1.7

HRP5D series

Radial piston hydraulic motor

The HRP5D series radial piston hydraulic motor, is a kind of low speed high torque hydraulic motor, disc valve structure, with high pressure, good stability at low speed, high volumetric efficiency and mechanical efficiency.

Contents

Overview

The HRP5D series radial piston hydraulic motor, is a kind of low speed high torque hydraulic motor, disc valve structure, with high pressure, good stability at low speed, high volumetric efficiency and mechanical efficiency, the motor can be equipped with a variety of functional modules.

Advantages

· Advanced disc valve structure, radial piston, high volumetric efficiency.
· Piston reinforced sealing ring, adapt to high pressure, high speed and other harsh working conditions.
· Rear parking brake, speed sensor, etc.
· Smoothly 2-speeds changed.

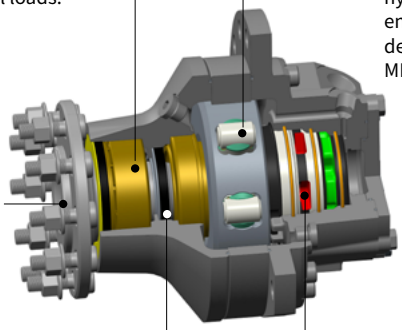
Standard structure

Heavy-duty Bearings

Heavy-duty bearings are used to ensure large axial/radial loads.

Piston Pair

The device that converts hydraulic energy into mechanical energy, and the specially designed rollers to have higher ME and high reliability.



Wheel Flanges

Direct drive wheels, easy to install, can withstand high torque output.

Distribution Device

Advanced disc valve structure, strong automatic compensation ability after wear, to ensure high volumetric efficiency, long life, efficient and stable work.

Shaft Seal

Specially customized shaft seal ensures the sealing between the housing and shaft with high speed.

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Specification

Series				HRP5D						
Motor performance										
Displacement			cm^3/rev.	470	520	565	620	680	750	820
Max.torque			N·m	3366	3724	4047	3947	4329	4775	5220
Min.stable speed			rpm	5						
Max.speed	Displacement		rpm	385	350	320	290	265	240	220
	Variable Displacement		rpm	465	420	385	350	320	290	265
Pressure	Max.differential pressure		bar	450			400			
Max.power			kW	29			35			
Weight	Single-speed	With brake	kg	53						
		Without brake	kg	44						
	Two-speed	With brake	kg	61						
		Without brake	kg	53						
Brake										
Static braking torque			N·m	4200						
Release pressure			bar	12-16						
Maximum pressure at brake port Z			bar	40						
Oil volume to operate brake			cm^3	32						

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- Make sure the motor is full of oil before use.
- During motor running-in(at least 20 hours), it should not be operated without load at greater than 100rpm.
- The filtration standard of ISO 4406 cleaning standard 20/18/15 is recommended.
- High quality anti-wear hydraulic fluids are recommended.
- When the temperature is 50° , the minimum viscosity of the oil is recommended to be $20mm^2/s$.
- The recommended maximum operating temperature is 85° C.

Ordering information

HRP5D	1	09	B1	W1	N	AA	A	V1
①	②	③	④	⑤	⑥	⑦	⑧	⑨

Radial Piston Series

①	Incurve multiple-action radial piston motor	HRP5D

Single and Two Speed

②	Single speed	1
	Two speed, gear ratio 2:1	2

Displacement cm^3/rev.

③	470, Standard piston	09
	520, Standard piston	10
	565, Standard piston	11
	620, Step piston	12
	680, Step piston	13
	750, Step piston	14
	820, Step piston	15

Port Connection

		Single Speed:1	Two Speed:2	Code
④	G3/4(A, B), G3/8(L, L1), G3/8(F)	●		B1/B7/B9
	M27×2(A, B), M16×1.5(L), M16×1.5(F), M14×1.5(X)		●	B5/B6
	M27×2(A, B), M16×1.5(L), M16×1.5(F), M14×1.5(X)	●	●	B2/BA

Output Shaft

		B1/B7/BA/B2	B9	B5/B6	Code
⑤	Wheel pilot Ø92.7×7, hub bolt Ø140 distribution circle 10×M14×1.5	●	●	●	W1
	Wheel pilot Ø95.7×7, hub bolt Ø140 distribution circle 10×M14×1.5	●	●		W3
	Wheel pilot Ø160.7×15, hub bolt Ø205 distribution circle 6×M18×1.5	●		●	W5
	Wheel pilot Ø92.7×7, hub bolt Ø140 distribution circle 10×M16×1.5	●	●		W2
	Wheel pilot Ø92.7×7, hub bolt Ø140 distribution circle 5×M16×1.5	●	●		W7
	Wheel pilot Ø92.7×7, hub bolt Ø140 distribution circle 10×M14×1.5	●	●		W9

