DAIKIN

High Pressure | High Flow Rate | Analog Command Input | High Accuracy

SUPER UNIT

HYBRID HYDRAULIC UNIT

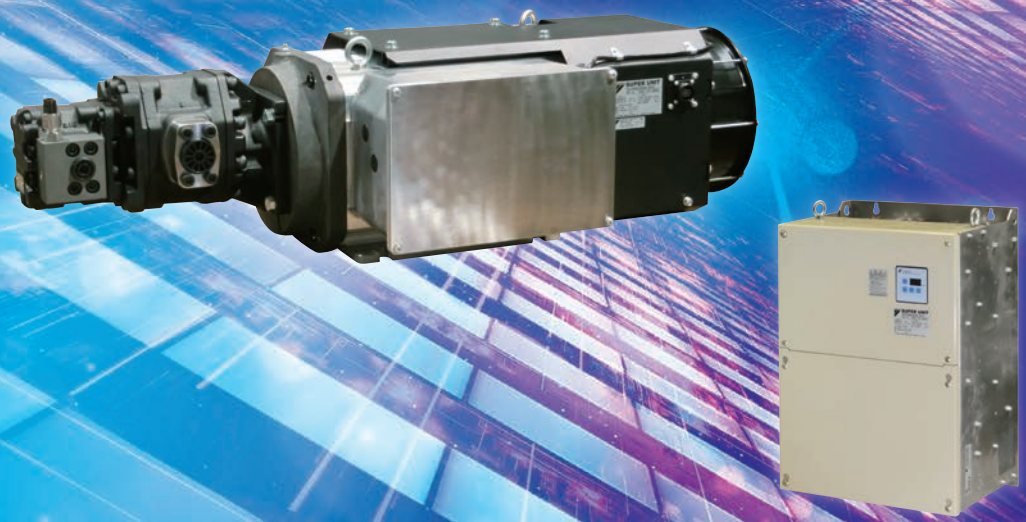
Exceeds standard of high efficiency motor regulation

New Model with High Pressure/High Flow Rate

(Equipped with 37 kW equivalent IPM motor)

Maximum operating pressure 28 MPa

Maximum flow rate 220, 260, 300 L/min



Unique Offer from DAIKIN!!

Unparalleled energy-saving and high-accuracy servo-based pump PQ control system

- An extensive lineup of pump control systems covering a wide range of applications including presses and industrial machinery -

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DAIKIN INDUSTRIES, LTD.
Oil Hydraulic Division
Oil Hydraulic Equipment

SUPER UNIT
Model List

Flow rate/pressure combinations other than those given in the model list below are also available. Please consult us when considering adoption.

SUPER UNIT (Analog Command Input, High-accuracy Type) Pressure/Flow Rate Model List

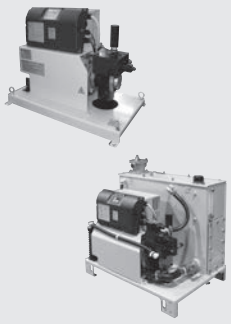
The encircled numbers indicate the nominal motor capacity [kW].

Maximum discharge rate	18 MPa	21 MPa	25 MPa	28 MPa
300 L/min		SUT00D30021 200/400 V (37)		SUT00D30028 200/400 V (37)
260 L/min		SUT00D26021 200/400 V (37)		
220 L/min				SUT00D22028 200/400 V (37)
200 L/min	SUT00S20018 400 V (22)	SUT00D20021 200/400 V (15)	S-SUT00D20021 400 V (15)	S-SUT00D20025 400 V (22)
150 L/min	SUT00S15018 200/400 V (15)	SUT00D15021 200/400 V (15)		
130 L/min	SUT00S13018 400 V (15)	SUT00S13021 400 V (15)	SUT00D13021 200/400 V (15)	S-SUT00D13025 400 V (15)
80 L/min	SUT00S8018 200/400 V (11)	SUT00D8021 200/400 V (11)		S-SUT00D8025 400 V (11)
50 L/min		SUT00S5021 200/400 V (11)		SUT00S5025 200/400 V (15)
30 L/min	SUT00S3018 200 V (7)	SUT00D3021 200 V (7)		

Note 1 All models allow selection of the input type as the analog command input type or 8-PQ digital command input type using a parameter. (Factory default is the analog command input type.)
Note 2 All models are tankless units with a split type controller (electrical components).
Note 3 When a discharge rate higher than 300 L/min is required, it can be achieved by combining multiple SUPER UNITs. Please consult us for detailed information.
Note 4 Consult DAIKIN if you use hydrous/synthetic oils such as water-glycol hydraulic oil or other non-petroleum oils.

SUPER UNIT (High-functionality Type) Pressure/Flow Rate Model List

Maximum discharge rate	7 MPa	10 MPa	16 MPa	21 MPa
110 L/min	SUT00S11007 200V			SUT00D11021 200V P-SUT20D11KW
80 L/min	SUT00S8007 SUT10S8007 200V			SUT00D8021 SUT10D8021 SUT16D8021 200V
60 L/min	SUT00S6007 SUT06S6007 200V			SUT00D6021 SUT06D6021 SUT10D6021 200V
40 L/min	SUT00S3007 SUT03S3007 200V		SUT00D4016 SUT06D4016 200V	
30 L/min	SUT00S4007 SUT03S4007 200V	SUT00S3010 SUT03S3010 200V	SUT00S3016 SUT06S3016 200V	
15 L/min	SUT00S1507 SUT03S1507 200V	SUT00S1510 SUT03S1510 200V	SUT00S1516 SUT03S1516 200V	



Note 1 All models are 16-PQ control type units. The communications type and analog command input type (single pump type only) can be selected as optional models.
Note 2 A motor pump type (tankless) and unit type (with tank) are available. Please refer to the separately provided SUPER UNIT catalog (GK244) for details.

Series	Nominal motor capacity [kW] (Equivalent)	Power supply voltage [V]	Flow rate selection	Maximum operating pressure [MPa]	Maximum flow rate [L/min]	Maximum flow rate [L/min] 30 50 80 100 130 150 180 200 250 300	Model	PQ chart No.	Figure Page No.
Single pump type	7	AC 3ϕ 200 V	—	17.6	30		SUT00S3018-30-A	1	22
	11			20.6	50		SUT00S5021-40-A	2	
	11			17.6	80		SUT00S8018-40-A	3	
	15			24.5	50		SUT00S5025-40-L-N0432	4	23
	15			17.6	150		SUT00S15018-40-A	5	24
	11	AC 3ϕ 400 V	—	20.6	50		SUT00S5021-40YA-N0265	6	22
	11			17.6	80		SUT00S8018-40YA	7	
	15			17.6	130		SUT00S13018-40YA-N0218	8	24
	15			20.6	130		SUT00S13021-40YA-N0286	9	
	15			17.6	150		SUT00S15018-40YA	10	
	22			17.6	200		SUT00S20018-40YL-N0340	11	
Double pump type	7	AC 3ϕ 200 V	Combination	17.6	30		SUT00D3021-30-B-N0436	12	25
			Independent	20.6	18.3				
	11		Combination	17.6	80		SUT00D8021-40-B-N0323	13	26
			Independent	20.6	38.4				
	15		Combination	20.6	130		SUT00D13021-40-B-N0321	14	
			Independent	20.6	47.9				
	15		Combination	17.6	150		SUT00D15021-40-B-N0365	15	
			Independent	20.6	70.9				
	15		Combination	11.0	200		SUT00D20021-40-L	16	27
			Independent	25.0	56				
	37		Combination	14.0	220		SUT00D22028-30-L	17	28
			Independent	28.0	63.2				
	37		Combination	11.0	260		SUT00D26021-30-L	18	29
			Independent	20.6	111				
	37		Combination	10.0	300		SUT00D30021-30-L	19	
			Independent	20.6	111				
	37		Combination	9.0	300		SUT00D30028-30-L	20	28
			Independent	28.0	56				
	11	AC 3ϕ 400 V	Combination	17.6	80		SUT00D8021-40YB-N0324	21	26
			Independent	20.6	38.4				
	15		Combination	20.6	130		SUT00D13021-40YB-N0322	22	
			Independent	20.6	47.9				
	15		Combination	17.5	150		SUT00D15021-40YB-N0358	23	
			Independent	20.6	70.9				
	15		Combination	11.5	200		S-SUT00D20021-40YL	24	27
			Independent	25.0	56				
	11		Combination	15.0	80		S-SUT00D8025-40YL	25	
			Independent	25.0	40				
	15		Combination	15.0	130		S-SUT00D13025-40YL	26	
			Independent	25.0	37.3				
	22		Combination	16.5	200		S-SUT00D20025-40YL	27	28
			Independent	25.0	56				
	37		Combination	14.0	220		SUT00D22028-30YL	28	
			Independent	28.0	63.2				
	37		Combination	11.0	260		SUT00D26021-30YL	29	29
			Independent	20.6	111				
	37		Combination	10.0	300		SUT00D30021-30YL	30	
			Independent	20.6	111				
	37		Combination	9.0	300		SUT00D30028-30YL	31	28
			Independent	28.0	56				

Note 1 The numbers in the PQ chart No. column in the above table correspond to the figure numbers in the “PQ characteristic chart” later in this catalog.
Note 2 Please refer to P34 “List of Electrical Components” for the electrical components that need to be arranged separately for each of the models indicated above.

Series	Nominal motor capacity [kW] (Equivalent)	Power supply voltage [V]	Flow rate selection	Maximum operating pressure [MPa]	Maximum flow rate [L/min]	Maximum flow rate [L/min] 10 20 30 40 50 60 70 80 90 100 110	Motor pump type (tankless)	Unit type (with tank)	Tank capacity [L]
Single pump type	2.2	AC 3ϕ 200 V	—	7.0	15.2		SUT00S1507-30	SUT03S1507-30	30
	2.8			7.0	28.5		SUT00S3007-30	SUT03S3007-30	30
	3.7			7.0	39.7		SUT00S4007-30	SUT03S4007-30	30
	5.0			7.0	61.1		SUT00S6007-30	SUT06S6007-30	60
	7.0			7.0	83.0		SUT00S8007-30	SUT10S8007-30	100
	11.0			7.0	110		SUT00S11007-30	—	—
	2.8			10.0	15.2		SUT00S1510-30	SUT03S1510-30	30
	3.7			10.0	25.6		SUT00S3010-30	SUT03S3010-30	30
	3.7			16.0	15.2		SUT00S1516-30	SUT03S1516-30	30
	5.0			16.0	25.6		SUT00S3016-30	SUT06S3016-30	60
Double pump type	3.7	AC 3ϕ 200 V	Combination	7.0	40.2		SUT00D4016-30	SUT06D4016-30	60
			Independent	15.7	15.2				
	5.0		Combination	7.0	60.3		SUT00D6021-30	SUT06D6021-30	60
			Independent	20.6	20.4			SUT10D6021-30	100
	7.0		Combination	7.0	81.7		SUT00D8021-30	SUT10D8021-30	100
			Independent	20.6	27.4			SUT16D8021-30	160
	11.0		Combination	7.0	109.2		SUT00D11021-30	P-SUT20D11KW-30	200
			Independent	20.6	39.7				

Note 1 Please refer to the separately provided SUPER UNIT catalog (GK244) for specifications and external appearances.

Nomenclature

SUT	00	S	300	28	–	40	Y	A	R	–	※※※※
a	b	c	d	e		f	g	h	i		j

a Model No.

