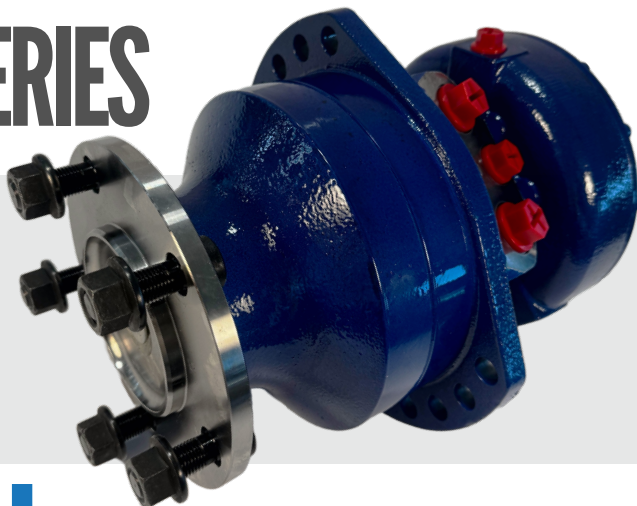


# TMR 03 -SERIES



# Radial Piston Hydraulic Motor

The TMR 03 series is a low speed high torque radial piston motor. Its disc valve structure ensures high pressure, stability at low speed and high volumetric and mechanical efficiency.

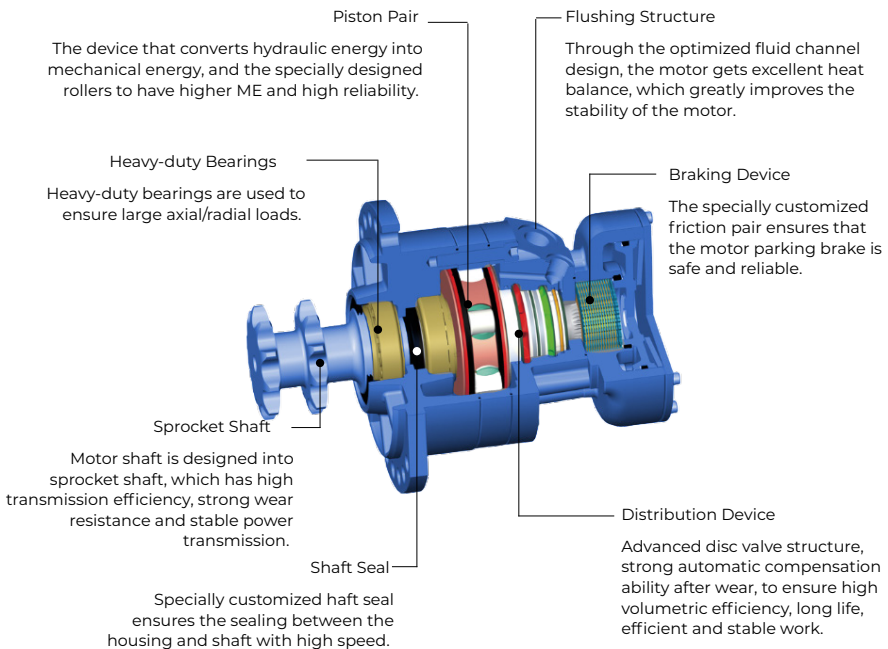
## Overview

The TMR 03 series is a low speed high torque radial piston motor. Its disc valve structure ensures high pressure, stability at low speed and high volumetric and mechanical efficiency. The motor can be equipped with various optional function modules.

## Advantages

- Using tapered roller bearing structure, can support larger axial and radial loads.
- Advanced disc valve structure and strong automatic compensation ability ensures high volumetric efficiency, long life and stability.
- Various function modules can be selected, such as Flushing valve, brake, variable speed valve, speed sensor, etc., are available to meet the needs of users in various fields.

## Standard structure



Specification

|                                  |                           |          |        |      |      |
|----------------------------------|---------------------------|----------|--------|------|------|
| Series                           |                           |          | TMR 03 |      |      |
| Motor performance                |                           |          |        |      |      |
| Displacement                     |                           | cm³/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 ³     | 23     |      |      |

- Make sure the motor is full of oil before use.
- The maximum torque is only available for peak 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

| TMR 03 | 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 Radial Piston Motor | TMR 03 |
|----|----------------------------------------------------|--------|

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-tooth ANSI B92.1                                   | S2/S1 |
|    | Double-sprocket, 10-tooth ASME B29.1                                 | S3    |
|    | Double-sprocket, 9-tooth ISO-606                                     | S5    |
|    | Φ40 straight shaft, parallel key 12x8x70, 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 |

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 | Without flushing valve                      | A |
|    | With Flushing valve, flow rate of 5L/min    | B |
|    | With Flushing valve, flow rate of 7L/min    | C |
|    | With Flushing valve, flow rate of 10L/min   | D |
|    | With Flushing valve, flow rate of 12.5L/min | E |
|    | With Flushing valve, 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 |

Note: For different porting options, please contact HANSA TMP Application Engineers.

