



**JSL INDUSTRIES LTD.**

## Vertical Hollow Shaft Squirrel Cage Screen Protected Drip Proof Motors



Provides protection against  
dripping liquids and falling objects



**ISO 9001 : 2015**

## **'JSL' VERTICAL HOLLOW SHAFT (VHS) MOTORS - CVD Series upto 355 frames**

These motors find special application in driving Vertical Turbine, Propeller, Mixed and Non-clog Pumps.

### **SPECIFICATIONS**

'JSL' VHS Motors are continuously rated S1 duty as per IS/IEC 60034-1 and are suitable to operate on 3-phase 415V  $\pm$  10%, 50 Hz  $\pm$ 5% electric supply. Combined voltage and frequency variation on load is 10%. The performance generally conforms to above standards. The motors are available upto 355 frame.

### **ENCLOSURE AND MOUNTING**

Motors are in drip-proof enclosure having degree of protection IP22/IP23 as per IS/IEC 60034-5. Top cover dome and metallic screen are specially designed to give protection against dripping liquids and falling objects. It also prevents any possibility of accidental touch to moving parts by the operators. Mounting flange dimensions of these motors are in accordance with IS-2254.

The rigid construction of body and covers offers very good mechanical strength to spigots and bearing housing for assembly and dismantling of motors.

### **WINDING AND INSULATION**

Stator winding is of Polyester Super Enamelled copper wires conforming to IS:13730, Part-III. The overhangs of the windings are well shaped and rigidly braced to withstand high stresses developed during starting of the motor. Class 'F' insulating materials suitable for working temperature of 155°C are used as insulation to provide electrical, thermal and mechanical strength to the windings. The temperature rise of winding limited by class 'B'.

Stator windings are impregnated under vacuum & pressure with thermosetting varnish. This ensures very good penetration of varnish into the windings and offers better heat transfer, mechanical strength and protection against moisture. Additional coating of air drying varnish is given when motors are required to operate under very high humid atmosphere.

### **STATOR & ROTOR**

Stator and rotor staves are made of low-loss silicon steel laminated stampings to minimise iron losses.

The stator stack is held in position by staking ribs in motor body to ensure uniform air-gap and to minimise vibrations.

Rotor stampings are directly stacked on precisely machined carbon steel shaft. The rotors are aluminium die-cast. All rotors are finished to close tolerances and dynamically balanced on highly accurate digital balancing machine.

### **TERMINALS AND TERMINAL BOX**

Six terminals made from extruded brass / copper rod and having adequate current carrying capacity are provided for either star-delta or auto transformer

starting. Delta links are provided if required for direct-on-line starting. Terminal box has ample space required for easy terminal connections. Cable entry can be arranged from any direction in steps of 90°.

### **LIFTING HOOKS**

Two lifting hooks of adequate capacity are provided at diametrically opposite location to lift the motor for carrying out installation, alignment, repairs and overhauling.

### **BEARINGS**

Carefully selected angular contact, heavy duty bearings are located at the top to take the thrust load and deep groove ball bearing is used at the bottom of the motor. For frames 315 & 355 top mounted thrust bearing are oil lubricated bearing. The floating arrangement at the bottom bearing ensures safety of these bearings against possible damage due to imposition of thrust load and axial expansion of shaft. Ball bearings are greased with lithium base grease grade-3 having a drop point of more than 160°C. Well designed lubrication arrangement is provided for both top and bottom bearings.

### **VENTILATION**

The optimum cooling is effected by guided air flow generated by rotor fins / fan. The cooled air is taken in from the top and the hot air is expelled out from the bottom. The air openings are well protected by properly sized screen.

### **NON-REVERSIBLE RATCHET**

It is essential for the vertical turbine pump that the direction of rotation is fixed. Otherwise, line shaft may get unscrewed, thus damaging the pump. To ensure proper direction of rotation, a non-reversible ratchet is provided in all the motors. the standard direction of rotation of motor is anti-clockwise looking from the top. However, motors running in clockwise direction also can be given on request. For this non reverse ratchet & fan have to be replaced.

### **COUPLING**

An easily accessible coupling located at the top of the motor facilitates coupling of pump and motor as well as permits vertical adjustment of the impellers in the pump through head shaft.

