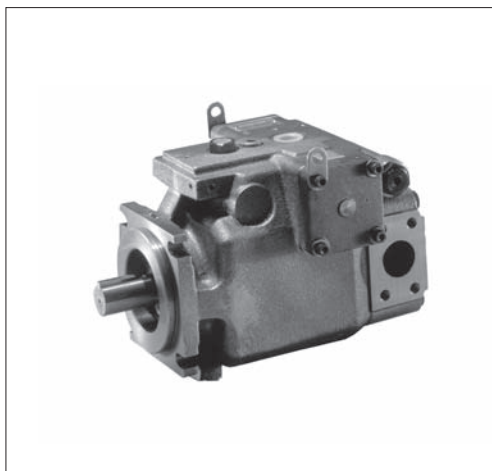


# VZ series Piston Pump



## Features

- **Highly intensified output**  
Adopting the cradle swash plate has achieved high pressure in a compact and light-weight body, resulting in increased output per unit weight.
- **Low noise**  
While increasing the rigidity of the swash plate structure, the noise level has been substantially reduced thanks to the housing geometry resulting from the state-of-the-art measurement and analysis technologies.
- **High efficiency**  
The spherical valve plate and optimum hydraulic balance realize stable and highly efficient operation over a broad range of operation conditions.
- **Long life**  
Adopting the spherical valve plate with its superior abrasion resistance has improved the anti-contaminant characteristics.

## Nomenclature

- **Pressure compensator control**

VZ ※ ※ ※ A ※ R X - 10 ※ ※

1	2	3	4	7	10	11	12
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- **Combination control**

VZ ※ ※ ※ C ※ ※ R ※ ※ X - 10

1	2	3	5	6	7	8	9	10	11
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**1 Model No.**

VZ: VZ series piston pump \*1

**2 Pump capacity**

50: 50.2 cm<sup>3</sup>/rev  
 63: 63.0 cm<sup>3</sup>/rev  
 80: 79.6 cm<sup>3</sup>/rev  
 100: 104.6 cm<sup>3</sup>/rev  
 130: 135.9 cm<sup>3</sup>/rev

**3 Control method I (Refer to Page A-4 for the applicable models.)**

A: Pressure compensator control  
 C: Combination control \*2

**4 Pressure adjustment range**

1: 1.5 to 7 MPa {15 to 70 kgf/cm<sup>2</sup>}  
 2: 1.5 to 14 MPa {15 to 140 kgf/cm<sup>2</sup>}  
 3: 3.5 to 21 MPa {35 to 210 kgf/cm<sup>2</sup>}  
 4: 3.5 to 28 MPa {35 to 280 kgf/cm<sup>2</sup>} \*3

**5 Low pressure adjustment range**

1: 1.5 to 7 MPa {15 to 70 kgf/cm<sup>2</sup>}  
 2: 1.5 to 14 MPa {15 to 140 kgf/cm<sup>2</sup>}  
 3: 3.5 to 21 MPa {35 to 210 kgf/cm<sup>2</sup>}  
 4: 3.5 to 28 MPa {35 to 280 kgf/cm<sup>2</sup>} \*3

**6 High pressure adjustment range**

1: 1.5 to 7 MPa {15 to 70 kgf/cm<sup>2</sup>}  
 2: 1.5 to 14 MPa {15 to 140 kgf/cm<sup>2</sup>}  
 3: 3.5 to 21 MPa {35 to 210 kgf/cm<sup>2</sup>}  
 4: 3.5 to 28 MPa {35 to 280 kgf/cm<sup>2</sup>} \*3

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

R: Clockwise (rightward)

**8 Control method II**

H: Pressure feedback method  
 J: Solenoid operated method

**9 Voltage code for the solenoid valve**

<Applied only when control method II is J>  
 A: AC 100 V (50/60 Hz), AC 110 V (60 Hz)  
 B: AC 200 V (50/60 Hz), AC 220 V (60 Hz)  
 P: DC 12 V

**10 Piping direction**

X: Side port

**11 Design No. (The design No. is subject to change)**

**12 Control method III**

No designation: Without remote control system  
 RC: With remote control system \*4  
 <Applied only when control method I is A>

Note: \*1 Only petroleum-based hydraulic fluids are acceptable for the VZ series.

\*2 The combination control is not applicable to VZ130.

\*3 The 4th pattern of the pressure adjustment range (3.5 to 28 MPa {35 to 280 kg/cm<sup>2</sup>}) applies only to VZ50, VZ63, VZ80, and VZ100.

\*4 The pressure adjustment range with a remote control system is the 4th pattern only (but the 3rd pattern for VZ130).

Note: JR-G (T) O2 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 to S-4.

## Models and pressure adjustment range table

● Pressure compensator control

4 Pressure adjustment range

Code	Pressure adjustment range MPa {kgf/cm <sup>2</sup> }	Without remote control system					With remote control system				
		VZ50	VZ63	VZ80	VZ100	VZ130	VZ50	VZ63	VZ80	VZ100	VZ130
1	1.5 to 7 { 15 to 70}	✓	✓	✓	✓	✓	-	-	-	-	-
2	1.5 to 14 { 15 to 140}	✓	✓	✓	✓	✓	-	-	-	-	-
3	2 to 21 { 20 to 210}	-	-	-	-	-	-	-	-	-	✓
3	3.5 to 21 {135 to 210}	✓	✓	✓	✓	✓	-	-	-	-	-
4	2 to 28 { 20 to 280}	-	-	-	-	-	✓	✓	✓	✓	-
4	3.5 to 28 { 35 to 280}	✓	✓	✓	✓	-	-	-	-	-	-

● Combination control

5 Low pressure adjustment range

Code	Pressure adjustment range MPa {kgf/cm <sup>2</sup> }	Without remote control system			
		VZ50	VZ63	VZ80	VZ100
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 28 {35 to 280}	✓	✓	✓	✓

6 High pressure adjustment range

Code	Pressure adjustment range MPa {kgf/cm <sup>2</sup> }	Without remote control system							
		Pressure feedback method				Solenoid operated method			
		VZ50	VZ63	VZ80	VZ100	VZ50	VZ63	VZ80	VZ100
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 28 {35 to 280}	✓	✓	✓	✓	✓	✓	✓	✓

## 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 1800min <sup>-1</sup> L/min	Mass (Control method A) kg
VZ50	50.2	28 {280}	500 to 1800	0 to 90	40
VZ63	63.0	28 {280}	500 to 1800	0 to 113	47
VZ80	79.6	28 {280}	500 to 1800	0 to 143	55
VZ100	104.6	28 {280}	500 to 1800	0 to 188	75
VZ130	135.9	21 {210}	500 to 1800	0 to 244	105

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

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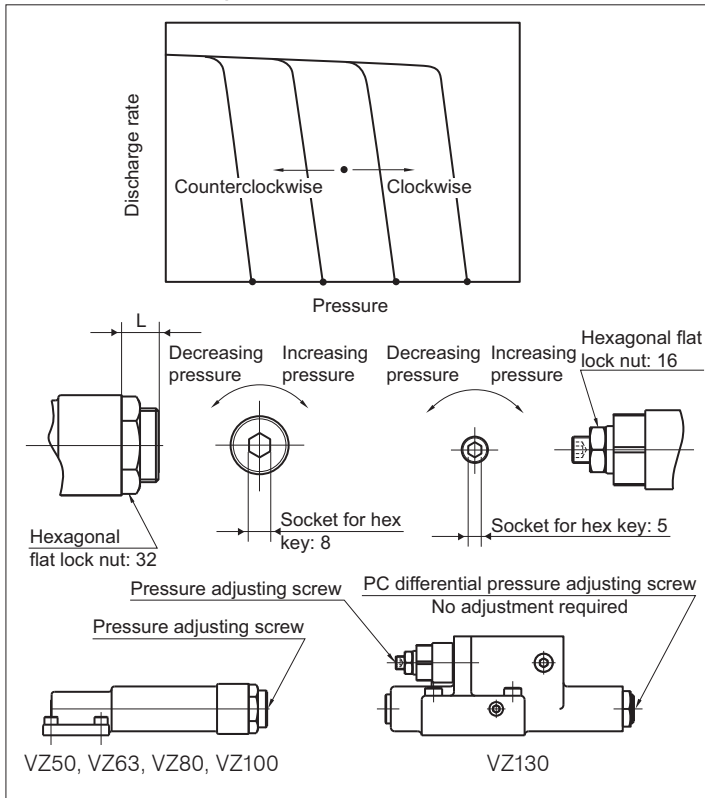
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## Pressure adjustment methods

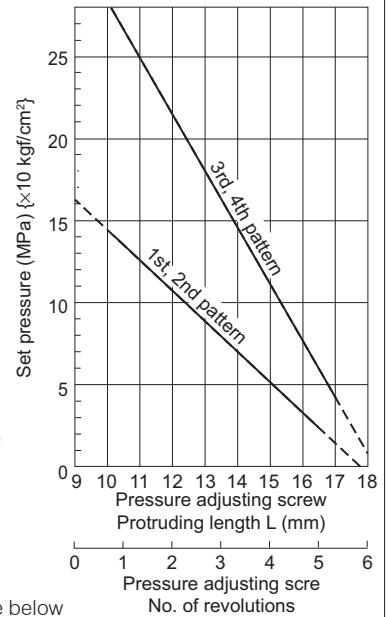
### ● Pressure compensator control



### Variation of discharge pressure

VZ50, VZ63  
VZ80, VZ100

As shown in the graph to the right

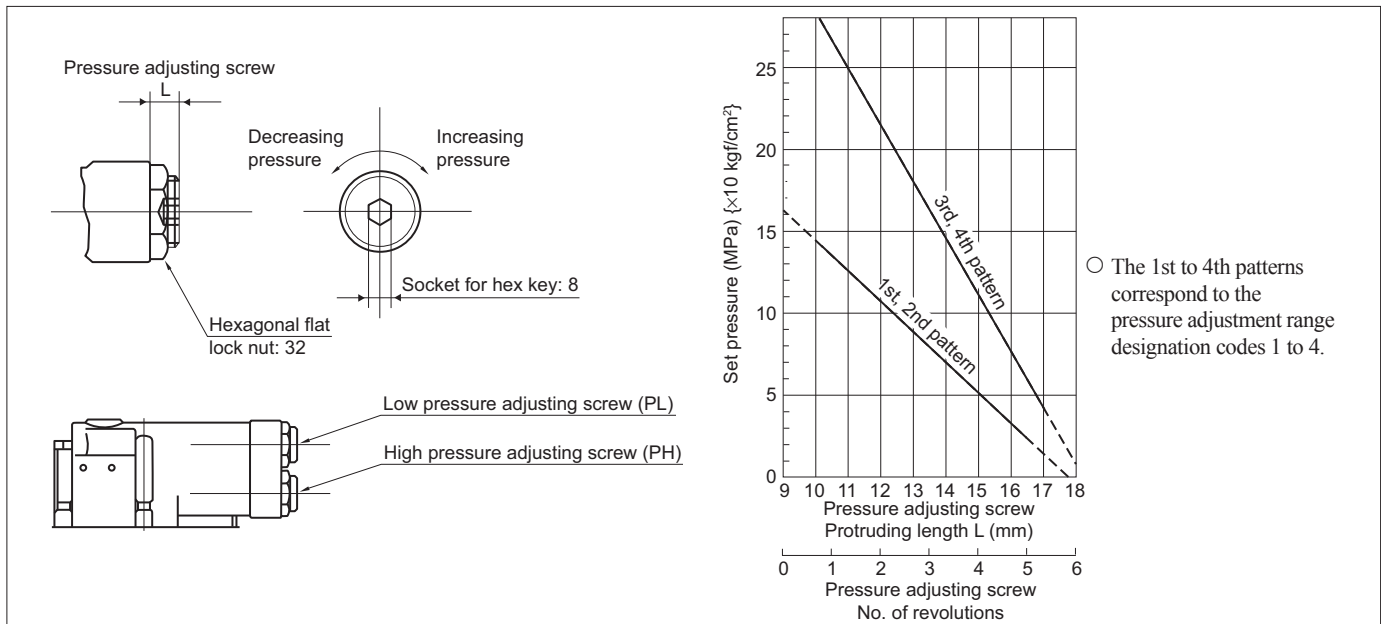


○ The 1st to 4th patterns correspond to the pressure adjustment range designation codes 1 to 4.

VZ130: As shown in the table below

Pressure adjustment range code	Discharge pressure variation/one revolution of the pressure adjusting screw
1	2.5 MPa/revolution
2	4.6 MPa/revolution
3	7.9 MPa/revolution

### ● Combination control

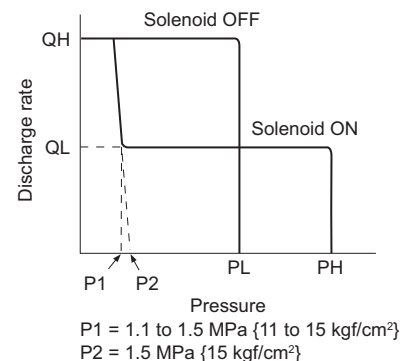


○ The 1st to 4th patterns correspond to the pressure adjustment range designation codes 1 to 4.

Pressure adjustment range [Common to the pressure feedback method (CH) and solenoid operated method (CJ)]

Pressure type	Low pressure adjustment range	High pressure adjustment range
1	1.5 to 7 MPa {15 to 70 kgf/cm <sup>2</sup> }	1.5 to 7 MPa {15 to 70 kgf/cm <sup>2</sup> }
2	1.5 to 14 MPa {15 to 140 kgf/cm <sup>2</sup> }	1.5 to 14 MPa {15 to 140 kgf/cm <sup>2</sup> }
3	3.5 to 21 MPa {35 to 210 kgf/cm <sup>2</sup> }	3.5 to 21 MPa {35 to 210 kgf/cm <sup>2</sup> }
4	3.5 to 28 MPa {35 to 280 kgf/cm <sup>2</sup> }	3.5 to 28 MPa {35 to 280 kgf/cm <sup>2</sup> }

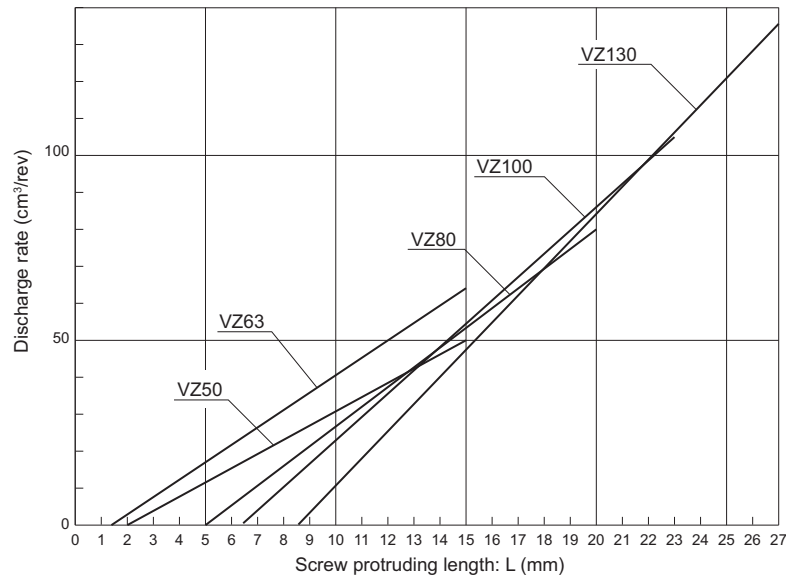
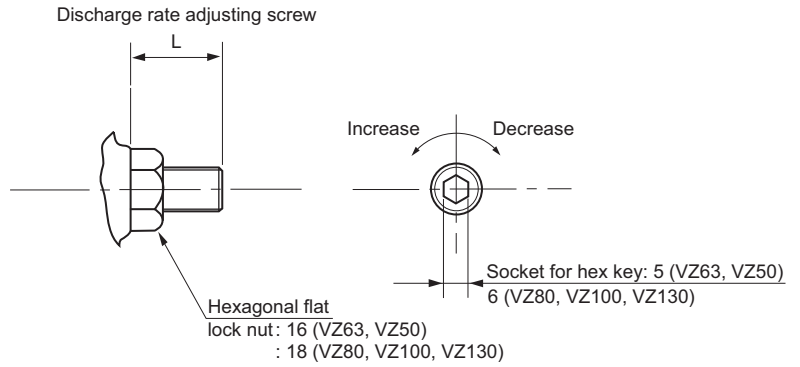
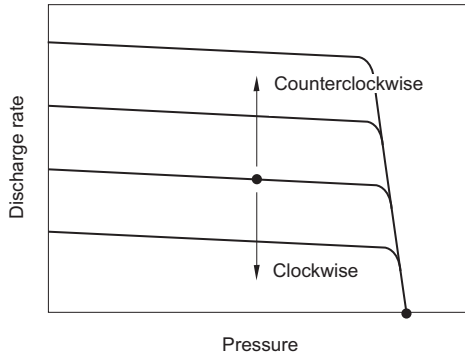
● The exact characteristics of the solenoid operated type combination control will be as shown to the right. To be more specific, even if the solenoid is turned on to switch to high pressure operation the discharge rate will not switch to the low quantity range (QL) until the pressure in the circuit reaches the pressure P1 that overcomes the bias spring force that inclines the swash plate.



