

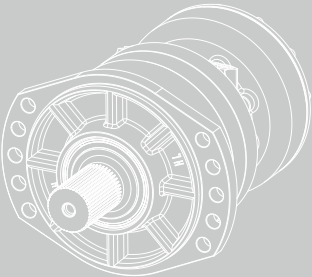
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# HRP03 series

## Radial piston hydraulic motor

The HRP03 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 .....	02
Advantages .....	02
Standard structure .....	02
Specification .....	03
Ordering information .....	04-05
Installation size .....	06-07
Shaft end dimensions .....	08-10
Hydraulic diagram .....	10
Allowable shaft load/bearing curve .....	11
Rotation direction .....	12



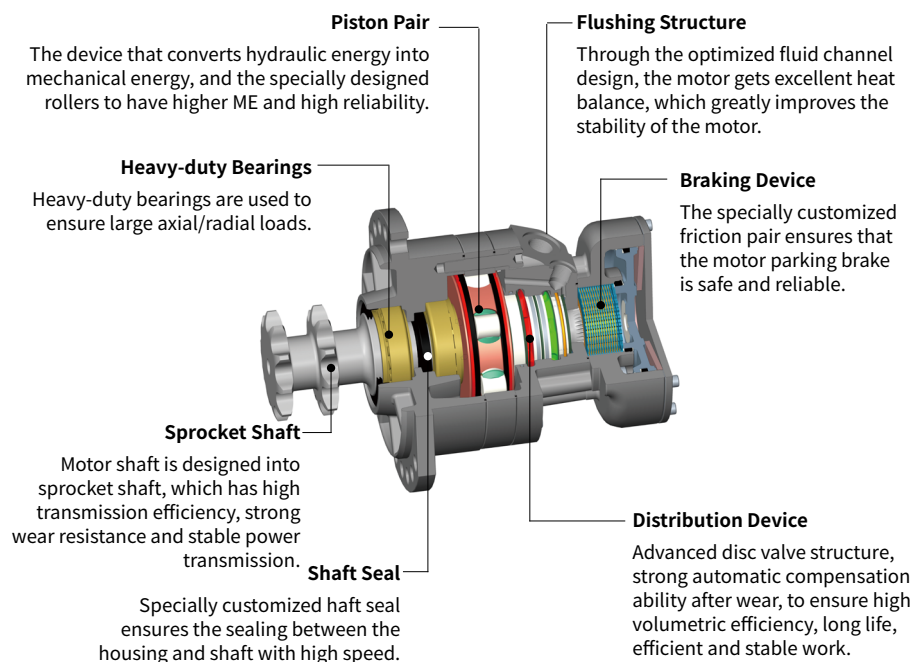
## Overview

The HRP03 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, and the motor can be equipped with various optional function modules.

## Advantages

- Using tapered roller bearing structure, can support larger axial and radial load.
- Advanced disc valve structure, radial piston, high volumetric efficiency, high torque and high reliability.
- More options including brake, variable speed valve, speed sensor, etc.
- Can withstand high speed and high pressure working environment.

## Standard structure



P - 0099

Specification

Series			HRP03		
Motor performance					
Displacement		cm <sup>3</sup> /rev.	225	255	400
Max.torque		Nm	1450	1640	2290
Min.stable speed		rpm	5		
Max.speed	Displacement	rpm	475	420	270
	Variable displacement	rpm	620	550	350
Pressure	Max.differential pressure	bar	450		400
Brake					
Minimum static torque		Nm	2200		
Release pressure		bar	11 ~ 15		
Maximum pressure at brake port Z		bar	30		
Oil volume to operate brake		cm <sup>3</sup>	23		

T - 0092

- Make sure the motor is full of oil before use.
- The maximum torque is only available for small operating conditions.
- 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<sup>2</sup>/s.
- The recommended maximum operating temperature is 85° C.