- SUT : SUT series
- S-SUT : S-SUT series

b Tank capacity

- 00 : Motor pump type (tankless)

c Pump type

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

d Pump discharge rate

- 30 : 30 L/min
- 50 : 50 L/min
- 80 : 80 L/min
- 130 : 130 L/min
- 150 : 150 L/min
- 200 : 200 L/min
- 220 : 220 L/min
- 260 : 260 L/min
- 300 : 300 L/min

e Maximum operating pressure

- 18 : 17.6 MPa
- 21 : 20.6 MPa
- 25 : 25.0 MPa
- 28 : 28.0 MPa

f Design No.

- 30 : Nominal motor capacity
  Equivalent to 7 kW and 37 kW
- 40 : Nominal motor capacity
  Equivalent to 11 kW, 15 kW and 22 kW
  Incremented at model changes

g Power supply voltage*1

- – : AC 200 V specifications
- Y : AC 400 V specifications

h Functional option code

- A : Analog command input type, with discharge block with safety valve
- B : Analog command input type, with discharge block without safety valve
- L : Analog command input type, with discharge block without safety valve

i Motor terminal box (viewed from pump side)

- No designation : Terminal box at the right side (standard)
- R : Terminal box at the left side
- U : Terminal box at the top *2

j Non-standard code

- “N” + non-standard number designated for each specification
  Non-standard No.: Specifications such as the 10V input specification or with suction flange
- C**** Equipped with communications function
  Protocol: Daikin original protocol/Modbus-RTU
  Port: RS232C
  * RS485 can also be supported. Please consult us.
- No designation: Standard (5V input specification, separate arrangement of controller’s electrical components, etc.)

*1 200/400 V cited as power supply voltage specifications are nominal voltages.
Refer to the specification tables (pages 9 to 11) and separately provided model drawings for details on the operating range.
*2 The terminal box at the top of motor is only available with SUT00D30028, SUT00D22028, SUT00D30021 and SUT00D26021.

Main Features and Functions

High Voltage/High Flow Rate

The analog command input/high-accuracy type SUPER UNITs **have operating ranges extended to include high pressure and high flow rate ranges**, enabling PQ control with even greater accuracy than conventional SUPER UNITs (high-functionality type).

Basic Hybrid Hydraulic unit video!
URL https://www.daikinpmc.com/en/mv/sut_hp_hfr.html

High Accuracy

Achieving stable servo control in response to analog input voltages over a range from low pressure (1%)/flow rate (1%) to the maximum pressure/flow rate.
The double pump type units enable low-pressure/high-flow-rate control in the combination flow mode, and high-pressure holding (continuous) control over a prolonged period in the individual flow mode.

Energy Saving

Superior energy-saving hydraulic systems suited to applications with industrial machinery such as presses and general industrial machines while offering **high performance, easy operation and reasonable prices.**

Two Types of Operation Commands

As an alternative to directly specifying command values for pressure and flow rate with analog voltage inputs, the operation conditions can be selected easily by **using 3-bit ON/OFF digital signals** that can **call eight different preset pressure/flow rate patterns.**
(8-PQ type: Selectable using a parameter)

Features

Energy Saving

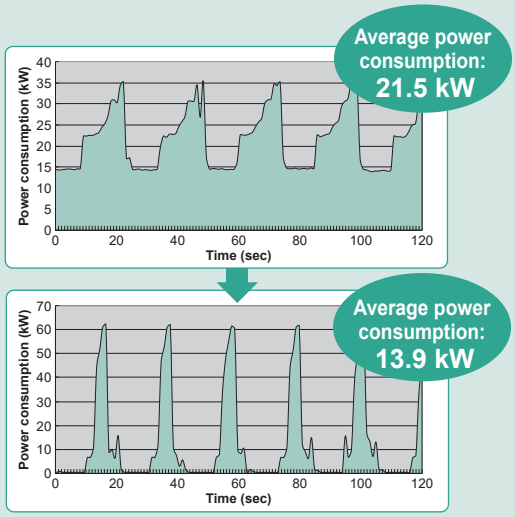
Energy savings at least 60% greater than conventional fixed displacement pump systems

(The energy-saving effect varies depending on the operation conditions.)

- Significant reduction of running costs with a small investment. Contributes to improvement of production efficiency at a reasonable price.

600-t press machine		
Pump model	Fixed-displacement pump →	SUT00D8025
Average power consumption	21.5 kW →	13.9 kW
Effect of reduced power consumption: $6,350 (¥635,000) / year		

* Electricity rate: $0.16 (¥16) / kWh, Annual operating hours: 5,220 hours / year



Oil cooler downsized by suppressing oil temperature rise

- Fewer oil changes by restricting hydraulic oil deterioration. Further, downsizing the hydraulic oil tank and oil cooler reduces the amount of hydraulic oil and cooling water used.

High Accuracy with Simple Operation

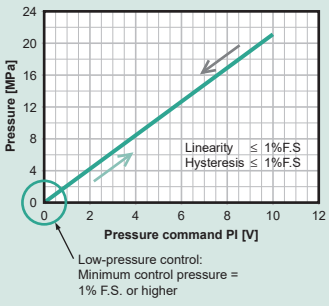
High-accuracy servo control according to analog pressure (P) / flow rate (Q) voltage commands

- Easy to use, just like conventional proportional valves.
  The servo-controlled pump adjusts the pressure and flow rate in accordance with the load.
- Highly accurate control with respect to pressure/flow rate command values, with a linearity of 1% F.S. maximum and hysteresis of 1% F.S. maximum.

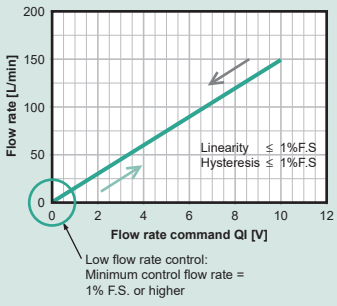
Case study of high accuracy SUPER UNIT
URL https://www.daikinpmc.com/en/mv/sut_example_press.html

Example with double pump type (SUT00D15021-40-B)

PI-PO static characteristics



QI-QO static characteristics



Main Features and Functions

Features

Sustained High-pressure Holding Control

Sustained high-pressure control with energy savings by selecting the pump flow rate

- Double pump type units enable selection of combination or independent flow rate using a dedicated solenoid valve to achieve sustained high-pressure control, switching between a low pressure with high flow rate and a high pressure with low flow rate, as is often required for presses and other equipment.
- The solenoid valve can be switched autonomously by the SUPER UNIT or from the machine, according to the parameter setting.

Faster Shipping Adjustment

Simple adjustment to start a trial run on the machine, meaning a shorter adjustment time

- The SUPER UNIT can be easily adjusted without requiring special skills for setting/adjusting complicated parameters of servo systems. The unit runs stably even with the default settings so the machine can reach the trial run stage in a short time.

Economical replacement of conventional hydraulic systems with servo-controlled pump systems

- Conventional hydraulic systems with proportional valves can be economically replaced with next-generation energy-saving high-accuracy servo-controlled pump systems, where the pump discharge rates and pressures are servo-controlled, by using analog command input type SUPER UNITs.
- Even hydraulic systems that do not incorporate proportional valves can be replaced with energy-saving hydraulic systems that can achieve stable control with a simple pressure/flow rate adjustment.
- The command input method can be selected, by parameter setting, as the analog command input type (0 to 5 V or 0 to 10 V) or the 8-PQ pattern input type using 3-bit digital ON/OFF input signals. (Factory default is the analog command input type.)

Improving the Working Environment

Reduced noise during operation

- Noise while holding a high pressure is reduced by lowering the rotational speed of the pump to the minimum level required to hold the pressure.
- Shockless control of pressures and flow rates can be achieved by ramping the command voltages during acceleration/deceleration of the pressure and flow rate. This gives smooth machine operation with less impact noise, helping to improve your working environment.

Ambient air temperature rise reduced by restricting oil temperature rise

- Temperature rise of the hydraulic oil raises the ambient temperature, which leads to a poor working environment. The energy-saving SUPER UNIT restricts hydraulic oil temperature rise to the minimum, helping to maintain a comfortable working environment.

Exceeds Standard of High Efficiency Motor Regulation

Incorporating a motor dedicated to servo-based rotational speed control

- Exceeds standard of high efficiency motor regulations eliminates complicated formalities both in Japan and when exporting the machine.
- Since no induction motor is used, the maximum discharge rate of the pump does not fluctuate depending on the power supply frequency, making it unnecessary to adjust the machines' maximum speed for each shipping destination.

American UL Standard Compliant

- In addition to European CE standards, the 37 kW 400 V motors and controllers comply with American UL standards. (SUT00D22028-30YL, SUT00D26021-30YL, SUT00D30021-30YL, SUT00D30028-30YL)

Functions

Communication Function

Remote Setting of Operating Conditions

Operating condition setting of the SUPER UNIT possible from a distance

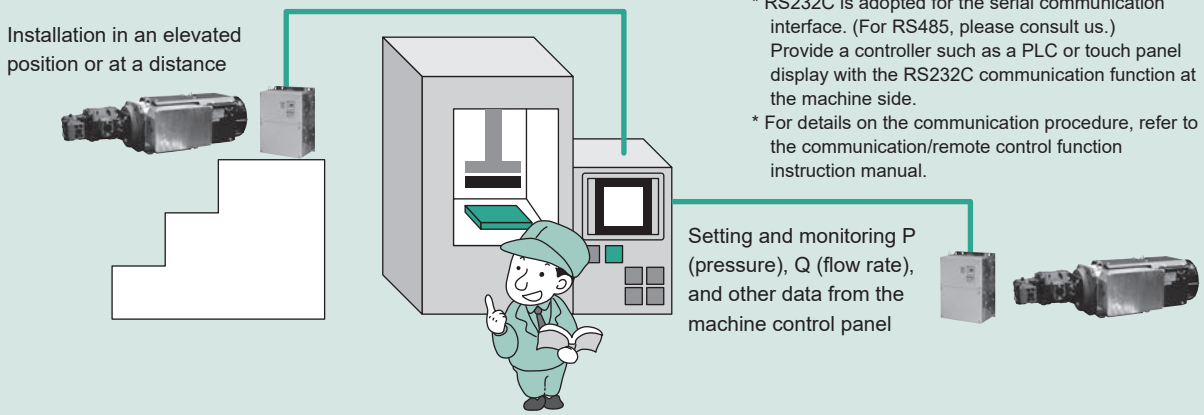
- Various settings such as acceleration/deceleration time and pressure switch settings, as well as the pressure and flow rate, can be set remotely. This makes it possible to control the hydraulic pressure operating conditions in synchrony with the control of the machine.

IoT-ready

Managing the pressure and flow rate from a machine

IoT applications are explained in a video!
URL https://www.daikinpmc.com/en/mv/hybrid_iot.html

- The information that the SUPER UNIT outputs during machine operation, such as pressure and flow rate, can be displayed on the monitor at a machine.
- By continuously collecting data from the SUPER UNIT, it is possible to determine machining faults, diagnose machine failures, and utilize the data for predictive maintenance.



* RS232C is adopted for the serial communication interface. (For RS485, please consult us.) Provide a controller such as a PLC or touch panel display with the RS232C communication function at the machine side.
* For details on the communication procedure, refer to the communication/remote control function instruction manual.

Maintenance/Management Function Software

Editing/Saving Parameter Settings

Equipped with RS232C communications port as default, DAIKIN's maintenance/ waveform measurement software (Hybrid-Win) provided

- The software tool Hybrid-Win, which can manage default parameter settings, read the alarm history, and save parameter data, allows easy maintenance and management of the SUPER UNIT simply by preparing a personal computer (Windows 7/8/10) and a communications cable (RS232C/USB conversion cable).