Ordering information

Paint Option

⑥	No Paint	N
	Black	B
	Hengli blue	C
	Yellow	Y

Brake

		B1/B7/ BA/B2	B9	B5/B6	代号
⑦	No brakes	●	●	●	AA
	Static braking torque 4200N·m, port Z G1/4	●	●		A5
	Static braking torque 4200N·m, port Z M14×1.5			●	A5/A9

Flushing Valve

⑧	No flushing valve	A

Special Features

		B1/B7/ BA/B2	B9	B5	B6	Code
⑨	High temperature, FKM	●		●		V1
	Speed sensor cavity, High temperature, FKM				●	S4
	Speed sensor cavity with direction judgement, High temperature, FKM		●			S4
	Speed sensor, High temperature, FKM				●	S3
	Speed sensor (with direction judgement), High temperature, FKM		●			S7
	Wheel side axle installs hub bolts only, no nuts, High temperature, FKM	●	●	●	●	AF

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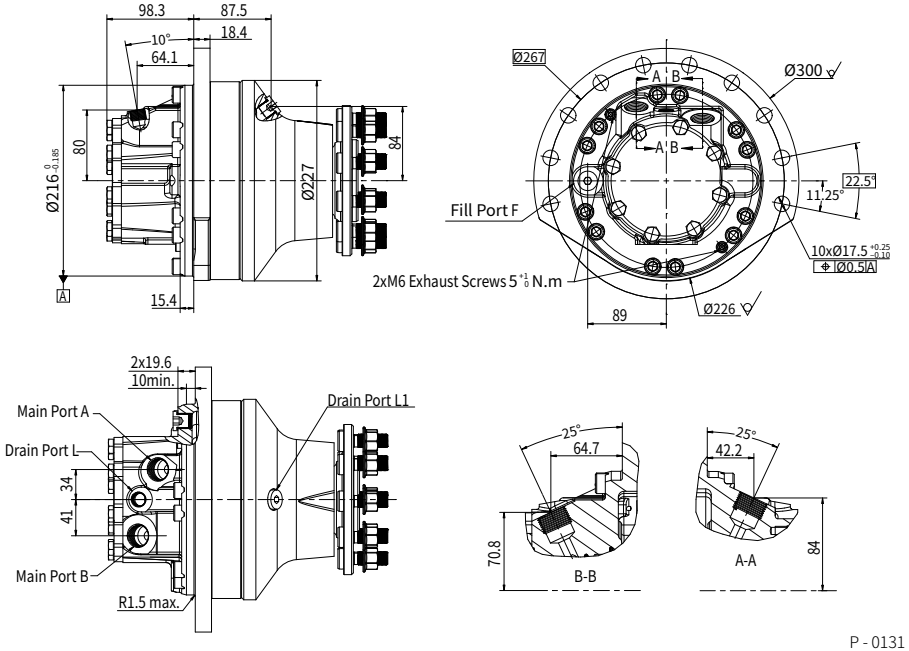
Note: ● =Available; For the other types of port forms, output forms and brake port orienttations, please contact Hengli's application engineer for consultation.

Installation size

·Single speed wheel output: Take HRP5D111B1W1YAAAV1 for example



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Note: The weight of the connection shown in the figure is 44.26kg.

Name	Port Function	B1/B9/B7	B2/BA
A, B	Main Port	G3/4	1-1/16-12UN
L, L1	Drain Port	G3/8	3/4-16UNF
F	Fill Port	G3/8	3/4-16UNF