Ordering information

HRP03	Single and Two Speed	Displacement	Port Connection	Output Shaft	Paint Option	Brake	Flushing Valve	Special Features
01	02	03	04	05	06	07	08	09

Radial Piston Series

01	Incurve multiple-action radial piston motor	HRP03
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Single and Two Speed

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

Displacement cm<sup>3</sup>/rev.

03	225, Standard piston	02
	255, Standard piston	03
	400, Step piston	07

Port Connection

04	7/8-14UNF(A, B), 9/16-18UNF(L), 3/4-16UNF(F)	M2
	G1/2(A, B), G3/8(L), G1/2(F)	M8
	7/8-14UNF(A, B), 9/16-18UNF(L), 3/4-16UNF(F), 9/16-18UNF(X)	M1
	G1/2(A, B), G1/4(L), G1/4(F), G1/4(X)	M4

Output Shaft

05	Splined shaft 42 teeth ANSI B92.1	S2/S1
	Double-sprocket 10 teeth ASME B29.1	S3
	Double-sprocket 9 teeth, Chain No. 100(ISO 606)	S5
	Φ40 straight shaft, parallel key 12×8×70, center hole M12	SA
	Pilot diameter Φ92.7x7, hub bolt Φ140 distribution circle 5×M14×1.5	W1

Ordering information

Paint Option

06	No Paint	N
	Black	B
	Hengli blue	C
	Yellow	Y

Brake

07	No brakes	AA
	Static braking torque 2200Nm, port Z 9/16-18UNF	A1
	Static braking torque 2200Nm, port Z G1/4	A3

Flushing Valve

08	Whether there is a flushing valve or not	A
	There is a flushing valve with a flow rate of 5L/min	B
	There is a flushing valve with a flow rate of 7L/min	C
	There is a flushing valve with a flow rate of 10L/min	D
	There is a flushing valve with a flow rate of 12.5L/min	E
	There is a flushing valve with a flow rate of 13.5L/min	F

Special Features

09	Standard	AA
	High temperature, FKM	V1
	Low temperature	V2
	Speed sensor cavity	S1
	Speed sensor to determine direction	S2

T - 0091

**Note:** For the other types of port forms, output forms and brake port orientations, please contact Hengli's application engineer for consultation.

- HRP03 (Single speed)

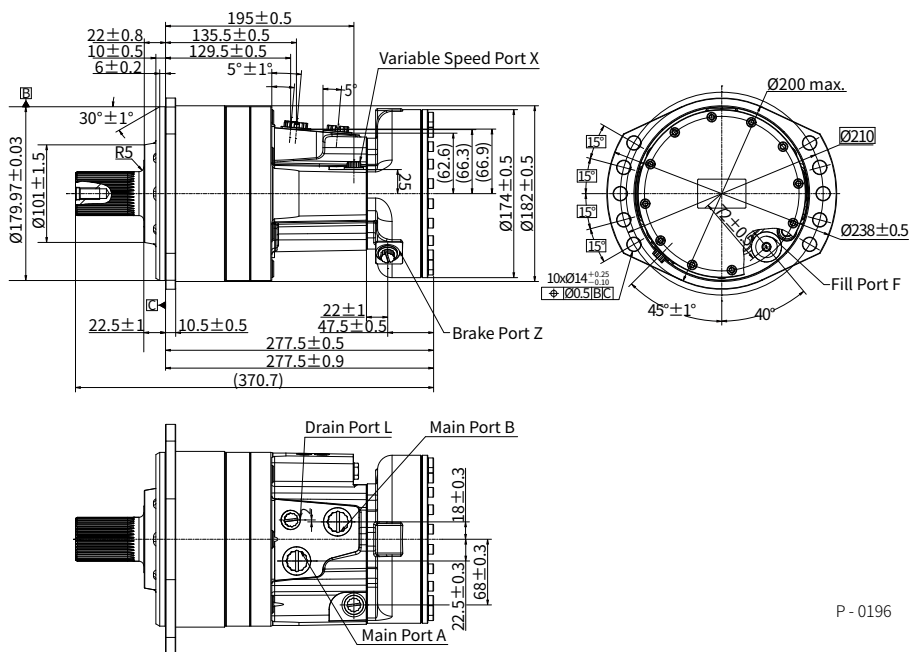


Note: The weight of the connection shown in the figure is 35kg.

