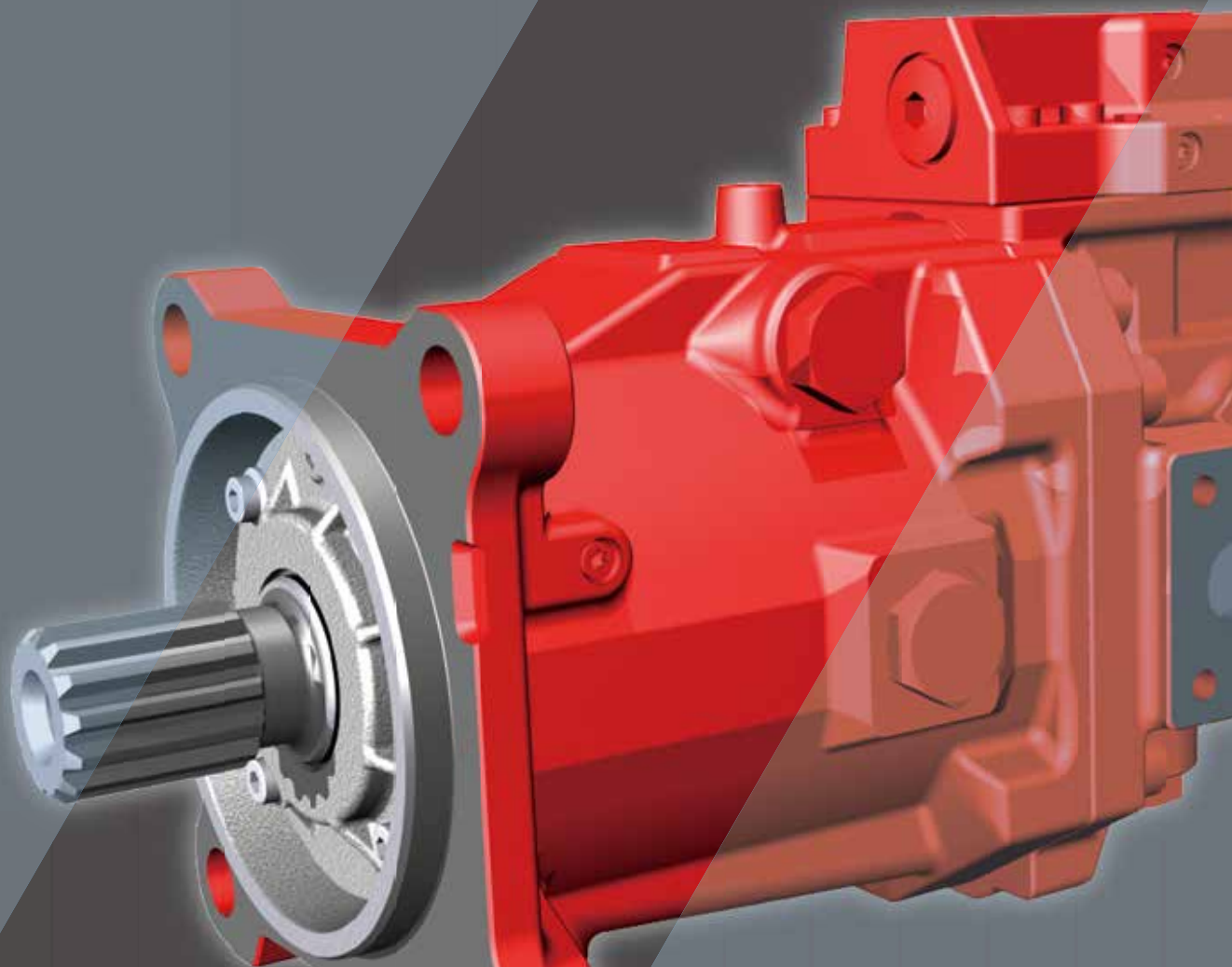


# Регулируемые аксиально-поршневые гидромоторы KAWASAKI серии M7V

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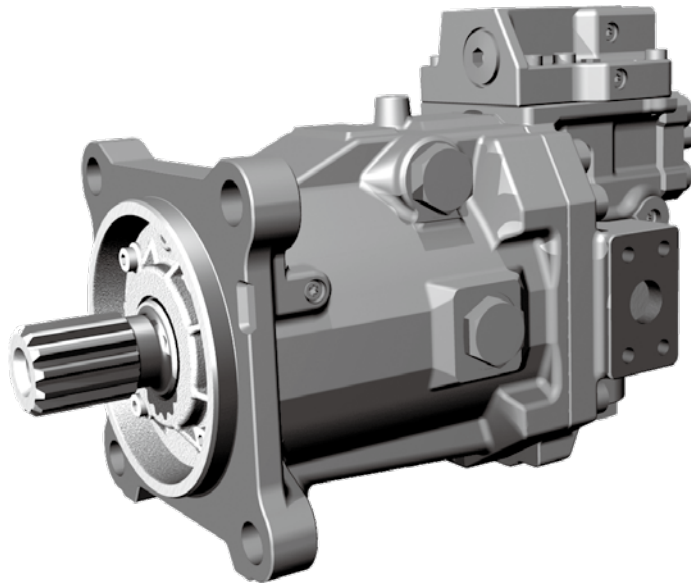
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# M7V Series

## Variable Displacement Type Axial Piston Motors



### ■ Specifications

Size : 85, 112, 160, 212

Nominal Pressure : 42 MPa (6,090 psi)

Maximum Pressure : 50 MPa (7,250 psi)

### ■ General Descriptions

- Applicable to an open circuit and closed circuit.
- Applicable to construction machinery and industrial vehicles.
- Swash plate design allows for a compact motor.
- High power density
- Various control options make the motor suitable for a wide range of applications.

### ■ Features

#### **Superior performance at High and Low speed**

Optimized rotary balance design enables high speed performance and excellent low speed characteristics.

#### **Low noise**

Swash plate configuration provides the low noise.

#### **Compact size**

Swash plate configuration provides the more compact structure and flexibility in system design.

#### **Long bearing life**

Swash plate configuration results in longer bearing life.

# Technical Information

## Specifications

### M7V series

| Size                                                                               | 85                                                                              | 112                       | 160                        | 212                          |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------|----------------------------|------------------------------|
| Min. Displacement : $q_{\min}$ $\text{cm}^3 (\text{in}^3)$                         | 0 to 68<br>(0 to 4.2)                                                           | 0 to 90<br>(0 to 5.5)     | 0 to 128<br>(0 to 7.9)     | 0 to 170<br>(0 to 10.5)      |
| Max. Displacement : $q_{\max}$ $\text{cm}^3 (\text{in}^3)$                         | 68 to 88.5<br>(4.2 to 5.2)                                                      | 90 to 112<br>(5.5 to 6.9) | 128 to 160<br>(7.9 to 9.8) | 170 to 215<br>(10.5 to 13.1) |
| Max. Speed : $N_{\text{nom}} / N_{\text{max}}^{*1}$ $\text{min}^{-1} (\text{rpm})$ | 3,900 / 6,150                                                                   | 3,550 / 5,600             | 3,100 / 4,900              | 2,900 / 4,600                |
