



SUPER UNIT

INVERTER HYDRAULIC UNIT

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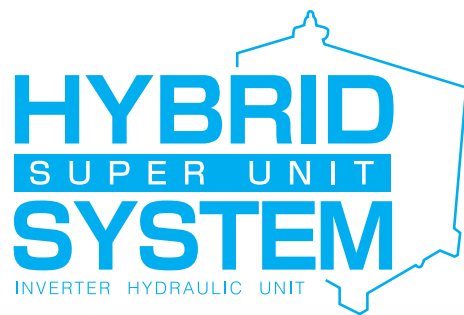
●For the purpose of making improvements, the contents of this catalog are subject to change without prior notice.



Get more than Saving!!

Energy saving is essential.
However, the DAIKIN hydraulic system goes one step farther than conventional models.

DAIKIN conducts environmentally friendly product development by promoting energy saving in production fields and by reducing waste through recycling. Pursuing higher usability and more diversified functions, DAIKIN combined its original high-efficiency IPM motor drive system and pump switching control technology. The SUPER UNIT incorporates the multi-stage pressure/flow rate control system as well as the functions of conventional hydraulic units, which results in use of a reduced number of valves. DAIKIN intends to promote energy saving through advanced hydraulic systems with the aim of environmental improvement and to continuously introduce hydraulic systems that lead the industry.



Combining the DAIKIN-original high-efficiency IPM motor drive system and hydraulic technology enables an overwhelming energy-saving effect and advanced functions.

Energy-saving technology that supports hybrid products

- ◆ DAIKIN INDUSTRIES was the first in the industry to introduce an interior permanent magnet synchronous motor (IPM motor) into air conditioners for household use. DAIKIN was also an early adopter in the industry of the IPM motor for use in industrial-use air conditioners. Thus, DAIKIN has led the industry as a top runner in terms of air conditioner energy-saving performance.
- ◆ Hybrid products equipped with variable speed motors, developed by making full use of DAIKIN-original energy-saving motor technology and its production capacity, contribute to energy saving for factory equipment.

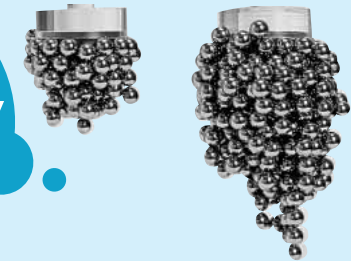


"Double torque" improves the energy-saving effect.

Combining two rotational forces ("magnetic torque" generated by a powerful neodymium magnet*1 and "reluctance torque"*2 first adopted in the air conditioner compressor) generates more power with less electricity.

Powerful neodymium magnets, the key to this improved energy-saving effect!

(Ferrite magnet) (Neodymium magnet)



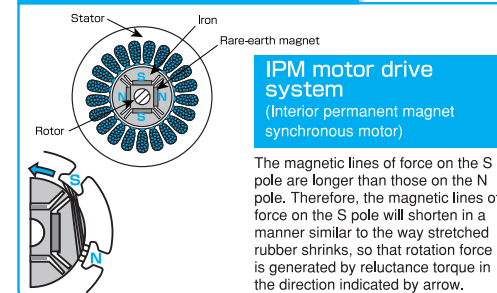
Neodymium magnets provide more power—remarkably more than the generally-used ferrite magnet.

※1:Compound of neodymium (Nd, rare-earth element), iron (Fe), and boron (B). It is generally known that neodymium magnets have superior magnetic properties. ※2:Rotation force generated by attraction force (reluctance = magnetic resistance) between iron and a magnet.

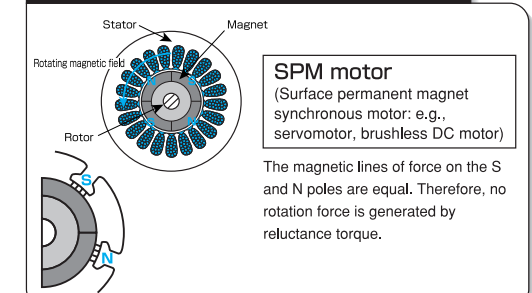
Fundamental Principle of the IPM Motor

With a rare-earth permanent magnet deeply embedded in the rotor, the IPM motor uses an electromagnetic structure that can maximize magnetic torque (attraction/repulsion force between the coil and permanent magnet) and reluctance torque (force of the coil that attracts iron). This structure provides a large amount of torque, the highest efficiency, and a low amount of heat.

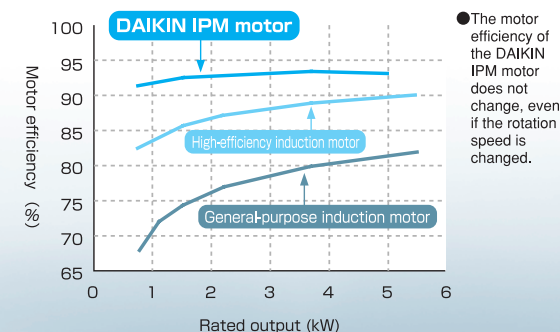
Structure of the IPM motor



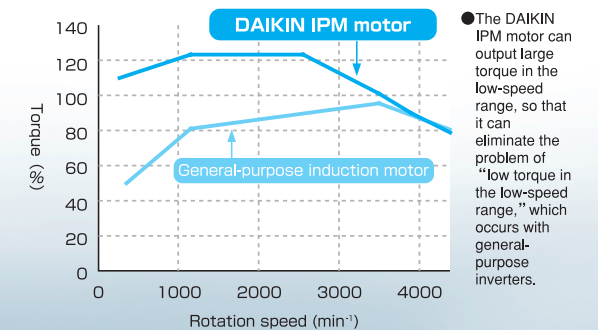
Structure of a conventional motor (AC servomotor)



(1) Comparison of motor efficiency



(2) Large torque at low speed





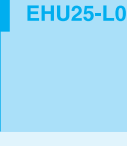

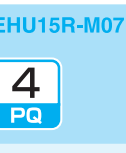

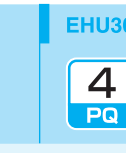

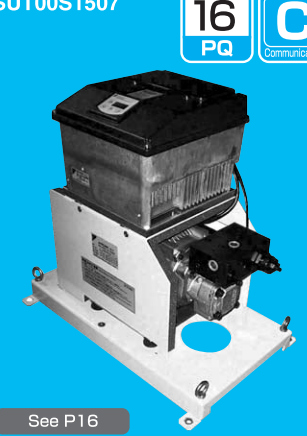
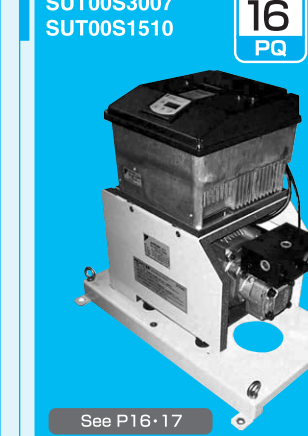
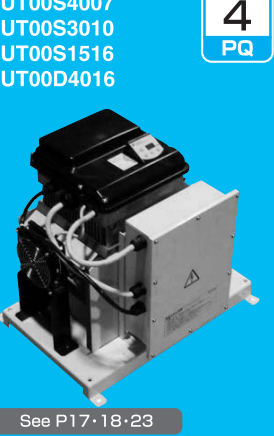
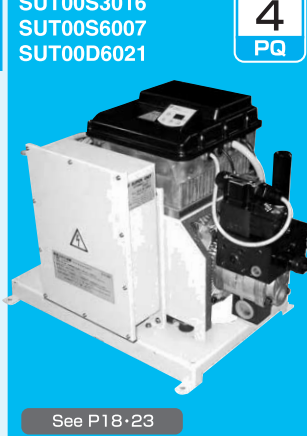

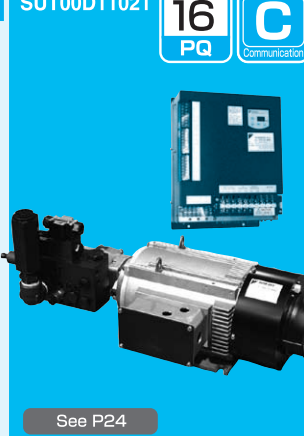
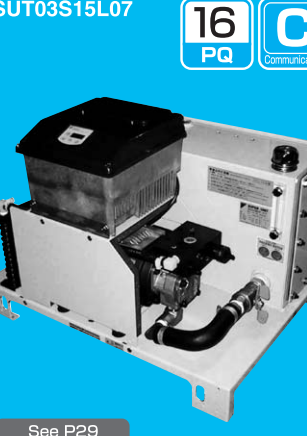
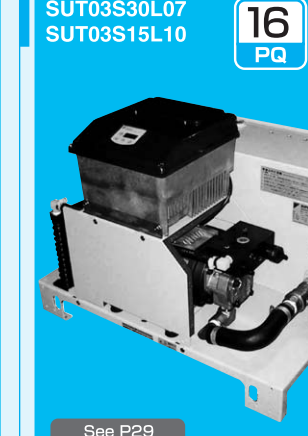
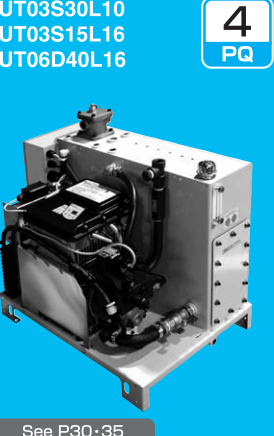

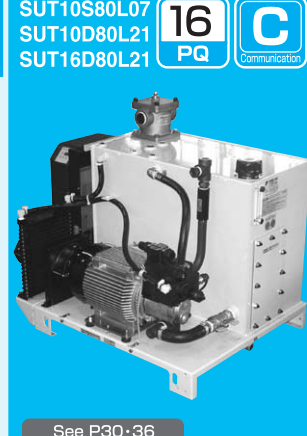


Hybrid Hydraulic Unit
Model List

Specifications vary depending on machine type.

The DAIKIN product lineup provides various functions and capacities according to machine type.

Hybrid Hydraulic Unit Model List

Hybrid Hydraulic Unit Model List

		Motor capacity 0.75kW or equivalent	1.5kW or equivalent	2.2kW or equivalent	2.8kW or equivalent	3.7kW or equivalent	5.0kW or equivalent	7.0kW or equivalent	11.0kW or equivalent
For machine tools	ECORICH								
	ECORICH-R	0.75	1.5				5.0	7.0	11.0
	SUPER ECORICH	0.75		2.2	2.8	3.7	5.0	7.0	11.0
For general industrial machinery	Pump & motor-type SUPER UNIT	0.75	1.5	 See P16	 See P16-17	 See P17-18-23	 See P18-23	 See P18-24	 See P24
	Unit type SUPER UNIT	0.75	1.5	 See P29	 See P29	 See P30-35	 See P30-35	 See P30-36	11.0
For molding machines	SUPER UNIT					 A Analog		 A Analog	

 Four-pattern P-Q control
  Sixteen-pattern P-Q control
  Idle stop
  Communication function
  Analog command input

※1: The above motor capacity is a standard value, not the general motor capacity.
 ※2: When selecting a SUPER UNIT, verify the specifications of each model by referring to "Pressure — Flow rate Characteristics (Typical)" on p. 13 and p. 14 and "How to Select a SUPER UNIT" on p. 53.
 For the purpose of making improvements, the specifications given in this catalog are subject to change without prior notice. Be sure to see the latest model chart.

SUPER UNIT Model List

The optimum model of SUPER UNIT can be selected in terms of size and functions in accordance with machine type.

Series	Motor capacity	Maximum operating pressure (MPa)	Maximum flow rate (ℓ/min)											Pump & motor type	Unit type	Tank capacity (ℓ)	P-Q selection pattern	Communication		
			10	20	30	40	50	60	70	80	90	100	110							
SUPER UNIT	2.2kW or equivalent	7.0	■													SUT00S1507-10-F	SUT03S15L07-10-F	30	16	
	2.2kW or equivalent	7.0	■													SUT00S1507-10-C	SUT03S15L07-10-C	30	16	○
	2.8kW or equivalent	7.0	■	■												SUT00S3007-10-F	SUT03S30L07-10-F	30	16	
	2.8kW or equivalent	7.0	■	■	■											SUT00S3007-10-C	SUT03S30L07-10-C	30	16	○
	2.8kW or equivalent	10.0	■	■												SUT00S1510-10-F	SUT03S15L10-10-F	30	16	
	2.8kW or equivalent	10.0	■	■												SUT00S1510-10-C	SUT03S15L10-10-C	30	16	○
	3.7kW or equivalent	7.0	■	■	■											SUT00S4007-10-F	EHU40R-M07-A-10	30	4	
	3.7kW or equivalent	10.0	■	■	■											SUT00S3010-10-F	SUT03S30L10-10-F	30	4	
	3.7kW or equivalent	15.7	■	■												SUT00S1516-10-F	SUT03S15L16-10-F	30	4	
	5.0kW or equivalent	15.7	■	■	■											SUT00S3016-10-F	SUT06S30L16-20-F	60	4	
	5.0kW or equivalent	7.0	■	■	■	■										SUT00S6007-10-F	SUT06S60L07-20-F	60	4	
	7.0kW or equivalent	7.0	■	■	■	■	■									SUT00S8007-10-F	SUT10S80L07-10-F	100	16	
	7.0kW or equivalent	7.0	■	■	■	■	■	■								SUT00S8007-10-C	SUT10S80L07-10-C	100	16	○
	Double pump type	3.7kW or equivalent	15.7	■	■	■										SUT00D4016-10-F	SUT06D40L16-20-F	60	4	
		3.7kW or equivalent		■	■	■										SUT10D40L16-20-F	100	4		
		5.0kW or equivalent	20.6	■	■	■	■									SUT00D6021-10-F	SUT06D60L21-20-F	60	4	
		5.0kW or equivalent		■	■	■	■									SUT10D60L21-20-F	100	4		
		7.0kW or equivalent	20.6	■	■	■	■	■								SUT00D8021-10-F	SUT10D80L21-10-F	100	16	
7.0kW or equivalent		■		■	■	■	■								SUT16D80L21-10-F	160	16			
7.0kW or equivalent		20.6	■	■	■	■	■								SUT00D8021-10-C	SUT10D80L21-10-C	100	16	○	
7.0kW or equivalent			■	■	■	■	■								SUT16D80L21-10-C	160	16	○		
11.0kW or equivalent	20.6	■	■	■	■	■	■								SUT00D11021-20 (21)-F	—	—	16		
11.0kW or equivalent		■	■	■	■	■	■								SUT00D11021-20 (21)-C	—	—	16	○	

※ A communication function is provided for models marked with a circle.
※ 1: Contact our sales representative for more information.

Model Identification Code

SUT	06	D	60	L	21	-	20	-	※	-	※※※
a	b	c	d	e	f		g		h		i

a Basic type

- SUT: SUT series

b Tank capacity

- 00: Pump & motor type
- 03: 30 ℓ
- 06: 60 ℓ
- 10: 100 ℓ
- 16: 160 ℓ

c Pump type

- D: Double pump type
- S: Single pump type

d Pump discharge rate

- 15: 15 ℓ/min
- 30: 25 ℓ/min
- 40: 40 ℓ/min
- 60: 60 ℓ/min
- 80: 80 ℓ/min
- 110: 110 ℓ/min

e Unit type

- L: Tank side mounting type
- No code: Pump & motor type

f Maximum operating pressure

- 07: 7.0 MPa
- 10: 10.0 MPa
- 16: 15.7 MPa
- 21: 20.6 MPa

g Design No.

- Progressively increased in accordance with model changes such as 10, 11 etc.

h Optional functions

- F: with a DC reactor and a noise filter
- C: with a DC reactor, a noise filter and communication function

i Non-standard No.

- 001~999

Features

POINT
1

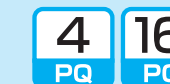
The high-efficiency IPM motor drive system that utilizes the DAIKIN-original air conditioning motor and inverter technologies provides a high energy-saving ratio-50%.

(Double pump type in pressure holding mode at 20.6 MPa)

- By controlling the motor rotation speed, the SUPER UNIT controls the flow rate and pressure of fixed-capacity pumps. This system provides an energy-saving ratio that is at least 50% in pressure-holding mode (compared with the conventional DAIKIN variable piston pump).
- Using the high-efficiency motor, the SUPER UNIT can even provide an energy-saving effect for general industrial machinery in which actuators provide a high duty ratio, as well as in pressure-holding mode.
- The single pump type is a highly-functional series created to be more useful.
- The double pump type uses the autonomously-switching, fixed-capacity double pump system, which combines large- and small-capacity pumps in a low pressure, high flow rate range, and autonomously switches to operate the high-pressure, small-capacity pump only in the high pressure, low flow rate range. Thus, the double pump type ensures a higher energy-saving effect.

POINT
2

Four or sixteen pressure (P) - flow rate (Q) setting patterns are available for cylinder control.



- The proportional control valve and proportional pressure control valve, which are utilized in conventional actuator circuits, are not required.
- The pressure and flow rate can be set using the controller panel.
- You can select 4 or 16 pressure and flow rate setting patterns via an external input signal.
- The SUPER UNIT autonomously switches between the pressure control and flow rate control modes.

Reducing shock during flow rate or pressure changes

- Depending on the acceleration time/deceleration time settings, the SUPER UNIT can reduce shock when the flow rate or pressure is changed.

POINT
3

Low noise level-60 dB (A) (Double pump type in pressure holding mode at 20.6 MPa)
The noise level is 73 dB (A) or less even in full-operation areas.

- With double phase-differential pumps, the SUPER UNIT can reduce pulsation and the noise level.

※ Data for the SUT**D60L21.

POINT
4

Multi-stage P-Q remote control by communication (Function: -C)



- Using a commercially-available PLC*1 with RS-232C communication capabilities and a touch panel display, P and Q parameters, acceleration time, deceleration time, and other parameters can be set and viewed from the machine operator's side. The SUPER UNIT enables multi-stage pressure/flow rate control through remote operation.

※ 1: Programmable logic controller.

POINT
5

The SUT series product lineup contains products with various capacities, from 7.0 MPa and 1.5 L/min to 20.6 MPa and 110 L/min. Furthermore, "pump & motor type" and "unit type" are selectable. Thus, the SUPER UNIT can flexibly meet almost any user's needs.

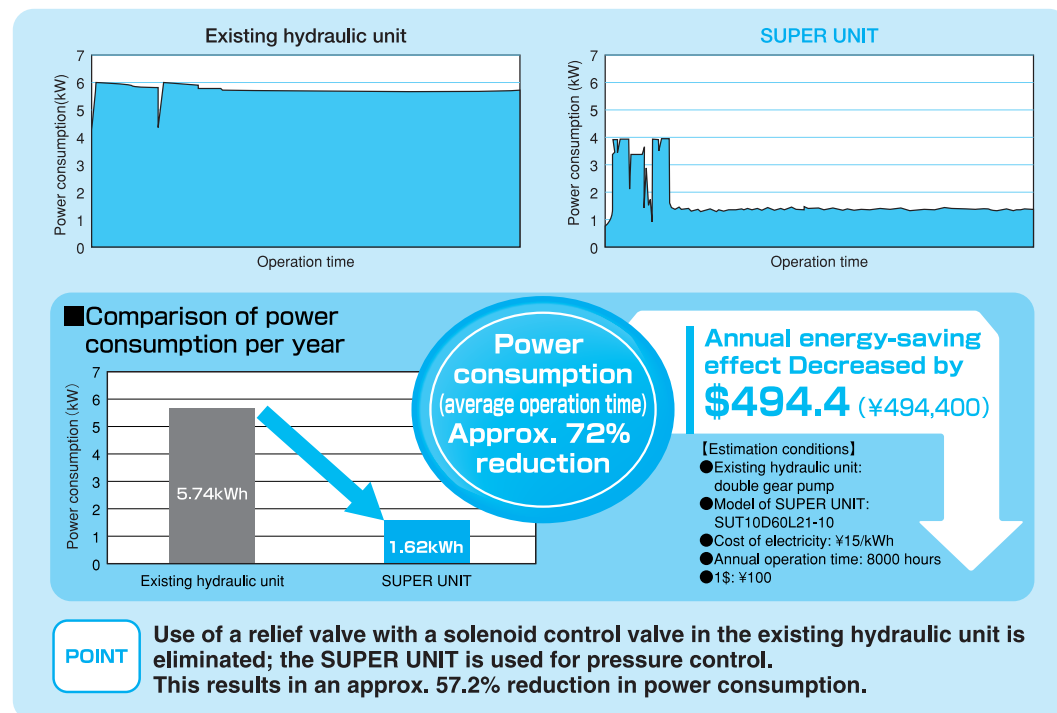
- The SUPER UNIT offers wide applications for machine tools and general industrial machinery such as press.

With excellent energy-saving technology, the SUPER UNIT can remarkably reduce electricity costs. The SUPER UNIT can easily upgrade your control system in combination with various functions.

Energy-saving Effect

The SUPER UNIT achieves an energy-saving ratio of 50%, resulting in excellent cost effectiveness. (Pressure holding mode at 20.6 MPa)

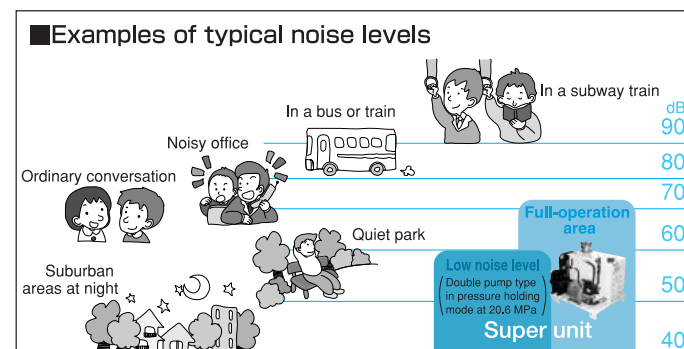
- Based on DAIKIN-original air-conditioning motor and inverter technologies, the SUPER UNIT incorporates the high-efficiency IPM motor drive system, which ensures both a high response speed and stable rotation speed control with fixed-capacity pumps. In pressure holding mode, the SUPER UNIT autonomously reduces the motor rotation speed to the minimum value required to hold the pressure, thus ensuring a 50% or higher energy-saving ratio (compared with the conventional DAIKIN variable piston pump).
- The SUPER UNIT can even provide an energy-saving effect with general industrial machinery in which actuators provide a high duty ratio, as well as in pressure-holding mode.



Low Noise Level

Low noise level-60 dB (A) (Double pump type in pressure holding mode at 20.6 MPa)
The noise level is 73 dB (A) or less even in full-operation areas.

- Based on inverter control, the motor runs at the minimum required rotation speed, resulting in a remarkable noise level reduction in pressure holding mode.



Generally, a noise level of 60 dB (A) allows ordinary conversation between persons 1 m apart.

