

hindustan ELECTRIC MOTORS



IE2 EFFICIENCY CLASS

Endurance Enhanced

2 YEARS ADDITIONAL WARRANTY

INSULATION CLASS π

PTC THERMISTORS

EPOXY BASE PAINT

WITH SEALING BOX
(FOR GR. 1 ONLY)

DC

WITH 9 NEW FEATURES

60 120 180 240 420 480

Introducing **POWER HORSE** IE2 series Motors

'POWER HORSE' – with increased thermal endurance

From a humble beginning in 1973 from a 510 sq. feet manufacturing area to 250,000 sq. feet manufacturing area today, from 60 motors per day to 1100 motors per day today, Hindustan Electric Motors is catering to a large customer base of approximately 900 plus and growing.

We have more than 5 million motors in operation in the field for various applications.

The National and International standard defines the performance parameters of the motors. The reliability part has to be build into the motor by the motor manufacturer.

We at Hindustan Electric Motors have always stressed on building robust motors which delivers the required power with maximum up time to ensure maximum production. The cost of loss of production is way higher than the cost of repair of the motor. Additionally once the motor is burnt the efficiency of a rewound motor is always less than a newly built motor and this results in higher power consumption.

The biggest threat to the motor is the heat generated in the motor windings when operated in abnormal conditions. When the temperature rating of the insulation class is used beyond its thermal rating the lubricants and insulation deteriorate chemically at a rate that doubles for each 8 to 12 degrees celsius increase in temperature. A widely accepted rule of thumb is that motor insulation life is reduced by one-half for every 10 degrees rise in temperature.

Once thermal deterioration occurs it is non reversible.

The following are the temperature related life shortening factors.

- Wide voltage variations
- Unbalanced voltage
- Overload
- High ambient temperature
- Frequent start stops
- High Inertia loads
- Poor ventilation
- Hot spot temperature when operating at service factor loading

Taking a step further we now introduce a new series of motors– 'Power Horse' having frame size 280, 315 and 355 with the following features as a standard supply.

1. IE2 efficiency class
2. Insulation class H
3. Dual coat wire for winding
4. PTC thermistors in the winding
5. Vacuum pressure impregnation for the winding
6. Bearing life 50000 hrs for directly coupled load through flexible coupling
7. High temperature grease
8. Epoxy base paint
9. *2 years additional warranty on winding against manufacturing defect

**Subject to proper selection of motor with respect to load details/load curves. The motor has to be suitably protected against over loading / short circuit. The bearings should be regressed as per schedule with high temperature grease.*

The table given below shows the maximum temperature for different insulation classes :

Insulation class	Maximum temperature Hot spot
B	130 Deg. C
F	155 Deg. C
H	180 Deg. C

The average life of the winding is considered to be 20,000 hours when used at maximum temperature allowed of a particular insulation class.

The approximate life of the insulation class H with different temperature class is given as below :

Insulation class H	Approximate winding life in hours
Class H temperature rise class B	> 640,000 hours
Class H temperature rise class F	160,000 hours
Class H temperature rise class H	20,000 hours

BEARING ARRANGEMENT

Frame Size	Driving End	Non-Driving End	Regreasing Time (Hrs.)	
			2 pole	4, 6, 8 pole
280S/M	6317	6317	2,000	5,000
315S/M/L	6319	6319	2,000	4,000
355S/M/L	6322	6322	2,000	3,000

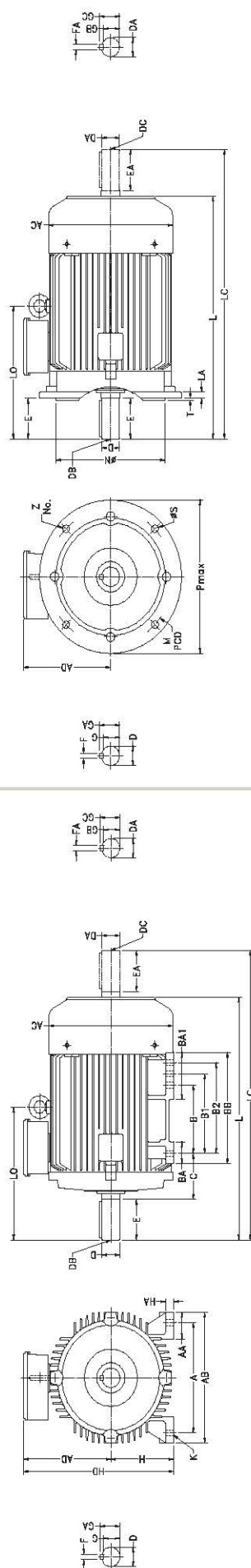
TERMINAL BOX DATA

Frame Size	Cable Entry size	Max. Cable Size	Max. Cable Size	Terminal
		DOL starting	Star-Delta starting	Stud size
280-315	2 x 2"	3C x 240mm ²	2 x 3C x 150mm ²	M12
355	2 x 3", 2 x 1"	3C x 400mm ²	2 x 3C x 300mm ²	M16

Equivalent metric & Pg threadings can also be provided on request.

MECHANICAL DIMENSIONS

DIMENSIONS OF FOOT (B3) & FLANGE (B5) MOUNTED MOTORS

[illegible]

Suffix "X" denotes motors other than 2 pole motors.

