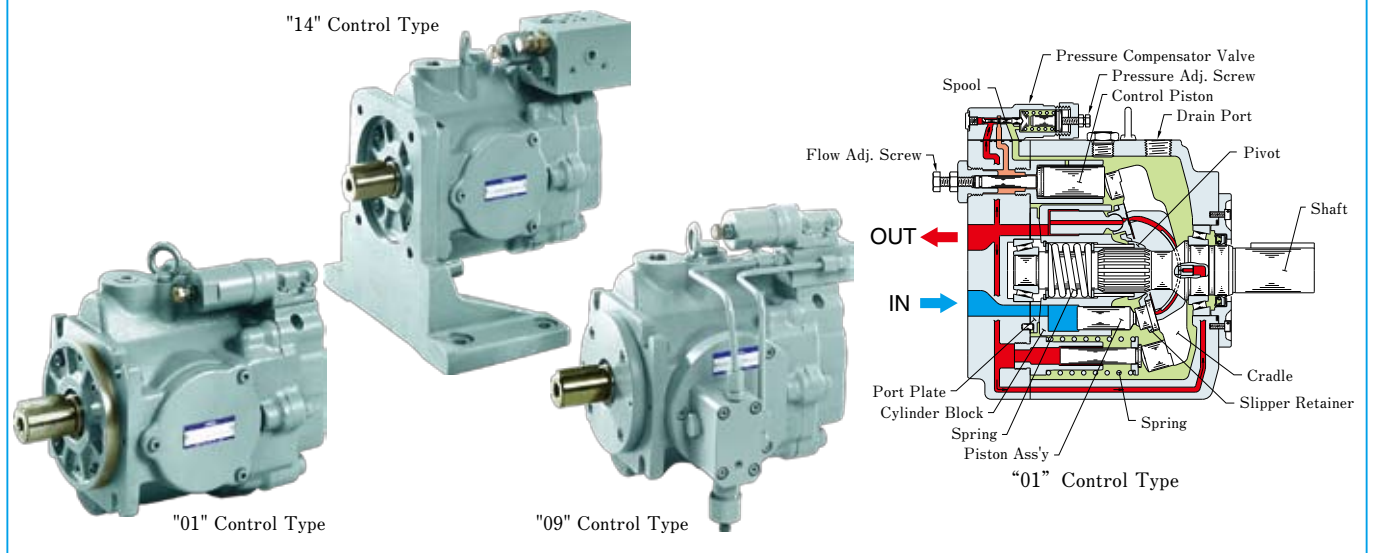


"A3H" Series Variable Displacement Piston Pumps

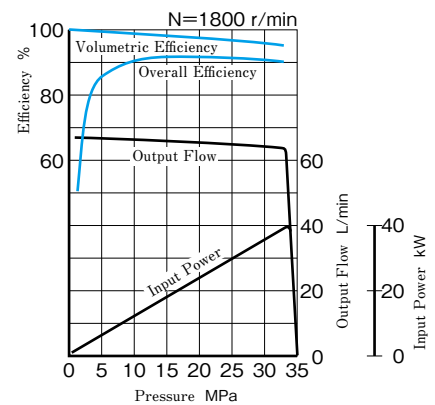


Control Type

Control Type	Graphic Symbols	Performance Characteristics
"01" Pressure Compensator Type		
"09" Constant Power (Torque) Control Type		
"14" Load Sensing Type		
"55" Simple Two-Pressure Two-Flow Control Type		

Features

- High performance at maximum pressure 35MPa
Volumetric efficiency is over 95% and overall efficiency is more than 90% at 1800 r/min.



- Compact size
A3H series are compact in size because output / mass ratio is large.

Specifications

Model Numbers	Geometric Displacement cm ³ / rev	Minimum Adj. Flow cm ³ / rev	Operating Pres. MPa		Shaft Speed Range r/min		Mass kg (01 Control type)	
			Rated	Intermittent	Max.	Min.	Flange Mtg.	Foot Mtg.
A3H16-※R※KK ⁽¹⁾	16.3	8	28	35	3600	600	14.5	23.4
A3H37-※R※KK	37.1	16			2700	600	19.5	27.0
A3H56-※R※KK	56.3	35			2500	600	25.7	33.2
A3H71-※R※KK	70.7	45			2300	600	35.0	42.5
A3H100-※R※KK	100.5	63			2100	600	44.6	72.6
A3H145-※R※KK	145.2	95			1800	600	60.0	88.0
A3H180-※R※KK	180.7	125			1800	600	70.4	98.4

(1) The "A3H16" model does not support the "09" control type.

