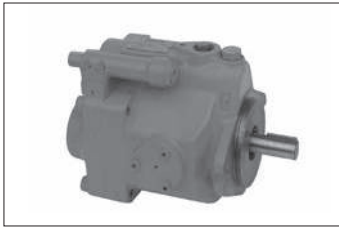


## V series Piston Pump



### Features

- **Low noise**
  - Low noise operation over the entire pressure range has been realized in each series.
- **High efficiency**
  - Fluid temperature rise can be reduced due to the smaller power loss. This means that the tank can be designed in a small size.
- **High reliability**
  - High responsiveness, high stability, and long life make it possible to increase the reliability of the main machine.

### Nomenclature

#### ● Pressure compensator control

※ - V ※※ A ※ ※ ※ - ※※ ※※  
 1 2 3 4 5 12 15 16 17

#### ● Combination control (pressure feedback method)

※ - V ※※ C ※ ※ R H X - ※※ ※※  
 1 2 3 4 7 8 12 13 15 16 17

#### ● Combination control (solenoid operated method)

※ - V ※※ C ※ ※ R J ※ X - ※※ ※※  
 1 2 3 4 7 8 12 13 14 15 16 17

#### ● Dual pressure control

※ - V ※※ D ※ ※ R ※ X - ※※ ※※  
 1 2 3 4 9 10 12 14 15 16 17

#### ● Power-match control

※ - V ※※ SA ※ ※ ※ ※ - ※※  
 1 2 3 4 6 11 12 15 16

#### 1 Applicable fluid code (Refer to Page A-5 for the applicable models and conditions of use)

No designation: Petroleum-based hydraulic fluid  
 W: Water-glycol hydraulic fluid  
 F: Phosphate ester hydraulic fluid

#### 2 Model No.

V: V series piston pump

#### 3 Pump capacity

8: 8.0 cm<sup>3</sup>/rev  
 15: 14.8 cm<sup>3</sup>/rev  
 23: 23.0 cm<sup>3</sup>/rev  
 38: 37.7 cm<sup>3</sup>/rev  
 50: 51.6 cm<sup>3</sup>/rev  
 70: 69.8 cm<sup>3</sup>/rev

#### 4 Control method I (Refer to Page A-4 for the applicable models)

A: Pressure compensator control  
 C: Combination control  
 D: Dual pressure control  
 SA: Power-match control

#### 5 6 Pressure adjustment range (See the pressure adjustment range table)

#### 7 9 Low pressure adjustment range (See the pressure adjustment range table)

#### 8 10 High pressure adjustment range (See the pressure adjustment range table)

#### 11 FC valve differential pressure

A: 0.7 MPa { 7 kgf/cm<sup>2</sup> }  
 B: 1.4 MPa { 14 kgf/cm<sup>2</sup> }  
 C: 2.1 MPa { 21 kgf/cm<sup>2</sup> }

#### 12 Direction of rotation, when viewed from the shaft end (Refer to Page A-4 for the applicable models)

R: Clockwise (rightward)  
 L: Counterclockwise (leftward)

\*The direction of rotation (rightward or leftward) cannot be changed.

#### 13 Control method II

H: Pressure feedback method  
 J: Solenoid operated method

#### 14 Voltage code for the solenoid valve

A: AC 100 V (50/60 Hz), AC 110 V (60 Hz)  
 B: AC 200 V (50/60 Hz), AC 220 V (60 Hz)  
 N: DC 12 V  
 P: DC 24 V

#### 15 Piping direction (Refer to Page A-4 for the applicable models)

No designation: Axial port  
 X: Side port

#### 16 Design No. (The design No. is subject to change) \*1

20: Pump model V8, V50  
 95: Pump model V15, V38  
 30: Pump model V23  
 <When control method I is A, CH, or SA>  
 35: Pump model V23  
 <When control method I is CJ or D>  
 60: Pump model V70

#### Control method III

17 No designation: Without remote control system  
 RC: With remote control system

Note:\*1 Refer to Page A-68 for information on forward/backward compatibility.

Refer to Page N-2 for hydraulic unit piston packs incorporating V series piston pumps, Page N-17 for NDJ series new DAIPACKs, Page N-22 for ND series Mini-packs, Page N-27 for ND series new DAIPACKs, and Page N-30 for the NT series SSS MARK-II.

**Models and pressure adjustment range table**

● Pressure compensator control (4 = A)

5 Pressure adjustment range

Code	Pressure adjustment range MPa {kgf/cm <sup>2</sup> }	Without remote control system						With remote control system				
		V8	V15	V23	V38	V50	V70	V15	V23	V38	V50	V70
1	0.8 to 7 {8 to 70}	✓	✓	✓	✓	-	-	-	-	-	-	-
1	1.5 to 7 {15 to 70}	-	-	-	-	✓	✓	-	-	-	-	-
2	1.5 to 14 {15 to 140}	-	✓	✓	✓	✓	✓	-	-	-	-	-
3	1.5 to 21 {15 to 210}	-	-	-	-	-	-	✓	-	-	-	-
3	2 to 21 {20 to 210}	-	-	-	-	-	-	-	-	-	✓	✓
3	3.5 to 21 {35 to 210}	-	✓	✓	✓	✓	✓	-	-	-	-	-
4	1.5 to 25 {15 to 250}	-	-	-	-	-	-	-	✓	✓	-	-
4	3.5 to 25 {35 to 250}	-	-	✓	✓	-	-	-	-	-	-	-

● Combination control [4 = C, 13 = H (self-regulation method) or 13 = J (solenoid operated method)]

7 Low pressure adjustment range

Code	Pressure adjustment range MPa {kgf/cm <sup>2</sup> }	Pressure feedback method				Solenoid operated method		
		V15	V23	V38	V70	V15	V23	V38
1	1.5 to 7 {15 to 70}	-	-	-	✓	✓	✓	✓
1	2.5 to 7 {25 to 70}	✓	✓	✓	-	-	-	-
2	1.5 to 14 {15 to 140}	-	-	-	✓	✓	✓	✓
2	2.5 to 14 {25 to 140}	✓	✓	✓	-	-	-	-

8 High pressure adjustment range

Code	Pressure adjustment range MPa {kgf/cm <sup>2</sup> }	Without remote control system						With remote control system							
		Pressure feedback method				Solenoid operated method		Pressure feedback method				Solenoid operated method			
		V15	V23	V38	V70	V15	V23	V38	V15	V23	V38	V70	V15	V23	V38
1	1.5 to 7 {15 to 70}	-	-	-	✓	✓	✓	✓	-	-	-	-	-	-	-
1	2.5 to 7 {25 to 70}	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-
2	1.5 to 14 {15 to 140}	-	-	-	✓	✓	✓	✓	-	-	-	-	-	-	-
2	2.5 to 14 {25 to 140}	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-
3	2.0 to 21 {20 to 210}	-	-	-	-	-	-	-	-	-	-	-	✓	-	-
3	2.5 to 21 {25 to 210}	-	-	-	-	-	-	-	✓	-	-	✓	-	-	-
3	3.5 to 21 {35 to 210}	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	-
4	2.0 to 25 {20 to 250}	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓
4	2.5 to 25 {25 to 250}	-	-	-	-	-	-	-	-	✓	✓	-	-	-	-
4	3.5 to 25 {35 to 250}	-	✓	✓	-	-	✓	✓	-	-	-	-	-	-	-

● Dual pressure control (4 = D)

9 Low pressure adjustment range

Code	Pressure adjustment range MPa {kgf/cm <sup>2</sup> }	V15	V23	V38
1	1.5 to 7 {15 to 70}	✓	✓	✓
2	1.5 to 14 {15 to 140}	✓	✓	✓

Note: If both low and high pressure adjustment ranges are the 1st pattern, the pressure adjustment range becomes 0.8 to 7 MPa {8 to 70 kgf/cm<sup>2</sup>}.

● Power-match control (4 = SA)

6 Pressure adjustment range

Code	Pressure adjustment range MPa {kgf/cm <sup>2</sup> }	V15	V23	V38	V50	V70
1	0.8 to 7 {8 to 70}	✓	✓	✓	-	-
1	1.5 to 7 {15 to 70}	-	-	-	✓	✓
2	1.5 to 14 {15 to 140}	✓	✓	✓	✓	✓
3	3.5 to 21 {35 to 210}	✓	✓	✓	✓	✓
4	3.5 to 25 {35 to 250}	-	✓	✓	-	-

10 High pressure adjustment range

Code	Pressure adjustment range MPa {kgf/cm <sup>2</sup> }	Without remote control system			With remote control system		
		V15	V23	V38	V15	V23	V38
1	1.5 to 7 {15 to 70}	✓	✓	✓	-	-	-
2	1.5 to 14 {15 to 140}	✓	✓	✓	-	-	-
3	2.5 to 21 {25 to 210}	-	-	-	✓	-	-
3	3.5 to 21 {35 to 210}	✓	✓	✓	-	-	-
4	2.5 to 25 {25 to 250}	-	-	-	-	✓	✓
4	3.5 to 25 {35 to 250}	-	✓	✓	-	-	-

### Nomenclature

※ - V ※※ SAJS - ※※ X - ※※

1 2 3 4 5 6 7 8

**1 Applicable fluid code**

No designation: Petroleum-based hydraulic fluid  
W: Water-glycol hydraulic fluid

**2 Model No.**

V: V series piston pump

**3 Pump capacity**

23: 23.0 cm<sup>3</sup>/rev  
38: 37.7 cm<sup>3</sup>/rev  
50: 51.6 cm<sup>3</sup>/rev  
70: 69.8 cm<sup>3</sup>/rev

**4 Control method**

SAJS: Power-match control

**5 Pressure adjustment range**

A: Up to 14 MPa {140 kgf/cm<sup>2</sup>}  
B: Up to 17.5 MPa {175 kgf/cm<sup>2</sup>}  
C: Up to 21 MPa {210 kgf/cm<sup>2</sup>}  
\* The minimum adjustment pressure varies depending on the model.

**6 Direction of rotation, when viewed from the shaft end (Refer to Page A-4 for the applicable models)**

R: Clockwise (rightward)  
L: Counterclockwise (leftward)

**7 Piping direction**

X: Side port

**8 Design number (The design number is subject to change)**

30: Pump model V23  
95: Pump model V38  
20: Pump model V50  
60: Pump model V70

※ - V 15 A 1 R Y - 95

1 2 3 4 5 6 7 8

**1 Applicable fluid code**

No designation: Petroleum-based hydraulic fluid  
W: Water-glycol hydraulic fluid  
F: Phosphate ester hydraulic fluid

**2 Model No.**

V: V series piston pump

**3 Pump capacity**

15: 14.8 cm<sup>3</sup>/rev

**4 Control method**

A: Pressure compensator control

**5 Pressure adjustment range**

1: 0.8 to 7 MPa {8 to 70 kgf/cm<sup>2</sup>}

**6 Direction of rotation, when viewed from the shaft end**

R: Clockwise (rightward)

**Piping port**

Y: Suction port: Flange  
Discharge port: Taper pipe threads

**8 Design No. (The design No. is subject to change) \*1**

Note: \*1 Refer to Page A-69 for information on forward/backward compatibility.

### Specifications

Model No.	Theoretical discharge rate cm <sup>3</sup> /rev	Maximum operating pressure MPa {kgf/cm <sup>2</sup> }	Permissible rotational speed min <sup>-1</sup>	Discharge rate adjustment range 1800 min <sup>-1</sup> L/min		Mass (Control method A) kg	
				Axial port	Side port	Axial port	Side port
V8	8.0	7 {70}	500 to 1800	2 to 14.4		-	8.9
V15	14.8	21 {210}	500 to 1800	4.5 to 26.6	7.5 to 26.6	12.8	14.5
V15 (Type Y)	14.8	7 {70}	500 to 1800	4.5 to 26.6		13.5	
V23	23.0	25 {250}	500 to 1800	12 to 41.4		18.4	21.5
V38	37.7	25 {250}	500 to 1800	34 to 68	36.5 to 68	24.4	26
V50	51.6	21 {210}	500 to 1800	0 to 93		-	50
V70	69.8	21 {210}	500 to 1800	13 to 126		-	55

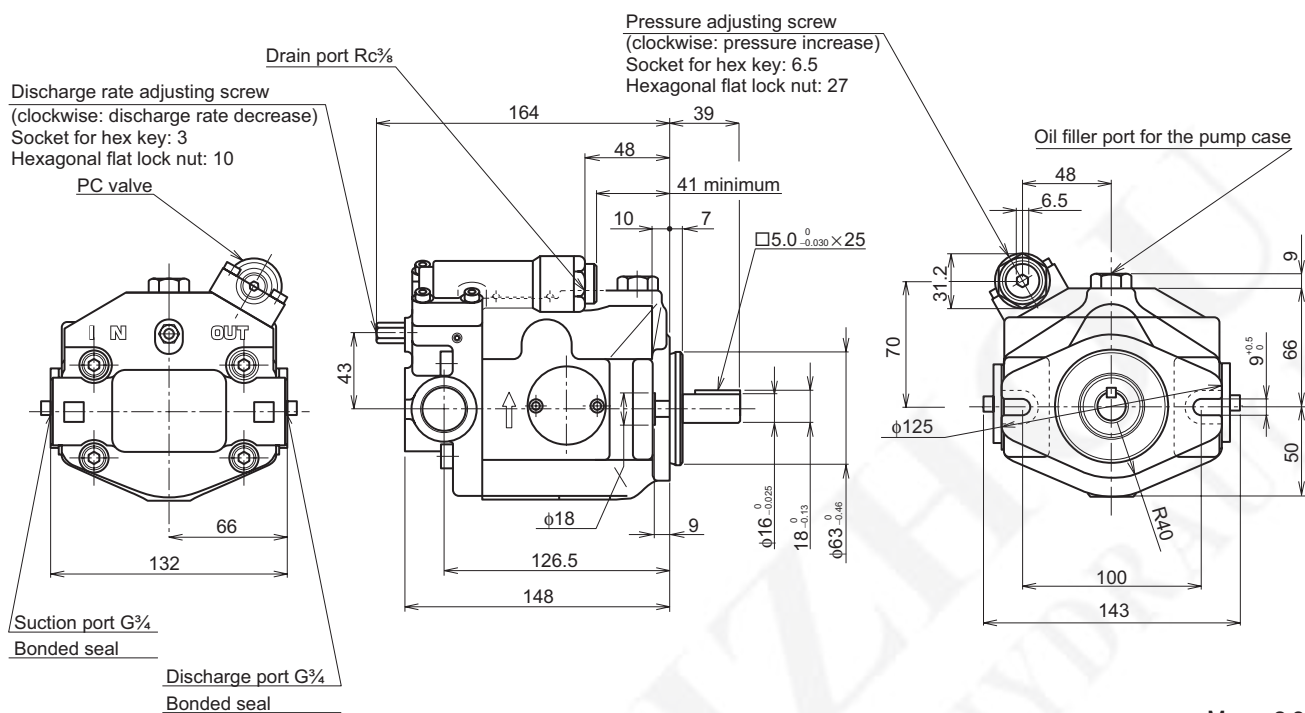
Note: JR-G (T) 02 and JRP-G02 are recommended for the remote control system's relief valve.

If the vent port is blocked, the pressure compensation structure does not work and the pump operates at a fixed pressure.

- Foot supports and piping flanges are not provided with the pump. Order them separately as required by referring to Pages S-2 and S-4.

