

ENERGY EFFICIENT MOTORS

LT MOTORS DIVISION

Crompton Greaves Ltd., a pioneering leader with more than 60 years of experience and expertise in the management of electric energy, is today India's largest private sector enterprise in electrical engineering, with a turnover exceeding Rs.1800 crores. The Company has 28 manufacturing units, 19 branch offices and a network of dealers, distribution and service centres all over India.

LT Motors division, for the past six decades has lead the industry in developing motors that deliver greater performance and reliability while using less electricity.

The motors are indigenously manufactured at the Crompton Greaves State-of-the-art plant at Ahmednagar thus consistently ensuring conformance to National and International standards for energy conservation and environment preservation.

ENERGY EFFICIENT MOTORS

Crompton Greaves has now developed a complete family of high efficiency motors confirming to Eff level 1 standards of IEEMA : 19-2000 and other applicable standards in Europe and rest of the world.

These motors are available in TEFC construction for use in safe areas and also in flameproof enclosure for use in Hazardous areas.

Special design Features:

Higher efficiencies are achieved by following special features :

- Low loss special grade of thinner laminations. This reduces the Iron loss even at partial loads.
- Thicker conductors and more copper contents reduce copper loss due to lower resistance.
- Longer core length, reduced and uniform air gap between stator and rotor to reduce stray losses.
- Special design of fan and fan cover to reduce windage losses

Benefits

Improved efficiency is available from 60 % to 100 % load. The eff curve is almost flat resulting in higher energy savings as in most of the cases the motor is not always fully loaded.

The special design features also result in lower operating temperatures which enhance the life of motor and reduce the maintenance costs.

These motors have inherently low noise and vibration and help in conservation of environment.

Crompton Greaves energy efficient motors offer an additional feature which no other manufacturer offers.

These motors are with highest power factor in the industry due to the special exclusive designs available with Crompton Greaves.

The higher power factor reduces the currents in the cables supplying power to motor and this reduces cable loss, improving the system efficiency sometimes by even 2 %. Sometimes this allows even a lower cable size saving

tremendously on capital costs. Saving is also made by reducing capacitors required to improve power factor.

Manufacturing range:

Efficiency Level 1

- 0.37 kW to 450 kW, (2 pole to 8 pole)
- Frame sizes : 71 to 355 for TEFC
80 to 315 for Flame proof
- The entire range is available in IEC frames sizes (metric range) and also in NEMA frames

Conform to following standards:

- IEEMA : 19-2000
- IS 12615
- IS 325-1996 & IEC 34
- NEMA EPACT EFFICIENCY VALUES (for NEMA motors)

IEEMA 19-2000 standard covers kW ratings only up to 160kW. However we are offering energy efficient motors up to 450 kW.

IMPORTANCE OF ENERGY EFFICIENCY:

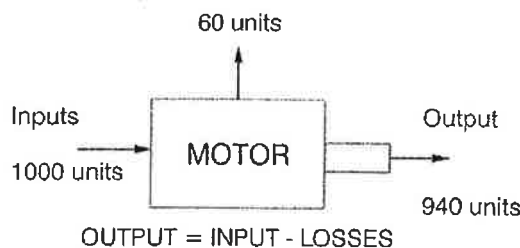
Growing cost of energy calls for power saving at each possible step of manufacturing. Electric motor driven systems used in industrial processes consume more than 70 percent of electricity used in industry, hence best possible technology is being applied for achieving highest possible efficiency values.

Efficiency measurement of an electric motor:

The efficiency of an electric motor is determined by the amount of useful power it produces compared to the amount of energy required to operate it. The figure below illustrates how a Crompton Greaves Energy efficient motors effectively turns 1000 units of electrical power into mechanical power.

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Since motor efficiency is commonly expressed as a percentage, Efficiency in this case would be 94%.

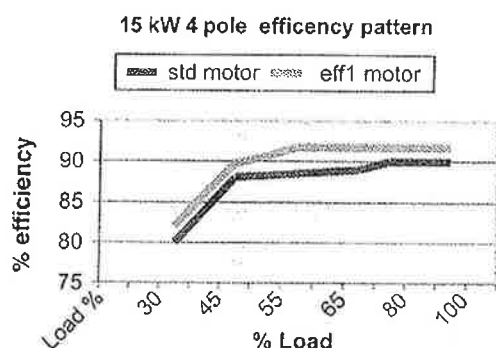
ENERGY EFFICIENT MOTORS

Applications:

The benefits of using these motors are maximum in continuous duty applications like Blowers, Compressors, Fans, Exhausters Pumps etc.

Best performance even at partial loads:

In many applications the load factor of the motor will range between 60% to 80%. The efficiency curve of standard motor is drooping in nature i.e there is a sharp fall in efficiency at partial loads. But the energy efficient motors have a flat efficiency curve and hence the fall in efficiency is marginal. Thus energy saving is significant even in part loads.



Assessing cost effectiveness of energy efficient motors:

Savings:

Savings are calculated as follows:-

Kw - out put of motor in kw

E1 - efficiency of standard motor

E2 - efficiency of energy efficient motor

$$X = \left(\frac{Kw}{E1} - \frac{Kw}{E2} \right)$$

$$\text{Savings} = X * \left(\frac{\text{working}}{\text{Hour's}} \right) * \left(\frac{\text{working}}{\text{days}} \right) * (\text{tariff})$$

EXAMPLE

3.7 kW 4 pole motor in frame ND112M

Std motor eff2: 85 % eff1 88.3 %

Price eff2: Rs 7215/- eff1: Rs 9380/-

Working hours 16 per days, working days 300 in a year , power rate Rs 4.5 per KWH

X=0.1626

RS Savings=0.1626X16X300X4.5

= 3514/- RS per year

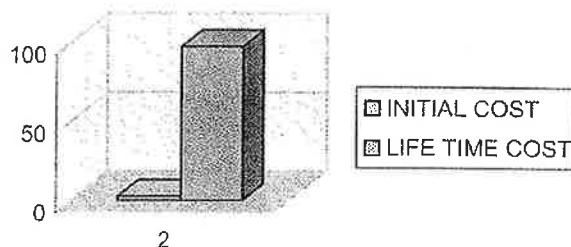
Extra investment RS 2615/-

Payback period = 9 months

Energy cost for a 15 years usage at Rs 4.5 kWh is staggering 14.10 lacs as compared to buying cost of Rs 7215/- . Also the energy KWH rate is likely to only go up in future.