## Relationship between the protruding length of the discharge rate adjusting screw and the discharge rate (pressure compensator control)

The maximum discharge rate can be set to the desired value by turning the discharge rate adjusting screw at the side of the housing.

- Turning the adjusting screw clockwise decreases the discharge rate.
- Turning the adjusting screw counterclockwise increases the discharge rate.



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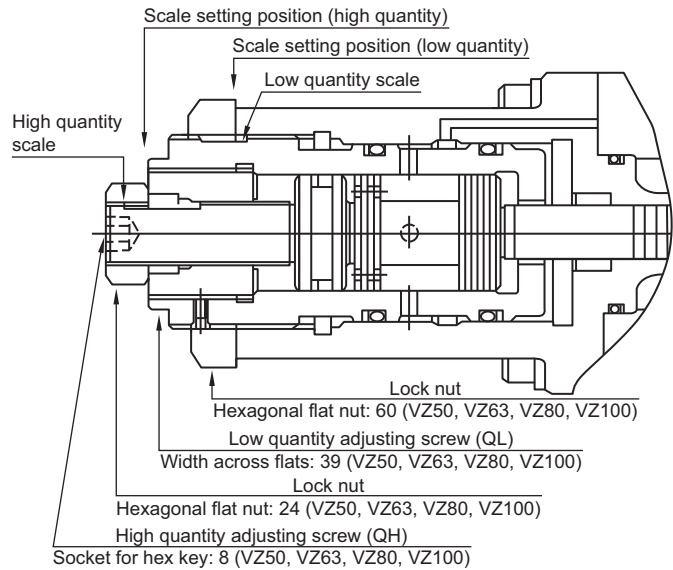
## Relationship between the protruding length of the discharge rate adjusting screw and the discharge rate (combination control)

- The discharge rate adjusting screws are provided with scales as shown below.
  - Turning the adjusting screw clockwise decreases the discharge rate.
  - Turning the adjusting screw counterclockwise increases the discharge rate.

Pump model	Scale °	
	Low quantity adjusting screw	High quantity adjusting screw
VZ50C	0 to 10	0 to 17
VZ63C	0 to 10	0 to 17
VZ80C	0 to 10	0 to 17
VZ100C	0 to 10	0 to 17

(Scale graduation: 1°)

Note: The high quantity adjustment range may be restricted due to the setting for the low quantity range. See the graphs on Page A-49 for details.



- Adjust the discharge rate according to the relevant discharge rate adjustment graph by following the procedure below.**

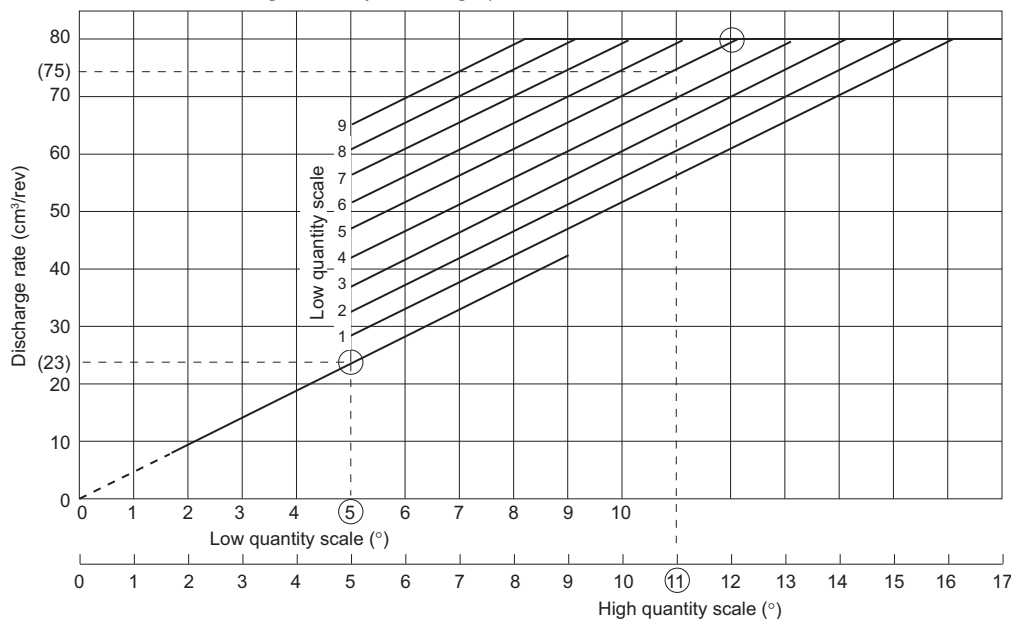
- For the low quantity range, read the value for the desired discharge rate on the graph and turn the low quantity adjusting screw to set the scale position to the read value.
- For the high quantity range, read the value for the desired discharge rate on the line corresponding to the value for the low quantity range on the graph and turn the high quantity adjusting screw to set the scale position to the read value.
- When adjusting only the high quantity range, loosen the lock nut and adjust as described above.
- When adjusting only the low quantity range, loosen the lock nut on the high quantity adjustment screw and adjust the setting for the low quantity range as described above while holding the high quantity adjusting screw in place with a hex key.

### Example of adjustment

When adjusting the discharge rate of VZ80C to 23 cm<sup>3</sup>/rev for the low quantity range (QL) and 75 cm<sup>3</sup>/rev for the high quantity range (QH)

- From the discharge rate adjustment graph for VZ80C in combination control, first read the value for QL = 23 cm<sup>3</sup>/rev, which is 5°, and adjust the low quantity adjusting screw accordingly.
- Then, read the value for QH = 75 cm<sup>3</sup>/rev on the line for 5° of QL, which is 11°, and adjust the high quantity adjusting screw accordingly.

Discharge rate adjustment graph for VZ80C in combination control



- The setting values indicated above may change slightly depending on the conditions of use (fluid temperature, hydraulic fluid type, etc.) For final fine adjustment, repeat the adjustment described above and achieve the setting appropriate for the actual application.

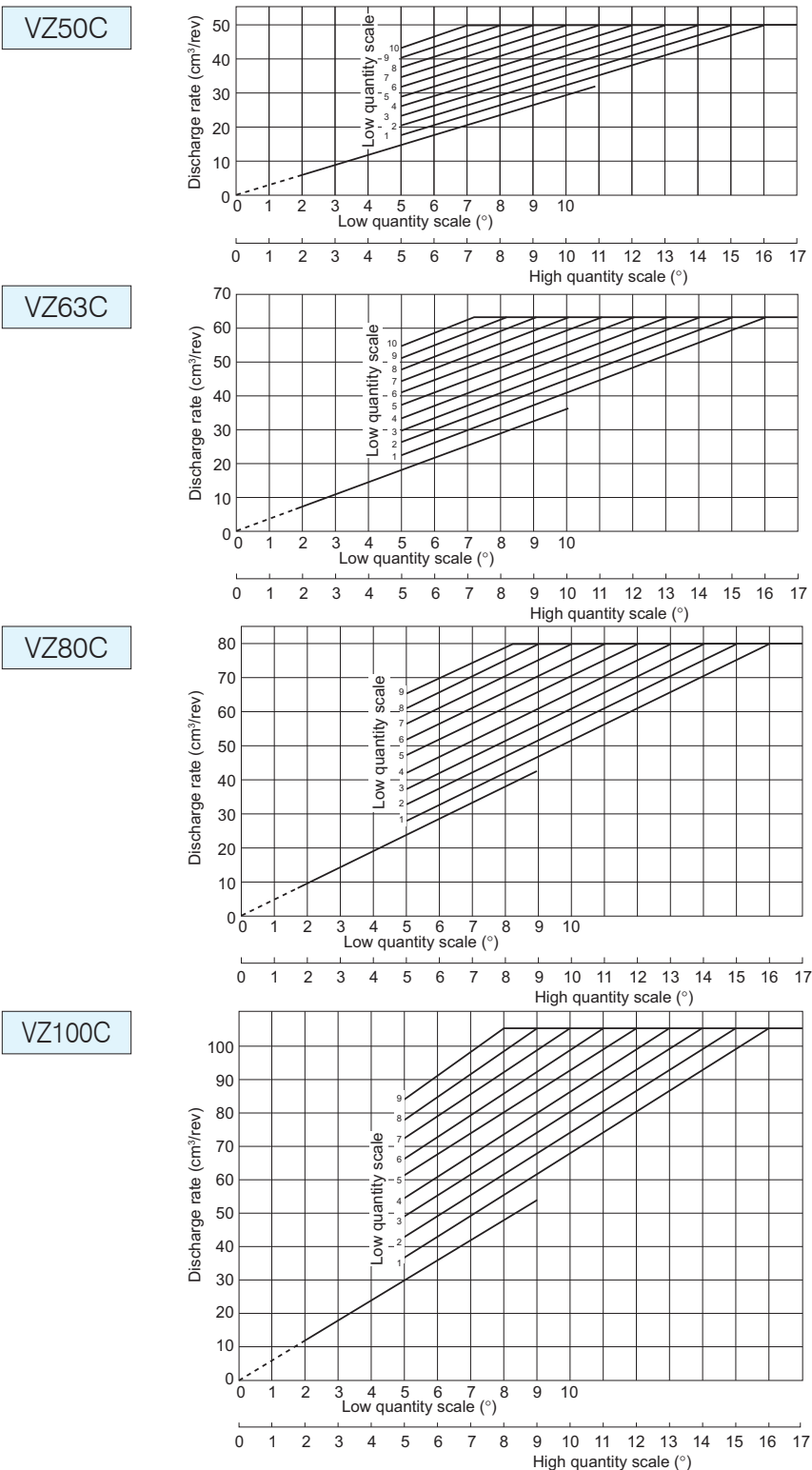
**■ Factory setting of discharge rate**

The discharge rate for the high quantity range is factory adjusted to the maximum discharge rate and the discharge rate for the low quantity range is factory adjusted as follows.

Pump model	Low quantity (QL) setting
VZ50C	Scale position: 4°
VZ63C	Scale position: 4°
VZ80C	Scale position: 4°
VZ100C	Scale position: 4°

**Discharge rate adjustment graph in combination control**

Linear adjustment of the discharge rate for the low quantity range is not possible below the adjustment range (section indicated by the dashed line).



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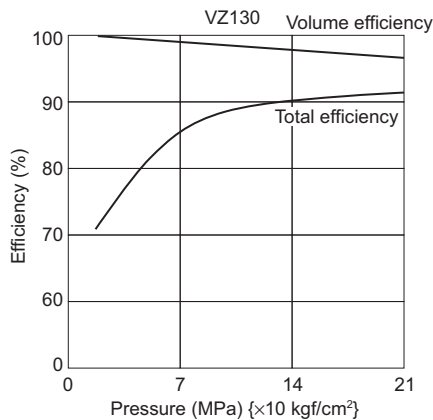
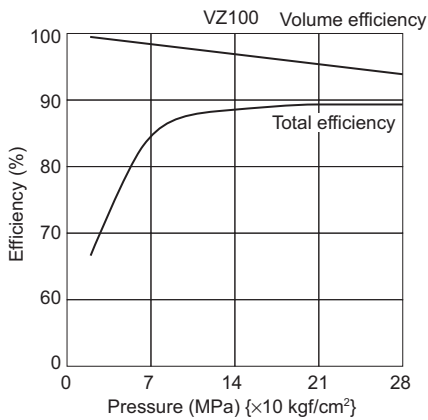
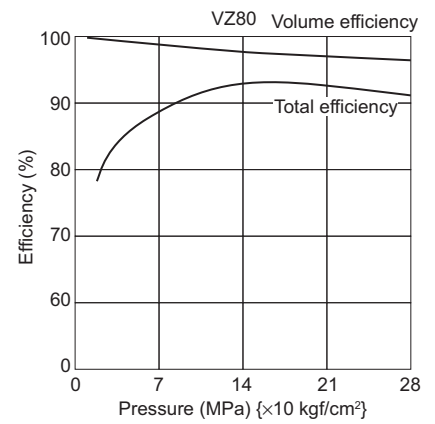
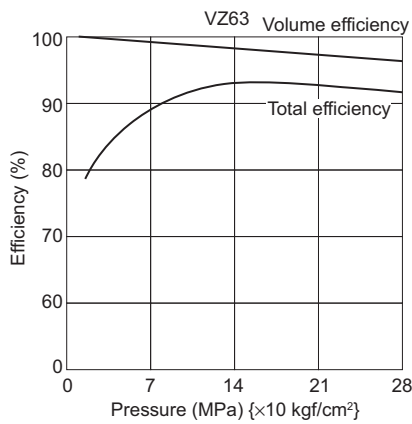
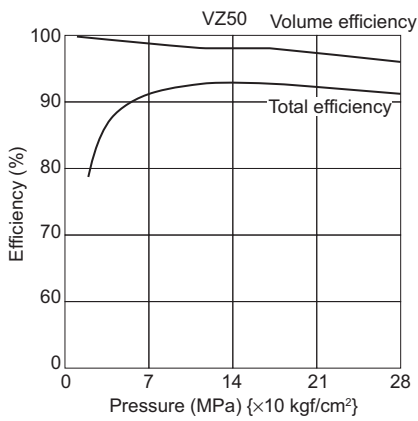
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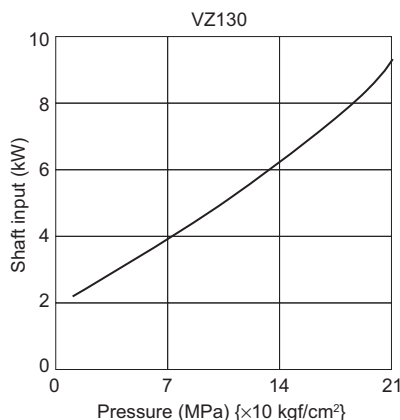
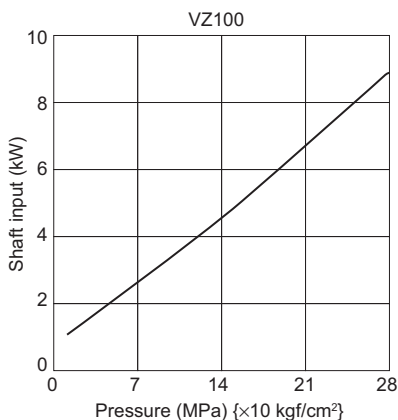
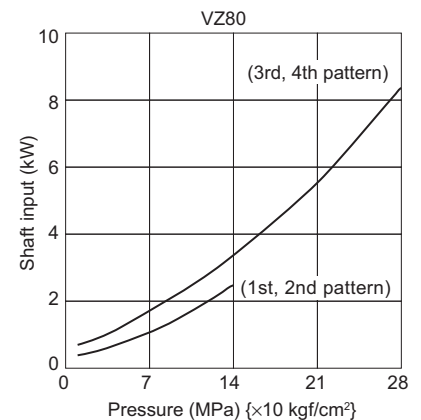
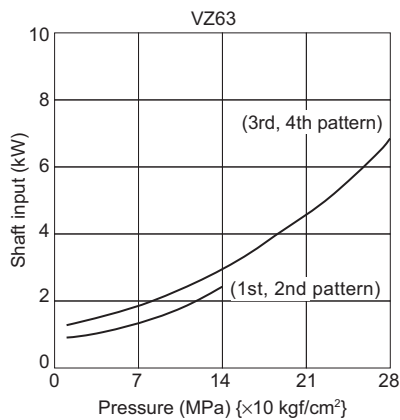
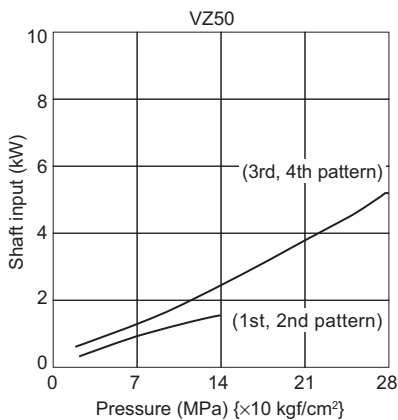
## General performance (1800 min<sup>-1</sup>)

## Discharge rate setting: maximum



Note: The efficiency varies depending on the discharge rate setting. When selecting the motor capacity, refer to the shaft input characteristics on Page A-52.