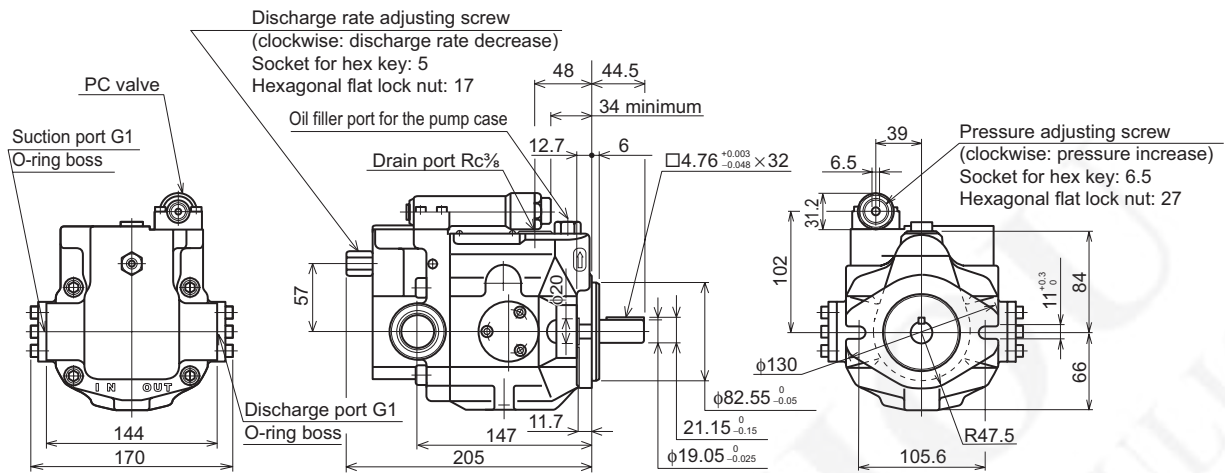
External dimension diagram

V8A1RX-20



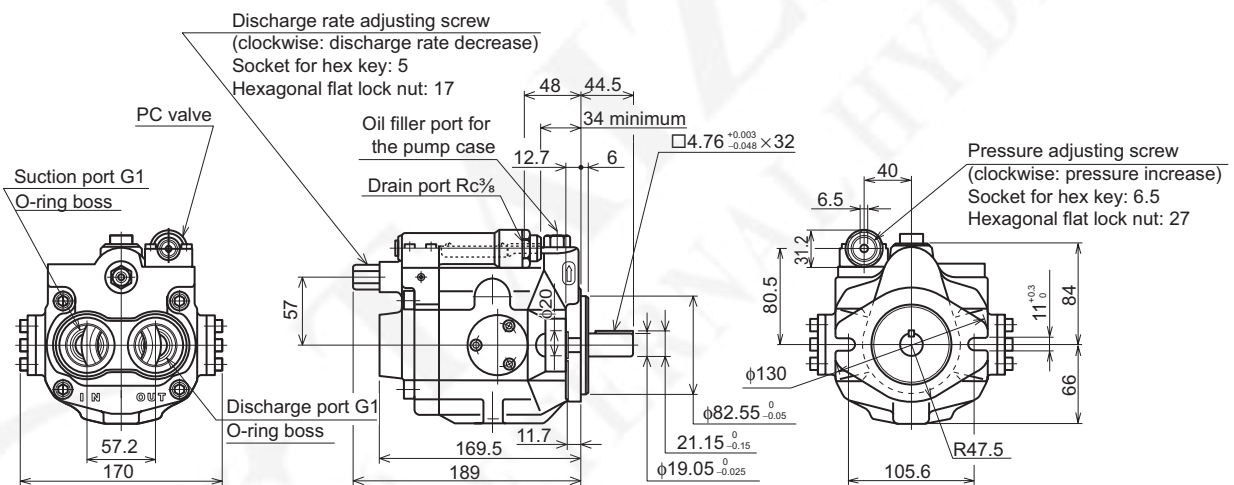
### External dimension diagram

V15A×RX-95



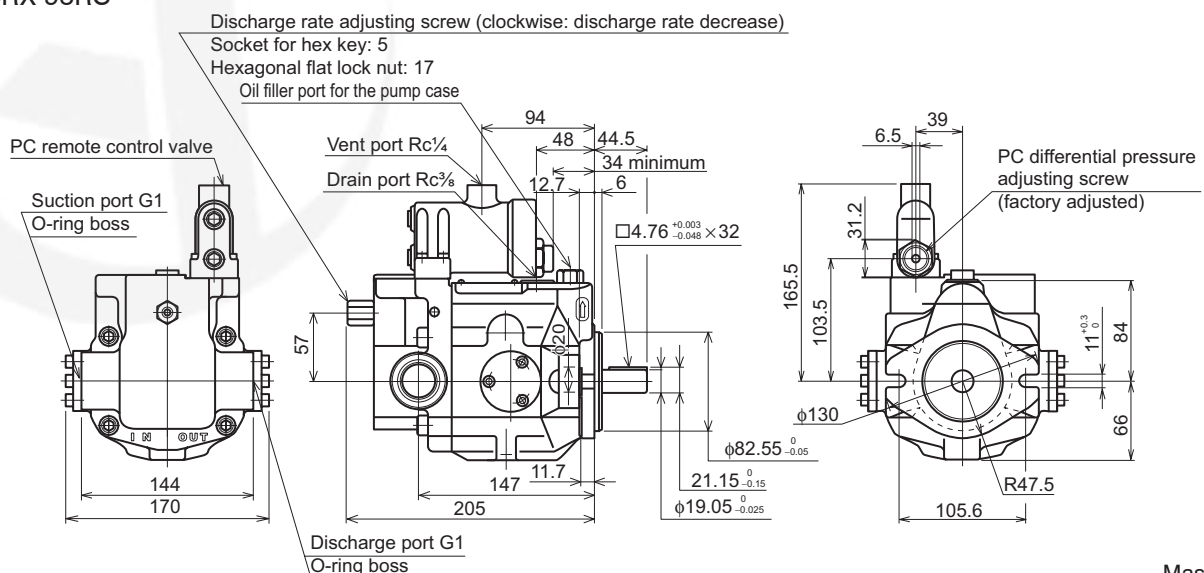
Mass: 14.5 kg

V15A×R-95



Mass: 12.8 kg

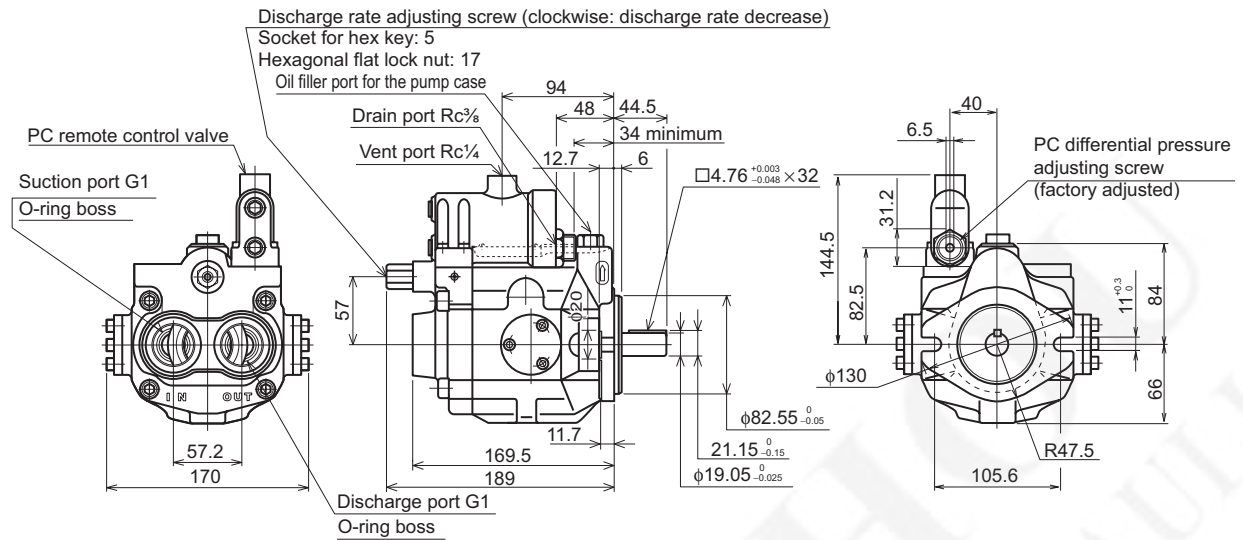
V15A3RX-95RC



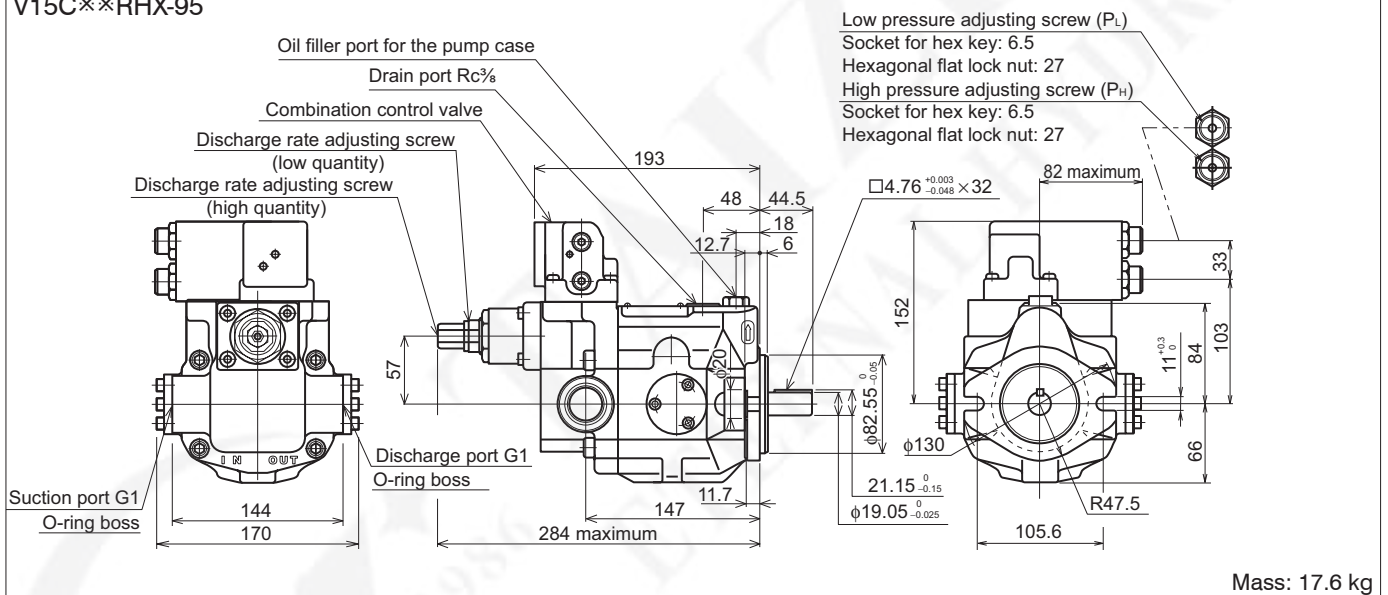
Mass: 16 kg

### External dimension diagram

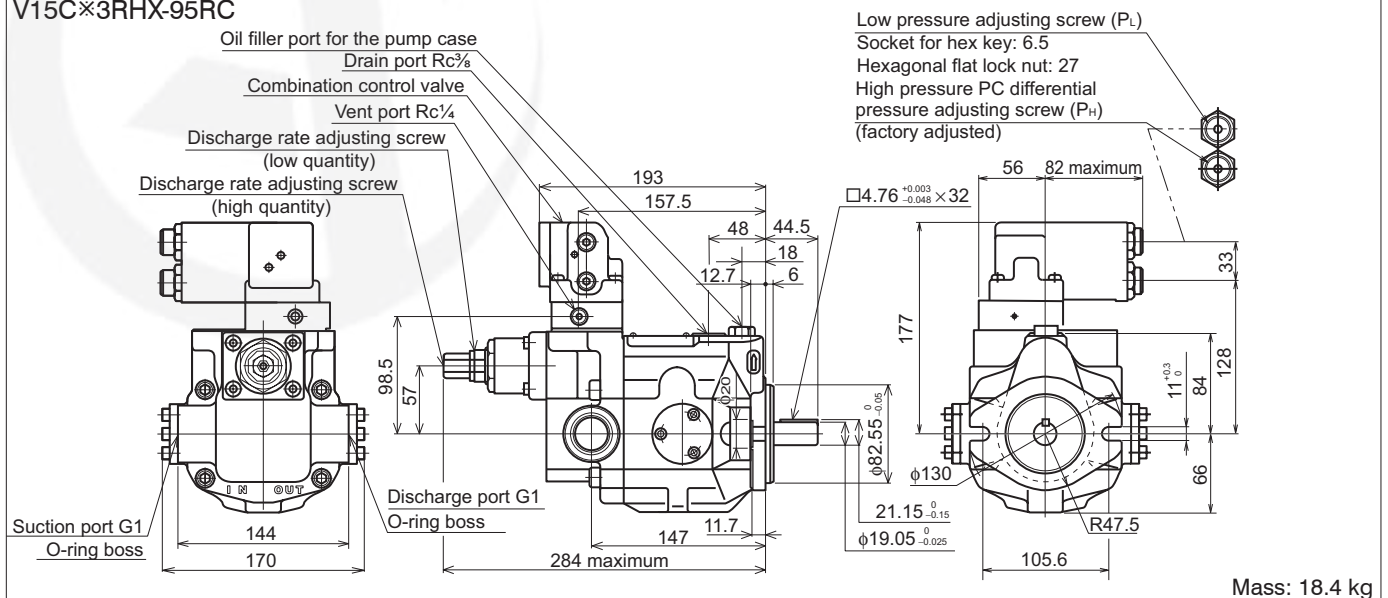
V15A3R-95RC



V15C××RHX-95

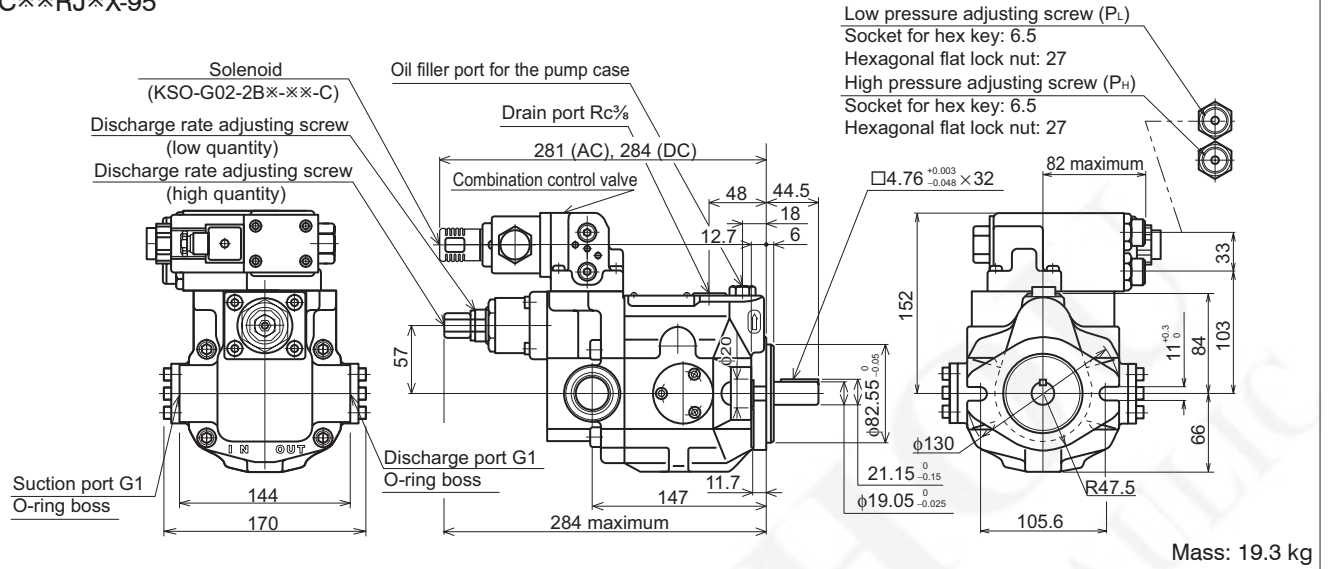


V15C×3RHX-95RC

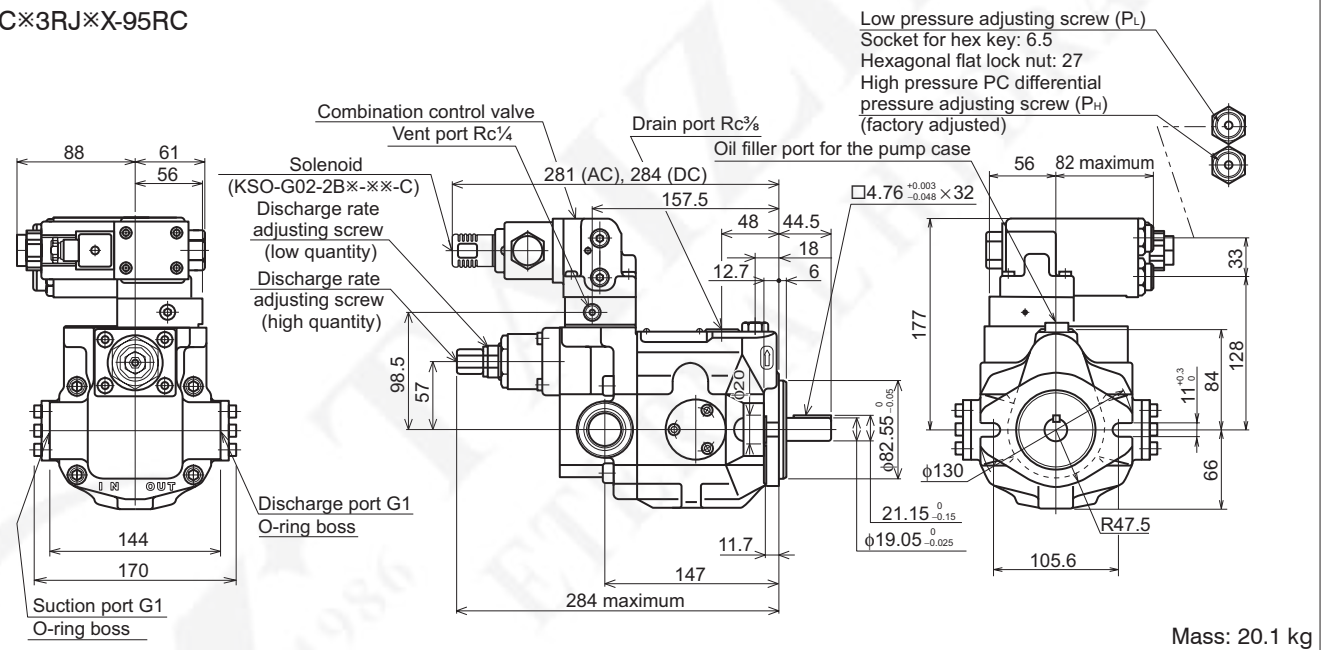