| Nominal pressure : $P_{\text{nom}}^{*2}$ MPa (psi)                                 | 42 (6,090)                                                                      |                           |                            |                              |
| Max. Pressure : $P_{\text{max}}$ MPa (psi)                                         | 50 (7,250)                                                                      |                           |                            |                              |
| Theoretical output torque      Nm (lbf ft)                                         | 592 (437)                                                                       | 749 (552)                 | 1,070 (789)                | 1,437 (1,060)                |
| Power      kW (hp)                                                                 | 242 (325)                                                                       | 278 (373)                 | 347 (465)                  | 436 (585)                    |
| Max. Flow : Q      L/min (gallon/min)                                              | 345 (91)                                                                        | 398 (105)                 | 496 (131)                  | 623 (165)                    |
| Moment of inertia $\text{kg} \cdot \text{m}^2$                                     | 0.011                                                                           | 0.017                     | 0.030                      | 0.054                        |
| Volume in the case      L (gallon)                                                 | 0.8 (0.21)                                                                      | 1.0 (0.26)                | 1.5 (0.40)                 | 2.0 (0.53)                   |
| Mass      kg (lb)                                                                  | 39 (86)                                                                         | 46 (101)                  | 65 (143)                   | 90 (198)                     |
| Temperature $^{\circ}\text{C}$ ( $^{\circ}\text{F}$ )                              | -20 to +115 (-4 to +239) at drain port<br>-20 to +90 (-4 to +194) at inlet port |                           |                            |                              |
| Coating                                                                            | Red synthetic resin primer                                                      |                           |                            |                              |