A through drive type to which a driven pump can be connected is also available. Contact us for details.

"A7H" Series Variable Displacement Piston Pumps



■ Features

● High Pressure–Large Volume Displacement

Adding to current A3H series, 180 + 270 cm³/rev displacement with rated pres. 35 MPa, Max. pres. 40 MPa pumps are now available.

● Optional Through Drive

Optional through drive allow an auxiliary or outboard pump (SAE Standard) to be directly mounted.

● Fire-Resistant Fluids

Water–Glycols and Polyol Ester Type are applicable under certain condition.

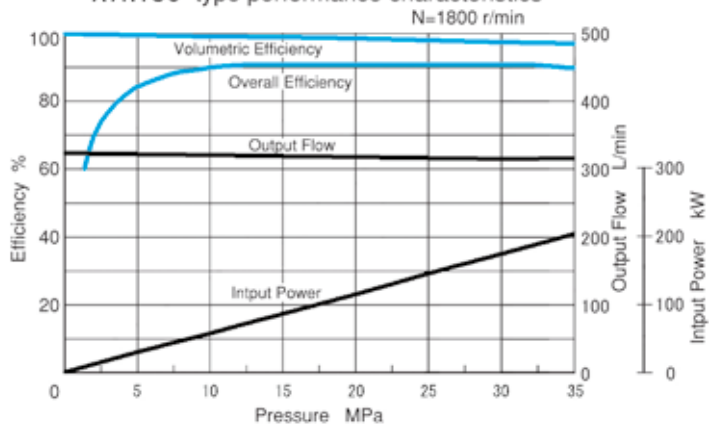
● High performance at maximum pressure 40 MPa

Volumetric efficiency is over 95% and overall efficiency more than 90% at 1800 r/min.

■ Control Type

Control Type	Graphic Symbols	Performance Characteristics
"01" Pressure Compensator Type		
"09" Constant Power Control Type		
"09R" Constant Power Control Type with External Pilot		

"A7H180" type performance characteristics



■ Specifications

Series Numbers	Geometric Displacement cm ³ /rev	Operating Pressure MPa		Shaft Speed Range r/min		Temperature Range °C	Viscosity Range mm ² /s	Approx Mass kg	
		Rated	Intermittent	Rated	Max.			Flange Mtg.	Foot Mtg.
A7H180	180	35	40	1800	1900	-20 – +80	10–1000	150 "01" 154 "09"	220 "01" 224 "09"
A7H265	270	35	40	1200	1600			220 "01" 224 "09"	310 "01" 314 "09"

■ Specifications for Special Fluids

Type of Fluids	Series Number	Operating Pressure MPa		Shaft Speed Range r/min		Temperature Range °C	Viscosity Range mm ² /s
		Rated	Intermittent	Rated	Max.		
Water–Glycols	M–A7H180	21	25	1800	1800	10–50	20–1000
	M–A7H265			1200	1200		
Polyol ester Type	P–A7H180	35	40	1800	1900	10–70	10–1000
	P–A7H265			1200	1600		

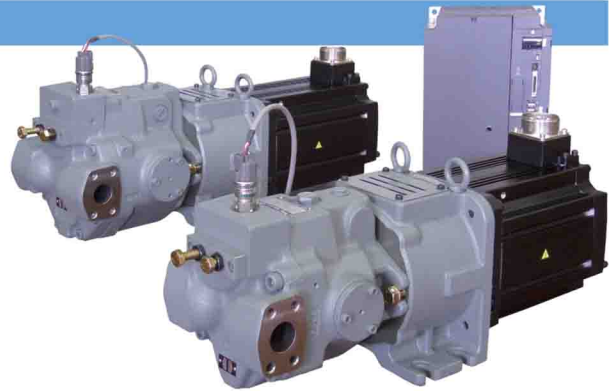
AC Servo Motor Driven Pumps

Revolution
Control System

ASR Series AC Servo Motor Driven Pumps

The ASR series provides variable flow by driving a piston pump directly with an AC servo motor and controlling the rotational speed in a range from zero to the maximum level.

This series allows for precise control of flow / pressure by using a dedicated AMSR controller. It also offers excellent response and repeatability.



ASE Series AC Servo Motor Driven Pumps

The ASE series pumps inherit the basic concept of the shaft speed control from the ASR series pumps and offer high cost performance.