## External dimension diagram

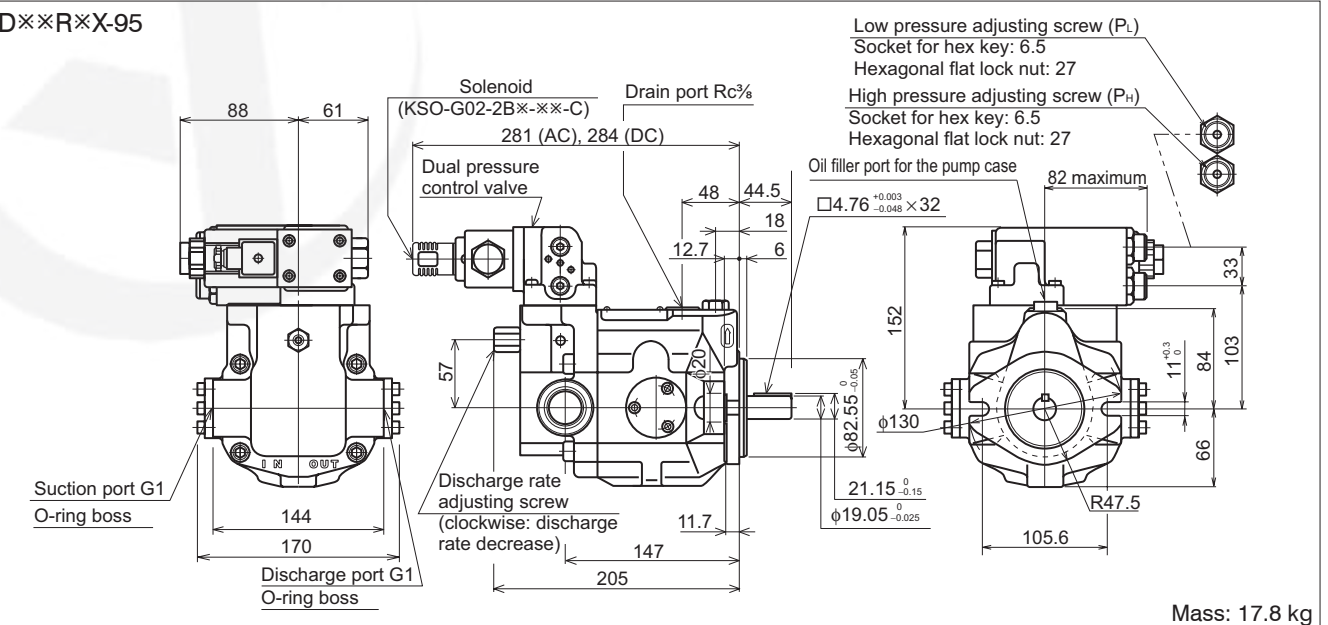
V15C\*\*RJ\*\*X-95



V15C\*3RJ\*X-95RC

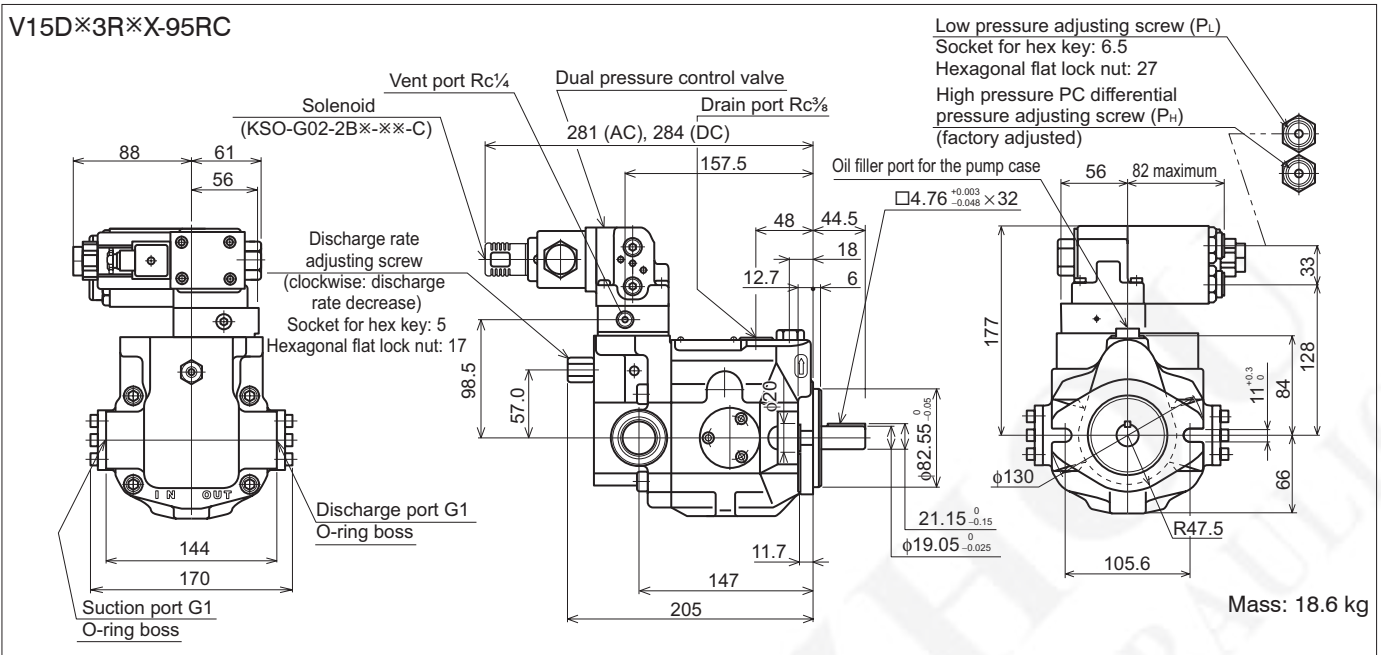


V15D\*\*R\*\*X-95

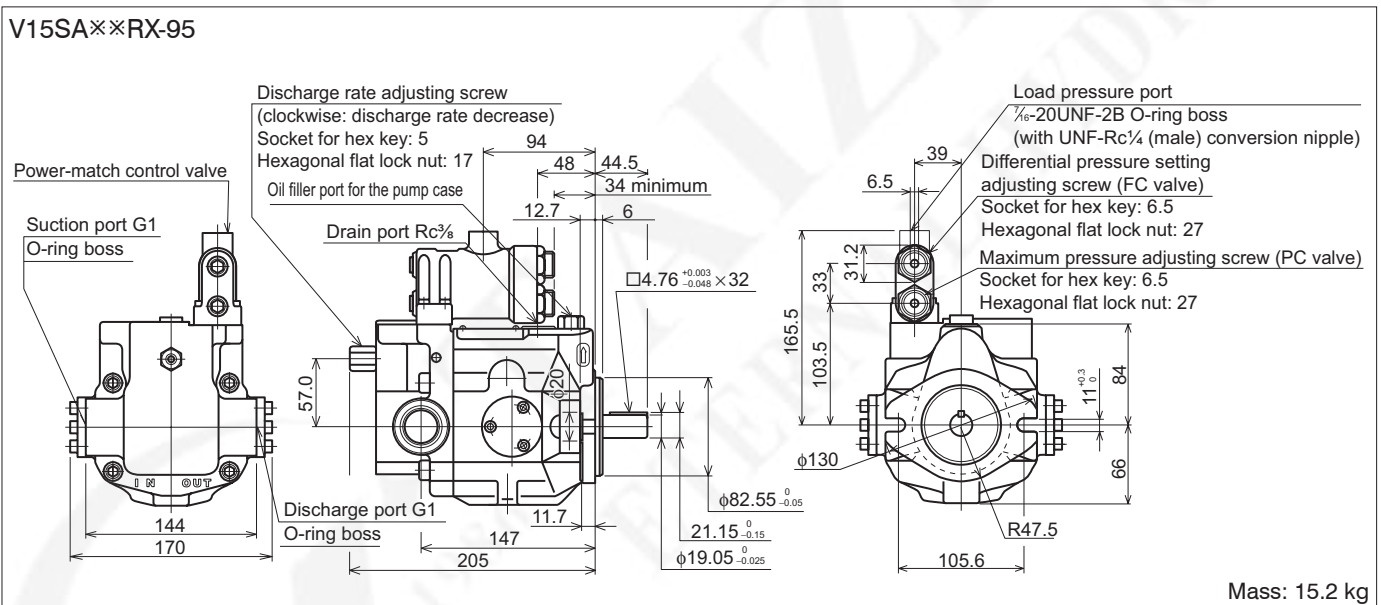


External dimension diagram

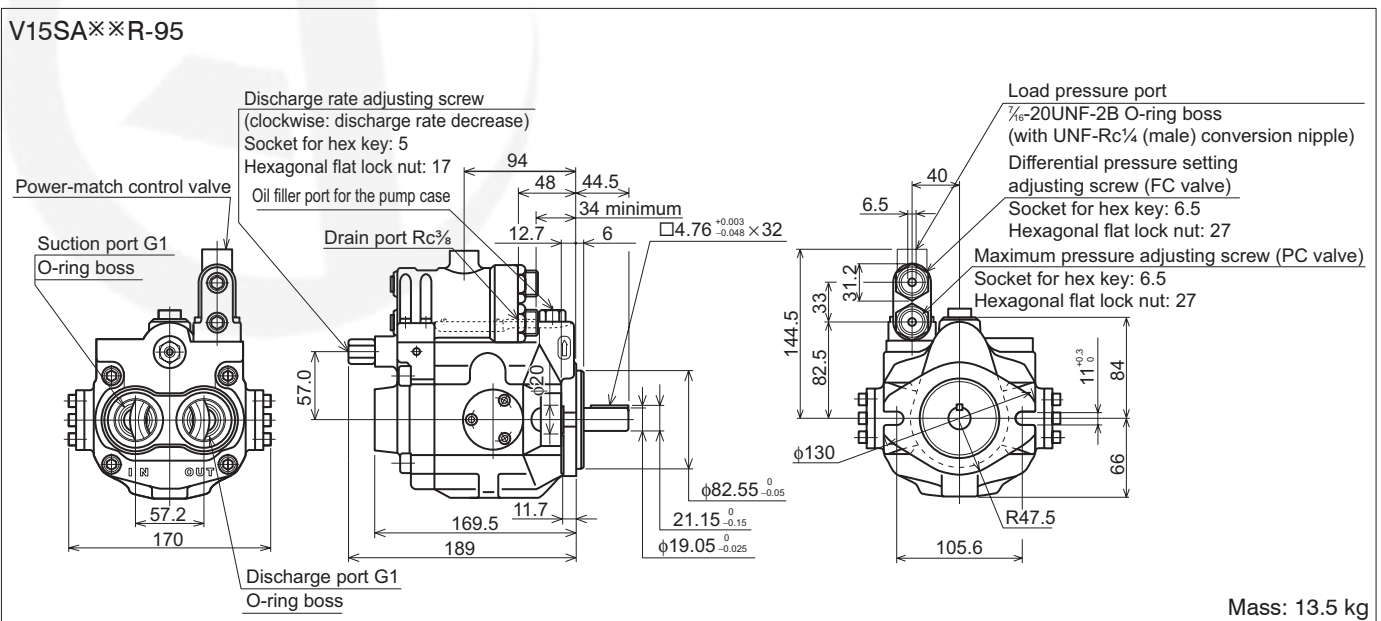
V15D\*3R\*X-95RC



V15SA\*RX-95



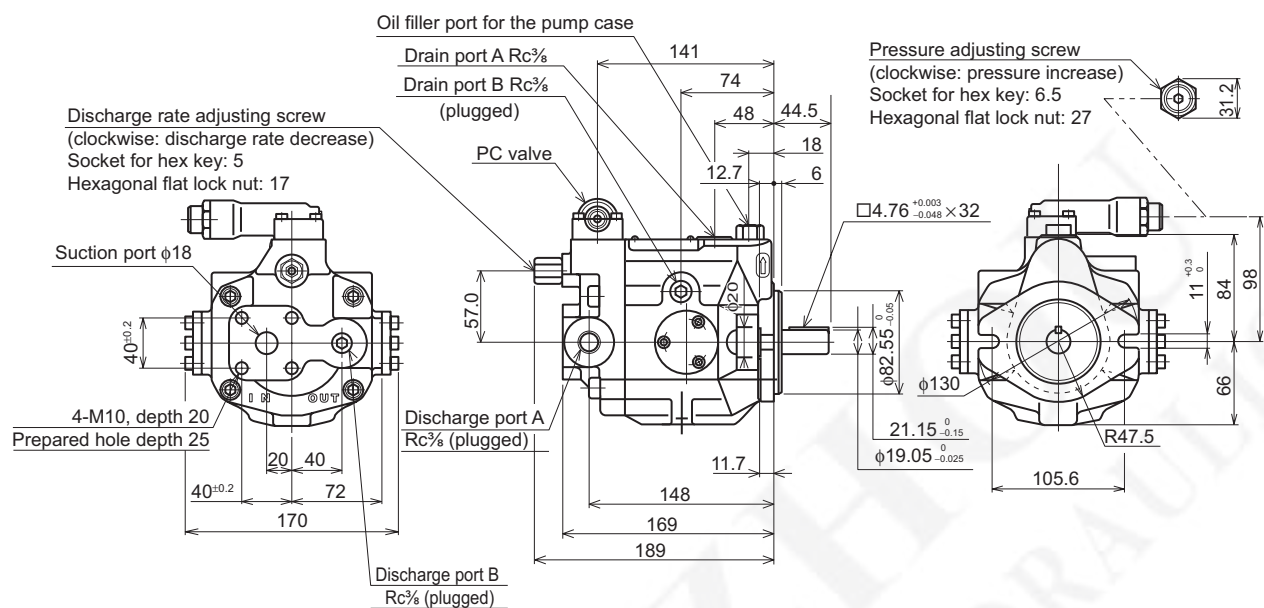
V15SA\*R-95





External dimension diagram

V15A1RY-95

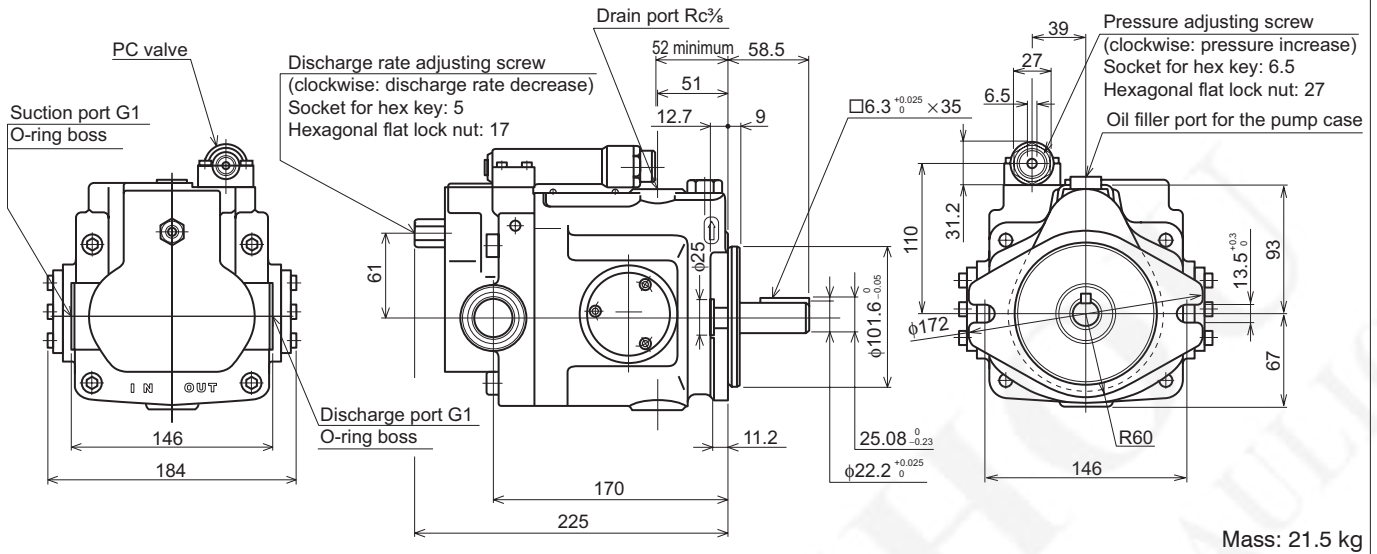


Mass: 13.5 kg

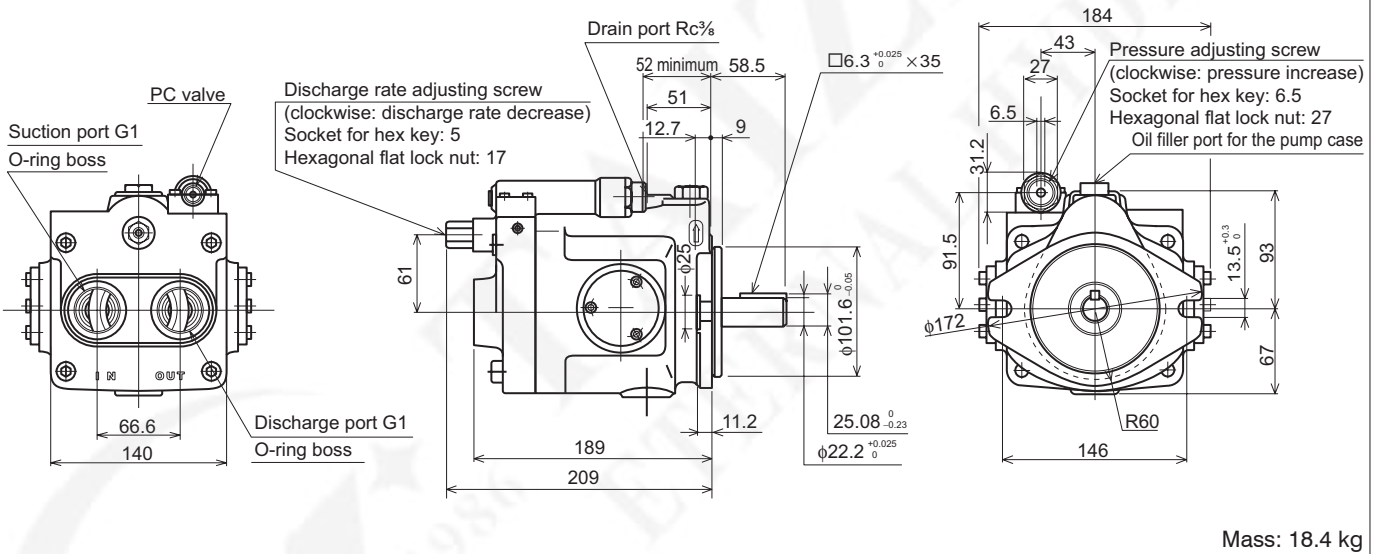
\* Use SHA15 or SSA20 pipe flange (JIS B 2291) or equivalent at the suction side.