Values shown in the table above are theoretical values.

\* 1 :  $N_{\text{nom}}$  : Max. speed at  $q_{\max}$ .

$N_{\text{max}}$  : Max. speed at  $q < 0.6q_{\max}$ . (M7V212 : Max speed at  $q < 0.4q_{\max}$ .)

(In case that 1 is selected at ordering code [12] ,  $N_{\text{max}}$  goes down up to  $N_{\text{nom}}$  regardless of displacement of the motor.)

\* 2 : Nominal pressure corresponds to the design pressure to provide proper performance, function, and service life.

## Precautions for System Design

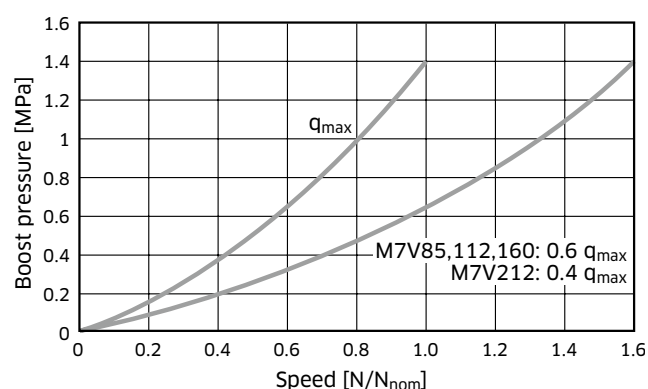
### M7V series

#### ◆ Minimum Boost Pressure

To prevent cavitation when the motor is operating in a pumping mode, a positive pressure is required at the suction port.

The figure on the right shows the minimum boost pressure requirement based on the regular operation. In case of a rapid change of the flow volume, more boost pressure must be applied.

Minimum boost pressure

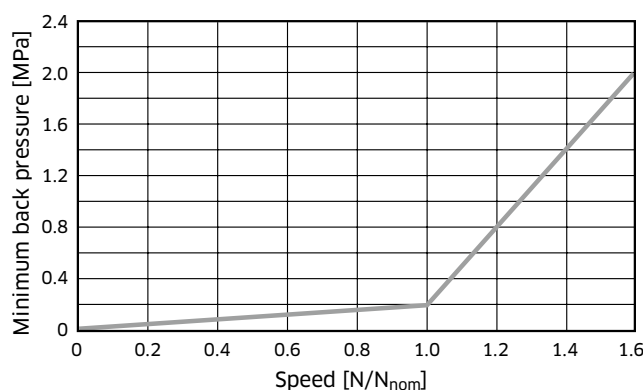


#### ◆ Minimum Back Pressure

To ensure the optimal performance and life time the back pressure is required at the lower pressure port.

Motor casing pressure must be  $\leq 0.2$  MPa.

