

# DDG440 Series

Cast-iron body / Mono-body block



C621-E018A

## ◆ Model number

More than minimum order 30 units. (300 units a year)

**DDG440 - 27 18 F 1 H 1 - L XXX**

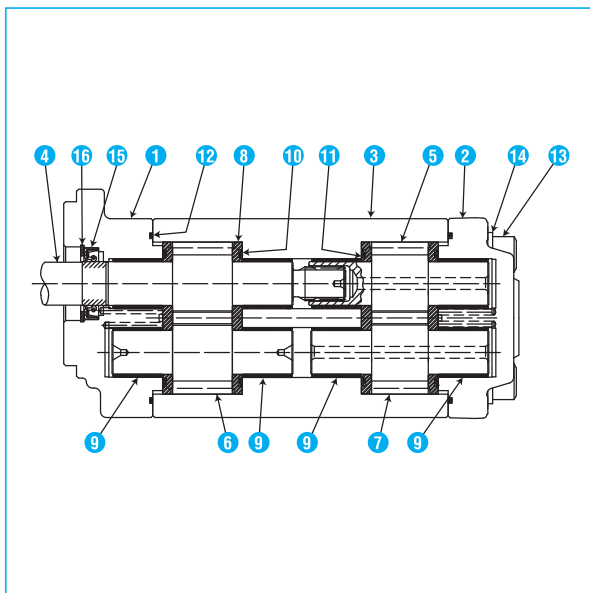
①      ②      ③      ④      ⑤      ⑥      ⑦      ⑧      ⑨      ⑩

- |   |  |   |  |
|---|--|---|--|
| ① Series number<br>DDG440 series  | ④ No.2 Pump Size   | ⑦ Mounting<br>H : horizontal 2 bolts                              | ⑨ Rotation viewing from shaft end<br>L = counterclockwise<br>R = clockwise |
| ② Mounting spigot diameter<br>- : $\phi 82_{-0.036}^{0.090}$<br>A : $\phi 82.55_{-0.06}^{0.06}$ | ⑤ Position of ports<br>F : side ports (single suction port)                  | ⑧ Shaft end<br>1 : SAE Spline 13 teeth<br>5 : SAE Spline 10 teeth | ⑩ Code number in 3 figures   |
| ③ No.1 Pump Size  | ⑥ Port configuration<br>1 : flange port<br>2 : G screw thread<br>9 : special |   |  |

## ◆ Specifications

	Size	Displacement		Rated pressure			Max. peak pressure			Speed min <sup>-1</sup>	
		cm <sup>3</sup>	in <sup>3</sup>	MPa	bar	psi	MPa	bar	psi	MIN.	MAX.
No.1 Pump	16	16.0	0.976	25.0	250	3625	30.0	300	4350	500	3000
	18	18.1	1.104								
	20	20.1	1.226								
	23	23.4	1.427								
	25	24.7	1.507								
	27	27.5	1.678								
	30	29.5	1.800								
No.2 Pump	8	8.2	0.500	25.0	250	3625	30.0	300	4350	500	3000
	10	10.3	0.628								
	12	12.4	0.756								
	14	13.6	0.830								
	16	16.0	0.976								
	18	18.1	1.104								