External dimension diagram

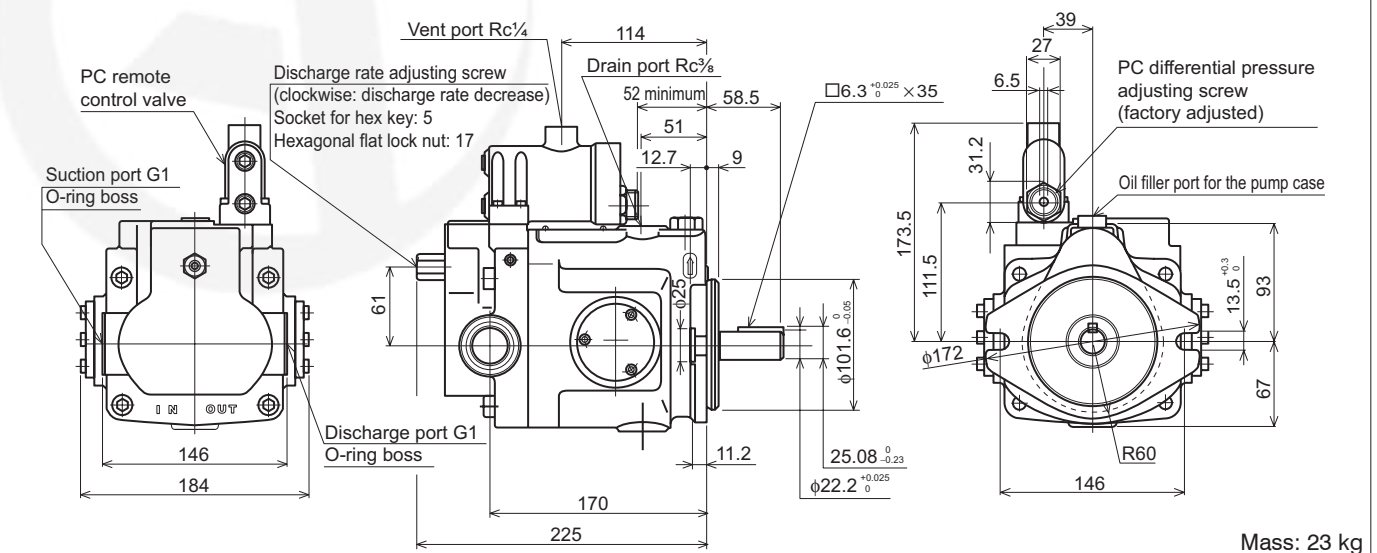
V23A×RX-30



V23A×R-30

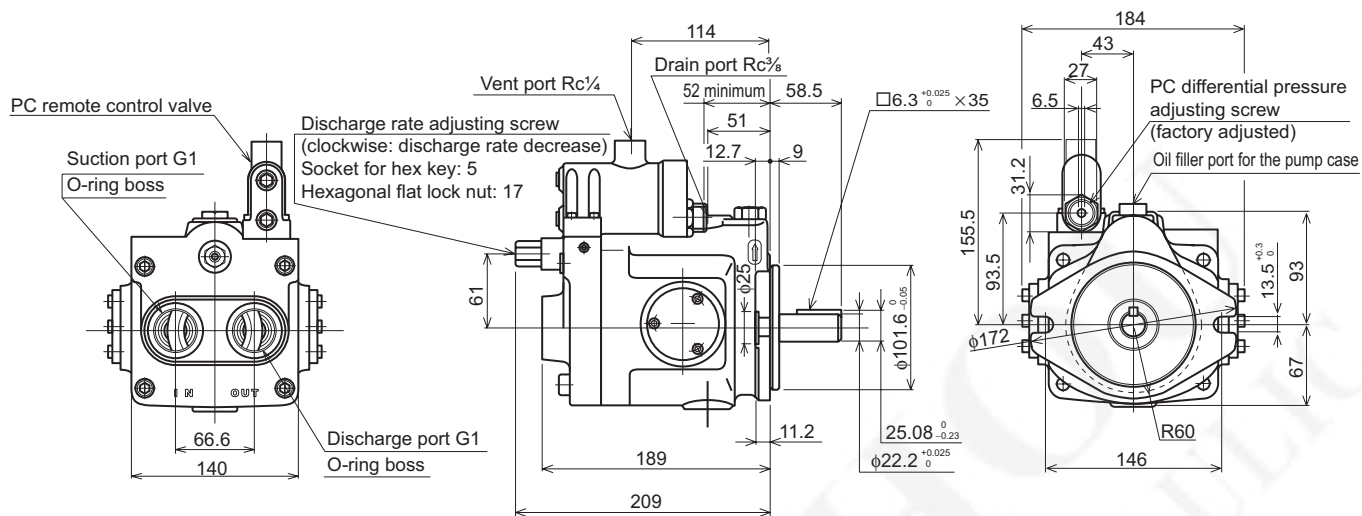


V23A4RX-30RC



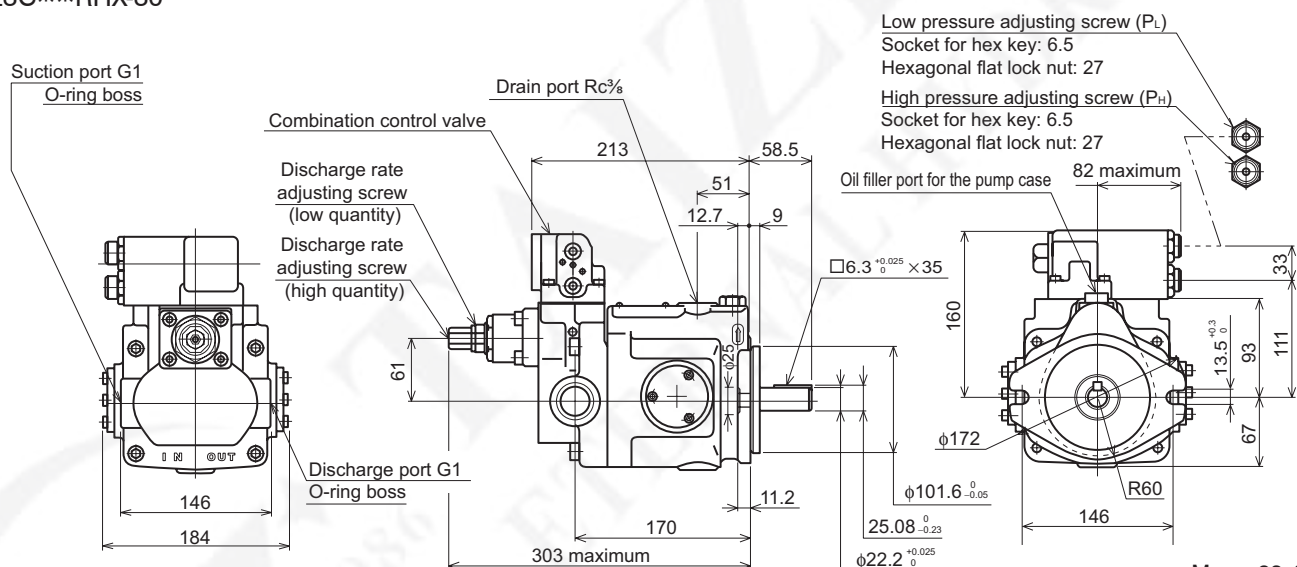
### External dimension diagram

V23A4R-30RC



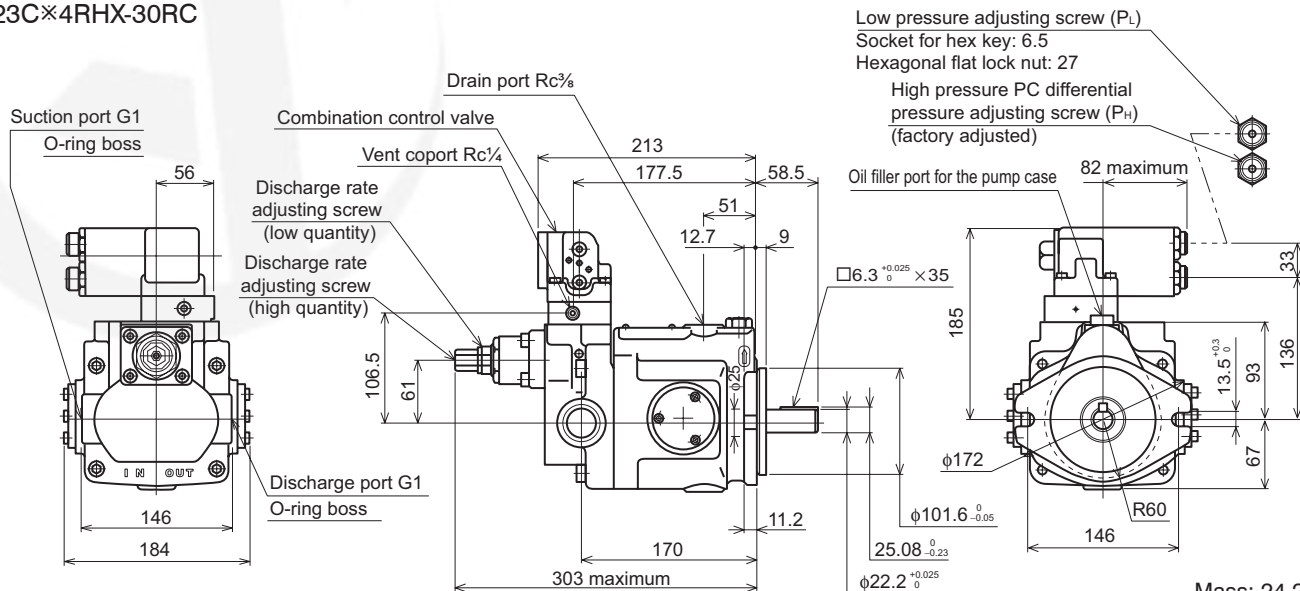
Mass: 20 kg

V23C××RHX-30



Mass: 23.4 kg

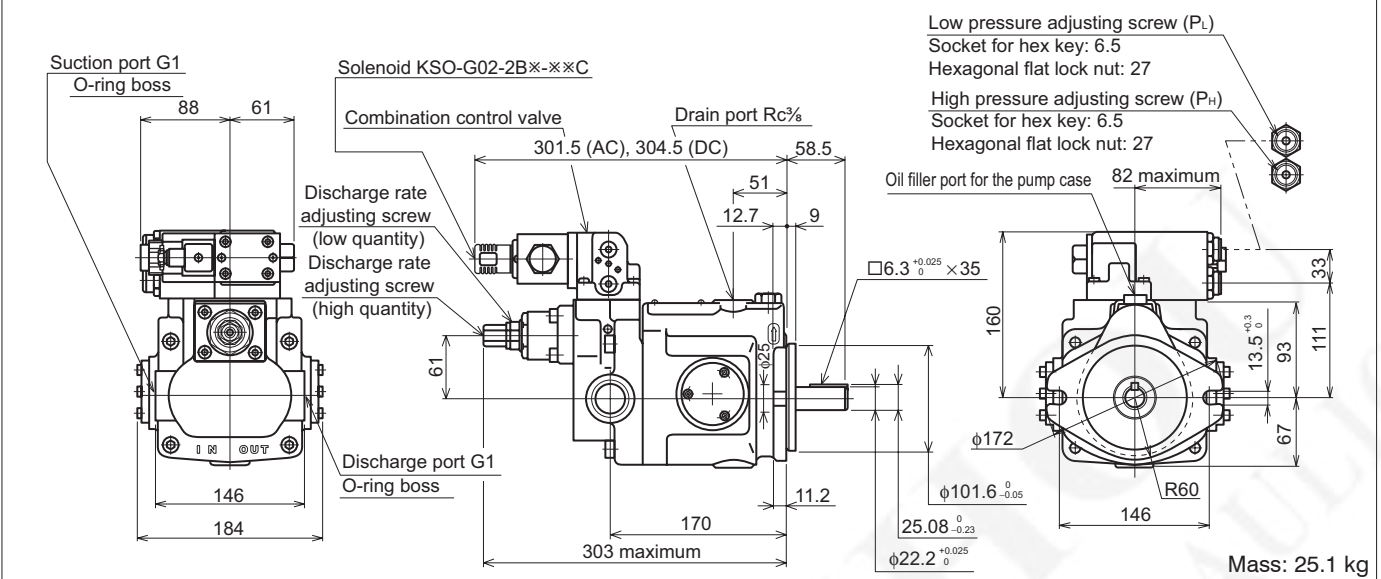
V23C×4RHX-30RC



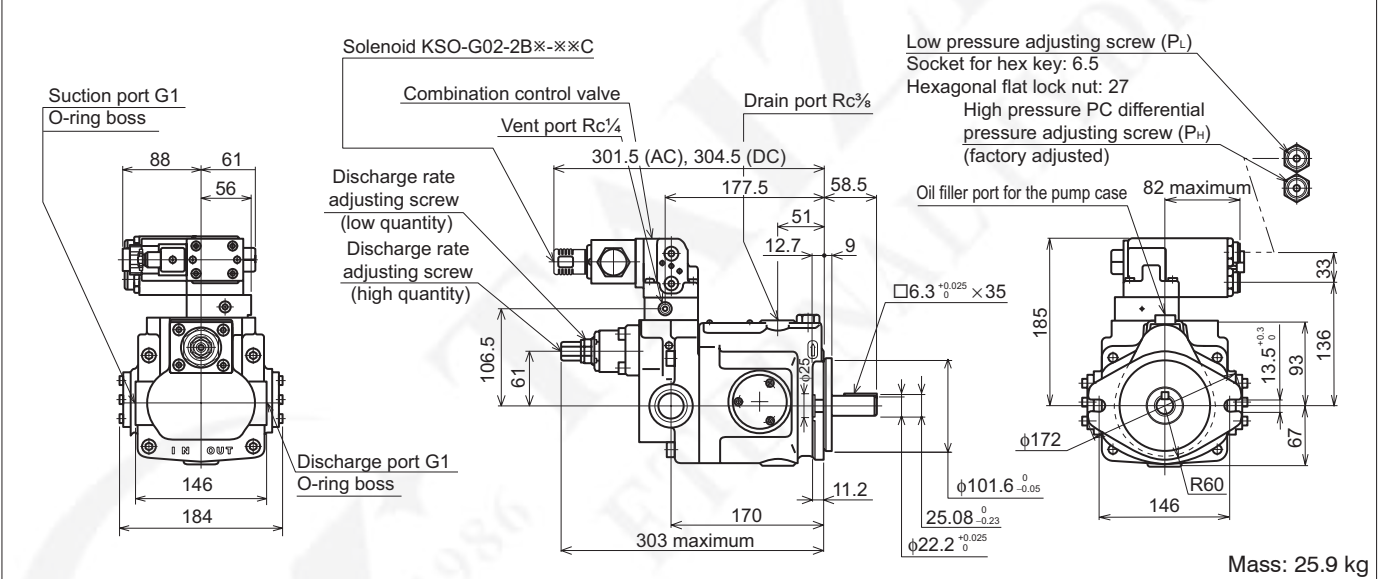
Mass: 24.2 kg

### External dimension diagram

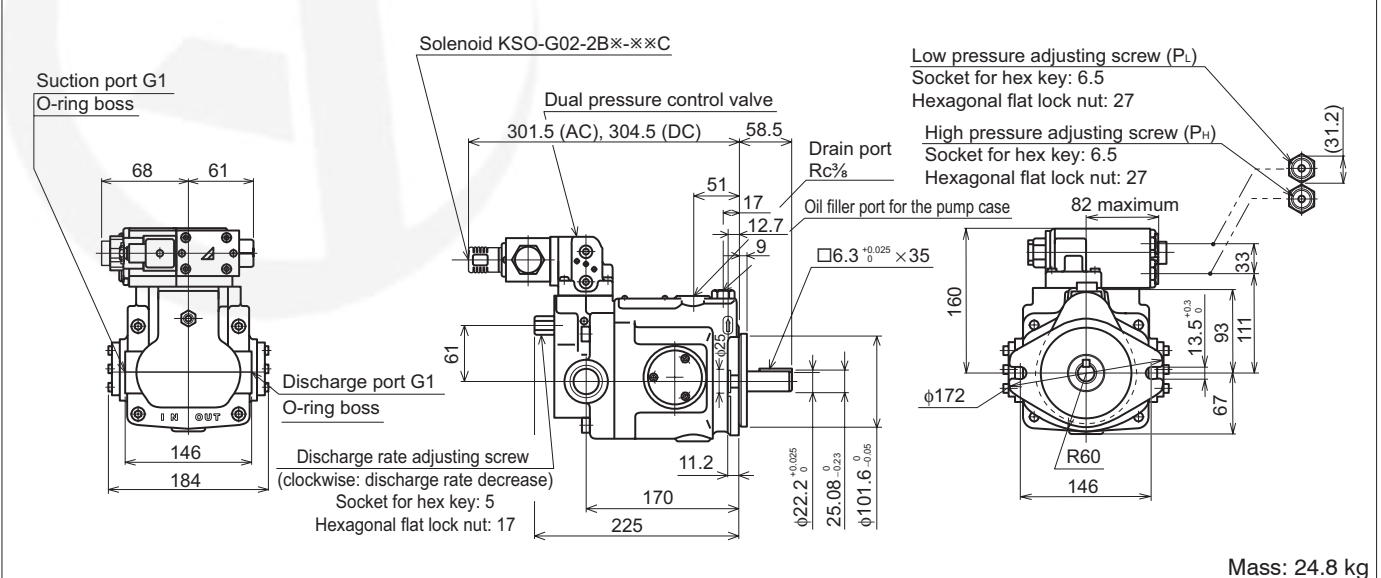
V23C\*\*RJ\*\*X-35



V23C\*\*4RJ\*\*X-35RC

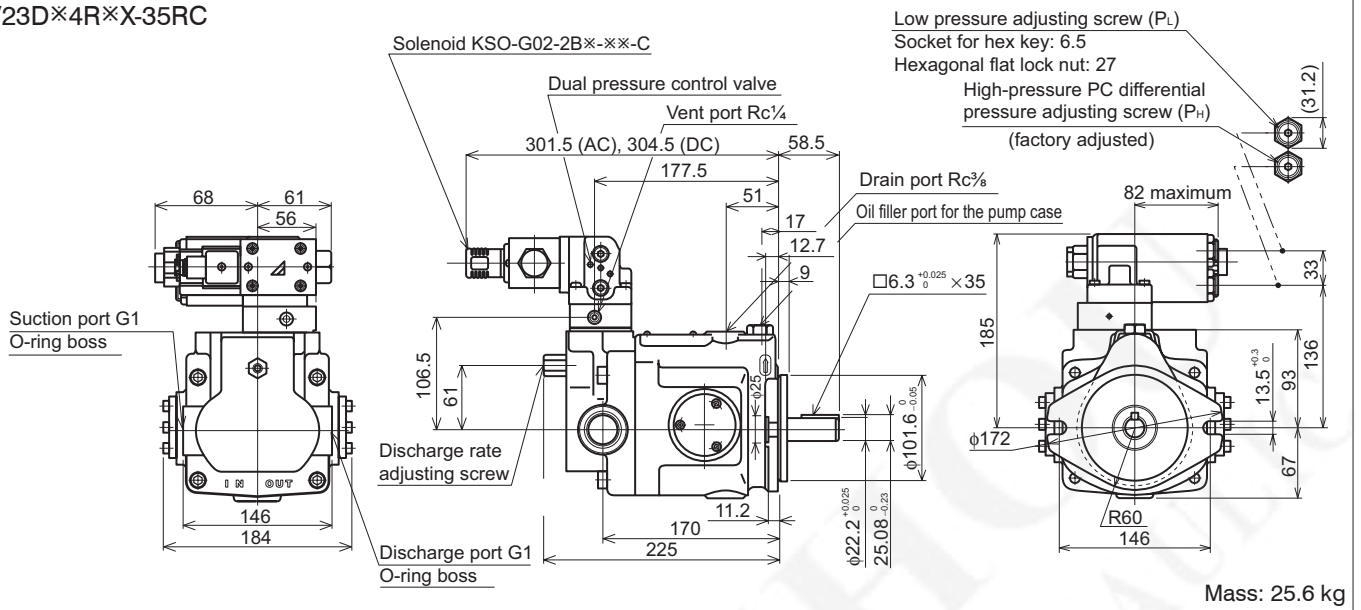


V23D\*\*R\*\*X-35

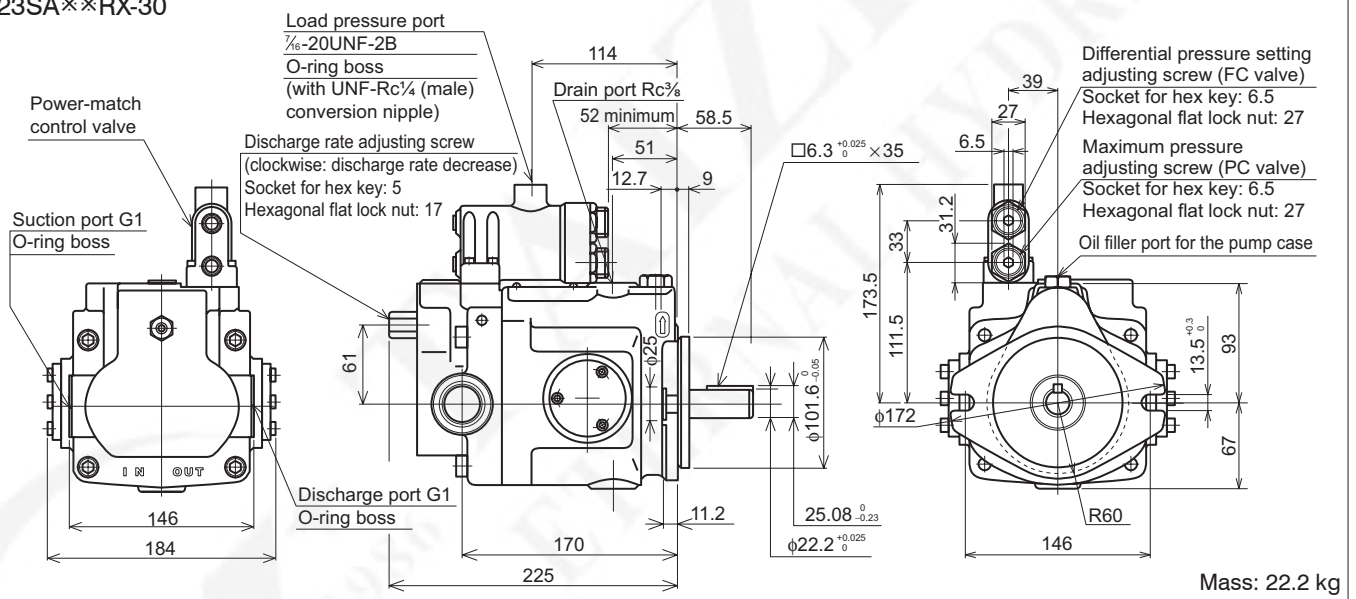


### External dimension diagram

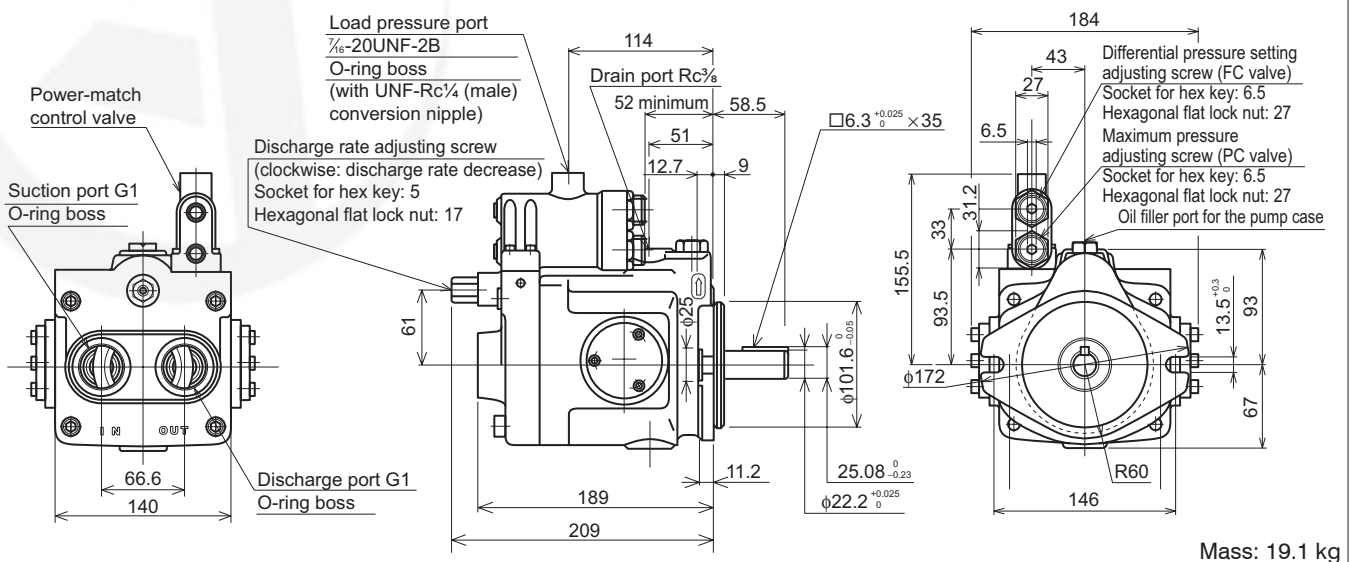
V23D×4R×X-35RC



V23SA××RX-30