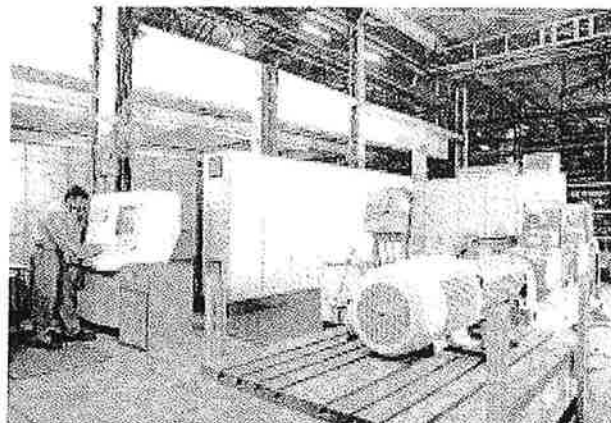
If we compare initial purchase price of the motor with the cost of energy it uses over it working lifetime, the initial cost represents less than two percent of its lifetime cost in most of the cases .

Comparison of initial & life time costs



So it makes a great deal of sense to choose a eff1 level motor whenever a motor is needed to drive any applications.

Combine this with usual Crompton greaves motors reliability , wide service network (over 180 service points all over India) and the wise choice is Crompton greaves EFF1 motor.



