Delctek®

Your Power, Our Commitment

Vertical Hollow Shaft Motors Catalog

10HP~1,000 HP

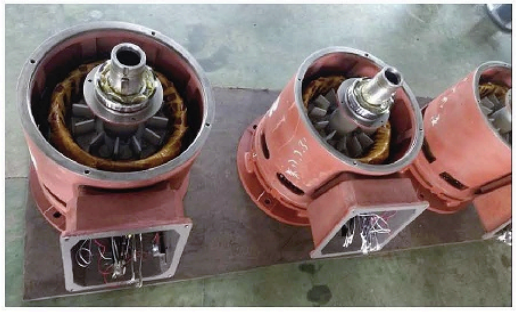
Shanghai Douli Power Co.,Ltd. Vertical Hollow Shaft (VHS) Motors are a specific type of vertical motor primarily designed for deep-well pumping systems and other vertical applications, such as irrigation systems, water treatment, and fire protection. Here's a more detailed breakdown of VHS motors:

1. Design and Construction

Hollow Shaft: The defining characteristic of a VHS motor is its hollow shaft design. This allows the pump shaft to pass through the motor, which connects directly to the pump impeller. The hollow shaft feature eliminates the need for couplings between the motor and pump shaft, reducing mechanical complexity and enhancing reliability.

Vertical Mounting: These motors are designed to operate in a vertical orientation, usually mounted above the pump. They are engineered to handle the axial (thrust) loads that are generated by the pump's operation.

Cooling and Ventilation: VHS motors usually come with open drip-proof **(ODP)** or totally enclosed fan-cooled **(TEFC)** designs to provide appropriate ventilation and cooling, ensuring safe and efficient operation.



2. Thrust Bearings

VHS motors are equipped with special thrust bearings that can handle **large vertical loads** generated by the pump's operation. These bearings come in different capacities depending on the application, and they are key components because they support both the weight of the pump and the hydraulic forces acting on the impeller.

High Thrust Capacity: Thrust ratings can vary from moderate to extra-high depending on the model. In water pumping applications, for instance, this is essential as the motor must support the weight of long pump shafts and the hydraulic load of water being pumped.

3. Applications

VHS motors are commonly used in industries that require deep well and vertical pumping solutions:
Deep Well Pumps: Widely used for pumping water from deep wells in municipal water systems, irrigation, and groundwater extraction.

Fire Protection: VHS motors are also used in vertical turbine fire pump applications, especially in large buildings and industrial complexes.

Water Treatment Facilities: They can be used for pumping and distributing water in treatment facilities or industrial water systems.

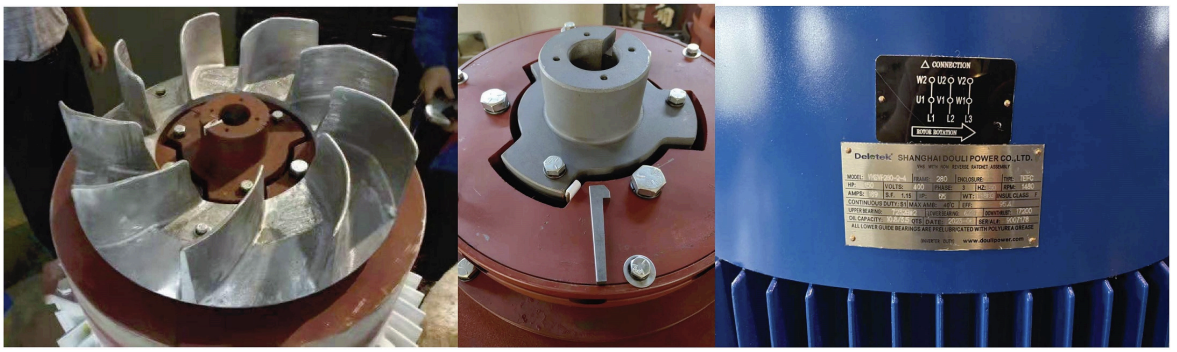
Agriculture: Used in irrigation systems for drawing water from wells and pumping it over large agricultural areas.

4.Key Specifications

Power Ratings: VHS motors range in power from **7.5 kW** to **750 kW**, depending on the application. Higher power ratings are required for larger, deeper wells.

Voltage: Our VHS motors are available in various voltage ratings, from low voltage (e.g., **380V, 400V,460V**) for smaller applications, to medium and high voltage (**3kV, 6.6 kV, 11kV**) for larger industrial applications.

Speed: Our VHS motors typically run at speeds between **1200 RPM** and **1800 RPM**, though the exact speed will depend on the specific model and application. If special speed is required, please contact **:sunny@doulipower.com**



5. Maintenance Considerations

Thrust Bearing Maintenance: Because thrust bearings are critical to VHS motor operation, regular inspection and lubrication of the bearings are important to avoid bearing failure.