Displaying and Recording Waveform Graphs during SUPER UNIT Operation

- During service work or adjustment for test runs, the pressure and flow rate commands at the SUPER UNIT and the result of pressure and flow rate control can be monitored and displayed in the form of graphs using Hybrid-Win software. The waveforms can also be saved in the PC. This speeds up adjustment of SUPER UNIT parameters and troubleshooting.

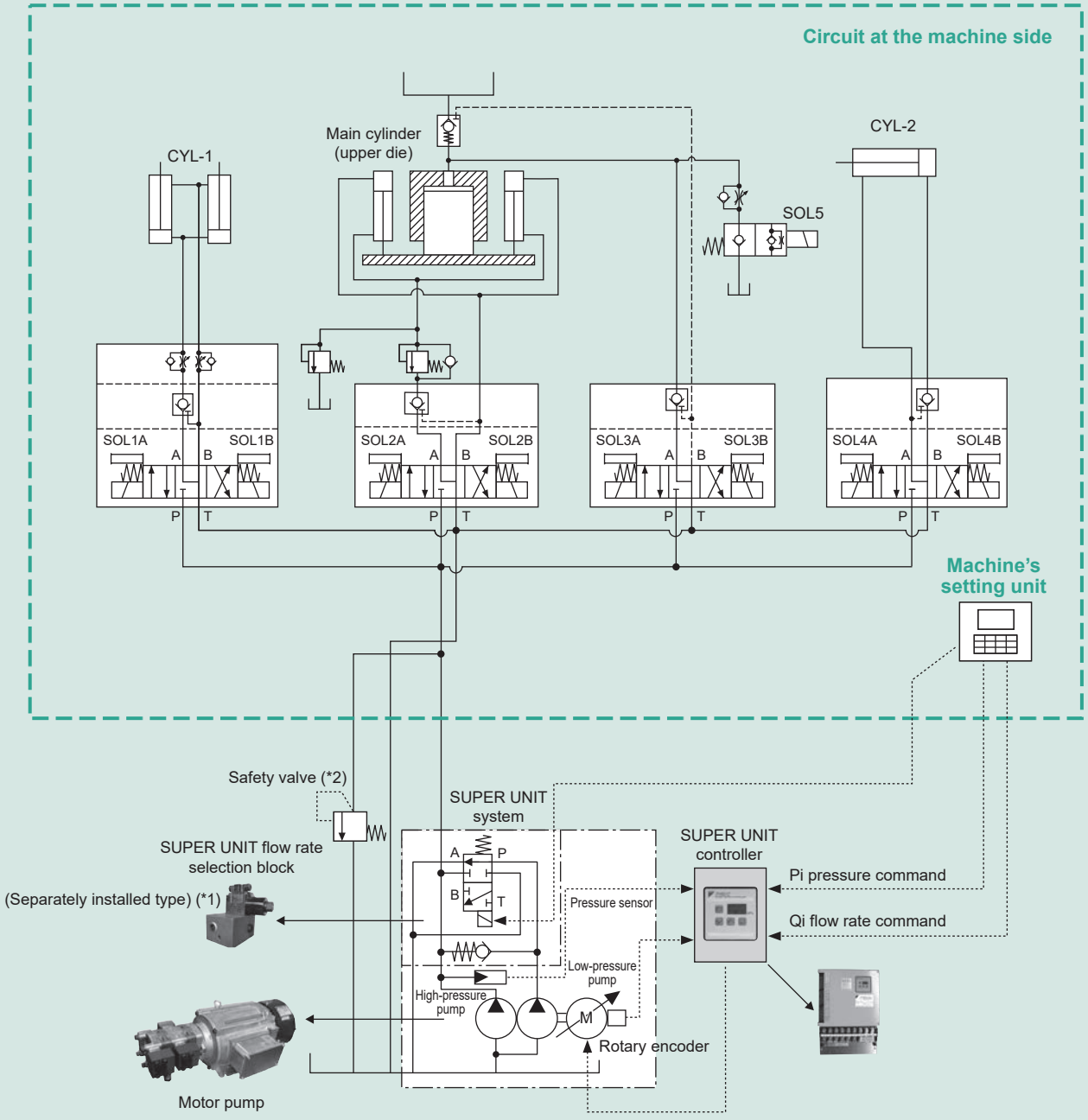
Collecting Data for Predictive Maintenance (*1)

- Periodically collecting, monitoring and analyzing those data on the results of SUPER UNIT control using the RS232C communications port opens up the possibility of new approaches to maintenance and management such as predictive maintenance.

Note: A personal computer with Windows 7/8/10 operating system and an RS232C/USB conversion cable are necessary.
Communications cables (3-core soldered cables PM-CM02-15 for 1.5 m and PM-CM02-30 for 3 m) are available as options (to be ordered separately).
Note: Hybrid-Win is a software tool to provide functions for editing or saving parameters and measuring waveforms of a SUPER UNIT, and runs on a personal computer connected to the SUPER UNIT using a communications cable.
Hybrid–win and its instruction manual are available free of charge from the website (http://www.daikinpmc.com/) after registering as a member.
(*1) Please consult us for detailed information on predictive maintenance.

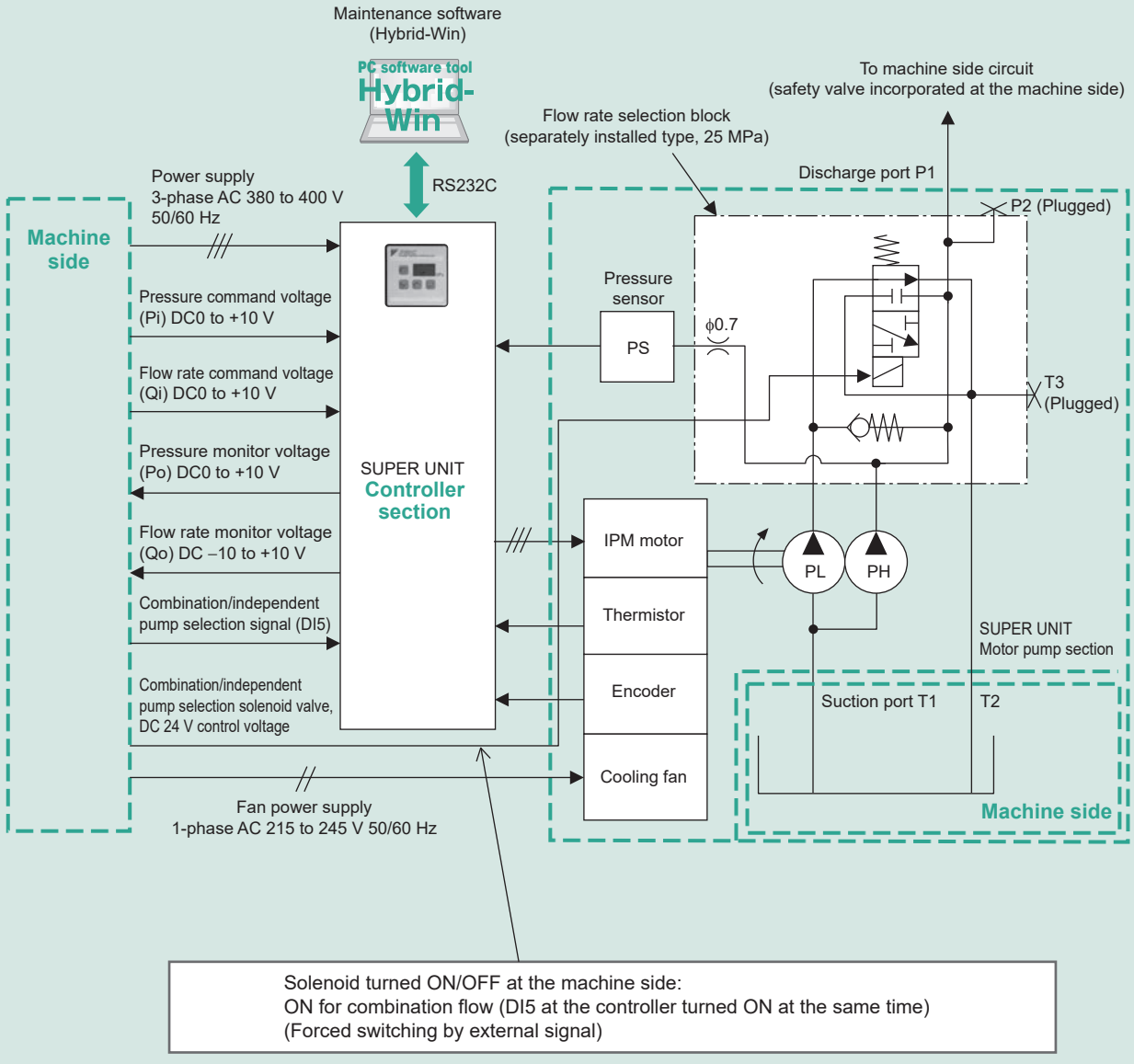
Circuit Configuration Examples (Double pump specifications)

Example Hydraulic Press Circuit



(*1) There are two types of flow rate selection circuit, the type built into the pump discharge block and the separately installed type.
(*2) A safety valve needs to be incorporated in hydraulic circuits at the pump discharge side for safety.

System block diagram for SUT00D flow rate selection specifications



Specifications by Product (Single pump 200 V/400 V specifications)

Item \ Model			200 V specifications					400 V specifications					
			SUT00S					SUT00S					
			3018-30-A	5021-40-A	8018-40-A	5025-40-L-N0432	15018-40-A	5021-40YA-N0265	8018-40YA	13018-40YA-N0218	13021-40YA-N0286	15018-40YA	20018-40YL-N0340
Maximum operating pressure [MPa]			17.6	20.6	17.6	24.5	17.6	20.6	17.6	17.6	20.6	17.6	
Maximum flow rate [L/min]			30	50	80	50	150	50	80	130		150	200
Operating pressure adjustment range [MPa]			0.18 to 17.6	0.21 to 20.6	0.18 to 17.6	0.25 to 24.5	0.18 to 17.6	0.21 to 20.6	0.18 to 17.6		0.21 to 20.6	0.18 to 17.6	
Operating flow rate adjustment range [L/min]			0.3 to 30	0.5 to 50	0.8 to 80	0.5 to 50	1.5 to 150	0.5 to 50	0.8 to 80	1.3 to 130		1.5 to 150	2.0 to 200
Pump	Pump type		Single geared pump					Single geared pump					
	Pump capacity [cm³]		9.13	20.7	31.2	27.4	52.7	20.7	31.2	44		52.7	73
Power supply	Controller input power (*1)		3-phase AC 200 to 220 V (50 Hz/60 Hz)					3-phase AC 380 to 440 V (50 Hz/60 Hz)					
		Permissible power supply voltage fluctuation range	–15% to +10%					–20% to +10%					
		Required power supply capacity [kVA]	11.3	23.2		33.8		20.1		34.8			52
	Motor cooling fan power		1-phase AC 200 V ±10% (50 Hz/60 Hz)					1-phase AC 215 to 245 V (50 Hz/60 Hz)					
Rated value		[min^{-1}]	2,340	1,800				1,800					
		[N·m]	28	58.4				58.4		–			117
Controller rated input current [A] (*2)			25.3	35.6		20	23.3	19		–			40
Motor rated input current [A] (*2)			29.2	38.3		27.5	27.7	21		–			45
Leak current [mA] (*2)			–	–		3	3.2	2.1		–			2.8
Mass	Motor pump [kg]		40	69	70	92	103	69	70	103	104	103	118
	Controller [kg]		11					11		–			14
Analog command input voltage DC [V] (*3)			0 to +5					0 to +10					
Non-standard specifications	Suction flange/block		Incorporated	None		Incorporated	None	Incorporated	None	Incorporated		None	Incorporated
	Safety valve (*4)		Incorporated			None	Incorporated			Incorporated			None

(*1) Even if the unit is used within the permissible power voltage fluctuation range, the PQ output characteristics may deteriorate if the power voltage fluctuates to the negative side. Also note that power voltage fluctuation to the positive side may cause alarms, due to overloading of regenerative operation, depending on the operation conditions. You are therefore recommended to use the unit in an environment with limited power voltage fluctuation as far as possible.