## Shaft input characteristics at full cutoff (1800 min<sup>-1</sup>)



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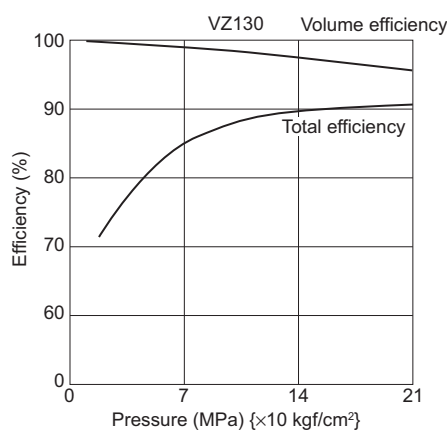
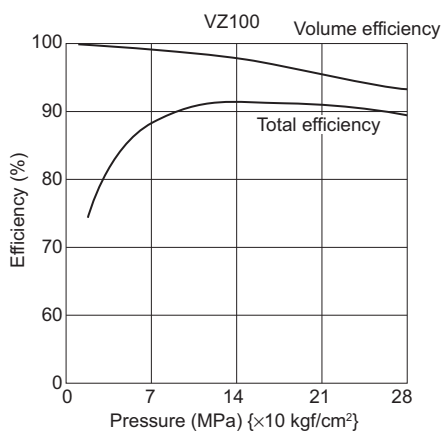
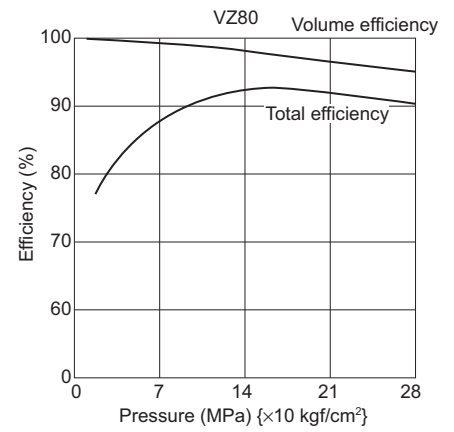
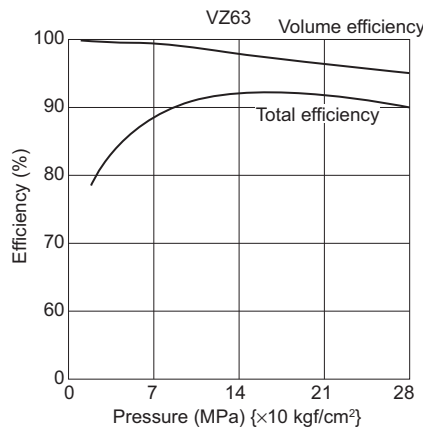
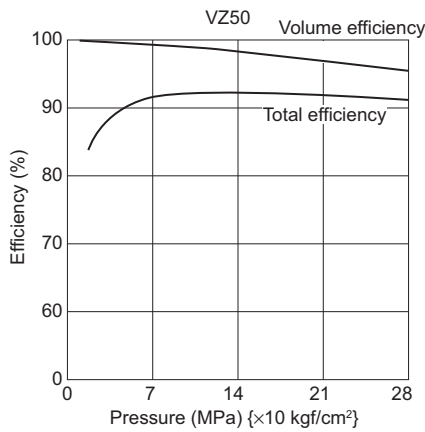
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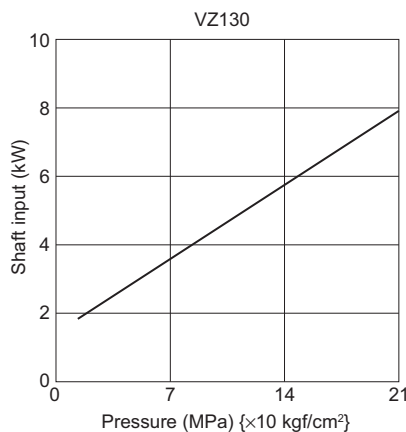
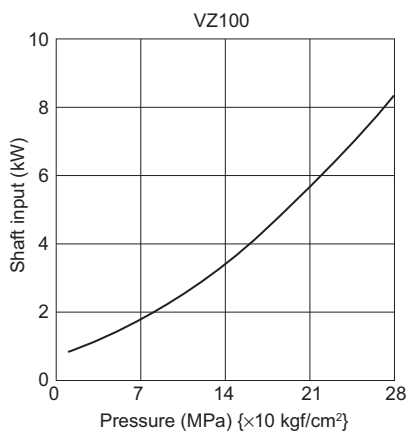
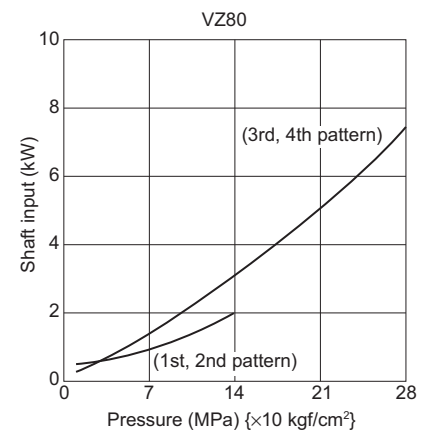
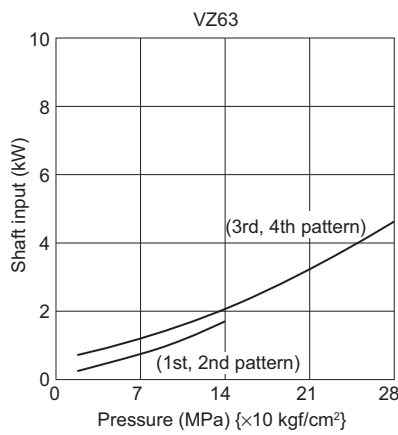
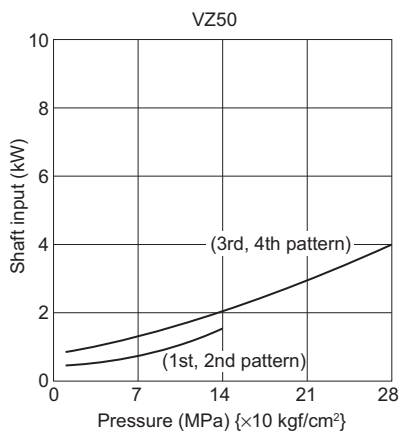
## General performance (1500 min<sup>-1</sup>)

## Discharge rate setting: maximum



Note: The efficiency varies depending on the discharge rate setting. When selecting the motor capacity, refer to the shaft input characteristics on Page A-53.

## Shaft input characteristics at full cutoff (1500 min<sup>-1</sup>)





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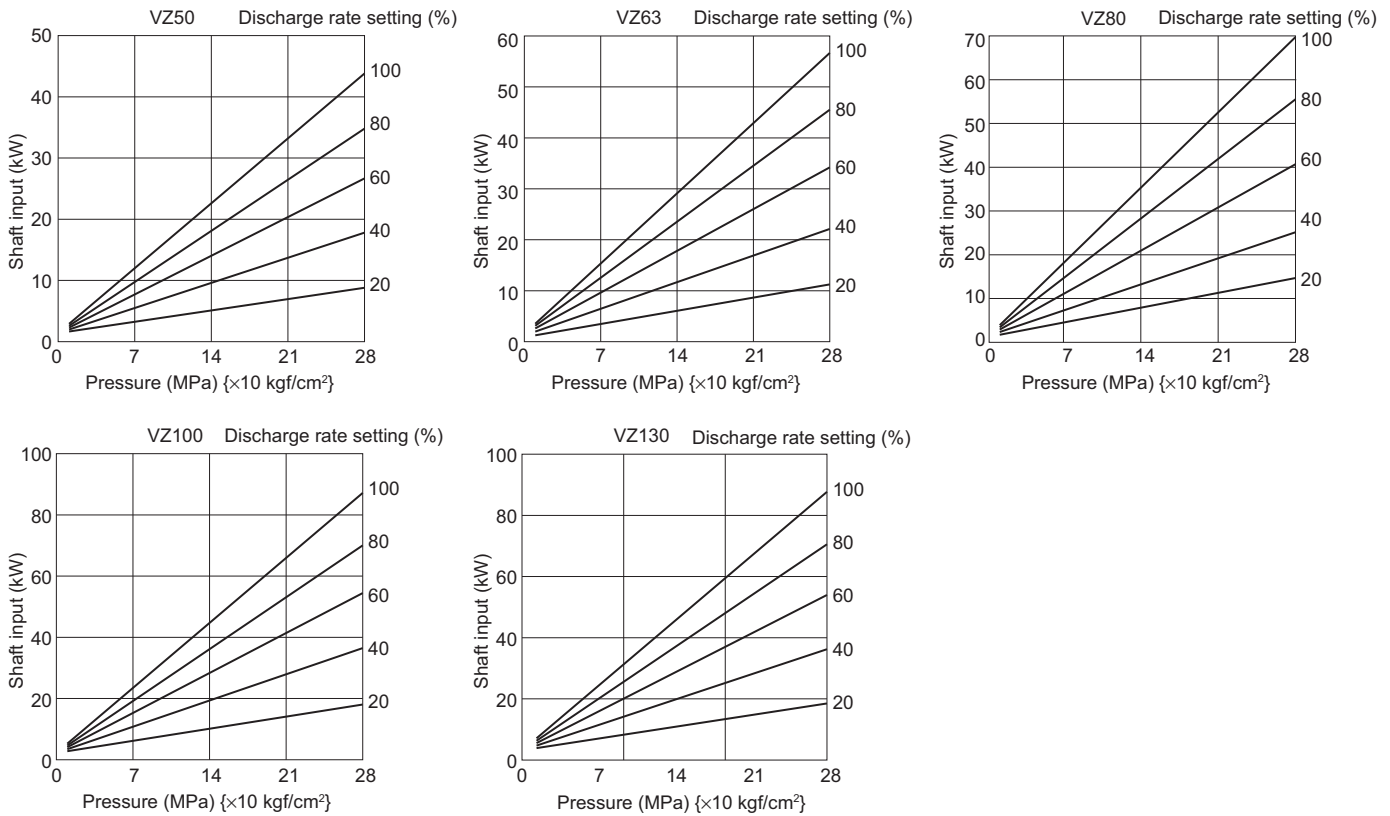
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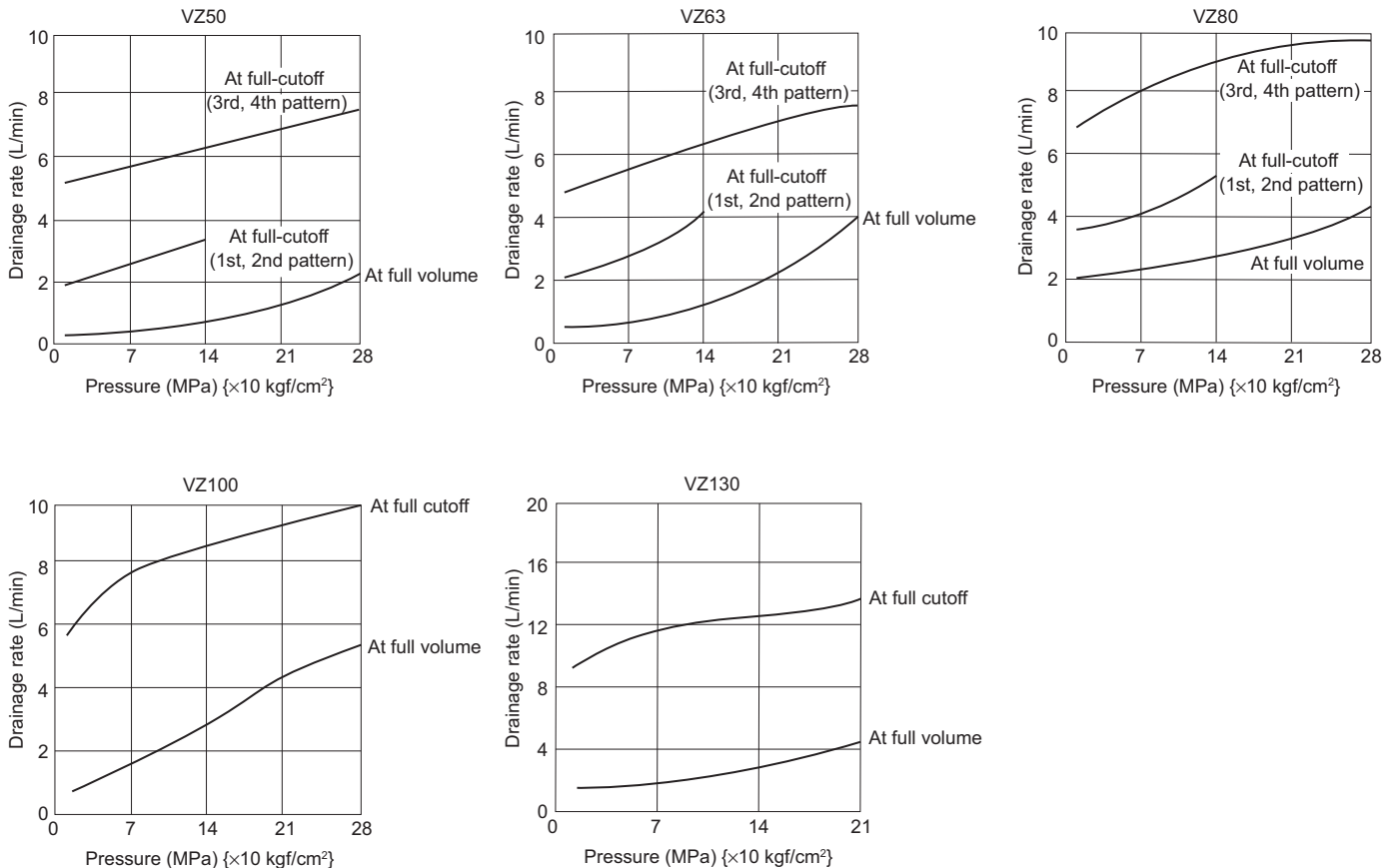
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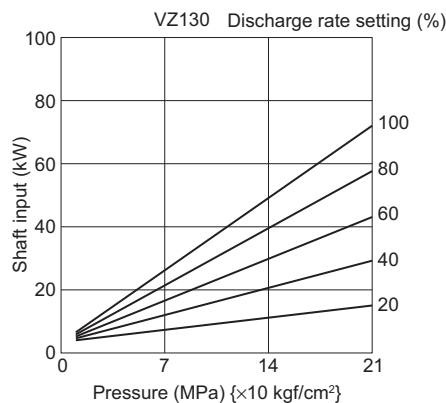
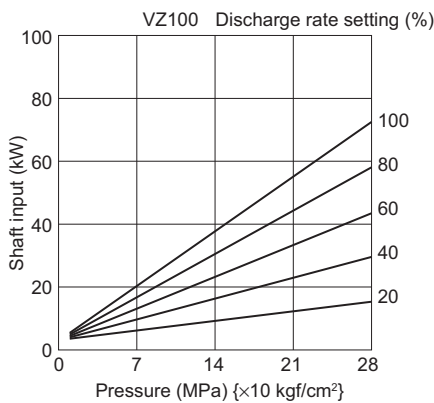
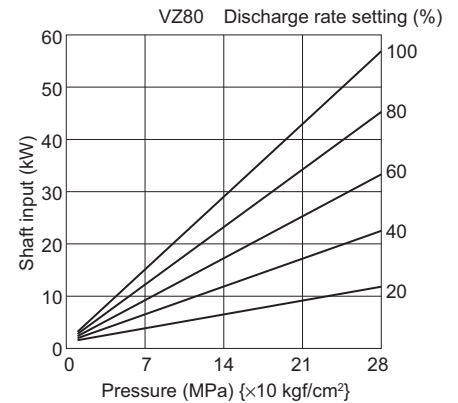
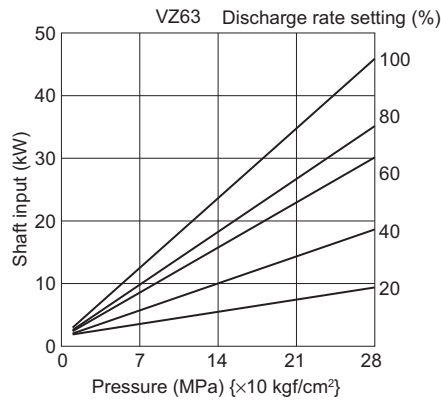
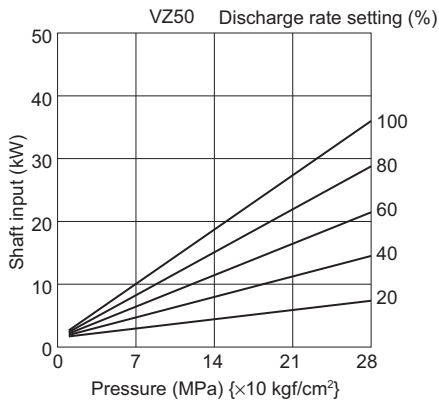
## Shaft input characteristics (1800 min<sup>-1</sup>)



