

#### Control Type

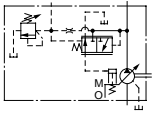
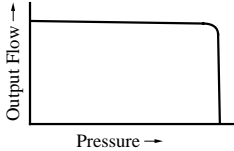
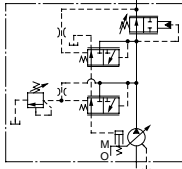
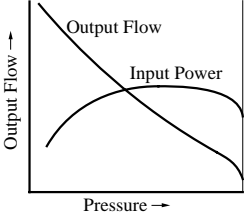
#### Single Pumps

Control Type	Graphic Symbols	Performance Characteristics	Explanation	Page
"01" Pressure Compensator Type			When the system pressure increases and comes close to the preset cut-off pressure, the pump flow decreases automatically while maintaining the set pressure as it is.	6
"02" Solenoid-two Pressure Control Type			This type of control is ideal for an application where the output power of the actuator has to be controlled in two different load pressures while keeping the actuator speed nearly constant.	28
"03" Pressure Compensator with Unloading Type			It is suitable for a situation where a long unloading time is required and heat generation and noise have to be kept at their lowest levels. <ul style="list-style-type: none"><li>The pump can be used in combination with the multistage pressure control valve.</li></ul>	36
"04" Proportional Electro-Hydraulic Load Sensing Type			This is an energy-saving type control which regulates the pump flow and load pressure to be at absolute minimum necessary level to operate the actuator. Pump flow rate and cut-off pressure are controlled proportional to the input current to the control device on the pump and the input current is regulated by the specific amplifier.	37
"04E" Proportional Electro-Hydraulic Pressure & Flow Control Type			This type of control has the pressure sensor and tilt angle sensor in the pump. The pump is used with the external amplifier. Flow and pressure can be controlled in proportion to input voltage by only one control valve. The features has been greatly improved by electrical feedback of swash plate tilt angle correspond to flow rate and load pressure to control valve. <ul style="list-style-type: none"><li>Linearity of input characteristics is excellent and easy to set.</li><li>Hysteresis is lower, repeatability and reproducibility are fine.</li></ul>	47
"05" Two-Pressure Two-Flow Control Type by System Pres.			This type of control is suitable for an application like "Presses" where the changeover from rapid advance to feed is required just when the pressing (pressurizing) starts.	—*
"06" Two-Pressure Two-Flow Control Type by Solenoid Valve			This pump control is suitable for machining found on machine tool, where machining starts after the changeover from rapid advance, to feed has been made.	—*

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"07" Pilot Pressure Control Type Pressure Compensator			The pump is used in combination with the pilot relief valve or multistage pressure control valve. By controlling the pilot pressure, the full cut-off pressure can be remote-controlled according to your requirements.	58
"09" Constant Power Control Type			<ul style="list-style-type: none"> <li>• Pump input power can be controlled in accordance with the motor output.</li> <li>• When the discharge pressure rise, the output flow decreases corresponding to the preset input power.</li> <li>• The pump can act for function of 2 pumps, low-pressure large-flow and high-pressure small-flow. Therefore, the motor capacity can be reduced.</li> </ul>	—*

\* Control type "05", "06" and "09" are not shown in this catalogue. Contact us for the details.

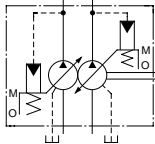
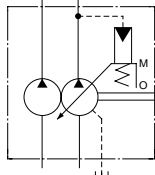
#### Availability of Control Type

Mark "○" in the table below refers to standard model.