Cooling Systems: Ensuring that ventilation or fan-cooling systems are free from blockages is key to avoiding overheating.

Alignment: Due to the vertical orientation and direct connection with the pump, proper alignment of the motor and pump shaft is crucial for smooth operation and to avoid undue wear on mechanical components.

6. VHS vs. VSS (Vertical Solid Shaft) Motors

VHS Motors: Have a hollow shaft for passing the pump shaft through the motor, used for deep well applications.

VSS Motors: Have a solid shaft, and require a coupling to connect to the pump. They are also used in vertical pump applications, but they don't allow the pump shaft to pass through the motor.

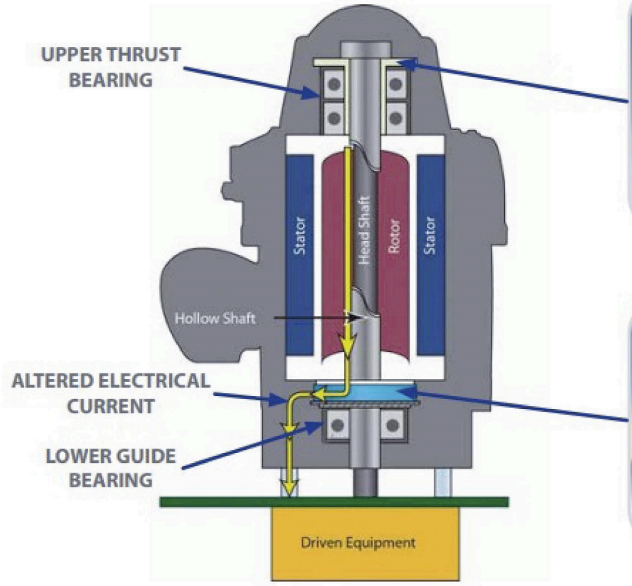
7. Advantages of VHS Motors

Space Efficiency: The vertical configuration saves floor space, making them ideal for environments where horizontal space is limited.

Direct Shaft Connection: The absence of couplings means there is less mechanical wear and tear, leading to longer motor life and lower maintenance.

High Reliability: Their robust design, particularly the thrust bearing system, makes VHS motors reliable in heavy-duty vertical pumping applications.

In summary, vertical hollow shaft motors are highly specialized machines used in demanding vertical pump applications, where their **hollow shaft design** and ability to handle **large thrust loads** make them a crucial part of **deep well** and **vertical pumping systems**.