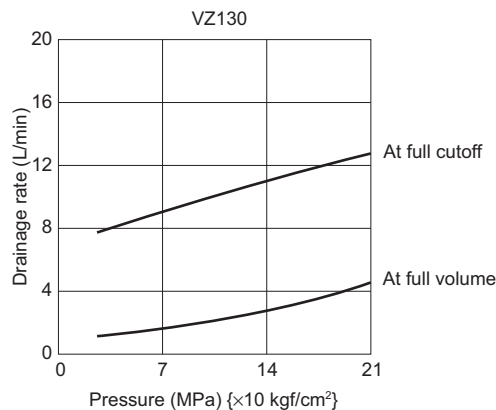
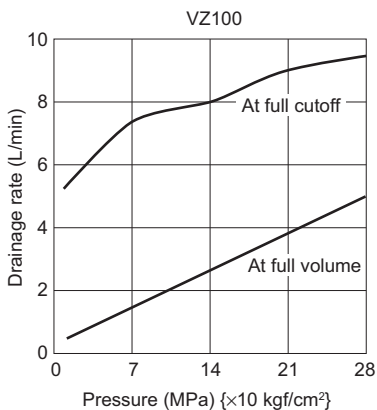
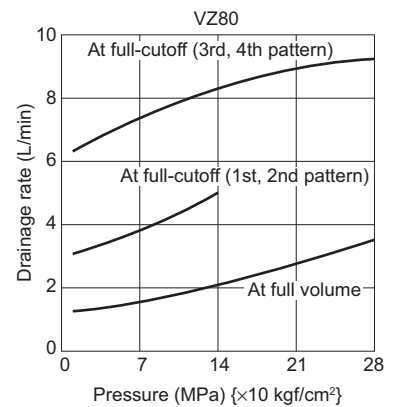
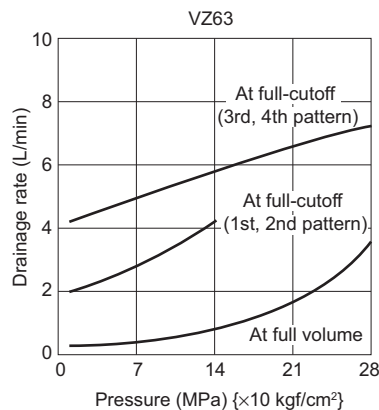
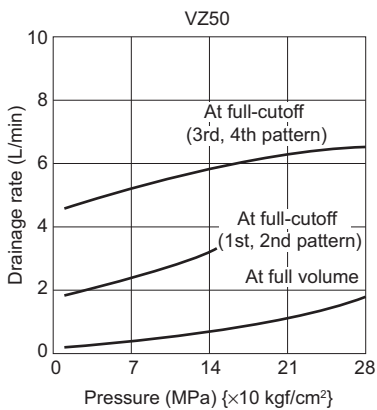
## Drainage volume characteristics (1800 min<sup>-1</sup>)



## Shaft input characteristics (1500 min<sup>-1</sup>)



## Drainage volume characteristics (1500 min<sup>-1</sup>)



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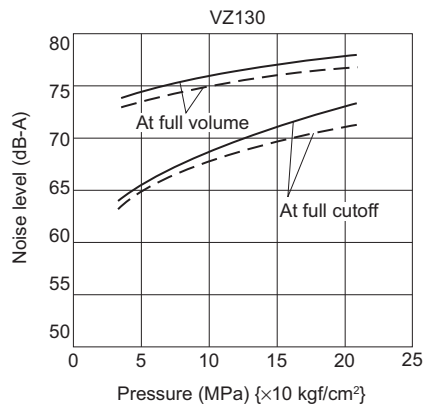
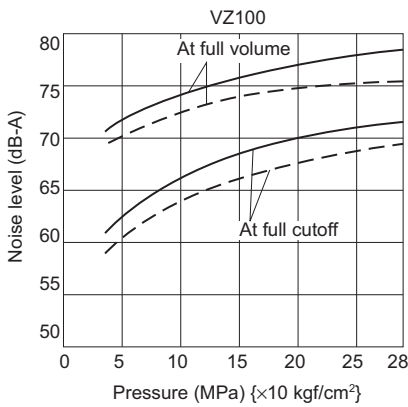
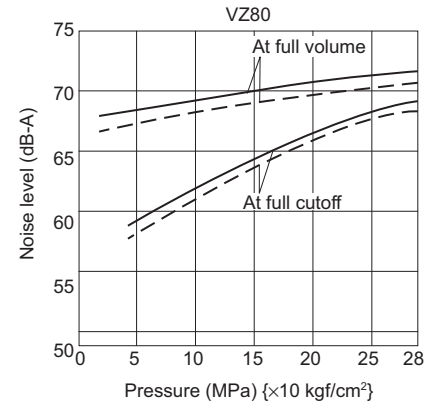
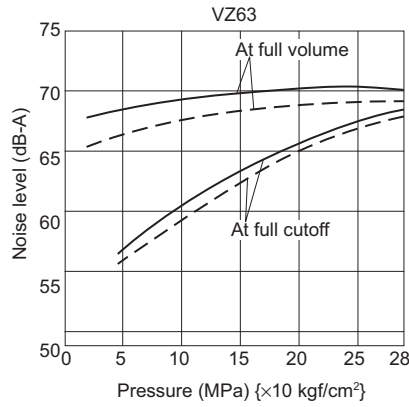
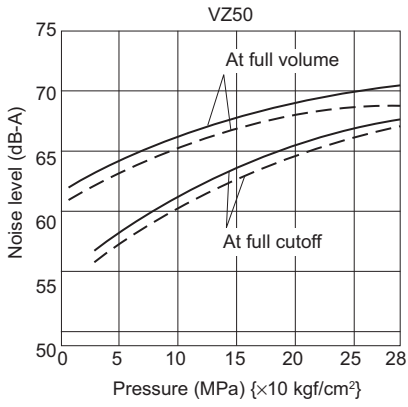
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## Noise characteristics (JIS B 8350, measuring position: 1 m from pump front)

Input rotational speed	Fluid used	Oil temperature
1800 min <sup>-1</sup> 1500 min <sup>-1</sup>	Equivalent to ISO VG32	50°C

--- 1500 min<sup>-1</sup>

— 1800 min<sup>-1</sup>



# Contact Details

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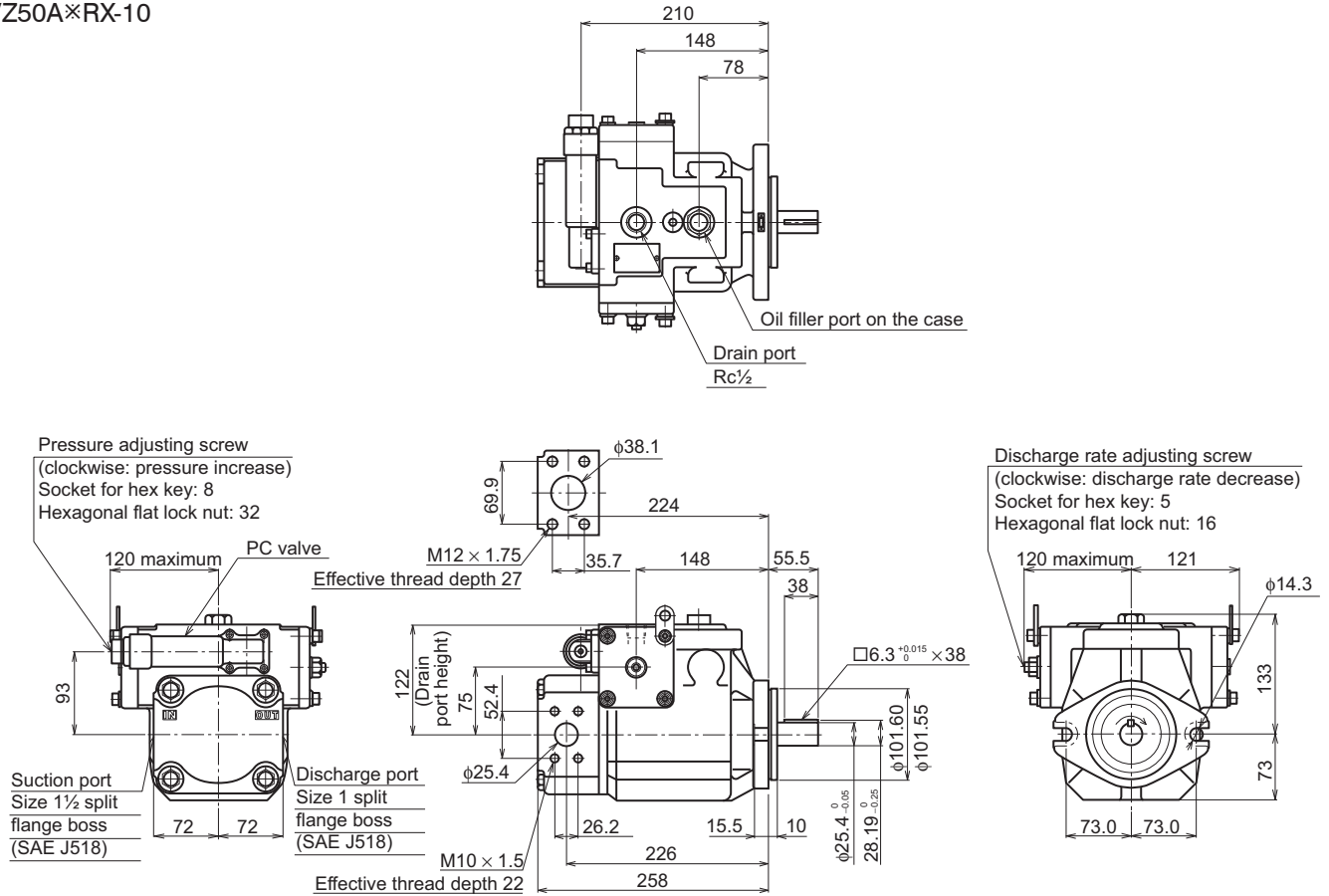
Internet

