



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 set-up)

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)

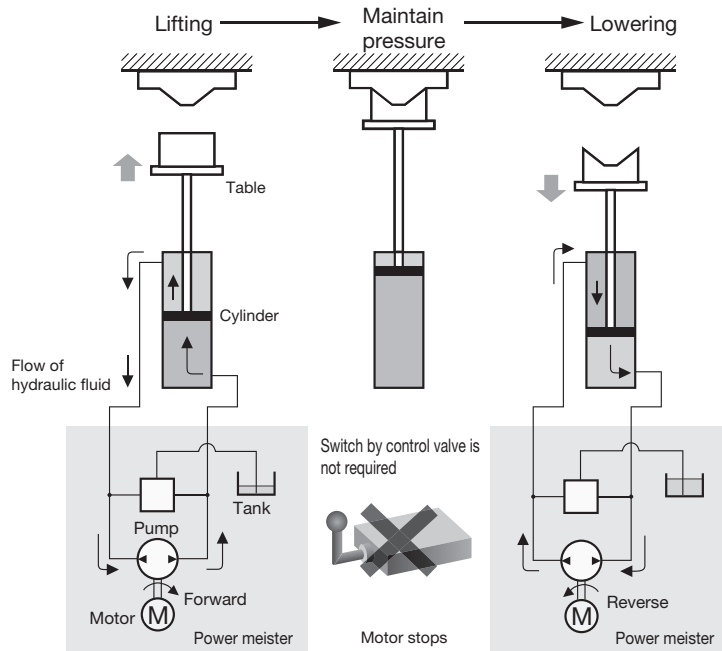
Signals to operate the cylinder (position, speed, and pressure) are sent from the control equipment to the servo controller and the hydraulic unit responds according to the signals. The servo controller receives feedback from sensors and accurately controls the cylinder so the deviation from the signals 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 Fan cable (select from 3, 5, or 10 meters) ...For 11kW motor
- ⑦ 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 (0.75 to 11kW (servo amp drive)) Power supply 3-phase 200 to 230VAC, 50/60Hz (servo amp power supply) For 11kW only : Fan motor power supply Single-phase 200 to 230VAC 50/60Hz is required
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 (Note7)
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	UPS-00A : 3.5 to 32MPa UPS-0A/1A : 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 4))
UPS-00A-2*07	0.75	2.0	3000	6.0	6.4	9.6	V:0.75 H:0.65 L:No tanks (Note 5)	V:0.3 H:0.2
UPS-00A-2*10 UPS-00A-3*10	1.0	2.0 3.0	3000	6.0 9.0	8.5 5.7	12.7 8.5		
UPS-00A-2*15 UPS-00A-3*15 UPS-00A-4*15	1.5	2.0 3.0 4.0	3000	6.0 9.0 12.0	19.2 12.8 9.6	28.8 19.2 14.4		

●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 4))
UPS-0A-2*12 UPS-0A-4*12	1.2	2.0 4.0	3000	6.0 12.0	15.2 7.6	22.8 11.4	V:1.9 H:1.5	V:0.6 H:0.3
UPS-0A-2*20 UPS-0A-4*20	2.0	2.0 4.0	3000	6.0 12.0	25.4 12.7	30.0 19.0		

●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 4))								
UPS-1A-5*35 UPS-1A-7*35 UPS-1A-9*35 UPS-1A-11*35 UPS-1A-13*35 UPS-1A-16*35	3.5	4.7 6.7 9.0 11.0 12.9 15.8	2500	11.8 16.8 22.5 27.5 32.3 39.5	21.1 14.8 11.7 9.6 8.2 6.7	30.0 22.2 17.5 14.3 12.2 10.0	No symbol:4.5 A:3.0 B:6.0	Tank capacity:No symbol V:1.2, H:0.6 Tank capacity:A V:0.6, H:0.4 Tank capacity:B V:2.8, H:0.8								
UPS-1A-5*45 UPS-1A-7*45 UPS-1A-9*45 UPS-1A-11*45 UPS-1A-13*45 UPS-1A-16*45		4.5		4.7 6.7 9.0 11.0 12.9 15.8	2500	11.8 16.8 22.5 27.5 32.3 39.5			30.0 22.6 17.8 14.6 12.4 10.2	30.0 30.0 26.8 21.9 18.7 15.2						
UPS-1A-7*55 UPS-1A-9*55 UPS-1A-11*55 UPS-1A-13*55 UPS-1A-16*55				5.5		6.7 9.0 11.0 12.9 15.8			2500	16.8 22.5 27.5 32.3 39.5	27.9 22.0 18.0 15.3 12.5	30.0 30.0 27.0 23.0 18.8				
UPS-1A-9*75 UPS-1A-11*75 UPS-1A-13*75 UPS-1A-16*75						7.5				9.0 11.0 12.9 15.8	2500	22.5 27.5 32.3 39.5	30.0 24.7 21.0 17.2	30.0 30.0 30.0 25.8		
UPS-1A-13*11K UPS-1A-16*11K										11.0		12.9 15.8	2500	32.3 39.5	30.0 25.1	30.0 30.0