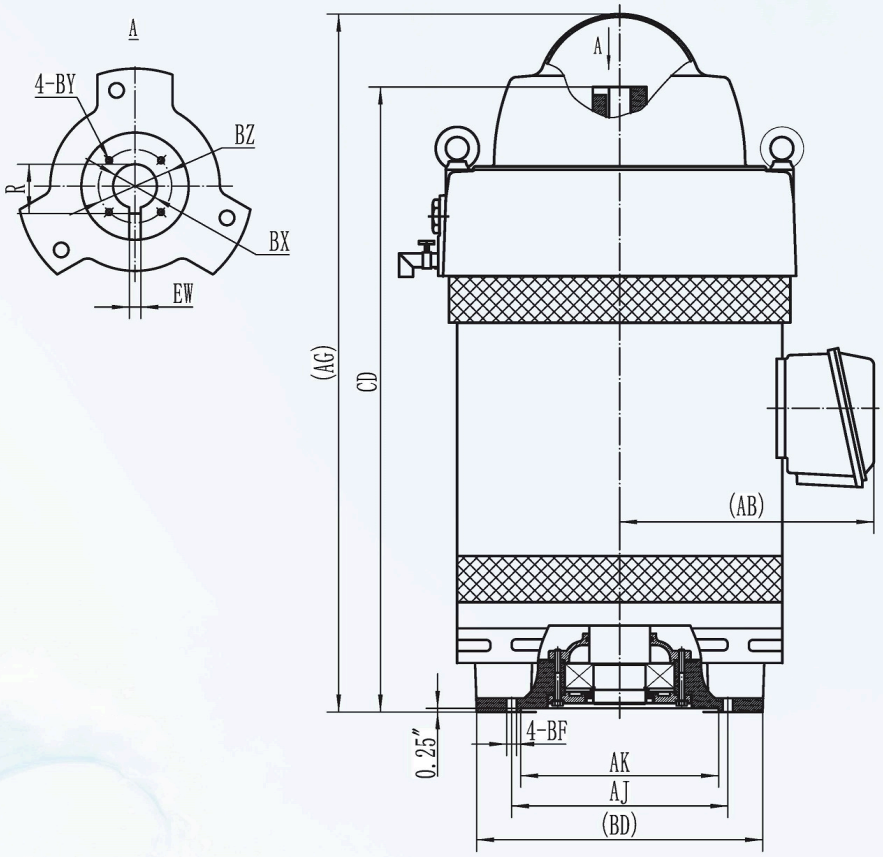


INSULATED THRUST BEARING CARRIER

GUIDE BEARING PROTECTION RING

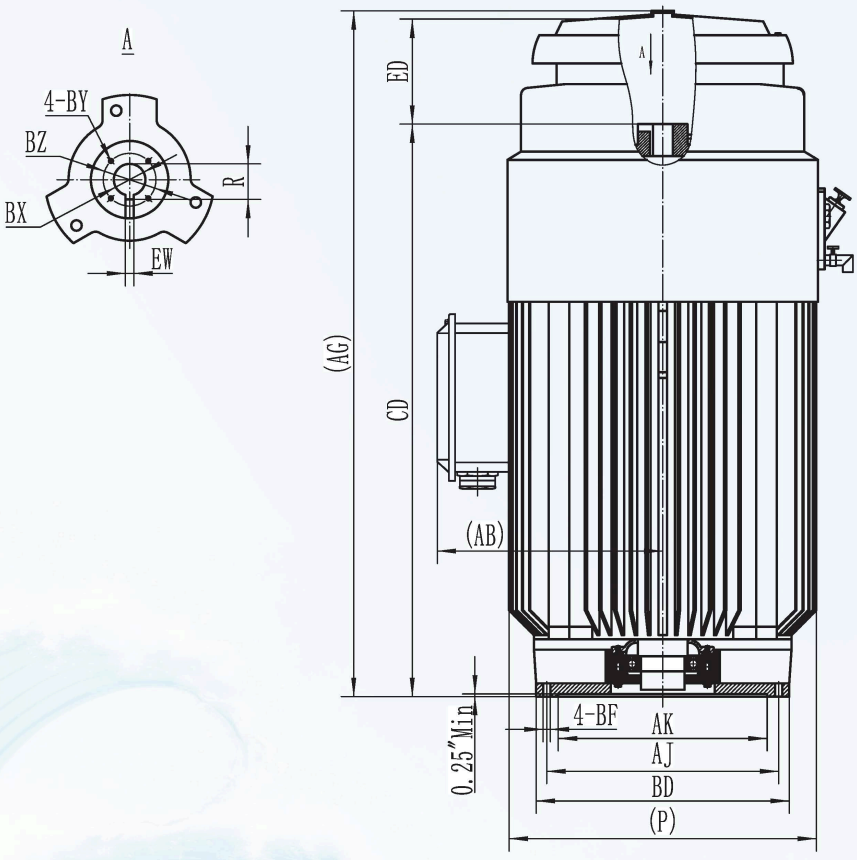
SPECIFICATIONS

	ITEM	STANDARD SPECIFICATION
RATING	Type of Motors	Vertical Hollow Shaft Motors
	Design Standards	NEMA MG-1,IEC 60034
	Voltage	380V, 400V, 230V/460V (Usable on 208V)150 HP and Larger are 460V only
	Frequency	50HZ, 60HZ
	Output Range LV	7.5HP~800HP
	Output Range MV	200HP~1000HP
	RPM	900,1200,1800RPM
	Service Factor	1.15 Service Factor-Continous on Sine Wave Power.1.0 Service Factor on PWM
	Frame Size LV	IEC: 160~355, NEMA: 215TP~5808P
	Frame Size MV	IEC: 280~355, NEMA:449TP-5810P
	Protection Enclosure	NEMA Weather Protected Type 1(WP1-IP23)&Totally Enclosed Fan Cooled(TEFC)IP55
	Stator insulation	Class F Insulation System with Class B Temperature Rise
	Mounting	Vertical
APPLICATION	Power Conditions	Voltage:+10%,Frequency:+5%,and 10% Max,of Combined Voltage and Frequency,but Frequency Variation Does Not Exceed 5%
	Connection	Direct On-Line; Part Wind Start; VFD; Wye/Delta on low Voltage
	Environment Conditions	Temperature:-15℃-40℃, Altitude:at or below 3,300ft/1000m
	Starting Method	Direct On-Line, VFD,Wye/Delta on low Voltage
	Direction of Rotation	Counterclock wise(View from Top Side); Bi-Directional without NRR
	Operating Conditions	For Direct Coupling
	Optional	Space Heaters,Thermal Protected,Resistance Temperature Detector(RTD)
CONSTRUCTION	Frame	High grade Cast Iron, Steel Plate
	Flange Bracket(Shield)	High grade Cast Iron
	Upper Bracket	High grade cast iron(Frame Size 324TP-5810P Design Including Oil Tank
	External Fan	Aluminum
	Vertical Splash Cover	Steel Plate
	Shaft	1045 Carbon Hollow Steel Shaft
	Terminal Housing	cast iron,Larger Size,can be Set 90 apart,Threaded for External Conduit entrance
	Nameplate	Stainless Steel Nameplate
	Bearings	Oversized Angular Contact Bearing,Ball Bearing,Extra High Thrust/Double Stacke d Bearing also Available
	Lead Terminal	210TP-405TP-12 leads(PWS on 230V)WYE Delta on 230v or 460v 444TP and Larger-6Leads(PWS on 460V)
	Painting	Phenolic Rust Proof Base Lacquer Surface,Finished Painting
	Varnish Treatment	LV:Phenolic Alkyd Resin Varnish and 1-Spray Finishing Varnish ,2 Dips and bakes,MV:VPI Epoxy
	Iron Core	High grade,Insulated,Cold-Rolled Electro-Magnetc Steel Plate(C5)
	NRR	Ball Type "Non-Sparking"
	Varnish Treatment	LV:Phenolic Alkyd Resin Varnish and 1-Spray Finishing Varnish ,2 Dips and bakes,MV:VPI Epoxy
	Optional	Steady Bushing And Alternate Upper Couplings
	Optional	Alternate P-base Sizes
	Warranty	24 months Warranty (Extended Warranty Available)