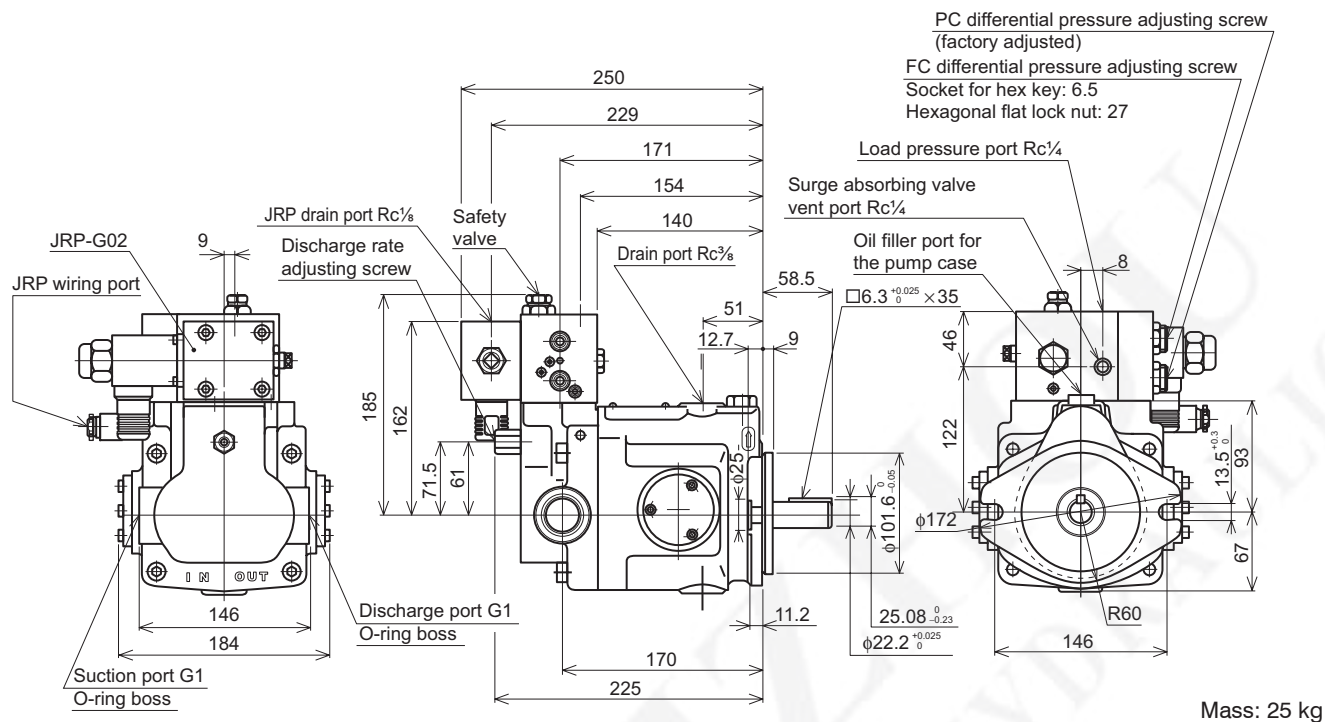


V23SA××R-30



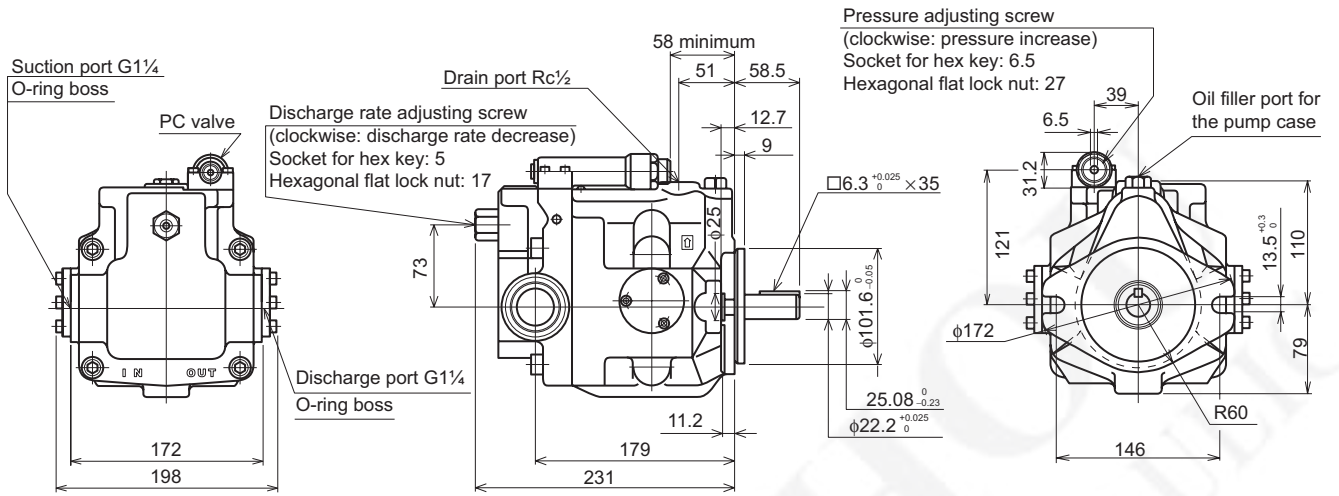
External dimension diagram

V23SAJS-※RX-30



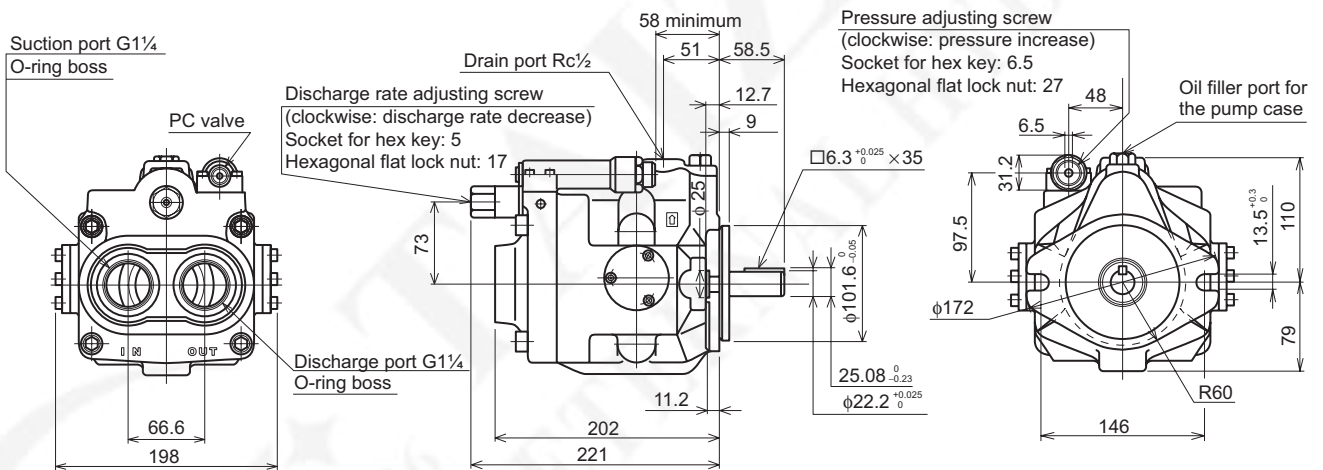
### External dimension diagram

V38A×RX-95



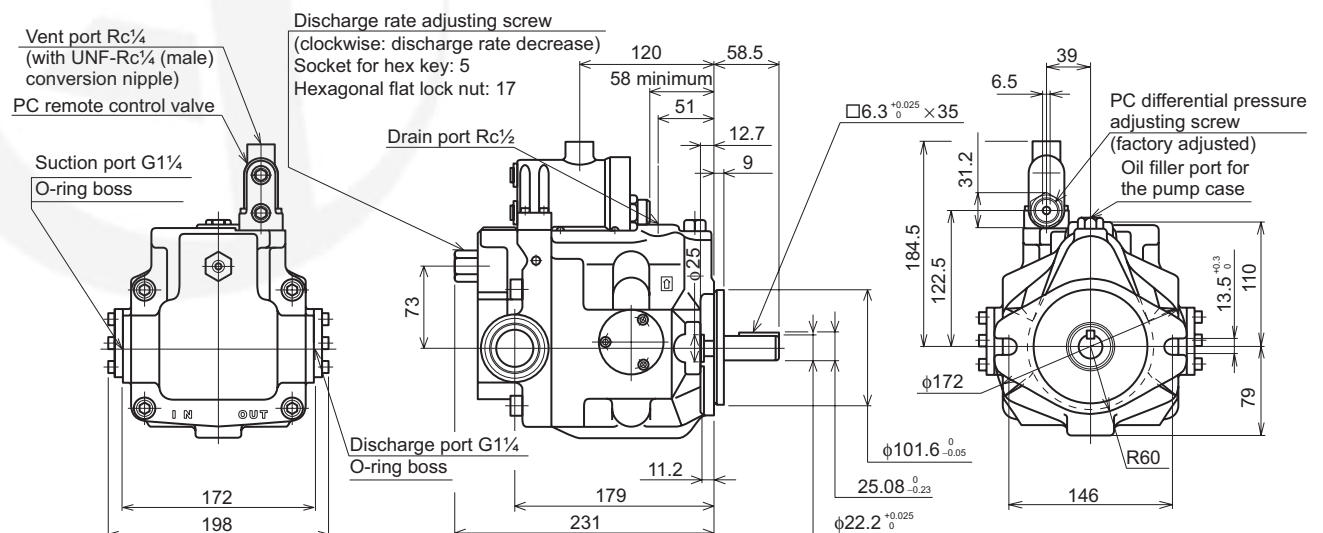
Mass: 26 kg

V38A×R-95



Mass: 24.4 kg

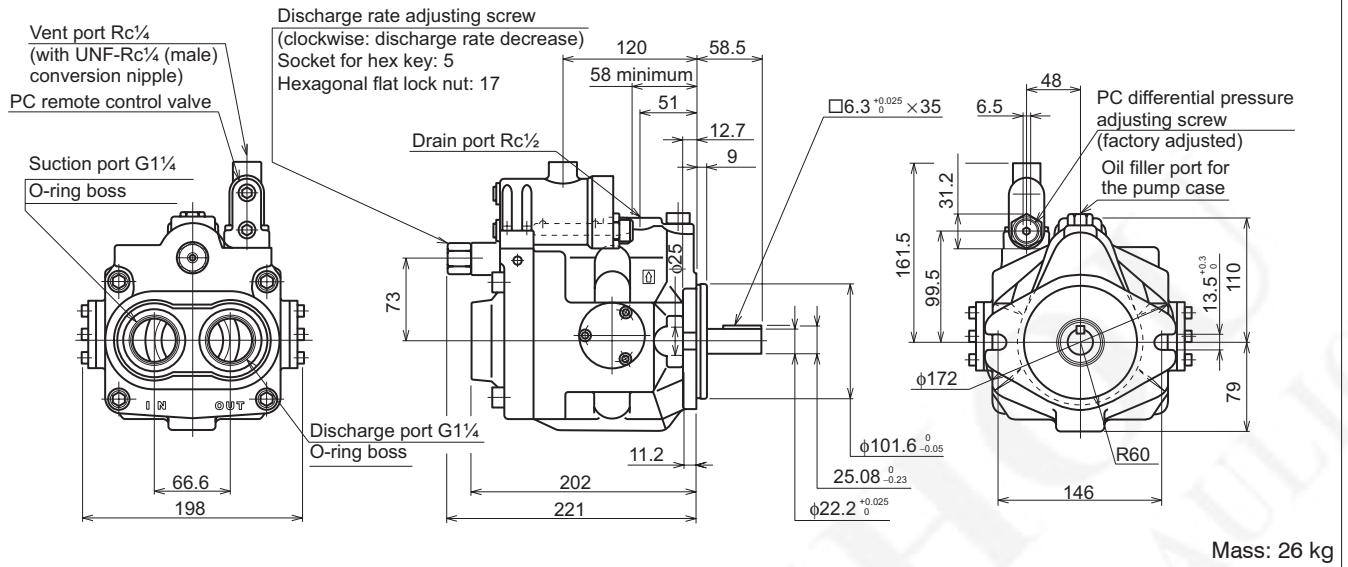
V38A4RX-95RC



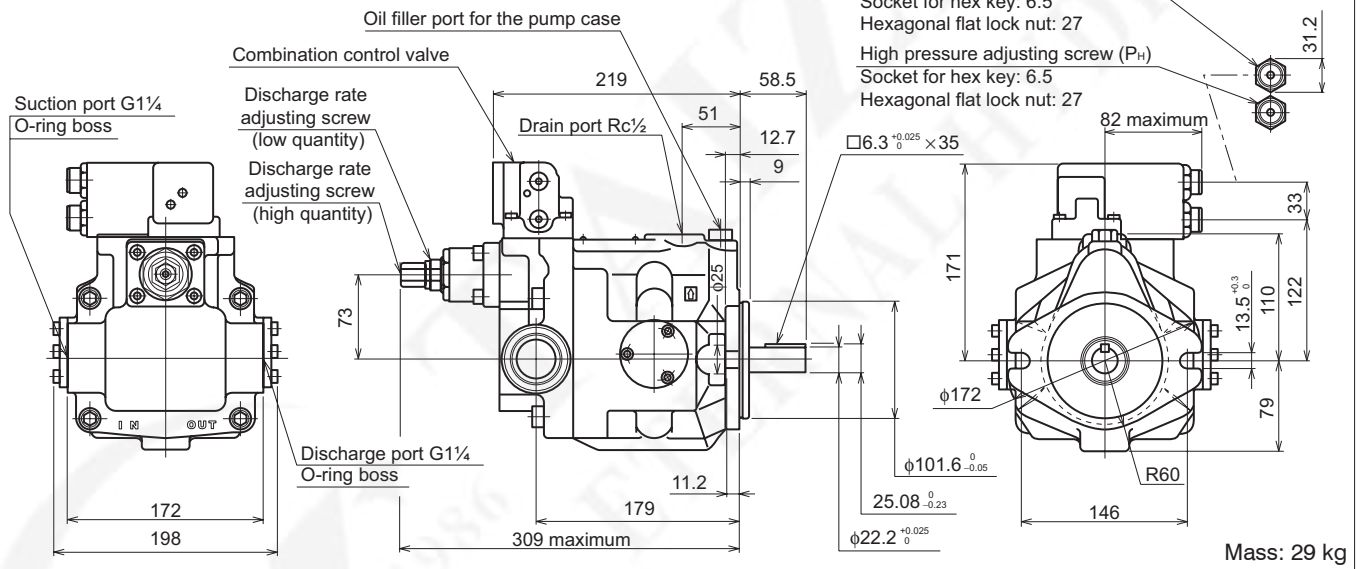
Mass: 28.7 kg

External dimension diagram

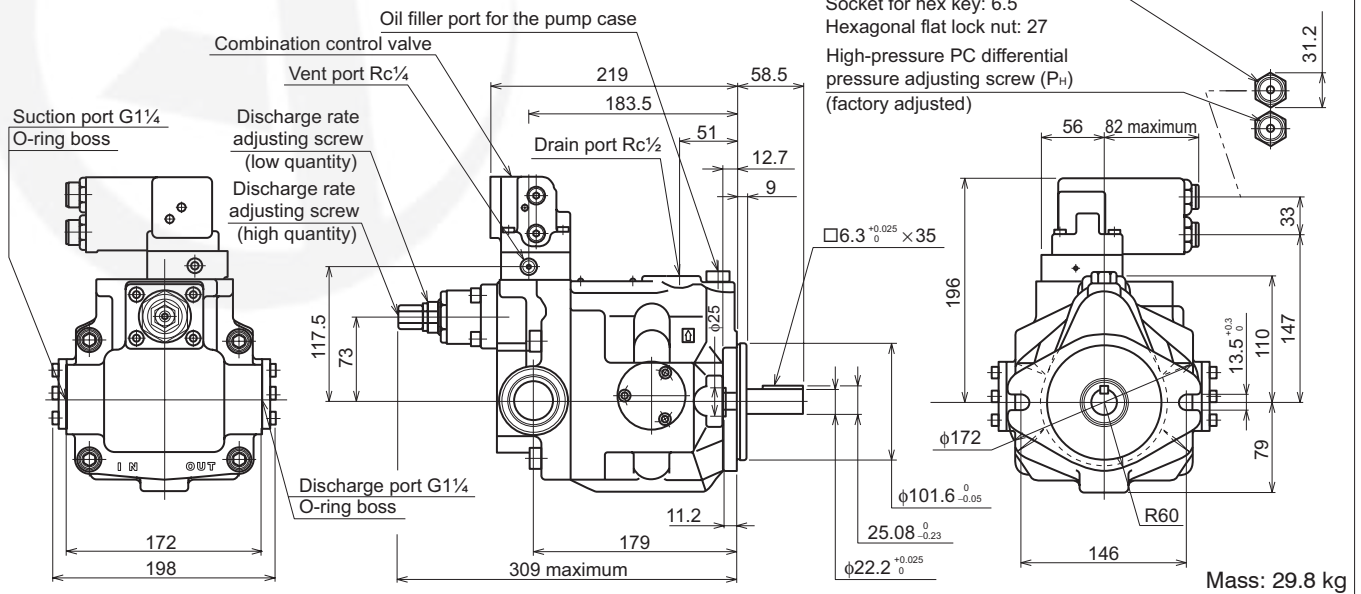
V38A4R-95RC



V38C $\times$ RHX-95



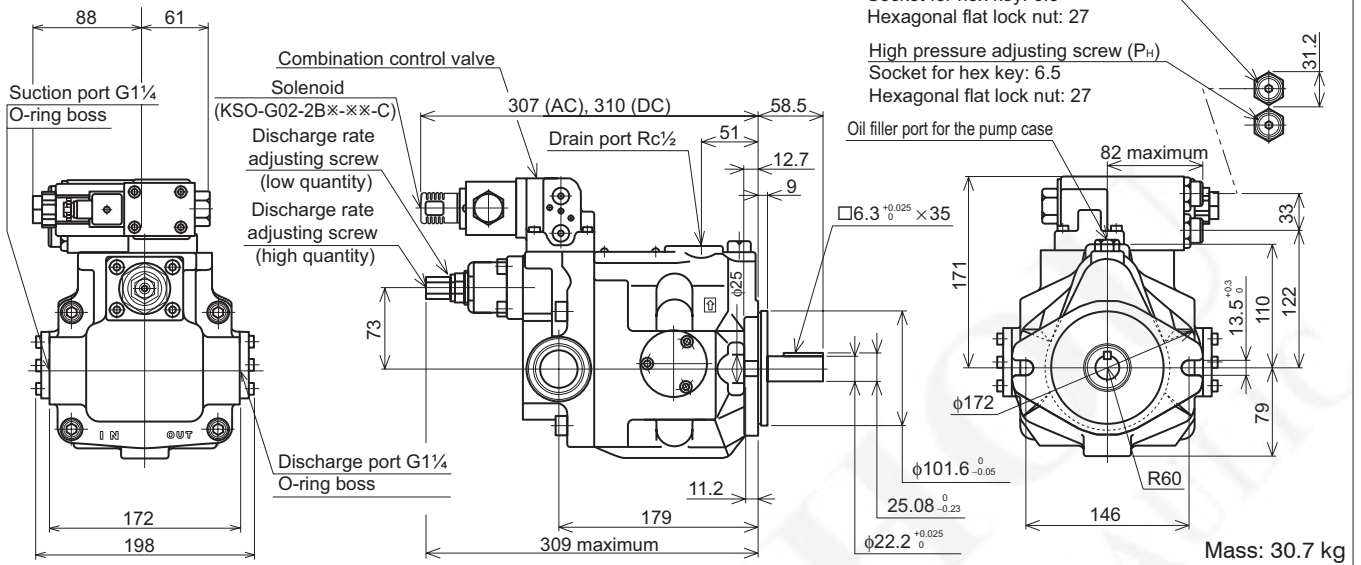
V38C $\times$ 4RHX-95RC



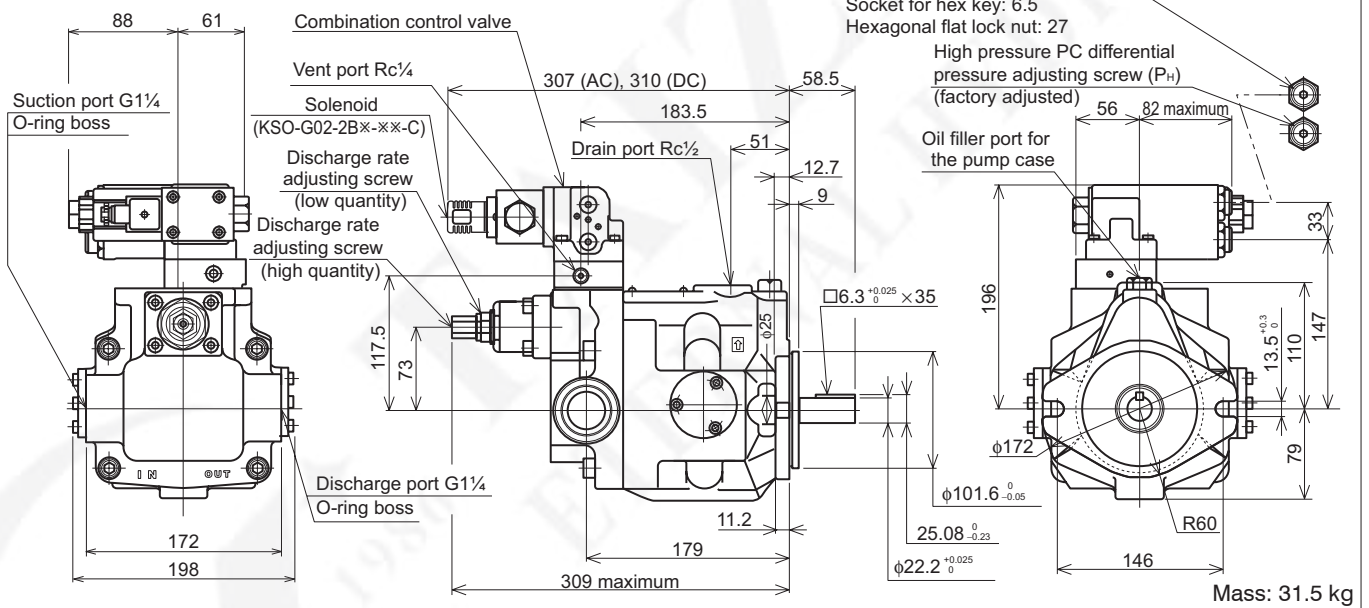


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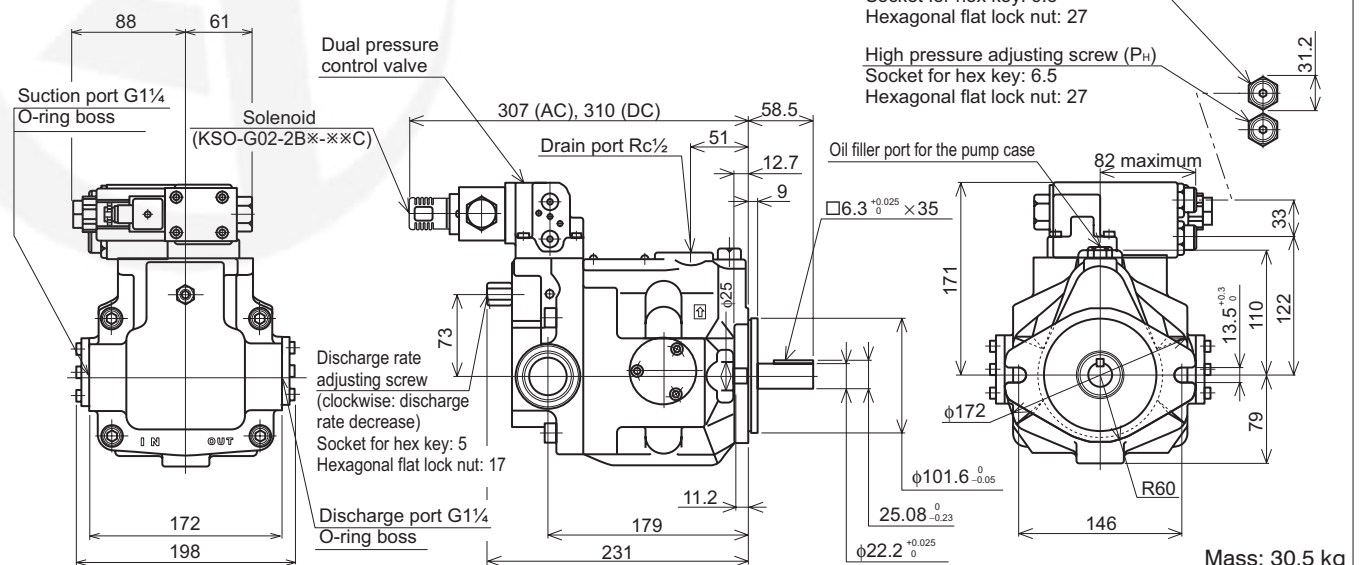
V38C××RJ×X-95