<Selection Precautions>

The Power Meister is a hydraulic system that directly drives the hydraulic cylinder by accelerating, decelerating, or stopping a motor. Because torque, separate from the motor torque needed to generate pressure, is needed to accelerate and decelerate, the maximum flow rate and maximum pressure may be lower than in the above table due to restrictions caused by the machinery's operating conditions.

When you select a product, you first need to clarify the operating cycle and load of your machinery (the hydraulic cylinders that the Power Meister will drive) in advance and then consult with us.

(Note 1) There is a limit to the operating pressure at maximum RPMs due to the low torque that is characteristic of this motor's output at high RPMs.

(Note 2) Theoretical flow under no load. Actual flow varies according to load pressure.

(Note 3) Rated pressure is rated torque of the motor, maximum operating pressure is pressure output at 150% torque. However, if this pressure exceeds 30 MPa, the maximum operating pressure of the hydraulic unit is below 30 MPa. Also, the maximum RPM and operating pressure may be limited depending on the acceleration, deceleration, and load conditions. Clarify your machinery's operating conditions first, and contact us for more information.

(Note 4) If the fluctuation in oil volume is greater than the allowed values an auxiliary tank can be connected to resolve this. Contact us for more information.

(Note 5) If your selection does not include a tank, then a separate oil tank is required. We can also manufacture oil tanks, so contact us for more information if you are interested.

(Note 6) The temperature of the hydraulic fluid is affected by many factors, such as the hydraulic unit's operating environment, operating methods, and load conditions. The customer must confirm the unit's actual continuous operating conditions. Also, long-term, continuous operation under pressure or high-frequency reciprocal operation may result in increased oil temperatures. Therefore, operating pressure limits or installation of a cooling system may be necessary. Contact us for more information.

Servo Controller

Model No.: EPD-PD3-10-D2-20

Power Supply/Consumption	24VDC ±15%/less than 10W	Separate power supply for sensor is needed
Operating Ambient Temperature/Humidity	0 to +55;/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 ^(*) , cylinder extended by positive voltage, cylinder retracted by negative voltage
	Pressure Command	Analog voltage DC ±10V/maximum control pressure ^(*) , 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	
Control Panel	5 digits with symbol, 4 key input, selector switch	data setting/display, test run function

- Connector for controller, pins are attached.
- When you use the spacer for the servo controller (Option:FZV-8676-02A-01), the installation dimension becomes the same as the old design [EPD-PD2-10(-A)-D2-10]and the height from the mounding surface to the connector becomes almost the same.

Servo Amp

Hydraulic Unit Model (UPS Series)	Motor Output kW	Compatible Servo Amp Model	Remarks
UPS-00A-**07	0.75	EPA-PD1-10-R075-20	Regenerative resistor built in
UPS-00A-**10	1.0	EPA-PD1-10-R100-20	
UPS-00A-**15	1.5	EPA-PD1-10-R150-20	
UPS-0A-**12	1.2	EPA-PD1-10-R120-20	
UPS-0A-**20	2.0	EPA-PD1-10-R200-20	
UPS-1A-***35	3.5	EPA-PD1-10-R350-20	
UPS-1A-***45	4.5	EPA-PD1-10-R450-20	
UPS-1A-***55	5.5	EPA-PD1-10-R550-20	External regenerative resistor included
UPS-1A-***75	7.5	EPA-PD1-10-R750-20	
UPS-1A-***11K	11.0	EPA-PD1-10-R11K-20	