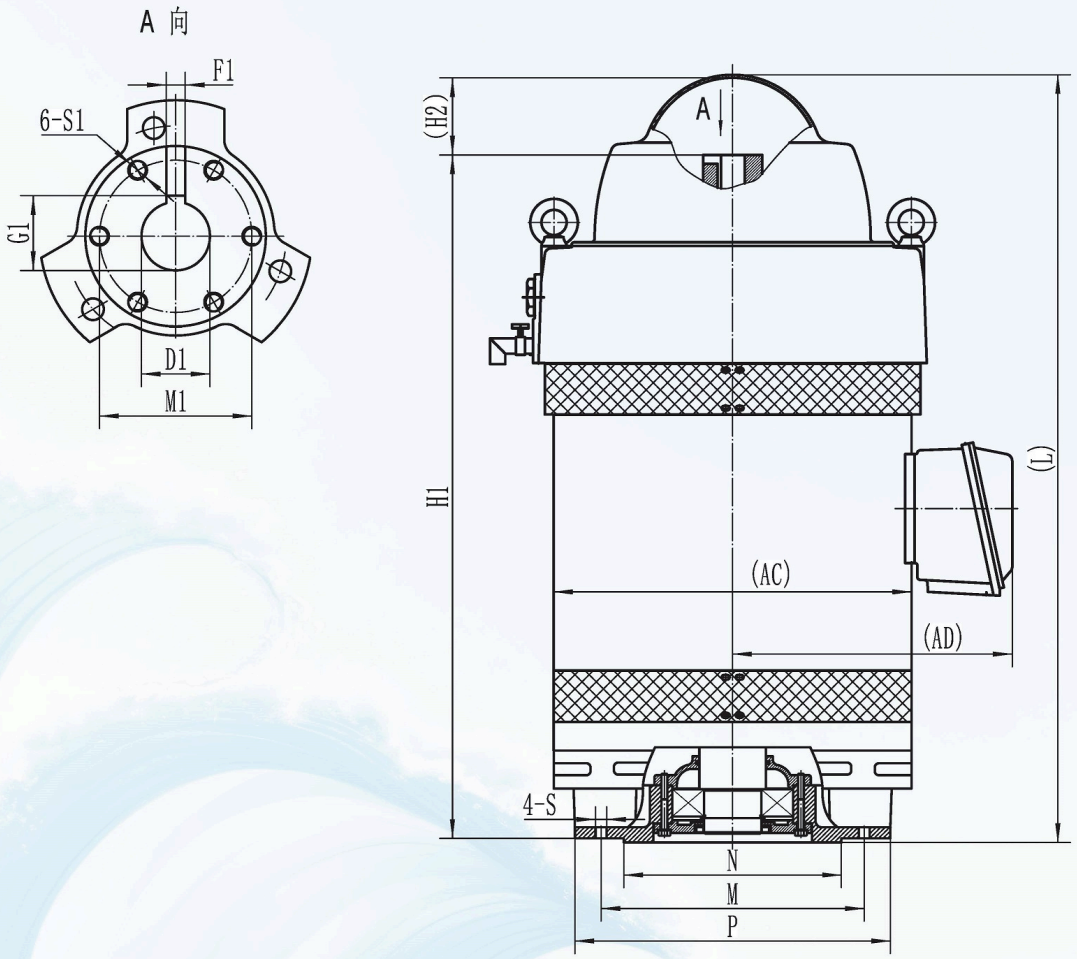
MOUNTING DIMENSIONS(INCH)