Description of Functions

4 **16**
PQ PQ

Multi-stage pressure/flow rate control (4/16 P-Q control setting patterns)

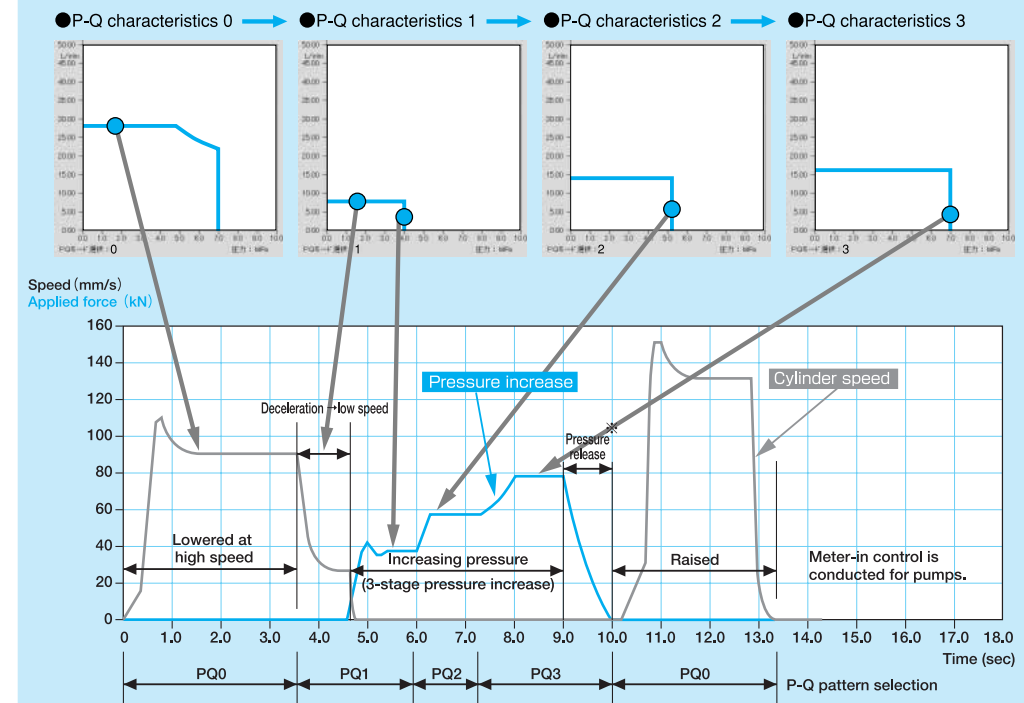
- The flow rate (speed) and pressure (force) of the actuator (cylinder) can be controlled with 4 or 16 flow rate (Q) and pressure (P) setting patterns.

The proportional control valve and proportional pressure control valve, which are utilized in conventional actuator circuits, are not required. Once the P and Q parameters are registered in the controller, you can select 4 or 16 preset patterns via a contact signal from the machine (main machine) side. The SUPER UNIT autonomously changes the control mode from flow rate control to pressure control (example: flow rate control is changed to pressure control at the cylinder stroke end).

- Smooth changing between flow rate (speed) control and pressure (force) control

Once acceleration time and deceleration time parameters suitable for the machine are registered, the force or speed of the machine (main machine) can be slowly changed during a pressure/flow rate setting change.

Example of 4 P-Q control setting patterns



※ When pressure release control is disabled, an additional pressure release circuit should be provided for the load side.

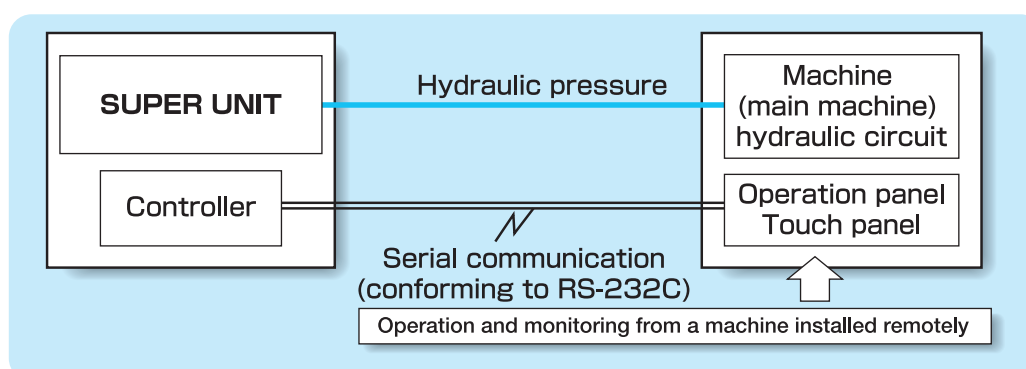
Communication Function



The SUPER UNIT and main machine can be remotely controlled with the same panel. This function eliminates complicated individual operations and installation space limitations.

● **Remote operation and monitor display are enabled by serial communication (conforming to RS-232C).**

Remote operation and monitor display are enabled by serial communication (conforming to RS-232C). The SUPER UNIT controller is equipped with an operation panel, allowing you to change parameter settings and monitor the pressure and flow rate. To change a parameter or monitor the pressure/flow rate from the machine (main machine) side, use a communication function-equipped hydraulic unit. (Refer to the model list on p. 5.) Serial communication (conforming to RS-232C)



● **The pressure and flow rate can be constantly monitored.**

By monitoring the pressure and flow rate, centralized control of process data is enabled. An additional pressure gauge is not required. (Communication is enabled using a commercially-available touch panel and PLC with an RS-232C interface.)

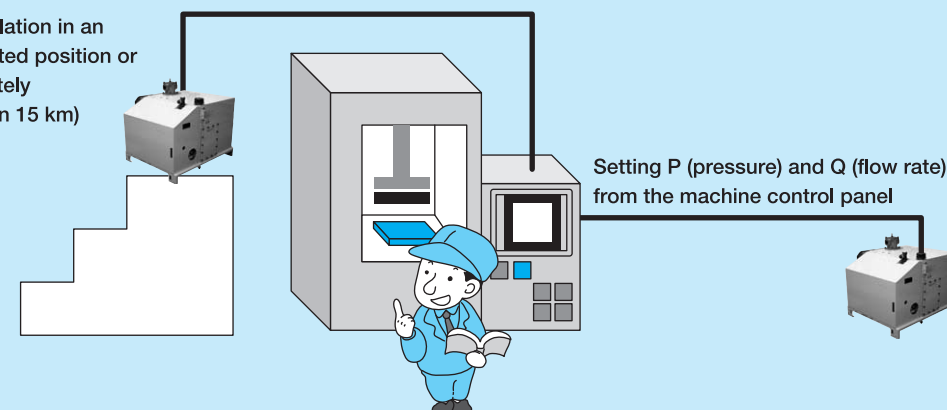
● **Parameter settings can be changed.**

With the communication function, the pressure and flow rate can be constantly monitored from the main machine side. The pressure and flow rate settings can also be changed from the main machine side.

※For details about the communication function, refer to the communication function instruction manual.

Application of SUPER UNIT Remote Operation and Communication Functions

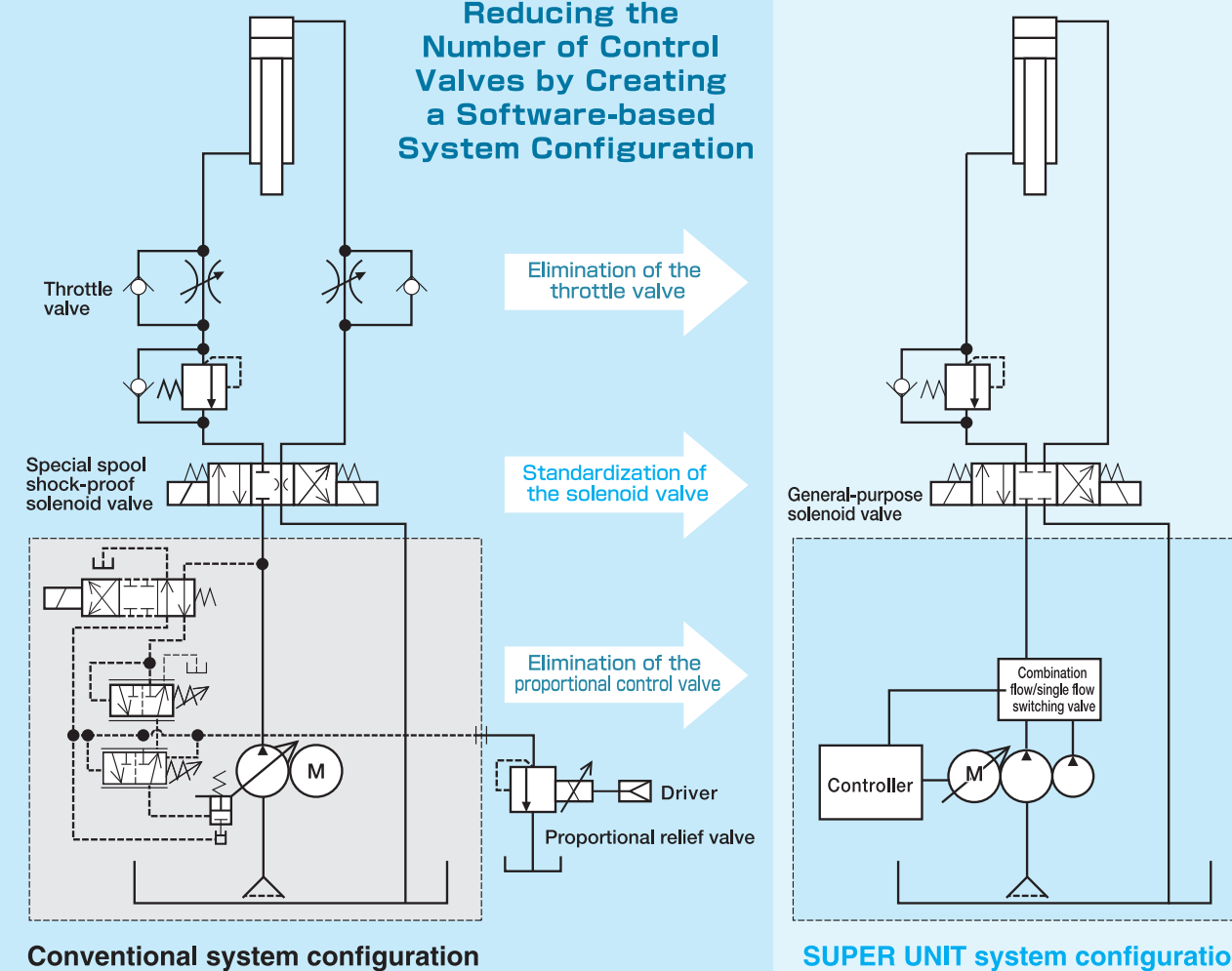
Installation in an elevated position or remotely (within 15 km)



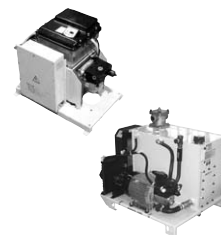
Software-based System Configuration that Reduces the Number of Control Valves

Example hydraulic press circuit configuration

Reducing the Number of Control Valves by Creating a Software-based System Configuration

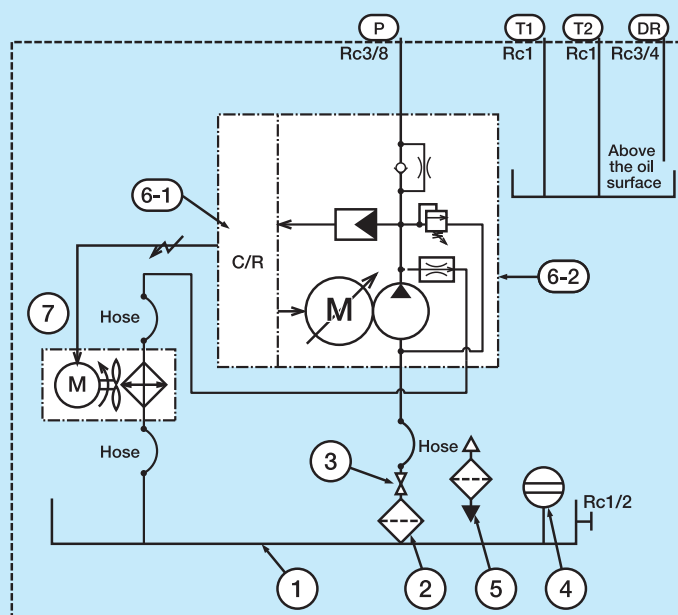


SUPER UNIT Hydraulic Circuit



SUPER UNIT Hydraulic Circuit

Unit type (single pump type)



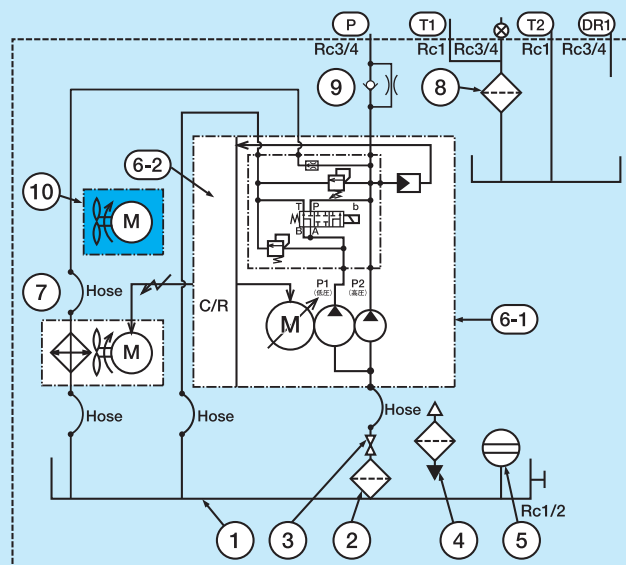
Part No.	Name
1	Tank
2	Suction strainer
3	Stop valve
4	Oil level gauge
5	Oil filling port/Air breather
6-1	Controller
6-2	Inverter drive pump
7	Oil cooler

* [] indicates items that apply to "Unit type" only.

Unit type (double pump type)

Three types of system configuration are selectable depending on capacity.

●SUT**D40*16/60*21



Part No.	Name
1	Tank
2	Suction strainer
3	Stop valve
4	Oil filling port/Air breather
5	Oil level gauge
6-1	Inverter drive pump
6-2	Controller
7	Oil cooler
8	Return filter
9	Check valve (with hole)
10	AC fan

* [] indicates items that apply to "Unit type" only.

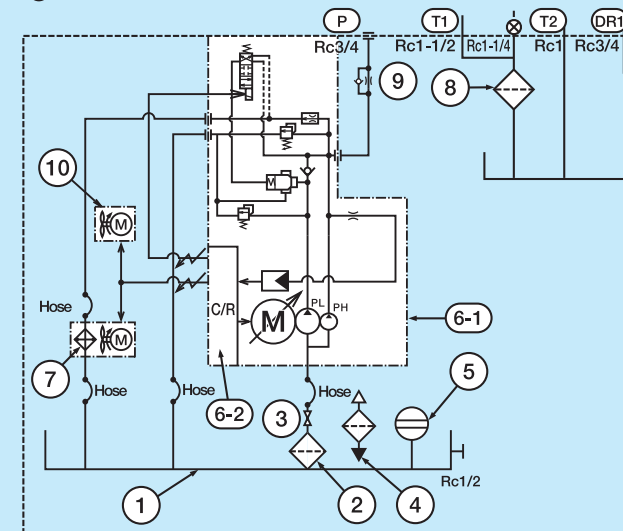
* [] indicates items that apply to "SUT**D60*21" only.

SUPER UNIT Hydraulic Circuit

Unit type (double pump type)

Three types of system configuration are selectable depending on capacity.

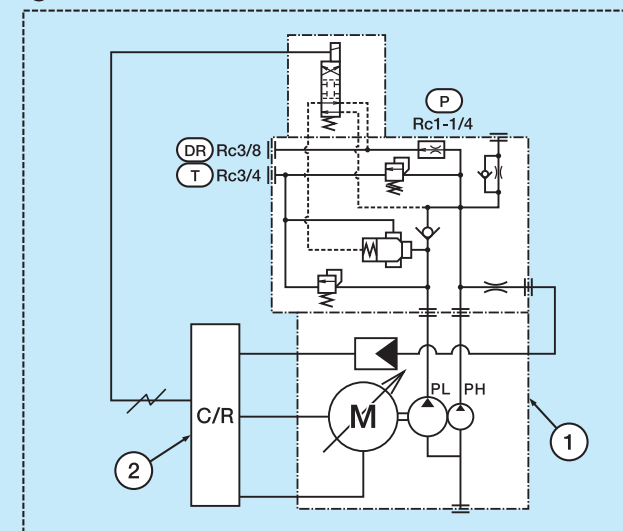
●SUT**D80*21



Part No.	Name
1	Tank
2	Suction strainer
3	Stop valve
4	Oil filling port/Air breather
5	Oil level gauge
6-1	Inverter drive pump
6-2	Controller
7	Oil cooler
8	Return filter
9	Check valve
10	AC fan

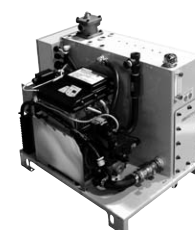
* [] indicates items that apply to "Unit type" only.

●SUT00D11021-20-F



Part No.	Name
1	Inverter drive pump
2	Controller

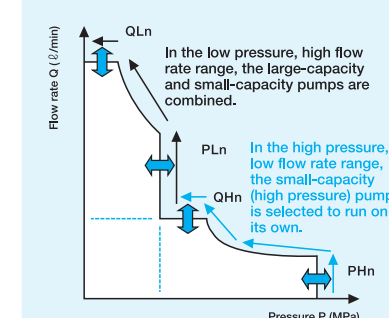
SUPER UNIT Double Pump System Configuration



The double pump type uses the autonomously-switching, fixed-capacity double pump system, providing a further improved energy-saving effect.

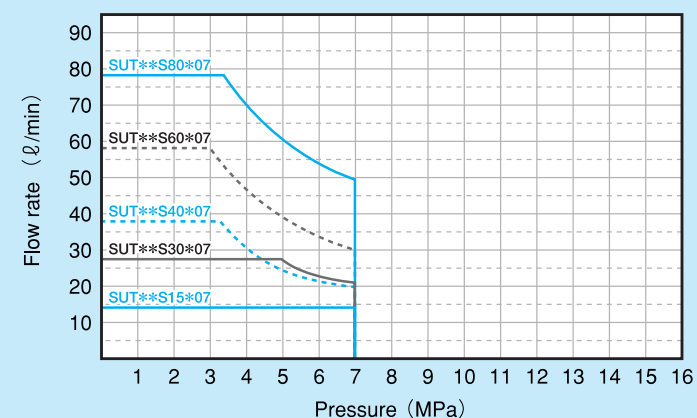
With fixed-capacity (small and large capacity) double pumps and a switching valve, the SUPER UNIT autonomously controls switching between combination flow and single flow depending on the load pressure. If high speed is required, the large-capacity and small-capacity pumps are combined to run together at high speed, enabling discharge of fluid at a high flow rate. To hold a specific pressure, the small-capacity pump is selected to run on its own at low speed, resulting in a remarkable energy-saving effect.

P-Q line chart



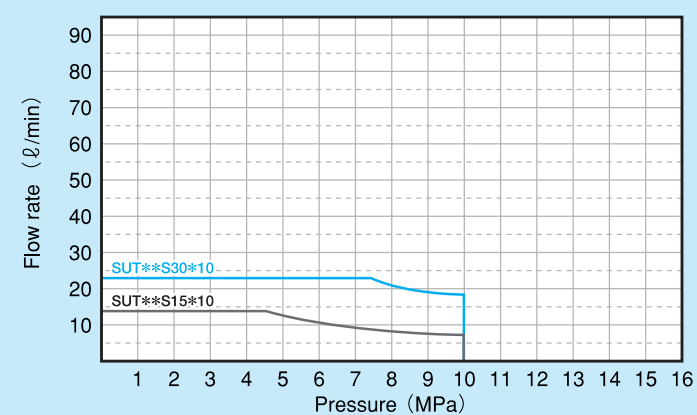
Pressure - Flow rate Characteristics (Typical)

SUT**S15*07 · SUT**S30*07 · SUT**S40*07
SUT**S60*07 · SUT**S80*07



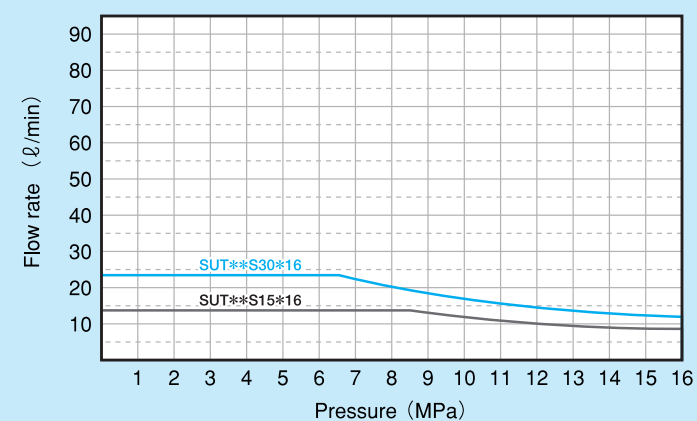
※For continuous operation, operate the hydraulic unit at the flow rate:
SUT**S15*07 : 3l/min or less
SUT**S30*07 : 5l/min or less
SUT**S40*07 : 8l/min or less
SUT**S60*07 : 14l/min or less
SUT**S80*07 : 19l/min or less

SUT**S15*10 · SUT**S30*10



※For continuous operation, operate the hydraulic unit at the flow rate:
SUT**S15*10 : 3l/min or less
SUT**S30*10 : 5l/min or less

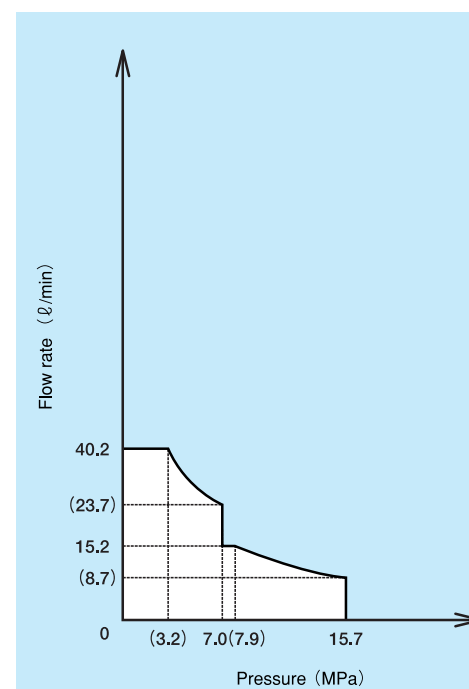
SUT**S30*16 · SUT**S15*16



※For continuous operation, operate the hydraulic unit at the flow rate:
SUT**S15*16 : 5l/min or less
SUT**S30*16 : 5l/min or less

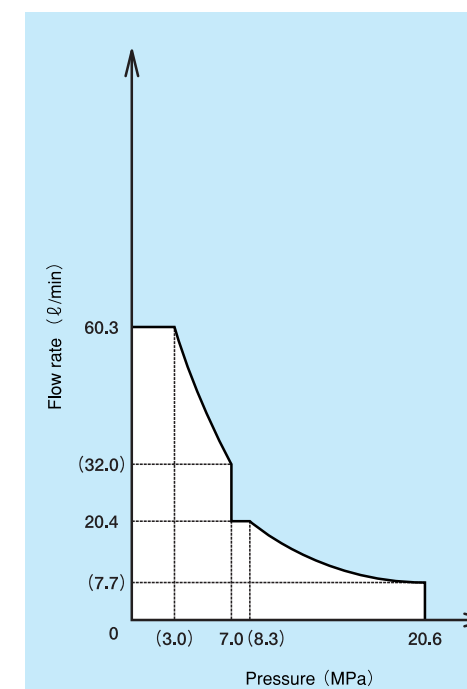
Pressure - Flow rate Characteristics (Typical)

SUT**D40*16



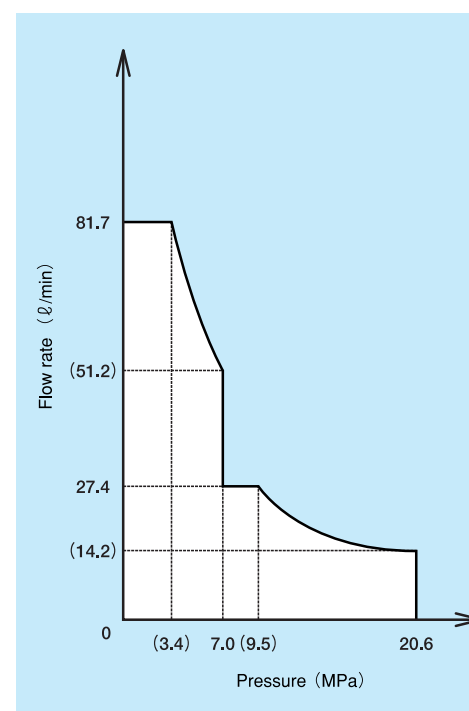
※For continuous operation, operate the hydraulic unit at a flow rate of 8 l/min or less, at max pressure.