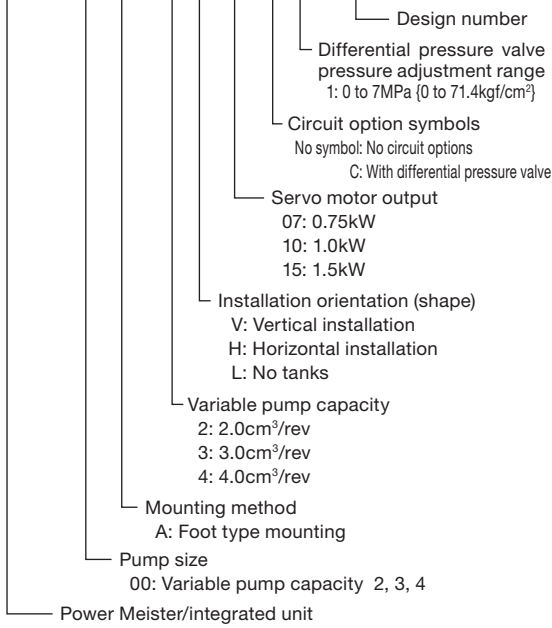
- Note 1) Power: 3-phase 200 to 230VAC, 50/60Hz
 Note 2) Separate motor cable and encoder cable are needed to connect the servo motor on the hydraulic unit.
 Note 3) An auxiliary external regenerative resistor may need to be added in some operating conditions if the built-in or external regenerative resistor is not sufficient.
 For more details contact us with information about your operating conditions (load motion diagram).
 Note 4) A cable connector is included.

Explanation of model No.