### **EARTHING**

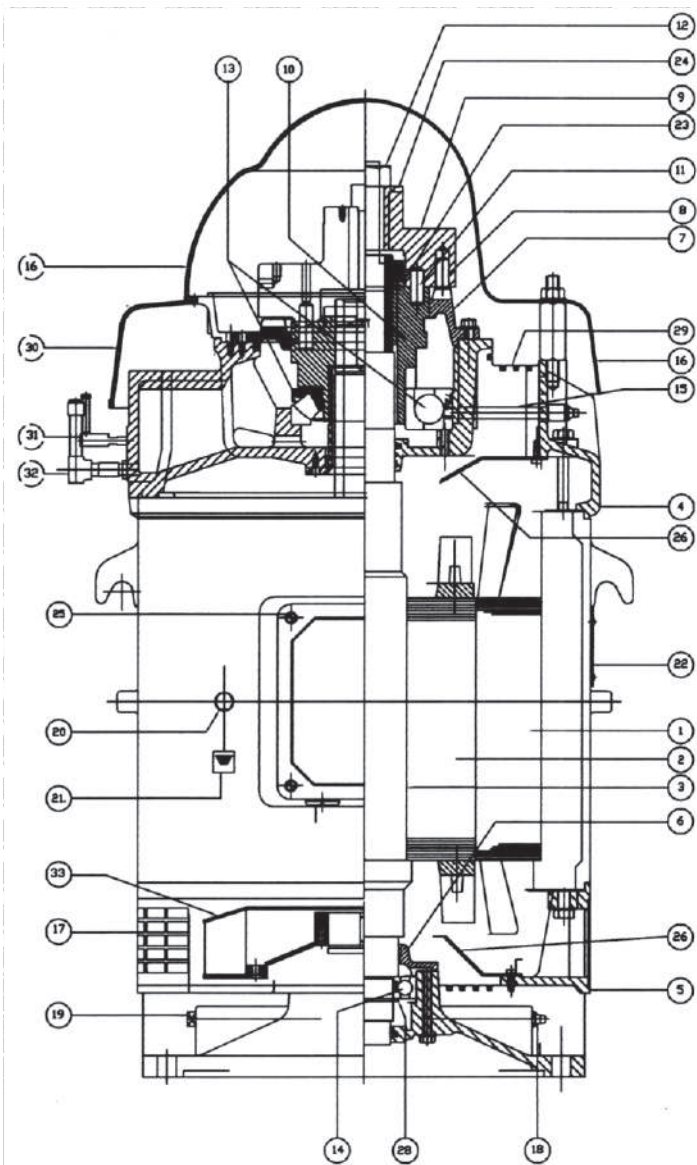
2 Nos. earthing bolts are provided for earthing connection at diametrically opposite direction.

### **TESTS**

All the motors are tested during manufacturing and before despatch, in accordance with IS/IEC 60034-1.

In case motors are required for wider voltage variations for operating at different voltages, the same can be offered on request.