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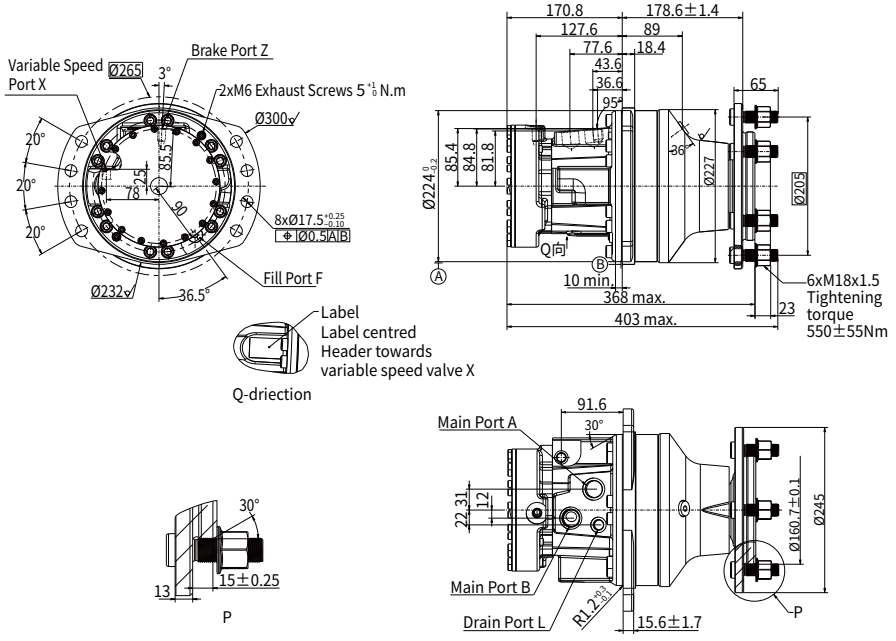
Installation size

·Two speed wheel output: Take HRP5D214B5W5BA5AV1 for example



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Note: The weight of the connection shown in the figure is 62kg.

Name	Port Function	B5/B6
A, B	Main Port	M27×2
L	Drain Port	M16×1.5
F	Fill Port	M16×1.5
X	Variable Speed Port	M14×1.5

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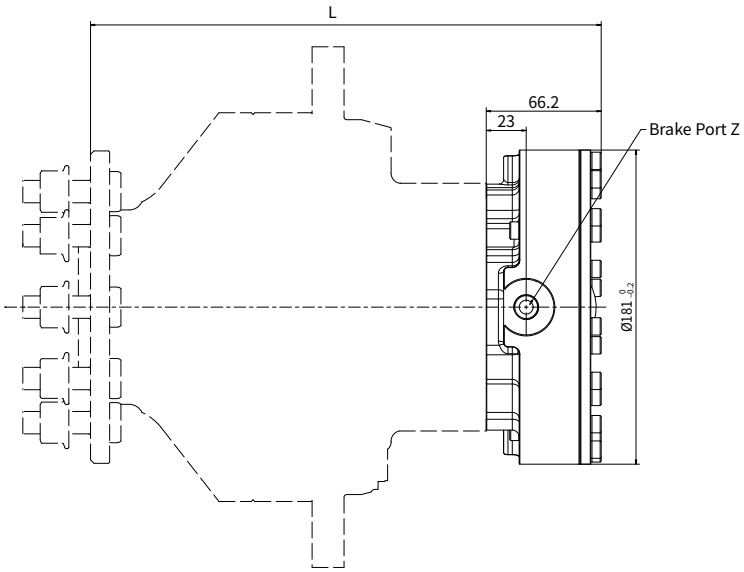
Brake installation size

Parking brake: Order code "A5/A9"



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Code	Single and Two speed	L	Z
A5	Single speed	294.1	G1/4
A5/A9	Two speed	349.4	M14×1.5

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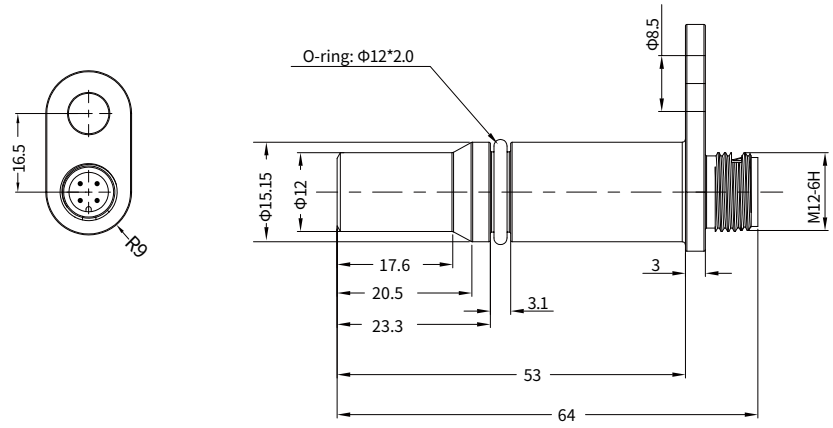
Speed sensor