T - 0093

## Installation size

- HRP03 (Two speed)

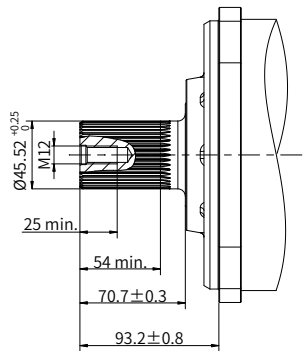


**Note:** The weight of the connection shown in the figure is 37.5kg.

Name	Port function	M1	M4
A、 B	Main port	7/8-14UNF	G1/2
L	Drain port	9/16-18UN	G1/4
F	Fill port	3/4-16UNF	G1/4
X	Variable speed port	9/16-18UNF	G1/4

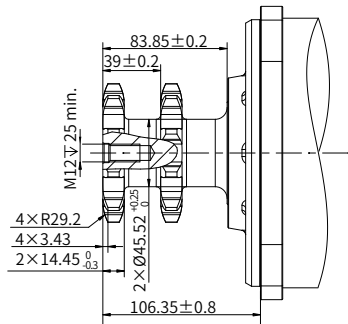
Shaft end dimensions

**S2/S1** Splined shaft 42 teeth ANSI B92.1



P - 0090

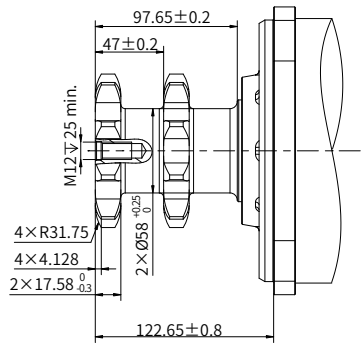
**S3** Double-sprocket 10 teeth ASME B29.1



P - 0091

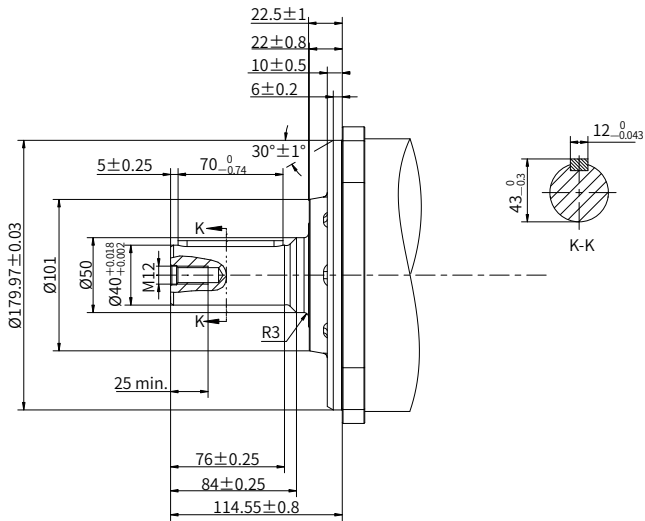
Shaft end dimensions

**S5** Double-sprocket 9 teeth, Chain No. 100(ISO 606)



P - 0092

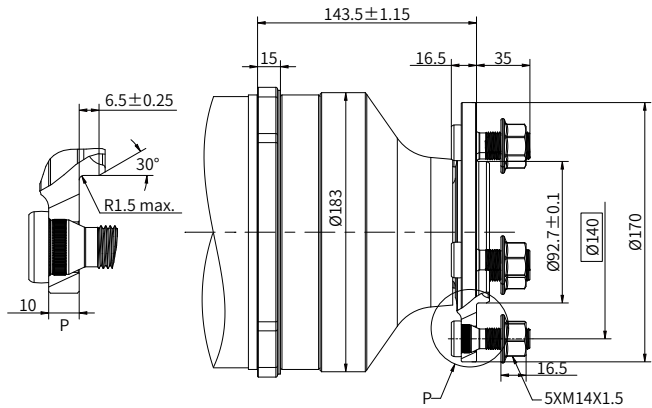
**SA**  $\phi 40$  straight shaft, parallel key  $12 \times 8 \times 70$ , center hole M12