(*2) Representative values when using a noise filter recommended by DAIKIN. Protection against noise, in accordance with DAIKIN's recommendations, may be required depending on the operating environment.

(*3) With 5 V analog command input voltage specifications, the voltage can be adjusted from 0 to 5 V using parameter VMAX. With 10 V specifications, the voltage can be adjusted from 0 to 10 V, so it can also be operated with 5 V inputs.

(*4) With models without a safety valve in the discharge block, incorporate a safety valve in the hydraulic circuit at the machine side. Use the unit with the safety valve set at the maximum operating pressure + 2 MPa.

Specifications by Product (Double pump 200 V specifications)

Item \ Model			200 V specifications								
			SUT00D								
			3021-30-B-N0436	8021-40-B-N0323	13021-40-B-N0321	15021-40-B-N0365	26021-30-L	30021-30-L	20021-40-L	22028-30-L	30028-30-L
Maximum operating pressure		Combination [MPa]	17.6		20.6	17.6	11.0	10.0	11.0	14.0	9.0
		Independent [MPa]	20.6						25.0	28.0	
Maximum flow rate		Combination [L/min]	30	80	130	150	260	300	200	220	300
		Independent [L/min]	18.3	38.4	47.9	70.9	111		56.0	63.2	56.0
Operating pressure adjustment range [MPa]			0.21 to 20.6						0.25 to 25	0.3 to 28	
Operating flow rate adjustment range [L/min]			0.3 to 30	0.8 to 80	1.3 to 130	1.5 to 150	2.6 to 260	3.0 to 300	2.0 to 200	2.2 to 280	3.0 to 300
Pump	Pump type		Double geared pump								
	Pump capacity	Combination [cm³]	9.1	31.2	44.0	52.7	100.0	114.6	74.1	80.4	123.5
		Independent [cm³]	5.6	15.0	16.2	24.9	42.7		20.8	23.1	
Power supply	Controller input power (*1)		3-phase AC 200 to 220 V (50 Hz/60 Hz)								
	Permissible power supply voltage fluctuation range		–15% to +10%								
	Required power supply capacity [kVA]		11.3	23.2	33.8		80		33.8	80	
	Motor cooling fan power		1-phase AC 200 V ±10% (50 Hz/60 Hz)				1-phase AC 200 to 240 V (50 Hz/60 Hz)		1-phase AC 200 V ±10% (50 Hz/60 Hz)	1-phase AC 200 to 240 V (50 Hz/60 Hz)	
	Flow rate selection solenoid valve power (*2)		DC 24 V (*3)	DC 24 V ±10% (*4)			– (*6)		– (*5)	– (*6)	– (*5)
Rated value		[min⁻¹]	2,340	1,800			2,500		1,800	2,500	
		[N·m]	28	58.4	58.4		141		79.6	141	
Controller rated input current [A] (*7)			25.3	18.4	20	23.3	124.2		23.3	124.2	
Motor rated input current [A] (*7)			29.2	39	27.5	27.7	135		27.4	135	
Leak current [mA] (*7)			–	–	3.2	3.2	9.6		3.9	9.6	7.7
Mass	Motor pump [kg]		40	76	109	109	178	180	99	168	174
	Controller [kg]		10				40		10	40	
Analog command input voltage DC [V] (*8)			0 to +10								
Non-standard specifications	Suction flange/block		Incorporated								
	Safety valve (*9)		None								

(*1) Even if the unit is used within the permissible power voltage fluctuation range, the PQ output characteristics may deteriorate if the power voltage fluctuates to the negative side. Also note that power voltage fluctuation to the positive side may cause alarms, due to overloading of regenerative operation, depending on the operation conditions. You are therefore recommended to use the unit in an environment with limited power voltage fluctuation as far as possible.
(*2) Please refer to “List of Electrical Components” for the electrical components required.
(*3) Solenoid valve model: KSOB-G02-9AP-40-N-H7 (minute signal current type solenoid valve, power supply voltage: DC 24 V ± 10%)
(*4) Solenoid valve model: KSO-G03-20BP-20-EN (power supply voltage: DC 24 V ± 10%)
(*5) Not equipped with a solenoid valve for flow rate selection (Arrange a separately installed type flow rate selection block or provide a flow rate selection mechanism in the hydraulic circuit at the machine side.)
(*6) Not equipped with a solenoid valve for flow rate selection (To be prepared by the customer, or the V-SUTD10P option needs to be ordered separately)
(*7) Representative values when using a noise filter recommended by DAIKIN. Protection against noise, in accordance with DAIKIN’s recommendations, may be required depending on the operating environment.
(*8) With 5 V analog command input voltage specifications, the voltage can be adjusted from 0 to 5 V using parameter VMAX. With 10 V specifications, the voltage can be adjusted from 0 to 10 V, so it can also be operated with 5 V inputs.
(*9) With models without a safety valve in the discharge block, incorporate a safety valve in the hydraulic circuit at the machine side. Use the unit with the safety valve set at the maximum operating pressure + 2 MPa.

Specifications by Product (Double pump 400 V specifications)

Item			Model	8021-40YB-N0324	13021-40YB-N0322	15021-40YB-N0358	26021-30YL	30021-30YL	20021-40YL	8025-40YL	13025-40YL	20025-40YL	22028-30YL	30028-30YL
				400 V specifications										
				SUT00D					S-SUT00D				SUT00D	
Maximum operating pressure	Combination	[MPa]		17.6	20.6	17.6	11.0	10.0	11.0	15.0		16.5	14.0	9.0
	Independent	[MPa]		20.6					25.0				28.0	
Maximum flow rate	Combination	[L/min]		80	130	150	260	300	200	80	130	200	220	300
	Independent	[L/min]		38.4	47.9	70.9	110		56.0	40.0	37.3	56.0	63.2	56.0
Operating pressure adjustment range		[MPa]		0.21 to 20.6					0.25 to 25				0.3 to 28	
Operating flow rate adjustment range		[L/min]		0.8 to 80	1.3 to 130	1.5 to 150	2.6 to 260	3.0 to 300	2.0 to 200	0.8 to 80	1.3 to 130	2.0 to 200	2.2 to 220	3.0 to 300
Pump	Pump type			Double geared pump										
	Pump capacity	Combination [cm³]		31.2	44.0	52.7	100.0	114.6	74.1	33.4	41.1	74.1	80.4	123.5
		Independent [cm³]		15.0	16.2	24.9	42.7		20.8	16.7	16.6	20.8	23.1	
Power supply	Controller input power (*1)			3-phase AC 380 to 440 V (50 Hz/60 Hz)			3-phase AC 380 to 480 V (50 Hz/60 Hz)		3-phase AC 380 to 440 V (50 Hz/60 Hz)				3-phase AC 380 to 480 V (50 Hz/60 Hz)	
	Permissible power supply voltage fluctuation range			–20% to +10%			–15% to +10%		–20% to +10%				–15% to +10%	
	Required power supply capacity [kVA]			20.1	34.8		80		34.8	20.1	34.8	52	80	
	Motor cooling fan power			1-phase AC 215 to 245 V (50 Hz/60 Hz)			1-phase AC 200 to 240 V (50 Hz/60 Hz)		1-phase AC 215 to 245 V (50 Hz/60 Hz)				1-phase AC 200 to 240 V (50 Hz/60 Hz)	
	Flow rate selection solenoid valve power (*2)			DC 24 V ±10% (*4)			– (*6)		– (*5)				– (*6)	
Rated value		[min⁻¹]		1,800			2,500		1,800				2,500	
		[N·m]		58.4	79.6		141		79.6	58.4	79.6	117	141	
Controller rated input current [A] (*7)				19	26		65.4		26	19	26	40	65.4	
Motor rated input current [A] (*7)				21	29		67.5		29	21	29	45	67.5	
Leak current [mA] (*7)				2.1	3.9		7.7		3.9	2.1	3.9	2.8	9.7	7.7
Mass	Motor pump	[kg]		76	109		178	180	99	65	98	119	168	174
	Controller	[kg]		10			40		10			14	40	
Analog command input voltage DC [V] (*8)				0 to +10										
Non-standard specifications	Suction flange/block			Incorporated										
	Safety valve (*9)			None										

(*1) Even if the unit is used within the permissible power voltage fluctuation range, the PQ output characteristics may deteriorate if the power voltage fluctuates to the negative side. Also note that power voltage fluctuation to the positive side may cause alarms, due to overloading of regenerative operation, depending on the operation conditions. You are therefore recommended to use the unit in an environment with limited power voltage fluctuation as far as possible.

(*2) Please refer to “List of Electrical Components” for the electrical components required.

(*3) Solenoid valve model: KSOB-G02-9AP-40-N-H7 (minute signal current type solenoid valve, power supply voltage: DC 24 V ± 10%)

(*4) Solenoid valve model: KSO-G03-20BP-20-EN (power supply voltage: DC 24 V ±10%)

(*5) Not equipped with a solenoid valve for flow rate selection (Arrange a separately installed type flow rate selection block or provide a flow rate selection mechanism in the hydraulic circuit at the machine side.)

(*6) Not equipped with a solenoid valve for flow rate selection (To be prepared by the customer, or the V-SUTD10P option needs to be ordered separately)

(*7) Representative values when using a noise filter recommended by DAIKIN. Protection against noise, in accordance with DAIKIN’s recommendations, may be required depending on the operating environment.

(*8) With 5 V analog command input voltage specifications, the voltage can be adjusted from 0 to 5 V using parameter VMAX. With 10 V specifications, the voltage can be adjusted from 0 to 10 V, so it can also be operated with 5 V inputs.

(*9) With models without a safety valve in the discharge block, incorporate a safety valve in the hydraulic circuit at the machine side. Use the unit with the safety valve set at the maximum operating pressure + 2 MPa.