<http://www.daikinpmc.com/en/>

For latest information, PDF catalogs and operation manuals

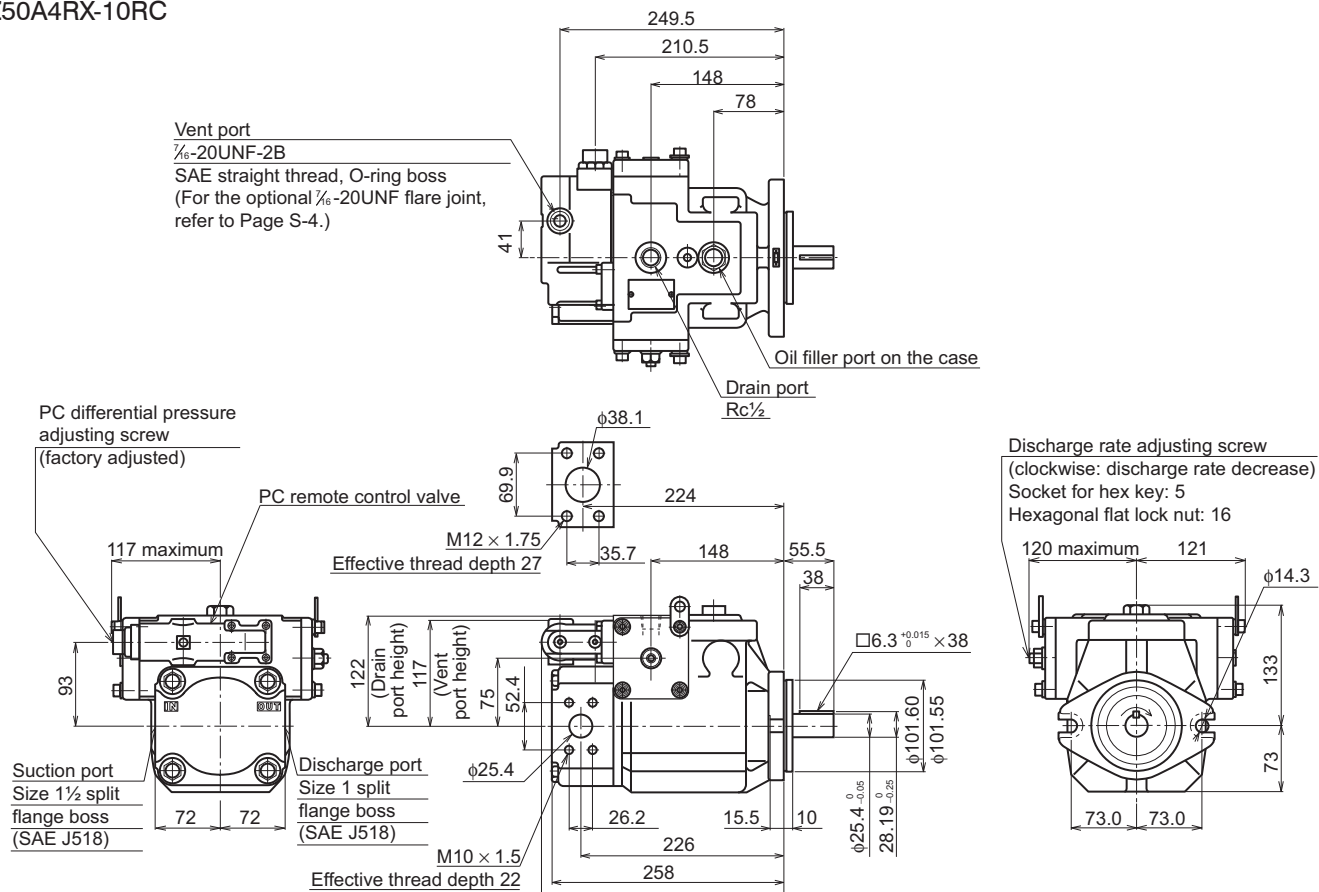
## External dimension diagram

### VZ50A×RX-10



Mass: 40 kg

### VZ50A4RX-10RC



Mass: 40.5 kg

## Contact Details

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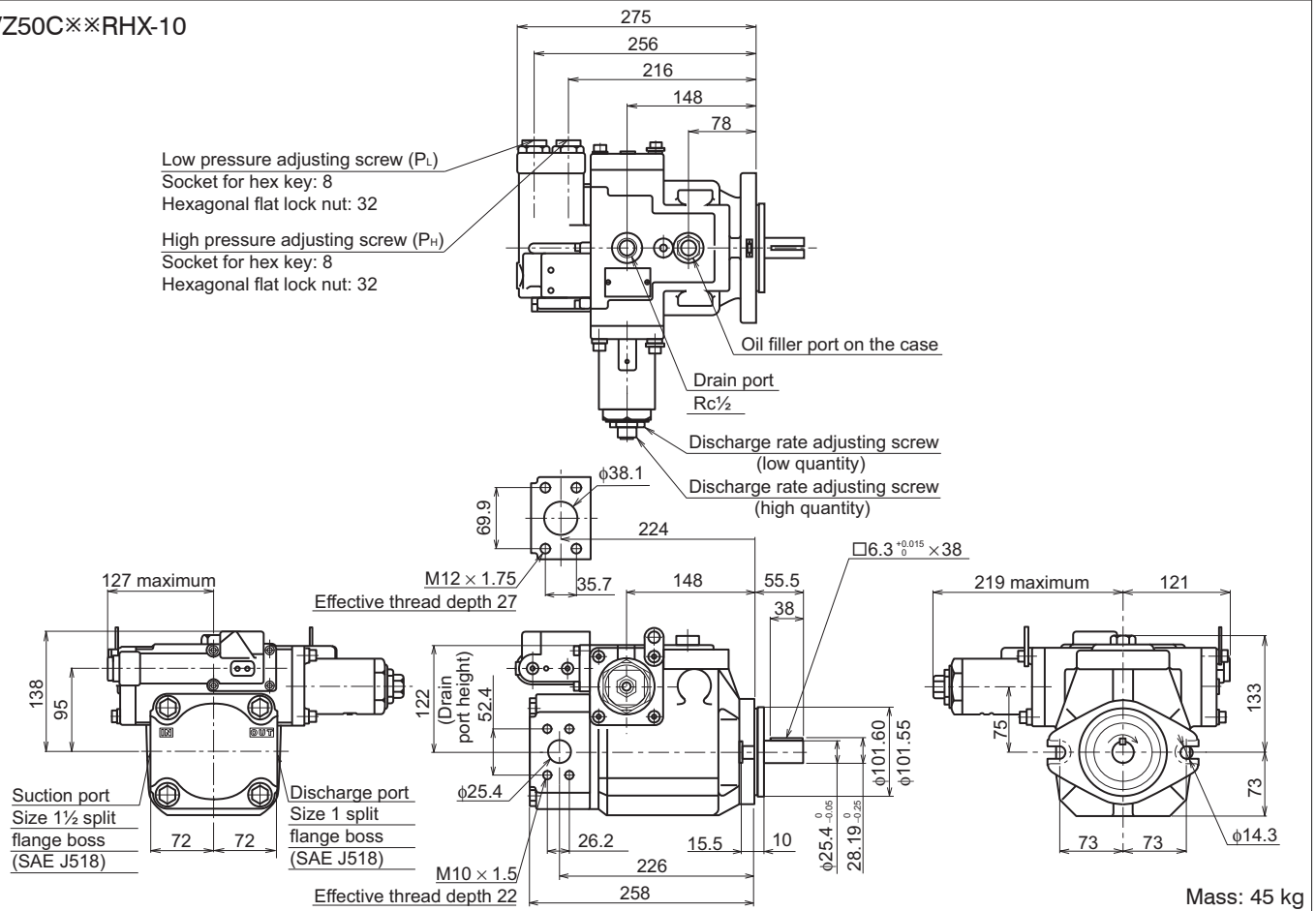
Internet

<http://www.daikinpmc.com/en/>

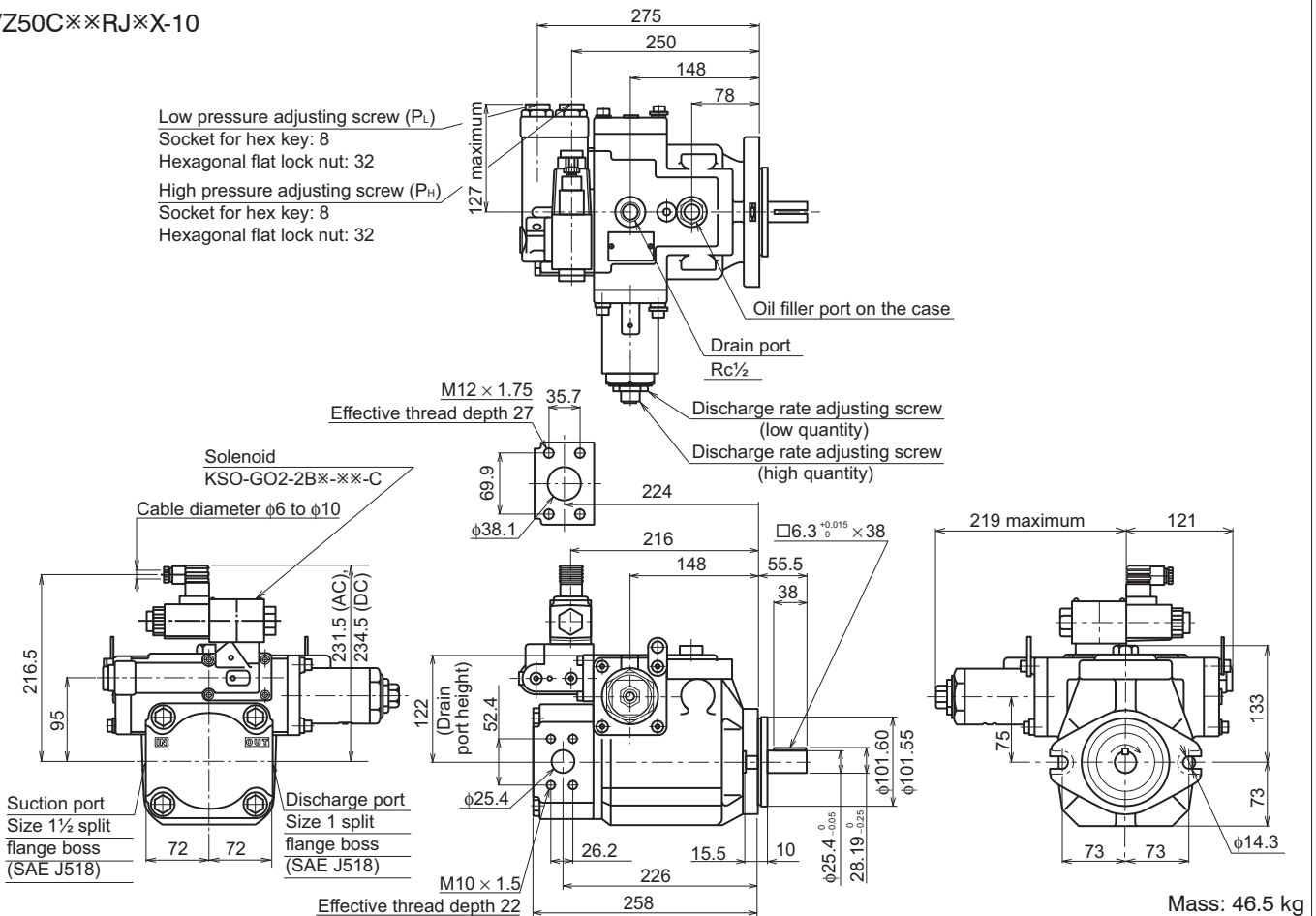
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## External dimension diagram

### VZ50C\*\*RHX-10

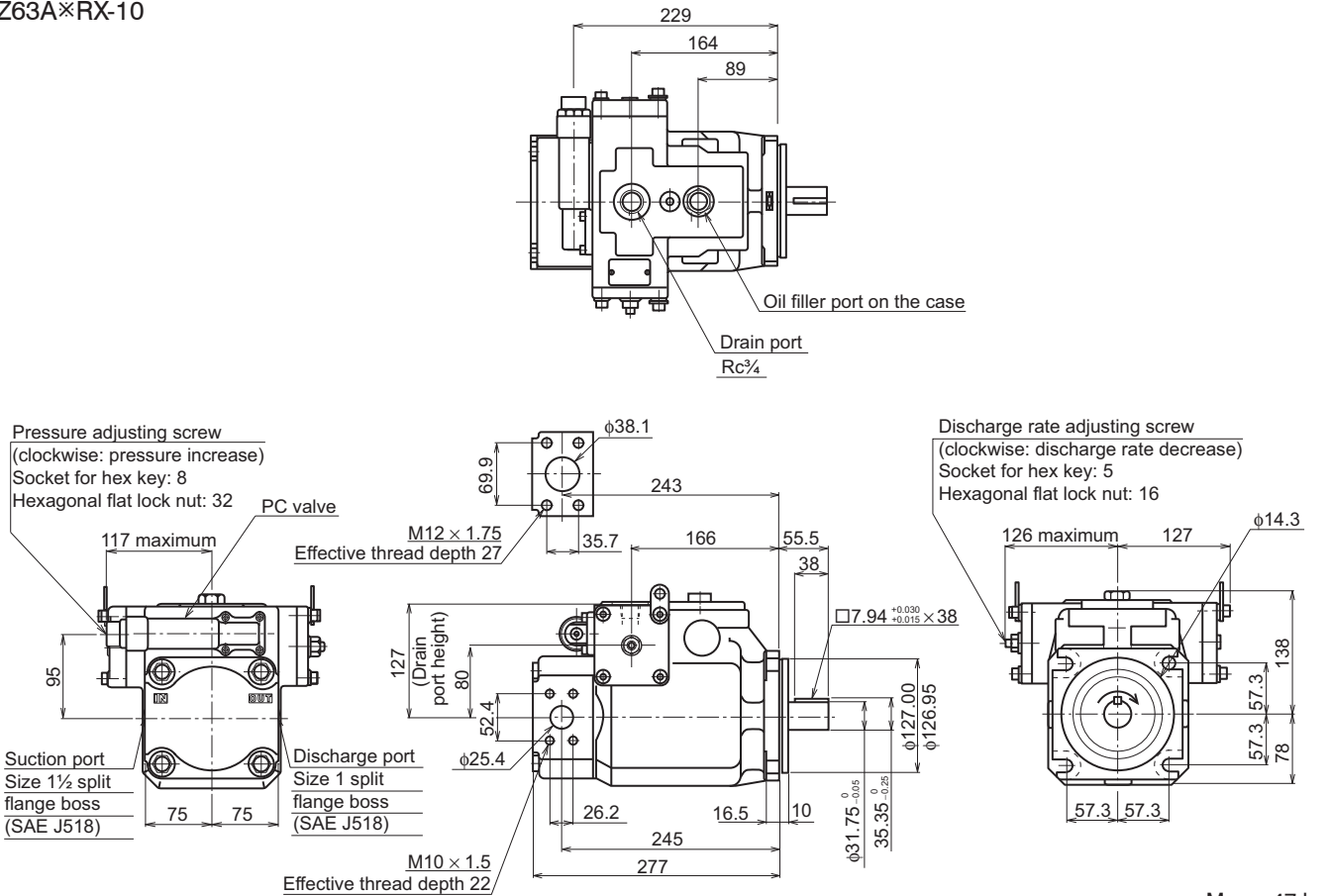


### VZ50C\*\*RJ\*\*X-10

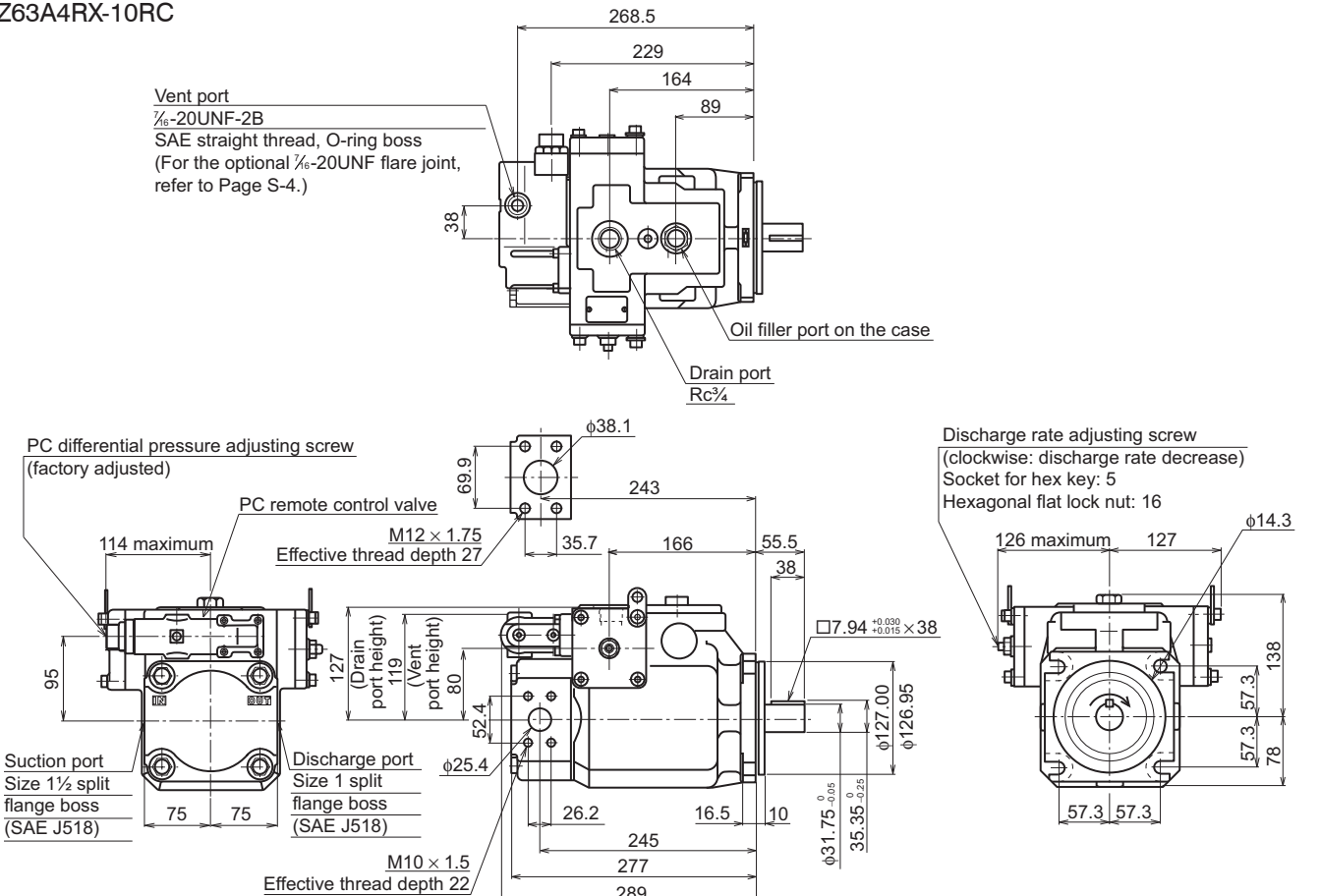


## External dimension diagram

### VZ63A×RX-10



### VZ63A4RX-10RC



# Contact Details

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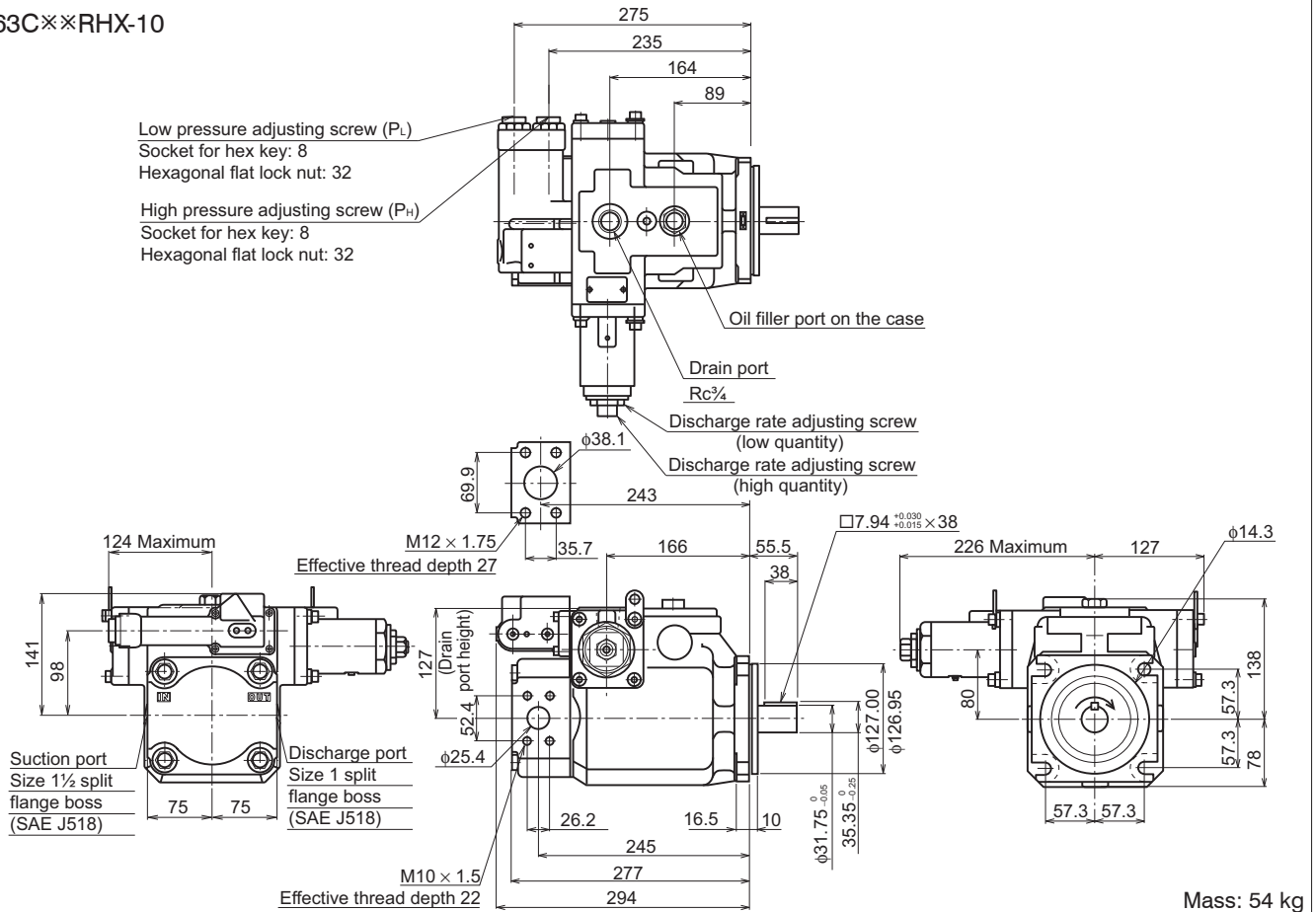
Internet