SUT**D60*21



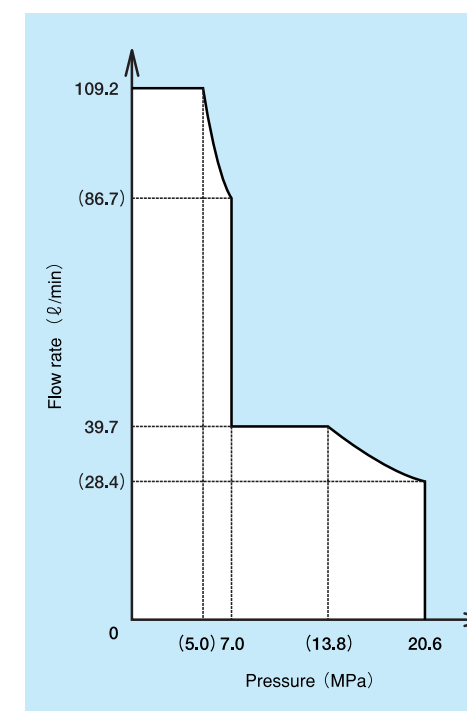
※For continuous operation, operate the hydraulic unit at a flow rate of 6.5 l/min or less, at max pressure.

SUT**D80*21



※For continuous operation, operate the hydraulic unit at a flow rate of 14 l/min or less, at max pressure.

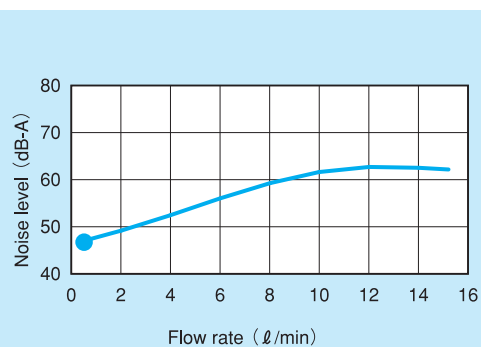
SUT**D110*21



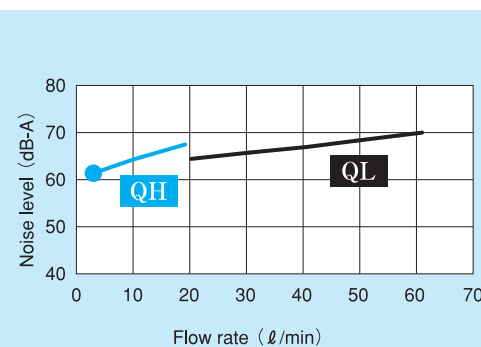
※For continuous operation, operate the hydraulic unit at a flow rate of 14.0 l/min or less, at max pressure.

Noise Characteristics (Typical)

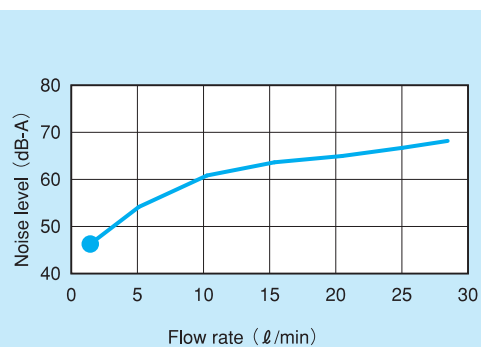
SUT03S15L07



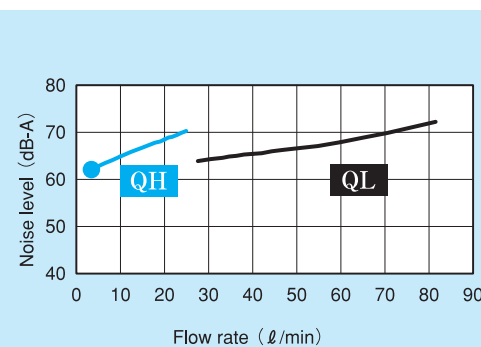
SUT06D40L16



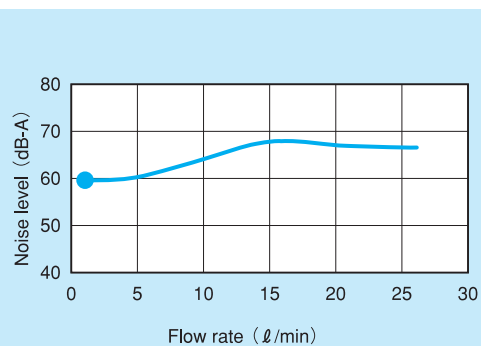
SUT03S30L07



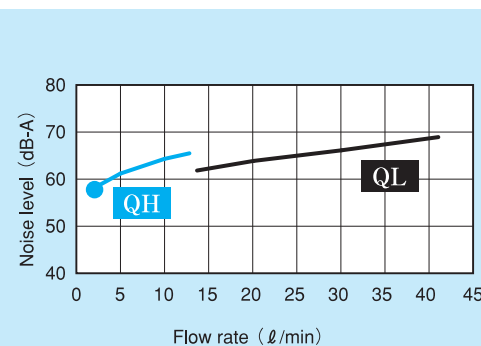
SUT06D60L21
SUT10D60L21



SUT03S15L16
SUT06S30L16



SUT10D80L21
SUT16D80L21



●: Pressure holding mode

QL: combination flow (low pressure)
QH: single flow (high pressure)

Pump & Motor Type: Single Pump Type



- SUT00S1507-10-F
- SUT00S1507-10-C
- SUT00S1510-10-F
- SUT00S1510-10-C

Model	SUT00S 1507-10-F	SUT00S 1507-10-C	SUT00S 1510-10-F	SUT00S 1510-10-C
Pump unit	Maximum flow rate (theoretical value; L/min) *1	15.2		
	Maximum operating pressure (MPa)	7.0	10	
	Operating flow rate adjustment range (l/min)	2.5~15.2		
	Operating pressure adjustment range (MPa)	1.5~7.0	1.5~10.0	
Motor capacity	Motor capacity (equivalent kW)		2.2kW or equivalent	
Power supply	Motor/pump			
	3-phase, 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz (allowable power supply fluctuation range: ±10%)			
	Rated current (A)	7.9	5.7	
Rated current (A)	AC3 Φ 200V/50Hz	7.7	5.4	
	AC3 Φ 200V/60Hz	7.1	5.2	
	AC3 Φ 220V/60Hz			
Main power supply breaker setting (A)	15			
External input signal	5ch			
	Insulated via photo-coupler, 24VDC (27V DC max.) 5mA/ch (negative common)			
External output signal	Digital output	2outputs; insulated via photo-coupler; open-collector output, 24V DC, 30mA max./ch		
	Contact output	1output (1c contact), dry contact Contact capacity:30V DC, 0.5A(resistance load)		
Weight (kg)	38		40	
	Hydraulic oil *2	Dedicated mineral hydraulic oil/wear-resistant hydraulic oil Viscosity grade: ISO VG32 to 68 Viscosity range: 15 to 400 mm ² /s Pollution degree: NAS9 or lower level		
Operating conditions	Operating hydraulic oil temperature	0 to 60°C (recommended operating temperature range: 15 to 50°C)		
	Operating ambient temperature	0~35°C		
	Storage ambient temperature	-20~60°C		
	Operating ambient humidity	85% RH max. (no condensation)		
	Installation location	Indoors (Be sure to secure the unit with bolts.)		
Others	<ul style="list-style-type: none"> • Be sure to connect a circuit breaker for all (three) poles and the earth leakage breaker. • Make sure that electrical wiring meets the requirements of EU Standard EN60204-1. • Frequently turning ON/OFF the power supply for this unit will remarkably shorten the controller service life. To start or stop the unit at 8-minute or shorter intervals, use the unit's control stop function. • Be sure to connect the ground terminal. 			
Standard paint color	Ivory white (Munsell code 5Y7.5/1)			

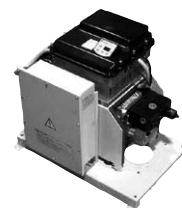
Note)
 *1: The pump flow rate has been factory-set to the maximum discharge rate. The maximum discharge rate given in the above table is a theoretical value, not a guaranteed value.
 *2: A hydraulic oil other than mineral hydraulic oil (water-containing oil or synthetic oil, e.g., water-glycol) cannot be used.
 *3: The SUPER UNIT incorporates a safety valve.
 *4: When selecting a SUPER UNIT, verify the specifications of each model by referring to "Pressure - Flow rate Characteristics (Typical)" on p. 13 and p. 14, and "How to Select a SUPER UNIT" on p. 53. For the purpose of making improvements, the specifications given in this catalog are subject to change without prior notice. Be sure to see the latest model chart.

Specifications of the Communication Function(-C)

Item	Setting range	Default setting
Interface	Conforming to RS-232C	—
Baud rate	4800, 9600, 14400, 19200 (bps)	19200 (bps)
Communication method	Half-duplex communication	—
Synchronization method	Start-stop synchronization	—
Number of units for communication	1:1	—
Transmission code	ASCII	—
Transmission data format	Start bit	1 bit
	Data bit length	7 or 8 bits
	Parity bit	None or 1 bit
	Stop bit	1 or 2 bits
Starting code	STX	—
Ending code	ETX	—
Error detection	Sum check: 2bytes	—
	Parity check: Enabled (Odd/Even), disabled	Disabled
Transmission distance	RS-232C: 15 m max. (19200 bps)	—
Flow control	Disabled	—

*For details about the communication procedure, refer to the separate communication function instruction manual.

Pump & Motor Type: Single Pump Type



SUT00S3007-10-F

SUT00S3007-10-C

SUT00S4007-10-F

Pump & Motor Type: Single Pump Type

Model	SUT00S3007-10-F	SUT00S3007-10-C	SUT00S4007-10-F	
Pump unit	Maximum flow rate (theoretical value; ℓ /min) *1	28.5		
	Maximum operating pressure (MPa)	7.0		
	Operating flow rate adjustment range (ℓ /min)	3.5 to 28.5	5.3 to 40.0	
	Operating pressure adjustment range (MPa)	1.5~7.0		
Motor capacity	2.8 kW or equivalent		3.7 kW or equivalent	
Power supply	3-phase, 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz(allowable power supply fluctuation range: \pm 10%)			
Rated current (A)	AC3 Φ 200V/50Hz	10.9	11.2	
	AC3 Φ 200V/60Hz	10.7	10.9	
	AC3 Φ 220V/60Hz	9.7	10.0	
Main power supply breaker setting (A)	15	20		
External input signal	5ch			
	Insulated via photo-coupler, 24 V DC (27 V DC max.)5mA/ch (negative common)			
External output signal	Digital output	2 outputs; insulated via photo-coupler; open-collector output, 24 V DC, 30 mA max./ch		
	Contact output	1 output (1c contact), dry contact Contact capacity: 30 V DC, 0.5 A (resistance load)		
Weight (kg)	40		54	
	Hydraulic oil *2			
Operating conditions	Dedicated mineral hydraulic oil/wear-resistant hydraulic oil Viscosity grade: ISO VG32 to 68 Viscosity range: 15 to 400 mm ² /s Pollution degree: NAS9 or lower level			
	Operating hydraulic oil temperature			
	0 to 60°C (recommended operating temperature range: 15 to 50°C)			
	Operating ambient temperature			
	0 to 35°C			
	Storage ambient temperature			
-20 to 60°C				
Operating ambient humidity				
85% RH max. (no condensation)				
Installation location				
Indoors (Be sure to secure the unit with bolts.)				
Others				
<ul style="list-style-type: none"> •Be sure to connect a circuit breaker for all (three) poles and the earth leakage breaker. •Make sure that electrical wiring meets the requirements of EU Standard EN60204-1. •Frequently turning ON/OFF the power supply for this unit will remarkably shorten the controller service life. •To start or stop the unit at 8-minute or shorter intervals, use the unit's control stop function. •Be sure to connect the ground terminal. 				
Standard paint color				
Ivory white (Munsell code 5Y7.5/1)				

Note)

*1: The pump flow rate has been factory-set to the maximum discharge rate. The maximum discharge rate given in the above table is a theoretical value, not a guaranteed value.

*2: A hydraulic oil other than mineral hydraulic oil (water-containing oil or synthetic oil, e.g., water-glycol) cannot be used.

*3: The SUPER UNIT incorporates a safety valve.

*4: When selecting a SUPER UNIT, verify the specifications of each model by referring to "Pressure & Flow rate Characteristics (Typical)" on p. 13 and p. 14, and "How to Select a SUPER UNIT" on p. 53. For the purpose of making improvements, the specifications given in this catalog are subject to change without prior notice. Be sure to see the latest model chart.

Pump & Motor Type: Single Pump Type



SUT00S3010-10-F

SUT00S1516-10-F

SUT00S3016-10-F

SUT00S6007-10-F

SUT00S3007-10-F

SUT00S8007-10-C

Pump & Motor Type: Single Pump Type

Model	SUT00S3010-10-F	SUT00S1516-10-F	SUT00S3016-10-F	SUT00S6007-10-F	SUT00S8007-10-F	SUT00S8007-10-C	
Pump unit	Maximum flow rate (theoretical value; ℓ /min) *1	25.6	15.2	25.6	61.1	83.0	
	Maximum operating pressure (MPa)	10.0	16.0		7.0		
	Operating flow rate adjustment range (ℓ /min)	3.4 to 25.6	2.4 to 15.2	3.4 to 25.6	8.7 to 61.1	11.6 to 83.0	
	Operating pressure adjustment range (MPa)	1.5 to 10.0	1.5 to 16.0		1.5 to 7.0		
Motor capacity	3.7 kW or equivalent		5.0 kW or equivalent		7.0 kW or equivalent		
Power supply	3-phase, 200 V/50Hz, 200 V/60Hz, 220 V/60Hz(allowable power supply fluctuation range: \pm 10%)						
Rated current (A)	Unit						
	AC3 Φ 200V/50Hz	16.5	10.9	15.6	16.8	25.5	
	AC3 Φ 200V/60Hz	16.2	11.2	15.7	16.4	24.8	
AC3 Φ 220V/60Hz	14.6	10.3	14.6	15.2	22.7		
Main power supply breaker setting (A)	20		30		50		
External input signal	3ch						
	Insulated via photo-coupler, 24 V DC (27 V DC max.)5mA/ch (negative common)						
External output signal	Digital output	2 outputs; insulated via photo-coupler; open-collector output, 24 V DC, 30 mA max./ch					
	Contact output	1 output (1c contact), dry contact Contact capacity: 30 V DC, 0.5 A (resistance load)					
Weight (kg)	54		60	66	72		
	Hydraulic oil *2						
Operating conditions	Dedicated mineral hydraulic oil/wear-resistant hydraulic oil Viscosity grade: ISO VG32 to 68 Viscosity range: 15 to 400 mm ² /s Pollution degree: NAS9 or lower level						
	Tank oil temperature						
	0 to 60°C (recommended operating temperature range: 15 to 50°C)						
	Operating ambient temperature						
	0 to 35°C						
	Storage ambient temperature						
-20 to 60°C							
Operating ambient humidity							
85% RH max. (no condensation)							
Installation location							
Indoors (Be sure to secure the unit with bolts.)							
Others							
<ul style="list-style-type: none"> •Be sure to connect a circuit breaker for all (three) poles and the earth leakage breaker. •Make sure that electrical wiring meets the requirements of EU Standard EN60204-1. •Frequently turning ON/OFF the power supply for this unit will remarkably shorten the controller service life. •To start or stop the unit at 8-minute or shorter intervals, use the unit's control stop function. •Be sure to connect the ground terminal. 							
Standard paint color							
Ivory white (Munsell code 5Y7.5/1)							

Note)

*1: The pump flow rate has been factory-set to the maximum discharge rate. The maximum discharge rate given in the above table is a theoretical value, not a guaranteed value.

*2: A hydraulic oil other than mineral hydraulic oil (water-containing oil or synthetic oil, e.g., water-glycol) cannot be used.

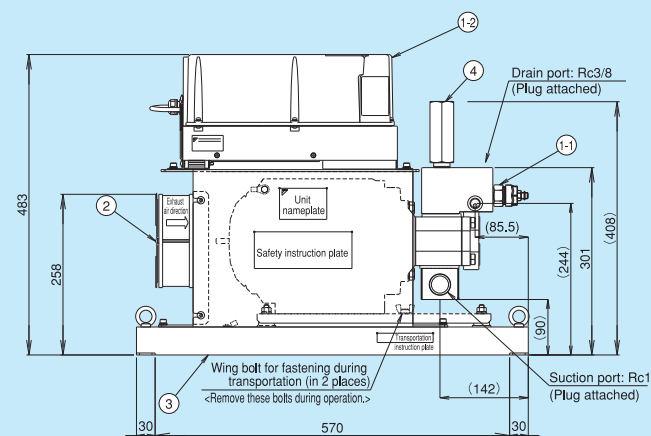
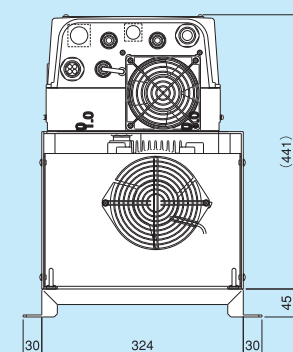
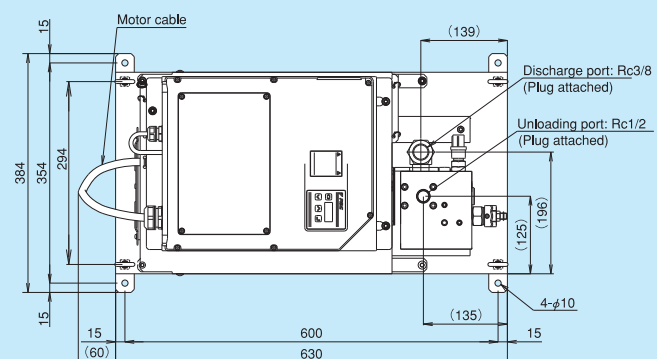
*3: The SUPER UNIT incorporates a safety valve.

*4: When selecting a SUPER UNIT, verify the specifications of each model by referring to "Pressure - Flow rate Characteristics (Typical)" on p. 13 and p. 14, and "How to Select a SUPER UNIT" on p. 53. For the purpose of making improvements, the specifications given in this catalog are subject to change without prior notice. Be sure to see the latest model chart.

Pump & Motor Type Dimensions: Single Pump Type

SUTOOS8007-10-F,-C

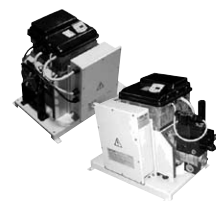
Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
2	AC fan	1
3	Base	1
4	Check valve	1



Memo

Blank lined area for notes.

Pump & Motor Type; Double Pump Type



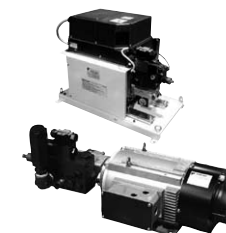
SUT00D4016-10-F
SUT00D6021-10-F

Model	SUT00D4016-10-F	SUT00D6021-10-F		
Pump unit	Maximum flow rate (theoretical value; ℓ /min) *1	41.0	61.1	
	Maximum operating pressure (MPa)	15.7	20.6	
	Operating flow rate adjustment range (ℓ /min)	5.4 to 41.0	8.7 to 61.1	
	Operating pressure adjustment range (MPa)	1.5 to 15.7	1.5 to 20.6	
Motor capacity	Motor capacity (equivalent kW)	3.7 kW or equivalent	5.0 kW or equivalent	
Power supply	Motor/pump	3-phase, 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz (allowable power supply fluctuation range: $\pm 10\%$)		
	Rated current (A)	AC3 Φ 200V/50Hz	13.0	16.8
		AC3 Φ 200V/60Hz	12.8	16.4
		AC3 Φ 220V/60Hz	11.6	15.2
Main power supply breaker setting (A)		30	30	
External input signal		3ch Insulated via photo-coupler, 24 V DC (27 V DC max.) 5 mA/ch (negative common)		
External output signal	Digital output	2 outputs; insulated via photo-coupler; open-collector output, 24 V DC, 30 mA max./ch		
	Contact output	1 output (1c contact), dry contact Contact capacity: 30 V DC, 0.5 A (resistance load)		
Weight (kg)		61	66	
Operating conditions	Hydraulic oil *2	Dedicated mineral hydraulic oil/wear-resistant hydraulic oil •Viscosity grade: ISO VG32 to 68 •Viscosity range: 15 to 400 mm ² /s •Pollution degree: NAS9 or lower level		
	Operating hydraulic oil temperature	0 to 60°C (recommended operating temperature range: 15 to 50°C)		
	Operating ambient temperature	0 to 35°C		
	Storage ambient temperature	-20 to 60°C		
	Operating ambient humidity	85% RH max. (no condensation)		
	Installation location	Indoors (Be sure to secure the unit with bolts.)		
Others		<ul style="list-style-type: none"> •Be sure to connect a circuit breaker for all (three) poles and the earth leakage breaker. •Make sure that electrical wiring meets the requirements of EU Standard EN60204-1. •Frequently turning ON/OFF the power supply for this unit will remarkably shorten the controller service life. To start or stop the unit at 8-minute or shorter intervals, use the unit's control stop function. •Be sure to connect the ground terminal. 		
Standard paint color		Ivory white (Munsell code 5Y7.5/1)		

Note)

- *1: The pump flow rate has been factory-set to the maximum discharge rate. The maximum discharge rate given in the above table is a theoretical value, not a guaranteed value.
 *2: A hydraulic oil other than mineral hydraulic oil (water-containing oil or synthetic oil, e.g., water-glycol) cannot be used.
 *3: When selecting a SUPER UNIT, verify the specifications of each model by referring to "Pressure & Flow rate Characteristics (Typical)" on p. 13 and p. 14, and "How to Select a SUPER UNIT" on p. 53. For the purpose of making improvements, the specifications given in this catalog are subject to change without prior notice. Be sure to see the latest model chart.