ENERGY EFFICIENT MOTORS

PERFORMANCE FIGURES OF TEFC SCR MOTORS FOR 45°/75°- EFF LEVEL 1, 415 V, 50 Hz

| OUTPUT | | P O L E | FRAME SIZE | FL RPM | FLC AMPS. | FLT Kg-m | EFFICIENCY (%) | | | POWER FACTOR | | | DOL STG. | | POT % FLT | GD. ² KGM. ² | NET WT. KG |
|--------|-------|------------------|-------------------|-----------|--------------|-------------|----------------|-------------|-------------|--------------|-------------|-------------|----------------|----------------|--------------|---------------------------------------|------------------|
| KW | HP | | | | | | FL | 3/4 LOAD | 1/2 LOAD | FL | 3/4 LOAD | 1/2 LOAD | STG.T % FLT | STG.C % FLC | | | |
| 0.37 | 0.50 | 2 | SD71 | 2820 | 0.95 | 0.13 | 70.2 | 70.2 | 68.2 | 0.79 | 0.72 | 0.60 | 250 | 500 | 300 | 0.002 | 7.0 |
| | | 4 | SD71 | 1400 | 1.00 | 0.26 | 73.0 | 73.0 | 71.0 | 0.70 | 0.58 | 0.43 | 225 | 600 | 275 | 0.004 | 7.0 |
| | | 6 | SD/ND80 | 910 | 1.05 | 0.40 | 69.4 | 69.4 | 67.4 | 0.71 | 0.63 | 0.52 | 210 | 400 | 260 | 0.011 | 10/17 |
| | | 8 | SD/ND90S | 680 | 1.40 | 0.53 | 66.8 | 66.8 | 64.8 | 0.57 | 0.50 | 0.40 | 170 | 400 | 220 | 0.015 | 13/22 |
| 0.55 | 0.75 | 2 | SD71 | 2800 | 1.30 | 0.19 | 74.0 | 74.0 | 72.0 | 0.78 | 0.72 | 0.60 | 250 | 500 | 300 | 0.002 | 7.0 |
| | | 4 | SD/ND80 | 1410 | 1.25 | 0.37 | 78.0 | 78.0 | 76.0 | 0.78 | 0.75 | 0.64 | 200 | 500 | 250 | 0.007 | 10/17 |
| | | 6 | SD/ND80 | 910 | 1.55 | 0.58 | 72.0 | 72.0 | 70.0 | 0.71 | 0.63 | 0.52 | 200 | 400 | 250 | 0.011 | 10/17 |
| | | 8 | SD/ND90L | 680 | 1.80 | 0.78 | 71.1 | 71.1 | 69.1 | 0.60 | 0.48 | 0.37 | 150 | 400 | 200 | 0.021 | 13/22 |
| 0.75 | 1.00 | 2 | SD/ND80 | 2820 | 1.65 | 0.26 | 77.0 | 77.0 | 75.0 | 0.81 | 0.73 | 0.62 | 250 | 600 | 300 | 0.003 | 10/17 |
| | | 4 | SD/ND80 | 1410 | 1.70 | 0.52 | 82.5 | 82.5 | 80.5 | 0.78 | 0.75 | 0.64 | 200 | 500 | 250 | 0.007 | 10/17 |
| | | 6 | SD/ND90S | 935 | 2.00 | 0.78 | 74.6 | 74.6 | 72.6 | 0.72 | 0.65 | 0.58 | 200 | 400 | 250 | 0.015 | 13/22 |
| | | 8 | SD/ND100L | 700 | 2.55 | 1.04 | 73.8 | 73.8 | 71.8 | 0.58 | 0.51 | 0.41 | 175 | 400 | 225 | 0.030 | 19/32 |
| 1.10 | 1.50 | 2 | SD/ND80*** | 2820 | 2.35 | 0.38 | 82.8 | 82.8 | 80.8 | 0.82 | 0.77 | 0.70 | 200 | 600 | 250 | 0.004 | 10/17 |
| | | 4 | SD/ND90S | 1415 | 2.40 | 0.76 | 83.8 | 83.8 | 81.8 | 0.78 | 0.75 | 0.64 | 200 | 500 | 250 | 0.014 | 13/22 |
| | | 6 | SD/ND90L | 935 | 2.75 | 1.15 | 77.3 | 77.3 | 75.3 | 0.72 | 0.65 | 0.58 | 200 | 500 | 250 | 0.021 | 16/25 |
| | | 8 | SD100L/ ND100L | 700 | 3.30 | 1.53 | 76.2 | 76.2 | 74.2 | 0.62 | 0.57 | 0.47 | 160 | 400 | 210 | 0.034 | 19/35 |
| 1.50 | 2.00 | 2 | SD/ND90S | 2830 | 3.00 | 0.52 | 84.1 | 84.1 | 82.1 | 0.82 | 0.77 | 0.70 | 225 | 600 | 275 | 0.006 | 13/22 |
| | | 4 | SD/ND90L | 1415 | 3.00 | 1.03 | 85.0 | 85.0 | 83.0 | 0.81 | 0.78 | 0.71 | 200 | 600 | 250 | 0.019 | 16/25 |
| | | 6 | SD/ND100L | 935 | 3.60 | 1.56 | 79.6 | 79.6 | 77.6 | 0.72 | 0.65 | 0.58 | 200 | 500 | 250 | 0.030 | 19/32 |
| | | 8 | SD112M/ ND112M | 700 | 3.90 | 2.09 | 77.9 | 77.9 | 75.9 | 0.68 | 0.60 | 0.52 | 190 | 400 | 240 | 0.057 | 29/45 |
| 2.20 | 3.00 | 2 | SD/ND90L | 2830 | 4.40 | 0.76 | 85.6 | 85.6 | 83.6 | 0.82 | 0.77 | 0.70 | 225 | 650 | 275 | 0.008 | 16/25 |
| | | 4 | SD/ND100L | 1440 | 4.30 | 1.49 | 86.4 | 86.4 | 84.4 | 0.82 | 0.78 | 0.72 | 200 | 600 | 250 | 0.030 | 19/32 |
| | | 6 | SD/ND112M | 935 | 5.00 | 2.29 | 82.2 | 82.2 | 80.2 | 0.75 | 0.70 | 0.60 | 200 | 500 | 250 | 0.048 | 29/42 |