The pumps of this series offer easy shaft speed control for systems that do not require as much precision, response, or repeatability as the ASR series pumps offer.

With the output flow and the discharge pressure controlled by a dedicated AMSE controller, precision, response and repeatability of systems using the ASE series pumps have been improved compared with those using conventional variable displacement piston pumps.

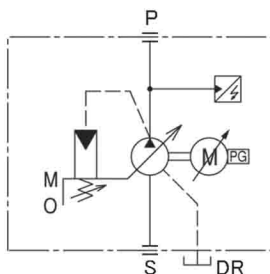


Specifications

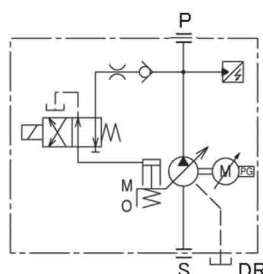
*) depends on pump displacement

Model	ASR1-C	ASR2-C	ASR3-E, G	ASR5-G, J	ASR10-J, M	ASE3	ASE5	ASE10	ASE15W
Max. Flow L/min	39.5	55.5	92.3	129	200	80.8	132.7	205.4	302
Max. Operating Pres. MPa	21	16	21	21	21	17.5	17.5	17.5	17.5 (21*)
Min. Adj. Pres. MPa	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Motor Output kW	4.5	4.5	6 to 8	8 to 11	11 to 15	11	20	35	35
Mass (Pump + Motor) kg	54	54	80 to 89	94 to 177.5	213 to 233	75	123	190	241.5
Input Signal Voltage	0 to +10V DC (Max.)								
Monitor Output Voltage	0 to +10V DC								
Sequence I/O	Photo Coupler Input 8ch/Open Collector Output 6ch					Photo Coupler Input 8ch/Open Collector Output 5ch			
Power Supply	3-Phase AC 200 to 230 V/3-Phase AC 380 to 480 V, 50/60 Hz							3-Phase AC 380 to 480 V 50/60 Hz	

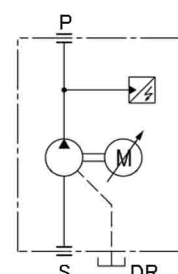
Graphic Symbols



ASR
Single Displacement Type



ASR
Dual Displacement Type



ASE

“ASR” Series AC Servo Motor Driven Pumps



Features

● High Performance

Special high power servo motor (SPM) and variable displacement piston pump → Improved ultralow speed molding & continuous pressure holding performance and excellent repeatability.

● High response

Ultra precise molding by high response injection with a high-efficiency piston pump.

● Energy saving

Power consumption less than half that of hydraulic machines and equivalent to that of full electric machines, with reduced standby power consumption

→ Dual displacement models allow more compact system designs.

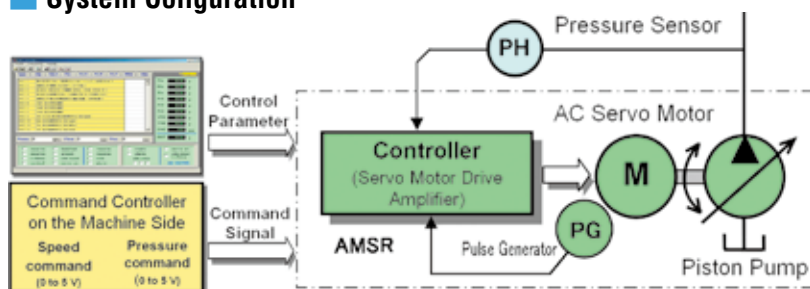
● Less wiring

Wire saving and miswiring prevention through the integration of the controller/driver and the use of special cables.

● Large flow

The AMSR controller has a combination function that supports operation with large flow up to 3200 L/min (ASR10 × 16 units).

System Configuration

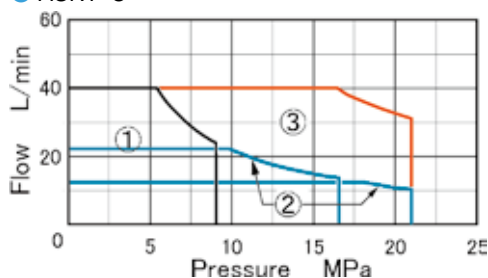


A feedback loop is by the AMSR controller that computes deviations between control signals from the machine side (speed and pressure commands) and sensor signals to drive the AC servo motor accordingly. Control parameters can be set digitally by using dedicated software.