Common Specifications (30 L/min to 200 L/min, single/double pump, 200 V/400 V specifications)

Item			Specifications
Analog Input (*1) (2ch)			Command resolution: 0.1 [%]
	Pressure command Pi		5 V specifications: 0 to +5 V / 0 to PMAX 10 V specifications: 0 to +10 V / 0 to PMAX
	Flow rate command Qi		5 V specifications: 0 to +5 V / 0 to QMAX 10 V specifications: 0 to +10 V / 0 to QMAX
Analog output (*1) (2ch)			5 V specifications: 0 to +5 V / 0 to PMAX 10 V specifications: 0 to +10 V / 0 to PMAX
	Pressure monitor Po		5 V specifications: −5 to +5 V / −QMAX to +QMAX 10 V specifications: −10 to +10 V / −QMAX to +QMAX
Digital input signal (*2) (8ch)			Photo-coupler insulation, DC +24 V (27 V maximum), 5 mA/channel, shared plus/minus common
	DI1		Start/stop signal (control stop signal)
	DI3, DI4, DI6		PQ number selection signal for 8-PQ type (3-bit)
	DI5		Pump capacity selection input (for flow rate selection specifications)
	DI2, 7, 8		(Unassigned)
Digital output signal (*3) (7ch)			Photo coupler insulation, open collector, DC +24 V, 30 mA maximum, minus common
	DO1		Ready to operate signal
	DO3		Pump capacity selection output (for autonomous flow rate selection specifications)
	DO4		Overload warning output (OFF: normal, ON: Warning)
	DO5 to 7		(Unassigned)
Contact output (alarm) (1ch)			Dry contact: DC 30 V, 1 channel, 500 mA maximum
Paint color	Motor pump		No paint, only fan cover is in black
	Controller		Ivory white (Munsell code 5Y7.5/1)
Oil used (*4)	Oil type		General petroleum-based hydraulic oil / Wear-resistant hydraulic oil
	Oil temperature		0 to 60°C (Recommended operating temperature range: 15 to 50°C)
	Viscosity grade		ISO VG32 to 68
	Viscosity range		15 to 400 mm^2/s
	Contamination		Within NAS class 9
Operating environment	Atmosphere		Indoors (not to be directly exposed to sunlight) Not to be subject to corrosive gases, inflammable gases, oil mist or dust
	Altitude		1000 m maximum
	Ambient humidity		85% RH maximum (no dew condensation)
	Ambient temperature	Motor pump	0 to 40°C (no freezing)
		Controller	0 to 55°C (no freezing)
	Installation orientation	Motor pump	To be secured on the base for the hydraulic unit on the machine. To be installed in the horizontal orientation.
		Controller	To be installed inside an electrical cabinet (IP54). To be installed in the vertical orientation (with the main power supply terminals at the bottom).
Protection grade	Controller		IP00
	Motor (*5)		IP44
Storage environment	Storage temperature	Motor pump	−20 to +70°C (no condensation)
		Controller	−20 to +60°C (no condensation)
	Storage humidity	Motor pump	85% RH maximum (no dew condensation)
		Controller	
Startup time			5 seconds maximum (at ambient temperature of 15°C)
Power supply grounding type			TN
Others			(a) Install a no-fuse breaker on the main power supply to protect electrical circuits from overcurrent, in the event of short circuits for example. (b) Be sure to connect the ground terminals of the controller and motor pump. (c) Frequently turning the controller's power supply ON/OFF will substantially shorten the controller's service life. It is advisable to start and stop the motor by turning the digital input (DI1) ON/OFF.

(*1) There are two different voltage specifications: 5 V specifications and 10 V specifications. The PMAX and QMAX settings can be selected using parameters.
The input and output voltage settings can be selected using parameter VMAX.
(*2) When incorporating a semiconductor relay in the circuit, select a product with a leak current specification of 1 mA maximum.
(*3) When incorporating a relay in the circuit as a load, take necessary measures against surge or select a surge-resistant product.
(*4) Consult DAIKIN about the use of hydraulic oils other than petroleum-based oil (e.g. hydrous/synthetic) such as water-glycol hydraulic oil.
(*5) The shaft through hole, encoder connector, motor cooling fan and terminal block are excluded.

Performance Specification

Item \ Model		200 V specifications	400 V specifications		
		SUT00S / SUT00D	SUT00S / SUT00D	S-SUT00D	S-SUT00D
		S3018, S5021, S8018, S5025, S15018	S5021, S8018, S13018, S13021, S15018, S20018	–	–
		D3021, D8021, D13021, D15021, D26021, D30021, D20021, D22028, D30028	D8021, D13021, D15021, D26021, D30021, D22028, D30028	D20021	D8025, D13025, D20025
Flow rate characteristics	Linearity	F.S. 1[%]			F.S. 1[%]
	Hysteresis	F.S. 1[%]			F.S. 1[%]
	Maximum flow rate response time (*1)	0.1 [s]			0.1 [s]
	Repeatability	F.S. 1[%]			F.S. 1[%]
Pressure characteristics	Linearity	F.S. 1[%]			F.S. 1[%]
	Hysteresis	F.S. 1[%]			F.S. 1[%]
	Maximum pressure response time (*2)	0.1 [s]			–
	Repeatability	F.S. 1[%]			F.S. 1[%]

Note: The data given above are the representative performance values, not guaranteed values.

(*1) Time required to reach 95% of the commanded value in response to a command to change the flow rate from 0 to the maximum with no load applied.

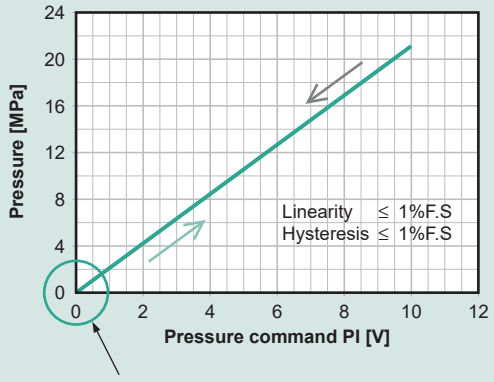
(*2) Time required to reach 95% of the commanded value in response to a command to change the pressure from 0 to the maximum.
The volumetric load capacity condition is 2 m of 3/4 high-pressure hose with SUT00S3018 to SUT00S13021, and 2 m of 1B high-pressure hose with SUT00S20018.

Command Voltage - Control Pressure, Command Voltage - Control Flow Rate Characteristics

Command Voltage - Control Pressure / Command Voltage - Control Flow Rate Characteristic Examples

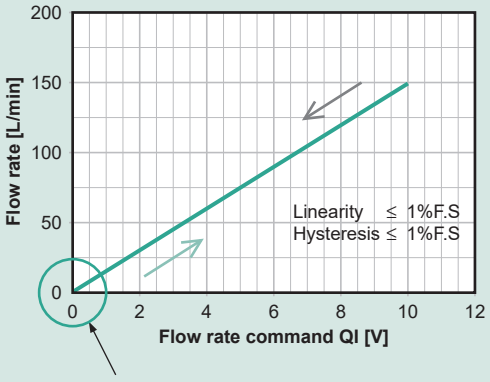
Example with Double Pump Type (SUT00D15021-40-B)

PI-PO static characteristics



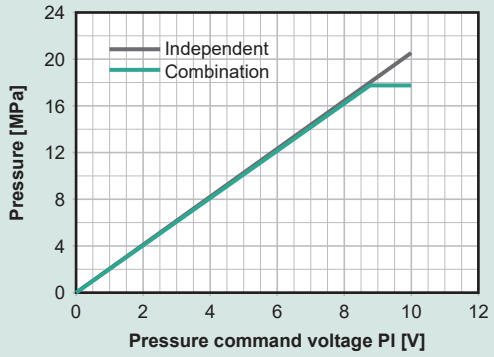
Low-pressure control:
Minimum control pressure = 1% F.S. or higher

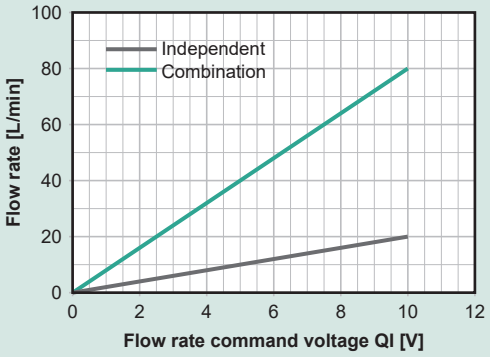
QI-QO static characteristics

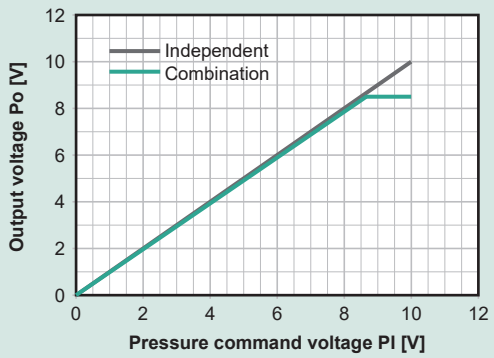


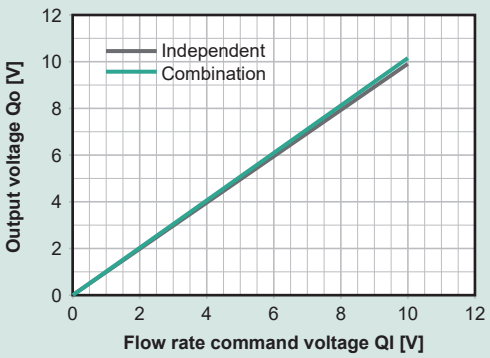
Low flow rate control:
Minimum control flow rate = 1% F.S. or higher

Example Output Characteristics for Flow Rate Selection Specifications (SUT00D8021-40-B)









Note 1: Since the PQ characteristics vary depending on the model, refer to the appropriate PQ characteristic chart for the detailed output characteristics of each model.

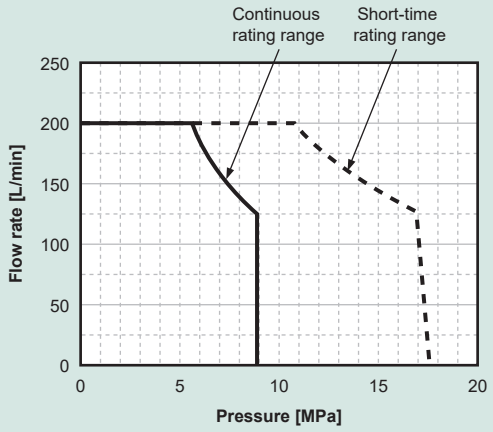
Note 2: When the combination flow is selected (DI5 = ON), the pressure does not rise above 17.5 MPa even if the pressure command voltage (Pi) is increased as shown in the graph above.

Memo

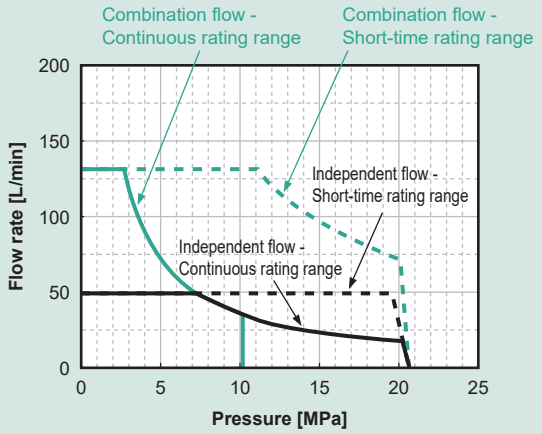
About Continuous and Short-time Rating Range

Analog command input/high-accuracy type SUPER UNITs can run continuously within the continuous rating range given in the pressure - flow rate characteristic charts (see P-Q charts on pages 16 to 21). Note, however, that the range of operation can be extended to within the short-time rating range for up to 20 seconds (or 60 seconds for the 400 V single pump type), provided it does not exceed a 20% duty cycle.

Example with Single Pump Type
SUT00S20018-40YL-N0340



Example with Double Pump Type
SUT00D13021-40-B-N0321



Continuous Rating : Continuous operation is possible when the mean hydraulic power obtained based on the pressure and flow rate during operation of 1 cycle is lower than the hydraulic power for the continuous rating range in the figure above and also the root-mean-square of the load pressure is within the maximum pressure for the continuous rating range.
(With the double pump type unit shown in the figure above with independent flow selected, continuous operation with the pressure held at 20.6 MPa is possible. However, for cycles that include pressure holding for 3 minutes or longer, a bleed off circuit equivalent to the capacity of a single pump running at 150 min^{-1} must be provided at the pump discharge side to cool the pump.)

