

Power Meister

AC servo motor controls hydraulic pump speed and direction. Generate pressure and flow to match the operating cycle of

machinery and to stop during idle times. Incredible energy savings by only operating when necessary.

Also, position, speed, and pressure are controlled with great precision by using a high-speed digital processing servo controller.

Features

- High power with 30MPa maximum pressure.
- Designed so pump operates only when necessary for energy savings and low noise.
- Great energy savings compared to conventional hydraulic systems.
- High-speed processing of the servo controller makes positioning on the order of μm possible.
- Compact all-in-one design saves space.
- (select either vertical or horizontal setup)

Principle of operation

Rotating the motor forward brings hydraulic fluid to the head side of the cylinder which lifts the cylinder. Reversing the motor pushes hydraulic fluid to the rod side and pushes the cylinder down. The direction the pump rotates controls the direction of the cylinder, and the speed of rotation controls the speed.

System Configuration (Standard Configuration)

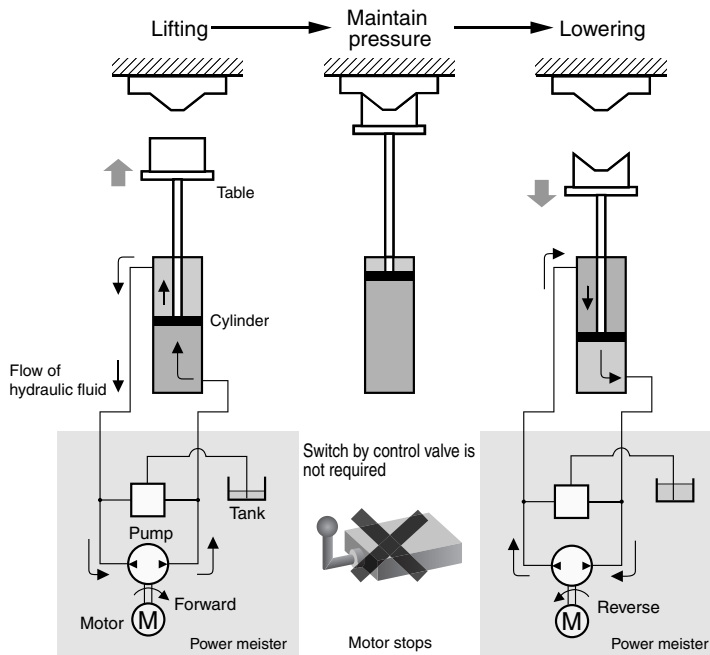
Signals to operate the cylinder (position, speed, and pressure) are sent from the control equipment to the servo controller and the hydraulic unit responds according to the signals. The servo controller receives feedback from sensors and accurately controls the cylinder so the deviation from the signals is 0. A feedback system using position and pressure sensors makes it possible to accurately control position, speed, and thrust (pressure).

About Power Meister

- ① Hydraulic unit (UPS)
- ② Servo controller (EPD)
- ③ Servo amp (compatible with motor mounted on item ①)
- ④ Motor cable (select from 3, 5, or 10 meters)
- ⑤ Encoder cable (select from 3, 5, or 10 meters)
- ⑥ Cable to computer (3 m)

It becomes offers.

Note) Customers must provide piping, wiring, hydraulic cylinder, sensors, control panel, and other equipment. (Contact us for information about cylinders and sensors.)



Specifications

Hydraulic Unit

Motor	AC servo motor (0.5 to 7.5kW (servo amp drive)) Power supply 3-phase 200 to 230VAC, 50/60Hz (servo amp power supply)
Pump	Piston pump (2.0 to 15.8cm ³ /rev)
Operating Ambient Temperature/Humidity	0 to +40°C/20 to 90%RH (non-condensation)
Temperature Range of Hydraulic Fluid (°C)	5 to 60°C
Recommended Hydraulic Fluid	Wear resistant hydraulic fluid ISO VG32 to 68 (VG46 recommended)
Operating Viscosity Range	20 to 200mm ² /s {cSt}
Degree of Contamination	NAS 10 or better
Safety Valve Pressure Adjustment Range	3.5 to 30MPa
Maximum Working Pressure	30MPa (for hydraulic pump) (maximum operating pressure varies according to motor performance and options)
Color of Paint	Black