IEC	Frame	HP	BD	AJ	AK	BF	BX	BZ	EW	R	BY	CD	AB	AG
VHS160	VHS215TP-4	10	10	9.125	8.25	0.44	1	1.38	0.25	1.11	1/4-20	17.6	12.1	20.8
VHS180	VHS254TP-4	15	10	9.125	8.25	0.44	1	1.38	0.25	1.11	1/4-20	23.38	14.3	27.1
	VHS256TP-4	20	10	9.125	8.25	0.44	1	1.38	0.25	1.11	1/4-20	23.38	14.3	27.1
	VHS284TP-4	25	16.5	14.75	13.5	0.69	1	1.38	0.25	1.11	1/4-20	24.75	14.3	28.5
	VHS286TP-4	30	16.5	14.75	13.5	0.69	1	1.38	0.25	1.11	1/4-20	24.75	14.3	28.5
VHS200	VHS324TP-4	40	16.5	14.75	13.5	0.69	1.25	1.77	0.25	1.367	1/4-20	28.22	15.35	32.7
	VHS326TP-4	50	16.5	14.75	13.5	0.69	1.25	1.77	0.25	1.367	1/4-20	28.22	15.35	32.7
	VHS364TP-4	60	16.5	14.75	13.5	0.69	1.25	1.77	0.25	1.367	1/4-20	31.16	15.35	36
	VHS365TP-4	75	16.5	14.75	13.5	0.69	1.25	1.77	0.25	1.367	1/4-20	31.16	15.35	36
VHS250	VHS404TP-4	100	16.5	14.75	13.5	0.69	1.5	2.165	0.375	1.687	1/4-20	36.94	16.93	42.2
	VHS405TP-4	125	16.5	14.75	13.5	0.69	1.5	2.165	0.375	1.687	1/4-20	36.94	16.93	42.2
VHS280	VHS444TP-4	150	16.5	14.75	13.5	0.69	1.687	2.5	0.375	1.854	1/4-20	42.66	20.47	47.7
	VHS445TP-4	200\250	16.5	14.75	13.5	0.69	1.687	2.5	0.375	1.854	1/4-20	42.66	20.47	47.7
VHS355	VHS5804P-4	300\350	20	14.75	13.5	0.69	1.938	2.5	0.5	2.16	1/4-20	49.78	27.5	56.9
	VHS5806P-4	400\450	24.5	14.75	13.5	0.69	1.938	2.5	0.5	2.16	1/4-20	58.25	27.5	65.4
	VHS5808P-4	500\550\600	24.5	14.75	13.5	0.69	1.938	2.5	0.5	2.16	1/4-20	58.25	27.5	65.4
VHS400	VHS5812P-4	650\700 750\800	30.5	26	22	0.69	1.938	2.5	0.5	2.16	1/4-20	72.3	29.6	79.4



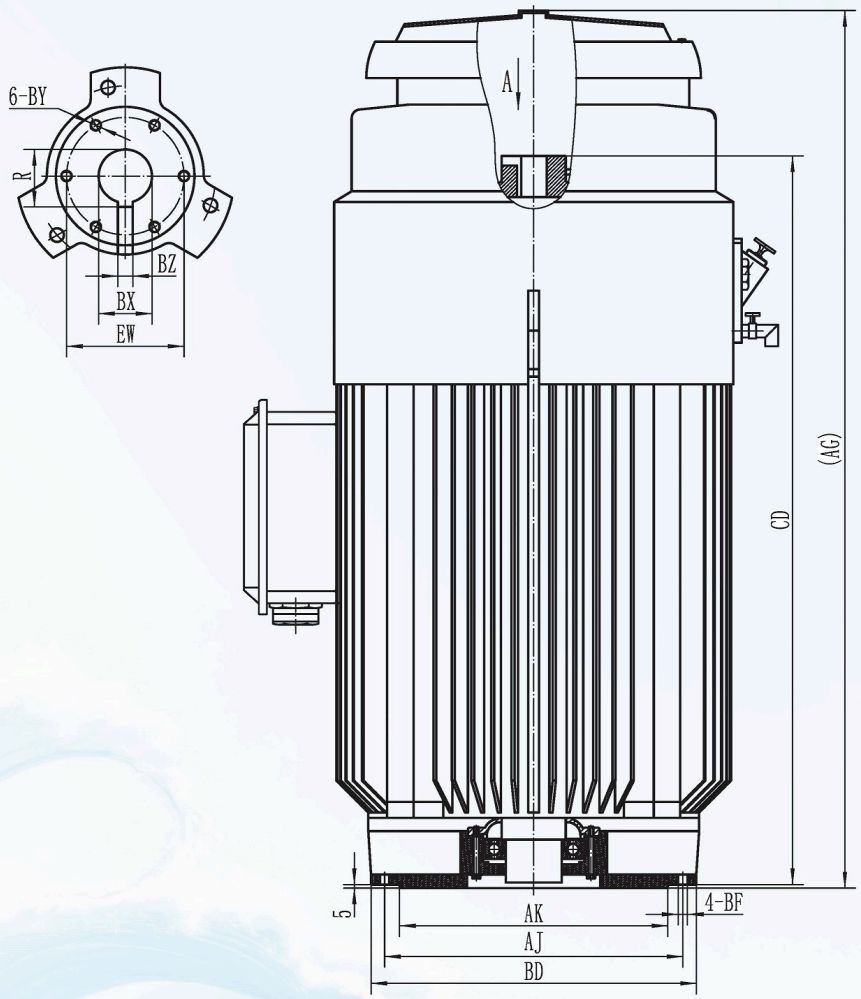
MOUNTING DIMENSIONS(INCH)

