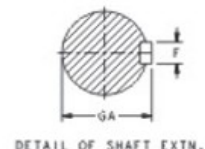


VIEW FROM DE SIDE

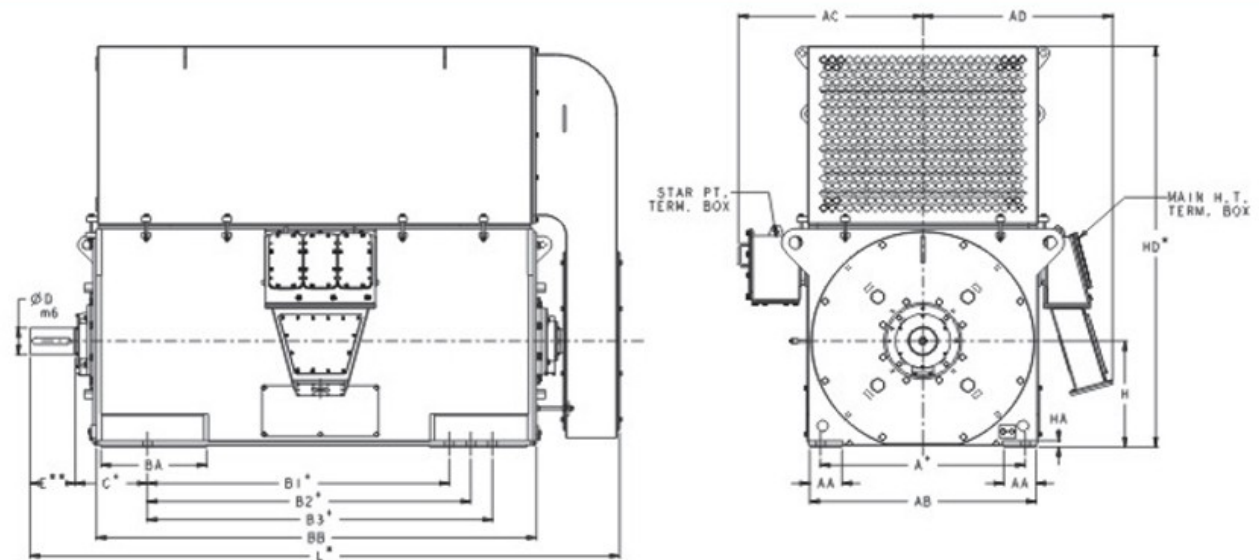
FRAME	M	P	Nh7	T	D	E	F	GA	LA	L*	B	A	AA*	K
CUA-355	740	800	680	6	90	170	25	95	25	1950	750	720	900	24
CUA-400	940	1000	880	6	110	210	28	106	25	2500	850	820	1000	28
CUA-450	1080	1150	1000	8/6	125	210	32	132	25	2750	860	860	1100	28
CUA-500	1180	1250	1120	8/6	140	250	36	148	32	2900	910	910	1400	28
CUA-560	1320	1400	1200	8/6	180	300	45	190	32	3350	1000	1000	1500	28
CUA-630	1700	1800	1600	8/6	200	350	45	210	32	3600	1050	1050	1650	28

All dimensions are in mm.

* These dimensions may vary by ±15mm



DETAIL OF SHAFT EXTN.



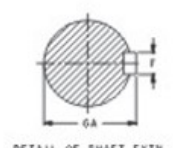
FRAME	A+	AA	AB	B+	BB	BA	C+	Dm6	E**	F	GA	H	HA	HD*	AD	AC	L*	K
CHA-355	670	120	750	900-1000-1120	1260	325	254	90	170	25	95	355	28	1500	715	650	1880	28
CHA-400	750	150	910	1000-1120-1250	1400	375	280	110	210	28	106	400	28	1650	800	855	2400	35
CHA-450	850	150	1000	1120-1250-1400	1600	425	280	125	210	32	132	450	30	1750	840	900	2600	35
CHA-500	950	150	1060	1250-1400-1600	1800	475	315	140	250	36	148	500	30	2000	870	1000	2900	42
CHA-560	1060	150	1240	1400-1600-1800	1950	475	315	180	300	45	190	560	30	2300	960	1300	3350	42
CHA-630	1180	180	1350	1600-1800-2000	2200	525	355	200	350	45	210	630	30	2350	1015	1400	3600	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



DETAIL OF SHAFT EXTN.

Jyoti-CACA Squirrel Cage Motors at 50°C Ambient and Class F with B limit Rise (i.e. 70°C Rse)

Frame	3300 Volts- 50 Hz					6600 Volts- 50 Hz					11000 Volts- 50 Hz					
	Pole	4	6	8	10	12	4	6	8	10	12	4	6	8	10	12
400		560	400	250	225	180	560	400	250	200	200					
		630	450	280	250	200	630	450	280	225	225					
		710	500	315	280	225	710	500	315	250						
		800	560	355	315		800	560	355	280						
		900	630	400	355		900	630	400	315						
				450					450							
450			500					480								
		1000	710	560	400	250	1000	710	560	400	250	560	500	400		
		1120	800	630	450	280	1120	800	630	450	315	630	560	450		
		1250	900	710	500	315	1250	900	710	500	355	710	710	500		
			1000		560	355		1000		560	400	800	800			
						400						900	900			
500											1000					
		1400	1120	900	630	450	1400	1120	900	630	500	1120	1000	560	450	400
		1600	1250	1000	710	500	1600	1250	1000	710	560	1250	1120	630	560	450
		1800	1400	1120	800	560	1800	1400	1120	800	630	1400	1250	710	630	500
		2000	1600	1250	900	630	2000	1600	1250	900		1600	1400	800	710	
														900	800	
560														1000		
		2250	1800	1400	1000	710	2250	1800	1400	1000	710	1800	1600	1120	900	630
		2500	2000	1600	1120	800	2500	2000	1600	1120	800	2000	1800	1250	1000	710
		2800	2250	1800	1250	900	2800	2250	1800	1250	900	2250	2000	1400	1120	800
		3150			1400	1000	3150	2500		1400	1000	2500	2250	1600	1250	900
630														1800		
		3500	2500	2000	1600	1120	3500	2800	2000	1600	1120	2800	2500	2000	1400	1000
		4000	2800	2250	1800	1250	4000	3150	2250	1800	1250	3150	2800	2250	1600	1120
		4500	3150	2500	2000	1400	4500	3500	2500	2000	1400	3500	3150	2500	1800	1400
			3500		2250	1600				2250	1600	4000	3350			

Note : For more details about wound rotor motor, contact our office.



Jyoti Ltd. VADODARA (INDIA)
Water • Power • Progress

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