● UPS-00A

Model No.	Motor Output kW	Pump Capacity cm ³ /rev	Maximum RPM min ⁻¹ (Note 1)	Maximum Flow Rate ℓ /min (Note 2)	Pressure Rating MPa (Continuous (Note 3))	Maximum Working Pressure MPa (Short term (Note 3))	Tank Size Lit. (nominal)	Hydraulic Fluid Level Range Lit. (estimate (Note 5))
UPS-00A-2*05	0.5	2.0	3000	6.0	6.7	10.0	V: 1.9	V: 0.6
UPS-00A-4*05		4.0		12.0	3.3	5.0	H: 1.5	H: 0.3
UPS-00A-2*10	1.0	2.0	3000	6.0	13.4	20.0	V: 1.9	V: 0.6
UPS-00A-4*10		4.0		12.0	6.7	10.0	H: 1.5	H: 0.3
UPS-00A-2*15	1.5	2.0	3000	6.0	20.0	30.0	V: 1.9	V: 0.6
UPS-00A-4*15		4.0		12.0	10.0	15.0	H: 1.5	H: 0.3
UPS-00A-2*20	2.0	2.0	3000	6.0	25.4	30.0	V: 1.9	V: 0.6
UPS-00A-4*20		4.0		12.0	12.7	19.0	H: 1.5	H: 0.3

● UPS-0A

Model No.	Motor Output kW	Pump Capacity cm ³ /rev	Maximum RPM min ⁻¹ (Note 1)	Maximum Flow Rate ℓ /min (Note 2)	Pressure Rating MPa (Continuous (Note 3))	Maximum Working Pressure MPa (Short term (Note 3))	Tank Size Lit. (nominal)	Hydraulic Fluid Level Range Lit. (estimate (Note 5))
UPS-0A-5*20	2.0	4.7	2500	11.7	11.2	16.8	3.0	V: 0.6
UPS-0A-7*20		6.7		16.7	8.0	11.9		H: 0.4

● UPS-1A

Model No.	Motor Output kW	Pump Capacity cm ³ /rev	Maximum RPM min ⁻¹ (Note 1)	Maximum Flow Rate ℓ /min (Note 2)	Pressure Rating MPa (Continuous (Note 3))	Maximum Working Pressure MPa (Short term (Note 3))	Tank Size Lit. (nominal)	Hydraulic Fluid Level Range Lit. (estimate (Note 5))
UPS-1A-11*29	2.9	11.0	2500	27.5	9.5	14.3	4.5	V: 1.2 H: 0.6
UPS-1A-13*29		12.9		32.2	8.1	12.2		
UPS-1A-16*29		15.8		39.5	6.6	10.0		
UPS-1A-11*44	4.4	11.0	2500	27.5	14.6	21.8	4.5	V: 1.2 H: 0.6
UPS-1A-13*44		12.9		32.2	12.4	18.6		
UPS-1A-16*44		15.8		39.5	10.1	15.2		
UPS-1A-11*55	5.5	11.0	2500	27.5	17.9	26.9	4.5	V: 1.2 H: 0.6
UPS-1A-13*55		12.9		32.2	15.3	22.9		
UPS-1A-16*55		15.8		39.5	12.5	18.7		
UPS-1A-11*75	7.5	11.0	2500	27.5	24.6	30.0	4.5	V: 1.2 H: 0.6
UPS-1A-13*75		12.9		32.2	21.0	30.0		
UPS-1A-16*75		15.8		39.5	17.1	25.7		

Notes 1.) Operating pressure may be limited by maximum RPM depending on the motor output.

Notes 2.) Theoretical flow under no load.

Notes 3.) Rated pressure is (available) pressure at rated torque of motor, maximum operating pressure is pressure output at 150% torque. However, if this pressure exceeds 30MPa, the maximum operating pressure of the hydraulic unit is limited to below 30MPa.