Short-time Rating : Operation possible for 20 seconds (or 60 seconds with 400 V single pump type)

■ Reference

How to obtain the mean hydraulic power and root-mean-square pressure (example for single pump type)

When load pressure in each process within 1 cycle is P_n (n = 1, 2, ..., n), flow rate is Q_n (n = 1, 2, ..., n), and time is t_n (n = 1, 2, ..., n)

- Mean hydraulic power = $(P_1 \times Q_1/60 \times t_1 + P_2 \times Q_2/60 \times t_2 + \ldots + P_n \times Q_n/60 \times t_n) / (t_1 + t_2 + \ldots + t_n)$
- Root-mean-square of load pressure = $SQRT((P_1^2 \times t_1 + P_2^2 \times t_2 + \ldots + P_n^2 \times t_n) / (t_1 + t_2 + \ldots + t_n))$
  (Note, however, that if the pump runs above the rated pump rotational speed of 1800 min^{-1} to provide the control flow rate of Q_n, with the load pressure P_n, P_n needs to be converted to the value when the pump is running at 1800 min^{-1}.)
  When the pump capacity of the SUPER UNIT is q_n [cm^3], the pump rotational speed N_n is $N_n = Q_n \times 10^3/q_n$.
  Therefore, converted pressure $P_n = P_n \times (N_n/1800)$

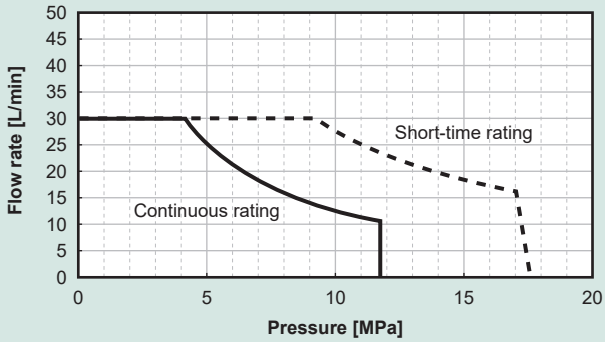
Note 1: The procedure for obtaining the mean hydraulic power and root-mean-square pressure with flow-rate-selection specifications (double pump type) is basically the same as above. Please consult us for detailed information.

Note 2: SQRT above represents square root operation ($\sqrt{\ }$). For the continuous rating hydraulic powers for each model, see the pressure - flow rate characteristic charts (P-Q characteristic charts) given in the instruction manual provided separately.

Pressure – Flow Rate Characteristics (Single pump type)

200 V Single Pump

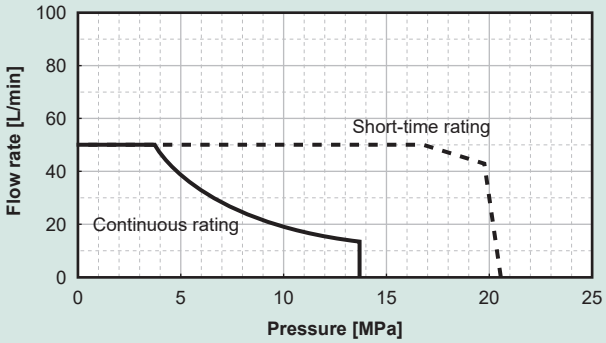
PQ chart - 1



SUT00S3018-30-A

Maximum operating pressure = 17.6 [MPa]
Maximum flow rate = 30 [L/min]
Command voltage = 5 [V]

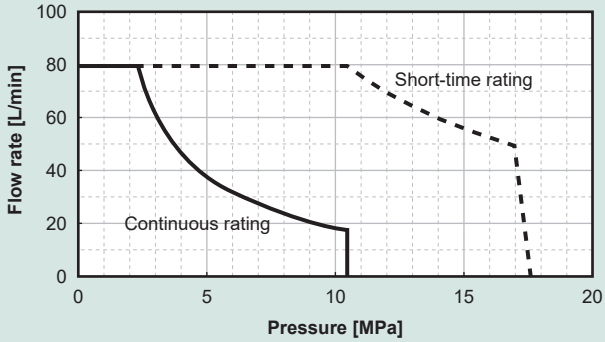
PQ chart - 2



SUT00S5021-30-A

Maximum operating pressure = 20.6 [MPa]
Maximum flow rate = 50 [L/min]
Command voltage = 5 [V]

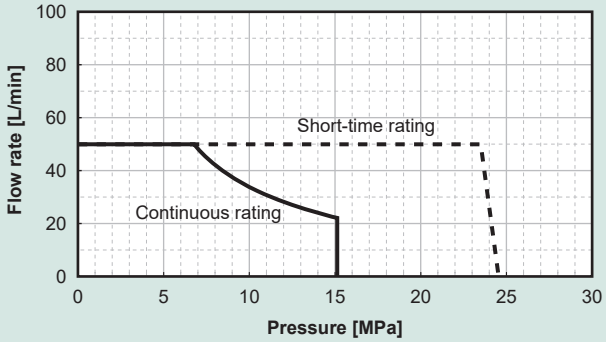
PQ chart - 3



SUT00S8018-30-A

Maximum operating pressure = 17.6 [MPa]
Maximum flow rate = 80 [L/min]
Command voltage = 5 [V]

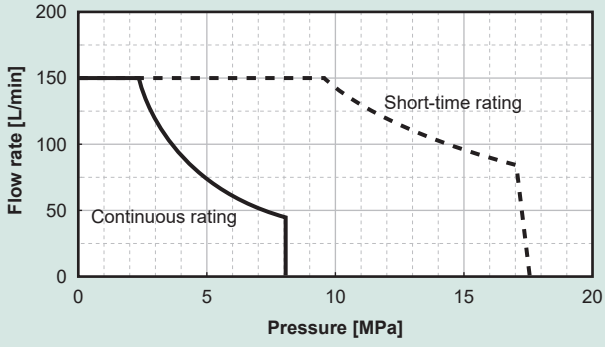
PQ chart - 4



SUT00S5025-10-L-N0432

Maximum operating pressure = 24.5 [MPa]
Maximum flow rate = 50 [L/min]
Command voltage = 5 [V]

PQ chart - 5



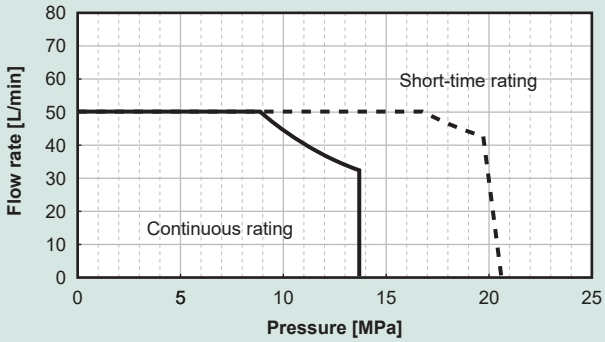
SUT00S15018-10-A

Maximum operating pressure = 17.6 [MPa]
Maximum flow rate = 150 [L/min]
Command voltage = 5 [V]

Pressure – Flow Rate Characteristics (Single pump specifications)

400 V Single Pump

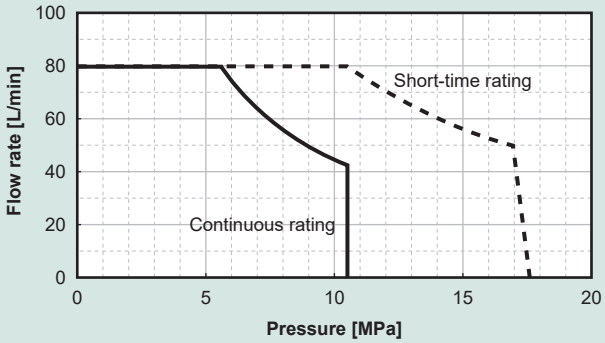
PQ chart - 6



SUT00S5021-40YA-N0265

Maximum operating pressure = 20.6 [MPa]
Maximum flow rate = 50 [L/min]
Command voltage = 10 [V]

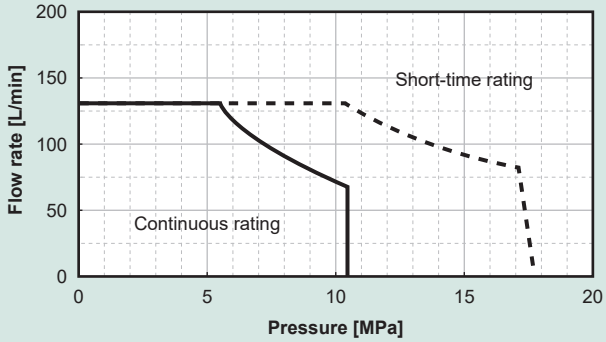
PQ chart - 7



SUT00S8018-40YA

Maximum operating pressure = 17.6 [MPa]
Maximum flow rate = 80 [L/min]
Command voltage = 10 [V]

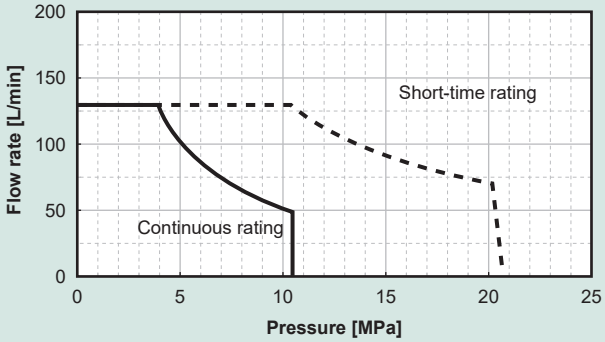
PQ chart - 8



SUT00S13018-40YA-N0218

Maximum operating pressure = 17.6 [MPa]
Maximum flow rate = 130 [L/min]
Command voltage = 10 [V]

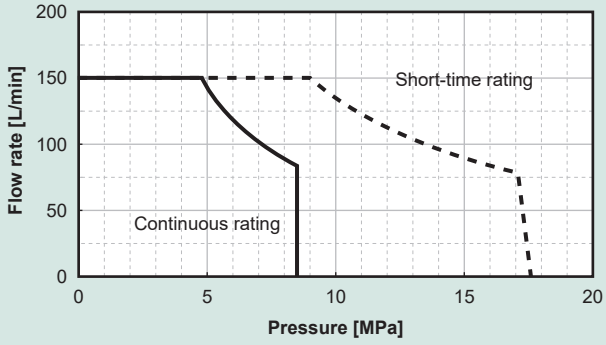
PQ chart - 9



SUT00S13021-40YA-N0286

Maximum operating pressure = 20.6 [MPa]
Maximum flow rate = 130 [L/min]
Command voltage = 10 [V]

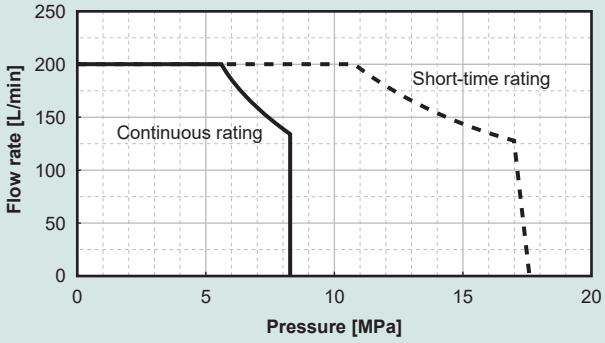
PQ chart - 10



SUT00S15018-40YA

Maximum operating pressure = 17.6 [MPa]
Maximum flow rate = 150 [L/min]
Command voltage = 10 [V]

PQ chart - 11



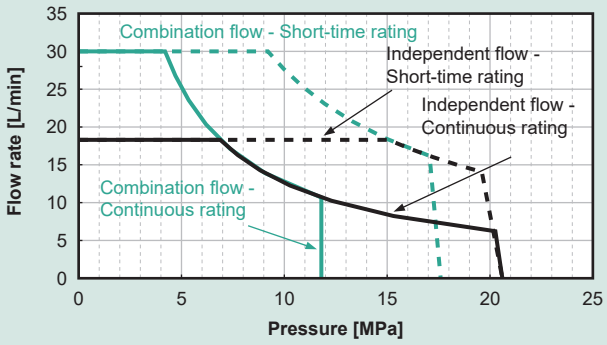
SUT00S20018-40YL-N0340

Maximum operating pressure = 17.6 [MPa]
Maximum flow rate = 200 [L/min]
Command voltage = 10 [V]