P - 0199

Shaft end dimensions

**W1** Pilot diameter  $\phi 92.7 \times 7$ , hub bolt  $\phi 140$  distribution circle  $5 \times M14 \times 1.5$



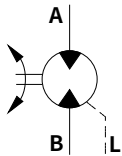
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Single and Two speed	Output shaft				
Single speed	S2	S3	S5	SA	W1
Two speed	S1				

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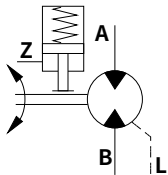
Hydraulic diagram

· Motor without brakes



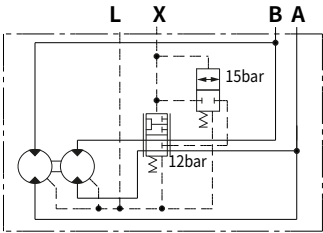
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· Motor with parking brake



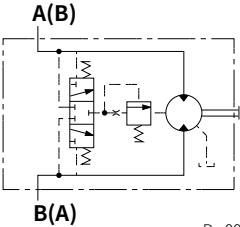
P - 0086

· Schematic diagram of a two-speed motor



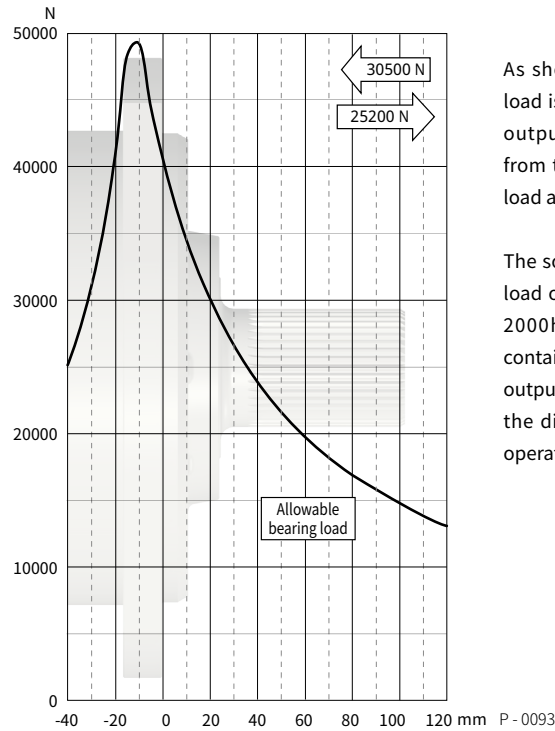
P - 0087

· Flushing valve schematic



P - 0088

Allowable shaft load/bearing curve

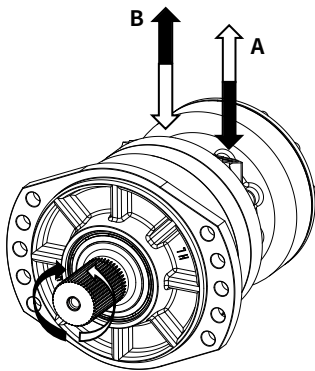


As shown in the figure, when the axial load is 0, the radial allowable load of the output shaft is related to the distance from the flange mounting surface to the load action point.

The solid line shows the allowable radial load of the bearing based on  $L_{10}$  life with 2000hrs. Denote use hydraulic fluids containing anti-wear additives, and rated output torque and motor speed of 50rpm, the differential pressure is 250 bar, the operating oil temperature is 50°C .

**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.



P - 0097