Notes 4.) Operating conditions may limit the maximum RPM and operating pressure to values lower than those shown in the table above, contact us for more information.

Contact us about continuously adding pressure while operation is stopped.

Notes 5.) An auxiliary tank can be connected if fluctuation in oil volume is greater than allowed values. Contact us for information on how to connect an auxiliary tank.

Servo Controller

Model No.: EPD-PD2-10 (-A) -D2-10

A non-Sign: Standard (Pulse output positioning sensor can also be responded.)
 A: Analog voltage output positioning sensor can also be responded.

Power Supply/Consumption	24VDC ±15%/less than 10W	Separate power supply for sensor is needed
Operating Ambient Temperature/Humidity	0 to +55°C/90% RH or less (no condensation)	
Controlled Parameters	Cylinder position, speed, pressure	Control mode automatic switching function available
Command Input	Speed Command	Analog voltage DC ±10V/maximum cylinder speed (*1), cylinder extended by positive voltage, cylinder retracted by negative voltage
	Pressure Command	Analog voltage DC ±10V/maximum control pressure (*2), positive voltage adds pressure to head side, negative voltage adds pressure to rod side
	Position Command	Position selection contact signal (4 contacts), target position selected by bit pattern of 4 contacts, acceleration function generated in controller moves cylinder to target position
Input Signals (Contact Signals)	Servo on, alarm reset, control mode external switching, start point search start, start point retraction end point LS, start point proximity LS	
Output Signals	Alarm, servo ready, control mode monitor, start point search end/in position (also output), pressure consistency	
Pressure Sensor Input	Analog voltage 0.5 to 4.5V, or 1 to 5V (2ch)	Uses pressure sensor with response time of 1 ms or less.
Position Sensor Input	90° phase difference biphasic pulse, start point pulse (line receiver input) or analog voltage 0 to 10V (only with -A option)	If using pulse output position sensor, start point search is necessary once after turning on the power Pulse output positioning sensor: Uses sensor with resolution of 1 μm or less Analog voltage output positioning sensor: Uses sensor with response time of 2 ms or less
Servo Amp I/F	Output: Motor revolve command (analog voltage ±10VDC), servo amp, servo alarm reset Input: Servo alarm, servo ready	

Connector for controller, pins are attached.

Servo Amp

Hydraulic Unit Model (UPS Series)	Motor Output kW	Compatible Servo Amp Model (According to Model Ordered)	Remarks
UPS-00A-* $\frac{1}{4}$ 05	0.5	EPA-PD1-10-R050-8647B	Regenerative resistor built in, cable connector included
UPS-00A-* $\frac{1}{4}$ 10	1.0	EPA-PD1-10-R100-8647B	Regenerative resistor built in, cable connector included
UPS-00A-* $\frac{1}{4}$ 15	1.5	EPA-PD1-10-R150-8647B	Regenerative resistor built in, cable connector included
UPS-00A-* $\frac{1}{4}$ 20	2.0	EPA-PD1-10-R200-8647B	Regenerative resistor built in, cable connector included
UPS-0A-* $\frac{1}{4}$ 20	2.0	EPA-PD1-10-R200-8647B	Regenerative resistor built in, cable connector included
UPS-1A-* $\frac{1}{4}$ 29	2.9	EPA-PD1-10-YV290-8647B	Regenerative resistor built in (cable connector not included)
UPS-1A-* $\frac{1}{4}$ 44	4.4	EPA-PD1-10-YV440-8647B	Regenerative resistor built in (cable connector not included)
UPS-1A-* $\frac{1}{4}$ 55	5.5	EPA-PD1-10-R550-8647B	Regenerative resistor built in, cable connector included
UPS-1A-* $\frac{1}{4}$ 75	7.5	EPA-PD1-10-R750-8647B	External regenerative resistor and cable connector included

Notes 1.) Power: 3-phase 200 to 230VAC, 50/60Hz

Notes 2.) Separate motor cable and encoder cable are needed to connect the servo motor on the hydraulic unit.