·Speed sensor: S7



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Dimensions	Ø12 /L=53mm
Voltage	8-32VDC
Input Current	<20mA
Sensing distance	0.2~1.15mm
Output circuitry	Push-Pull
Output overcurrent protection（Y/N）	Yes
Maximum output current	⩽ 200mA
Voltage drop	⩽ 3.5VDC
Working frequency	0-15KHz
Output signal	A, B
Operating temperature	-40°C ~+125°C
Protection	IP67
Shell material	Copper/plastic
Pressure resistance of measuring surface	10bar
Connector	M12
Weight	55g
Installation depth	53mm
Reverse polarity protection	Yes
Dielectric strength	500VDC

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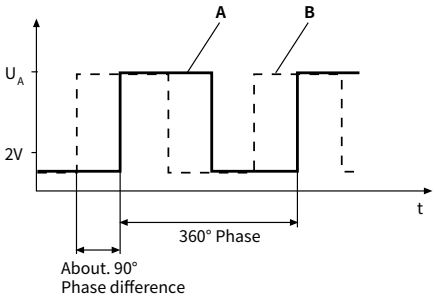
Speed sensor

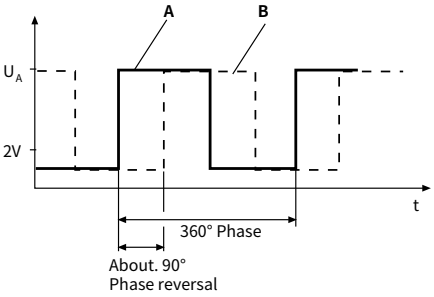
·Speed sensor: S7

■ OUTPUT SIGNAL

The measured gear rotates clockwise



The measured gear rotates counterclockwise



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■ TERMINAL ASSIGNMENT

Signal	+Ub	0V	A	B
4 core plug 	1	3	4	2

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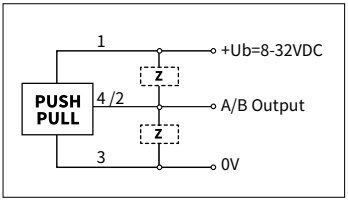
■ WIRING DIAGRAM



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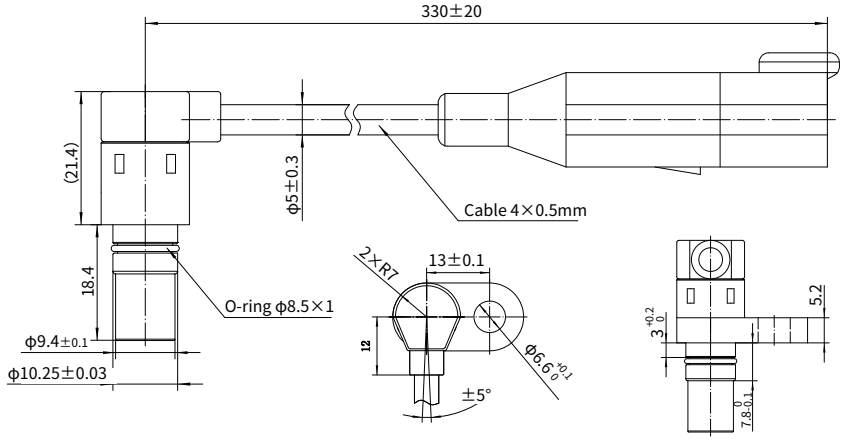
Speed sensor

·Speed sensor: S3



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Dimensions	Ø10.25 /L=18.4mm
Voltage	8-32VDC
Input Current	<15mA
Sensing distance	0.2~2mm
Power reverse protection（Y/N）	Yes
Power input overcurrent and overvoltage protection（Y/N）	Yes
Maximum output current	50mA
Voltage drop	⩽ 3VDC
Working frequency	0-20KHz
Output signal	A, B
Operating temperature	-40°C ~+125°C
Protection	IP67/IP69K
Shell material	Copper/plastic
Pressure resistance of measuring surface	10bar
Connector	Cable 0.33m, Injection 4-core DEUTSCH DT04-4P-EP04 plug

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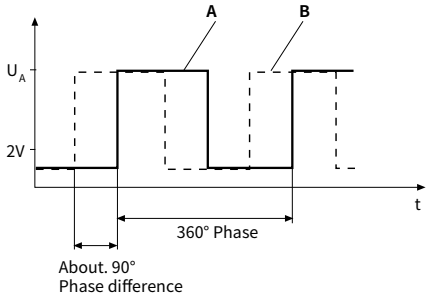
Speed sensor

