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## STANDARD INDUCTION MOTOR

### RANGE:-

The motors are available from 63 to 355 frame size and in 2 pole to 16 pole design.

### MOUNTING:-

Foot – Horizontal B3, Vertical V5/V6,  
Face – Horizontal B14 , Vertical V18/V19,

Flange – Horizontal B5 , Vertical V1/V3,  
Foot cum Flange B35 , Foot cum face B34,

### GENERAL ENCLOSURE:-

The Stator Housing & End shields are of C.I. Grade FG 200 of IS:210 1978 & machined to close tolerance. Motors of 63 to 90 frame can be Offered in Aluminium die cast body. Foot mounted motors are with integral feet.

### CORE:-

The stator & rotor cores are made of low loss , high quality magnetic steel.

### FINISH:-

All Castings are coated with red Oxide primer and final coating is of “Coffee Brown” shade. Motors with different shade / colour can be given.

### STADARDS:-

The motors confirm to following National & International Standards.

<u>DESCRIPTION</u>	<u>IS</u>	<u>IEC</u>
<u>PERFORMANCE</u>	325	34-1
<u>DIMENSIONS</u>	1231	72-1
	2223	72-1
<u>PROTECTION</u>	4691	34-5
<u>INSULATION</u>	1271	8-5
<u>TERMINAL MARKING</u>	4728	34-8
<u>MOUNTING</u>	2253	34-7

### WINDING:-

Stator windings consist of modified polyester enamelled copper wire confirming to type II of IS : 4800 part V.

### ROTOR:-

The complete range of motors is provided with high pressure aluminium die-cast rotors.  
( copper rotor available on request)

### SHAFT:-

The shaft is made of Steel-Grade 40 C8 of IS :1570 (part2) , 1979, shaft of special steel i.e. EN , EN 31 , SS 431 etc. can be made available.

### EFFICIENCY:-

Motors are offered with efficiency confirming to EFF 2 of IS: 12615 Motors confirming to Eff 1 can be offered. The variation in efficiency between 60% to 100% load is nominal which ensures low losses at partial loads.

### TERMINAL BOX:-

The terminal box is Aluminum casting & can be rotated in steps of 90°.

### VOLTAGE FREQUENCY:-



The Motors are suitable for  $415 \pm 10\%$  V ,  $50 \pm 5\%$  Hz , However motors suitable for operation at 110 to 650 V & 25 TO 75 Hz can be given.

### **AMBIENT TEMPERATURE:-**

Motors are suitable for 45°C ambient temperature .However motors suitable for different ambient conditions can be offered.

### **NOISE LEVEL:-**

Noise level of motor is maintained as per IS:12065 specifications.

### **DEGREE OF PROTECTION:-**

Motors are available in IP 55 protection as per IS:4691.

### **INSULATION:-**

Motors are with class “F” Insulation with temperature rise of class “B” limits. Motors in class A,B,H can be offered. The slot linings are either provided with double cuffing or edge binding at the slot month. To strengthen insulation Surge test is carried out on all windings to ensure their healthiness.

### **COOLING:-**

The external cooling is brought about by plastic or metallic bidirectional centrifugal fan ad cooling confirms to IC-411 as per IS:6362. The fan cover is of corrosion protected sheet metal.

### **VIBRATION:-**

The rotors & fan are balanced separately on precision balancing machine to normal class as per IS:12075 , which results in low vibration levels.

### **OPTIONS AT SHORT NOTICE:-**

- Torque motors ,Brake motors.
- Cooling tower Motors,
- Double shaft , Special shaft.
- Multi speed.
- Special Voltage / Frequency
- Dual voltage / Dual Frequency
- Crane duty / Lift duty suitable for S1 to S9 , duty different C.D.F. and various no of starts / stops / reversals.
- Suitable for different service factors.
- Suitable for VVVF operation
- NEMA and IEC frames.

### **SHIPPING DIMENSIONS:-**

<b>FRAME</b>	<b>L (CM)</b>	<b>W (CM)</b>	<b>H (CM)</b>
<b>63</b>	<b>33</b>	<b>25</b>	<b>22</b>
<b>71</b>	<b>33</b>	<b>25</b>	<b>22</b>
<b>80</b>	<b>36</b>	<b>27</b>	<b>23</b>
<b>90S</b>	<b>38</b>	<b>31</b>	<b>25</b>
<b>90L</b>	<b>41</b>	<b>31</b>	<b>25</b>
<b>100L</b>	<b>43</b>	<b>34</b>	<b>33</b>
<b>112M</b>	<b>52</b>	<b>38</b>	<b>35</b>
<b>132S</b>	<b>57</b>	<b>43</b>	<b>38</b>
<b>132M</b>	<b>62</b>	<b>43</b>	<b>38</b>
<b>160M</b>	<b>67</b>	<b>49</b>	<b>46</b>
<b>160L</b>	<b>72</b>	<b>49</b>	<b>46</b>
<b>180 M/L</b>	<b>79</b>	<b>56</b>	<b>49</b>
<b>200L</b>	<b>90</b>	<b>58</b>	<b>65</b>
<b>225 S/M</b>	<b>96</b>	<b>61</b>	<b>70</b>
<b>250 M</b>	<b>112</b>	<b>67</b>	<b>76</b>
<b>280 S/M</b>	<b>125</b>	<b>75</b>	<b>82</b>

>Three-phase induction motor



**THREE PHASE INDUCTION MOTORS**

**SINGLE PHASE INDUCTION MOTORS**



# FLAME PROOF MOTOR

Flame proof ( explosion proof or increased safety)motors suitable for zone 1 and zone 2 areas for gas group I , IIA , IIB and IIC are approved by CMRI , CCOE , BIS and DGMS ( IIC on request only)

## RANGE:-

The Motors are available from 63 to 315 frame size and in 2 pole to 16 pole design.