ELECTRICAL PERFORMANCE FOR HINDUSTAN POWER HORSE IE2 MOTORS

P	Output		Frame Size	Motor Type	Speed (rpm)	Curr. (A)	Torque (kgm)	Efficiency (%)			Power Factor			STA	STT	POT	GD ² (kgm ²)	Wt. (kg)
	kW	HP						FL	3/4L	1/2L	FL	3/4L	1/2L					
2	75.0	100.0	280S	2PH2 280-02	2975	124.0	24.55	93.8	93.8	91.0	0.90	0.87	0.83	7.0	2.3	2.7	2.9368	570
	90.0	120.0	280M	2PH2 283-02	2975	148.0	29.47	94.1	94.1	91.5	0.90	0.87	0.83	7.0	2.3	2.7	3.3886	592
	110.0	150.0	315S	2PH2 310-02	2980	180.0	35.95	94.3	94.3	91.8	0.90	0.87	0.83	7.0	2.2	2.6	3.9194	750
	125.0	170.0	315M	2PH2 313-02	2980	204.0	40.86	94.5	94.5	92.0	0.90	0.87	0.83	7.0	2.2	2.6	4.6393	780
	132.0	180.0	315M	2PH2 314-02	2980	216.0	43.14	94.6	94.6	92.0	0.90	0.87	0.83	7.0	2.2	2.6	4.6393	780
	160.0	215.0	315L	2PH2 316-02	2985	260.0	52.21	94.8	94.8	92.5	0.90	0.87	0.83	7.0	2.2	2.6	5.5991	930
	200.0	270.0	315L	2PH2 317-02	2985	326.0	65.26	95.0	95.0	93.0	0.90	0.87	0.83	7.0	2.2	2.6	7.0389	965
	250.0	335.0	355M	2PH2 353-02	2985	407.0	81.57	95.0	95.0	93.0	0.90	0.87	0.83	7.0	2.0	2.4	10.0292	1710
	315.0	425.0	355L	2PH2 357-02	2985	512.0	102.78	95.0	95.0	93.0	0.90	0.87	0.83	7.0	2.0	2.4	12.6685	1900
4	75.0	100.0	280SX	2PH2 280-04	1482	128.0	49.29	94.0	94.0	93.5	0.87	0.84	0.79	7.0	2.2	2.5	3.9994	590
	90.0	120.0	280MX	2PH2 283-04	1482	152.0	59.15	94.2	94.2	93.5	0.87	0.84	0.80	7.0	2.2	2.5	4.7993	610
	110.0	150.0	315SX	2PH2 310-04	1485	187.0	72.15	94.5	94.5	93.7	0.87	0.84	0.80	7.0	2.2	2.5	8.1503	790
	125.0	170.0	315MX	2PH2 313-04	1485	215.0	81.99	94.6	94.6	93.8	0.86	0.84	0.80	7.0	2.2	2.5	9.7803	820
	132.0	180.0	315MX	2PH2 314-04	1485	226.0	86.58	94.7	94.7	94.0	0.86	0.84	0.80	7.0	2.2	2.5	9.7803	820
	160.0	215.0	315LX	2PH2 316-04	1485	272.0	104.94	94.9	94.9	94.2	0.86	0.84	0.80	7.0	2.2	2.5	11.8549	990
	200.0	270.0	315LX	2PH2 317-04	1485	336.0	131.18	95.1	95.1	94.6	0.87	0.84	0.80	7.0	2.2	2.5	14.8187	1000
	250.0	335.0	355MX	2PH2 353-04	1488	420.0	163.64	95.1	95.1	94.6	0.87	0.84	0.78	7.0	2.0	2.4	15.9163	1740
	315.0	425.0	355LX	2PH2 357-04	1488	527.0	206.19	95.1	95.1	94.6	0.87	0.84	0.78	7.0	2.0	2.4	20.7282	1980
6	45.0	60.0	280SX	2PH2 280-06	983	80.0	44.59	92.7	92.7	89.4	0.84	0.81	0.73	7.0	2.2	2.4	5.2502	570
	55.0	75.0	280MX	2PH2 283-06	983	98.0	54.50	93.1	93.1	89.7	0.84	0.81	0.73	7.0	2.2	2.4	5.8335	590
	75.0	100.0	315SX	2PH2 310-06	986	133.0	74.09	93.7	93.7	90.0	0.84	0.81	0.73	7.0	2.1	2.4	7.2611	750
	90.0	120.0	315MX	2PH2 313-06	986	159.0	88.90	94.0	94.0	92.0	0.84	0.81	0.74	7.0	2.1	2.4	8.5948	780
	110.0	150.0	315MX	2PH2 314-06	986	192.0	108.66	94.3	94.3	92.0	0.85	0.82	0.75	7.0	2.1	2.4	10.3731	960
	125.0	170.0	315LX	2PH2 316-06	987	215.0	123.35	94.4	94.4	92.5	0.86	0.83	0.76	7.0	2.1	2.4	12.4477	985
	132.0	180.0	315LX	2PH2 317-06	987	227.0	130.26	94.6	94.6	93.0	0.86	0.83	0.76	7.0	2.1	2.4	12.4477	985
	160.0	215.0	355SX	2PH2 350-06	988	280.0	157.73	94.8	94.8	94.0	0.84	0.82	0.75	7.0	2.1	2.4	18.2762	1660
	200.0	270.0	355MX	2PH2 353-06	988	345.0	197.17	95.0	95.0	94.5	0.85	0.82	0.75	7.0	2.1	2.4	21.0176	1830
	250.0	335.0	355LX	2PH2 357-06	988	433.0	246.46	95.0	95.0	94.5	0.85	0.82	0.75	7.0	2.1	2.4	26.5005	2020

• IE3 series motors also available.



HINDUSTAN MOTOR MFG. CO.

32/A, Vidyavilla Compound, Old Nagardas Road,
Andheri (East), Mumbai - 400 069. INDIA.

Tel: +91 22 4250 0500 (30 Lines)
Fax: +91 22 2838 0947
Email: sales@hindmotors.com

Website : www.hindmotors.com



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