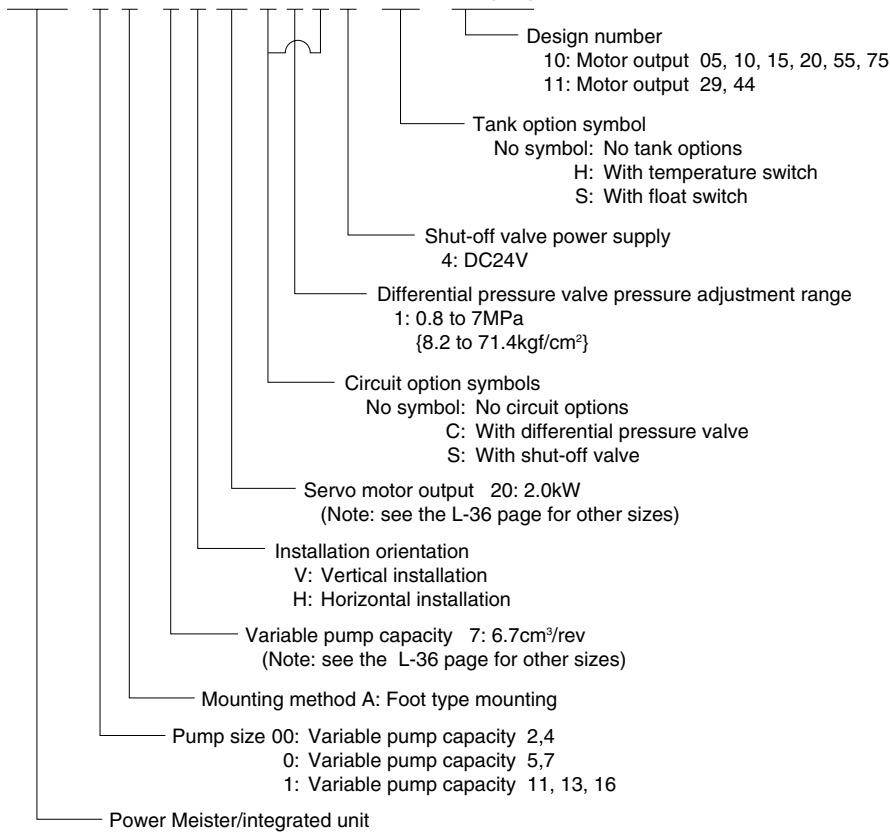
Notes 3.) An auxiliary external regenerative resistor may need to be added in some operating conditions if the built-in or external regenerative resistor is not sufficient.

For more details contact us with information about your operating conditions (load motion diagram).

Understanding Model Numbers

Hydraulic Unit

UPS-0 A-7 V 20 C 1 S 4-HS-10 (11)