Hydraulic Unit

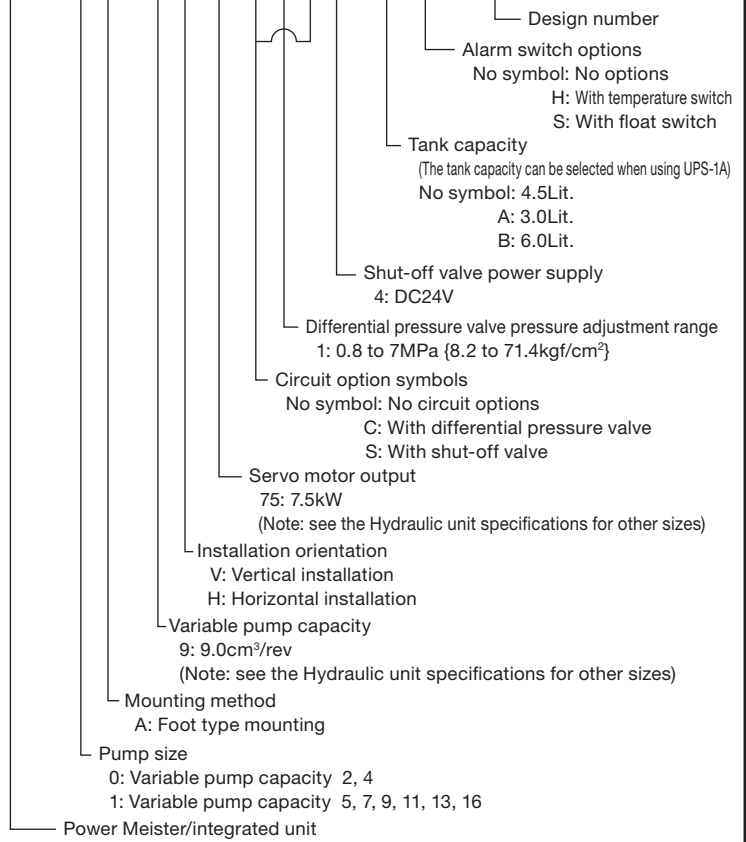
●UPS-00A

UPS - 00 A - 2 H 07 C 1 - 20



●UPS-0A/UPS-1A

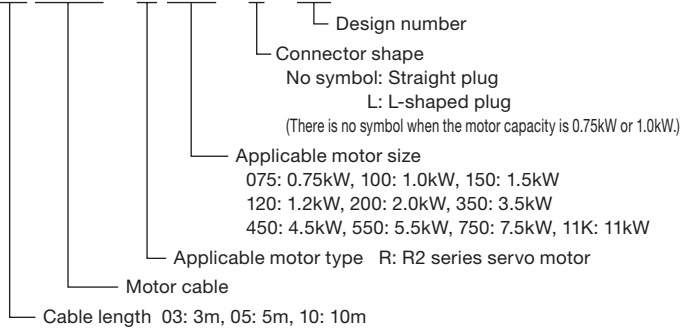
UPS - 1 A - 9 V 75 C 1 S 4 - B HS - 20



Cable Kit Specification

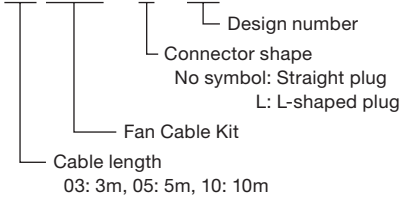
●Motor Cable Kit

JAQ - 03 ACM - R 150 - L - 20



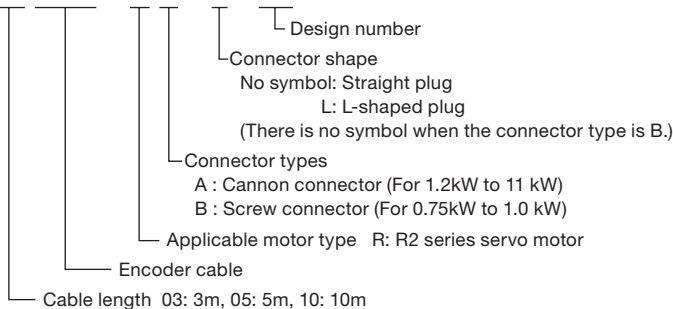
●Fan Cable Kit

JAQ - 03 ACF - L - 20



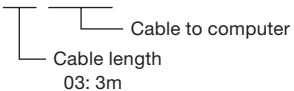
●Encoder Cable Kit

JAQ - 03 ACE - R A - L - 20



●Cable to computer Kit

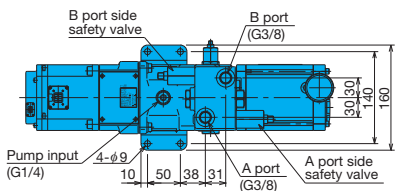
JAQ - 03 PMC - 8654A



Installation Dimension Drawings

●UPS-00A Series Integrated Unit

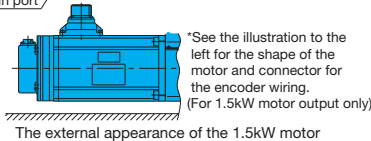
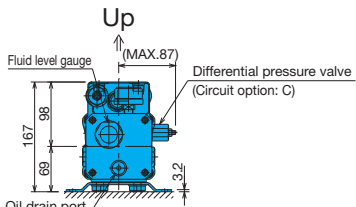
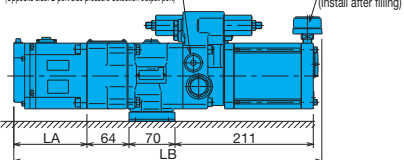
UPS-00A-*H*** (Horizontal Installation)



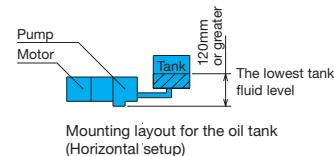
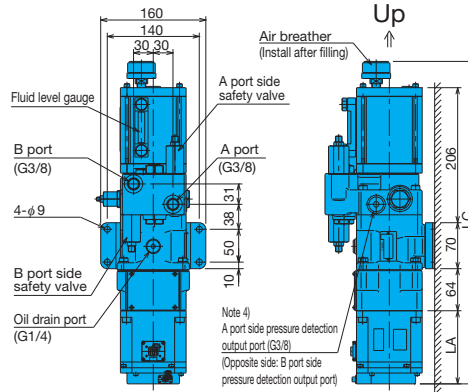
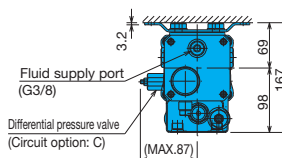
Note 4)

A port side pressure detection output port (G3/8)

(Opposite side: B port side pressure detection output port)



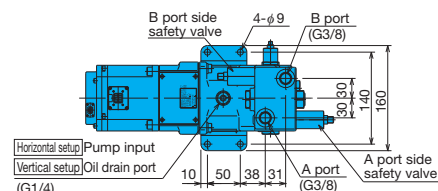
UPS-00A-*V*** (Vertical Installation)



UPS Model No.	LA	LB	LC	Approximate Weight
UPS-00A-* _H 07	111	469	491	16kg
UPS-00A-* _H 10	128	486	508	17kg
UPS-00A-* _H 15	224	582	604	20kg

- Note 1) Dimensions in (parentheses) and two-dot chain lines are for circuit options C.
 Note 2) The air breather is included in the unit as a separate item. After filling the tank with oil, install the air breather.
 Note 3) Install the unit in a mounting orientation prescribed by Model No. (H: Horizontal installation, V: Vertical installation)
 Note 4) The B port side pressure detection output port can only be used when there are no "C" circuit options.