## MOUNTING:-

Foot – Horizontal B3, Vertical V5/V6,  
 Flange – Horizontal B5 , Vertical V1/V3,  
 Face – Horizontal B14 , Vertical V18/V19,  
 Foot cum Flange B35 , Foot cum face B34,

## GENERAL ENCLOSURE:-

The Stator Housing & End shields are of C.I. Grade FG 200 of IS:210 1978 & machined to close tolerance. All Foot mounted motors are with Integral feet. Flame proof motors have compact & rugged construction which Prevents any interval explosion from spreading outside.

Fasteners

used are of high tensile material with a Minimum tensile strength not more than 240 N/ mm<sup>2</sup>

## CORE:-

The stator & rotor cores are made of low loss , high quality magnetic steel.

## FINISH:-

All Castings are coated with red Oxide primer on internal & external surfaces . Final coating is of ‘Epoxy Turquoise Blue’ Shade . Motors with different shade / colour can be given.

## STADARDS:-

The Motors confirm to following national & international standards.



<u>DESCRIPTION</u>	<u>IS</u>	<u>IEC</u>
<b>PERFORMANCE</b>	<b>3283</b>	<b>34-1</b>
	<b>(Underground mines)</b>	
	<b>325</b>	<b>34-1</b>
	<b>(Other Industrial applications)</b>	
<b>DIMENSIONS</b>	<b>1231</b>	<b>72-1</b>
	<b>2223</b>	<b>72-1</b>
<b>PROTECTION</b>	<b>4691</b>	<b>34-5</b>
<b>INSULATION</b>	<b>1271</b>	<b>8-5</b>
<b>TERMINAL MARKING</b>	<b>4728</b>	<b>34-8</b>
<b>MOUNTING</b>	<b>2253</b>	<b>34-7</b>
<b>ENCLOSURE</b>	<b>2148</b>	<b>79-1</b>

## **WINDING:-**

Stator windings consist of modified polyester enamelled copper wire conforming to type II of IS : 4800 part V. Windings are specially treated to protect against chemically aggressive gases, vapours & conductive dust.

## **ROTOR:-**

The complete range of motors is provided with high pressure aluminium die cast rotors.

## **SHAFT:-**

The shaft is made of Steel-Grade 40 C8 of IS :1570 (part2) , 1979, shaft of special steel i.e. EN 24 EN 31 , SS 431 etc. can be made available.

## **EFFICIENCY:-**

Motors are offered with efficiency conforming to EFF 2 of IS: 12615 Motors conforming to Eff 1 can be offered. The variation in efficiency between 60% to 100% load is nominal which ensures low losses at partial loads.

## **TERMINAL BOX:-**

Flame proof motors have terminal box on top as standard which can be rotated in steps of 90° Terminal box Comes with spigotted cover and bottom plate and is spaciouly designed for accomodating bigger cables. Terminal blocks are made of completely non-hygroscopic , thermo setting moulded glass-filled compound enveloped on brass studs. Motors upto & including 2.2 kw are with 3 leads 3.7 kw & above are with 6 leads.

## **VOLTAGE FREQUENCY:-**

The Motors are suitable for  $415 \pm 10\%$  V ,  $50 \pm 5\%$  Hz , However motors suitable for operation at 110 to 650 V & 25 TO 75 Hz can be given.

## **AMBIENT TEMPERATURE:-**

Motors are suitable for 45°C ambient temperature at an altitude not exceeding 1000m above mean sea level. Flame proof motors are suitable for temperature class T1 to T4 as per IS:6381. Motors upto temperature class T6 can be made available.

## **PRESSURE TESTING:-**

All parts of the Flame proof enclosure are hydraulically tested for pressure of 15 kg/cm<sup>2</sup> as per IS: 2148:2004 & IEC 60079-1 (2001) to ensure that there is no leakage through blow holes of pinholes.

## **NOISE LEVEL:-**

Noise level of motor is maintained as per IS:12065 specifications.

## **DEGREE OF PROTECTION:-**

Motors are provided with IP 55 protection as per IS:4691 . All B5 Motors have oil seal at driving end.

## **INSULATION:-**

Motors are with class "F" Insulation with temperature rise of class "B" limits. Motors in class H can be offered. The slot linings are either provided with double cuffing or edge binding at the slot month. To strengthen insulation Surge test is carried out on all windings to ensure their healthiness.

## **COOLING:-**

The external cooling is brought about by cast iron bidirectional centrifugal fan and cooling confirms to IC-411 as per IS:6362. The fan cover is of corrosion protected sheet metal.

## **VIBRATION:-**

The rotors & fan are balanced separately on precision balancing machine to normal class as per IS:12075 , which results in low vibration levels.



## **CABLE ENTRY:-**

Flame proof motors for underground mines for paper insulated lead covered double wired armoured (PILCDWA) PVC cables come with cable entry with compound filling sealing boxes. Flame proof cable glands in cable entries can also be provided for PVC armoured cables.

## **OPTIONS AT SHORT NOTICE:-**

- Brake motors , Cooling Tower motors.
- Double shaft , Special shaft.
- Multi speed.
- Dual voltage / Dual Frequency
- Crane duty / Lift duty suitable for S1 to S9 , duty different C.D.F. and various no of starts / stops / reversals.
- Suitable for different service factors.
- Suitable for VVVF operation
- NEMA and IEC frames.
- II C Flame proof motors of full range (63-280 Frames).