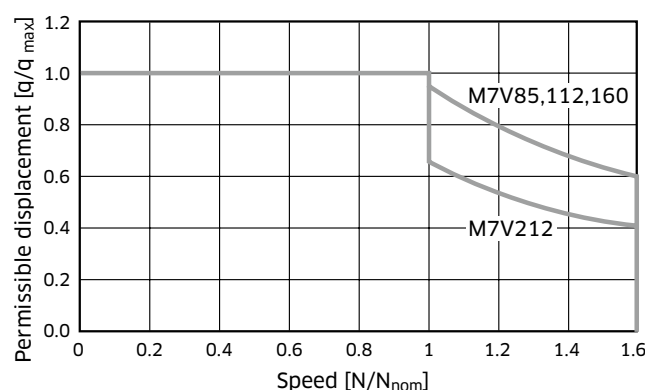
Minimum back pressure



#### ◆ Permissible Displacement, Speed Related

The figure on the right shows permissible displacement in relation to the motor operating speed. Design the system not to exceed this requirement.

Permissible displacement



#### ◆ Beginning of Control for Winch Device

For the safety reasons, winch device are not permissible with beginning control at q<sub>min</sub>.

## Technical Information

# Speed Sensor

## Ordering Code [9] : 1, 2, B

### ◆ 1 : w/o Speed Sensor

- A speed sensor is not installed.

### ◆ 2 : w/ Speed Sensor (A port side)

- A speed sensor that detects the motor speed and direction is installed at A port side.

### ◆ B : w/ Speed Sensor (B port side)

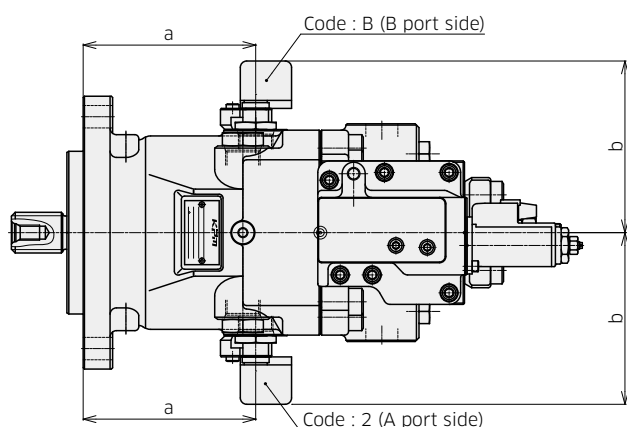
- A speed sensor that detects the motor speed and direction is installed at B port side.

## Specification

Supply Voltage : 4.5V ~ 26V DC

Mating Connector : TE Connectivity AMP Superseal 1.5 series, 4 positions(part number : 282088)