IEC	Frame	HP	BD	AJ	AK	BF	BX	BZ	EW	R	BY	CD	AB	AG
VHS160	VHS215TP-4	10	10	9.125	8.25	0.44	1	1.38	0.25	1.11	1/4-20	17.5	10.2	23.8
VHS180	VHS254TP-4	15	10	9.125	8.25	0.44	1	1.38	0.25	1.11	1/4-20	23.38	14.3	27.1
	VHS256TP-4	20	10	9.125	8.25	0.44	1	1.38	0.25	1.11	1/4-20	23.38	14.3	27.1
	VHS284TP-4	25	16.5	14.75	13.5	0.69	1	1.38	0.25	1.11	1/4-20	24.75	14.3	28.5
	VHS286TP-4	30	16.5	14.75	13.5	0.69	1	1.38	0.25	1.11	1/4-20	24.75	14.3	28.5
VHS200	VHS324TP-4	40	16.5	14.75	13.5	0.69	1.25	1.77	0.25	1.367	1/4-20	28.22	15.5	36.4
	VHS326TP-4	50	16.5	14.75	13.5	0.69	1.25	1.77	0.25	1.367	1/4-20	28.22	15.5	36.4
	VHS364TP-4	60	16.5	14.75	13.5	0.69	1.25	1.77	0.25	1.367	1/4-20	31.16	15.5	39.4
	VHS365TP-4	75	16.5	14.75	13.5	0.69	1.25	1.77	0.25	1.367	1/4-20	31.16	15.5	39.4
VHS250	VHS404TP-4	100	16.5	14.75	13.5	0.69	1.5	2.165	0.375	1.687	1/4-20	36.94	19.6	45.7
	VHS405TP-4	125	16.5	14.75	13.5	0.69	1.5	2.165	0.375	1.687	1/4-20	36.94	19.6	45.7
VHS280	VHS444TP-4	150	16.5	14.75	13.5	0.69	1.687	2.5	0.375	1.854	1/4-20	45.12	22.8	54.3
	VHS445TP-4	200\250	16.5	14.75	13.5	0.69	1.687	2.5	0.375	1.854	1/4-20	45.12	22.8	54.3
VHS355	VHS5007P-4	300\350	24.5	14.75	13.5	0.69	1.938	2.5	0.5	2.16	1/4-20	56.88	27.5	68.9
	VHS5808P-4	400\450\500	24.5	14.75	13.5	0.69	1.938	2.5	0.5	2.16	1/4-20	61.53	27.5	73.5
VHS400	VHS5809P-4	550/600	30.5	26.0	22.0	0.813	1.938	2.5	0.5	2.16	1/4-20	68.53	32.5	80.6
	VHS5811P-4	700/800	30.5	26.0	22.0	0.813	1.938	2.5	0.5	2.16	1/4-20	76.53	32.5	88.6



mm

Frame	Pole	KW	D1	F1	G1	H1	H2	P	M	M1	N	S	S1	AC	AD	L
160	2	11/15	28	8	31.3	717	80	325	267	70	235	14.5	M8	350	265	850
	4	11/15														
180	2	18.5/22	28	8	31.3	750	90	370	267	70	235	14.5	M8	395	290	885
	4	18.5/22	32	10	35.3				370		330	18.5				
200	2	30/37/45/55/75	36	10	39.3	851	95	420	370	80	330	18.5	M10	445	330	995
	4	30/37/45														
250	4	55/75/90	45	14	48.8	964	105	510	440	104	380	18.5	M10	540	395	1175
280	4	110/132	50	14	53.8	1055	120	570	480	110	420	24	M10	600	445	1225
		150/180/200/225				1235									540	1400
315	4	150/185/200/220 260/280	55	16	59.3	1329	120	620	520	110	460	24	M10	645	590	1520
355	4	300/350/400/420	55	16	59.3	1544	120	620	520	110	460	24	M10	645	590	1723