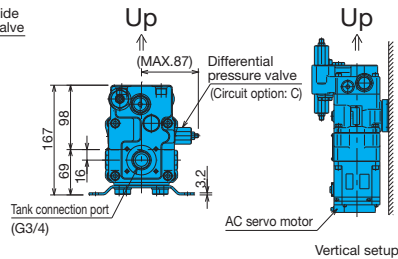
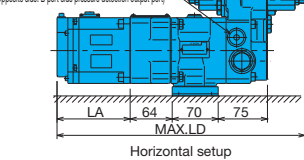
UPS-00A-*L*** (No tanks)



Note 5)

A port side pressure detection output port (G3/8)

(Opposite side: B port side pressure detection output port)



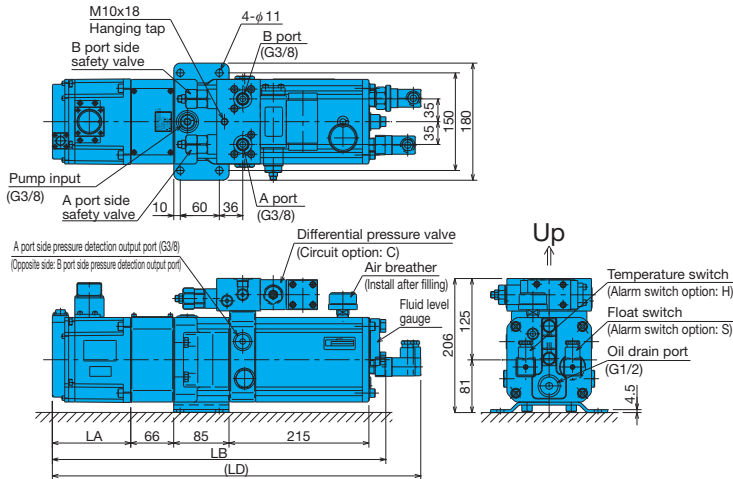
UPS Model No.	LA	LD	Approximate Weight
UPS-00A-*L07	111	377	14kg
UPS-00A-*L10	128	394	15kg
UPS-00A-*L15	224	490	18kg

- Note 1) Dimensions in (parentheses) and two-dot chain lines are for circuit options C.
 Note 2) An Oil tank will be required separately. We can also produce oil tanks. Contact us for requests for oil tanks.
 Note 3) Install horizontally or vertically. For vertical installation, install the servo motor facing down.
 Note 4) When installing the oil tank horizontally, make sure the lowest fluid level position during the cylinder operation is always 120mm or greater from the bottom of the unit. (See illustration on the upper right: Mounting layout for the oil tank)
 Note 5) The B port side pressure detection output port can only be used when there are no "C" circuit options.

●UPS-0A Series Integrated Unit

Circuit options: S (shut off valve) none

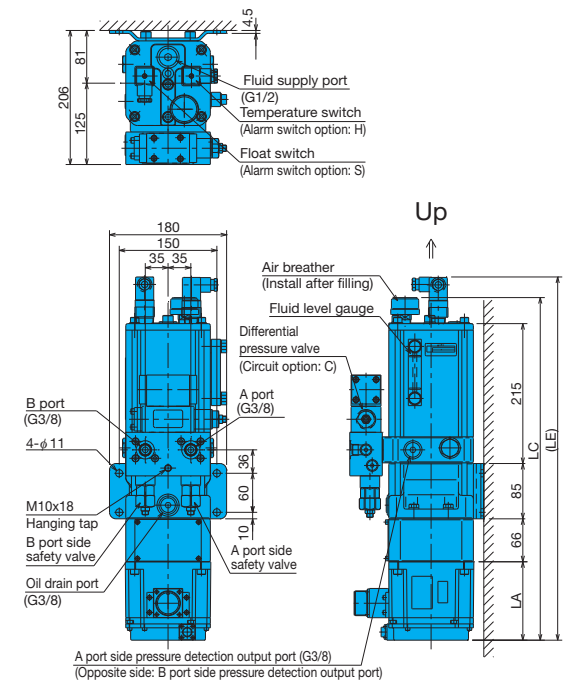
UPS-0A-*H**(Horizontal Installation)**



UPS Model No.	LA	LB	LC	LD	LE	Approximate Weight
UPS-0A-* $\frac{1}{2}$ 12	121	513	527	567	559	30kg
UPS-0A-* $\frac{1}{2}$ 20	160	552	566	606	598	33kg