Servo Controller

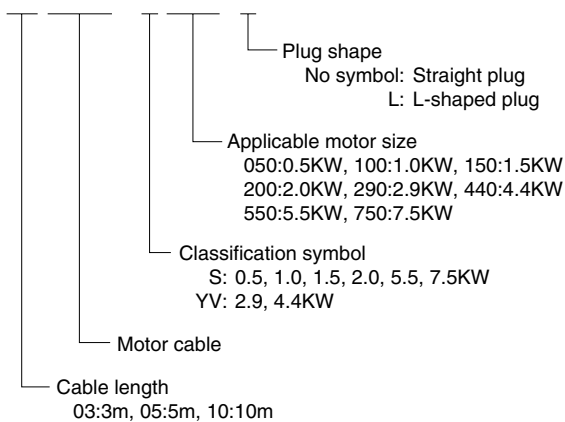
EPD-PD 2-10 (-A) -D 2-10

None: Standard
-A : Analog voltage output position sensor compatible

Cable Kit Specification

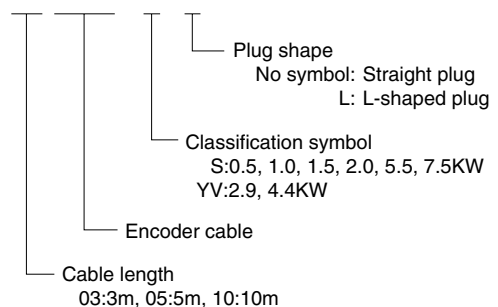
• Motor Cable Kit

JAQ-05 ACM-S 200-L- 8649



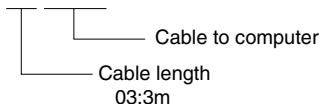
• Encoder Cable Kit

JAQ-05 ACE-S-L- 8648



• Cable to computer Kit

JAQ-03 PMC- 8654A

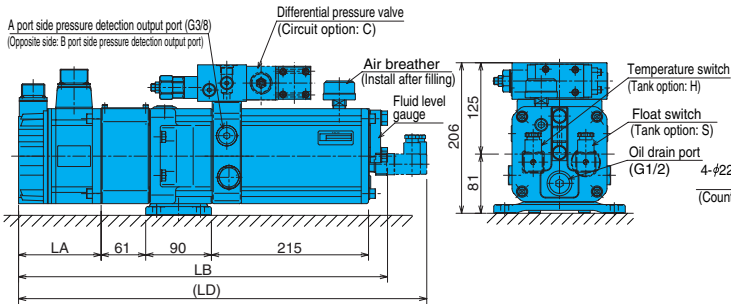
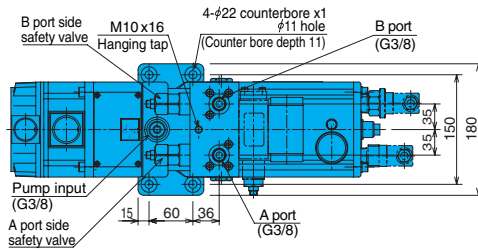


Installation Dimension Drawings

• UPS-00A Series Integrated Unit

Circuit options: S (shut off valve) none

UPS-00A-*H**** (Horizontal Installation)



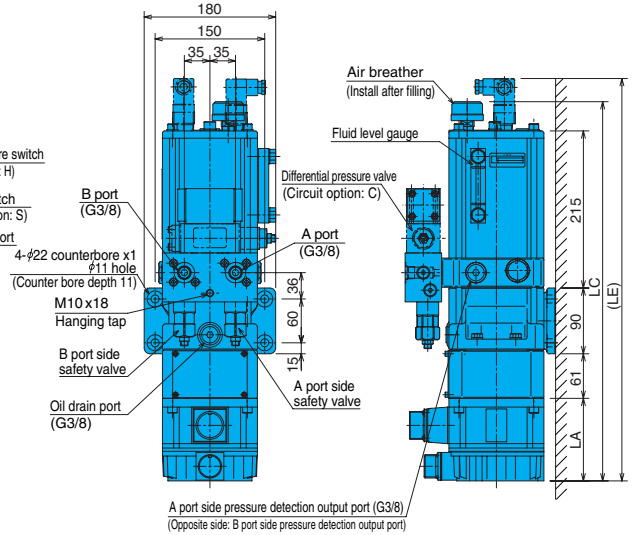
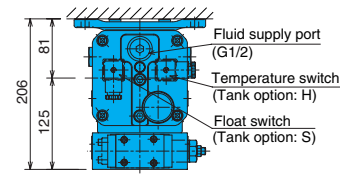
UPS Model No.	LA	LB	LC	LD	LE	Note 2) Approximate Weight
UPS-00A-* _H 05	113	505	519	559	551	28kg
UPS-00A-* _H 10	133	525	539	579	571	30kg
UPS-00A-* _H 15	152	544	558	598	590	31kg
UPS-00A-* _H 20	171	563	577	617	609	33kg

Note 1.) Dimensions in (parentheses) and two-dot chain lines are for circuit options C and S and tank options H and S.

Note 2.) Does not include circuit or tank options or weight of hydraulic fluid.

