

ASE Series AC Servo Motor Driven Pump

The Revolution Control System

Outline & Specifications

ASE-series AC servo motor driven pump is electro-hydraulic hybrid pump developed with our accumulated knowledge by Yuken, the leading supplier of hydraulic products for injection moulding machine. It has strength from both full electric and hydraulic machine, having excellent effect to "energy saving", "high performance" and "high precision moulding". The ultimate control system for injection moulding machine.

In addition to our ASR1, ASR2, ASR3, ASR5 & ASR10, we proudly announce new AC servo motor driven pump, ASE3, ASE5, ASE10 & ASE15W in the series, that is based on an original idea of Yuken Kogyo.

For features and details of ASR series, refer to catalogue Pub. EC-1905.



■ Features

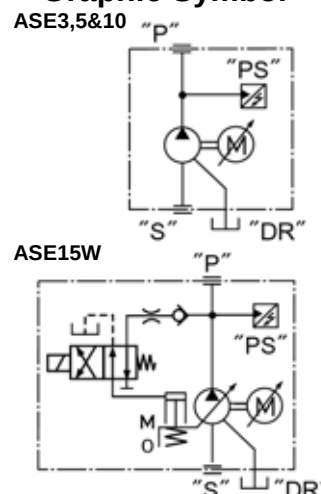
- The complete package in one.
- Larger motor output – max. motor output is 11 to 35 kW (@ASE3 to ASE15W)
- Large flow, up to 4800 L/min with AMSE combination function and 16 units of ASE15W
- Longer lifetime – controller is equipped a long-lifetime cooling fan and capacitors of 10 years
- Easy Maintenance – adopting a cartridge fan and desorption terminals
- Reduced electrical noise, using environmentally friendly EMC filter
- Less wiring – uses sensor-less rotational speed control
- Space saving – integrated motor pump unit

■ Specification

*) depends on pump displacement

Series	ASE3	ASE5	ASE10	ASE15W
Max. Flow L/min	80.8	132.7	205.4	302
Min. Adj. - Max. Operating Pres. MPa	0.1-17.5	0.1-17.5	0.1-17.5	0.1-17.5 (21*)
Motor Rated Output kW	11	20	35	35
Mass (Pump + Motor) kg	79	116	190	242
Command Signal Input/Monitor Out. Input Signal/Output Signal Elec. Power Supply	0 ~ max. +10 V DC / 0 ~ +10 V DC Input 6 ch / Output 6 ch AC380-480 V			