| | | 8 | ND132S | 710 | 5.40 | 3.02 | 80.5 | 80.5 | 78.5 | 0.71 | 0.68 | 0.61 | 180 | 500 | 230 | 0.174 | 68.0 |
| 3.70 | 5.00 | 2 | SD/ND100L | 2875 | 7.20 | 1.25 | 87.5 | 87.5 | 85.5 | 0.82 | 0.77 | 0.70 | 250 | 650 | 300 | 0.022 | 19/36 |
| | | 4 | SD/ND112M | 1440 | 7.20 | 2.50 | 88.3 | 88.3 | 86.3 | 0.81 | 0.76 | 0.69 | 200 | 600 | 250 | 0.052 | 29/42 |
| | | 6 | SD/ND132S | 950 | 8.00 | 3.79 | 85.1 | 85.1 | 83.1 | 0.76 | 0.73 | 0.63 | 200 | 600 | 250 | 0.174 | 42/68 |
| 5.50 | 7.50 | 2 | SD/ND132S | 2865 | 9.70 | 1.87 | 88.6 | 88.6 | 86.6 | 0.89 | 0.85 | 0.80 | 250 | 600 | 300 | 0.034 | 29/45 |
| | | 4 | SD/ND132S | 1450 | 10.60 | 3.69 | 89.2 | 89.2 | 87.2 | 0.81 | 0.80 | 0.75 | 250 | 600 | 300 | 0.131 | 42/68 |
| | | 6 | SD/ND132M | 950 | 11.30 | 5.64 | 86.8 | 86.8 | 84.8 | 0.78 | 0.75 | 0.68 | 200 | 600 | 250 | 0.214 | 45/79 |
| 7.50 | 10.00 | 2 | SD/ND132S*** | 2880 | 13.70 | 2.54 | 89.5 | 89.5 | 87.5 | 0.85 | 0.82 | 0.76 | 200 | 650 | 250 | 0.062 | 45/68 |
| | | 4 | SD/ND132M | 1455 | 13.80 | 5.02 | 90.1 | 90.1 | 88.1 | 0.84 | 0.82 | 0.74 | 250 | 650 | 300 | 0.161 | 45/79 |
| 3.7 | 5.0 | 8 | ND160M | 710 | 8.0 | 5.08 | 83.0 | 83.0 | 81.0 | 0.74 | 0.70 | 0.62 | 150 | 700 | 200 | 0.46 | 125 |
| 5.5 | 7.5 | 8 | ND160M | 710 | 12.0 | 7.55 | 85.1 | 85.1 | 83.1 | 0.74 | 0.70 | 0.62 | 150 | 700 | 200 | 0.46 | 125 |
| 7.5 | 10.0 | 6 | ND160M | 975 | 11.0 | 5.49 | 88.1 | 88.1 | 86.1 | 0.80 | 0.76 | 0.68 | 200 | 700 | 250 | 0.46 | 125 |
| | | 8 | ND160L | 710 | 12.0 | 7.55 | 86.4 | 86.4 | 84.4 | 0.76 | 0.72 | 0.64 | 150 | 700 | 200 | 0.64 | 148 |
| 9.3 | 12.5 | 2 | ND160M | 2920 | 16.0 | 3.10 | 90.0 | 90.0 | 88.0 | 0.88 | 0.86 | 0.78 | 225 | 700 | 275 | 0.13 | 125 |
| | | 4 | ND160M | 1460 | 17.0 | 6.20 | 90.5 | 90.5 | 88.5 | 0.84 | 0.81 | 0.73 | 175 | 700 | 225 | 0.31 | 125 |
| | | 6 | ND160L | 975 | 18.0 | 9.29 | 89.3 | 89.3 | 87.3 | 0.80 | 0.76 | 0.68 | 200 | 700 | 250 | 0.59 | 148 |
| | | 8 | ND180L | 720 | 20.0 | 12.58 | 87.3 | 87.3 | 85.3 | 0.74 | 0.70 | 0.60 | 175 | 700 | 225 | 0.99 | 174 |
| 11 | 15 | 2 | ND160M | 2920 | 19.0 | 3.67 | 90.5 | 90.5 | 88.5 | 0.88 | 0.86 | 0.78 | 225 | 700 | 275 | 0.13 | 125 |
| | | 4 | ND160M | 1460 | 21.0 | 7.34 | 91.0 | 91.0 | 89.0 | 0.82 | 0.79 | 0.70 | 200 | 700 | 250 | 0.36 | 125 |
| | | 6 | ND160L | 975 | 21.0 | 10.99 | 89.7 | 89.7 | 87.7 | 0.80 | 0.76 | 0.68 | 200 | 700 | 250 | 0.64 | 148 |
| | | 8 | ND180L | 720 | 23.0 | 14.88 | 88.1 | 88.1 | 86.1 | 0.74 | 0.70 | 0.60 | 175 | 700 | 225 | 1.16 | 210 |
| 15 | 20 | 2 | ND160M | 2920 | 26.0 | 5.00 | 91.3 | 91.3 | 89.3 | 0.88 | 0.86 | 0.79 | 225 | 700 | 275 | 0.17 | 125 |
| | | 4 | ND160L | 1460 | 27.0 | 10.01 | 91.8 | 91.8 | 89.8 | 0.85 | 0.83 | 0.75 | 200 | 700 | 250 | 0.47 | 148 |
| | | 6 | ND180L | 975 | 29.0 | 14.98 | 90.5 | 90.5 | 88.5 | 0.79 | 0.73 | 0.66 | 225 | 700 | 275 | 1.16 | 210 |
| | | 8 | ND200L | 725 | 33.0 | 20.15 | 89.0 | 89.0 | 87.0 | 0.71 | 0.65 | 0.55 | 225 | 700 | 275 | 2.14 | 282 |
| 18.5 | 25 | 2 | ND160L | 2920 | 32.0 | 6.17 | 91.8 | 91.8 | 89.8 | 0.88 | 0.86 | 0.79 | 225 | 700 | 275 | 0.21 | 148 |
| | | 4 | ND180M | 1475 | 33.0 | 12.22 | 92.2 | 92.2 | 90.2 | 0.84 | 0.80 | 0.72 | 200 | 700 | 250 | 0.81 | 174 |
| | | 6 | ND200L | 975 | 34.0 | 18.48 | 91.3 | 91.3 | 89.3 | 0.84 | 0.82 | 0.73 | 200 | 700 | 250 | 1.69 | 282 |
| | | 8 | ND225S | 725 | 38.0 | 24.85 | 89.8 | 89.8 | 87.8 | 0.75 | 0.71 | 0.63 | 175 | 700 | 225 | 3.24 | 345 |