<http://www.daikinpmc.com/en/>

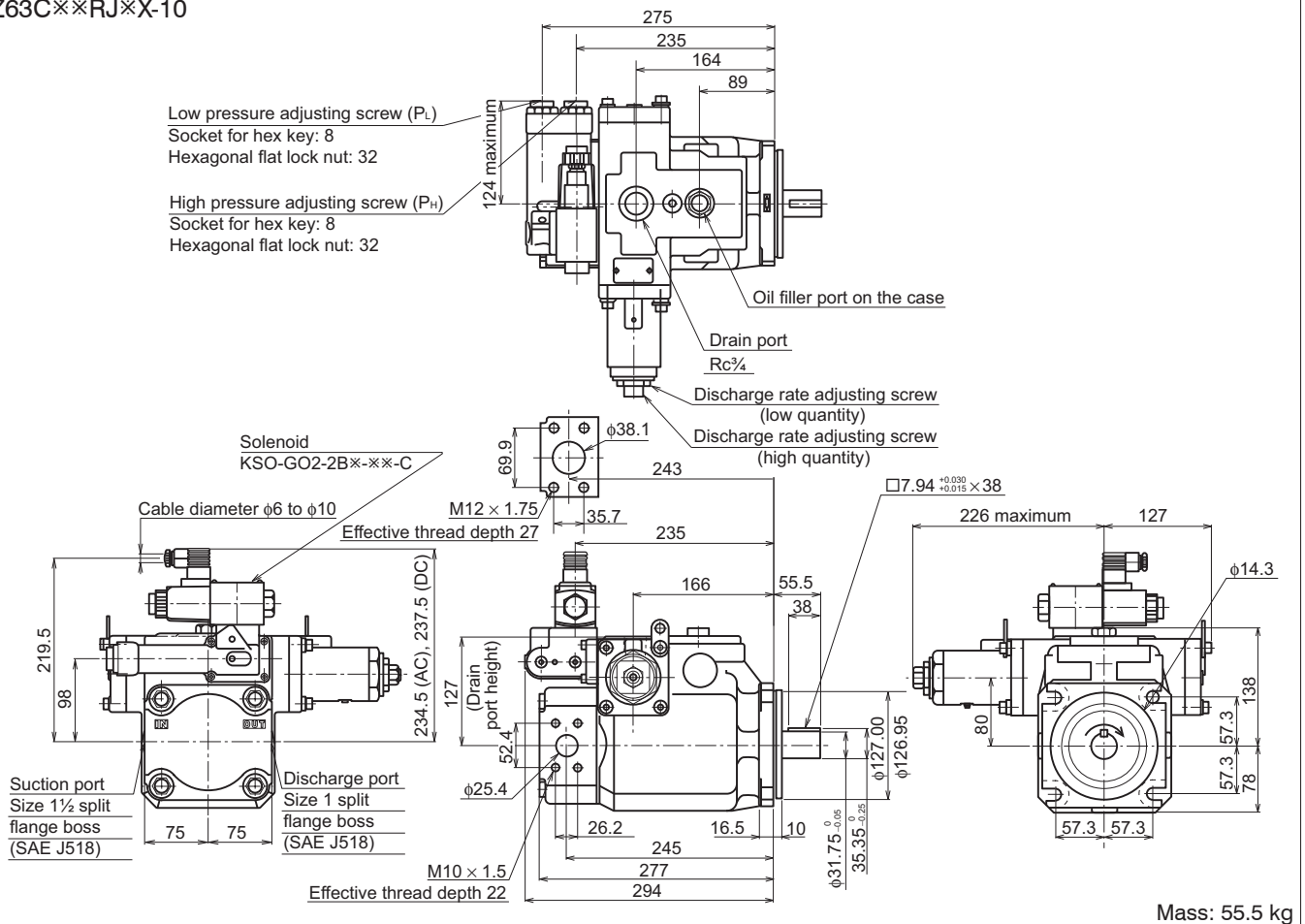
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## External dimension diagram

### VZ63C\*\*RHX-10



### VZ63C\*\*RJ\*\*X-10



**Contact Details**

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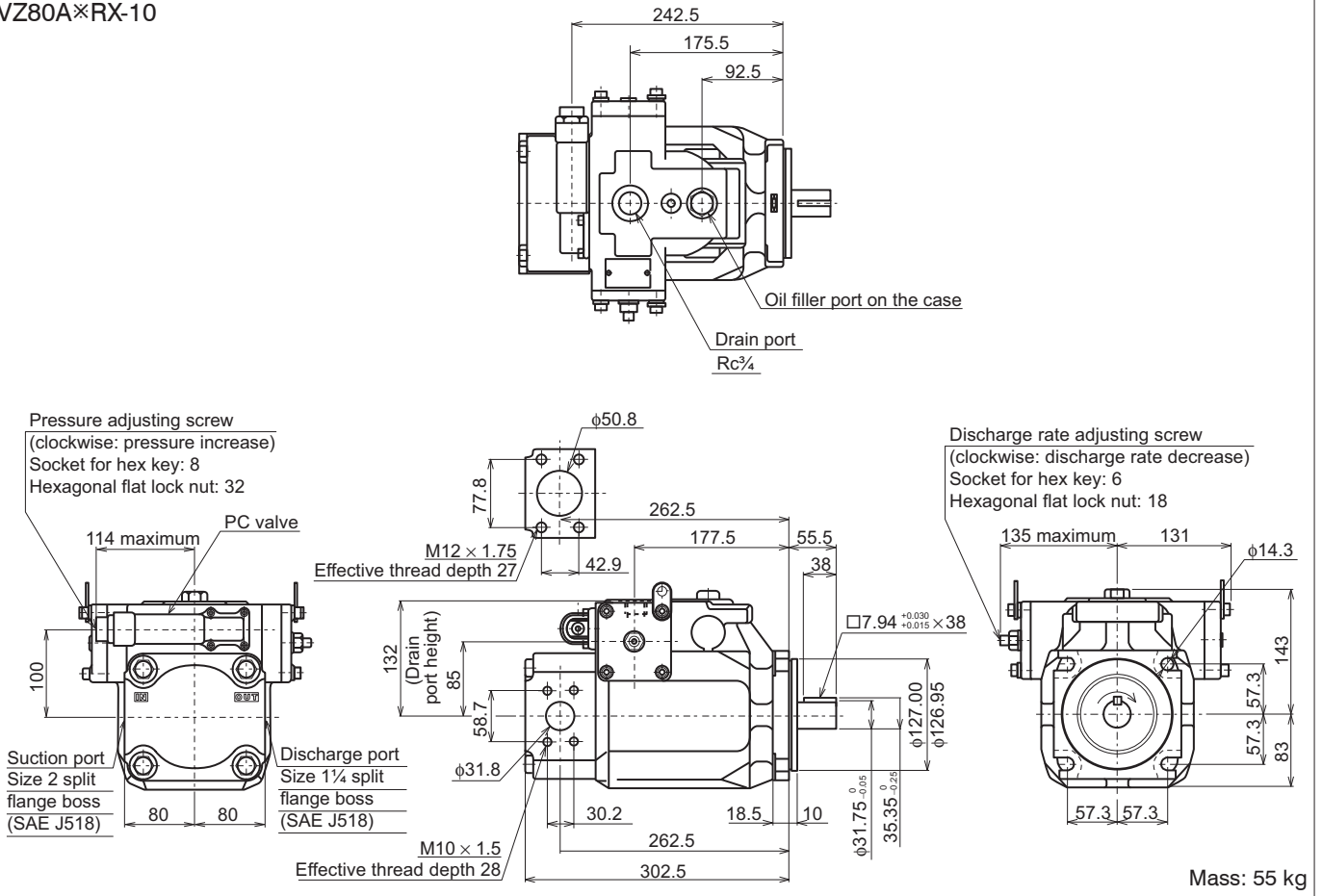
Internet

<http://www.daikinpmc.com/en/>

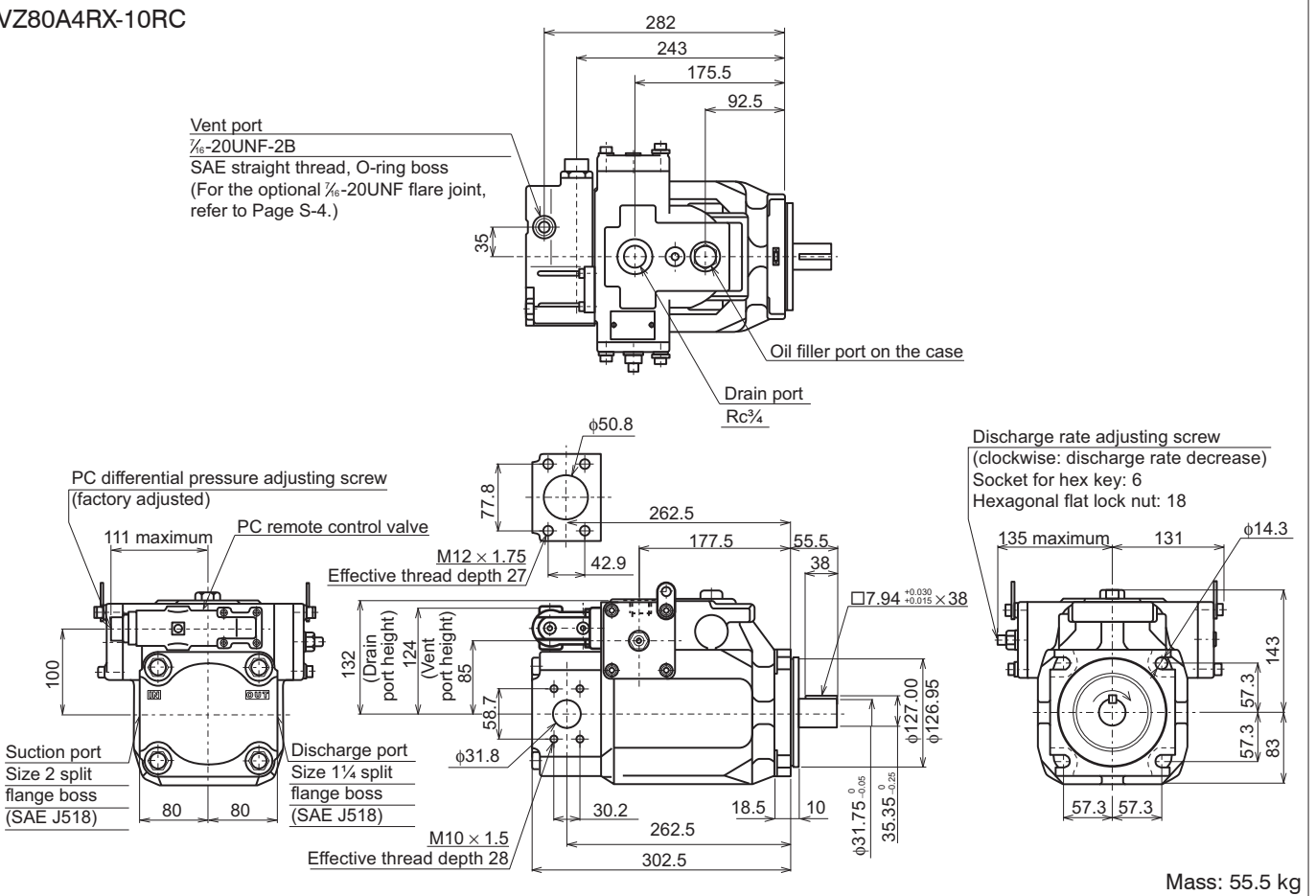
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## External dimension diagram