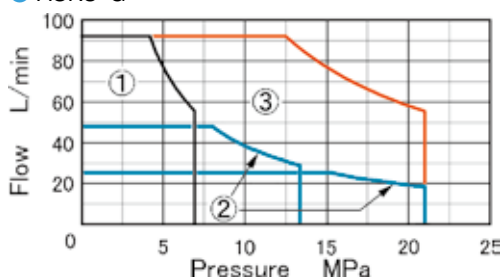
The AC servo motor is selected according to the torque and shaft speed required to drive the hydraulic pump. The selection of an appropriate motor for the load condition is important.

Sample of Pressure–Flow Diagram

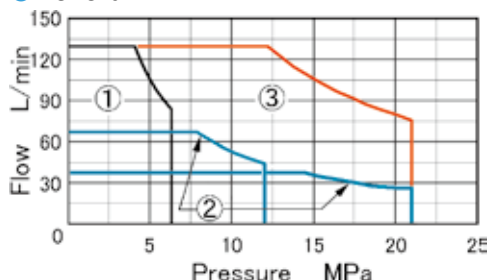
● ASR1–C



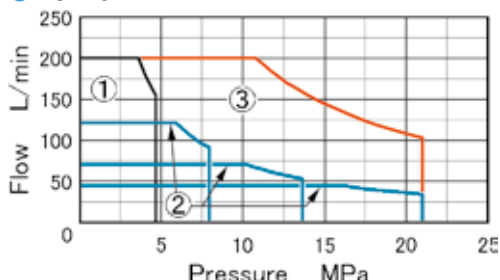
● ASR3–G



● ASR5–J



● ASR10–M

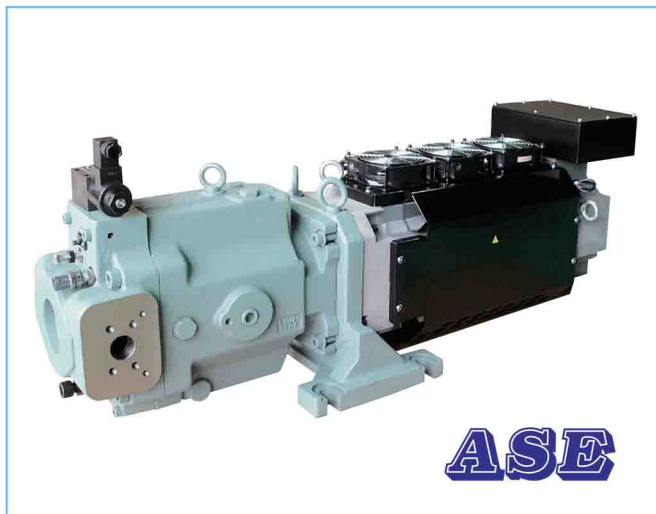


Model Number Designation

ASR3	—4	G	—H	X	S	A100*1	N*1	—A	00	—11
Series Numbers	Power Supply Voltage	Power Capacity	Max. Operating Pres.	Flow Setting	Port Direction	Coil Type for Solenoid Operated Directional Valve	Electrical Conduit Conection for Solenoid Operated Directional Valve	Function Selection	Parameter Number	Design Number
ASR1	None: AC200V 4: AC400V	C	H: 21 MPa	X: Single Displacement Type	S: Side None: Axial	AC A100: AC100V A120: AC120V A200: AC200V A240: AC240V DC None: DC24V D12: DC12V D48: DC48V	None: Terminal Box N: Plug-in Connector (Optional)	A: Single B: Combination (Single Operation Allowed)	00: Standard	11
ASR2		C	C: 16 MPa							11
ASR3		E, G	H: 21 MPa							W: Dual Displacement Type
ASR5		G, J		11						
ASR10		J, M		12						

*1 Apply to only Flow Setting "W".

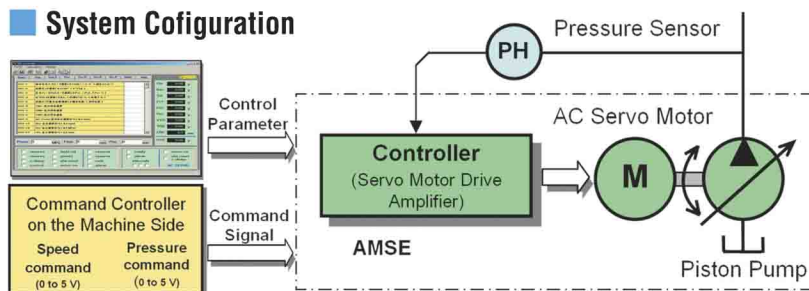
“ASE” Series AC Servo Motor Driven Pumps