IP Protection Rating : IP69K



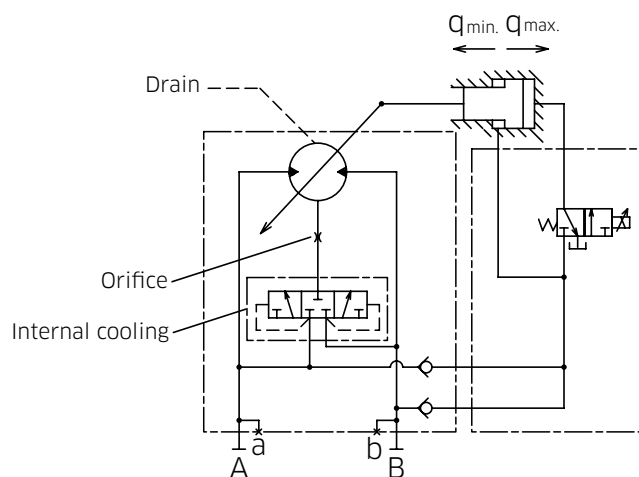
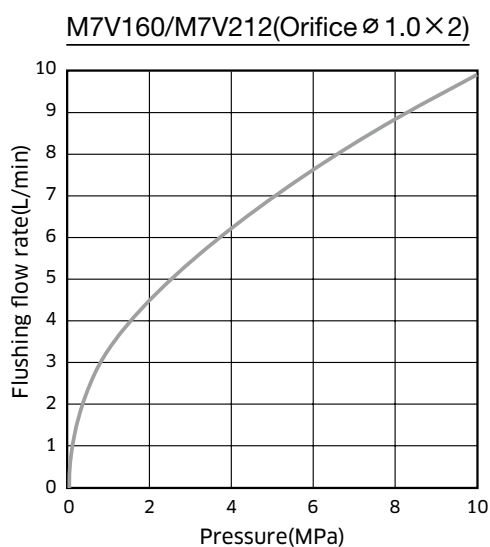
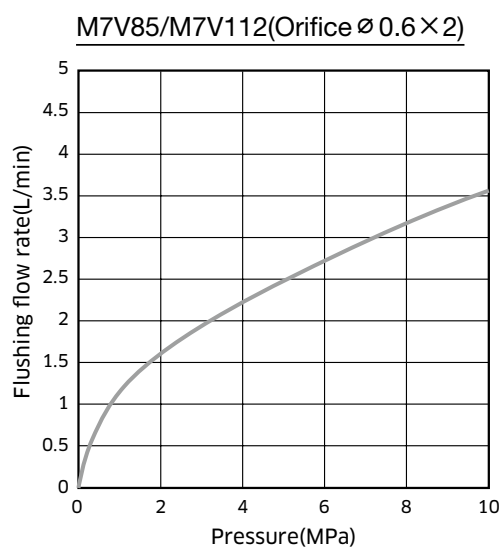
|                             |          |      | M7V85 | M7V112 | M7V160 | M7V212 |
|-----------------------------|----------|------|-------|--------|--------|--------|
| a [mm]                      | Code [4] | A, B | 134.5 | 144    | 158.5  | 175    |
|                             |          | C, D | 110.5 | 112    | 126.5  | 143    |
|                             |          | E, F | 151.5 | —      | —      | —      |
| b [mm]                      |          |      | 134   | 139    | 147    | 155.5  |
| Pulse Frequency [pulse/rev] |          |      | 71    | 77     | 87     | 97     |

# Accessory

## Ordering Code [12] : X, 1, 2

### ◆ X : w/o Flushing Valve, w/ Internal Cooling

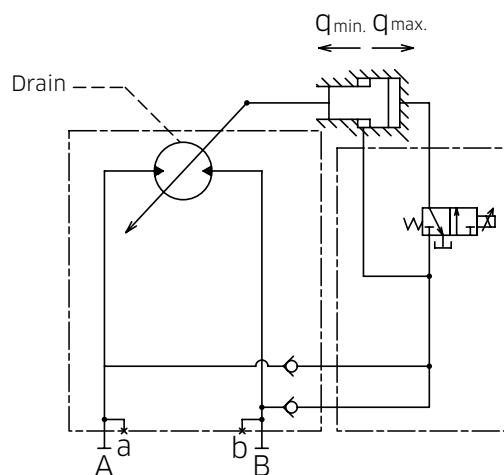
- $N_{max}$  of motor spec is based on this configuration.
- A part of the hydraulic oil on the lower pressure is supplied to the inside of the motor casing to cool the rotary.
- When the motor is used in a series circuit, the internal cooling affects the performance of the second motor. Please contact Kawasaki to discuss in more detail. The graph below shows the relationship between lower pressure and the flushing flow.



## Technical Information

### ◆ 1 : w/o Flushing Valve, w/o Internal Cooling

- The flushing flow into the motor case is blocked.
- $N_{max}$  goes down up to  $N_{nom}$  regardless of displacement of the motor.
- When the motor is used above  $N_{nom}$  without internal cooling, excessive heat could be generated resulting in damage to the motor. Please contact Kawasaki to discuss in more detail.



### ◆ 2 : w/ Flushing Valve, w/ Internal Cooling(Under development)

- The function is chosen in case that the circuit needs additional cooling or minimum boost pressure needs to be ensured.

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