## SECTIONAL ASSEMBLY LAYOUT FOR SQUIRREL CAGE DRIP PROOF VERTICAL HOLLOW SHAFT (VHS) MOTOR.

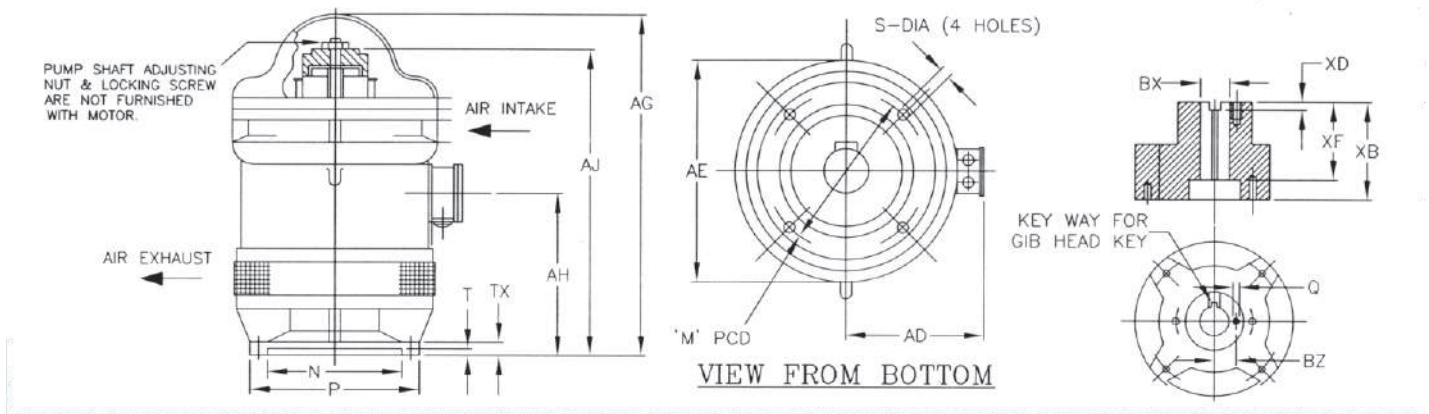


MOTOR FRAME	POLE	RATED OUTPUT KW	TOP BRG TYPE SKF OR EQU	BOTTOM BRG TYPE SKF OR EQU
CVD-132-B	2	3.7	7309 45 X 100 X 25	6307 35 X 80 X 21
CVD-132-B	4	3.7	7309 45 X 100 X 25	6307 35 X 80 X 21
CVD-160-B1	2	7.5	7310 50 X 100 X 27	6308 40 X 90 X 23
CVD-160-B1	2	9.3	7310 50 X 100 X 27	6308 40 X 90 X 23
CVD-160-B1	2	11	7310 50 X 100 X 27	6308 40 X 90 X 23
CVD-160-B1	4	5.5	7310 50 X 100 X 27	6308 40 X 90 X 23
CVD-160-B1	4	7.5	7310 50 X 100 X 27	6308 40 X 90 X 23
CVD-160-B2	2	13	7312 60 X 130 X 31	6310 50 X 110 X 27
CVD-160-B2	2	15	7312 60 X 130 X 31	6310 50 X 110 X 27
CVD-160-B2	4	9.3	7312 60 X 130 X 31	6310 50 X 110 X 27
CVD-160-B2	4	11	7312 60 X 130 X 31	6310 50 X 110 X 27
CVD-160-B2	4	13	7312 60 X 130 X 31	6310 50 X 110 X 27
CVD-160-B2	4	15	7312 60 X 130 X 31	6310 50 X 110 X 27
CVD-160-B2	4	17	7312 60 X 130 X 31	6310 50 X 110 X 27
CVD-160-B2	4	18.5	7312 60 X 130 X 31	6310 50 X 110 X 27
CVD-180-B	4	22	7316 80 X 170 X 39	6211 55 X 100 X 21
CVD-180-B	4	26	7316 80 X 170 X 39	6211 55 X 100 X 21
CVD-200-B1	4	30	7317 85 X 180 X 41	6221 60 X 110 X 22
CVD-200-B1	4	33.5	7317 85 X 180 X 41	6221 60 X 110 X 22
CVD-200-B1	4	37	7317 85 X 180 X 41	6221 60 X 110 X 22
CVD-200-B2	4	45	7317 85 X 180 X 41	6221 60 X 110 X 22
CVD-225	4	55	7320 100 X 215 X 47	6212 60 X 110 X 22
CVD-250	4	75, 90	7322 110 X 240 X 50	6316 80 X 170 X 39
CVD-280	4	110, 125, 132, 150, 160	7322 x 2 110 X 240 X 50	6318 90 X 190 X 43
CVD-315	4	180, 200, 220, 250, 280	29326E 130 X 225 X 58	6320 100 X 125 X 47
CVD-355	4	300, 315, 335, 355, 370	29326E 130 X 225 X 58	6320 100 X 215 X 47