### VZ80A×RX-10



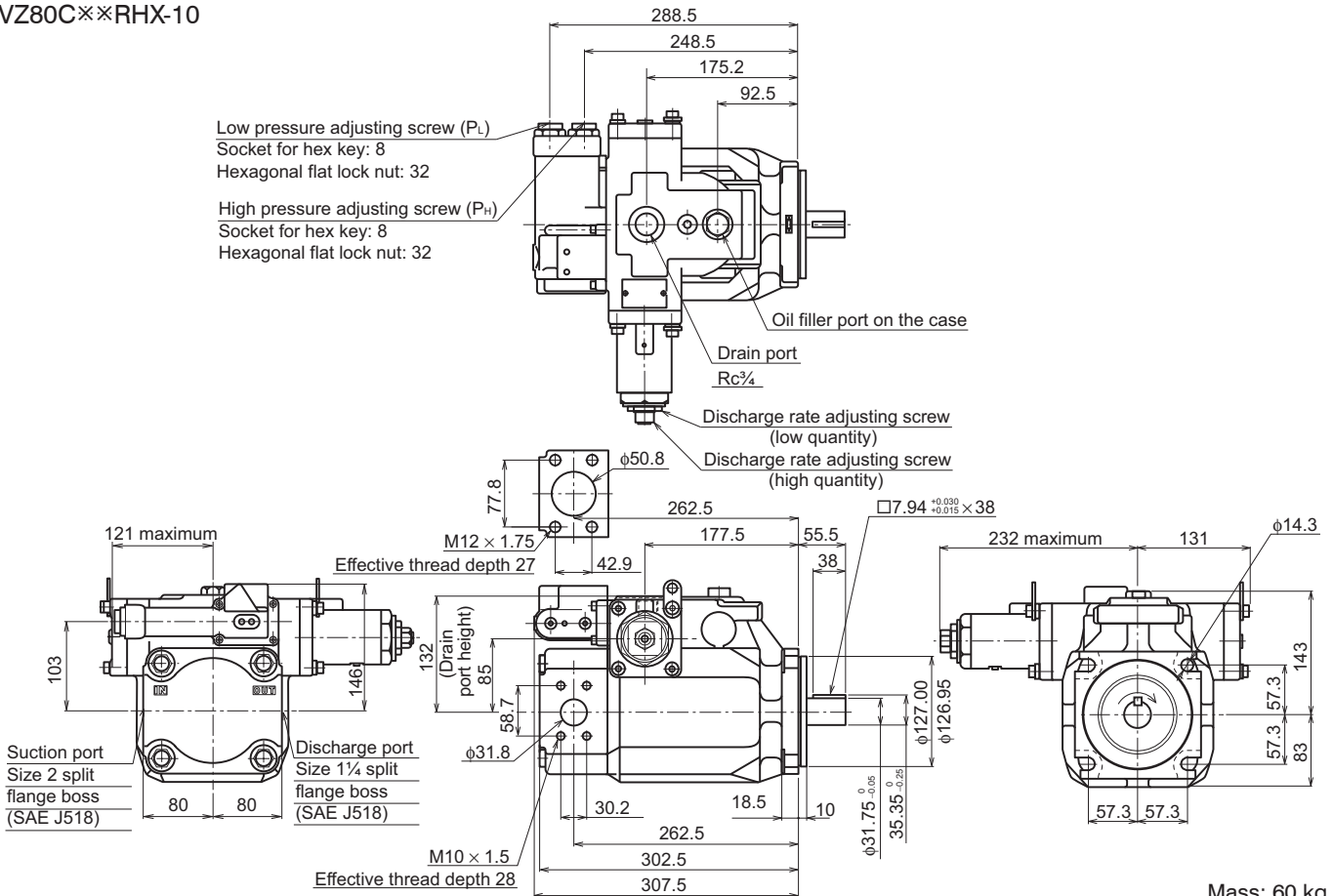
### VZ80A4RX-10RC



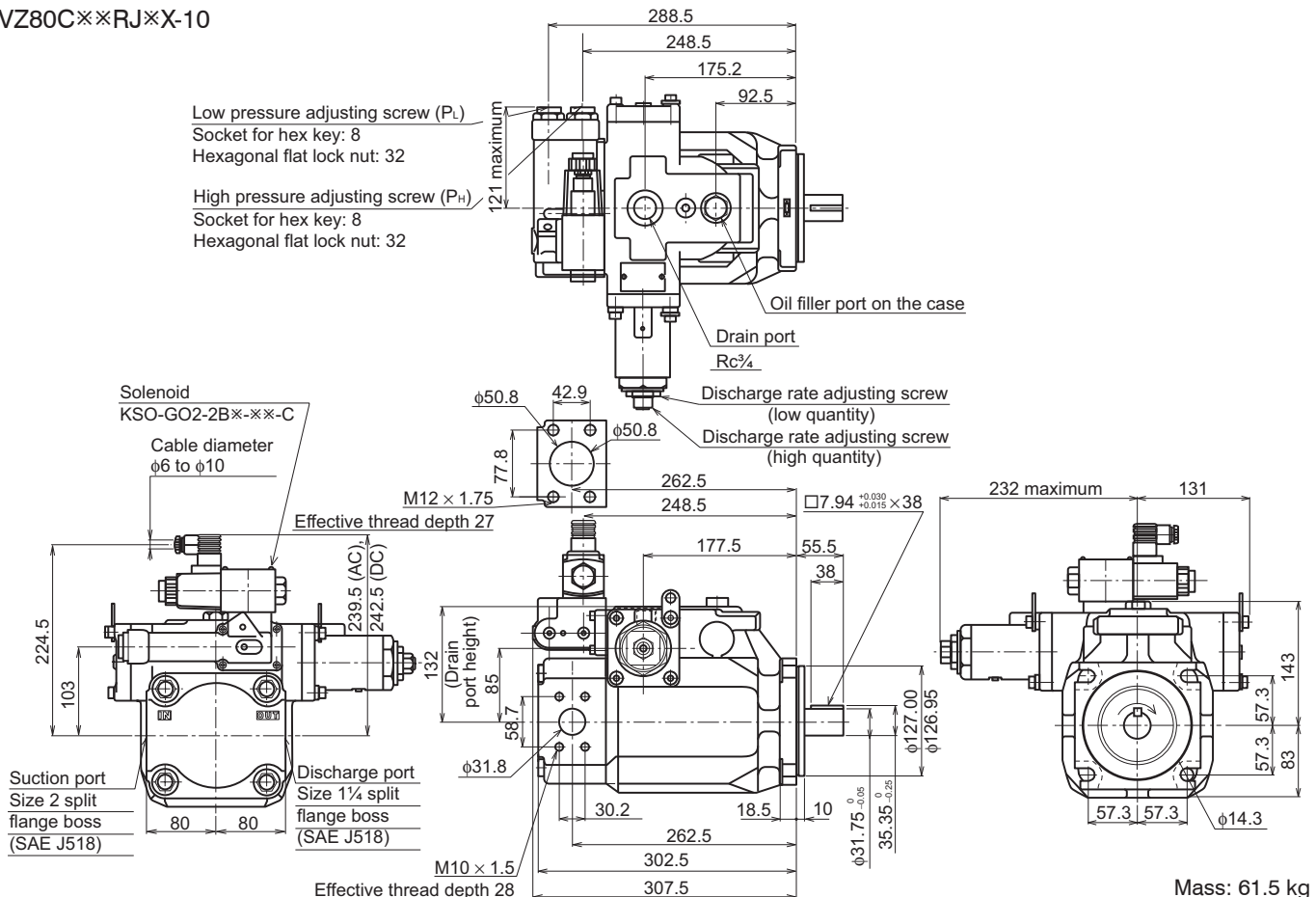


**External dimension diagram**

**VZ80C\*\*RHX-10**

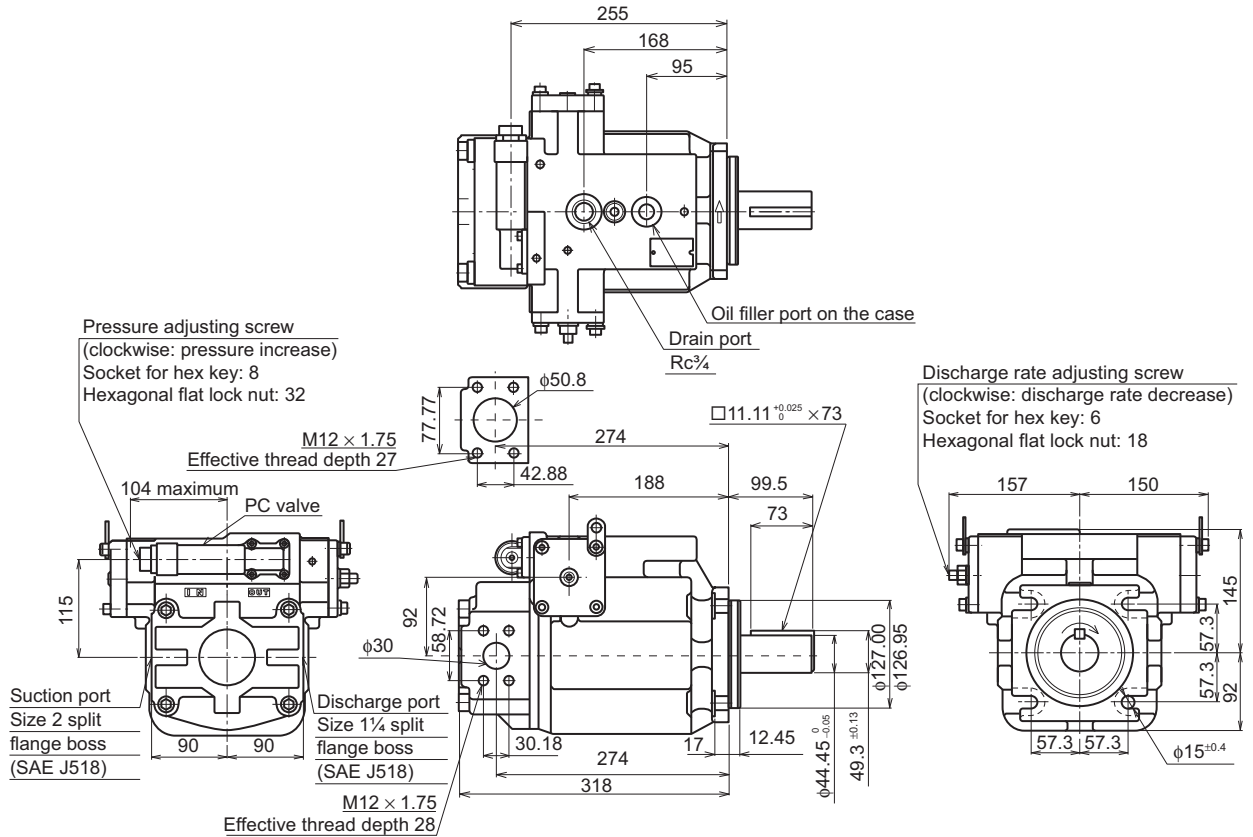


**VZ80C\*\*RJ\*\*X-10**

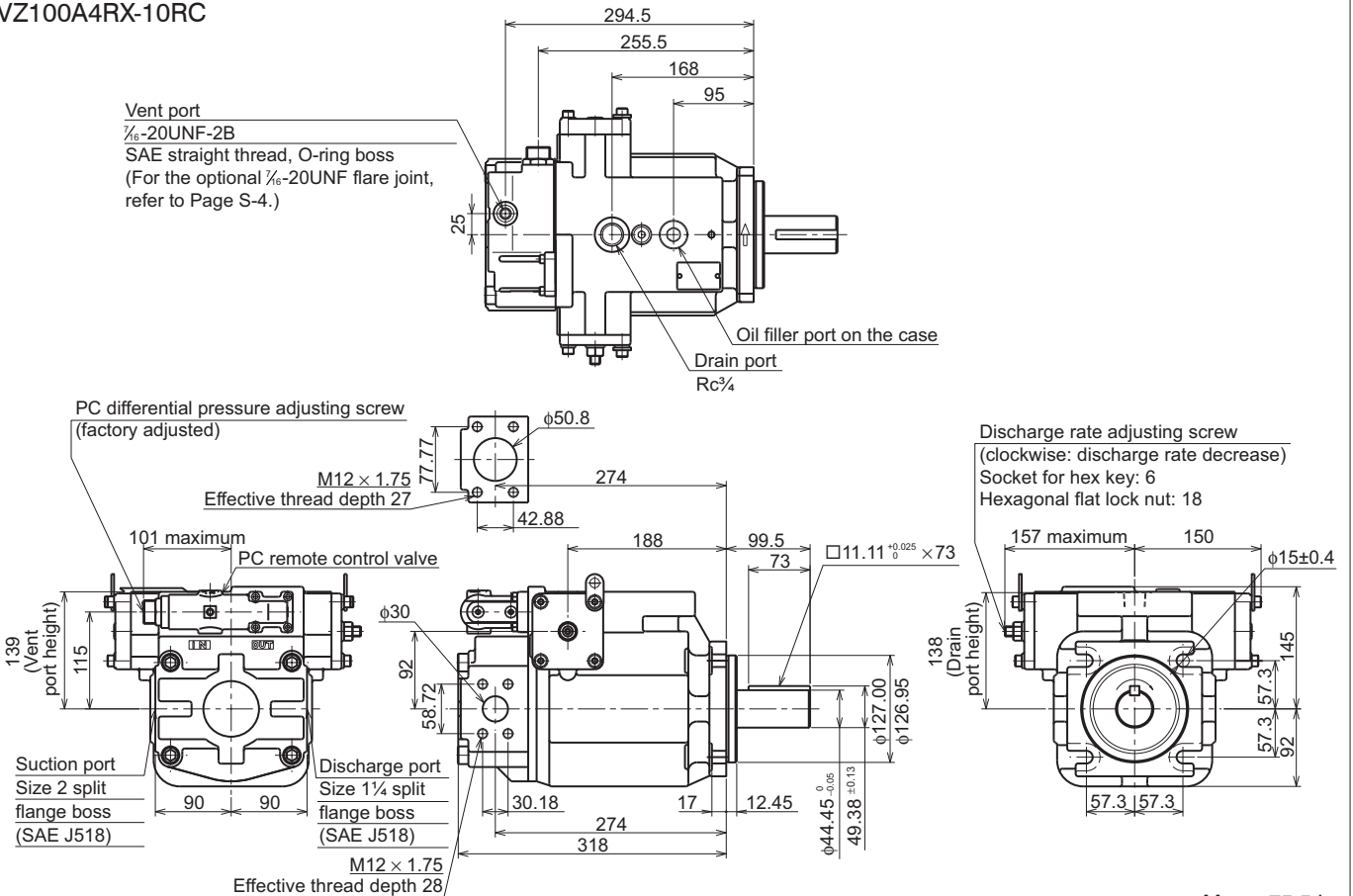


## External dimension diagram

### VZ100A×RX-10



### VZ100A4RX-10RC



# Contact Details

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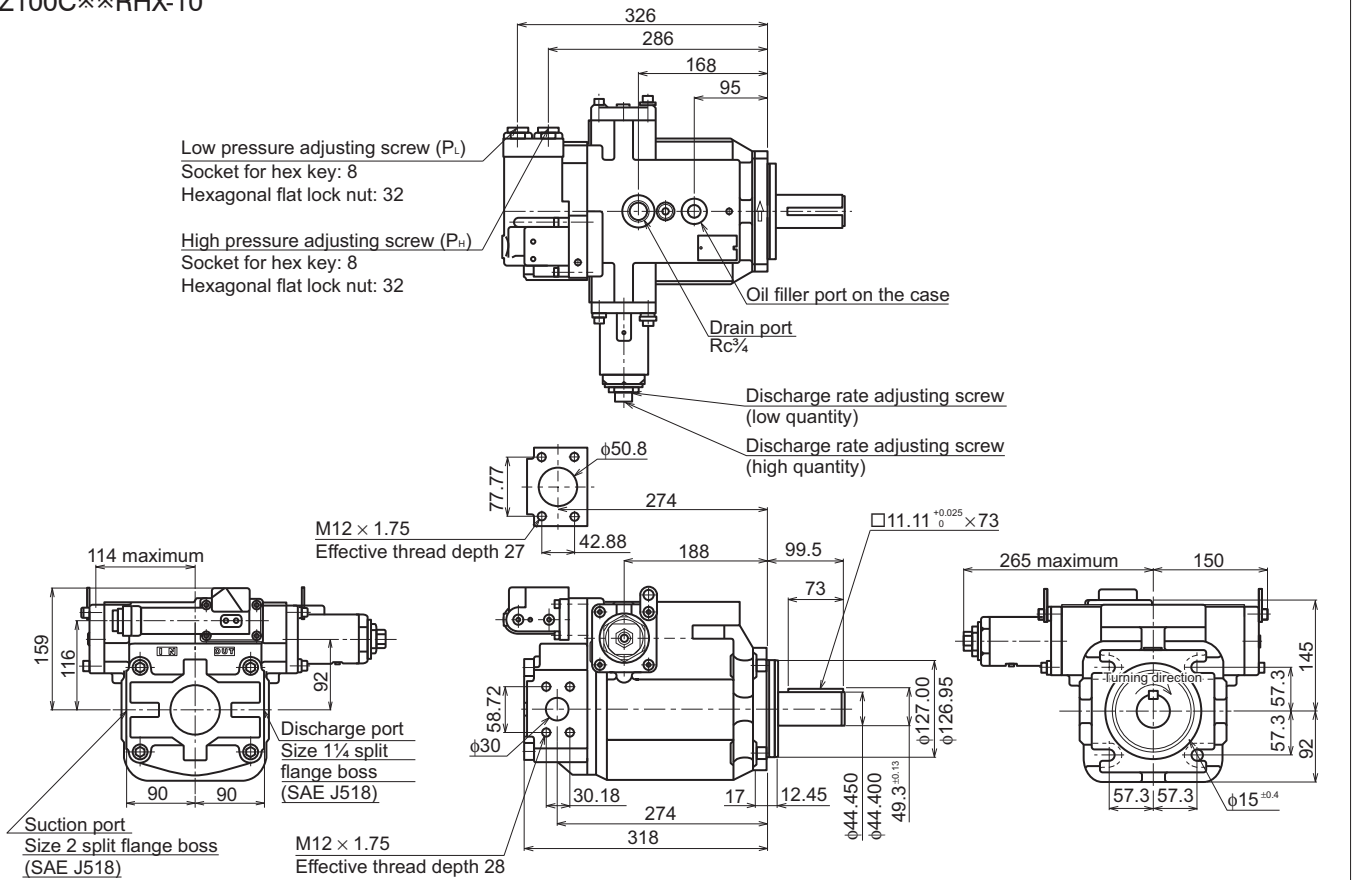
Internet