Pump & Motor Type; Double Pump Type



SUT00D8021-10-F
SUT00D8021-10-C
SUT00D11021-20-F
SUT00D11021-20-C

Model	SUT00D8021-10-F	SUT00D8021-10-C	SUT00D11021-20-F	SUT00D11021-20-C
Pump unit	Maximum flow rate (theoretical value; ℓ /min) *1	83	110	
	Maximum operating pressure (MPa)	20.6		
	Operating flow rate adjustment range (ℓ /min)	11.6 to 83.0	13.3 to 110	
	Operating pressure adjustment range (MPa)	1.5~20.6		
Motor capacity	Motor capacity (equivalent kW)	7.0 kW or equivalent	11.0 kW or equivalent	
Power supply	Motor/pump	3-phase, 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz (allowable power supply fluctuation range: $\pm 10\%$)		
	Rated current (A)	AC3 Φ 200V/50Hz	25.5	38.3
		AC3 Φ 200V/60Hz	24.8	37.8
		AC3 Φ 220V/60Hz	22.7	34.9
Main power supply breaker setting (A)		50	75	
External input signal		5ch Insulated via photo-coupler, 24 V DC (27 V DC max.) 5 mA/ch (negative common)		
External output signal	Digital output	2 outputs; insulated via photo-coupler; open-collector output, 24 V DC, 30 mA max./ch		
	Contact output	1 output (1c contact), dry contact Contact capacity: 30 V DC, 0.5 A (resistance load)		
Weight (kg)		72	112	
Operating conditions	Hydraulic oil *2	Dedicated mineral hydraulic oil/wear-resistant hydraulic oil •Viscosity grade: ISO VG32 to 68 •Viscosity range: 15 to 400 mm ² /s •Pollution degree: NAS9 or lower level		
	Operating hydraulic oil temperature	0 to 60°C (recommended operating temperature range: 15 to 50°C)		
	Operating ambient temperature	0 to 35°C		
	Storage ambient temperature	-20 to 60°C		
	Operating ambient humidity	85% RH max. (no condensation)		
	Installation location	Indoors (Be sure to secure the unit with bolts.)		
Others		<ul style="list-style-type: none"> •Be sure to connect a circuit breaker for all (three) poles and the earth leakage breaker. •Make sure that electrical wiring meets the requirements of EU Standard EN60204-1. •Frequently turning ON/OFF the power supply for this unit will remarkably shorten the controller service life. To start or stop the unit at 8-minute or shorter intervals, use the unit's control stop function. •Be sure to connect the ground terminal. 		
Standard paint color		Ivory white (Munsell code 5Y7.5/1)		

Note)

- *1: The pump flow rate has been factory-set to the maximum discharge rate. The maximum discharge rate given in the above table is a theoretical value, not a guaranteed value.
 *2: A hydraulic oil other than mineral hydraulic oil (water-containing oil or synthetic oil, e.g., water-glycol) cannot be used.
 *3: When selecting a SUPER UNIT, verify the specifications of each model by referring to "Pressure & Flow rate Characteristics (Typical)" on p. 13 and p. 14, and "How to Select a SUPER UNIT" on p. 53. For the purpose of making improvements, the specifications given in this catalog are subject to change without prior notice. Be sure to see the latest model chart.

Specifications of the Communication Function (-C)

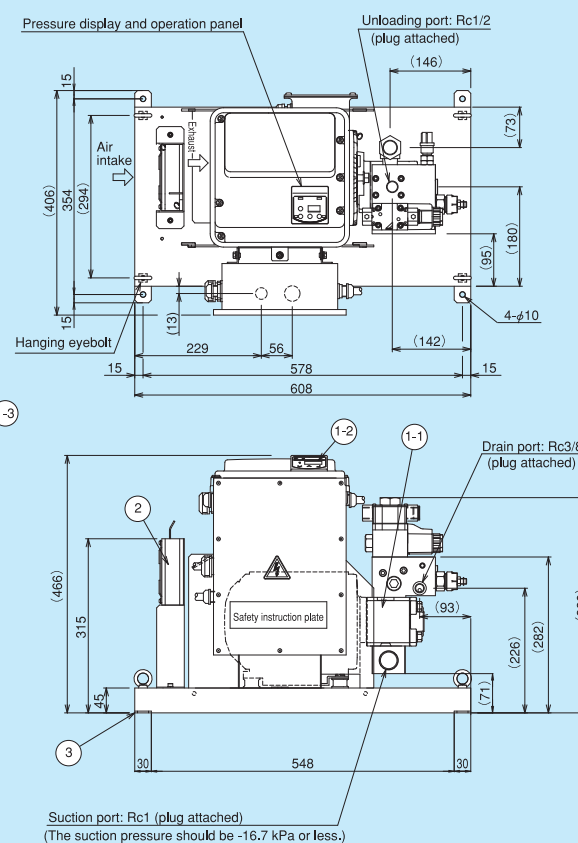
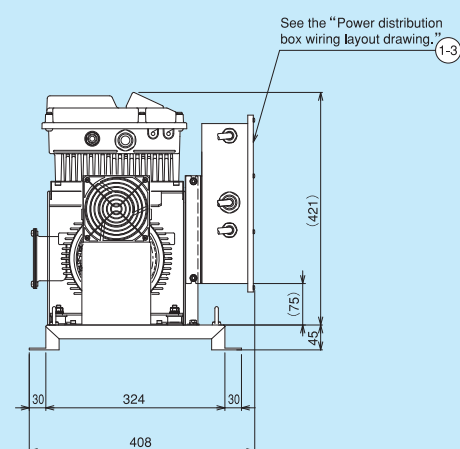
Item	Setting range	Default setting
Interface	Conforming to RS-232C	—
Baud rate	4800, 9600, 14400, 19200 [bps]	19200 [bps]
Communication method	Half-duplex communication	—
Synchronization method	Start-stop synchronization	—
Number of units for communication	1:1	—
Transmission code	ASCII	—
Transmission data format	Start bit	1 bit
	Data bit length	7 or 8 bits
	Parity bit	None or 1 bit
	Stop bit	1 or 2 bits
Starting code	STX	—
Ending code	ETX	—
Error detection	Sum check: 2 bytes	—
	Parity check: Enabled (Odd/Even), disabled	Disabled
Transmission distance	RS-232C: 15 m max. (19200 bps)	—
Flow control	Disabled	—

*For details about the communication procedure, refer to the separate communication function instruction manual.

Pump & Motor Type Dimensions: Double Pump Type

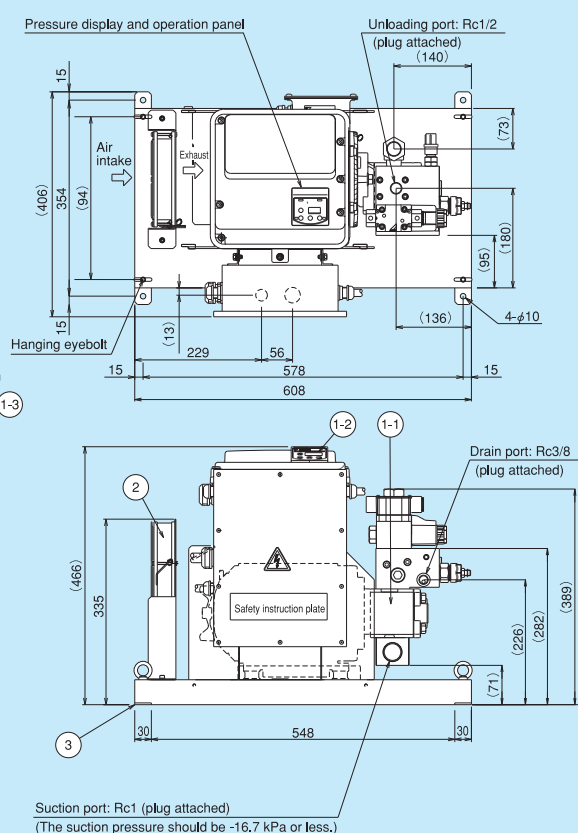
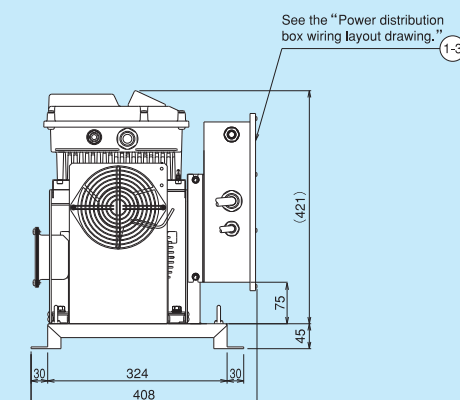
SUTOOD4016-10-F

Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
1-3	Power distribution box (noise filter, DC reactor, I/O)	1
2	AC fan	1
3	Base	1
4	Check valve	1



SUTOOD6021-10-F

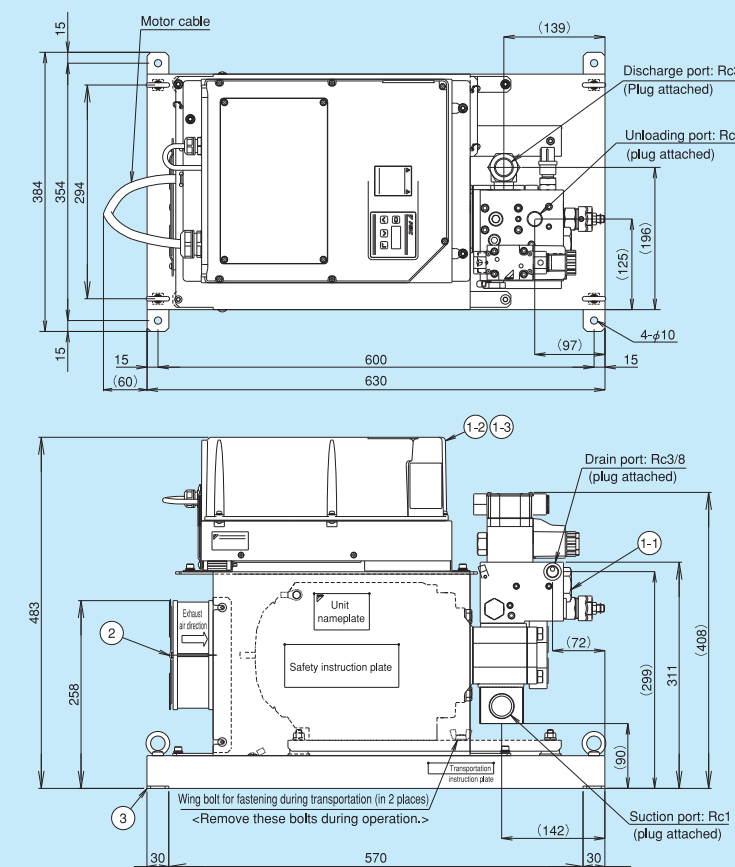
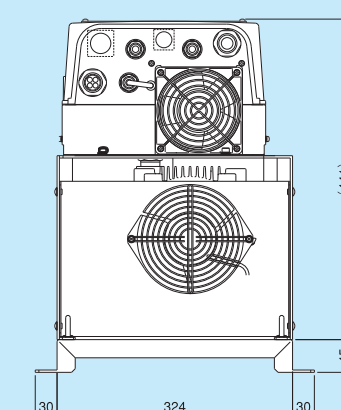
Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
1-3	Power distribution box (noise filter, DC reactor, I/O)	1
2	AC fan	1
3	Base	1
4	Check valve	1



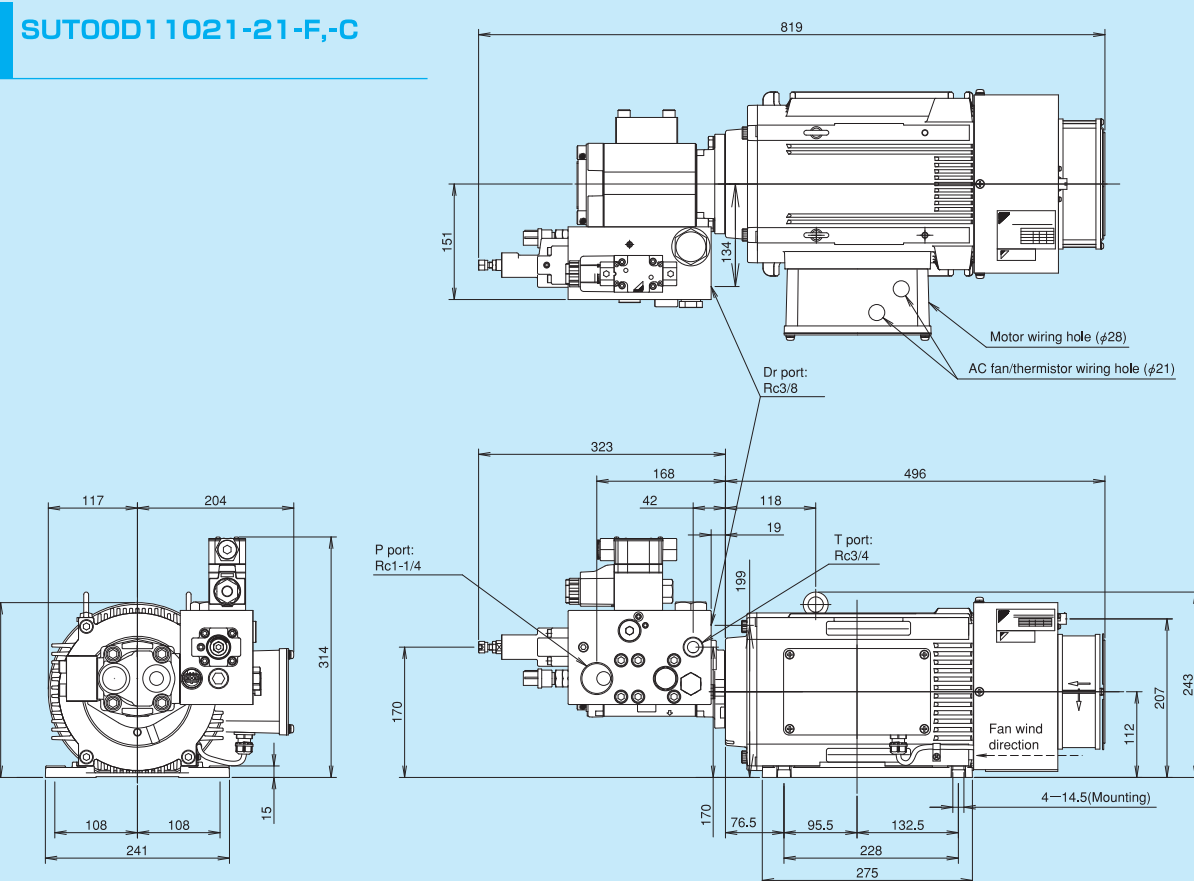
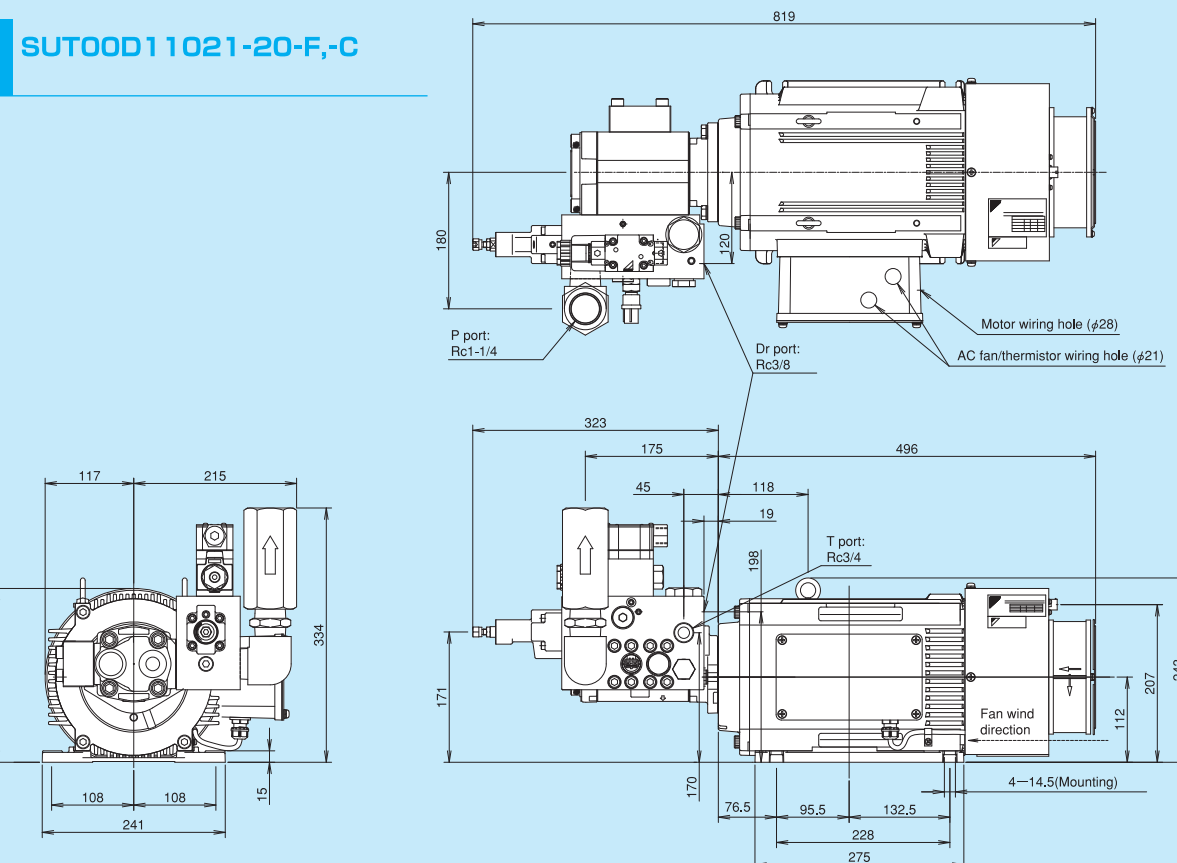
Pump & Motor Type Dimensions: Double Pump Type

SUTOOD8021-10-F,-C

Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
1-3	Power distribution box (noise filter, DC reactor, I/O)	1
2	AC fan	1
3	Base	1
4	Check valve	1

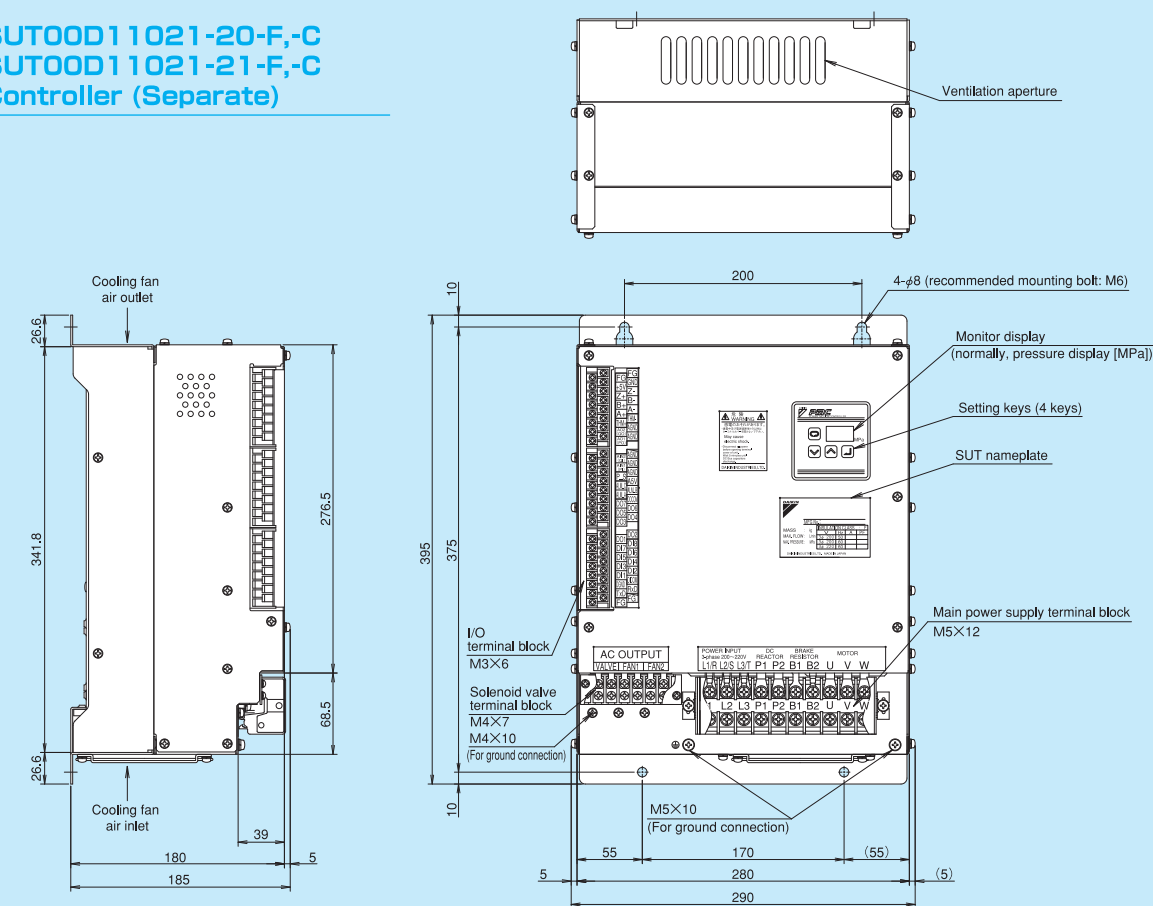


Pump & Motor Type Dimensions: Double Pump Type



Pump & Motor Type Dimensions: Double Pump Type

**SUTOOD11021-20-F,-C
SUTOOD11021-21-F,-C
Controller (Separate)**



Unit Type: Single Pump Type



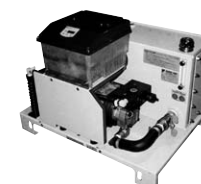
- SUT03S15L07-10-F
- SUT03S15L07-10-C
- SUT03S15L10-10-F
- SUT03S15L10-10-C
- SUT03S30L07-10-F
- SUT03S30L07-10-C

Model		SUT03S 15L07-10-F	SUT03S 15L07-10-C	SUT03S 15L10-10-F	SUT03S 15L10-10-C	SUT03S 30L07-10-F	SUT03S 30L07-10-C
Pump unit	Maximum flow rate (theoretical value; ℓ/min) *1	15.2			28.5		
	Maximum operating pressure (MPa)	7.0		10		7.0	
	Operating flow rate adjustment range (ℓ/min)	2.5 to 15.2			3.5 to 28.5		
	Operating pressure adjustment range (MPa)	1.5 to 7.0		1.5 to 10.0		1.5 to 7.0	
Motor capacity	2.2 kW or equivalent			2.8 kW or equivalent			
Power supply	Unit 3-phase, 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz (allowable power supply fluctuation range: ±10%)						
Rated current (A)	AC3 Φ 200V/50Hz	7.9		5.7		10.9	
	AC3 Φ 200V/60Hz	7.7		5.4		10.7	
	AC3 Φ 220V/60Hz	7.1		5.2		9.7	
Main power supply breaker setting (A)		15					
External input signal		5ch					
External output signal		Insulated via photo-coupler, 24 V DC (27 V DC max.) 5 mA/ch (negative common)					
External output signal	Digital output	2 outputs; insulated via photo-coupler; open-collector output, 24 V DC, 30 mA max./ch					
	Contact output	1 output (1c contact), dry contact Contact capacity: 30 V DC, 0.5 A (resistance load)					
Weight (kg)		65		67			
Operating conditions	Hydraulic oil *2	Dedicated mineral hydraulic oil/wear-resistant hydraulic oil ·Viscosity grade: ISO VG32 to 68 ·Viscosity range: 15 to 400 mm ² /s ·Pollution degree: NAS9 or lower level					
	Tank oil temperature	0 to 60°C (recommended operating temperature range: 15 to 50°C)					
	Operating ambient temperature	0 to 35°C					
	Storage ambient temperature	-20 to 60°C					
	Operating ambient humidity	85% RH max. (no condensation)					
	Installation location	Indoors (Be sure to secure the unit with bolts.)					
	Others	<ul style="list-style-type: none"> •Be sure to connect a circuit breaker for all (three) poles and the earth leakage breaker. •Make sure that electrical wiring meets the requirements of EU Standard EN60204-1. •Frequently turning ON/OFF the power supply for this unit will remarkably shorten the controller service life. •To start or stop the unit at 8-minute or shorter intervals, use the unit's control stop function. •Be sure to connect the ground terminal. 					
Tank Volume (ℓ)		30					
Standard paint color		Ivory white (Munsell code 5Y7.5/1)					

Note)
 *1: The pump flow rate has been factory-set to the maximum discharge rate. The maximum discharge rate given in the above table is a theoretical value, not a guaranteed value.
 *2: A hydraulic oil other than mineral hydraulic oil (water-containing oil or synthetic oil, e.g., water-glycol) cannot be used.
 *3: The SUPER UNIT incorporates a safety valve.
 *4: When selecting a SUPER UNIT, verify the specifications of each model by referring to "Pressure - Flow rate Characteristics (Typical)" on p. 13 and p. 14, and "How to Select a SUPER UNIT" on p. 53. For the purpose of making improvements, the specifications given in this catalog are subject to change without prior notice. Be sure to see the latest model chart.