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| OUTPUT | | P O L E | FRAME SIZE | FL RPM | FLC AMPS | FLT Kg-m | EFFICIENCY (%) | | | POWER FACTOR | | | DOL STG. | | POT % FLT | GD. ² KGM. ² | NET WT. KG |
|--------|-----|------------------|---------------|-----------|-------------|-------------|----------------|-------------|-------------|--------------|-------------|-------------|----------------|----------------|--------------|---------------------------------------|------------------|
| KW | HP | | | | | | FL | 3/4 LOAD | 1/2 LOAD | FL | 3/4 LOAD | 1/2 LOAD | STG.T % FLT | STG.C % FLC | | | |
| 22 | 30 | 2 | ND180M | 2930 | 40.0 | 7.31 | 92.2 | 92.2 | 90.2 | 0.83 | 0.80 | 0.72 | 225 | 700 | 275 | 0.44 | 164 |
| | | 4 | ND180L | 1475 | 39.0 | 14.53 | 92.6 | 92.6 | 90.6 | 0.84 | 0.80 | 0.72 | 200 | 700 | 250 | 0.95 | 210 |
| | | 6 | ND200L | 975 | 40.0 | 21.98 | 91.8 | 91.8 | 89.8 | 0.84 | 0.82 | 0.78 | 200 | 700 | 250 | 2.04 | 282 |
| | | 8 | ND225M | 725 | 45.0 | 29.56 | 90.2 | 90.2 | 88.2 | 0.75 | 0.71 | 0.63 | 175 | 700 | 225 | 3.61 | 375 |
| 30 | 40 | 2 | ND200L | 2950 | 50.0 | 9.91 | 92.9 | 92.9 | 90.9 | 0.90 | 0.89 | 0.87 | 200 | 700 | 250 | 0.80 | 282 |
| | | 4 | ND200L | 1475 | 50.0 | 19.81 | 93.2 | 93.2 | 91.2 | 0.89 | 0.86 | 0.78 | 250 | 700 | 300 | 1.62 | 282 |
| | | 6 | ND225M | 980 | 53.0 | 29.82 | 92.6 | 92.6 | 90.6 | 0.85 | 0.82 | 0.73 | 200 | 700 | 250 | 3.61 | 375 |
| | | 8 | ND250M | 735 | 61.0 | 39.76 | 91.5 | 91.5 | 89.5 | 0.75 | 0.71 | 0.63 | 175 | 700 | 225 | 4.82 | 473 |
| 37 | 50 | 2 | ND200L | 2950 | 61.0 | 12.22 | 93.3 | 93.3 | 91.3 | 0.90 | 0.89 | 0.87 | 200 | 700 | 250 | 0.89 | 282 |
| | | 4 | ND225S | 1480 | 62.0 | 24.35 | 93.6 | 93.6 | 91.6 | 0.89 | 0.86 | 0.78 | 250 | 700 | 300 | 2.64 | 345 |
| | | 6 | ND250M | 980 | 66.0 | 36.77 | 93.0 | 93.0 | 91.0 | 0.84 | 0.81 | 0.72 | 250 | 700 | 300 | 4.82 | 473 |
| | | 8 | ND280S | 735 | 75.0 | 49.03 | 91.9 | 91.9 | 89.9 | 0.75 | 0.71 | 0.63 | 200 | 700 | 250 | 8.01 | 600 |
| 45 | 60 | 2 | ND225M | 2955 | 71.0 | 14.83 | 93.7 | 93.7 | 91.7 | 0.94 | 0.92 | 0.88 | 225 | 700 | 275 | 1.87 | 375 |
| | | 4 | ND225M | 1480 | 75.0 | 29.61 | 93.9 | 93.9 | 91.9 | 0.89 | 0.86 | 0.78 | 250 | 700 | 300 | 3.13 | 375 |
| | | 6 | ND280S | 980 | 79.0 | 44.72 | 93.4 | 93.4 | 91.4 | 0.85 | 0.82 | 0.73 | 250 | 700 | 300 | 8.01 | 600 |
| | | 8 | ND280M | 725 | 90.0 | 60.46 | 92.4 | 92.4 | 90.4 | 0.75 | 0.71 | 0.63 | 175 | 700 | 225 | 9.89 | 670 |
| 55 | 75 | 2 | ND250M | 2955 | 87.0 | 18.13 | 94.0 | 94.0 | 92.0 | 0.94 | 0.92 | 0.88 | 175 | 700 | 225 | 2.79 | 473 |
| | | 4 | ND250M | 1475 | 91.0 | 36.32 | 94.2 | 94.2 | 92.2 | 0.89 | 0.86 | 0.82 | 200 | 700 | 250 | 3.45 | 473 |
| | | 6 | ND280M | 980 | 95.0 | 54.66 | 93.8 | 93.8 | 91.8 | 0.86 | 0.82 | 0.74 | 175 | 700 | 225 | 9.89 | 670 |
| | | 8 | ND315S | 740 | 113.0 | 72.39 | 93.0 | 93.0 | 91.0 | 0.73 | 0.66 | 0.56 | 250 | 700 | 300 | 14.12 | 900 |
| 75 | 100 | 2 | ND280S | 2975 | 123.0 | 24.55 | 94.6 | 94.6 | 92.6 | 0.90 | 0.86 | 0.78 | 225 | 700 | 275 | 7.14 | 600 |
| | | 4 | ND280S | 1480 | 122.0 | 49.36 | 94.7 | 94.7 | 92.7 | 0.90 | 0.88 | 0.84 | 250 | 700 | 300 | 7.21 | 600 |
| | | 6 | ND315S | 987 | 129.0 | 74.01 | 94.2 | 94.2 | 92.2 | 0.86 | 0.82 | 0.74 | 250 | 700 | 300 | 14.12 | 900 |
| | | 8 | ND315M | 740 | 153.0 | 98.72 | 93.5 | 93.5 | 91.5 | 0.73 | 0.66 | 0.56 | 200 | 700 | 250 | 18.98 | 950 |
| 90 | 120 | 2 | ND280M | 2975 | 146.0 | 29.47 | 95.0 | 95.0 | 93.0 | 0.90 | 0.86 | 0.78 | 225 | 700 | 275 | 8.18 | 670 |
| | | 4 | ND280M | 1480 | 146.0 | 59.23 | 95.0 | 95.0 | 93.0 | 0.90 | 0.88 | 0.84 | 250 | 700 | 300 | 8.26 | 670 |
| | | 6 | ND315M | 987 | 154.0 | 88.81 | 94.5 | 94.5 | 92.5 | 0.86 | 0.82 | 0.74 | 250 | 700 | 300 | 17.00 | 950 |
| | | 8 | ND315L | 740 | 178.0 | 118.46 | 94.0 | 94.0 | 92.0 | 0.75 | 0.72 | 0.68 | 250 | 700 | 300 | 29.85 | 1160 |
| 110 | 150 | 2 | ND315S | 2965 | 171.0 | 36.13 | 95.0 | 95.0 | 93.0 | 0.94 | 0.91 | 0.84 | 200 | 700 | 250 | 6.63 | 900 |
| | | 4 | ND315S | 1488 | 175.0 | 72.00 | 95.2 | 95.2 | 93.2 | 0.92 | 0.88 | 0.80 | 225 | 700 | 275 | 11.62 | 900 |
| | | 6 | ND315M | 987 | 188.0 | 108.55 | 94.6 | 94.6 | 92.6 | 0.86 | 0.82 | 0.74 | 250 | 700 | 300 | 18.98 | 950 |
| | | 8 | ND315L | 740 | 216.0 | 144.78 | 94.3 | 94.3 | 92.3 | 0.75 | 0.72 | 0.68 | 250 | 700 | 300 | 29.85 | 1160 |
| 132 | 180 | 2 | ND315M | 2965 | 205.0 | 43.36 | 95.3 | 95.3 | 93.3 | 0.94 | 0.90 | 0.82 | 200 | 700 | 250 | 7.97 | 950 |
| | | 4 | ND315M | 1488 | 209.0 | 86.40 | 95.5 | 95.5 | 93.5 | 0.92 | 0.88 | 0.80 | 225 | 700 | 275 | 13.98 | 950 |
| | | 6 | ND315L | 985 | 225.0 | 130.53 | 94.9 | 94.9 | 92.9 | 0.86 | 0.82 | 0.74 | 250 | 700 | 300 | 29.85 | 1160 |
| | | 8 | ND315L | 740 | 259.0 | 173.74 | 94.7 | 94.7 | 92.7 | 0.75 | 0.72 | 0.68 | 225 | 700 | 275 | 29.85 | 1160 |
| 160 | 215 | 2 | ND315L | 2975 | 248.0 | 52.38 | 95.5 | 95.5 | 93.5 | 0.94 | 0.92 | 0.90 | 175 | 700 | 225 | 16.37 | 1160 |
| | | 4 | ND315L | 1490 | 258.0 | 104.59 | 95.8 | 95.8 | 93.8 | 0.90 | 0.86 | 0.78 | 200 | 700 | 250 | 24.97 | 1160 |
| | | 6 | ND315L | 990 | 272.0 | 157.41 | 95.1 | 95.1 | 93.1 | 0.86 | 0.82 | 0.74 | 250 | 700 | 300 | 29.85 | 1160 |