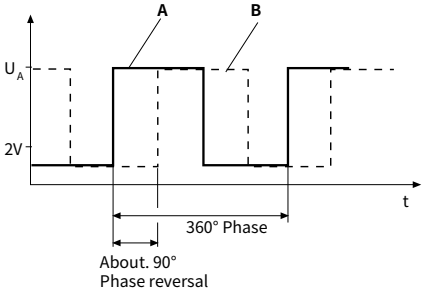
·Speed sensor: S3

■ OUTPUT SIGNAL

The measured gear rotates clockwise



The measured gear rotates counterclockwise



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■ TERMINAL ASSIGNMENT

Signal		+Ub	0V	A	B
Color		BN	BU	BK	WH
4 core plug DT04		1	2	3	4

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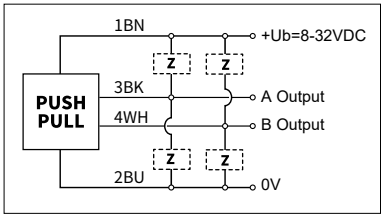
■ WIRING DIAGRAM



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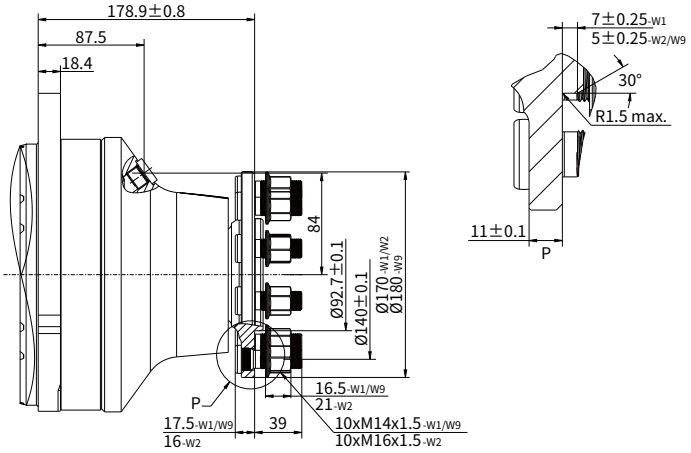
Shaft end dimensions

W1/W2/W9 **Wheel pilot Ø92.7×7, hub bolt Ø140 distribution circle 10×M14×1.5$_{(-W1/W9)}$ /10×M16×1.5$_{(-W2)}$**



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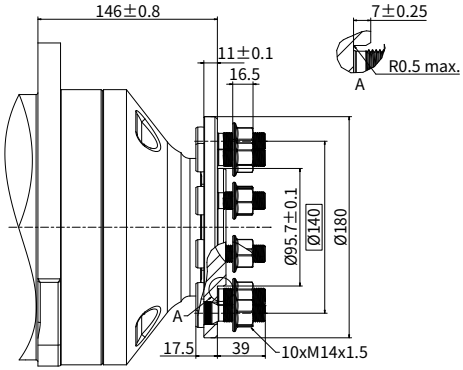
W3 **Wheel pilot Ø95.7×7, hub bolt Ø140 distribution circle 10×M14×1.5**



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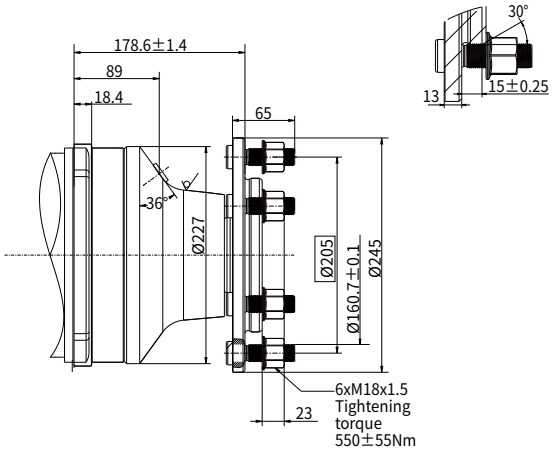
Shaft end dimensions