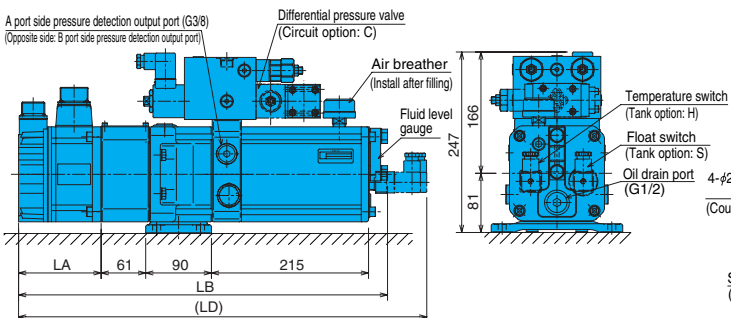
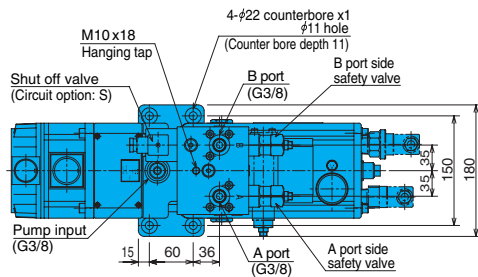
Note 3.) Install the air breather facing up.

UPS-00A-*V**** (Vertical Installation)

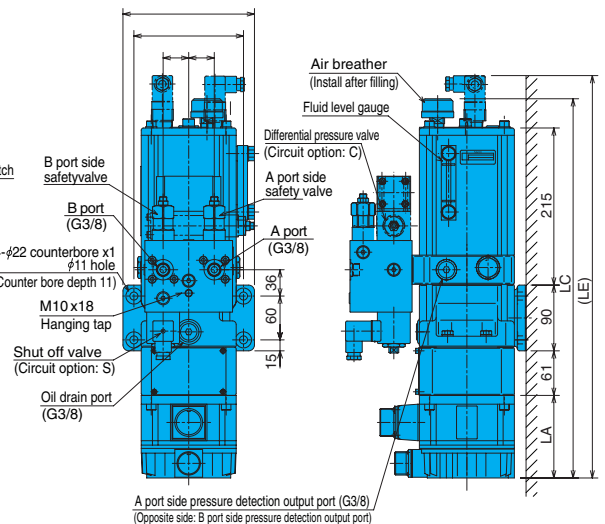
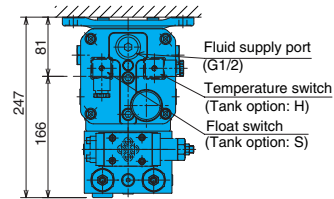


Circuit options: S (shut off valve) attached

UPS-00A-*H****S4 (Horizontal Installation)

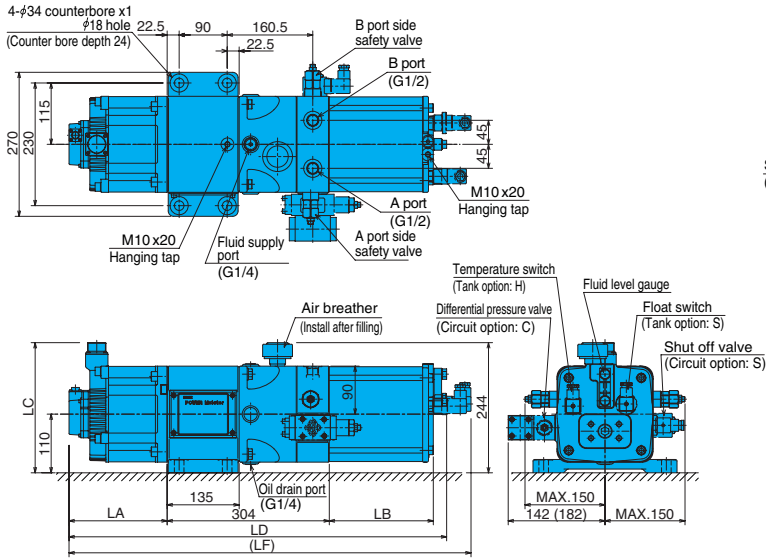


UPS-00A-*V****S4 (Vertical Installation)