Pressure – Flow Rate Characteristics (Double pump specifications)

200 V Double Pump

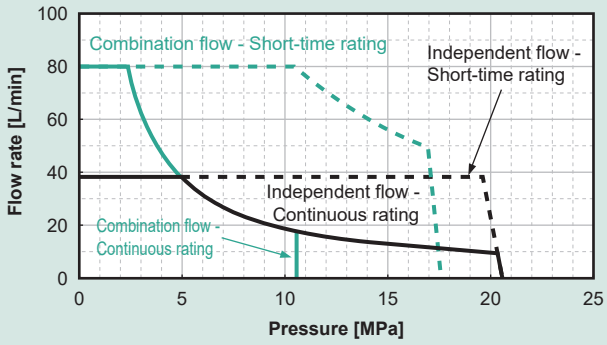
PQ chart - 12



SUT00D3021-30-B-N0436

Maximum operating pressure = 17.6/20.6 [MPa]
Maximum flow rate = 30/18.3 [L/min]
Command voltage = 10 [V]

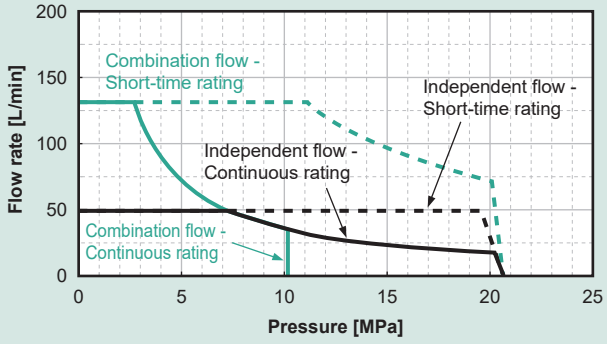
PQ chart - 13



SUT00D8021-40-B-N0323

Maximum operating pressure = 17.6/20.6 [MPa]
Maximum flow rate = 80/38.4 [L/min]
Command voltage = 10 [V]

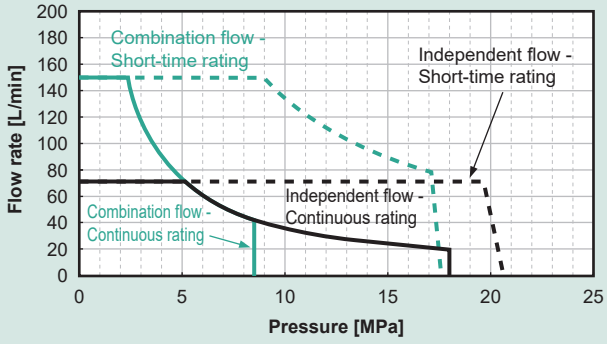
PQ chart - 14



SUT00D13021-40-B-N0321

Maximum operating pressure = 20.6/20.6 [MPa]
Maximum flow rate = 130/47.9 [L/min]
Command voltage = 10 [V]

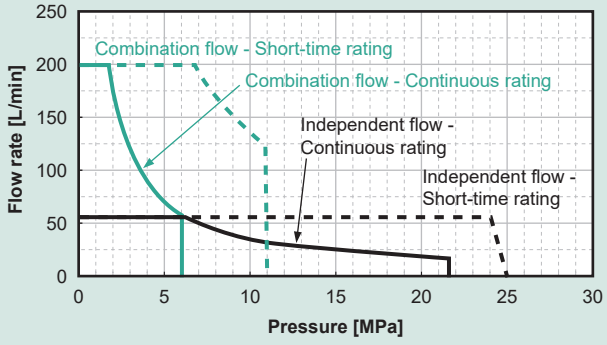
PQ chart - 15



SUT00D15021-40-B-N0365

Maximum operating pressure = 17.6/20.6 [MPa]
Maximum flow rate = 150/70.9 [L/min]
Command voltage = 10 [V]

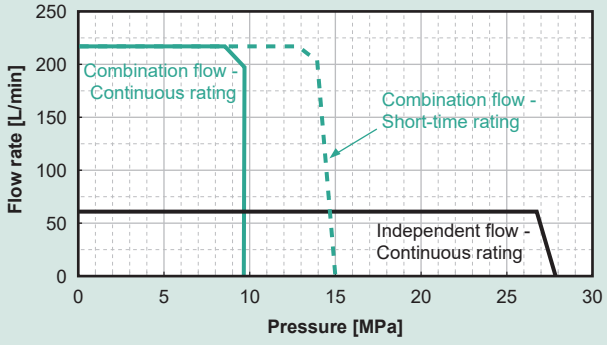
PQ chart - 16



SUT00D20021-40-L

Maximum operating pressure = 11.0/25.0 [MPa]
Maximum flow rate = 200/56 [L/min]
Command voltage = 10 [V]

PQ chart - 17



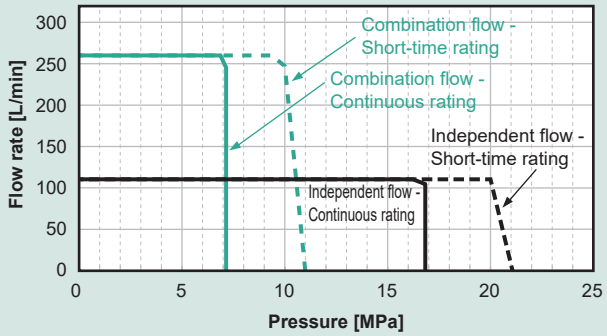
SUT00D22028-30-L

Maximum operating pressure = 14.0/28.0 [MPa]
Maximum flow rate = 220/63.2 [L/min]
Command voltage = 10 [V]

Pressure – Flow Rate Characteristics (Double pump specifications)

200 V Double Pump

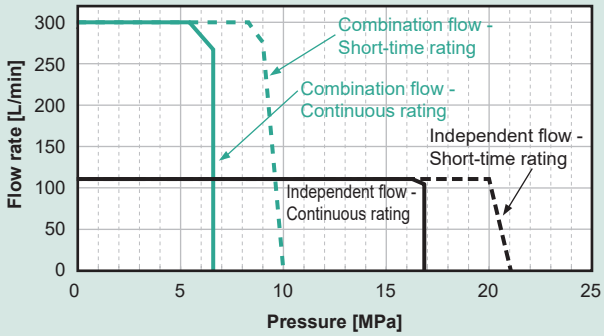
PQ chart - 18



SUT00D26021-30-L

Maximum operating pressure = 11.0/20.6 [MPa]
Maximum flow rate = 260/111 [L/min]
Command voltage = 10 [V]

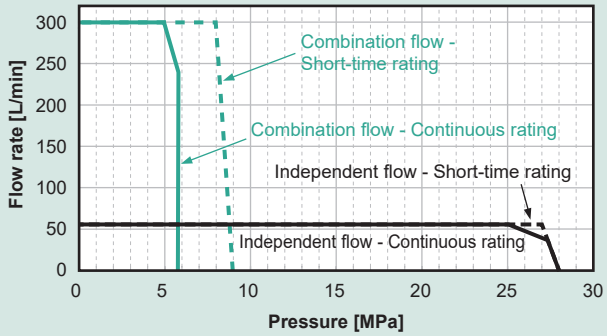
PQ chart - 19



SUT00D30021-30-L

Maximum operating pressure = 10.0/20.6 [MPa]
Maximum flow rate = 300/111 [L/min]
Command voltage = 10 [V]

PQ chart - 20

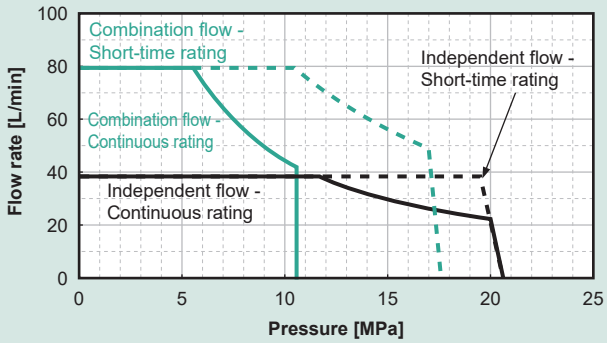


SUT00D30028-30-L

Maximum operating pressure = 9.0/28.0 [MPa]
Maximum flow rate = 300/56.0 [L/min]
Command voltage = 10 [V]

400 V Double Pump

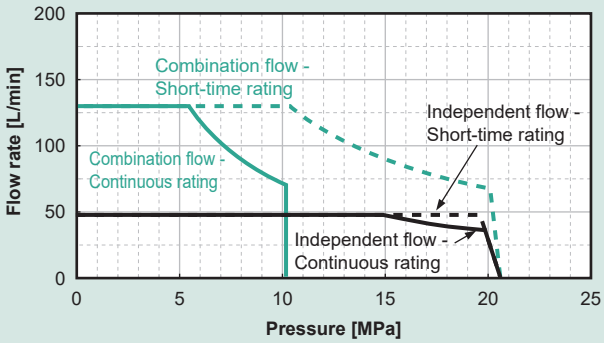
PQ chart - 21



SUT00D8021-40YB-N0324

Maximum operating pressure = 17.6/20.6 [MPa]
Maximum flow rate = 80/38.4 [L/min]
Command voltage = 10 [V]

PQ chart - 22

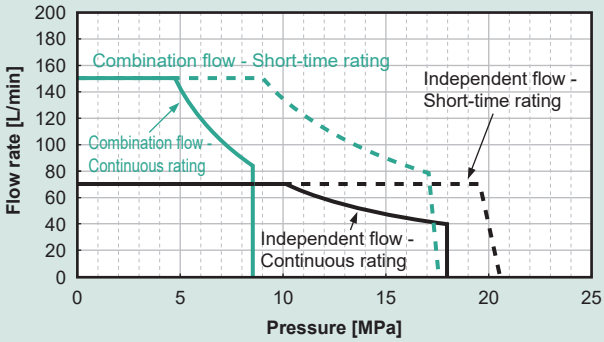


SUT00D13021-40YB-N0322

Maximum operating pressure = 20.6/20.6 [MPa]
Maximum flow rate = 130/47.9 [L/min]
Command voltage = 10 [V]

400 V Double Pump

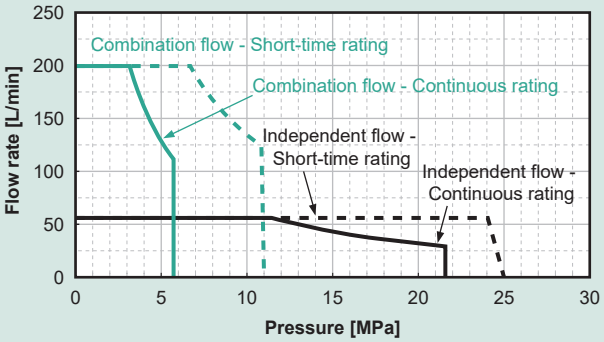
PQ chart - 23



SUT00D15021-40YB-N0358

Maximum operating pressure = 17.6/20.6 [MPa]
Maximum flow rate = 150/70.9 [L/min]
Command voltage = 10 [V]