V38C×4RJ×X-95RC

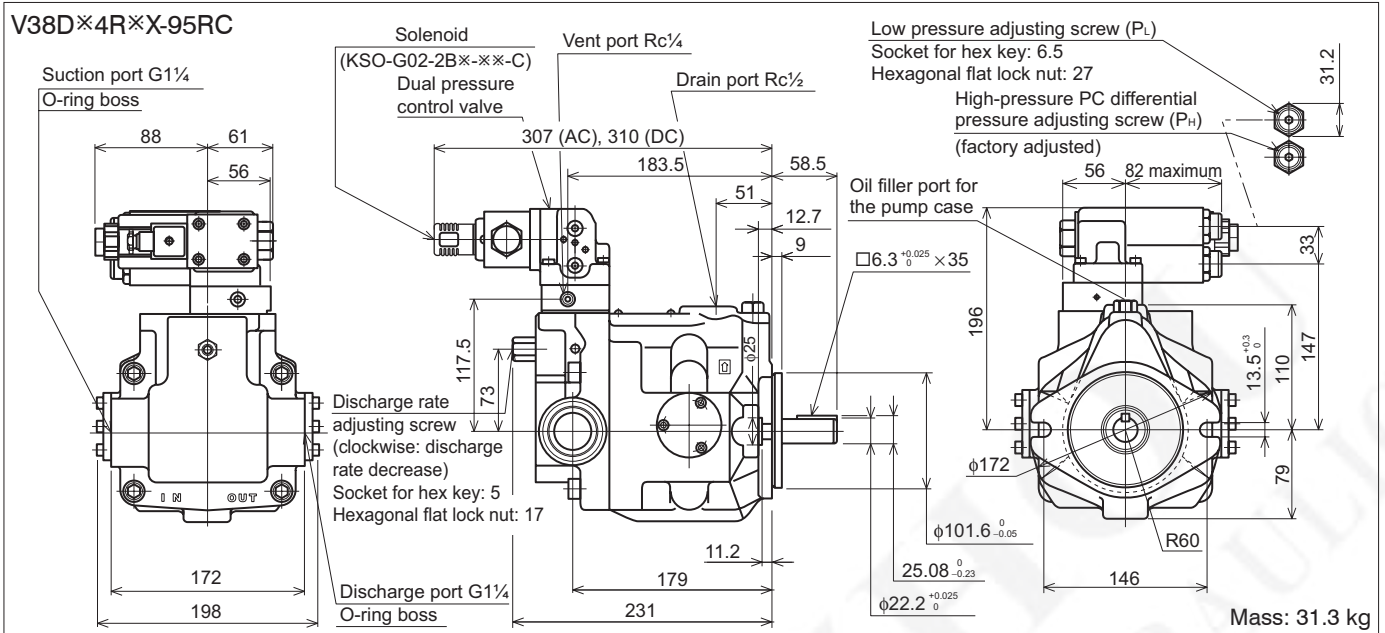


V38D××R×X-95

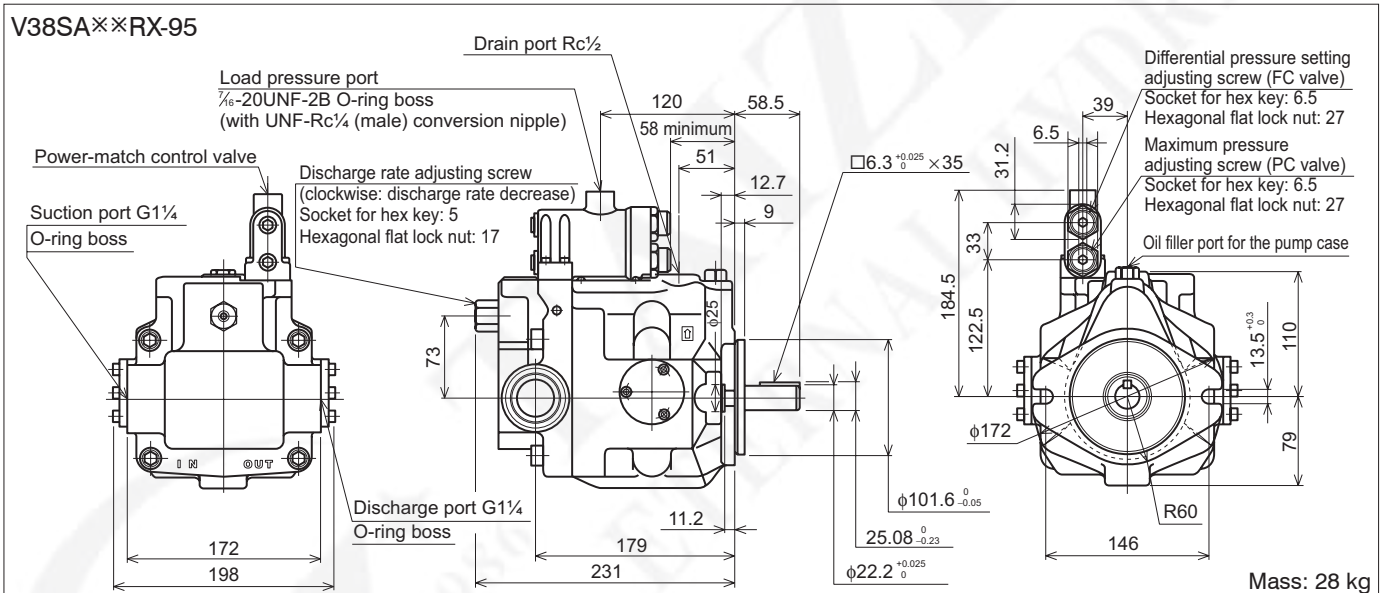


### External dimension diagram

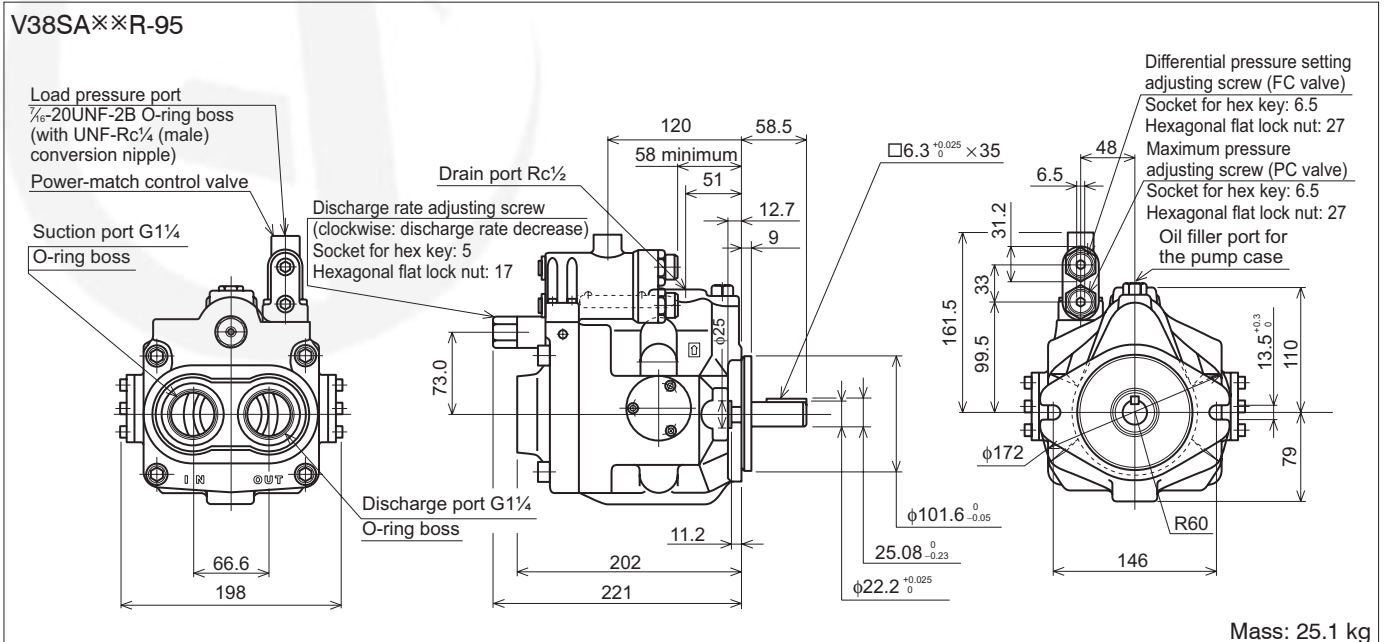
#### V38D×4R×X-95RC



#### V38SA××RX-95

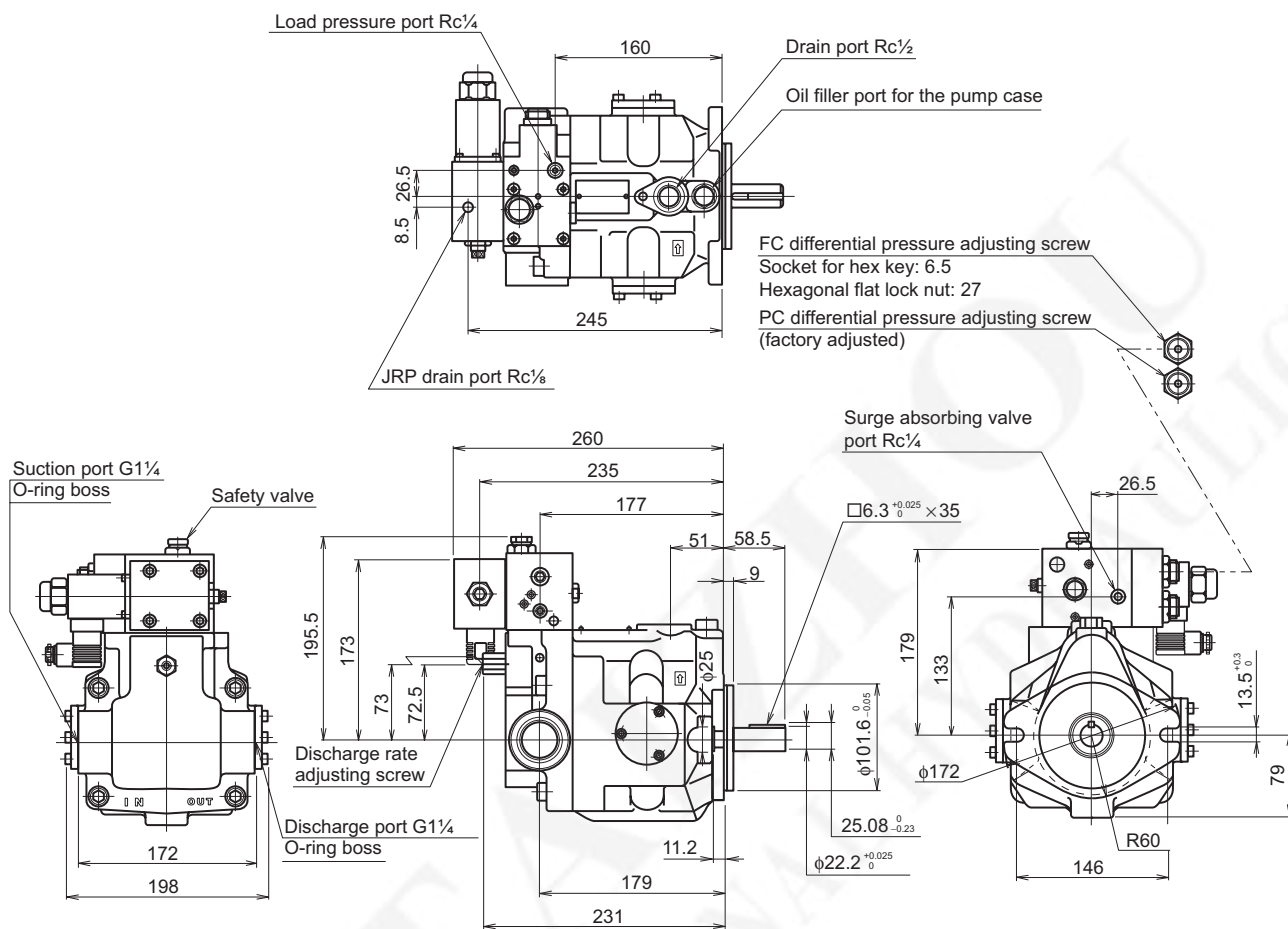


#### V38SA××R-95



External dimension diagram

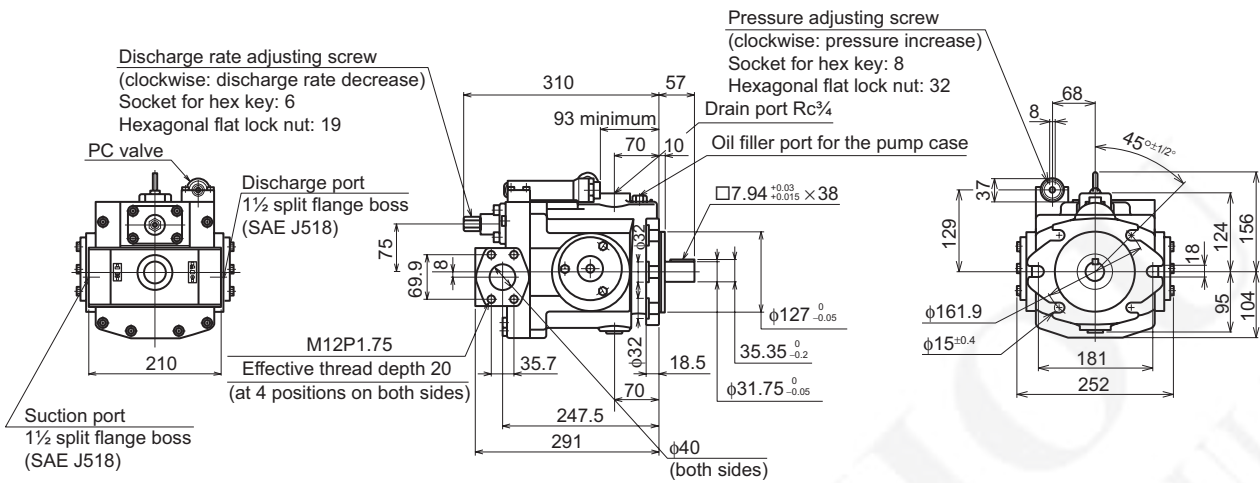
V38SAJS-※RX-95



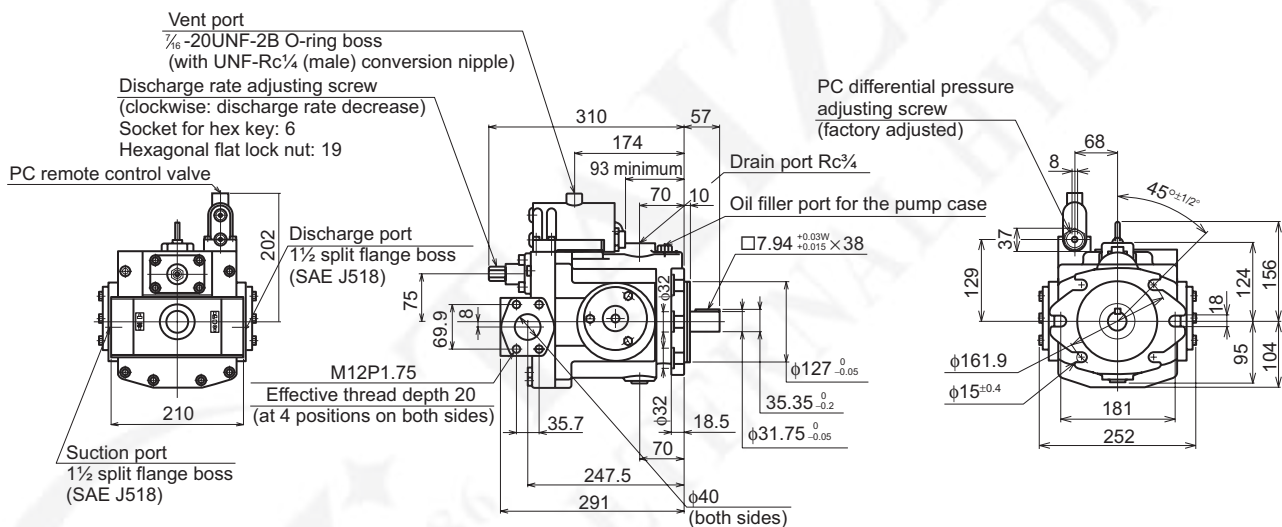
Mass: 32 kg

External dimension diagram

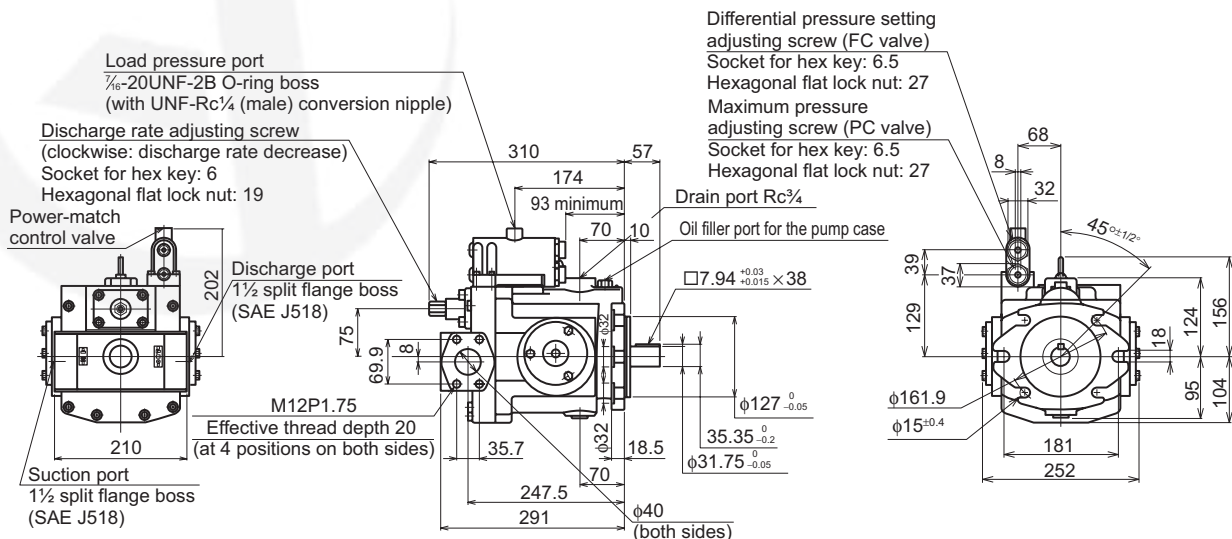
V50A×RX-20



V50A3RX-20RC

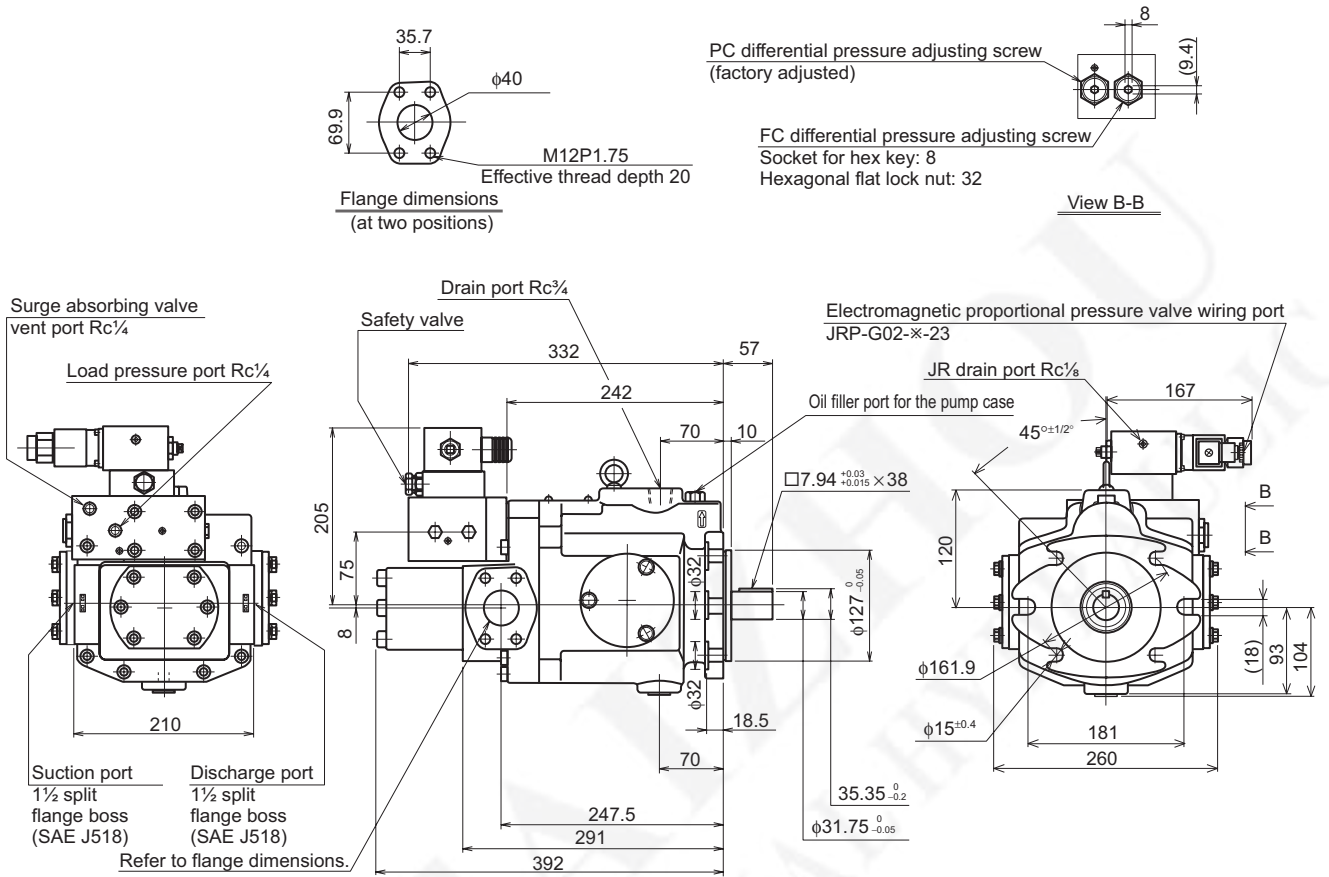


V50SA×RX-20



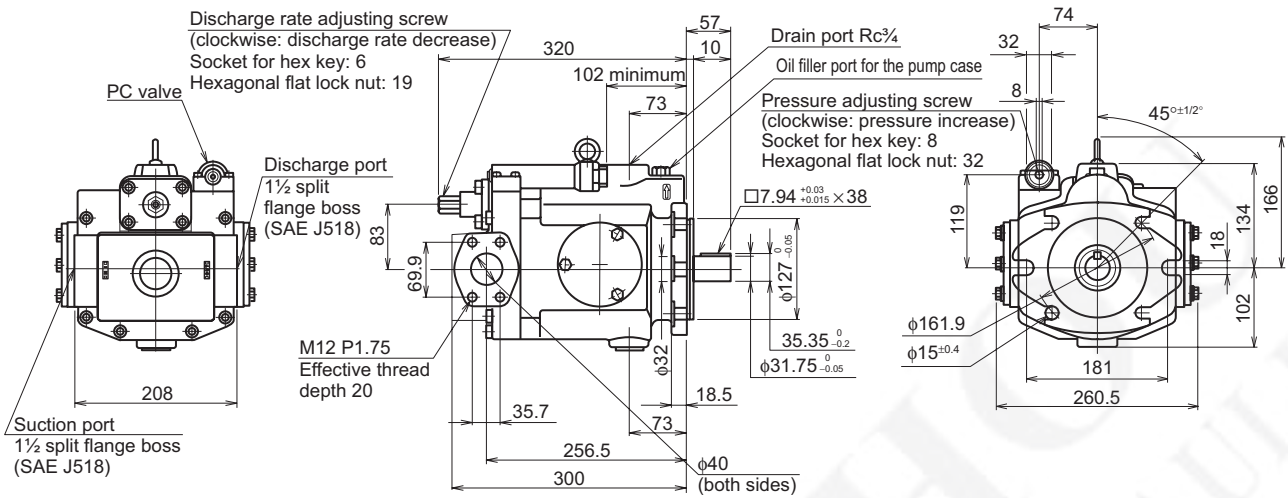
External dimension diagram

V50SAJS-※RX-20

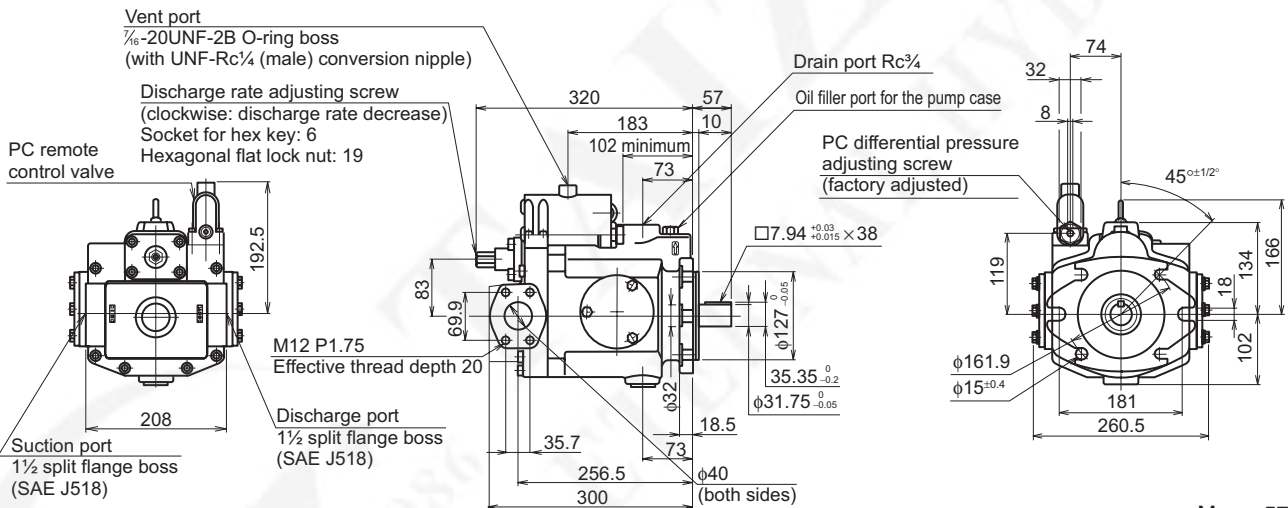


External dimension diagram

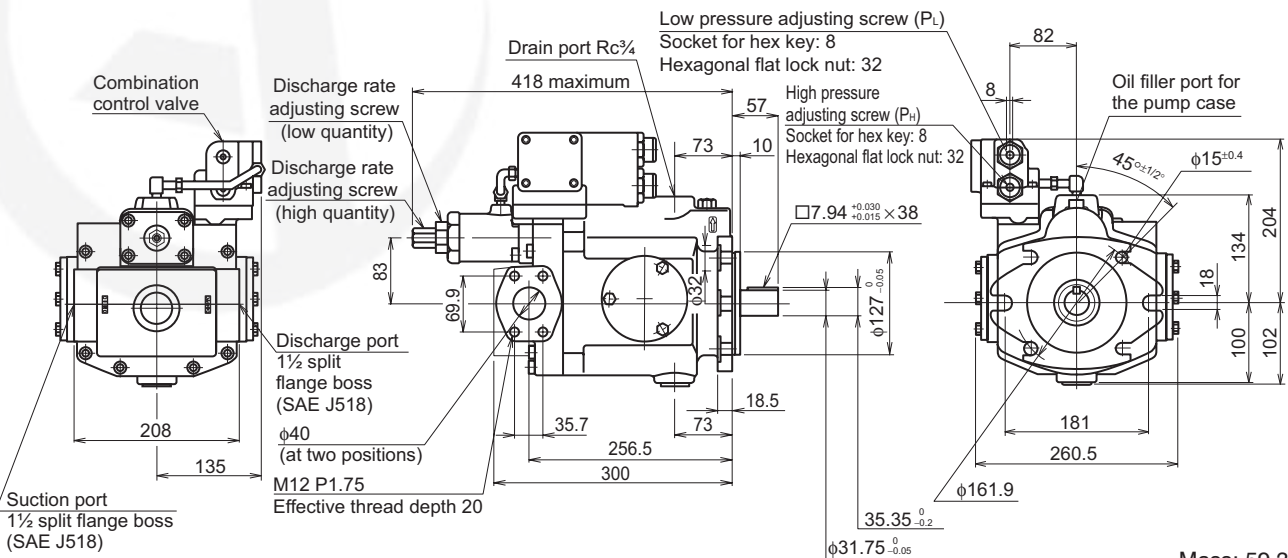
V70A×RX-60



V70A3RX-60RC

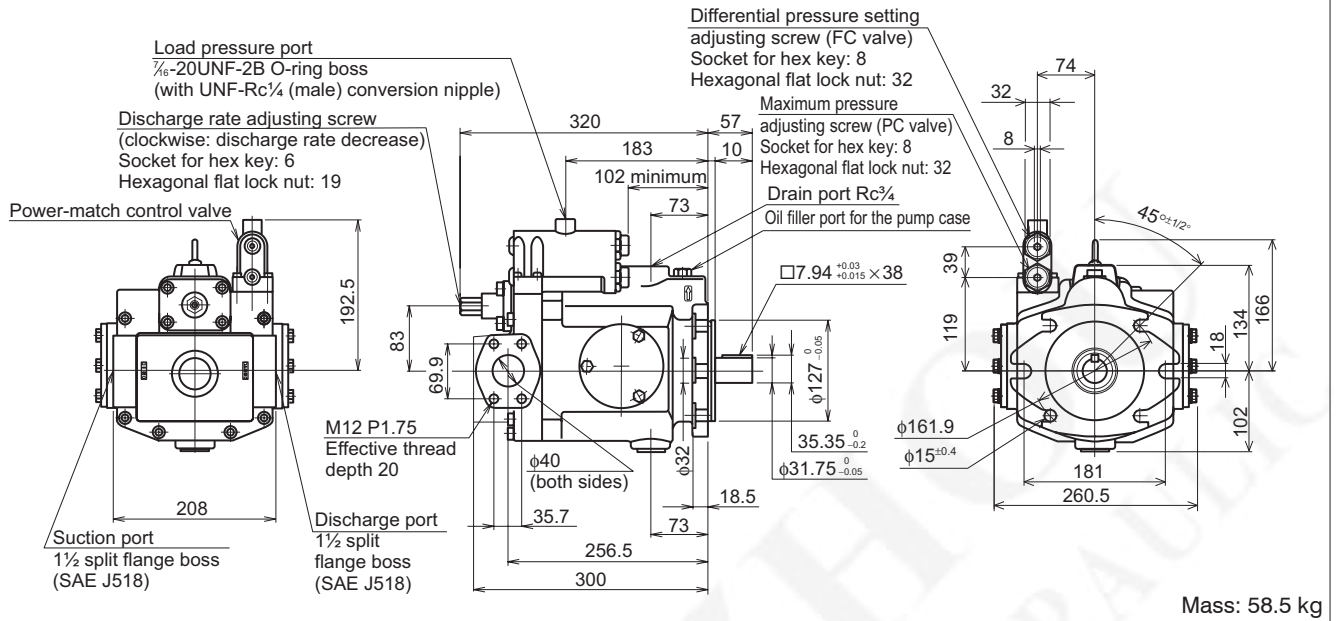


V70C××RHX-60

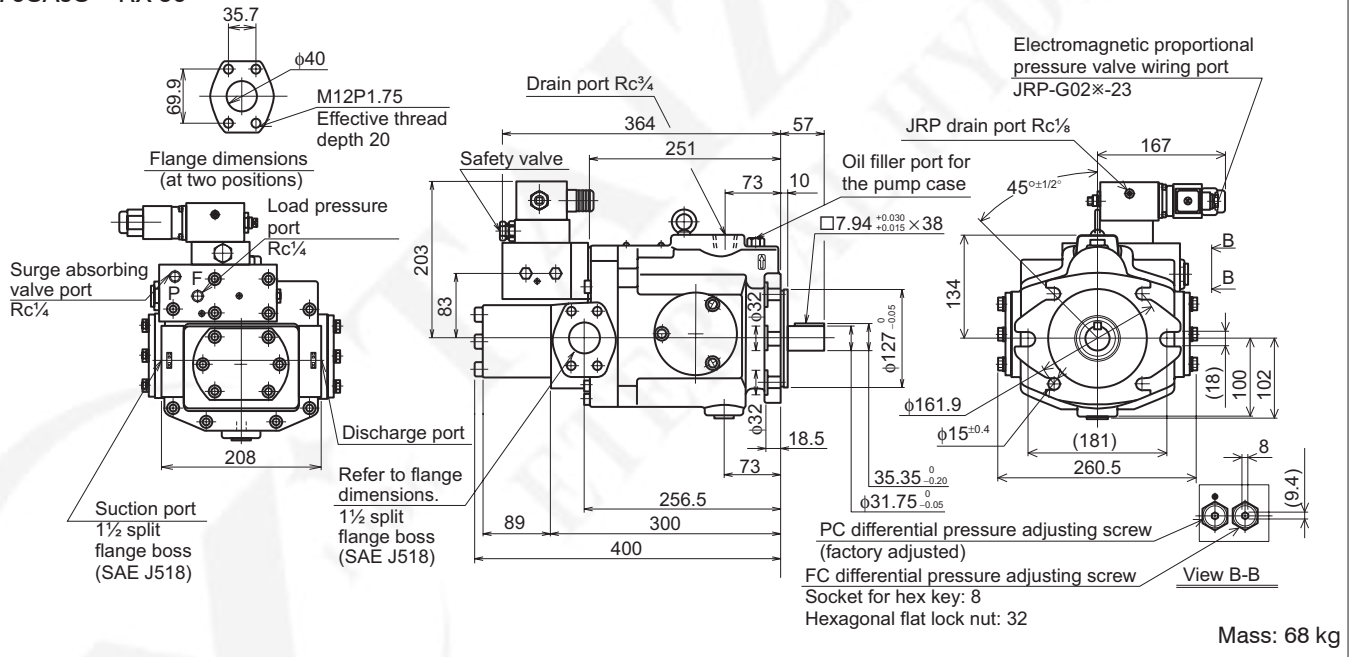


External dimension diagram

V70SA\*\*RX-60

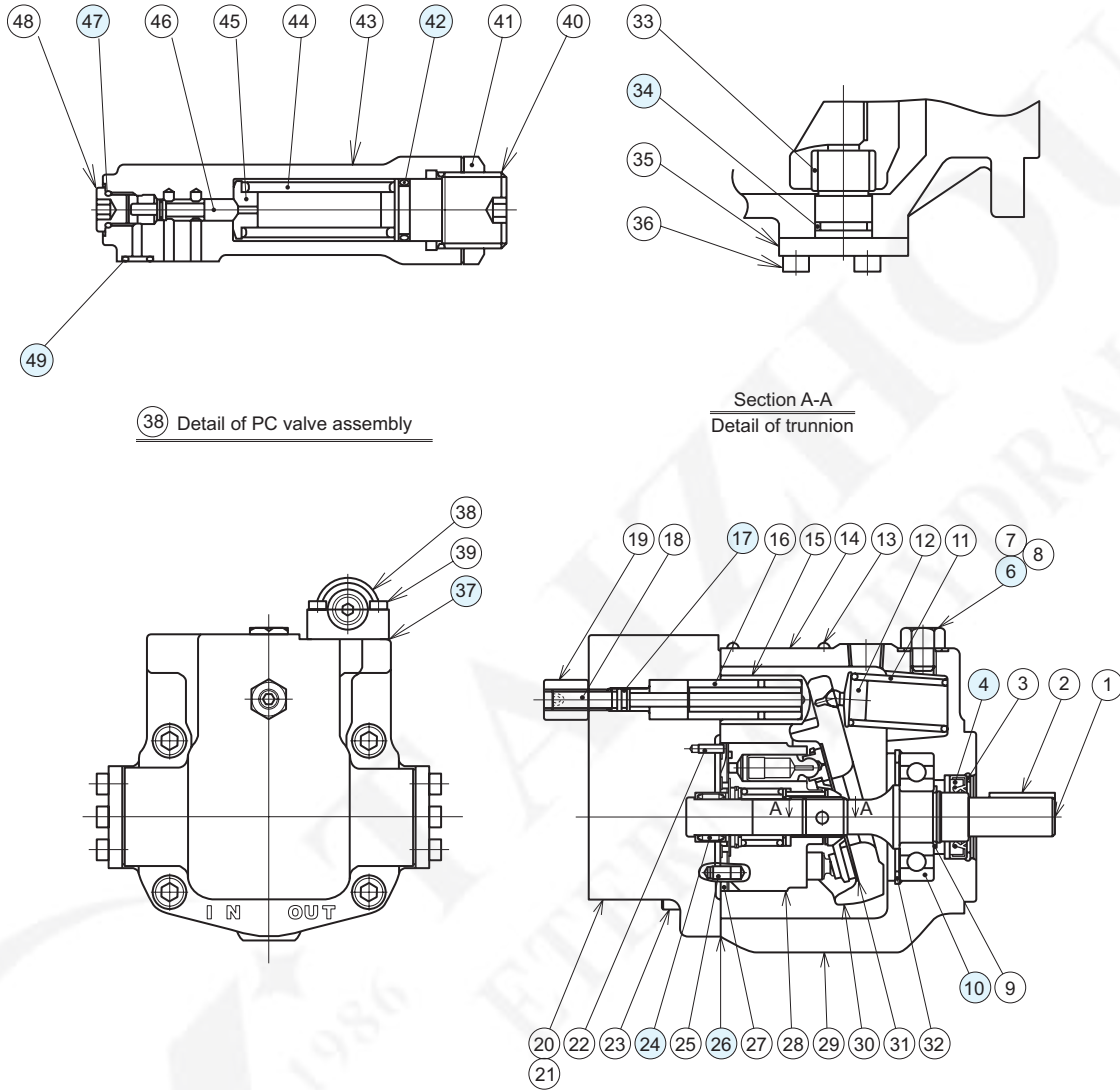


V70SAJS-\*\*RX-60



**Sectional structural diagram**

V8, V15



38 Detail of PC valve assembly

Section A-A  
Detail of trunnion

V8 Seal/bearing table

Part No.	Name	Specifications	Material	Quantity
4	Oil seal	TCV19358	NBR	1
6	Sealing washer	WF12192	NBR	1
10	Ball bearing	6004		1
17	O-ring	JIS B 2401 1A-P4	NBR	1
24	Needle bearing	HK1210		1
26	Gasket	1730500 (special part)		1
34	O-ring	JIS B 2401 1A-P20	NBR	2
37	Gasket	1741116 (special part)		1
42	O-ring	JIS B 2401 1B-P14	NBR	1