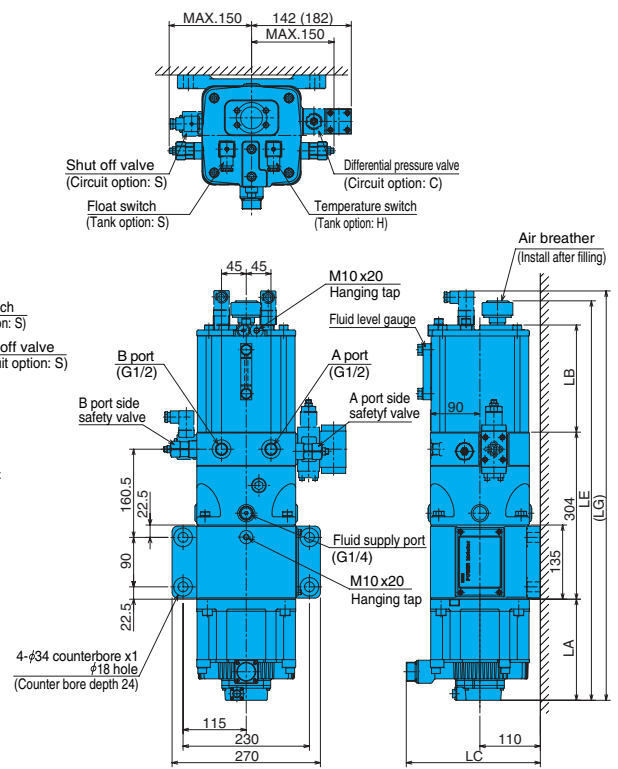


● UPS-0A/1A Series Integrated Unit

UPS-*A-**H**** (Horizontal Installation)

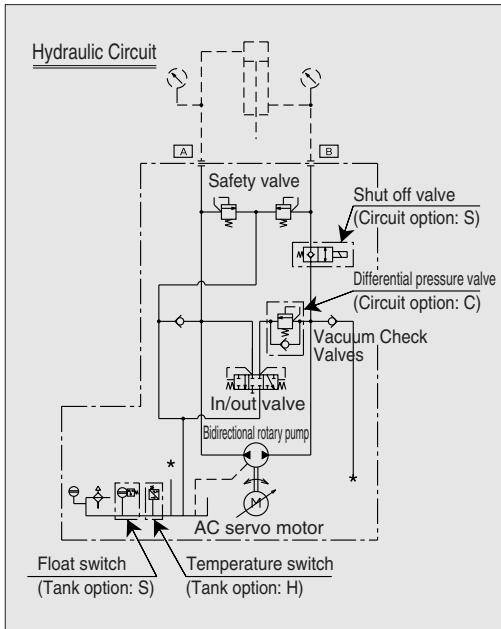


UPS-*A-**V**** (Vertical Installation)



UPS Model No.	LA	LB	LC	LD	LE	LF	LG	Note 2) Approximate Weight
UPS-0A- * _H 20	171	120	229	620	639	666	657	52kg
UPS-1A-** _H 29	160		244	684	703	730	721	58kg
UPS-1A-** _H 44	184	195		708	727	754	745	62kg
UPS-1A-** _H 55	267		276	791	810	837	828	76kg
UPS-1A-** _H 75	332			856	875	902	893	87kg

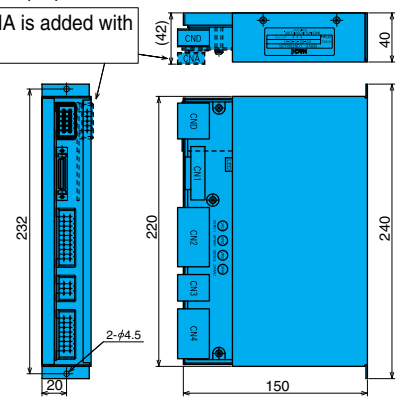
Note 1.) Dimensions in parentheses and two-dot chain lines are for circuit options C and S and tank options H and S.
 Note 2.) Does not include circuit or tank options or weight of hydraulic fluid.
 Note 3.) Install the air breather facing up.



• Servo Controller

EPD-PD2-10 (-A)-D2-10

Connector CNA is added with option (-A).