Unit Type: Single Pump Type

Unit Type: Single Pump Type



- SUT03S30L10-10-F
- SUT03S15L16-10-F
- SUT03S30L16-20-F
- SUT06S60L07-10-F
- SUT10S80L07-10-F
- SUT10S80L07-10-C

Model		SUT03S 30L10-10-F	SUT03S 15L16-10-F	SUT03S 30L16-20-F	SUT06S 60L07-10-F	SUT10S 80L07-10-F	SUT10S 80L07-10-C
Pump unit	Maximum flow rate (theoretical value; ℓ/min) *1	25.6	15.2	25.6	61.1	83.0	
	Maximum operating pressure (MPa)	10.0	16.0		7.0		
	Operating flow rate adjustment range (ℓ/min)	3.4 to 25.6	2.4 to 15.2	3.4 to 25.6	8.7 to 61.1	11.6 to 83.0	
	Operating pressure adjustment range (MPa)	1.5 to 10.0	1.5 to 16.0		1.5 to 7.0		
Motor capacity	3.7kW or equivalent		5.0kW or equivalent		7.0kW or equivalent		
Power supply	Unit 3-phase, 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz (allowable power supply fluctuation range: ±10%)						
Rated current (A)	AC3 Φ 200V/50Hz	16.5	10.9	15.6	16.8	25.5	
	AC3 Φ 200V/60Hz	16.2	11.2	15.7	16.4	24.8	
	AC3 Φ 220V/60Hz	14.6	10.3	14.6	15.2	22.7	
Main power supply breaker setting (A)		20		30		50	
External input signal		3ch					
External output signal		Insulated via photo-coupler, 24 V DC (27 V DC max.) 5 mA/ch (negative common)					
External output signal	Digital output	2 outputs; insulated via photo-coupler; open-collector output, 24 V DC, 30 mA max./ch					
	Contact output	1 output (1c contact), dry contact Contact capacity: 30 V DC, 0.5 A (resistance load)					
Weight (kg)		68	60	99	134		
Operating conditions	Hydraulic oil *2	Dedicated mineral hydraulic oil/wear-resistant hydraulic oil ·Viscosity grade: ISO VG32 to 68 ·Viscosity range: 15 to 400 mm ² /s ·Pollution degree: NAS9 or lower level					
	Tank oil temperature	0 to 60°C (recommended operating temperature range: 15 to 50°C)					
	Operating ambient temperature	0 to 35°C					
	Storage ambient temperature	-20 to 60°C					
	Operating ambient humidity	85% RH max. (no condensation)					
	Installation location	Indoors (Be sure to secure the unit with bolts.)					
	Others	<ul style="list-style-type: none"> •Be sure to connect a circuit breaker for all (three) poles and the earth leakage breaker. •Make sure that electrical wiring meets the requirements of EU Standard EN60204-1. •Frequently turning ON/OFF the power supply for this unit will remarkably shorten the controller service life. •To start or stop the unit at 8-minute or shorter intervals, use the unit's control stop function. •Be sure to connect the ground terminal. 					
Tank Volume (ℓ)		30		60	100		
Standard paint color		Ivory white (Munsell code 5Y7.5/1)					

Note)
 *1: The pump flow rate has been factory-set to the maximum discharge rate. The maximum discharge rate given in the above table is a theoretical value, not a guaranteed value.
 *2: A hydraulic oil other than mineral hydraulic oil (water-containing oil or synthetic oil, e.g., water-glycol) cannot be used.
 *3: The SUPER UNIT incorporates a safety valve.
 *4: When selecting a SUPER UNIT, verify the specifications of each model by referring to "Pressure - Flow rate Characteristics (Typical)" on p. 13 and p. 14, and "How to Select a SUPER UNIT" on p. 53. For the purpose of making improvements, the specifications given in this catalog are subject to change without prior notice. Be sure to see the latest model chart.

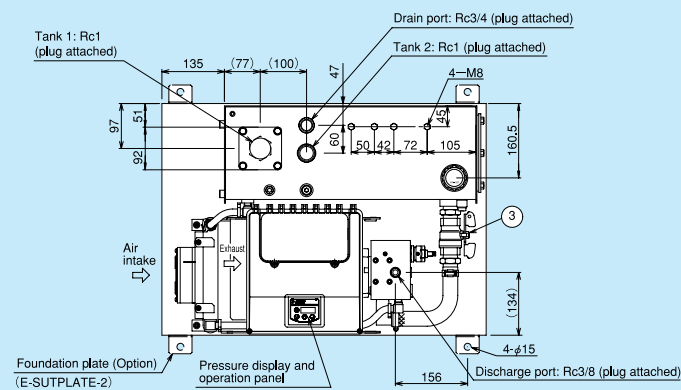
Unit Type: Single Pump Type

Specifications of the Communication Function (-C)

Item	Setting range	Default setting
Interface	Conforming to RS-232C	—
Baud rate	4800, 9600, 14400, 19200 (bps)	19200 (bps)
Communication method	Half-duplex communication	—
Synchronization method	Start-stop synchronization	—
Number of units for communication	1:1	—
Transmission code	ASCII	—
Transmission data format	Start bit	1 bit
	Data bit length	7 or 8 bits
	Parity bit	None or 1 bit
	Stop bit	1 or 2 bits
Starting code	STX	—
Ending code	ETX	—
Error detection	Sum check: 2 bytes	—
	Parity check: Enabled (Odd/Even), disabled	Disabled
Transmission distance	RS-232C: 15 m max. (19200 bps)	—
Flow control	Disabled	—

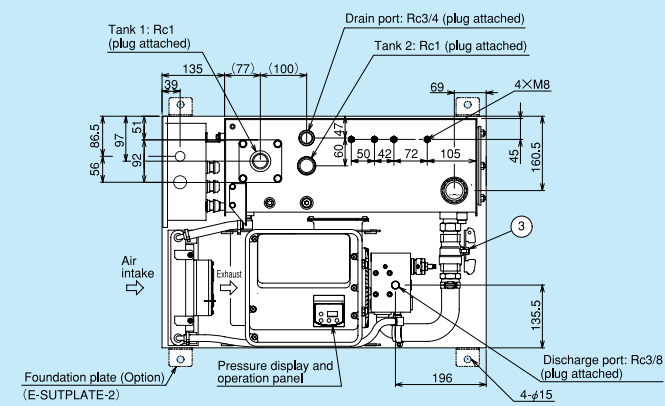
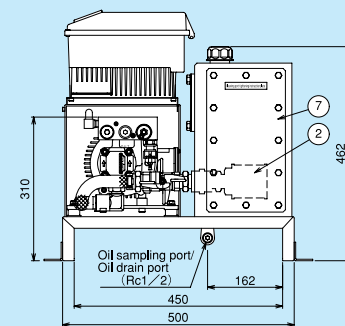
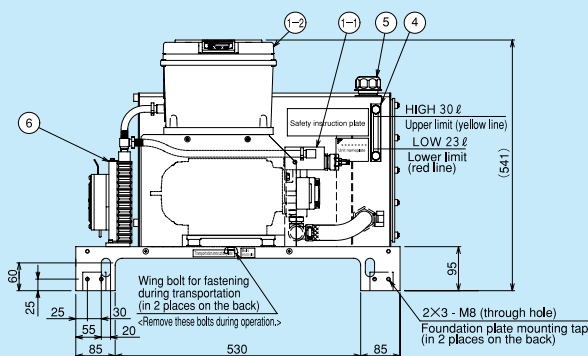
*For details about the communication procedure, refer to the separate communication function instruction manual.

Unit Type Dimensions: Single Pump Type



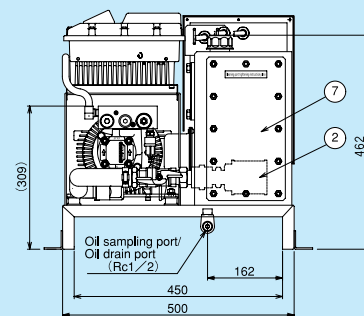
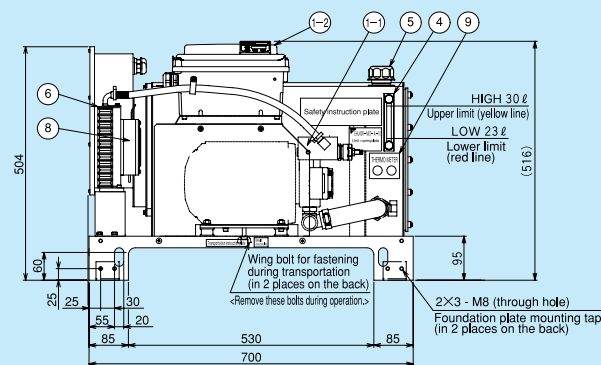
SUT03S15L07-10-F-C
SUT03S30L07-10-F-C
SUT03S15L10-10-F-C

Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
2	Suction strainer	1
3	Stop valve	1
4	Oil level gauge	1
5	Oil filling port/air breather	1
6	Oil cooler	1
7	Tank (30 ℓ)	1

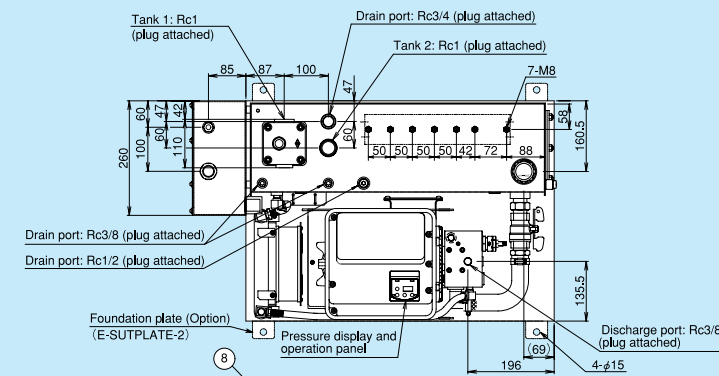


SUT03S15L16-10-F
SUT03S30L10-10-F

Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
2	Suction strainer	1
3	Stop valve	1
4	Oil level gauge	1
5	Oil filling port/air breather	1
6	Oil cooler	1
7	Tank (30 ℓ)	1
8	AC fan	1
9	Thermo sticker	1

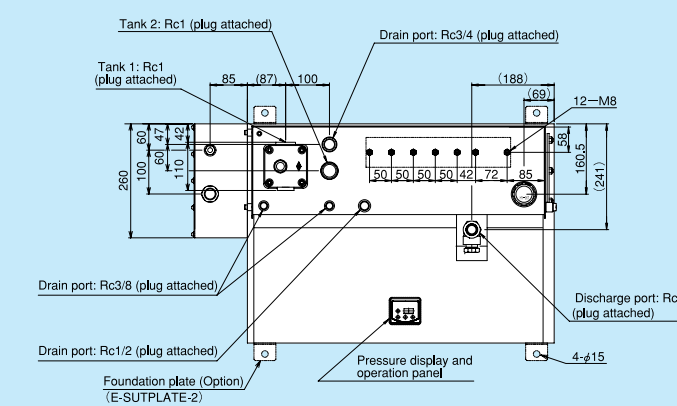
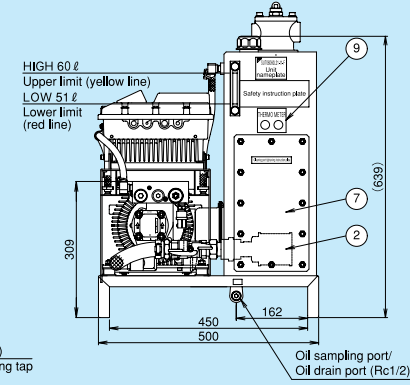
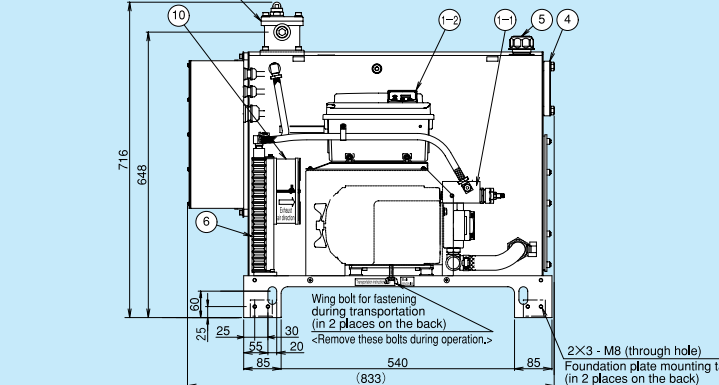


Unit Type Dimensions: Single Pump Type



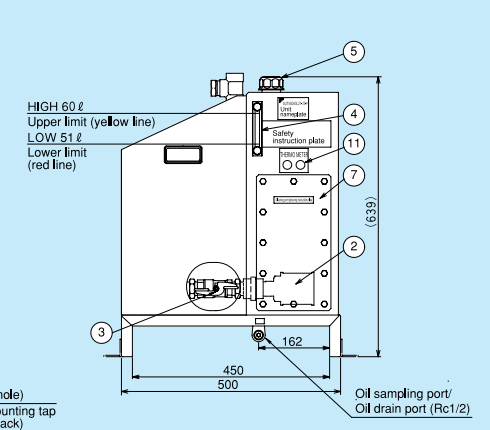
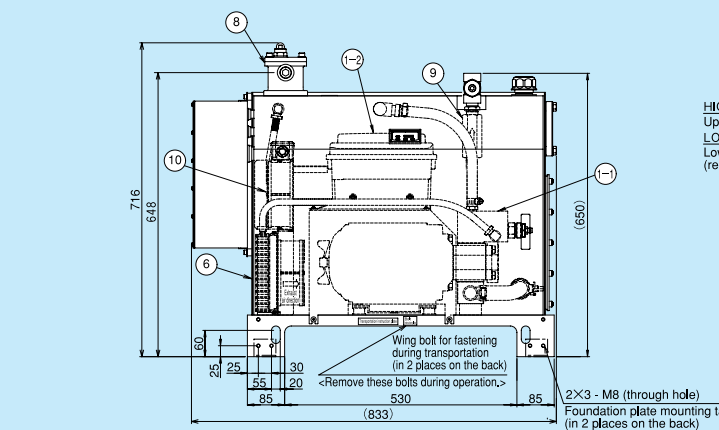
SUT06S30L16-20-F

Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
2	Suction strainer	1
3	Stop valve	1
4	Oil level gauge	1
5	Oil filling port/air breather	1
6	Oil cooler	1
7	Tank (60 ℓ)	1
8	Return filter	1
9	Thermo sticker	1
10	AC fan	1

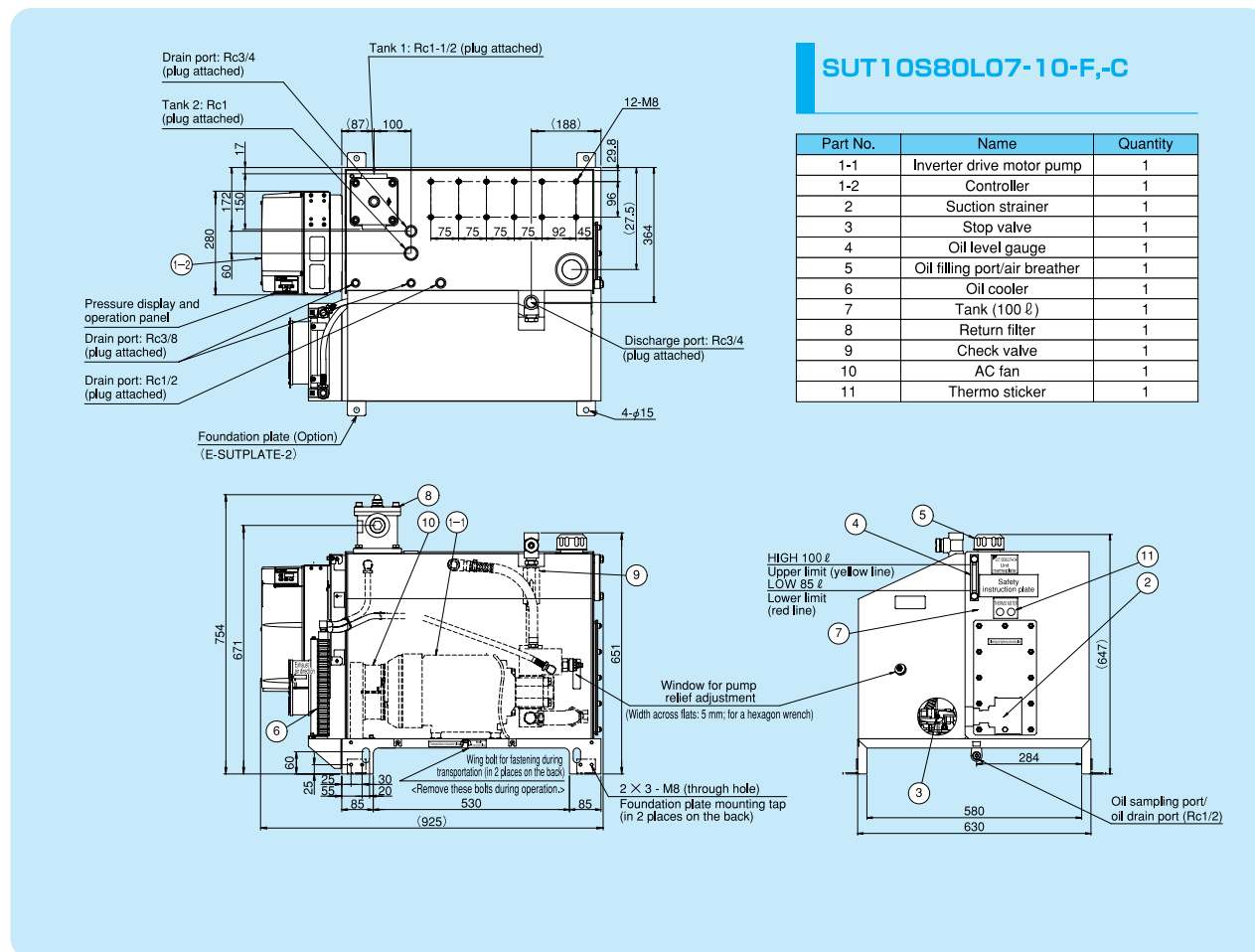


SUT06S60L07-20-F

Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
2	Suction strainer	1
3	Stop valve	1
4	Oil level gauge	1
5	Oil filling port/air breather	1
6	Oil cooler	1
7	Tank (60 ℓ)	1
8	Return filter	1
9	Check valve	1
10	AC fan	1
11	Thermo sticker	1



Unit Type Dimensions: Single Pump Type



Memo

Blank area for notes with horizontal dashed lines.

Unit Type: Double Pump Type



SUT06D40L16-20-F

SUT10D40L16-20-F

SUT06D60L21-20-F

SUT10D60L21-20-F

Model		SUT06D 40L16-20-F	SUT10D 40L16-20-F	SUT06D 60L21-20-F	SUT10D 60L21-20-F
Pump unit	Maximum flow rate (theoretical value; ℓ /min) *1	41.0		61.1	
	Maximum operating pressure (MPa)	15.7		20.6	
	Operating flow rate adjustment range (ℓ /min)	5.4 to 41.0		8.7 to 61.1	
	Operating pressure adjustment range (MPa)	1.5 to 15.7		1.5 to 20.6	
Motor capacity	3.7 kW or equivalent		5.0 kW or equivalent		
Power supply	Motor/Pump	3-phase, 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz(allowable power supply fluctuation range: \pm 10%)			
Rated current (A)	AC3 Φ 200V/50Hz	13.0		16.8	
	AC3 Φ 200V/60Hz	12.8		16.4	
	AC3 Φ 220V/60Hz	11.6		15.2	
Main power supply breaker setting (A)		30			
External input signal		3ch Insulated via photo-coupler, 24 V DC (27 V DC max.) 5 mA/ch (negative common)			
External output signal	Digital output	2 outputs; insulated via photo-coupler; open-collector output, 24 V DC, 30 mA max./ch			
	Contact output	1 output (1c contact), dry contact Contact capacity: 30 V DC, 0.5 A (resistance load)			
Weight (kg)		100	115	105	120
Operating conditions	Hydraulic oil *2	Dedicated mineral hydraulic oil/wear-resistant hydraulic oil •Viscosity grade: ISO VG32 to 68 •Viscosity range: 15 to 400 mm ² /s •Pollution degree: NAS9 or lower level			
	Tank oil temperature	0 to 60°C (recommended operating temperature range: 15 to 50°C)			
	Operating hydraulic oil temperature	0 to 60°C (recommended operating temperature range: 15 to 50°C)			
	Operating ambient temperature	0 to 35°C			
	Storage ambient temperature	-20 to 60°C			
	Operating ambient humidity	85% RH max. (no condensation)			
	Installation location	Indoors (Be sure to secure the unit with bolts.)			
Others	•Be sure to connect a circuit breaker for all (three) poles and the earth leakage breaker. •Make sure that electrical wiring meets the requirements of EU Standard EN60204-1. •Frequently turning ON/OFF the power supply for this unit will remarkably shorten the controller service life. To start or stop the unit at 8-minute or shorter intervals, use the unit's control stop function. •Be sure to connect the ground terminal.				
Tank Volume (ℓ)		60	100	60	100
Standard paint color		Ivory white (Munsell code 5Y7.5/1)			

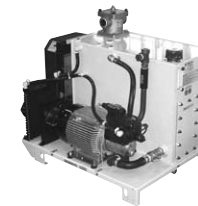
Note)

*1: The pump flow rate has been factory-set to the maximum discharge rate. The maximum discharge rate given in the above table is a theoretical value, not a guaranteed value.

*2: A hydraulic oil other than mineral hydraulic oil (water-containing oil or synthetic oil, e.g., water-glycol) cannot be used.

*3: When selecting a SUPER UNIT, verify the specifications of each model by referring to "Pressure - Flow rate Characteristics (Typical)" on p. 13 and p. 14, and "How to Select a SUPER UNIT" on p. 53. For the purpose of making improvements, the specifications given in this catalog are subject to change without prior notice. Be sure to see the latest model chart.