STG.C = Starting Current; STG.T = Starting Torque

NOTE: All performance figures are subject to tolerances as per IS 325 - 1996

EFFICIENCY VALUE AT 60% LOAD SHALL BE SAME AS THAT AT 100% & 75% LOAD.

Performance figures are as per IEEEMA : 19-2000, EFFICIENCY LEVEL 1

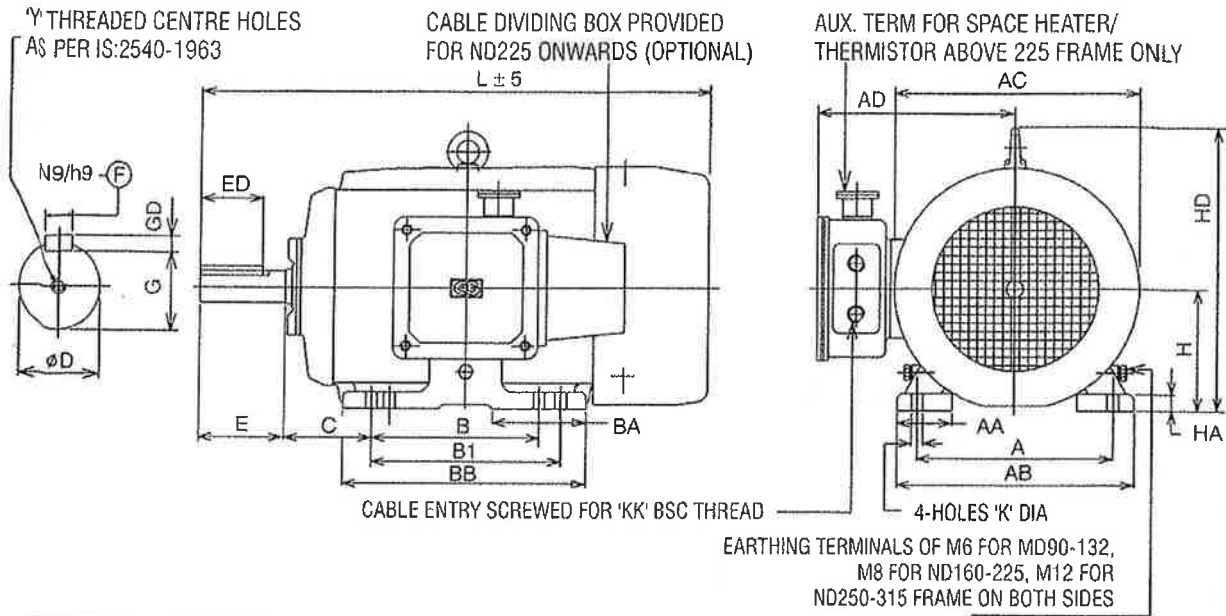
For kW above 160, please refer to Division / Branch Office.