<http://www.daikinpmc.com/en/>

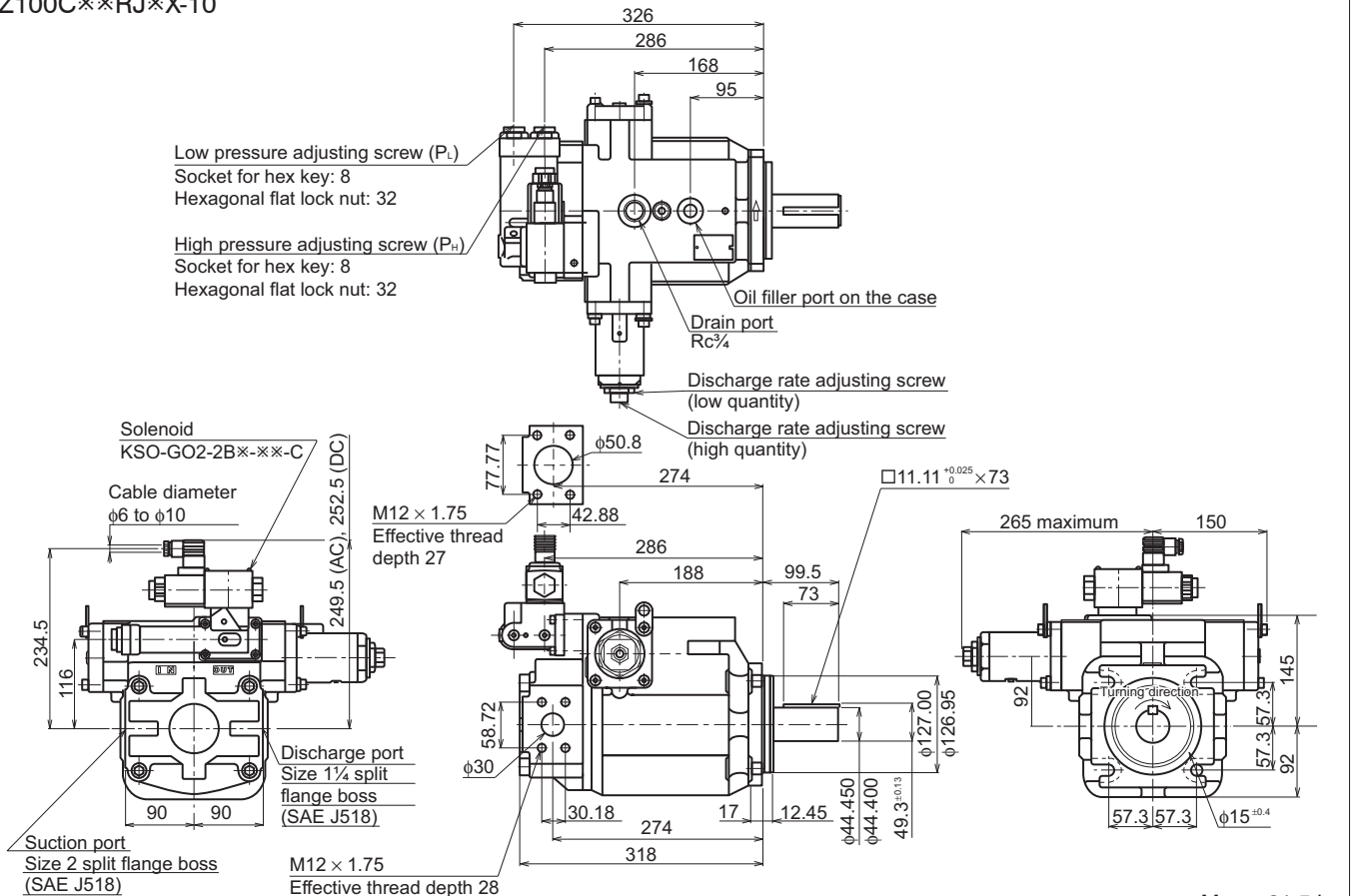
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## External dimension diagram

### VZ100C※※RHX-10



### VZ100C※※RJ※X-10



## Contact Details

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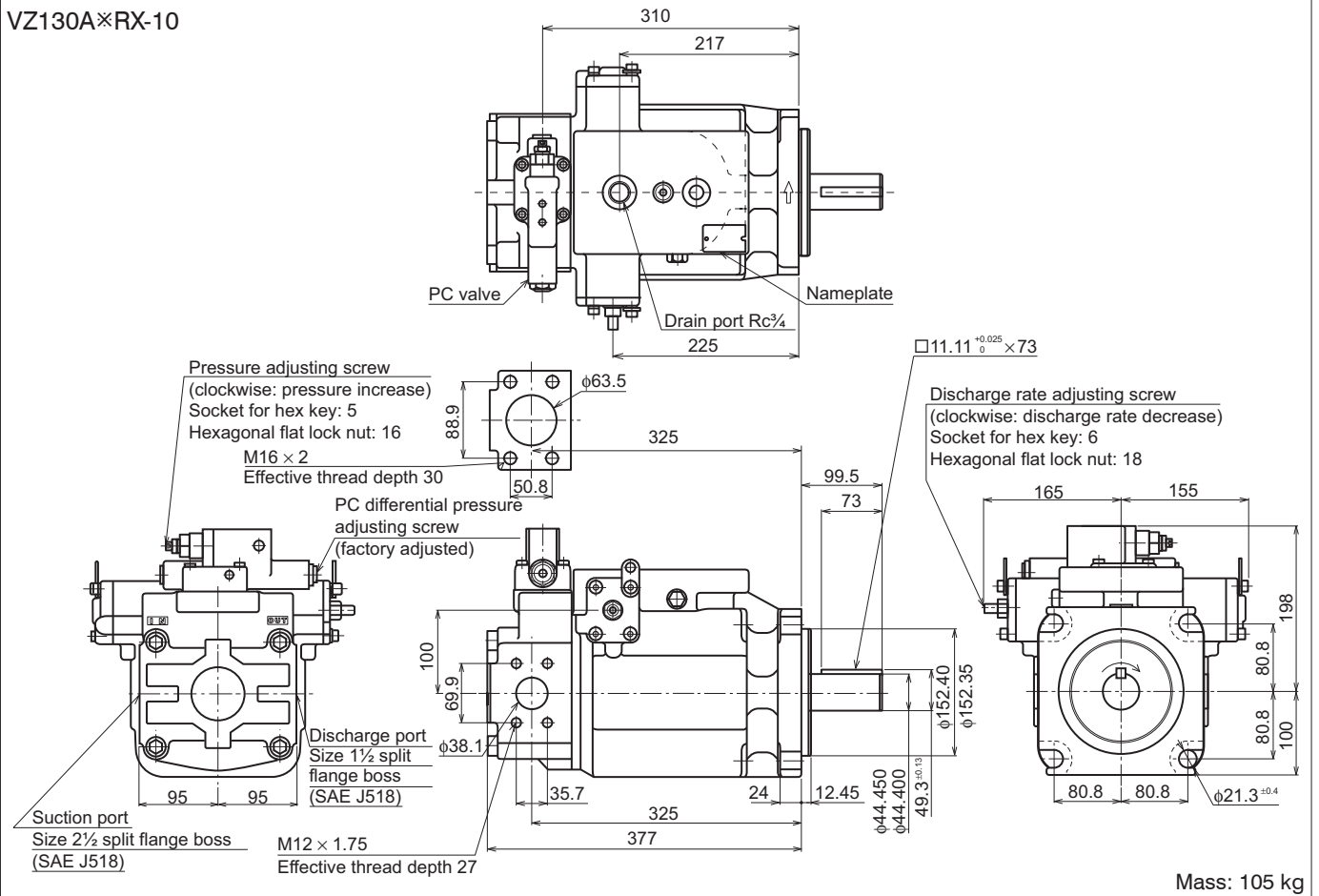
Internet

<http://www.daikinpmc.com/en/>

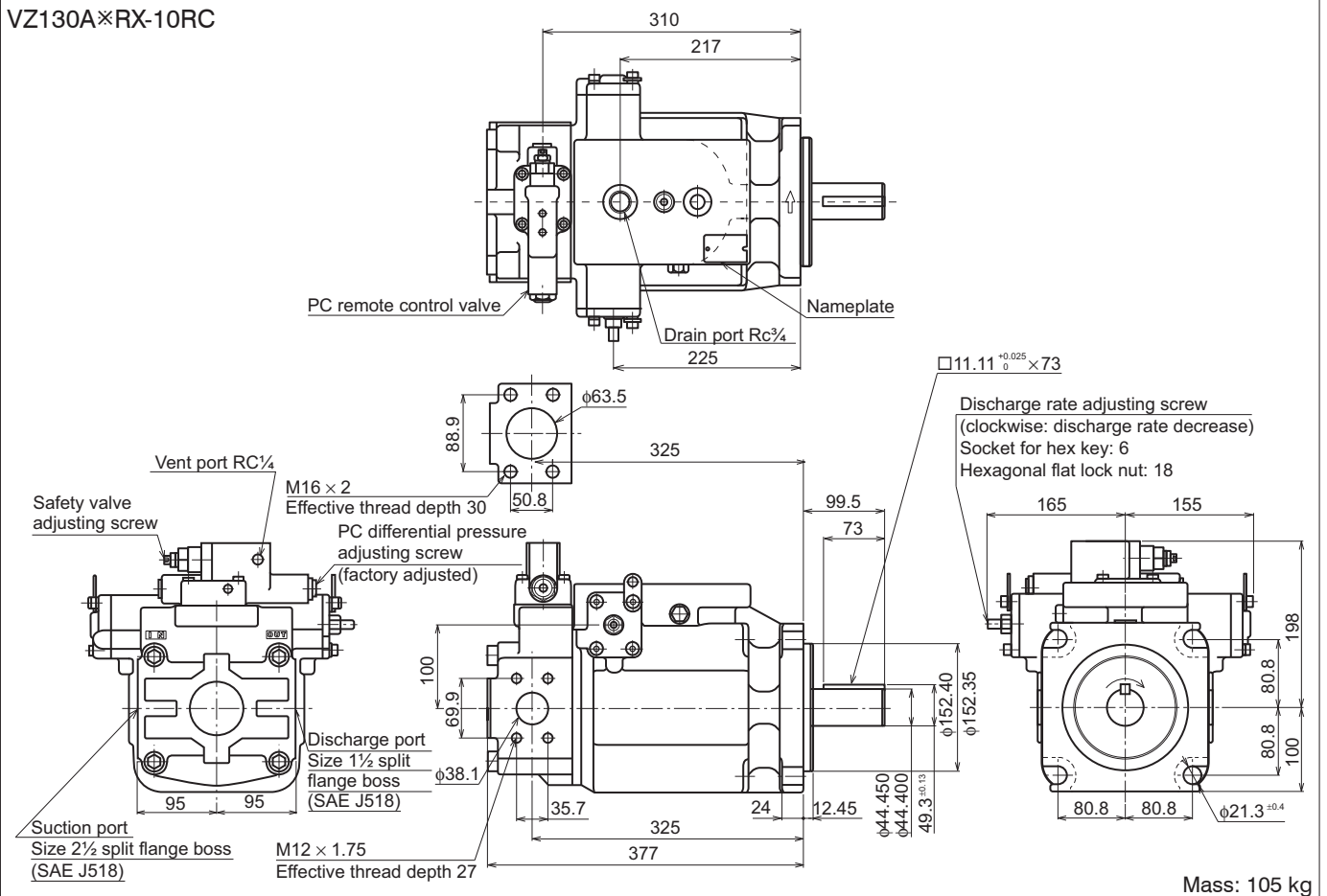
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## External dimension diagram

VZ130A×RX-10



VZ130A×RX-10RC



# Contact Details

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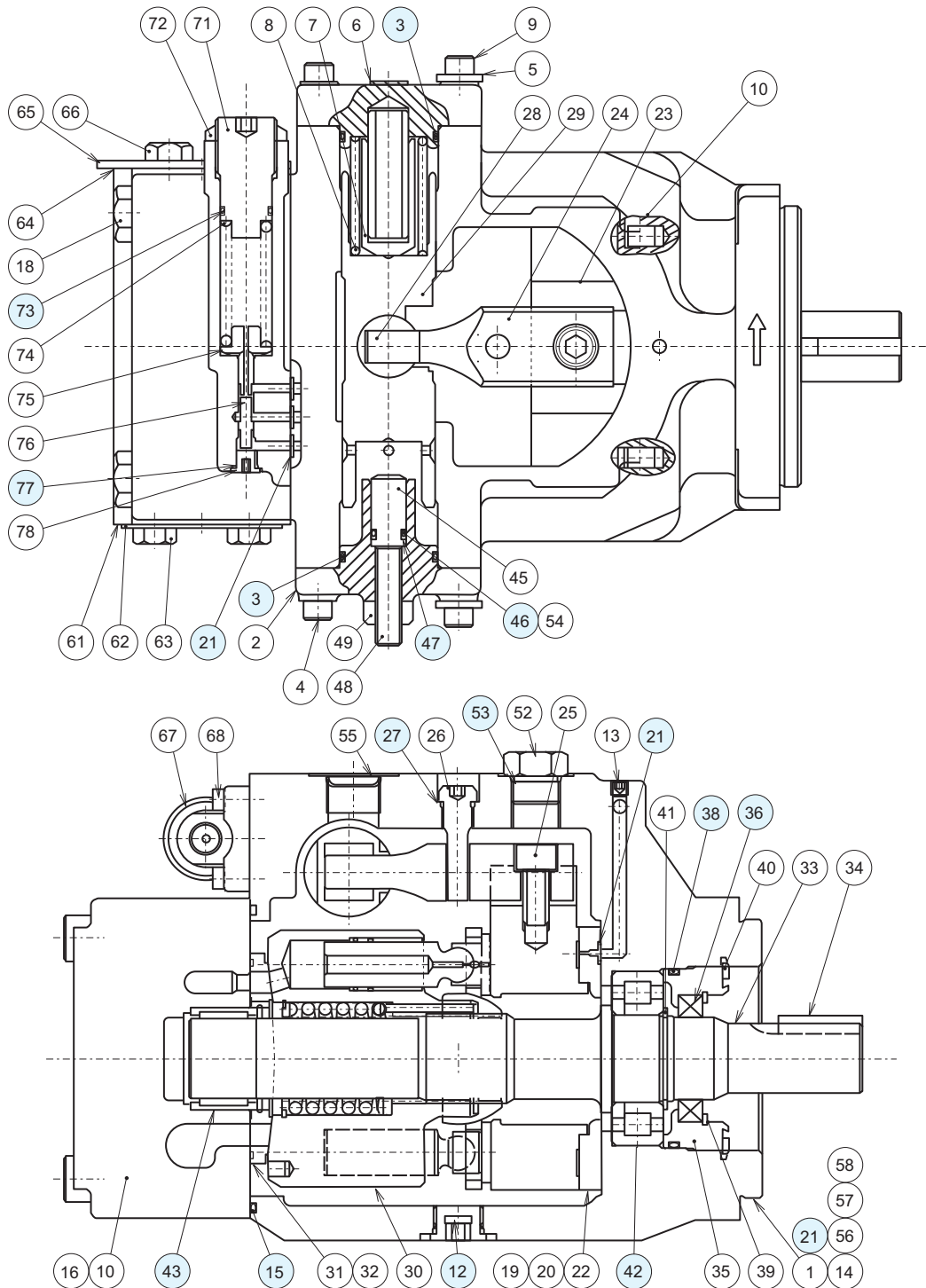
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## Sectional structural diagram

VZ80



Part No.	Part name	VZ130	VZ100	VZ80	VZ63	VZ50	Material	Quantity	
		Specifications							
3	O-ring	JIS B 2401 1B-G45		JIS B 2401 1B-G40	JIS B 2401 1B-G35		NBR	2	
12	O-ring	AS568-910 (HS90)				AS568-908 (HS90)		NBR	1
15	O-ring	JIS B 2401 1A-G160	JIS B 2401 1A-G150	JIS B 2401 1B-G135	JIS B 2401 1B-G125	JIS B 2401 1B-G120	NBR	1	
21	O-ring	JIS B 2401 1B-P7					NBR	6	
27	O-ring	AS568-908 (HS90)					NBR	1	
36	Oil seal	TCN487012		TCV385811		TCV284811	NBR	1	
38	O-ring	AS568-238 (HS70)		AS568-234 (HS70)			NBR	1	
42	Cylinder roller bearing	NUP2210G1C3	NUP2210G1C3	NUP2208C3	NUP208C3	NUP2206C3		1	
43	Needle bearing	NK43/30RV1+IR384330C	NK40/30RV1+IR354030C	NK37/30RV1	NK32/30RV2	NK29/30RV1		1	
46	O-ring	JIS B 2401 1B-P12			JIS B 2401 1B-P10A		NBR	1	
47	Backup ring	JIS B 2407 T2P12			JIS B 2407 T2P10A			1	
53	O-ring	AS568-910 (HS90)					NBR	1	
73	O-ring	JIS B 2401 1B-P20					NBR	1	
77	O-ring	AS568-903 (HS90)					NBR	1	