Unit Type: Double Pump Type



SUT10D80L21-10-F

SUT16D80L21-10-F

SUT10D80L21-10-C

SUT16D80L21-10-C

Model		SUT10D80L21-10-F	SUT16D80L21-10-F	SUT10D80L21-10-C	SUT16D80L21-10-C
Pump unit	Maximum flow rate (theoretical value; ℓ /min) *1	83			
	Maximum operating pressure (MPa)	20.6			
	Operating flow rate adjustment range (ℓ /min)	11.6 to 83.0			
	Operating pressure adjustment range (MPa)	1.5 to 20.6			
	Motor capacity	7.0kW or equivalent			
Power supply	Motor/Pump	3-phase, 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz(allowable power supply fluctuation range: \pm 10%)			
Rated current (A)	AC3 Φ 200V/50Hz	25.5		24.8	
	AC3 Φ 200V/60Hz	24.8		22.7	
	AC3 Φ 220V/60Hz	22.7		22.7	
Main power supply breaker setting (A)		50			
External input signal		5ch Insulated via photo-coupler, 24 V DC (27 V DC max.) 5 mA/ch (negative common)			
External output signal	Digital output	2 outputs; insulated via photo-coupler; open-collector output, 24 V DC, 30 mA max./ch			
	Contact output	1 output (1c contact), dry contact Contact capacity: 30 V DC, 0.5 A (resistance load)			
Weight (kg)		135	145	135	145
Operating conditions	Hydraulic oil *2	Dedicated mineral hydraulic oil/wear-resistant hydraulic oil •Viscosity grade: ISO VG32 to 68 •Viscosity range: 15 to 400 mm ² /s •Pollution degree: NAS9 or lower level			
	Tank oil temperature	0 to 60°C (recommended operating temperature range: 15 to 50°C)			
	Operating hydraulic oil temperature	0 to 60°C (recommended operating temperature range: 15 to 50°C)			
	Operating ambient temperature	0 to 35°C			
	Storage ambient temperature	-20 to 60°C			
	Operating ambient humidity	85% RH max. (no condensation)			
	Installation location	Indoors (Be sure to secure the unit with bolts.)			
Others	•Be sure to connect a circuit breaker for all (three) poles and the earth leakage breaker. •Make sure that electrical wiring meets the requirements of EU Standard EN60204-1. •Frequently turning ON/OFF the power supply for this unit will remarkably shorten the controller service life. To start or stop the unit at 8-minute or shorter intervals, use the unit's control stop function. •Be sure to connect the ground terminal.				
Tank Volume (ℓ)		100	160	100	160
Standard paint color		Ivory white (Munsell code 5Y7.5/1)			

Note)

*1: The pump flow rate has been factory-set to the maximum discharge rate. The maximum discharge rate given in the above table is a theoretical value, not a guaranteed value.

*2: A hydraulic oil other than mineral hydraulic oil (water-containing oil or synthetic oil, e.g., water-glycol) cannot be used.

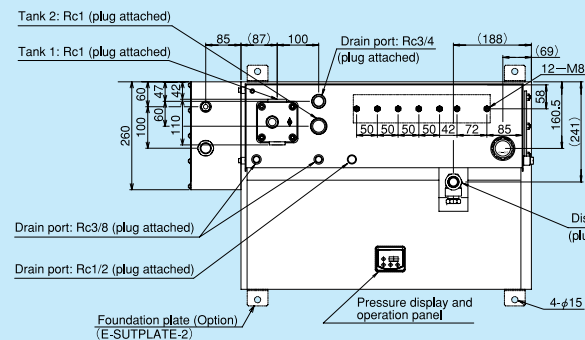
*3: When selecting a SUPER UNIT, verify the specifications of each model by referring to "Pressure - Flow rate Characteristics (Typical)" on p. 13 and p. 14, and "How to Select a SUPER UNIT" on p. 53. For the purpose of making improvements, the specifications given in this catalog are subject to change without prior notice. Be sure to see the latest model chart.

Specifications of the Communication Function (-C)

Item	Setting range	Default setting
Interface	Conforming to RS-232C	—
Baud rate	4800, 9600, 14400, 19200 (bps)	19200 (bps)
Communication method	Half-duplex communication	—
Synchronization method	Start-stop synchronization	—
Number of units for communication	1:1	—
Transmission code		
	ASCII	—
Transmission data format	Start bit	1 bit
	Data bit length	7 or 8 bits
	Parity bit	None or 1 bit
	Stop bit	1 or 2 bits
Starting code	STX	—
Ending code	ETX	—
Error detection	Sum check: 2 bytes	—
	Parity check: Enabled (Odd/Even), disabled	Disabled
Transmission distance	RS-232C: 15 m max. (19200 bps)	—
Flow control	Disabled	—

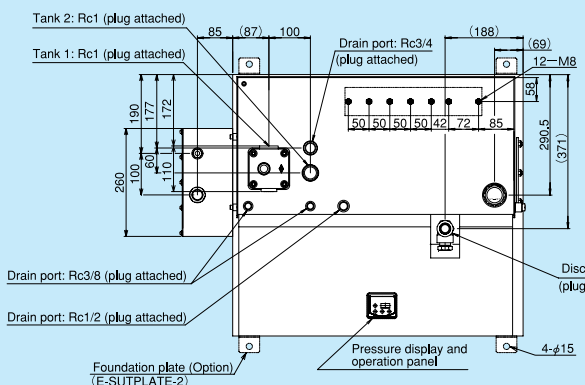
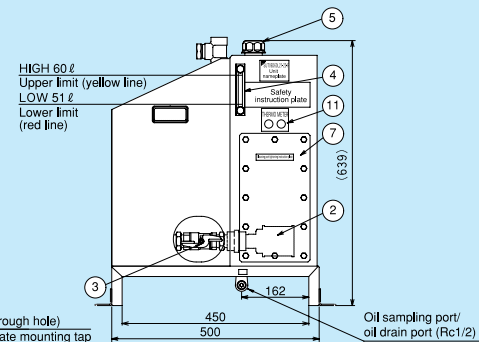
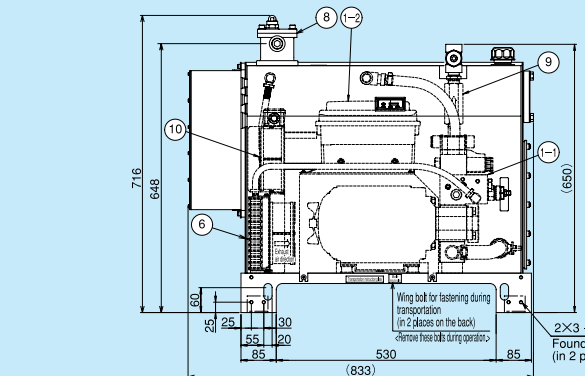
*For details about the communication procedure, refer to the separate communication function instruction manual.

Unit Type Dimensions: Double Pump Type



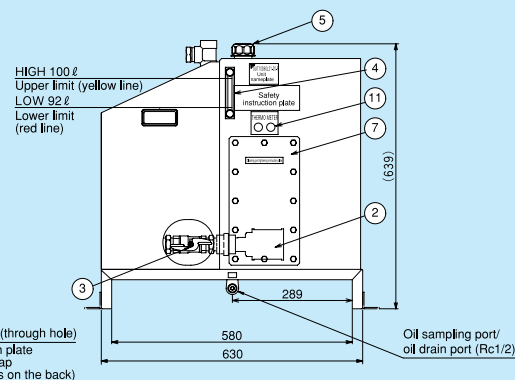
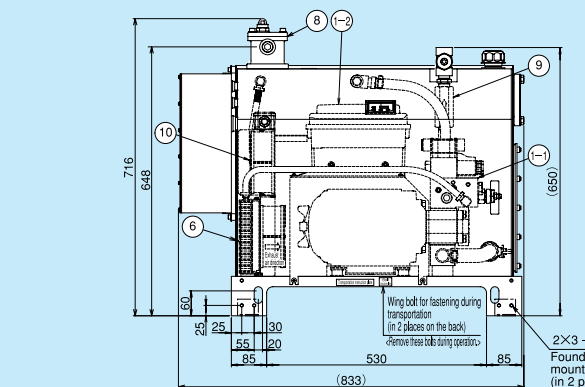
SUT06D40L16-20-F
SUT06D60L21-20-F

Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
2	Suction strainer	1
3	Stop valve	1
4	Oil level gauge	1
5	Oil filling port/air breather	1
6	Oil cooler	1
7	Tank (60ℓ)	1
8	Return filter	1
9	Check valve	1
10	AC fan	1
11	Thermo sticker	1

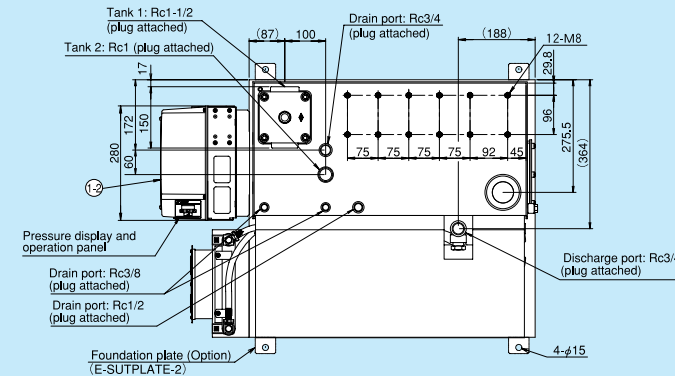


SUT10D40L16-20-F
SUT10D60L21-20-F

Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
2	Suction strainer	1
3	Stop valve	1
4	Oil level gauge	1
5	Oil filling port/air breather	1
6	Oil cooler	1
7	Tank (60ℓ)	1
8	Return filter	1
9	Check valve	1
10	AC fan	1
11	Thermo sticker	1



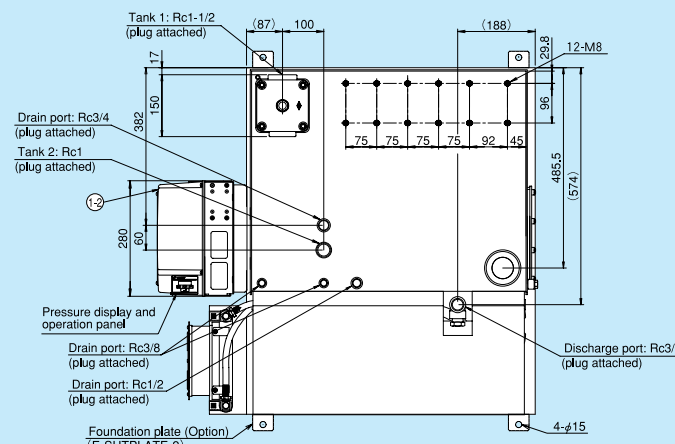
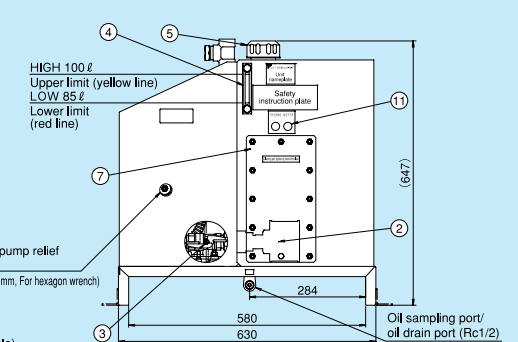
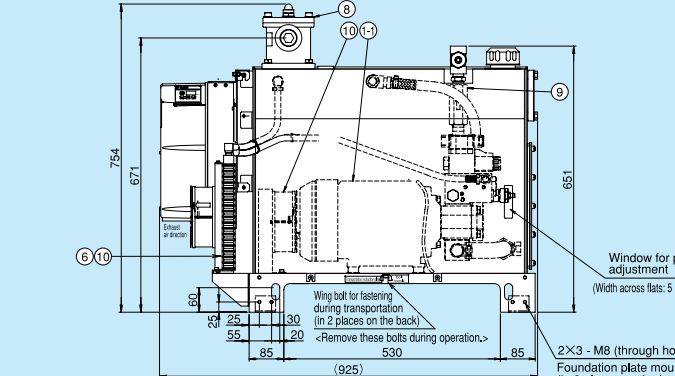
Unit Type Dimensions: Double Pump Type



SUT10D80L21-10-F

Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
2	Suction strainer	1
3	Stop valve	1
4	Oil level gauge	1
5	Oil filling port/air breather	1
6	Oil cooler	1
7	Tank (100ℓ)	1
8	Return filter	1
9	Check valve	1
10	AC fan	1
11	Thermo sticker	1

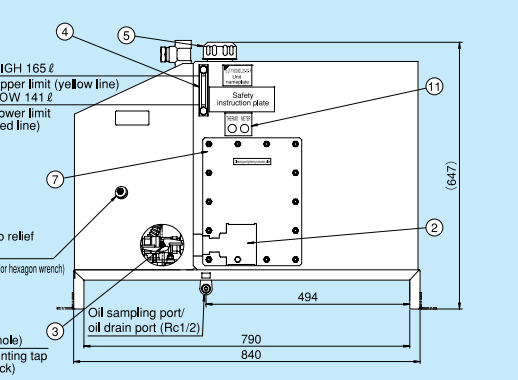
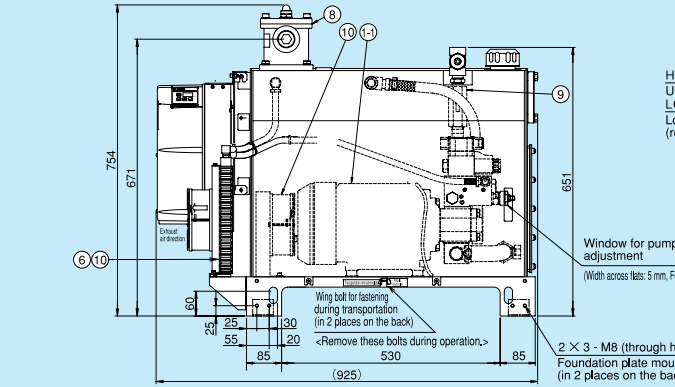
(Items marked with ※ are incorporated in casing.)



SUT16D80L21-10-F

Part No.	Name	Quantity
1-1	Inverter drive motor pump	1
1-2	Controller	1
2	Suction strainer	1
3	Stop valve	1
4	Oil level gauge	1
5	Oil filling port/air breather	1
6	Oil cooler	1
7	Tank (160ℓ)	1
8	Return filter	1
9	Check valve	1
10	AC fan	1
11	Thermo sticker	1

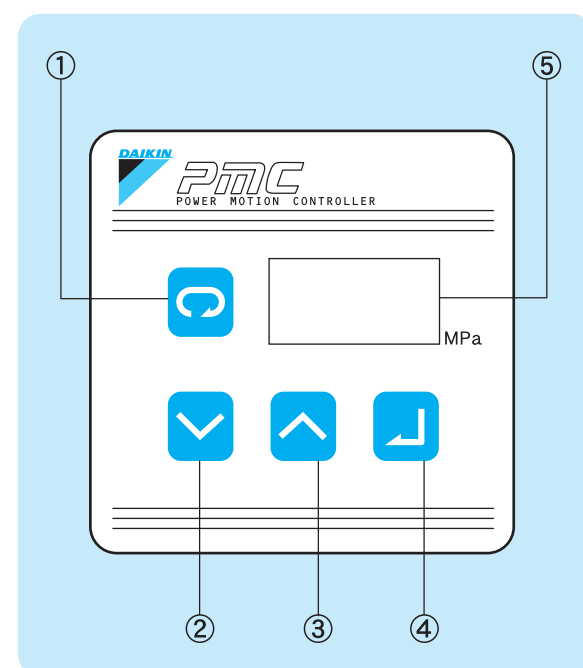
(Items marked with ※ are incorporated in casing.)



Part Names, Functions, and Operations of the Operation Panel

Using the key switches on the SUPER UNIT controller, you can monitor the pressure and flow rate and set or change parameters.

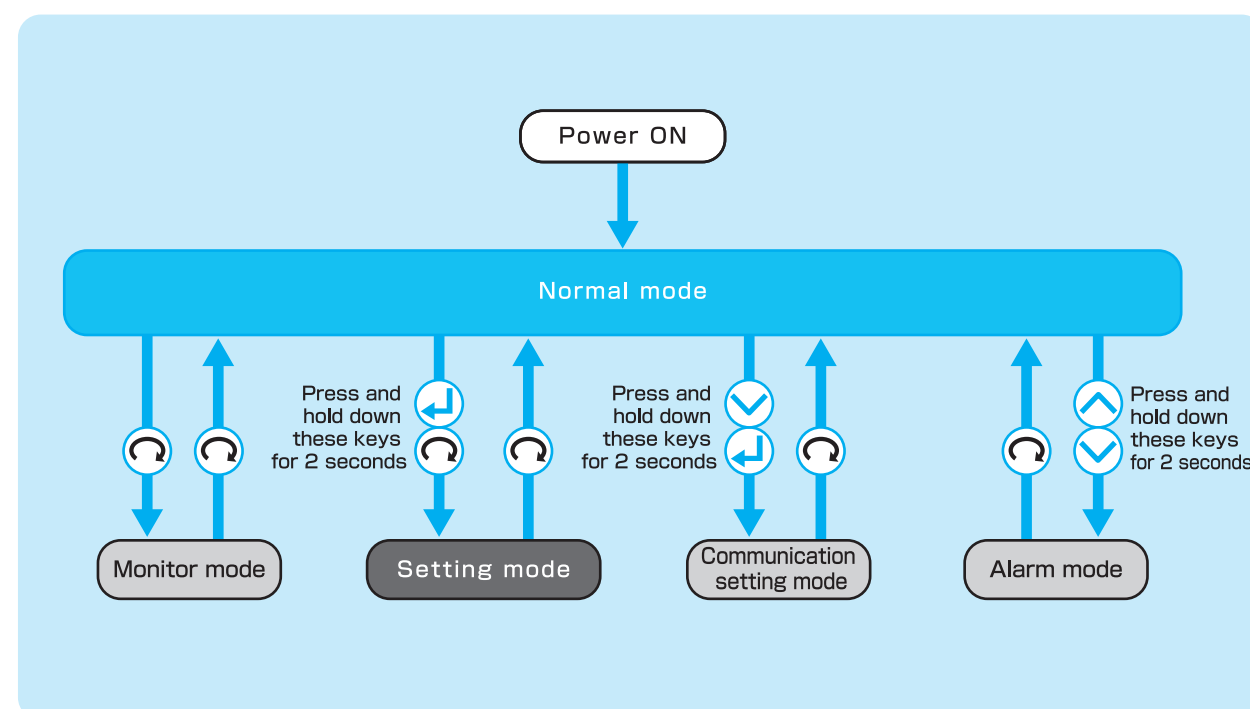
Outline of Functions



No.	Item	Function
①	[SEL] key	Used to select an operation mode.
②	[DOWN] key	Decrements a set value in an operation or monitor mode.
③	[UP] key	Increments a set value in an operation or monitor mode.
④	[ENT] (Register) key	Used to register a change of setting in an operation or monitor mode.
⑤	Data display	Normal mode : Displays the current pressure or alarm code. Monitor mode : Displays the pressure switch setting, each pressure setting, each flow rate setting, the current flow rate, or the current rotation speed. Setting mode : Used to set or change the pressure, flow rate, or other parameters. Alarm mode : Used to check the alarm history. Communication : Used to change communication setting mode settings.

Shifting between Individual Modes

To return to monitor mode or normal mode from other modes, press the key.
To go to setting mode or alarm mode, press and hold down a combination of keys for 2 seconds.



Monitor Mode

The following items can be checked in monitor mode.

Item No.	Name	Description
n00	Pressure switch setting	(MPa) [When PSI units are selected: ×10 PSI] Displays the pressure switch setting.
n01 *1	Pressure setting	(MPa) [When PSI units are selected: ×10 PSI] Alternately displays the high and low pressure settings for the current P-Q selection number.
n02	Flow rate setting	(ℓ/min) Alternately displays the low and high flow rate settings for the current P-Q selection number.
n03	Flow rate	(ℓ/min) Displays the current flow rate.
n04 *2	Latest alarm code	Displays the latest alarm code.
n05	Rotation speed	(×10min ⁻¹) Displays the current rotation speed.
n06	Operation status	[SUT**D] Displays the solenoid valve switching status: "Low pressure [L]" (combination flow) or "High pressure [H]" (single flow), and the P-Q selection number. Example) Combination flow (low pressure) - P-Q selection No. 1 [SUT**S] Displays the low pressure status [L] and P-Q selection number or the selected P-Q selection number only. Example) Combination flow (low pressure)- P-Q selection No. 1 Example) P-Q selection No. 2
n07	Reverse rotation speed at power OFF	Displays the rotation speed of the motor when it rotates in the reverse direction due to reverse flow from the load when the power supply for the unit is turned OFF. This value is used to estimate the machine load volume.
n08	Regenerative load integration ratio	Displays the regenerative load integration ratio of the current regenerative braking resistance.
n10	Motor thermistor temperature	Displays the temperature detected by the thermistor in the motor.
n11	Fin thermo temperature	Displays the temperature detected by the thermistor in the controller.
n12	Main circuit voltage	Displays the controller's internal circuit voltage. The indicated voltage is a value equivalent to "power supply voltage × √2". The main circuit voltage may momentarily exceed 350 V due to a regenerative current during deceleration. However, this is not abnormal.

*1: The default setting is displayed in MPa (standard display units). If you change the display units to PSI, ensure that you indicate in some manner that the monitor value is displayed in PSI units (attach a label, etc). However, use of PSI units in Japan is subjected to punishment under the Measurement Law. Users should supply their own unit indication labels.

*2: You can check the current power ON count by pressing the key when an alarm code is displayed. For details concerning alarm codes, refer to the alarm descriptions in the Operation Manual.

Setting Mode

SUT**S15*07
SUT**S15*10
SUT**S30*07

Item No.	Name	Description
P00	Start/stop signal switching	Specify whether to start or stop the motor when the start/stop signal is input.
P01	Pressure switch	Specify whether to enable or disable the pressure switch function and specify the pressure level that activates the pressure switch.
P02	Pressure switch output delay time	Specify the delay time before the pressure switch output is activated after the pressure decreases to a level that activates the pressure switch.
P03	Pressure switch display hold setting	Specify whether to enable the function that indicates that the pressure switch is activated.
P04	Pressure unit selection	Select the units for normal pressure display: "MPa" or "×10 PSI".
P05	Regenerative load command ratio	Adjust the regenerative load when it is too large in normal pressure response (FF → DH).
P06	AC fan motor synchronization	Specify whether to start or stop the radiator AC fan in synchronization with start/stop signal input.
P07	Warning output level setting	Specify the warning output level.
P08	Alarm output combination	Specify whether to use the contact outputs (alarm, warning, and pressure switch outputs) individually or to integrate these outputs into one, or specify whether to enable the pressure switch extension function.
P09	Initialize	When the power supply is turned OFF and then turned ON again, the parameters will be reset to the default settings. 1: Resets P00 to P08. 2: Resets all parameters.
P10	Response gain	Adjust the control response gain (the smaller the set value, the faster the response).
P11	Acceleration response gain	Adjust the acceleration response gain (the larger the set value, the faster the acceleration response; however, the pump may easily vibrate during deceleration).
P12	Solenoid valve response delay time	Specify the solenoid valve response delay time so that cylinder operation conforms to the P-Q selection pattern.
P13~P28	Pressure, flow rate, acceleration time, and deceleration time settings for P-Q selection Nos. 0 to 15	Specify the pressure, flow rate, acceleration time, and deceleration time for each P-Q selection number. The flow rate parameter is defined as a theoretical value. Specify the following parameters in this sequence: PL <Pressure setting> qL <Flow rate setting> Ut <Acceleration time setting>; simultaneous setting of the pressure increase (pressure) and speed increase rates (flow rate) dt <Deceleration time setting>; simultaneous setting of the pressure reduction (pressure) and speed reduction rates (flow rate) Example) P-Q selection No. 11: PL.11, qL.11, Ut.11, dt.11
P29~P30	(Not used)	These parameters are not used, and have no influence on unit operation. However, do not change the default settings.
P31	Pressure sensor rating	Specify the pressure sensor's detectable pressure rating.
P32	Surge-suppression starting time	Specify the stabilization time for motor start up.
P33	Motor startup initial response gain	Specify the initial response gain for motor start up.
P34	Motor startup error judgment time	Specify the time for judgment of motor startup errors.
P35	Dry operation judgment pressure	Specify the pressure threshold level for judgment of the dry operation status.
P36	Dry operation judgment time	Specify the time for judgment of the dry operation status.
P37	(Not used)	These parameters are not used, and have no influence on unit operation. However, do not change the default settings.
P38	Pressure switch output dead zone	Specify the dead zone for pressure switch function changeover.
P39	Digital output selection	Specify an operating condition subjected to digital output.
P40	(Not used)	These parameters are not used, and have no influence on unit operation. However, do not change the default settings.