Approximate Weight: 1.0kg

• Servo Amp for UPS-00A

0.5kW Motor

Approximate Weight: 1.0kg

**1.0kW
1.5kW Motor**

Approximate Weight: 2.2kg

2.0kW Motor

Approximate Weight: 5.5kg

• Servo Amp for UPS-0A/1A

2.0kW Motor

Approximate Weight: 5.5kg

2.9kW Motor

Approximate Weight: 4.6kg

4.4kW Motor

Approximate Weight: 4.6kg

5.5kW Motor

Approximate Weight: 6.8kg

7.5kW Motor

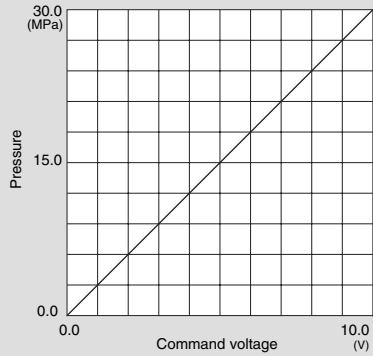
Approximate Weight: 10.0kg

Regenerative resistor: height 140mm, width 340mm. Approximate Weight: 10.0kg

Regenerative resistor: height 57mm, width 340mm. Approximate Weight: 1.0kg

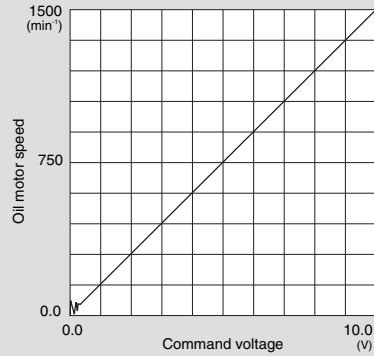
Performance Characteristics

● Pressure Command Voltage - Pressure Characteristics (0 to 100%)



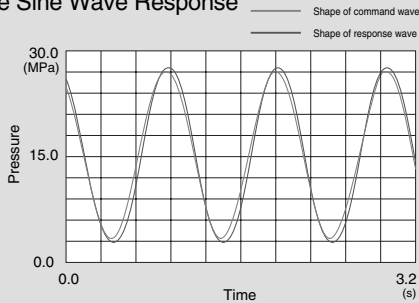
Command 10V for 30MPa From low pressure 0.15MPa
 0V→10V→0V command To high pressure 30MPa

● Speed Command Voltage - Speed Characteristics (0 to 100%)



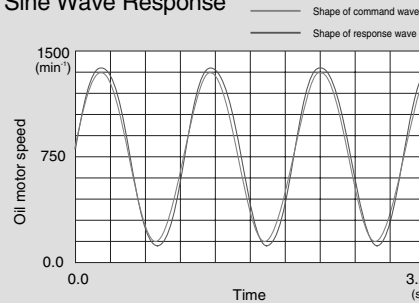
Command 10V to 1500min⁻¹ From low speed 50min⁻¹
 0V→10V→0V command To high-speed 1500min⁻¹
 (If oil motor is running as actuator)

● Pressure Sine Wave Response



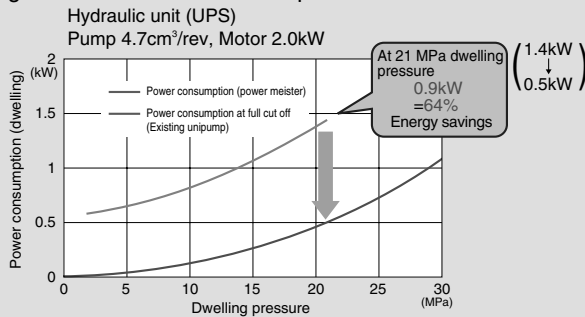
Command 1Hz sine wave, amplitude 10 to 90%

● Speed Sine Wave Response



Command 1Hz sine wave, amplitude 10 to 90%
 (If oil motor is running as actuator)

● Dwelling Pressure - Power Consumption Characteristics



Control equipment: Unipump 2.2kW (variable piston pump)
 Full cut off power consumption (N=1800min⁻¹)
 (Note) Characteristics vary depending on operating conditions.