




B

VANE PUMPS

Pump Type	Graphic Symbols	Output Flow at 1200 r/min at No-Load L/min								Maximum Operating Pressure MPa	Page			
		1	2	5	10	20	50	100	200			500	1000	
Fixed Displacement	Single Pumps						50T	150T					7	B-5
	"PV2R" Series Single Pumps						PV2R1	PV2R2, PV2R3, PV2R4					21	B-6
	"PV2R" Series Double Pumps					Small Volume	(PV2R1)	(PV2R2), (PV2R3)					21	B-18
						Large Volume	(PV2R2), (PV2R3), (PV2R4)							

● The following pumps can also be supplied.

"PV2R4A" Single Pumps

"PV2R24A/PV2R34A" Double Pumps

Consult Yuken for details.

Caution :

In the case of Water Glycol fluid, a slight oil leak occurs from the shaft seal part.

(Criterion : 500ml / 6 months of oil leakages.)

Please install a tray appropriate capacity on the pump-base.

Hydraulic Fluids

Type of Hydraulic Fluids

Any type of hydraulic fluids listed in the Table 1 below can be used. However, the specifications of the pumps such as maximum pressure and maximum pump speed may be changed according to the type of hydraulic fluids to be used.

For details, please refer to the specifications of the pump concerned.

Hydraulic Fluids

(Table 1)

Type of Fluids		Single Pumps	"PV2R" Series Single Pumps "PV2R" Series Double Pumps
Petroleum Base Oils		Use anti-wear type oils or R & O (Rust and Oxidation inhibitor) type oils (equivalent to ISO VG32 or 46)	
Synthetic Fluids		Use phosphate ester type fluids. When phosphate ester type fluid is used, prefix "F-" to the model number because the special seals (fluororubber) are required to be used.	
Water Containing Fluids	Water-Glycols	Consult Yuken for details.	Standard pumps can be used without conditions. However, if any type other than those in Table 2 is used, the maximum operating pressure is limited.

Anti-Wear Type Water-Glycols

(Table 2)

Fluid Manufacturer	Commercial Trade Name
Shell Lubricants Japan K.K.	Shell HFC Fluid
ENEOS Corporation	HIGHLAND FRZ 46
MORESCO Corporation	HYDOL HAW
COSMO OIL LUBRICANTS Co.,Ltd.	COSMO FLUID GS 46 COSMO FLUID HQ 46

Fluid Viscosity and Temperature

Use the hydraulic fluids which satisfy the recommended viscosity and oil temperature given in the Table 3 below.

However, please note that if any of the pumps listed in the table 4 is started at low speed, the maximum fluid viscosity is limited.

Fluid Viscosity and Temperature

(Table 3)

Fluid	Temperature °C	Viscosity mm ² /s
Petroleum Base Oils	0-70	20-400
Phosphate Esters		
Water-Glycols	0-50	

Maximum Viscosity for Low Start-up Speed

(Table 4)

Pump Type	Start-up Speed r/min	Max. Viscosity mm ² /s
PV2R1, PV2R12 PV2R13	750	100
	950	200
50T, PV2R2	600	100
PV2R23	950	200

Control of Contamination

Contamination of hydraulic fluids results in pump failures and reduced pump lives. Carry out sufficient contamination control for hydraulic fluids and keep contamination level within NAS class 12.

Also, use a 100 μm tank filter on the suction side, more than 50 mm away from the tank bottom.

Instructions

■ Alignment of Shaft

Employ a flexible coupling whenever possible, and avoid any stress from bending or thrust.

Maximum permissible misalignment is less than 0.1 mm TIR and maximum permissible misangular is less than 0.2°.

■ Suction Pressure

Set the suction pressure at pump inlet port at the value given in the table below. Furthermore, use the pipes in the suction side having the diameter as indicated on the installation drawings. In case where the pump is installed on the tank or at the position higher than the tank top cover, the height of the suction port of the pump should be less than 1 meter from the oil level {less than 0.8 meter in case of using phosphate esters or water containing fluids}.

Pump Type		Suction Pressure		
		Minimum		Maximum
		Petroleum Base Oils	Phosphate Esters Water Containing Fluid	
Single Pumps	50T, 150T	-20 kPa	-16 kPa	+140 kPa
"PV2R" Series Single Pumps	PV2R1, PV2R2	-20 kPa	-16 kPa	+30 kPa
	PV2R3, PV2R4	-20 kPa *		
"PV2R" Series Double Pumps	PV2R12	-20 kPa		
	PV2R13, PV2R23	-20 kPa *		

★ In relation to the rotating speed of the pump, the minimum suction pressure may be restricted for a certain nominal displacement. For details, please refer to the specifications of the pump concerned.

■ Precautions at Starting

At an initial operation or at an operation after a long rest, the pump may have difficulty in sucking up fluid. In such cases, an air bleed valve should be installed beforehand on the discharge side (model No. ST1004- *-10), or discharge air by slightly slackening the connection on the discharge side. At starting, operate the pump intermittently as far as possible with no load. For fluid viscosity at starting, see the item of "Hydraulic Fluids".

■ Other Precautions

If a pump is used at speed below 1200 r/min, install the pump with the suction port upside so that the pump can suck up fluid easily at starting.

Interchangeability in Installation between Current and New Design

The models shown below have been changed in design.

Name	Model Numbers		Interchangeability in Installation	Major Changes
	Current	New		
"PV2R1" Series Single Pumps	PV2R1-**-*-RAA-4222	PV2R1-**-*-RAA-43	Yes	● Change only design number
"PV2R2" Series Single Pumps	PV2R2-**-*-RAA-40	PV2R2-**-*-RAA-41	Yes	● Lower noise level
"PV2R3" Series Single Pumps	PV2R3-**-*-RAA-30	PV2R3-**-*-RAA-31	Yes	● Lower noise level
"PV2R12" Series Double Pumps	PV2R12-**-**-REAA-4222	PV2R12-**-**-REAA-43	Yes	● Change only design number
"PV2R13" Series Double Pumps	PV2R13-**-**-RAAA-4222	PV2R13-**-**-RAAA-43	Yes	
"PV2R14" Series Double Pumps	PV2R14-**-**-RAAA-3222	PV2R14-**-**-RAAA-33	Yes	
"PV2R23" Series Double Pumps	PV2R23-**-**-REAA-40	PV2R23-**-**-REAA-41	Yes	
"PV2R33" Series Double Pumps	PV2R33-**-**-RAAA-30	PV2R33-**-**-RAAA-31	Yes	● Lower noise level
"PV2R24" Series Double Pumps	PV2R24-**-**-RAAA-30	PV2R24-**-**-RAAA-31	Yes	
"PV2R34" Series Double Pumps	PV2R34-**-**-REAA-30	PV2R34-**-**-REAA-31	Yes	