## ◆ Typical assembly



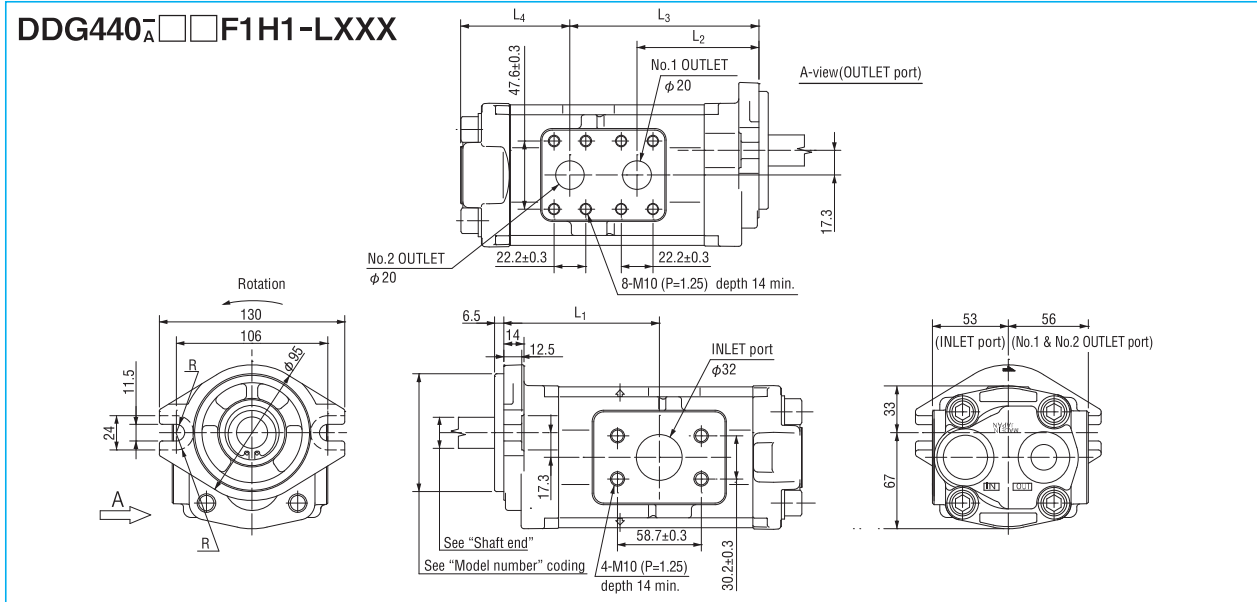
Item No.	Name	QTY	Material
①	Front cover	1	Aluminum alloy
②	Rear cover	1	Aluminum alloy
③	Body	1	Cast iron
④	No.1 drive gear	1	Alloy steel
⑤	No.2 drive gear	1	Alloy steel
⑥	No.1 driven gear	1	Alloy steel
⑦	No.2 driven gear	1	Alloy steel
⑧	Side plate	4	Special alloy steel
⑨	Bush	8	Special alloy steel
⑩	Gasket	4	Nitrile rubber
⑪	Back-up	4	Synthetic resin
⑫	Gasket	2	Nitrile rubber
⑬	Bolt	4	Alloy steel
⑭	Washer	4	Carbon steel
⑮	Oil seal	1	Nitrile rubber
⑯	Retainer ring	1	Carbon steel

NOTES : "QTY" shows the amount per one

# DDG440 Series Cast-iron body / Mono-body block

## ◆ Outline dimensions

dimensions in mm



NOTE 1. Figure shown indicated counterclockwise rotation "L" viewing from shaft end. Clockwise rotation "R" is mirror image of this.  
2. Unless otherwise specified, tolerance on dimension are  $\pm 1.0$  mm.

Size	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
8				70.0
10				76.5
12				79.0
14				80.5
16	94.8	71.3	118.3	83.5
18	97.3	73.8	120.8	86.0
20	99.8	76.3	123.3	
23	103.8	80.3	127.3	
25	105.3	81.8	128.8	
27	108.8	85.3	132.3	
30	111.3	87.8	134.8	
32	115.3	91.8	138.8	

## ◆ Combination of double pump

### 1. Limitation in maximum delivery pressure due to PQ value.

Calculate the PQ value, using the following equation, and use the pump at the pressure range lower than the value shown in Table-1.

Input shaft	$PQ1 > P1 \times Q1 + P2 \times Q2$
Intermediate joint	$PQ2 > P2 \times Q2$

P1, P2 : Delivery pressure (MPa) of No.1, No.2 pump.

Pr1, Pr2 : Rated pressure (MPa) of No.1, No.2 pump.

Q1, Q2 : Displacement volume (cm<sup>3</sup>) of No.1, No.2 pump.

·P1 < Pr1 ·P2 < Pr2

Table-1 Allowable PQ value

	PQ1 Input shaft	PQ2 Intermediate joint
SAE spline 13T	1471	638
SAE spline 10T	638	638

### 2. Limitation in maximum rotating speed due to suction flow.

It is advised to use the pump at the rotating speed lower than the value, which is satisfied with the equation in Table-2.

Table-2 Limitation in maximum rotating speed

For single suction port	
$\phi 32$	$N \times (Q1 + Q2) \div 1000 < 143$ (L/min)
N: Maximum allowable rotating speed (min <sup>-1</sup> ).	

## ● Shaft end

SAE Spline (Some dimensions are different form SAE standard.)	
SAE Spline 10 teeth	SAE Spline 13 teeth
<p>No. of teeth : 10 D.P. : 16/32 Pressure angle : 30° Over pin dia. : 20.263~ 20.193 Pin dia. : φ3.048</p>	<p>No. of teeth : 13 D.P. : 16/32 Pressure angle : 30° Over pin dia. : 24.891~ 24.819 Pin dia. : φ3.048</p>

Shimadzu Corporation Fluidics Systems Division

The appearances and specifications are subject to change for reasons of improvement without notice.