Features

- Less wiring/high reliability
Uses sensor -less rotational speed control.
- Space saving/compactness
Integrated motor pump unit.
- Larger motor output
(compared with other products in the same flow capacity range)
Max. motor output is 11 to 35 kW (@ASE15W).
- Easy maintenance
Adopting a cartridge fan and desorption terminals.
- Reduced electrical noise
Using environmentally friendly EMC filter.
- Large flow
Up to 4800 L/min with AMSE combination function and 16 units of ASE15W.

System Configuration

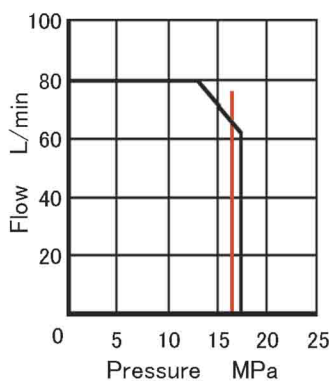


A feedback loop is by the AMSE controller that computes deviations between control signals from the machine side (speed and pressure commands) and sensor signals to drive the AC servo motor accordingly. Control parameters can be set digitally by using dedicated software. The AC servo motor is selected according to the torque and shaft speed required to drive the hydraulic pump. The selection of an appropriate motor for the load condition is important.

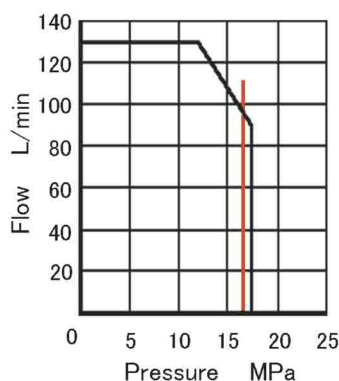
Sample of Pressure–Flow Diagram

- ① Allowable continuous operating pressure: 11 MPa or less
- ② —Max. continuous operating time: 60 s

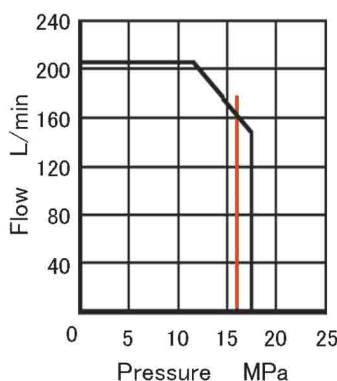
ASE3-4AA-G80



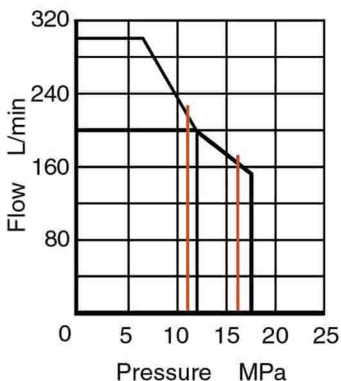
ASE5-4BZ-G130



ASE10-4CE-G200



ASE15W-4CE-G150/100



Model Number Designation

ASE3	-4	AA	-G	80	S	A100*2	N*2	-A	00	31
Series Numbers	Power Supply	Power Capacity	Max. Operating Pres.	Max. Flow	Port Position	Coil Type for Solenoid Operated Directional Valve	Electrical Conduit Connection for Solenoid Operated Directional Valve	Function Selection	Parameter Number	Design Number
ASE3	None: AC200V	AA	G: 17.5 MPa	80: 80.8 L/min*1	S: Horizontal B: Vertical	AC A100: AC100V A120: AC120V A200: AC200V A240: AC240V DC None: DC24V D12: DC12V D48: DC48V AC (AC → DC) R100: AC100V R200: AC200V	None: Terminal Box N: Plug-in Connector (Optional)	A: Single B: Combination (Single Use Allowed)	00: Standard	31
ASE5	4: AC400V	BZ		130: 132.7 L/min*1						31
ASE10	4: AC400V	CE		200: 205.4 L/min*1						21
ASE15W	4: AC400V	CE		W: User Setting 120/90: Large Flow (Sol OFF) 120 cm ³ /rev Small Flow (Sol ON) 90 cm ³ /rev				B: Combination (Single Use Allowed)		10

*1 In case of Max. Operating Revolution.

*2 Apply to only Series Numbers "ASE15W".