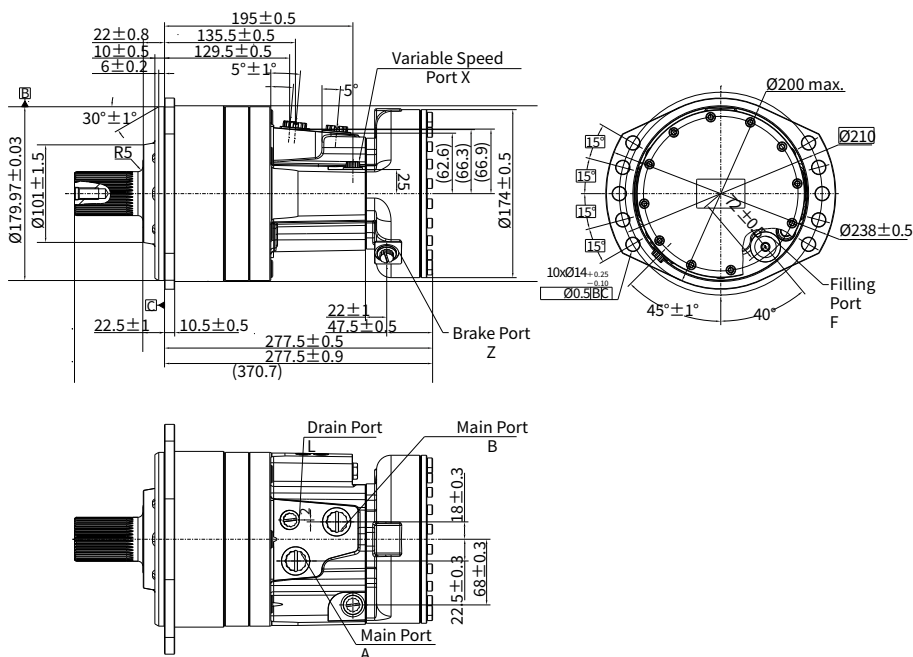
·TMR 03 (Single speed)



| Name | Port function | M2        | M8   |
|------|---------------|-----------|------|
| A, B | Main port     | 7/8-14UNF | G1/2 |
| L    | Drain port    | 9/16-18UN | G3/8 |
| F    | Filling port  | 3/4-16UNF | G1/2 |

## Installation size

·TMR 03 (Two speed)

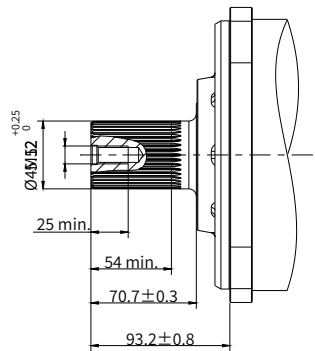


Note: Weight of the two speed motor 37.5 kg

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

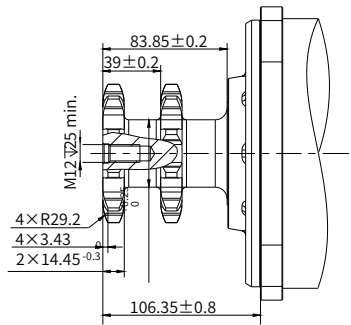
Shaft end dimensions

S2/S1 Splined shaft, 42-tooth ANSI B92.1



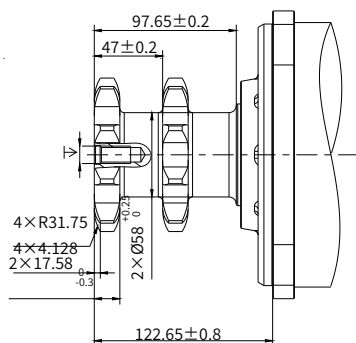
| Output Shaft | Single and double speed |
|--------------|-------------------------|
| S2           | Single speed            |
| S1           | Two speed               |