##### Single Pumps

Model Number	Geometric Displacement cm <sup>3</sup> /rev (cu.in./rev)	Control Type									
		01	02	03	04	04E	05	06	07	09	
A10	10.0 (.610)	○								○	
A16	15.8 (.964)	○	○	○	○	○	○	○	○	○	○
A22	22.2 (1.355)	○	○	○	○	○			○	○	
A37	36.9 (2.25)	○	○	○	○	○	○	○	○	○	○
A56	56.2 (3.43)	○	○	○	○	○	○	○	○	○	○
A70	70.0 (4.27)	○	○	○	○	○			○	○	○
A90	91.0 (5.55)	○	○	○	○	○			○	○	○
A145	145 (8.85)	○	○	○	○	○			○	○	○

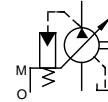
##### Double Pump & Variable/Fixed Double Pump

Control Type	Graphic Symbols	Explanation	Page
"01/01" Pressure Compensator Type		These double pump consist of two "A" series single pumps combined in tandem and driven by a common shaft. Fluid delivered from two separate ports can be either supplied to separate or common circuit according to the usage.	67
"01" Pressure Compensator + Fixed Vane Pump		These double pump consist of "A" series pumps and PV2R series vane pumps combined in tandem and driven by a common shaft. Fluid delivered from two separate ports can be either supplied to separate or common circuit according to the usage.	80

**Specifications**



Graphic Symbol

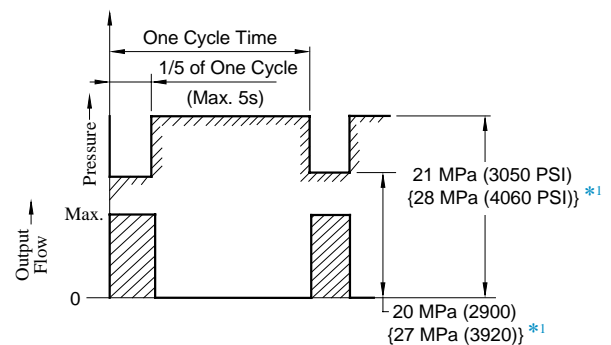


**Specifications**

Model Numbers	Geometric Displacement cm <sup>3</sup> /rev (cu. in. /rev)	Minimum Adj. Flow cm <sup>3</sup> /rev (cu. in. /rev)	Operating Pres. MPa (PSI)		Shaft Speed Range r/min		Approx. Mass kg (lbs.)	
			Rated <sup>*2</sup>	Intermittent <sup>*1</sup>	Max.	Min.	Flange Mtg.	Foot Mtg.
A10-FR01B-12*	10.0 (.610)	2 (.122)	16 (2320)	21 (3050)	1800	600	5.1 (11.2)	—
A10-FR01C/H-12*							8.5 (18.7)	
A16-*-R-01-*-K-32*	15.8 (.964)	4 (.244)	16 (2320)	21 (3050)	1800	600	16.5 (36.4)	18.7 (41.2)
A22-*-R-01-*-K-32*	22.2 (1.355)	6 (.366)	16 (2320)	16 (2320)	1800	600	16.5 (36.4)	18.7 (41.2)
A37-*-R-01-*-K-32*	36.9 (2.25)	10 (.610)	16 (2320)	21 (3050)	1800	600	28.0 (61.7)	32.3 (71.2)
A56-*-R-01-*-K-32*	56.2 (3.43)	12 (.732)	16 (2320)	21 (3050)	1800	600	35.0 (77.2)	39.3 (86.7)
A70-*R01*S-60*	70.0 (4.27)	30 (1.83)	25 (3630)	28 (4060)	1800	600	58.5 (129)	70.5 (155)
A90-*R01*S-60*	91.0 (5.55)	56 (3.42)	25 (3630)	28 (4060)	1800	600	72.5 (160)	93 (205)
A145-*R01*S-60*	145 (8.85)	83 (5.06)	25 (3630)	28 (4060)	1800	600	92.5 (204)	117.5 (259)

★1. Whenever setting pressure, make sure the full cut-off pressure never exceeds the maximum intermittent pressure.

★2. Care should be taken in cases of used at a higher pressure than the rated pressure, because operating terms may be restricted. For example, if used as per maximum illustrated operating conditions, intermittent time at maximum flow is restricted to under 1/5 of one cycle time and under 6 seconds simultaneously. Conditions may vary according to the actual working pressure and delivery (inclination angle of the swash plate). Consult factory or Yuken sales representative for further information.



\*1. Applicable only for "A70/90/145"