*** These ratings are with Class 'F' Temperature rise.

Voltage : 415 V +/- 10%, Frequency : 50 Hz +/- 5%

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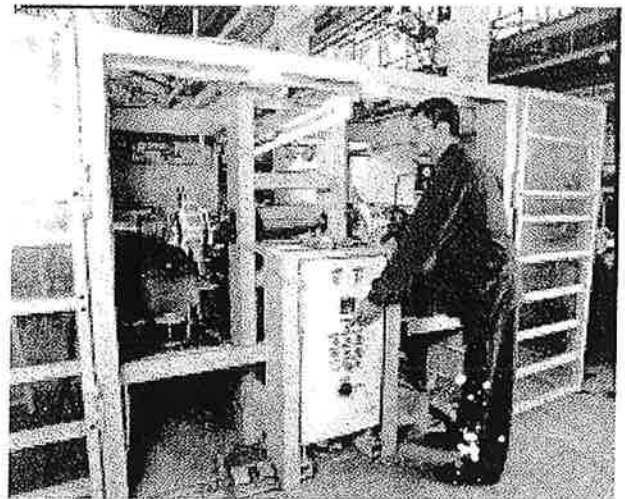
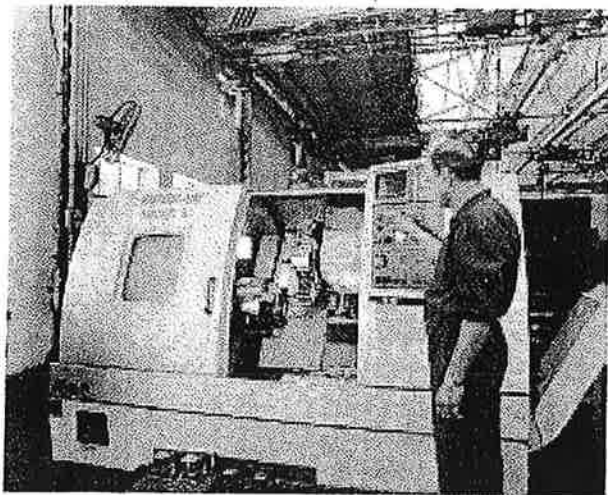
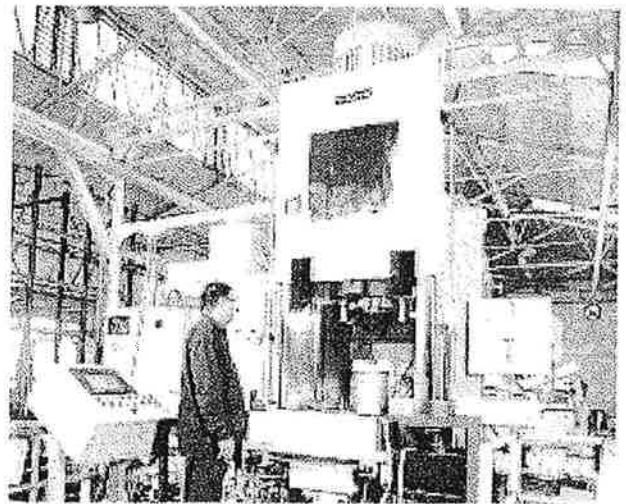
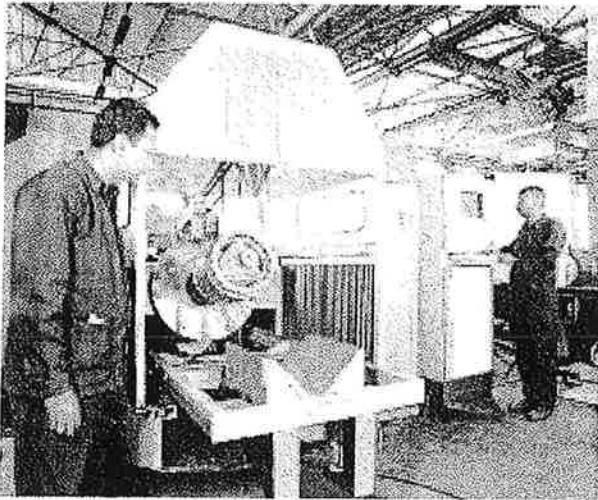
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED INDUCTION MOTORS CONFORMING TO IS:1231-1974