S3 Double-sprocket, 10-tooth ASME B29.1

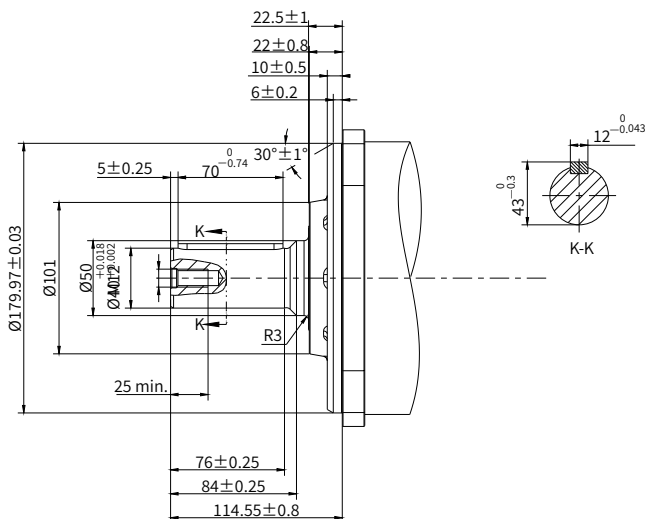


## Shaft end dimensions

**S5** Double-sprocket, 9-tooth ISO-606

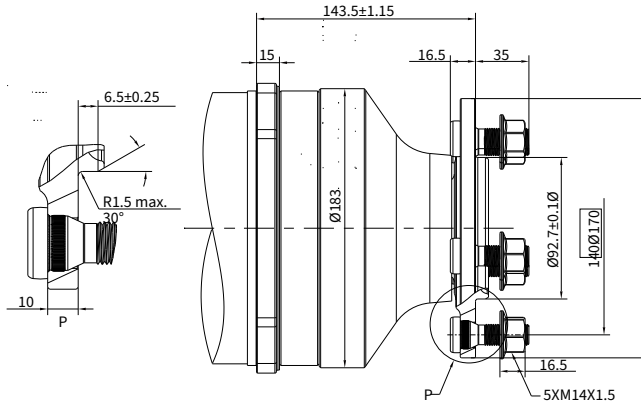


**SA**  $\text{Ø}40$  straight shaft, parallel key 12x8x70, center hole M12



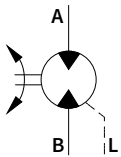
## Shaft end dimensions

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

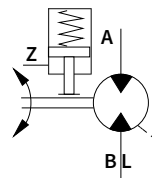


## Hydraulic diagram

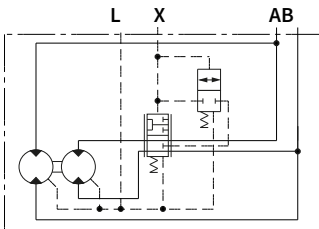
· Motor without brakes



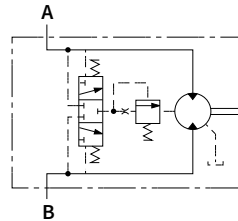
· Motor with parking brake



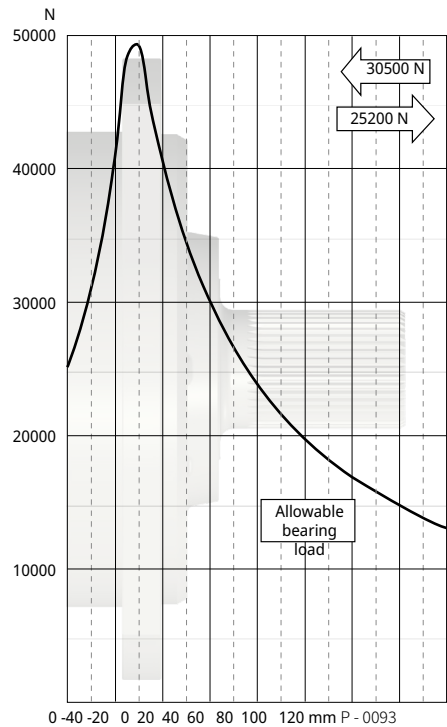
· Schematic diagram of a two-speed motor



· Flushing valve schematic



Allowable shaft load/bearing curve



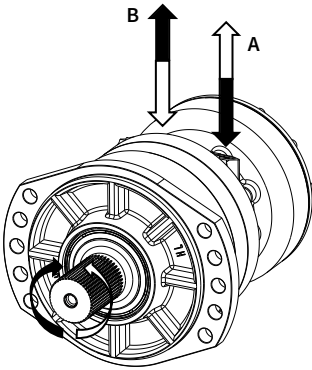
As shown in the figure, when the axial load is zero, the allowable radial load of the output shaft depends on the distance from the flange mounting surface to the load application point.

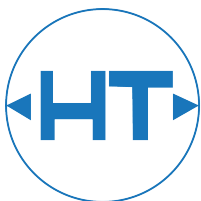
The solid line represents the allowable radial load of the bearing based on an L10 lifespan of 2,000 hours.

When using hydraulic fluids containing anti-wear additives, with a rated output torque and motor speed of 50 rpm, the differential pressure is 250 bar, and 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.





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