*Normally, the settings of the P05, P10, and P11 parameters do not need to be changed. However, you must change their settings when the unit is operated under special circuit conditions (large load volume, etc.).

Setting Mode

SUTO0S4007
SUT**S15*16
SUT**S30*10

SUT**S30*16
SUT**S60*07

SUT**D40*16
SUT**D60*21

Item No.	Name	Description
P00~P03	Pressure and flow rate settings for P-Q selection Nos. 0 to 3	Setting mode allows you to specify the pressure and flow rate for each P-Q selection number. The flow rate parameter is defined as a theoretical value. Specify the following parameters in this sequence: PH <Pressure setting for high-pressure operation (single flow)> qH <Flow rate setting for high-pressure operation (single flow)> PL <Pressure setting for low-pressure operation (combination flow)> qL <Flow rate setting for low-pressure operation (combination flow)>
P04	Pressure increase time after P-Q selection change	Specify a pressure increase time for increase of pressure after P-Q selection change.
P05	Pressure reduction time after P-Q selection change	Specify a pressure reduction time for reduction of pressure after P-Q selection change (units: seconds/MPa).
P06	Speed increase time after P-Q selection change	Specify a speed increase time for increase of flow rate after P-Q selection change.
P07	Speed reduction time after P-Q selection change	Specify a speed reduction time for reduction of flow rate after P-Q selection change.
P08	Pressure switch display hold	Specify whether to enable the function that indicates that the pressure switch is activated.
P09	Pressure unit selection	Select the units for normal pressure display: "MPa" or "×10 PSI".
P10	Thermistor alarm output enable	Specify whether to enable the motor and controller temperature alarm output functions.
P11	Start/stop signal switching	Specify whether to start or stop the motor when the start/stop signal is input.
P12	Pressure switch	Specify whether to enable or disable the pressure switch function and specify the pressure level that activates the pressure switch.
P13	Pressure switch output delay time	Specify the delay time before the pressure switch output is activated after the pressure decreases to a level that activates the pressure switch.
P14	Response gain	Adjust the control response gain (the smaller the set value, the faster the response).
P15	Regenerative load command ratio	Adjust the regenerative load when it is too large for normal pressure response (FF → DH).
P16	HIGH/LOW switching response time	Adjust the minimum solenoid valve switching time when operation is unstable because the operation point is close to the solenoid valve switching point (high pressure ↔ low pressure).
P17	Rotation speed dead zone	Adjust the rotation speed dead zone when operation is unstable because the operation point is close to the solenoid valve switching point (high pressure ↔ low pressure).
P18	Alarm output combination	Specify whether to use the contact outputs (alarm, warning, and pressure switch outputs) individually or to integrate these outputs into one, or specify whether to enable the pressure switch extension function.
P19	Initialize	When the power supply is turned OFF and then turned ON again, the parameters will be reset to the default settings.
P20~P30	(Not used)	These parameters are not used, and have no influence on unit operation. However, do not change the default settings.
P31	Pressure sensor rating	Specify the pressure sensor's detectable pressure rating.
P32	Surge-suppression starting time	Specify the stabilization time for motor start up.
P33	Motor startup initial response gain	Specify the initial response gain for motor start up.
P34	Motor startup error judgment time	Specify the time for judgment of motor startup errors.
P35	Dry operation judgment pressure	Specify the pressure threshold level for judgment of dry operation status.
P36	Dry operation judgment time	Specify the time for judgment of dry operation status.
P37	Equal-pressure combination flow rate	Specify a combination flow switching judgment pressure when the high-pressure setting for both pumps is equal (when the double pump type is used).
P38	Pressure switch output dead zone	Specify the dead zone for pressure switch function changeover.
P39	Digital output selection	Specify signals subject to digital output.
P40	Pump operation selection	Specify whether to enable operation of the high-pressure, small-capacity pump only.

*Normally, the settings of the P14 to P17 parameters do not need to be changed. However, you must change their settings when the unit is operated under special circuit conditions (large load volume, etc.).

■ indicates items that apply to the double pump type only.

Setting Mode

SUT**S80*07
SUT**D80*21
SUT00D11021

Item No.	Name	Description
P00	Start/stop signal switching	Specify whether to start or stop the motor when the start/stop signal is input.
P01	Pressure switch	Specify whether to enable or disable the pressure switch function and specify the pressure level that activates the pressure switch.
P02	Pressure switch output delay time	Specify a delay time before the pressure switch output is activated after the pressure decreases to a level that activates the pressure switch.
P03	Pressure switch display hold setting	Specify whether to enable the function that indicates that the pressure switch is activated.
P04	Pressure unit selection	Select the units for normal pressure display: "MPa" or "× 10 PSI".
P05	Regenerative load command ratio	Adjust the regenerative load when it is too large for normal pressure response (FF → DH).
P06	Regenerative load command ratio for deceleration	Specify the limit used for the torque command ratio until the rotation speed command finishes changing when the flow rate command changes by 50% or more of the maximum flow rate during P-Q selection change.
P07	Warning output level setting	Specify the warning output level.
P08	Alarm output combination	Specify whether to use the contact outputs (alarm, warning, and pressure switch outputs) individually or to integrate these outputs into one, or specify whether to enable the pressure switch extension function.
P09	Initialize	When the power supply is turned OFF and then turned ON again, the parameters will be reset to the default settings. 1: Resets P00 to P08. 2: Resets all parameters.
P10	Response gain	Adjust the control response gain (the smaller the set value, the faster the response).
P11	Acceleration response gain	Adjust the acceleration response gain (the larger the set value, the faster the acceleration response; however, the pump may easily vibrate during deceleration).
P12	Solenoid valve response delay time	Specify the solenoid valve response delay time so that cylinder operation conforms to the P-Q selection pattern.
P13 - P28	Pressure, flow rate, acceleration time, and deceleration time settings for P-Q selection Nos. 0 to 15	Specify the pressure, flow rate, acceleration time, and deceleration time for each P-Q selection number. The flow rate parameter is defined as a theoretical value. Specify the following parameters in this sequence: PH <Pressure setting for high-pressure operation (single flow)> qH <Flow rate setting for high-pressure operation (single flow)> PL <Pressure setting for low-pressure operation (combination flow)> qL <Flow rate setting for low-pressure operation (combination flow)> Ut <Acceleration time setting>: simultaneous setting of the pressure increase (pressure) and speed increase rates (flow rate) dt <Deceleration time setting>: simultaneous setting of the pressure reduction (pressure) and speed reduction rates (flow rate) * The P-Q selection numbers for parameters P23 to P28 are defined as a hexadecimal code. Example) P-Q selection No. 11: PH.b, qH.b, PL.b, qL.b, Ut.b, dt.b
P29	HIGH/LOW switching response time	Adjust the minimum solenoid valve switching time when operation is unstable because the operation point is close to the solenoid valve switching point (high pressure ↔ low pressure).
P30	Rotation speed dead zone	Adjust the rotation speed dead zone when operation is unstable because the operation point is close to the solenoid valve switching point (high pressure ↔ low pressure).
P31	Pressure sensor rating	Specify the pressure sensor's detectable pressure rating.
P32	Surge-suppression starting time	Specify the stabilization time for motor start up.
P33	Motor startup initial response gain	Specify the initial response gain for motor start up.
P34	Motor startup error judgment time	Specify the time for judgment of motor startup errors.
P35	Dry operation judgment pressure	Specify the pressure threshold level for judgment of dry operation status.
P36	Dry operation judgment time	Specify the time for judgment of dry operation status.
P37	Equal-pressure combination flow rate	Specify a combination flow switching judgment pressure when the high-pressure setting for both pumps is equal (when the double pump type is used).
P38	Pressure switch output dead zone	Specify the dead zone for pressure switch function changeover
P39	Digital output selection	Specify signals subject to digital output.
P40	Pump operation selection	Specify whether to enable operation of the high-pressure, small-capacity pump only.

*Normally, the settings of the P05, P6, P10, and P11 parameters do not need to be changed. However, you must change the settings when the unit is operated under special circuit conditions (large load volume, etc.).

■ indicates items that apply to the double pump type only.

Specifications of the Recommended Power Supply Cable, I/O Signal Cable, Motor Cable, and Harness

Model	Power supply cable				I/O signal cable		
	Cable size	Recommended cable	Recommended crimp terminal	Recommended cable clamp	Cable size	Recommended cable	Recommended cable clamp
SUT**S15*07	2.5 mm ² or more (AWG14 or larger size)	CE362 2.5 mm ² ×4 wires (KURAMO ELECTRIC)	RBV2-4	OA-W2216 (OHM ELECTRIC) Applicable cable outer diameter: φ11 to φ16	0.3 to 0.5 mm ² (AWG20-22)	KVC-36SB 0.3 to 0.5 mm ²	OA-W1611 (OHM ELECTRIC) Applicable cable outer diameter: φ9 to φ11
SUT**S15*07							
SUT**S30*07							
SUT**S15*10							
SUT**S15*10							
SUT**S15*16							
SUT**S30*16	5.5 mm ² or more (AWG10 or larger size)	CE362 6.0 mm ² ×4 wires (KURAMO ELECTRIC)	RBV5.5-4	OA-W2216 (OHM ELECTRIC) Applicable cable outer diameter: φ15 to φ19	0.3 to 1.0 mm ² (AWG16-22)		
SUT**S60*07							
SUT**S80*07	6.0 mm ² or more (AWG10 or larger size)	CE362 6.0 mm ² ×4 wires (KURAMO ELECTRIC)	RBV5.5-5	OA-W2216 (OHM ELECTRIC) Applicable cable outer diameter: φ15 to φ19	0.3 to 1.0 mm ² (AWG16-22)		
SUT**S80*07							
SUT**D40*16	2.5 mm ² or more (AWG14 or larger size)	CE362 2.5 mm ² ×4 wires (KURAMO ELECTRIC)	RBV2-4	OA-W2216 (OHM ELECTRIC) Applicable cable outer diameter: φ11 to φ16	0.3 to 0.5 mm ² (AWG20-22)		
SUT**D60*21							
SUT**D80*21	5.5 mm ² or more (AWG10 or larger size)	CE362 6.0 mm ² ×4 wires (KURAMO ELECTRIC)	RBV5.5-5	OA-W2216 (OHM ELECTRIC) Applicable cable outer diameter: φ15 to φ19	0.3 to 1.0 mm ² (AWG16-22)		
SUT**D80*21							
SUT00D11021	10 mm ² or more	CE362 10.0 mm ² ×4 wires (KURAMO ELECTRIC)	R8-5	—	0.3 to 0.5 mm ² (AWG)		—
SUT00D11021							

Model	Power supply cable for solenoid valve output			
	Cable size	Recommended cable	Recommended crimp terminal	Recommended cable clamp
SUT00D11021-20-F	—	CE362 0.5 mm ² × 3 wires (KURAMO ELECTRIC)	(Controller side) RBV1.25-4 (Solenoid valve side) RBV1.25-3	—
SUT00D11021-20-C	—	—	—	—

Model	Motor cable		AC fan power supply cable		Motor thermistor harness	
	Recommended cable	Recommended crimp terminal	Recommended cable	Recommended crimp terminal	Recommended cable	Recommended crimp terminal
SUT00D11021-20-F	CE362 10 mm ² ×4 wires (KURAMO ELECTRIC)	(Controller side) R8-5	CE362 0.5 mm ² × 3 wires (KURAMO ELECTRIC)	(Controller side) RBV1.25-3	KVC-36SB 0.3 to 0.5 mm ² (KURAMO ELECTRIC)	(Controller side) RBV1.25-3 (Motor side) RBV1.25-3.5
SUT00D11021-20-C		(Motor side) R8-6				

Specifications of Harnesses for the SUT00D11021

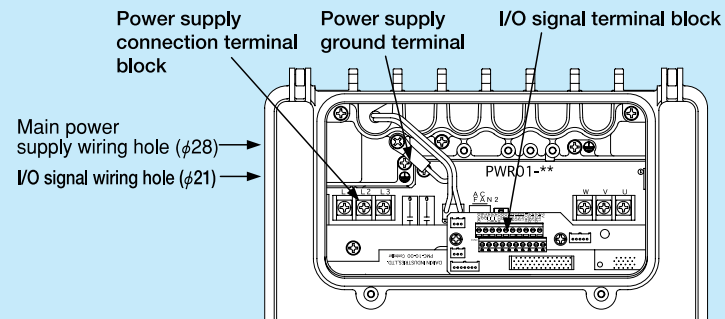
If preparing your own harnesses, the following harnesses should have a max cable length of 5 m.

Name	Model	Terminal specifications			Cable specifications			Ferrite core (recommended)
		SUT unit	Controller	Cable type	Cable size	Cable length		
Encoder harness	PM-SEH05-P22-A09R	Contact 170366-1 Housing 172169-1 (All manufactured by AMP)	Round terminal with a vinyl insulation sheath (PBV1.25-3)	KVC-36SB (KURAMO ELECTRIC)	AWG22	5m	Not required	
Pressure sensor harness	PM-SPH05 (with a ferrite core)	Contact 171630-1 Rubber cap 172746-1 Housing 174357-2 Double lock plate 1-174358-1 (All manufactured by AMP)	Round terminal with a vinyl insulation sheath (PBV1.25-3)	KVC-36SB (KURAMO ELECTRIC)	AWG20	5m	TFCM-16-8-16 (Kitagawa Industries) or equivalent	

Power Supply and I/O Signal Cables

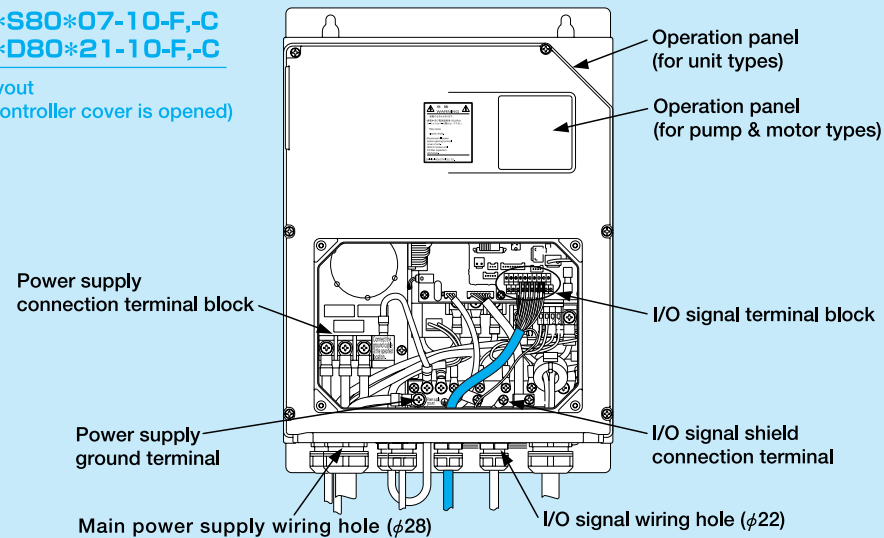
SUT**S15*07-10-F,-C · SUT**S30*07-10-F,-C
SUT**S15*10-10-F,-C

Terminal layout (when the controller cover is opened)



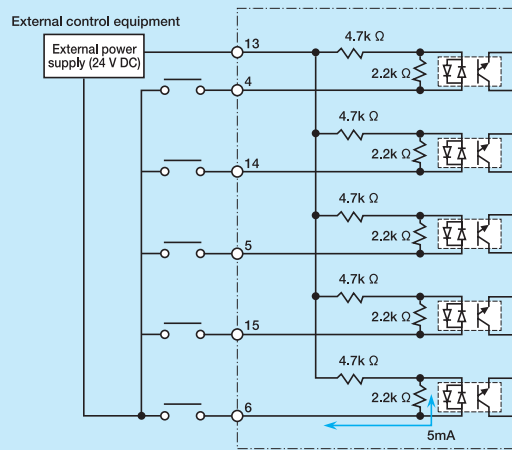
SUT**S80*07-10-F,-C
SUT**D80*21-10-F,-C

Terminal layout (when the controller cover is opened)



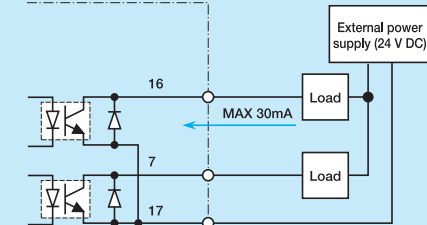
- * Main power supply connections: Connect a 3-phase AC power supply (200 V/50 Hz, 200 V/60 Hz, or 220 V/60 Hz) to the power supply terminals (L1, L2 and L3), and connect a ground cable to the ground terminal.
- * I/O signal connections: In regard to terminals 1 to 20, connect the input (4 to 6, and 13 to 15), output (7, 16, and 17), and alarm output terminals (8, 9, and 18) as shown below.

Digital input signal



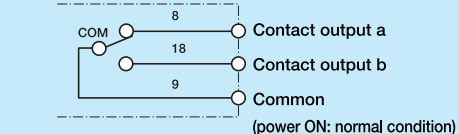
- Input terminal: The input common terminal (terminal 13) can be either positive or negative.
- Prepare an external power supply (24 V DC ±1 V, 0.5 A or more).
- The maximum output current of the input circuit is 5 mA per channel.

Digital output signal



- Output terminal: The output common terminal (terminal 17) is negative.
- Prepare an external power supply (24 V DC ±1 V, 0.5 A or more).
- We recommend use of the same external power supply as used for the input circuit.
- The maximum output current of the output circuit is 30 mA (resistance load) per channel.

Contact output signal

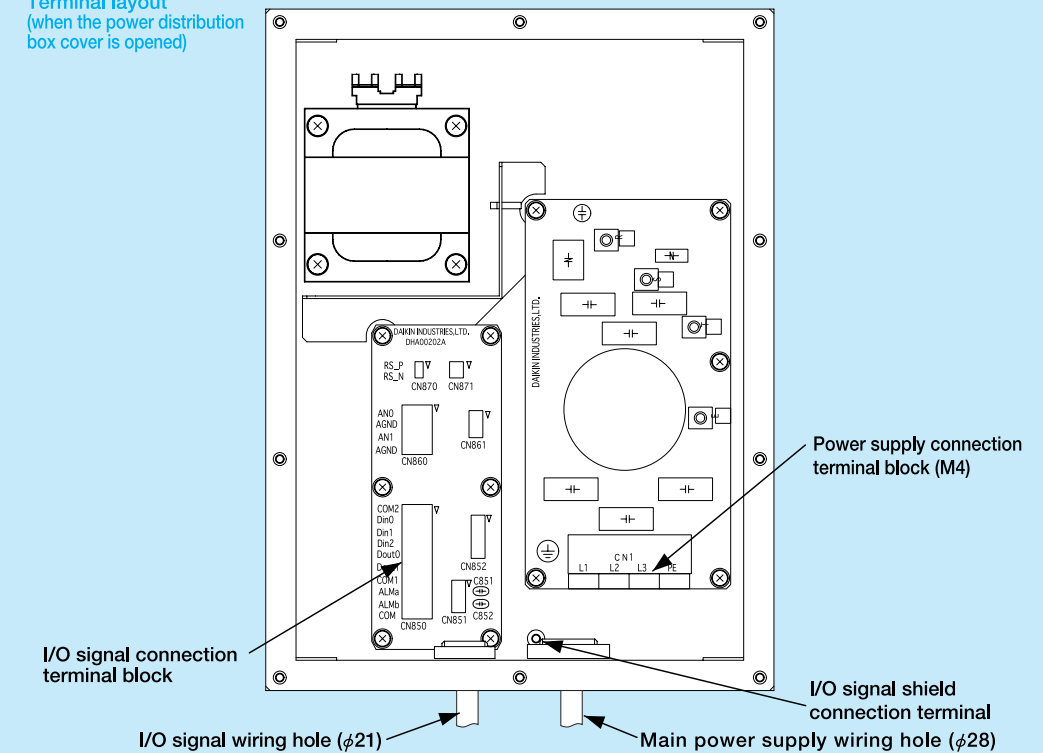


- Pressure switch terminal: contact output (switching capacity: 30 V DC, 0.5 A [resistance load])

Power Supply and I/O Signal Cables

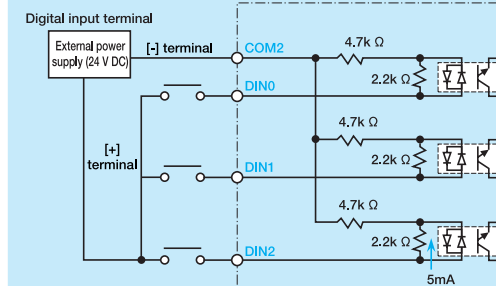
SUT00S4007-10-F · SUT**S30*10-10-F · SUT**S15*16-10-F
SUT**S30*16-10-F · SUT**S60*07-10-F
SUT**D40*16-**-F · SUT**D60*21-**-F

Terminal layout (when the power distribution box cover is opened)



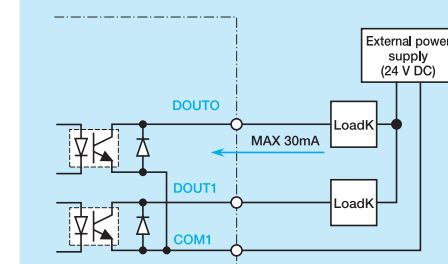
- * Main power supply connections: Connect a 3-phase AC power supply (200 V/50 Hz, 200 V/60 Hz, or 220 V/60 Hz) to the power supply terminals (L1, L2, and L3), and connect a ground cable to the ground terminal.
- * I/O signal connections: Connect the input (DIN0, DIN1, and DIN2: input terminal codes indicated in the power distribution box wiring diagram), output (DOUT0 and DOUT1: output terminal codes indicated in the power distribution box wiring diagram), and alarm output terminals (ALMa and ALMb) as shown below.

Digital input terminal



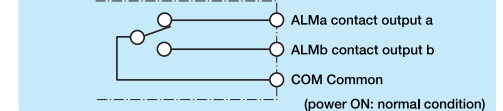
- Input terminal: The input common terminal (COM2) is negative.
- Prepare an external power supply (24 V DC ±1 V, 0.5 A or more).
- The maximum output current of the input circuit is 5 mA (typical).
- To use the input common terminal (COM2) as a positive common terminal, cut the jumper line on the terminal block circuit board (refer to the Operation Manual for details).

Digital output terminal



- Output terminal: The output common terminal (COM1) is negative.
- Prepare an external power supply (24 V DC ±1 V, 0.5 A or more).
- We recommend use of the same external power supply as used for the input circuit.
- The maximum output current of the output circuit is 30 mA (resistance load) per channel.