47	O-ring	AS568-903 (HS90)	NBR	1
49	O-ring	JIS B 2401 1B-P6	NBR	1

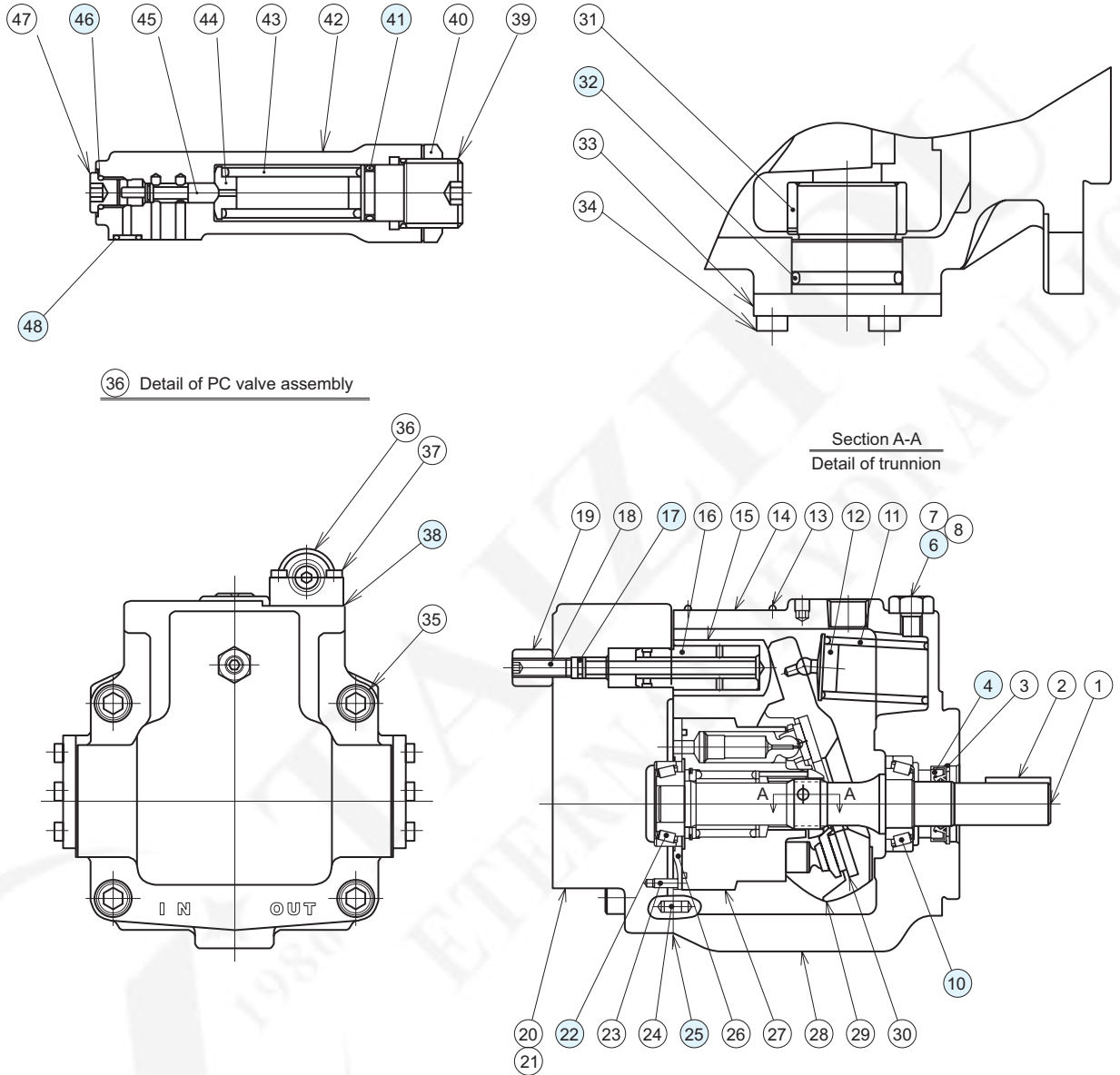
V15 Seal/bearing table

Part No.	Name	Specifications	Material	Quantity
4	Oil seal	TCV24408	NBR	1
6	Sealing washer	WF12192	NBR	1
10	Ball bearing	6305		1
17	O-ring	JIS B 2401 1A-P8	NBR	1
24	Needle bearing	FJL1715		1
26	Gasket	1730390 (special part)		1
34	O-ring	JIS B 2401 1A-P18	NBR	2
37	Gasket	1740698 (special part)		1
42	O-ring	JIS B 2401 1B-P14	NBR	1
47	O-ring	AS568-903 (HS90)	NBR	1
49	O-ring	JIS B 2401 1B-P6	NBR	1



**Sectional structural diagram**

V23, V38



V23 Seal/bearing table

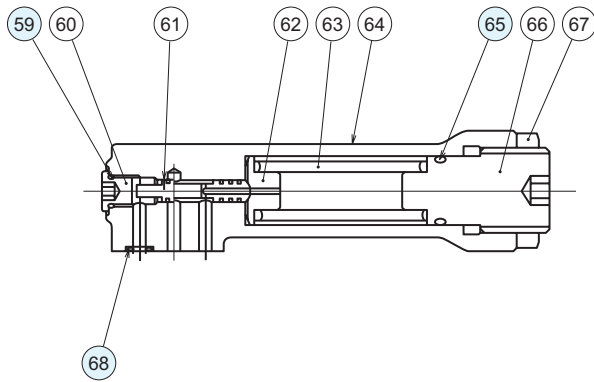
Part No.	Name	Specifications	Material	Quantity
4	Oil seal	TCV24408	NBR	1
6	Sealing washer	WF12192	NBR	1
10	Tapered roller bearing	Cup: 4T-L44610/ Cone: 4T-L44643		1
17	O-ring	JIS B 2401 1A-P8	NBR	1
22	Tapered roller bearing	Cup: 4T- LM11710/ Cone: 4T- LM11749		1
25	Gasket	1730511 (special part)		1
32	O-ring	JIS B 2401 1A-G30	NBR	2
38	Gasket	1740698 (special part)		1
41	O-ring	JIS B 2401 1B-P14	NBR	1
46	O-ring	AS568-903 (HS90)	NBR	1
48	O-ring	JIS B 2401 1B-P6	NBR	1

V38 Seal/bearing table

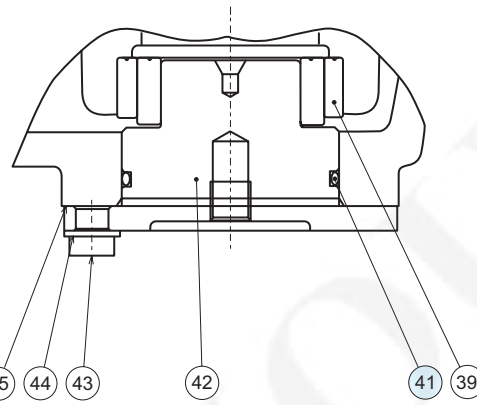
Part No.	Name	Specifications	Material	Quantity
4	Oil seal	TCV24408	NBR	1
6	Sealing washer	WF12192	NBR	1
10	Tapered roller bearing	Cup: 4T-L44610/ Cone: 4T-L44643		1
17	O-ring	JIS B 2401 1A-P8	NBR	1
22	Tapered roller bearing	Cup: 4T- LM11910/ Cone: 4T- LM11949		1
25	Gasket	1730500 (special part)		1