■ Graphic Symbol



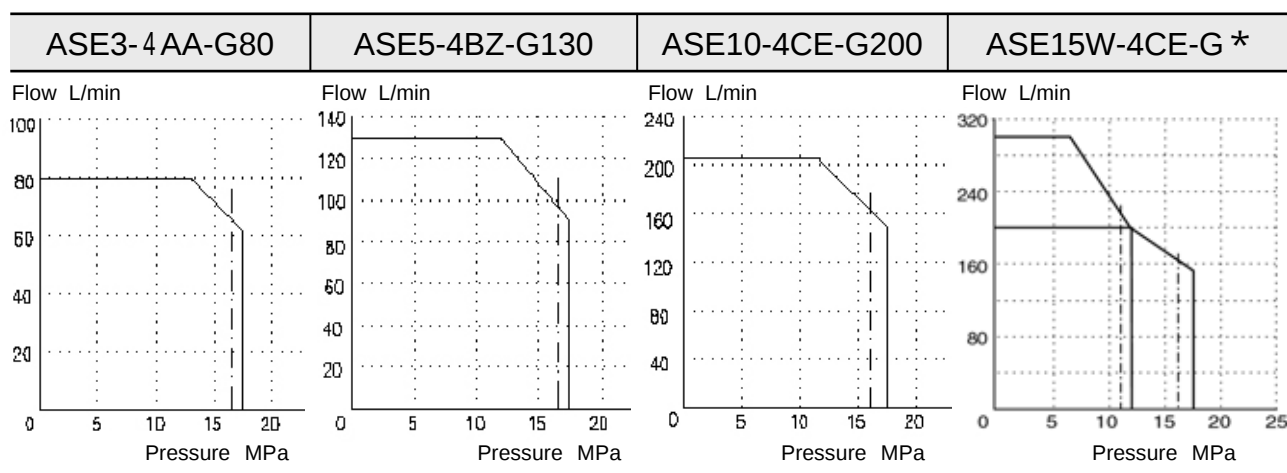
■ Model Number Designation

ASE3	- 4	AA	- G	80	S	- B 00	- 30
Series	Power Supply	Drive Capacity	Max. Pressure	Max. Flow	Port Position	Function & Parameter No.	Design No.
ASE3	4: AC400 V	AA	G: 17.5 MPa	80: 80.8 L/min	S: Horizontal B: Vertical	B: Combination (both single operation Allowed) 00: Std. value at Shipment	31
ASE5		BZ		130: 132.7 L/min			31
ASE10		CE		200: 205.4 L/min			21

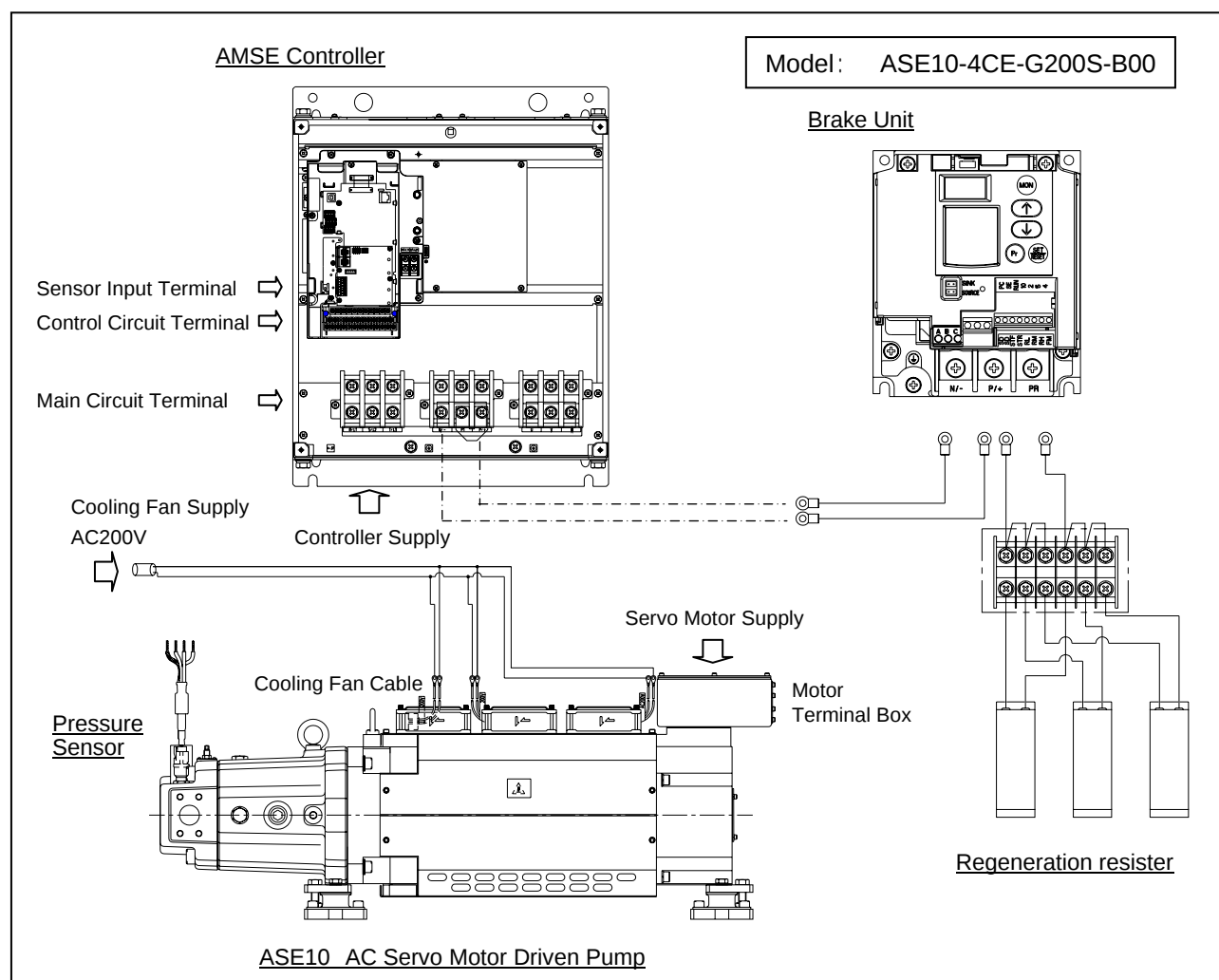
ASE15W	- 4	CE	- G	W	S	A100 N	- B 00	- 10
Series	Supply	Capa.	Press.	Max. Flow	Port Pos.	Solenoid Valve	Func. & Para. No.	Des.
ASE15W	AC 400V	CE	17.5 MPa	150/100: 150/100 cm³/rev W: User setting	Same as ASR3-10	A*: AC, D*: DC N: Plug-in Connector None: Terminal Box	B: Combination (both single operation Allowed) 00: Std. value	10