mm

Model	KW	BD	AJ	AK	BF	BX	BZ	EW	R	BY	CD	AG
YLB132 -2	5.5/7.5	264	232	210	12	20	6	35	22.8	M5	483	636
YLB180 -2	11/15	410	267	235	15	28	8	70	31.3	M8	727	870
YLB180 -4	11/15	410	267	235	15	28	8	70	31.3	M8	727	870
YLB200 -2	18.5/22	410	267	235	15	28	8	70	31.3	M8	764	934
YLB200 -4	18.5/22	410	370	330	19	32	10	70	35.3	M8	764	934
YLB225 -2	30/37/45/55	420	370	330	19	36	10	80	39.3	M10	870	1048
YLB225 -4	30/37/45	420	370	330	19	36	10	80	39.3	M10	870	1048
YLB280 -4	55/75/90	510	440	380	19	45	14	104	48.8	M10	1102	1318
YLB315S -4	110/132	570	480	420	24	50	14	110	53.8	M10	1300	1524
YLB315L -4	150/185/200/220	570	520	460	24	55	16	110	59.3	M10	1400	1664
YLB355S -4	220/260/280/300	660	600	530	26	65	18	130	69.4	M12	1567	1820
YLB355L -4	315/335/355/375	660	600	530	26	65	18	130	69.4	M12	1647	1900

Shanghai Douli Power Co.,Ltd.

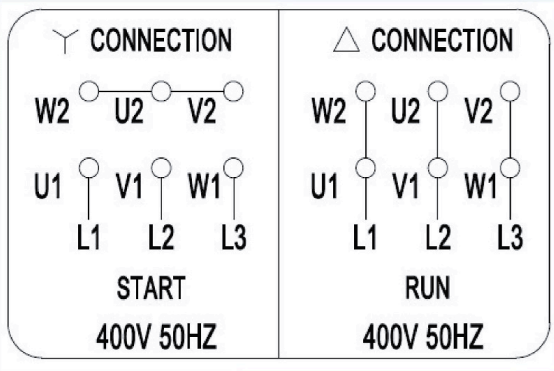
VHSVF SERIALS PERFORMANCE DATA (TEFC) 400V 50Hz

Type	HP	KW	SPEED (R/MIN)	RATED CURRENT (A)	TORQUE		EFF%			cosϕ			IA/IN	POWER FACTOR %	MOTOR THRUST (LBS)	DE BEARING	NDE BEARING	VIBRATION (mm²/s)	SOUND LEVEL SPL/SWL at 50Hz (dB)	NW. (KG)
					LOCKED ROTOR %	BREAK DOWN %	FULL LOAD	3/4 LOAD	1/2 LOAD	FULL LOAD	3/4 LOAD	1/2 LOAD								
VHSVF160-1-4	10	7.5	1465	13.9	170	230	90.4	90.85	85.88	86	81.7	74.82	5	86	3610	6210	7310	1.2	67	111
VHSVF180-2-4	15	11	1470	20.0	170	230	91.4	91.86	86.83	87	82.65	75.69	5	87	3610	6212	7312	1.2	67	189
VHSVF180-3-4	20	15	1470	27.0	170	230	92.1	92.56	87.5	87	82.65	75.69	5	87	3610	6212	7312	1.2	68	203
VHSVF180-4-4	25	18.5	1470	33.1	170	230	92.6	93.06	87.97	87	82.65	75.69	5	87	3610	6212	7312	1.3	70	216
VHSVF180-5-4	30	22	1470	38.8	170	230	93	93.47	88.35	88	83.6	76.56	6	88	3610	6212	7312	1.3	71	237
VHSVF200-2-4	40	30	1475	52.6	170	230	93.6	94.07	88.92	88	83.6	76.56	6	88	5715	7221	6312	1.3	71	339
VHSVF200-3-4	50	37	1475	64.6	170	220	93.9	94.37	89.21	88	83.6	76.56	6	88	5715	7221	6312	1.4	71	349
VHSVF200-4-4	60	45	1475	77.5	170	220	94.2	94.67	89.49	89	84.55	77.43	6	89	5715	7221	6312	1.5	72	399
VHSVF200-5-4	75	55	1475	94.3	170	210	94.6	95.07	89.87	89	84.55	77.43	6.5	89	5715	7221	6312	1.5	72	422
VHSVF250-2-4	100	75	1475	128.0	170	220	95	95.48	90.25	89	84.55	77.43	6.5	89	6745	7230	6317	1.7	72	628
VHSVF250-3-4	125	90	1475	153.3	170	210	95.2	95.68	90.44	89	84.55	77.43	6.5	89	6745	7230	6317	1.9	72	678
VHSVF280-2-4	150	110	1480	187.0	170	210	95.4	95.88	90.63	89	84.55	77.43	7	89	9800	7232	6318	1.9	72	1188
VHSVF280-3-4	175	132	1480	221.4	170	200	95.8	96.28	91.01	89	84.55	77.43	7	89	9800	7232	6318	2	73	1240
VHSVF280-4-4	200	150	1480	253.9	170	200	95.8	96.28	91.01	89	84.55	77.43	7	89	9800	7232	6318	2	73	1289
VHSVF280-5-4	250	185	1480	312.9	160	200	95.9	96.38	91.11	89	84.55	77.43	7	89	9800	7232	6318	2	73	1341
VHSVF355-1-4	300	220	1480	323.2	170	200	96	96.48	91.2	90	85.5	78.3	7	90	17200	7236	6221	2.1	79	1427
VHSVF355-2-4	350	260	1480	377.7	170	200	96	96.48	91.2	90	85.5	78.3	7	90	17200	7236	6221	2.1	79	1461
VHSVF355-3-4	400	300	1480	435.8	170	200	96	96.48	91.2	90	85.5	78.3	7	90	17200	7236	6221	2.1	79	1495
VHSVF355-4-4	450	330	1480	481.3	170	200	96	96.48	91.2	90	85.5	78.3	7	90	17200	7236	6221	2.1	79	1596