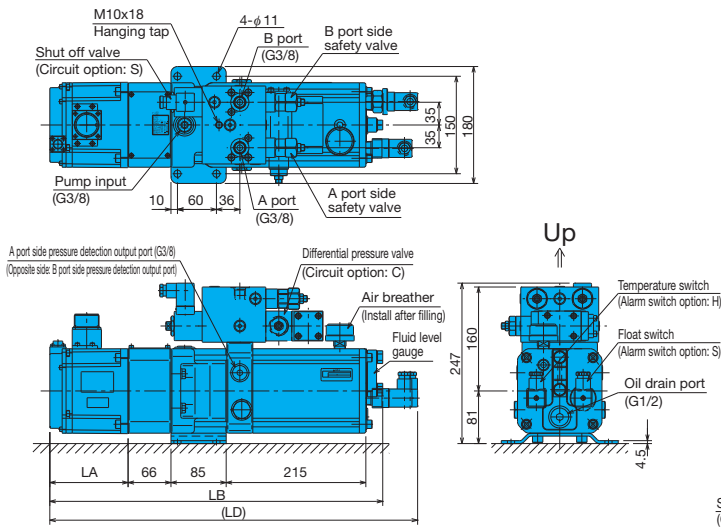
Note 1) Dimensions in (parentheses) and two-dot chain lines are for circuit options C and alarm switch options H and S.
 Note 2) Does not include circuit or alarm switch options or weight of hydraulic fluid.
 Note 3) The air breather is included in the unit as a separate item. After filling the tank with oil, install the air breather.
 Note 4) Install the unit in a mounting orientation prescribed by Model No. (H: Horizontal installation, V: Vertical installation)

UPS-0A-*V**(Vertical Installation)**



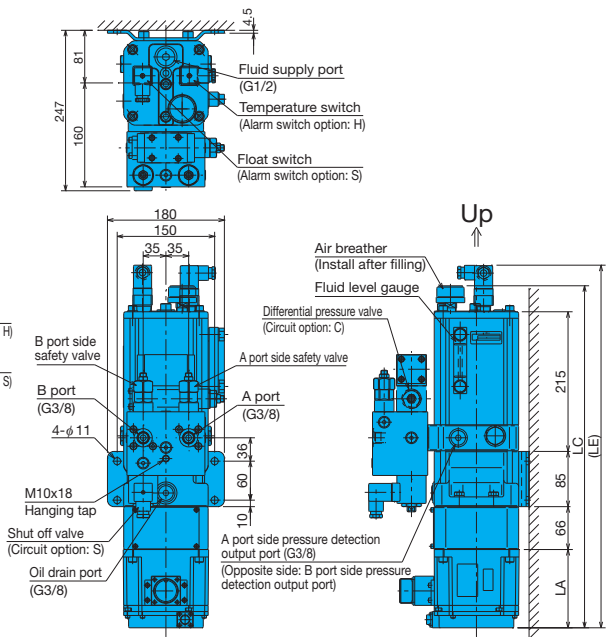
Circuit options: S (shut off valve) attached

UPS-0A-*H**S4(Horizontal Installation)**



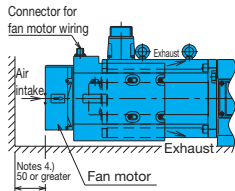
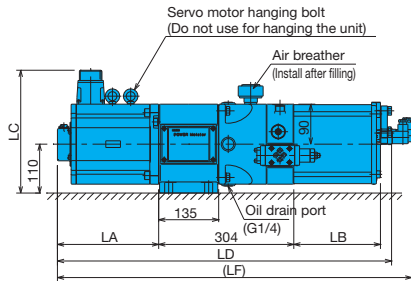
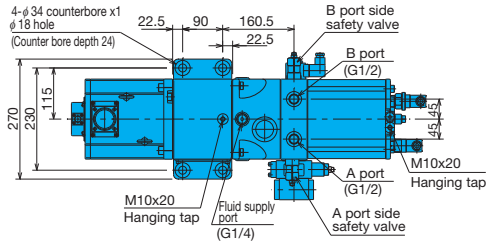
*The dimension table and Notes 1 to 4 are in common with when there is no circuit option:S (Shut off valve)

UPS-0A-*V**S4(Vertical Installation)**



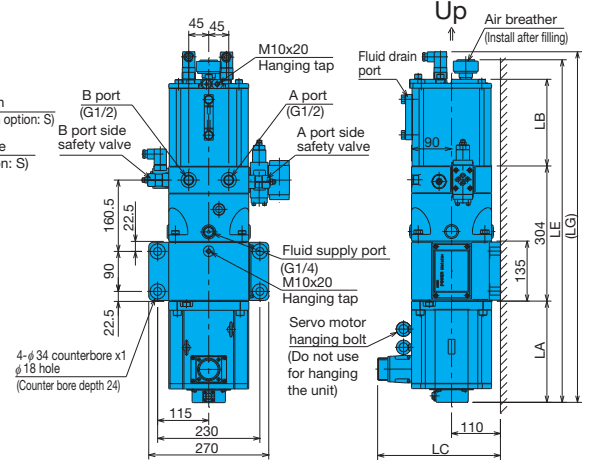
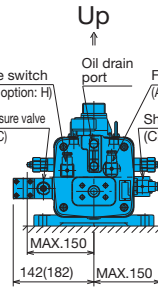
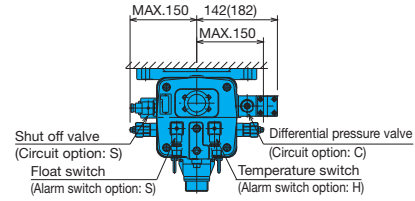
●UPS-1A Series Integrated Unit