■ Sample of Pressure-Flow Diagram

Continuous Max. Operating Pressure: less than 11MPa
 - - - - Continuous Max. Operating Time 60s



■ Typical System Diagram & Wire Diagram



■ Specifications

Series			ASE3-4AA	ASE5-4BZ	ASE10-4CE	ASE15W-4CE
Hydraulic Specifications	Flow Control	Displacement	32.3 cm ³ /rev	57.7 cm ³ /rev	102.7 cm ³ /rev	151 cm ³ /rev
		Max. Flow	80.8 L/min	132.7 L/min	205.4 L/min	302 L/min
		Max. Speed	2500 r/min	2300 r/min	2000 r/min	2000 r/min
		Hysteresis	1% or less			
		Repeatability	1% or less			
		Input Signal Voltage	400 r/min/V (Max. 6.25 V)	400 r/min/V (Max. 5.75 V)	400 r/min/V (Max. 5.0 V)	400 r/min/V (Max. 5.0 V)
	Pressure Control	Adj. Pres. Range	0.1 to Specify Press. (Max. Operating Press.17.5 MPa)			(17.5/max.21 MPa)
		Hysteresis	1 % or less			
		Repeatability	1 % or less			
		Input Signal Voltage	3.5 MPa /V (Max. 5V)			
	Hydraulic Fluid		Petroleum Base Oil ISO VG 32-46			
	Viscosity Range		20 to 400 mm ² /s			
	Temperature Range		0 to 60			
Motor and Controller Specifications	Servo Motor	Rated Output	11 kW	20 kW	35 kW	35 kW
		Insulation Class	Class F			
		Cooling System	Totally Enclosed Force-cooling			
		Protection	IP44			
		Ambient Temperature and Humidity	0 to 40 (No Freezing) · 80 %RH or less (No Condensing)			
	Controller	Cooling System	Fan-cooling			
		Protection	Enclosed :IP20		IP00	IP00
		Ambient Temperature and Humidity	0 to 50 (No Freezing) · 90 %RH or less (No Condensing)			
	Main Supply	Voltage	AC380 to 480 V Permissible Voltage AC323 to 528 V			
		Frequency	50/60 Hz Permissible Frequency Fluctuation ± 5 % or less			
		Power Supply Cap.	28 kVA	41 kVA	80 kVA	80 kVA
	Environmental Condition		Indoor (Non-direct sunlight), Non-corrosive gas & Non-inflammable Gas, Non-oil mist, Non-dust			
	Protective Functions ☐ Overcurrent shut-off ☐ Regenerative overvoltage shut-off ☐ AMSE overload ☐ Motor overload shut-off ☐ Fin overheat ☐ Instantaneous power failure ☐ PU stop ☐ Undervoltage ☐ Input phase failure ☐ Output phase failure ☐ Stall prevention ☐ Output side earth fault over current ☐ Communication option alarm ☐ Parameter strage device alarm ☐ CPU error ☐ Operation panel power supply short circuit ☐ 24VDC power output dhort circuit ☐ Inrush current limit circuit alarm ☐ Analogue input error ☐ Fan fault ☐ Electronic thermal relay function prealarm ☐ Regenerative brake prealarm ☐ Brake transistor error ☐ Copy operation error ☐ Parameter write error ☐ Operation panel lock ☐ Parameter copy alarm ☐ Error ☐ Communication error ☐ USB communication error ☐ Internal circuit error ☐ Maintenance signal output ☐ Hydraulic control board error & alarm					

■ System Construction

Patent Pending

■ Operation

- Pump discharge volume "Q" is determined by its displacement per revolution "D" and rotating speed "N".
- Rotating speed is precisely controlled by AC servo motor and driver following command signal from control driver.
- Control Driver computes deviation by detecting load pressure against speed/pressure command signal from upper system, and provide revolution speed command to servo motor. Thus, high precision and high response control is achieved to injection process.
- Selection of AC servo motor is determined by required torque and revolution speed to drive hydraulic pump. It is also important to make appropriate selection depending on load condition.