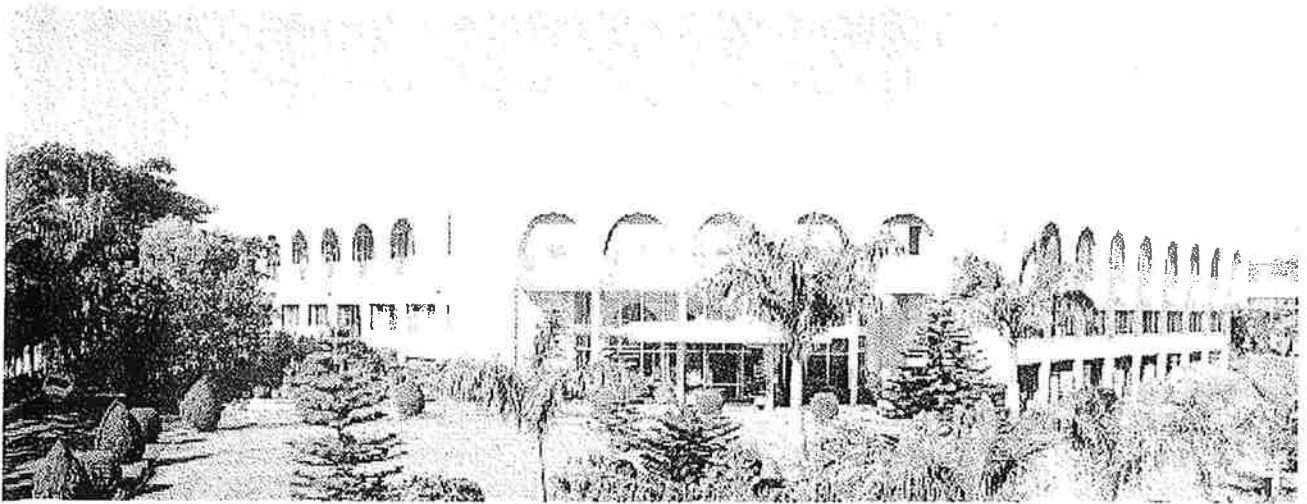


| FRAME | FOOT FIXING | | | | | | | | | | SHAFT AND KEYWAY OVERALL (MAX) | | | | | | | | | | | | |
|--------------------|-------------|------------|----|-----|----------------|-----|-----|-----|------------|--------------|--------------------------------|-----|-----|-----------------|----------------|--------------|----------|------------|-----|--------------|-----|----|-----------|
| SIZE | A | B | B1 | C | H | AA | AB | BA | BB | K | D | E | ED | F | G | GD | Y x DEEP | AD | AC | L | HD | HA | KK |
| ND80 | 125 | 100 | - | 50 | 80 | 35 | 152 | 45 | 124 | 10 | 19 | 40 | 27 | 6 | 15.5 | 6 | M6x16 | 134 | 170 | 285 | - | 11 | 3/4" |
| ND90S ND90L | 140 | 100 125 | - | 56 | 90 | 36 | 168 | 40 | 127 152 | 10 | 24 | 50 | 36 | 8 | 20 | 7 | M8x19 | 150 | 195 | 315 340 | - | 13 | 1" |
| ND100L | 160 | 140 | - | 63 | 100 | 36 | 192 | 45 | 170 | 12 | 28 | 60 | 44 | 8 | 24 | 7 | M10x22 | 160 | 215 | 380 | 250 | 13 | 1" |
| ND112M | 190 | 140 | - | 70 | 112 | 36 | 222 | 50 | 170 | 12 | 28 | 60 | 44 | 8 | 24 | 7 | M10x22 | 170 | 235 | 405 | 275 | 13 | 1" |
| ND132S ND132M | 216 | 140 178 | - | 89 | 132 | 48 | 254 | 54 | 178 216 | 12 | 38 | 80 | 60 | 10 | 33 | 8 | M12x28 | 190 | 275 | 470 510 | 320 | 16 | 1" |
| ND160N ND160L | 254 | 210 254 | - | 108 | 160.0 159.7 | 73 | 308 | 76 | 254 298 | 15.5 15.0 | 42.018 42.002 | 110 | 80 | 12.00 11.957 | 8.00 7.91 | 37.0 36.8 | M16x32 | 275 | 318 | 605 650 | 378 | 22 | 2Nos-1 |
| ND 200L | 318 | 305 | - | 133 | 200.0 199.5 | 66 | 381 | 115 | 358 | 19.5 19.0 | 55.030 55.011 | 110 | 80 | 16.00 15.957 | 10.00 9.91 | 49.0 48.8 | M20x40 | 345 | 428 | 8.5 | 480 | 25 | 2Nos-1.5" |
| ND 225S ND225M | 356 | 286 311 | - | 149 | 225.0 224.5 | 70 | 425 | 102 | 375 | 19.5 19.0 | 60.030 60.011 | 140 | 110 | 18.00 17.957 | 11.00 10.91 | 53.0 52.8 | | 375 | 470 | 855 880 | 534 | 25 | |
| ND 250S | 406 | 311 | - | 168 | 250.0 | 80 | 483 | 135 | 419 | 24.5 | 65.030 | 140 | 110 | 18.00 | 11.00 | 58.0 | | 405 | 500 | 940 | 598 | 32 | |
| ND 280S ND 280M | 457 | 368 419 | - | 190 | 280.0 279.0 | 100 | 538 | 167 | 487 | 24.5 24. | 75.030 75.011 | 140 | 110 | 20.00 19.948 | 12.00 11.91 | 87.5 87.3 | | 430 515 | 536 | 1035 1085 | 642 | 35 | |
| ND 315S ND 315M | 508 | 406 457 | - | 216 | 315.0 314.0 | 110 | 597 | 164 | 533 | 28.5 28.0 | 80.030 80.011 | 170 | 140 | 22.00 21.948 | 14.00 13.91 | 71.0 70.8 | | 510 | 588 | 1180 1230 | 725 | 38 | 2Nos-2" |
| ND 315L | 508 | 506 | - | 216 | 315.0 | 110 | 610 | 230 | 740 | 28.5 | 90.033 | 170 | 140 | 25.00 | 14.00 | 81.0 | M24x50 | 570 | 655 | 1375 | 755 | 35 | |

| | FRAME | D. TOL | E | ED | F. TOL | GD. TOL. | D | L | |
|---|--------|---------------|-----|-----|-------------|------------|-----------|------|------|
| ABOVE 200 FRAMES MACHINES RUNNING AT 3000 RPM HAVE SMALLER SHAFTS AS SHOWN HERE | ND 225 | 55.030/60.011 | 110 | 800 | 18.0/15.957 | 10.0/9.91 | 49.0/48.8 | 825 | 850 |
| | ND 250 | 60.030/60.011 | 140 | 110 | 18.0/17.957 | 11.0/10.91 | 53.0/52.8 | 940 | 940 |
| | ND 280 | 65.030/65.011 | 140 | 110 | 18.0/17.957 | 11.0/10.91 | 58.0/57.8 | 1035 | 1085 |
| | ND 315 | | | | | | | 1150 | 1200 |
| | ND 315 | 70.030/70.011 | 140 | 110 | 20.0/19.948 | 12.0/11.91 | 52.5/62.3 | - | - |

INTERNATIONAL APPROVALS & CERTIFICATES





CG **Crompton Greaves**
EVERYDAY SOLUTIONS

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 Ahmednagar 414 111
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 Fax : (0241) 2777508

NORTHERN REGION

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 Church Road,
 P.O. Box No. 173,
 Jaipur-302001.
 Tel : (0141) 2376919, 2376307

Jalandhar :
 416-417, 3rd Floor,
 Prestige Chambers, GT Road,
 Jalandhar 144 001.
 Tel : (0181) 2223801, 2459467

Lucknow :
 3rd Floor, Saran Chambers II,
 5, Park Road, Lucknow-226001.
 Tel : (0522) 2239443, 2237007/8

EASTERN REGION

Kolkata :
 50, Chowringhee Road,
 Kolkata - 700 071.
 Tel : (033) 22829681-85

Bhubaneshwar :
 Janpath Tower, 3rd Floor,
 Ashok Nagar, Unit II,
 Bhubaneshwar-751009.
 Tel : (0674) 2531128, 2531429,
 2531277, 2533647.

Patna :
 Eastern Logistics,
 Behind Mithila Motors,
 Exhibition Road, Patna-800 001
 Tel : (0612) 2212751, 2624757

Guwahati :
 533, K. C. Chaudhury Road,
 Satribari, Guwahati-781008
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WESTERN REGION

Ahmedabad : 909-916, Sakar II,
 Near Ellis Bridge Police Station,
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 Tel : (079) 26581729,
 26582780, 26587238.

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 Premium Point, 4th Floor,
 Opp. Modern High School,
 Jangali Maharaj Road, Pune 5.
 Tel : (020) 25534675-77

Indore :
 103-B, Apollo Trade Centre,
 2B, Rajgarh Kolhi, Mumbai-Agra Road,
 Indore-452001.
 Tel : (0731) 2498269, 2498276

Nagpur :
 3, West High Court Road,
 Lal Bahadur Shastri Chowk,
 Dharampeth, Nagpur-440010.
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SOUTHERN REGION

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 Cherupushpam Building,
 5th Floor, 300-6
 Shanmugham Road,
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 Thane Bhivandi Road, Kasheli,
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 Tel : (044) 28257375