UPS-1A-H****(Horizontal Installation)**



The external appearance of a 11kW motor
 *For 11kW motor output only, the fan motor is provided.

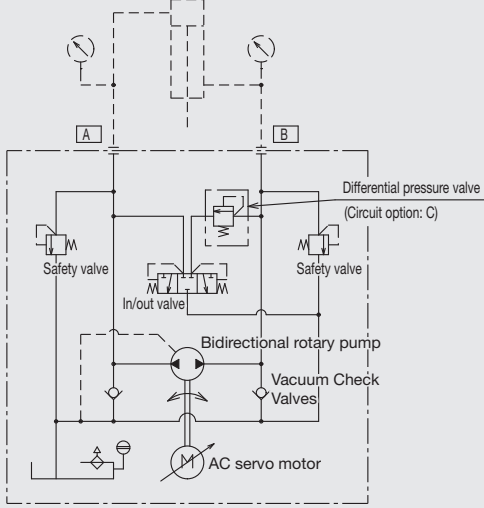
UPS-1A-V****(Vertical Installation)**



UPS Model No.	LA	LB	LC	LD	LE	LF	LG	Approximate Weight ^{Note 2)}
UPS-1A- ^V _H 35****-A		120		608	627	654	645	60kg
UPS-1A- ^V _H 35****	159	195	254	683	702	729	720	61kg
UPS-1A- ^V _H 35****-B		275		763	782	809	800	63kg
UPS-1A- ^V _H 45****-A		120		625	644	671	662	64kg
UPS-1A- ^V _H 45****	176	195	254	700	719	746	737	65kg
UPS-1A- ^V _H 45****-B		275		780	799	826	817	67kg
UPS-1A- ^V _H 55****-A		120		677	696	723	714	70kg
UPS-1A- ^V _H 55****	228	195	276	752	771	798	789	71kg
UPS-1A- ^V _H 55****-B		275		832	851	878	869	73kg
UPS-1A- ^V _H 75****-A		120		722	741	768	759	78kg
UPS-1A- ^V _H 75****	273	195	276	797	816	843	834	79kg
UPS-1A- ^V _H 75****-B		275		877	896	923	914	81kg
UPS-1A- ^V _H 11K****-A		120		844	863	890	881	85kg
UPS-1A- ^V _H 11K****	395	195	276	919	938	965	956	86kg
UPS-1A- ^V _H 11K****-B		275		999	1018	1045	1036	88kg

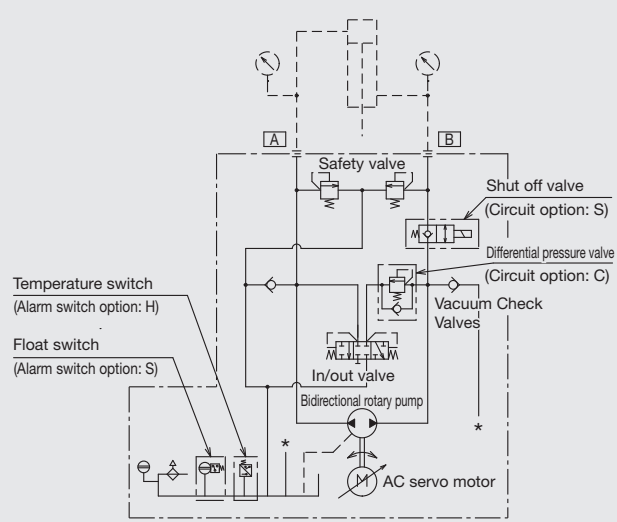
Note 1) Dimensions in (parentheses) and two-dot chain lines are for circuit options C and S and alarm switch options H and S.
 Note 2) Does not include circuit or alarm switch options or weight of hydraulic fluid.
 Note 3) The air breather is included in the unit as a separate item. After filling the tank with oil, install the air breather.
 Note 4) For 11kW motor output only, the fan motor is provided. When installing the unit, provide space of 50mm or greater for air intake of the fan motor.
 Note 5) Install the unit in a mounting orientation prescribed by Model No. (H: Horizontal installation, V: Vertical installation)