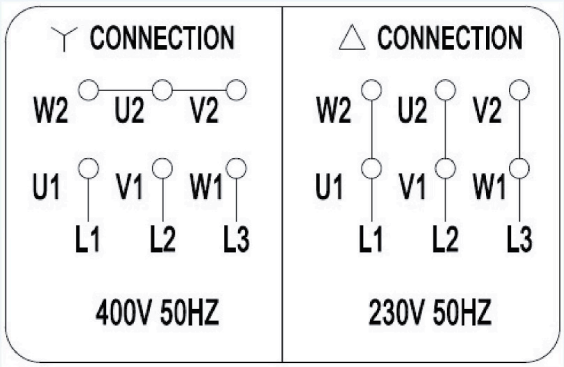
Delotek

Terminal Connection Diagrams

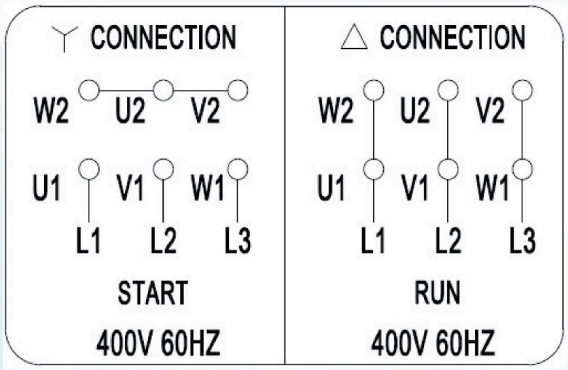
400V 50Hz Single Voltage Wiring Diagram

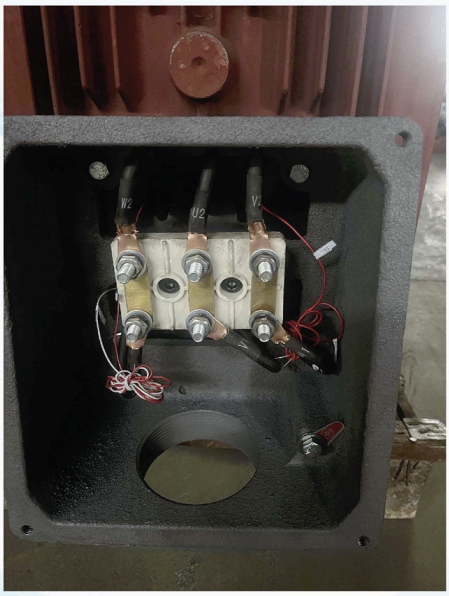


230/400V 50Hz Dual Voltage Wiring Diagram



400V 60Hz Star-Delata Wiring Diagram





Data subject to change without notice.

Shanghai Douli Power Co.,Ltd.

No.5000 Baoqian Road,Jiading Industrial Park,Shanghai China
Tel:+86-13361864955 +86-17721048860
www.doulipower.com
sales@doulipower.com
www.linkedin.com/company/shanghai-douli-power-co-ltd/
www.linkedin.com/in/sunny-wan-electricmotor/