W5 **Wheel pilot Ø160.7×15, hub bolt Ø205 distribution circle 6×M18×1.5**



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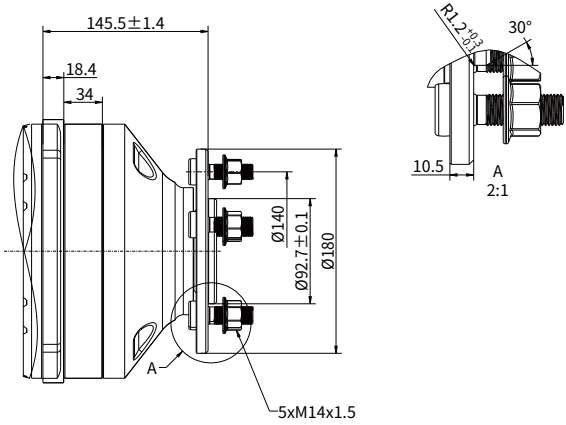
W7 **Wheel pilot Ø92.7×7, hub bolt Ø140 distribution circle 5×M16×1.5**



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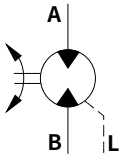
Hydraulic diagram

·Motor without brakes



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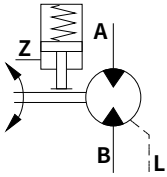
·Motor with parking brake



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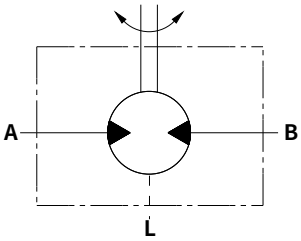
·Schematic diagram of a single-speed motor



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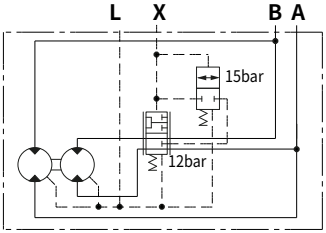
·Schematic diagram of a two-speed motor



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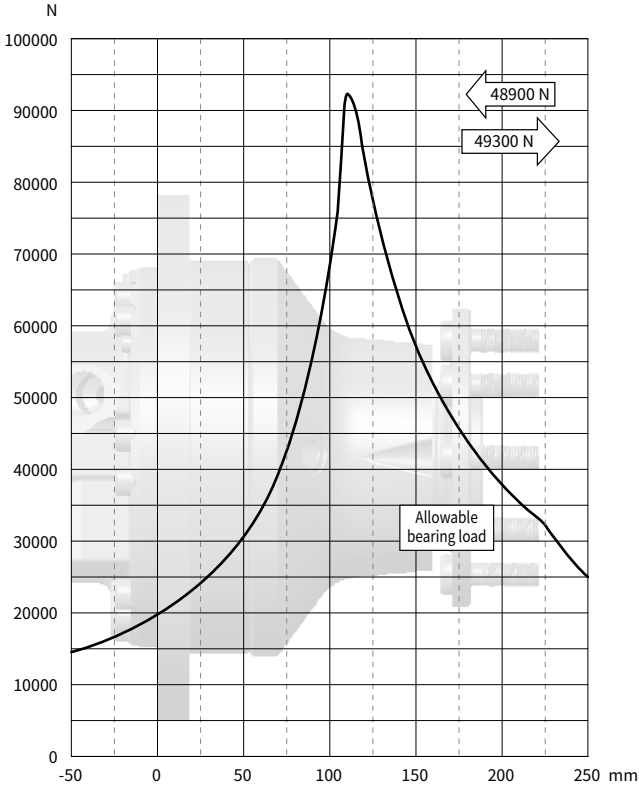
Allowable shaft load/bearing curve

As shown in the figure, when the axial load is 0, the radial allowable load of the output shaft is related to the distance from the flange mounting surface to the load action point.

The solid line shows the permissible radial load of the bearing. This is based on the use of hydraulic oil containing anti-wear additives and the use of continuous output torque at a motor speed of 50 rpm, a differential pressure of 250 bar, an operating oil temperature of 50°C , and a bearing service life of 2000 hrs.



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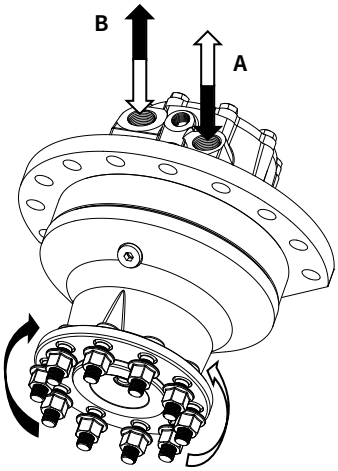
Rotation direction: CW

When facing the motor shaft extension direction, port A is high pressure oil, the output shaft rotates CW; Otherwise, it rotates CCW.



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