Hydraulic circuit diagram (UPS-00A)



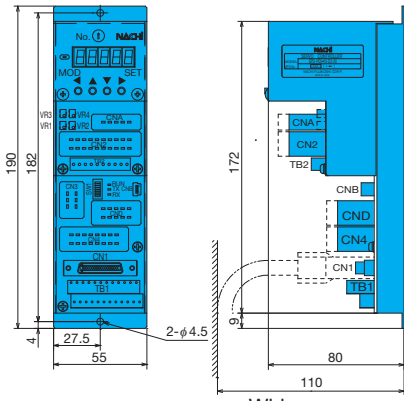
When maintaining the position of the cylinder during servo off is required for example when preventing the cylinder from self-weight falling, additional circuits (for example shut-off valve) will be required. Contact us for more information.

Hydraulic circuit diagram (UPS-0A, 1A)



● Servo Controller

EPD-PD3-10-D2-20



Approximate Weight: 0.5kg

● Servo Amp

0.75kW Motor
1.0kW Motor

Approximate Weight: 1.0kg

1.2kW Motor
1.5kW Motor

Approximate Weight: 1.7kg

2.0kW Motor

Approximate Weight: 5.0kg

3.5kW Motor
4.5kW Motor
5.5kW Motor

Approximate Weight: 5.3kg

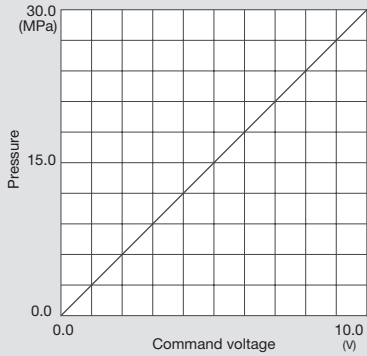
7.5kW Motor
11kW Motor

Approximate Weight: 9.6kg

Approximate Weight: 3.0kg

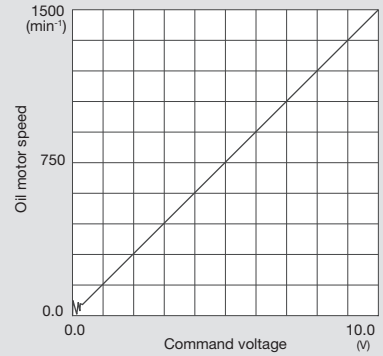
Performance Characteristics

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



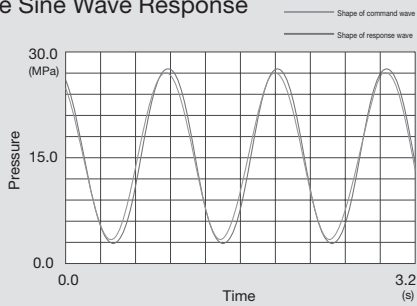
Command 10V for 30MPa From low pressure 0.15MPa
 0V → 10V → 0V command To high pressure 30MPa

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



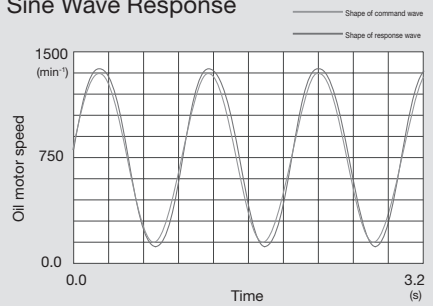
Command 10V to 1500min⁻¹ From low speed 50min⁻¹
 0V → 10V → 0V command To high-speed 1500min⁻¹
 (If oil motor is running as actuator)

● Pressure Sine Wave Response



Command 1Hz sine wave, amplitude 10 to 90%

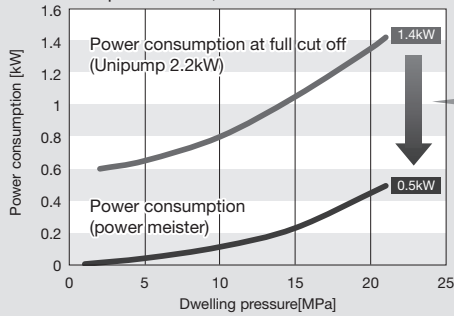
● Speed Sine Wave Response



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

● Dwelling Pressure - Power Consumption Characteristics

Hydraulic unit (UPS)
 Pump 4.0cm³/rev, Motor 2.0kW



Energy savings
0.9kW (Approximately 65%)
 At 21 MPa dwelling pressure

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