32	O-ring	JIS B 2401 1A-G30	NBR	2
38	Gasket	1740698 (special part)		1
41	O-ring	JIS B 2401 1B-P14	NBR	1
46	O-ring	AS568-903 (HS90)	NBR	1
48	O-ring	JIS B 2401 1B-P6	NBR	1

Sectional structural diagram

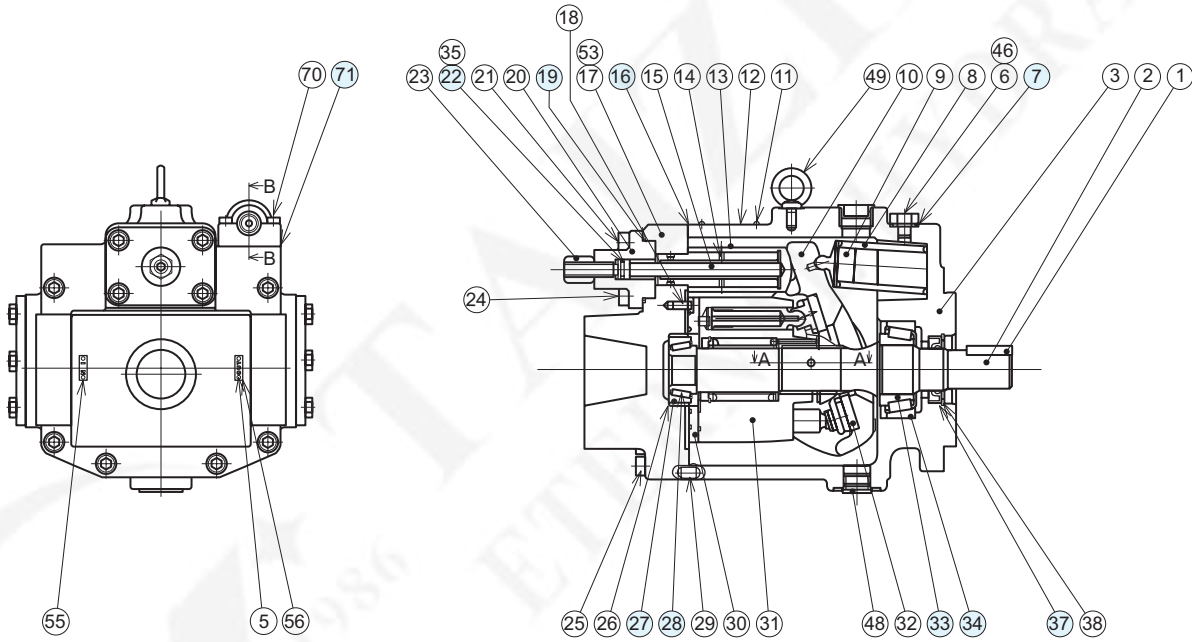
V50, V70



58 Detail of PC valve assembly



Section A-A  
Detail of trunnion



V50 Seal/bearing table

Part No.	Name	Specifications	Material	Quantity
7	Sealing washer	WF12192	NBR	1
16	Gasket	1020257 (special part)		1
19	O-ring	JIS B 2401 1A-G50	NBR	1
22	O-ring	JIS B 2401 1A-P12	NBR	1
27	Tapered roller bearing	Cup: 21212 Sa		1
28	Tapered roller bearing	Cone: 21075 Sa		1
33	Tapered roller bearing	Cone: 4T-344A P × 2		1
34	Tapered roller bearing	Cup: 4T-332 P × 2		1
37	Oil seal	TCV355511	NBR	1
41	O-ring	AS568-228 (HS70)	NBR	2
59	O-ring	AS568-903 (HS90)	NBR	1
65	O-ring	JIS B 2401 1A-P18	NBR	1
68	O-ring	JIS B 2401 1B-P6	NBR	1
71	Gasket	1740975 (special part)		1

V70 Seal/bearing table

Part No.	Name	Specifications	Material	Quantity
7	Sealing washer	WF12192	NBR	1
16	Gasket	1730446 (special part)		1
19	O-ring	JIS B 2401 1A-G50	NBR	1
22	O-ring	JIS B 2401 1A-P12	NBR	1
27	Tapered roller bearing	Cup: 4T-M84210		1
28	Tapered roller bearing	Cone: 4T-M84249		1
33	Tapered roller bearing	Cone: 4T-3386		1
34	Tapered roller bearing	Cup: 4T-3320		1
37	Oil seal	TCV355511	NBR	1
41	O-ring	AS568-230 (HS70)	NBR	2
59	O-ring	AS568-903 (HS90)	NBR	1
65	O-ring	JIS B 2401 1A-P18	NBR	1
68	O-ring	JIS B 2401 1B-P6	NBR	1
71	Gasket	1740975 (special part)		1