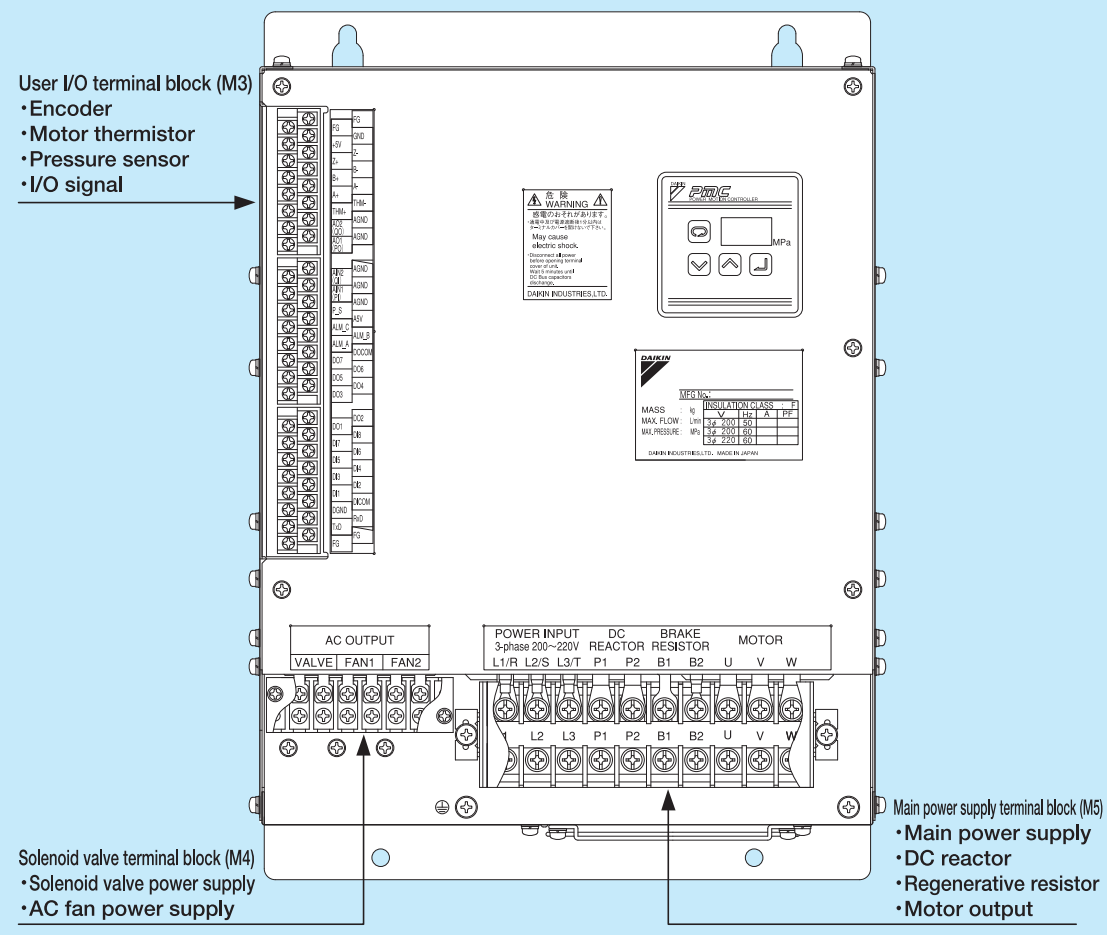
Contact output signal



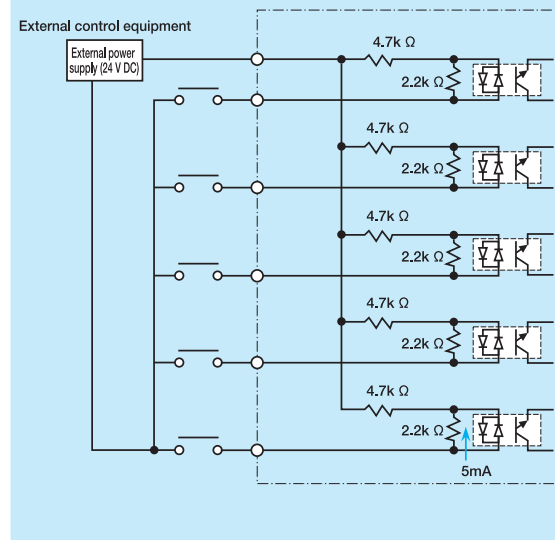
- Pressure switch terminal: contact output (switching capacity: 30 V DC, 0.5 A [resistance load])
- The minimum applicable load for contact output is 10 mV/10 mA. This is the standard value that allows the contact to be opened or closed with a small load. The value varies depending on switching frequency and environmental conditions. We recommend that you verify the contact capacity with the actual load.

Power Supply and I/O Signal Cables

SUTOOD11021-20-F,-C · SUTOOD11021-21-F,-C

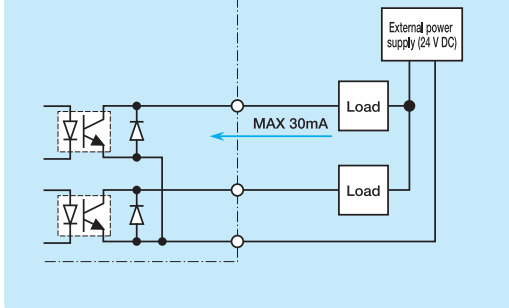


Digital input signal



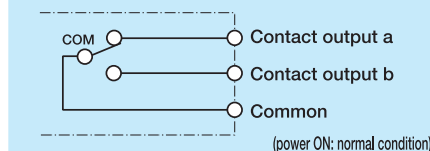
- Input terminal: The input common terminal can be either positive or negative common
- Prepare an external power supply (24 V DC ± 1 V, 0.5 A or more).
- The maximum output current of the input circuit is 5 mA per channel.

Digital output signal



- Output terminal: The output common terminal is negative.
- Prepare an external power supply (24 V DC ± 1 V, 0.5 A or more).
- We recommend use of the same external power supply as used for the input circuit.
- The maximum output current of the output circuit is 30 mA (resistance load) per channel.

Contact output signal



- Pressure switch terminal: contact output (switching capacity: 30 V DC, 0.5 A [resistance load])

Memo

Optional Accessories

1. Factory Options

The SUPER UNIT can be equipped with the following devices (factory options) before shipment. The applicable optional items are listed below. For details, contact a DAIKIN sales representative.

Optional item	Specifications	SUPER UNIT model					
		SUT03S	SUT06D	SUT10D	SUT10D80	SUT16D	
Oil pan		○	○	○	○	○	
Control valve	Control valve	Nominal size: 1/4	For up to three pumps	For up to four pumps	For up to five pumps	For up to five pumps	For up to five pumps
		Nominal size: 3/8	For up to one pumps	For up to three pumps	For up to four pumps	For up to four pumps	For up to four pumps
		Nominal size: 1/2	×	×	For up to three pumps	For up to three pumps	For up to three pumps
	Bracket		○	○	○	○	○
	Rubber hose set for the P side		○	○	○	○	○
	Rubber hose set for the T side		○	○	○	○	○
	Pressure gauge	10MPa	○	○	○	○	○
		16MPa	○	○	○	○	○
		25MPa	○	○	○	○	○
		40MPa	○	○	○	○	○
	Water cooler with control valve		LT0504A-10	LT0504A-10	LT0707A-10	LT0707A-10	LT0707A-10
	Cooler bracket set		○	○	○	○	○
	Rubber hose	Nominal size: 1/4	○	○	○	○	○
Nominal size: 3/8		○	○	○	○	○	
Nominal size: 1/2		×	×	×	○	○	
Water cooler without control valve	Cooler bracket set	LT0504A-10	LT0504A-10	LT0707A-10	LT0707A-10	LT0707A-10	
	Rubber hose	○	○	○	○	○	
Thermometer	0 to 100°C	○	○	○	○	○	
Temperature switch function (H/L)	65°C or higher: OFF	○	○	○	○	○	
	65°C or higher: ON	○	○	○	○	○	
	15°C or higher: ON	○	○	○	○	○	
	5°C or lower: OFF	○	○	○	○	○	
	5°C or lower: ON	○	○	○	○	○	
Lower limit alarm level switch *1	Lower than preset level: ON	22 ℓ	50 ℓ	82 ℓ	80 ℓ	133 ℓ	
	Lower than preset level: OFF	22 ℓ	50 ℓ	82 ℓ	80 ℓ	133 ℓ	
Micro separator		1 pc	1 pc	1 pc	1 pc	2 pcs	
Main pressure gauge	16MPa	○	○	○	○	○	
	25MPa	○	○	○	○	○	
	40MPa	○	○	○	○	○	
Temperature control valve		○	○	○	○	○	
Drain stop valve	Globe valve	○	○	○	○	○	

*1: An upper limit alarm level switch is not available.

Optional Accessories

2. User Options

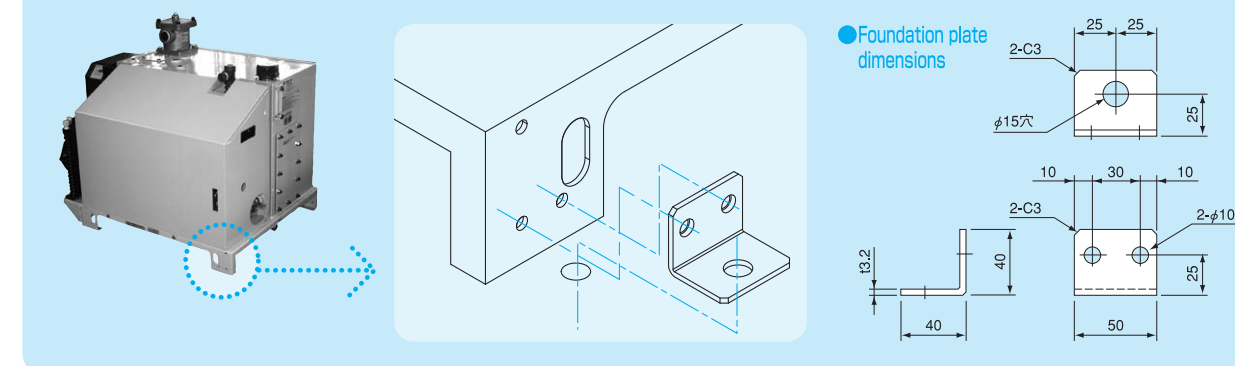
After purchase of a SUPER UNIT, "User Options" can also be ordered. These parts are mounted by the user.

Base plate set

These parts are used to fasten the SUPER UNIT body to a floor surface. The bolts for mounting the unit to the floor should be prepared by the user.

Part code	Applicable SUPER UNIT model	Color	Accessories
E-SUTPLATE-1	[Unit Type: single pump type] SUT06S60L07-10-F [Unit Type: double pump type] SUT06D40L16-10 (11)-F SUT10D40L16-10 (11)-F SUT06D60L21-10 (11)-F SUT10D60L21-10 (11)-F	Blue (Munsell code:) 10B 3/8	① Foundation plate (4 pcs) ② Tank body fastening bolt (8 pcs) ③ Plain and spring washers for the above parts (8 pcs each)
E-SUTPULATE-2	[ECORICH] EHU40R-M07-A-10 [Unit Type: single pump type] SUT03S15L07-10-F,-C SUT03S30L07-10-F,-C SUT03S15L10-10-F,-C SUT03S30L10-10-F SUT03S15L16-10-F SUT03S30L16-10-F SUT06S60L07-20-F SUT10S80L07-10-F,-C [Unit Type: double pump type] SUT06D40L16-20-F SUT10D40L16-20-F SUT06D60L21-20-F SUT10D60L21-20-F	Ivory white (Munsell code:) 5Y7.5/1	

Example of installation



Level switch

Type	Operating voltage	Operating current	Contact resistance	Enclosure rating	Oil level that activates alarm output	CE standard
E-DLSN130L-A-10	24V DC/AC	0.05A DC/AC	1Ω max.	IP65	SUT03* (30 L tank) 21 L or less : closed SUT06* (60 L tank) 50 L or less : closed SUT10* (100 L tank) 83 L or less : closed SUT16* (160 L tank) 135 L or less : closed	Ineligible
E-DLSN130L-B-10	24V DC/AC	0.05A DC/AC	1Ω max.	IP65	SUT03* (30 L tank) 21 L or less : opened SUT06* (60 L tank) 50 L or less : opened SUT10* (100 L tank) 83 L or less : opened SUT16* (160 L tank) 135 L or less : opened	Ineligible

*: Directly mountable onto the Rc1/2 option port of each tank upper surface. Use a bushing (3/8 × 1/2) to mount the level switch onto the Rc3/8 option port.

Spare Parts

To order spare parts, contact the “DAIKIN Contact Center” (see the back cover of this catalog).

No.	Part name	Spare parts order No.					
		SUT03S15L07-10-F.C	SUT03S30L10-10-F	SUT06S30L16-20-F	SUT06D40L16-20-F SUT10D40L16-20-F	SUT06D60L21-20-F SUT10D60L21-20-F	SUT10D80L21-10-F.C SUT16D80L21-10-F.C
		SUT00S1507-10-F.C	SUT00S3010-10-F	SUT00S3016-10-F	SUT00D4016-10-F	SUT00D6021-10-F	SUT00D8021-10-F.C
		SUT03S30L07-10-F.C	SUT03S15L16-10-F			SUT06S60L07-20-F	SUT10S80L07-10-F.C
		SUT00S3007-10-F.C	SUT00S1516-10-F			SUT00S6007-10-F	SUT00S8007-10-F.C
		SUT03S15L10-10-F	SUT00S4007-10-F				
		SUT00S1510-10-F					
1	Suction strainer			SP3167-5			
2	Molding machine suction hose		SP2767			SP2572	
3	Return filter				SP2575		HP31674-2
4	Oil level gauge				HP9650		
5	Oil filling port/air breather			HP30995			PP01564-01
6	Drain rubber hose	Hose (Oil cooler → Pump)	1734777	1734480-5	1734480-1	1734480-3	1734480-8
		Hose (Valve → Oil cooler)	1734480-6	1734480-2	1734480-2	1734480-4	1734480-12
		Snubber			SP2703 (white), HPH30819 (black)		
7	Drain joint	Elbow			1942667		
		Straight			1942661		
8	Relief drain rubber hose		—			SP2731	
9	Oil cooler	Oil cooler core	HP30988	SP2474	SP2614	SP2724	SP3221
		AC fan (for cooling the oil cooler)	SP2880	SP2807	SP2574	SP2734	SP3260
10	AC fan (for cooling the motor)	For the unit type			—	SP2734	SP3260
		For the pump & motor type	SP2880	SP2807	SP2574	SP2807	SP2574
11	Motor pump	[SUT**S15*07] SUM04-S07-10-Z	[SUT**S30*10] SUM06-S10-10-Z			[SUT**D60*21] [SUT**S60*07] SUM15-D21-10-Z	[SUT**D80*21] [SUT**S80*07] SUM19-D21-10-Z
		[SUT**S30*07] SUM06-S07-10-Z	[SUT**S15*16] SUM04-S16-10-Z	[SUT**S30*16] SUM06-S16-10-Z	[SUT**D40*16] SUM09-D16-10-Z		
		[SUT**S15*10] SUM04-S10-10-Z	[SUT00S4007] SUM08-S07-10-Z				[SUT00D11021] SUM44-D21-20-Z
12	Relief valve set			See the chart on p. 52.			
13	Pressure sensor set	Pressure sensor	[SUT**S15*07] [SUT**S30*07] SP3192	[SUT**S30*10] [SUT**S15*16] SP2570-1		SP2570-1	
			[SUT**S15*10] SP2570-1	[SUT00S4007] SP3192			
	Pressure sensor harness	SP3105			SP2625	[SUT**D80*21] [SUT**S80*07] SP3173	
						[SUT00D11021] PM-SPH05	
14	Operation panel sheet			1734420			1735007
15	Power supply extension harness	For the unit type		SP2763		SP2701	
		For the pump & motor type		SP2898		SP2871	
16	I/O and alarm harness	For the unit type		SP2694		SP2620	
		For the pump & motor type		SP2694		SP2694	
17	Solenoid valve harness		—		SP2627		SP3172
18	Rubber bushing set			Without hole: 1745967, φ4.8:1745966, φ6.5:1745965, φ7.8:1745964, φ11:1745971, φ12:1746274, φ13:1745963			

※1: All items without a specified quantity are supplied as one piece.
 ※2: If a set of spare parts is required, order each part by referring to the specifications in the above table.
 [] indicates items that are available for the unit type only.

Spare Parts

Relief valve set

Model of unit	SUT03S15L07-10-F.C	SUT03S30L10-10-F	SUT06S30L16-20-F	SUT06D40L16-20-F SUT10D40L16-20-F	SUT06D60L21-20-F SUT10D60L21-20-F	SUT10D80L21-10-F.C SUT16D80L21-10-F.C
	SUT00S1507-10-F.C	SUT00S3010-10-F	SUT00S3016-10-F	SUT00D4016-10-F	SUT00D6021-10-F	SUT00D8021-10-F.C
Spare order No.	1812843-1	1812699-2	1812691-2	1812661-3	1812661-2	20100376-01

Model of unit	SUT03S30L07-10-F.C	SUT03S15L16-10-F	SUT06S60L07-20-F	SUT10S80L07-10-F.C
	SUT00S3007-10-F.C	SUT00S1516-10-F	SUT00S6007-10-F	SUT00S8007-10-F.C
Spare order No.	1812843-2	1812691-1	1812846-01	1812846-02

Model of unit	SUT03S15L10-10-F	SUT00S4007-10-F	SUT00D11021-20-F.C	SUT00D11021-21-F.C
	SUT00S1510-10-F			
Spare order No.	1812699-1	1812842	201001111-01	20100371-01

How to Select a SUPER UNIT

How to Select a SUPER UNIT

- Determine the cylinder that needs the maximum pressure and flow rate.
- To operate several cylinders simultaneously, calculate the pump flow rate required for each circuit. Refer to 6) below.

- Calculation of cylinder output (see the calculation formula by load)
Calculate the force F (N) required for the cylinder.
- Calculation of the required pressure (P_u) of the cylinder ($P_u = F/A$)
Based on the force (F) and pressure receiving area (A), calculate the net pressure (P_u ; MPa) required for the cylinder.
- Calculation of the required pressure (P_p) of the pump ($P_p = P_u + \Delta P$)
Calculate the pressure P_p (MPa) required for the pump by adding the total pressure loss P to the pressure (P_u) required for the cylinder.
- Calculation of the net required flow rate (Q_c) of the cylinder ($Q_c = A \cdot V \cdot 0.06$)
Based on the cylinder speed (V) and pressure receiving area (A), calculate the net flow rate (Q_c ; ℓ /min) of the cylinder.
- Calculation of the required flow rate (Q_p) of the pump
Add the flow rate loss to the net flow rate (Q_c) of the cylinder.
- Total required flow rate (Q_p) of the pump
Calculate the maximum required flow rate of the pump by totaling the (Q_p) values of the cylinders to be simultaneously operated.

F: Force (N)
A: Pressure receiving area of the cylinder (cm^2)
*The pressure receiving area varies depending on the specifications of the hydraulic cylinder.

ΔP : Valve pressure loss + Piping pressure loss (MPa)

V: Speed (cm/sec)

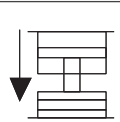
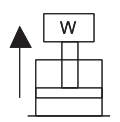
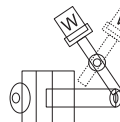
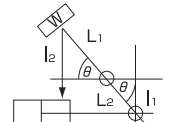
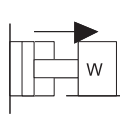
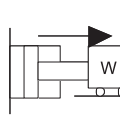
g1: Flow rate loss (ℓ /min)
Set the flow rate loss according to 1) the pressure reducing valve type, and 2) the pressure reducing valve diameter.

- Based on the maximum required pump pressure (P_p) and pump flow rate (Q_p), select the SUT series unit size.

By referring to the "Pressure — Flow Rate Characteristics" charts (on p. 13 and p. 14), select an appropriate model so that the P_u and Q_c values of all cylinders do not exceed the P-Q curve.

<Reference> Load analysis (cylinder output)

Calculate the cylinder force (F_s) depending on operation and load type.

Operation/Load type	Calculation of force (F_s)
A. Mechanical load  Load requiring pushing or pulling force (examples: pressing, forming, cutting, shearing)	User-defined value (Generally, specified in tons)
B. Load driven under its own weight  Load driven by negative force in cylinder pushing or pulling operation to move a driven target (e.g., table lifter) up/down.	$F_s = W$ The required force is equal to the weight of the driven target.
C. Inverting load  Load that changes force direction (\leftrightarrow) (Examples: down ender, workpiece rotation)	$F_s = I_1 / I_2 \times W$ $I_1 = L_1 \times \cos \theta$ $I_2 = L_2 \times \cos \theta$ 
D. Resistance load  Load driven by positive sliding force in both forward and backward operation (Examples: pusher, table slide)	$F_s = W \times \mu$ Coefficient of friction Standard setting: 0.3 Other cases: user-defined value
E. Inertial load  Load driven by large inertial force in high-speed operation with a heavy object (Example: Coil car travel)	$F_s = W \times \mu$ Coefficient of friction Standard setting: 0.1 Other cases: user-defined value

Handling Precautions

The following instructions are the minimum requirements for use of the SUPER UNIT. For details, refer to the Operation Manual.

Ambient environment

- Ambient temperature of 0 to 35°C, ambient humidity of 20 to 85% RH, and a maximum altitude of 1,000 m. For indoor use only.

Hydraulic oil

- Use general petroleum hydraulic oil (R&O) or wear-resistant hydraulic oil. Water-containing or synthetic oil cannot be used.
- Use hydraulic oil with a viscosity of ISO VG32 to VG68 or equivalent. During operation, the oil viscosity should be 15 to 400 mm^2/s , and the tank oil temperature should be 0 to 60°C. The recommended operating range is 15 to 50°C (20 to 200 mm^2/s).
- The degree of hydraulic oil contamination should be NAS9 or lower.

Installation and piping

- To move this unit, use the hook slots at the bottom of the unit (if the unit is lifted via the pump piping, the unit may fall or overturn). When moving the unit, be sure to attach the wing bolts (M8 x L15, in two places) to protect the vibration-absorbing rubber. If the unit is moved without the wing bolts, the vibration-absorbing rubber will be damaged, causing the motor pump to fall. When moving the unit, be careful not to apply any strong impact (e.g., fall or collision impact) to the unit.
- The hydraulic unit is a fixed type. Fasten the unit with bolts to a level surface free from vibration.
- Do not place any obstacles within 10 cm of the air inlet or exhaust ports of the motor and oil cooler. Install the unit in a well-ventilated location so that heat will not remain around the unit. The air inlet temperature should conform to the specified ambient temperature (35°C or lower).
- Connect hoses such that the piping retains flexibility.
- During operation, be sure to remove the wing bolts that protect the vibration-absorbing rubber. If the unit is operated with the wing bolts attached, the amount of noise and vibration may increase.
- Ensure that you provide the space required to access the unit during electrical wiring on the noise filter box or controller side.

Electrical wiring

- In regard to the electrical wiring from the main power supply, provide all required protective devices so that the wiring meets all relevant laws, ordinances, and standards. (For example, to protect the electric circuits from overcurrent due to a short circuit and to protect the controller against overload, provide electric circuits conforming to the EN60204-1 EU standard.) To protect users against electric shock, provide an earth leakage breaker.
- Use the appropriate sizes of cables for the electrical wiring, and connect the cables properly according to the wiring diagram shown in the Operation Manual. Be sure to connect the ground terminal under Class D (Class 3) grounding conditions.
- Before you access the interior of the controller, turn OFF the unit's power supply. Make sure that the circuit is turned OFF via the circuit breaker for the primary power supply, and then wait at least 5 minutes.

Other precautions

- If an abnormal condition is detected in the hydraulic unit, the unit will indicate an alarm and stop operation.
- If a fault or malfunction of this unit may result in death or serious hazard to the human body, provide safety devices on the machine side. Furthermore, when this unit is applied to important equipment, take safety measures on the machine side so that a fault of this unit will not result in a serious accident or loss.
- This hydraulic unit takes approx. 3 minutes to start up after the power supply is turned ON. Depending on the piping conditions, the unit may take longer to increase the pressure to the pressure switch's preset level, resulting in pressure switch signal output. In this case, set up the machine so that the machine will not accept this alarm output during this period.
- Do not start and stop the hydraulic unit frequently by turning ON/OFF the main power supply. This may damage the inverter.
(To start and stop the unit, use the start/stop signal.)