SR.NO.	PART NAME	SPECIFICATION
1	STATOR ASSEMBLY	----
2	ROTOR ASSEMBLY	----
3	ROTOR SHAFT	BLACK BAR 40-C8 IS : 7283
4	TOP COVER	CAST IRON As per IS : 210
5	BOTTOM COVER	CAST IRON As per IS : 210
6	BTM. BRG. COVER	CAST IRON As per IS : 210
7	RATCHET	CAST IRON As per IS : 210
8	RATCHET PIN	BLACK BAR 40-C8 IS : 7283
9	SAFETY CLUTCH TOP HALF	CAST IRON
10	SAFETY CLUTCH BOTTOM HALF	CAST IRON
11	SAFETY CLUTCH PIN	BLACK BAR 40-C8 IS : 7283
12	RT SHAFT TOP LOCKNUT	BLACK BAR 40-C8 IS : 7283
13	TOP BEARING	----
14	BOTTOM BEARING	----
15	GREASE PIPE	GALV. STEEL IS : 1239
16	SHELTER DOME	SHEET METAL / ALUMINUM

SR.NO.	PART NAME	SPECIFICATION
17	BTM. PROT. GRILL ASSLY.	----
18	GREASE NIPPLE (AM 10X1)	IS : 4009 P-II
19	GREASE PLUG (10)	IS : 1239
20	EARTHING WIRE SCREWS	G-4 IS : 1363 P-2
21	(HEX) (GALV.ZINC PLATED) EARTHING SYMBOL	SELF ADHESIVE TYPE
22	NAME PLATE	PVC LABLE ALUMINIUM SHEET
23	KEY FOR BTM. HALF CLUTCH	BLACK BAR SQ. 40-C8 IS : 7283
24	KEY FOR TOP HALF CLUTCH	BLACK BAR SQ. 40-C8 IS : 7283
25	TERM. BOX ASSLY.	----
26	TOP & BTM. AIR GUIDE	St. SHEET D.D. IS : 513
28	BTM. BRG. CIRCLIP	IS : 3075
29	TOP PROT. GRILL ASLY.	----
30	SHELTER	4600 M IS:617
31	OIL INDICATOR	STEEL BAR, Fe410WA, IS:2062
32	OIL FILLER ASSEMBLY	BLACK BAR 20-C8, IS:7283
33	FAN	ST SHEET , Fe410WA, IS:5986

## GENERAL DIMENSIONAL SKETCH OF 'JSL' SQUIRREL CAGE SCREEN PROTECTED DRIP PROOF VERTICAL HOLLOW SHAFT MOTOR.



FRAME	P+	N H8	**M P.C.D.	T	TX ±0.3	AJ +	AG +	AE +	AH +	S DIA.	AD +	BX #	KEY	Q THRDS	XB	XF	XD	BZ
CVD-132 B	255	209.55	232 ±0.3	6	15	438	505	282	192	11	208	22H8	6X6	M5	37	34	5.5	17
CVD-160 B1	255	209.55	232 ±0.3	6	18	514	580	346	220	11	232	24H8	8X7	M5	65	38	5	18.5
CVD-160 B2	305	209.55	232 ±0.3	6	17	660	730	346	310	11	237	24H8	8X7	M5	73	45	6	18.5
CVD-180 B	420	342.90	375 ±0.5	6	18	692	780	455	304	18	272	33H8	10X8	M5	86	57	6	22
CVD-200 B1	420	342.90	375 ±0.5	6	20	785	875	455	326	18	367	39H8	10X8	M5	95	60	6	22
CVD-200 B2	420	342.90	375 ±0.5	6	20	846	945	455	358	18	367	39H8	10X8	M5	95	60	6	22
CVD-225 B	420	342.90	375 ±0.5	8	20	849	965	525	375	18	390	39H8	12X8	M5	96	60	6	27
CVD-250 B	510	342.90	375 ±0.5	8	20	949	1040	550	409	18	375	50H8	14X9	M8	110	75	6	35
CVD-280	510	342.9	375 ±0.5	8	20	1226	1320	615	640	18	535	50H8	14X9	M8	110	75	6	35
CVD-315	625	342.9	375 ±0.5	8	25	1402	1566	780	790	18	605	60H8	18X11	M8	175	125	6	40
CVD-355	775	558.8	661 ±0.5	8	30	1599	1731	920	810	22	660	60H8	18X11	M8	187	130	6	40

- 1) # DIMENSION 'BX' INDICATES MAXIMUM HEAD SHAFT.
- 2) + THESE DIMENSIONS MAY EXCEED BY ±15mm. DUE TO VARIATIONS
- 3) ALL DIMENSIONS ARE IN mm. EXCEPT OTHERWISE STATED.



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