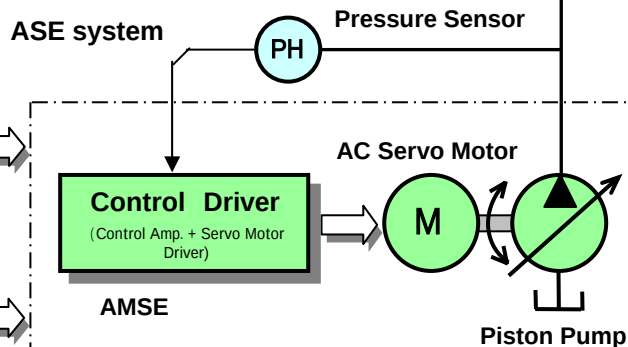
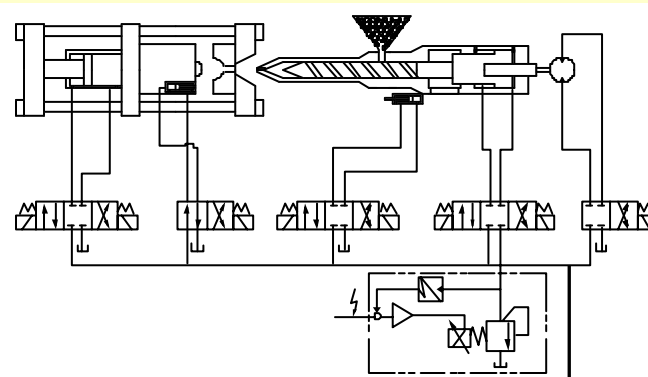


**Command Controller
at Machine Side**

Speed Command (0-5 V)
Pressure Command (0-5 V)

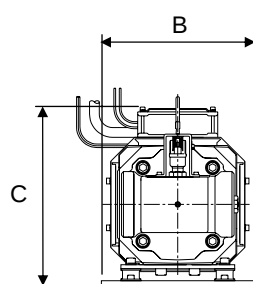
Control
Parameter

Command
Signal

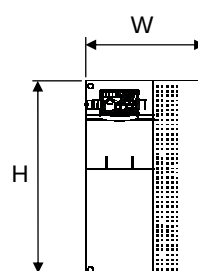
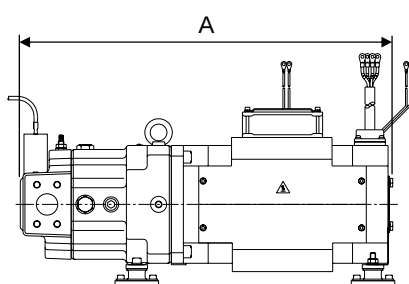


■ Typical Dimension

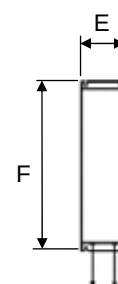
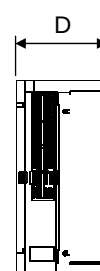
Series	ASE3	ASE5	ASE10	ASE15W
Dimension A × B × C mm	575 × 228 × 269	670 × 248 × 326	991 × 340 × 402	1142 × 332 × 395
Dimension W × H × D mm	220 × 300 × 190	250 × 400 × 190	435 × 550 × 250	435 × 550 × 250
Dimension E × F mm (pcs.)	100 × 300 (2pcs.)	100 × 450 (2pcs.)	100 × 400 (3pcs.)	100 × 400 (3pcs.)



ASE *



AMSE *



Regeneration
resister

Note) For other dimensions, please refer to installation drawings.

ASE3:1501-PA321742-9, ASE5:1502-PA321743-7, ASE10:1503-PA321744-5