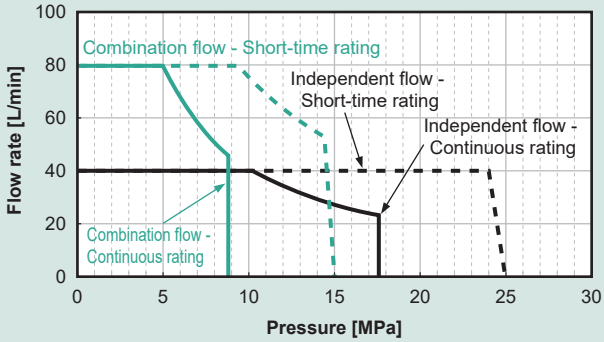
PQ chart - 24



S-SUT00D20021-40YL

Maximum operating pressure = 11.0/25.0 [MPa]
Maximum flow rate = 200/56.0 [L/min]
Command voltage = 10 [V]

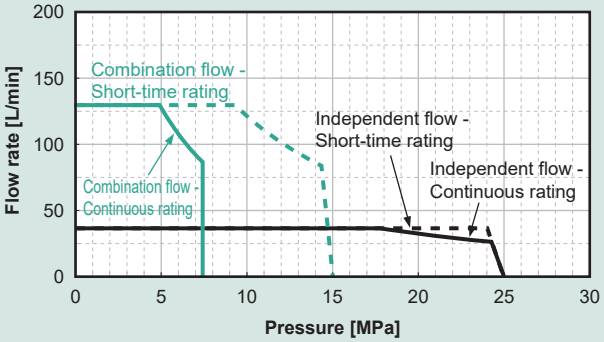
PQ chart - 25



S-SUT00D8025-40YL

Maximum operating pressure = 15.0/25.0 [MPa]
Maximum flow rate = 80/40.0 [L/min]
Command voltage = 10 [V]

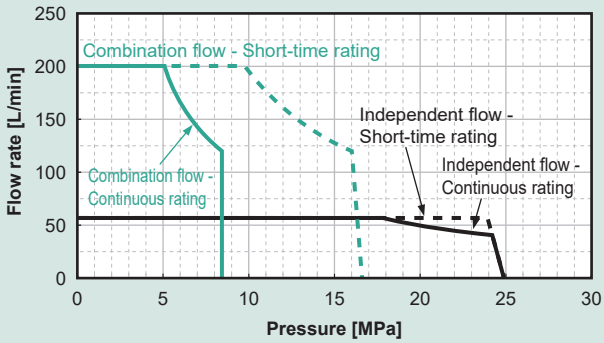
PQ chart - 26



S-SUT00D13025-40YL

Maximum operating pressure = 15.0/25.0 [MPa]
Maximum flow rate = 130/37.3 [L/min]
Command voltage = 10 [V]

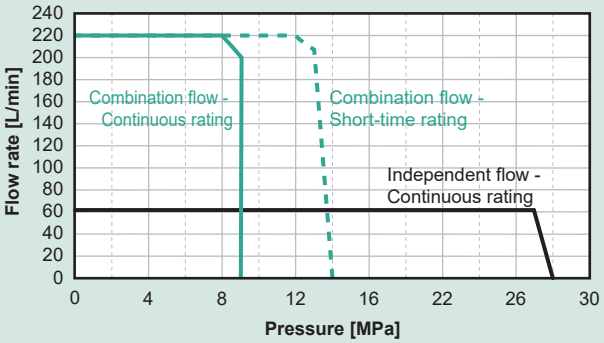
PQ chart - 27



S-SUT00D20025-40YL

Maximum operating pressure = 16.5/25.0 [MPa]
Maximum flow rate = 200/56.0 [L/min]
Command voltage = 10 [V]

PQ chart - 28



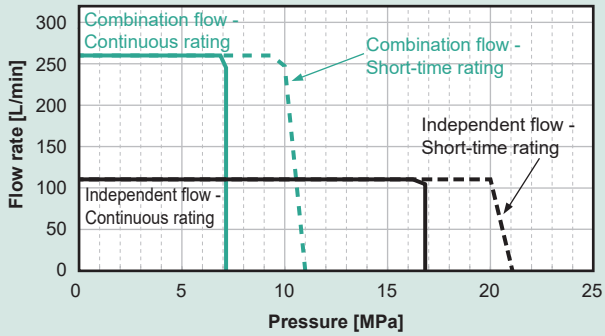
SUT00D22028-30YL

Maximum operating pressure = 14.0/28.0 [MPa]
Maximum flow rate = 220/63.2 [L/min]
Command voltage = 10 [V]

Pressure – Flow Rate Characteristics (Double pump specifications)

400 V Double Pump

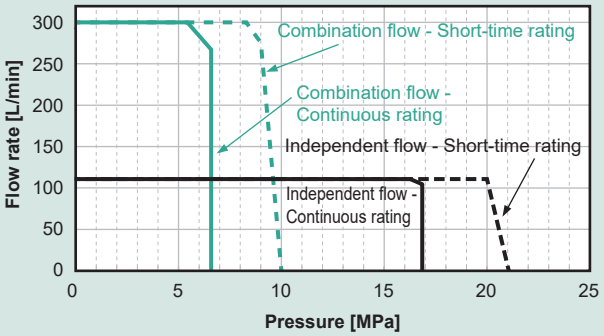
PQ chart - 29



SUT00D26021-30YL

Maximum operating pressure = 11.0/20.6 [MPa]
Maximum flow rate = 260/110 [L/min]
Command voltage = 10 [V]

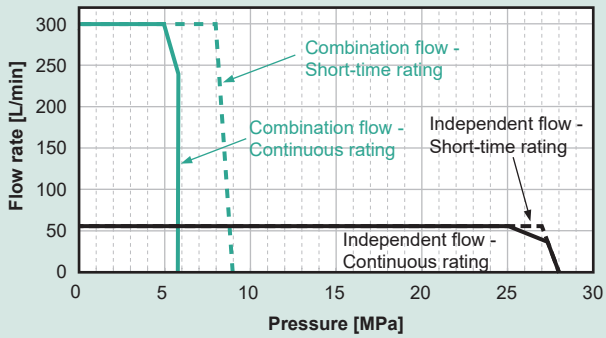
PQ chart - 30



SUT00D30021-30YL

Maximum operating pressure = 10.0/20.6 [MPa]
Maximum flow rate = 300/110 [L/min]
Command voltage = 10 [V]

PQ chart - 31



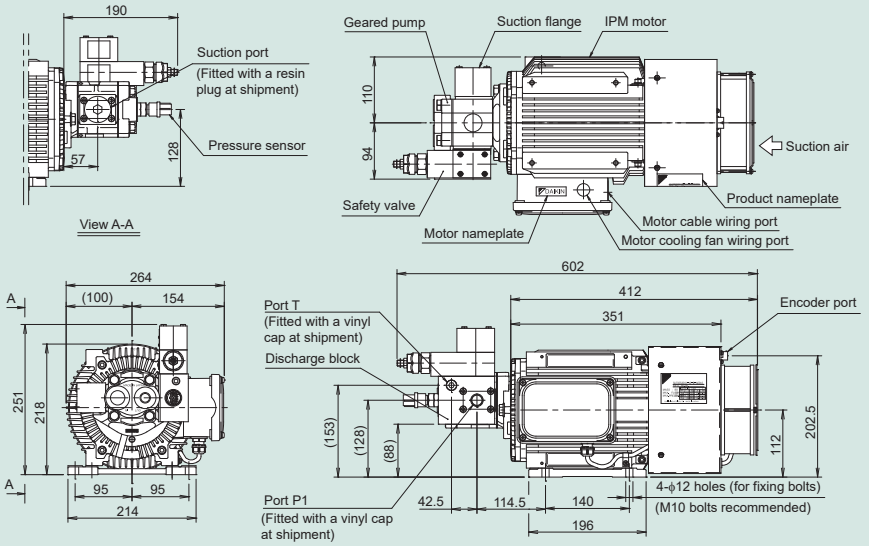
SUT00D30028-30YL

Maximum operating pressure = 9.0/28.0 [MPa]
Maximum flow rate = 300/56.0 [L/min]
Command voltage = 10 [V]

External Dimension Diagrams (Motor pump 200 V/400 V double pump type)

200 V 30 L/min 17.6 MPa

SUT00S3018-30-A

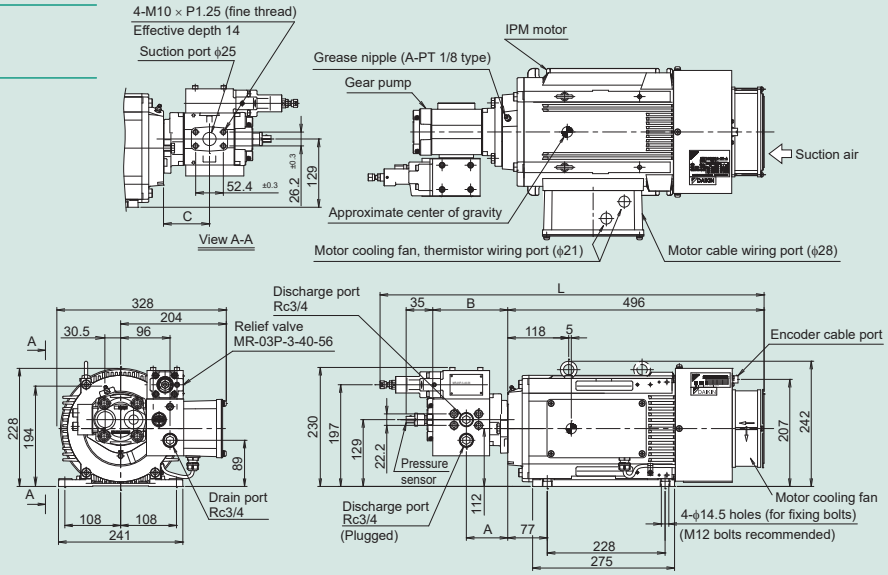


Model code	Power supply specifications	Pump specifications	Suction port	Discharge port	Drain port	Pressure sensor orientation (*1)	Suction flange
SUT00S3018-30-A	200 V	Single	Rc1	Rc1/2	Rc3/8	Front	Incorporated

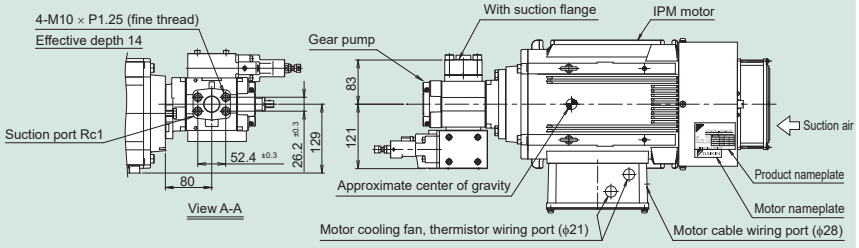
(*1) "Pressure sensor orientation" indicates the orientation of the pressure sensor viewed from the pump side.

200 V/400 V 50 L/min 20.6 MPa
200 V/400 V 80 L/min 17.6 MPa

SUT00S5021-40-A
SUT00S8018-40-A
SUT00S5021-40YA-N0265
SUT00S8018-40YA



SUT00S5021-40YA-N0265 with suction flange



Model code	Power supply specifications	Pump specifications	L	A	B	C	Suction port	Discharge port	Drain port	Pressure sensor orientation (*1)	Suction flange
SUT00S5021-40-A	200 V	Single	742	80	145	80	ϕ25	Rc3/4	Rc3/4	Front	None
SUT00S8018-40-A	200 V	Single	749	87	152	87	ϕ25	Rc3/4	Rc3/4	Front	None
SUT00S5021-40YA-N0265	400 V	Single	742	80	145	80	Rc1	Rc3/4	Rc3/4	Front	Incorporated
SUT00S8018-40YA	400 V	Single	749	87	152	87	ϕ25	Rc3/4	Rc3/4	Front	None

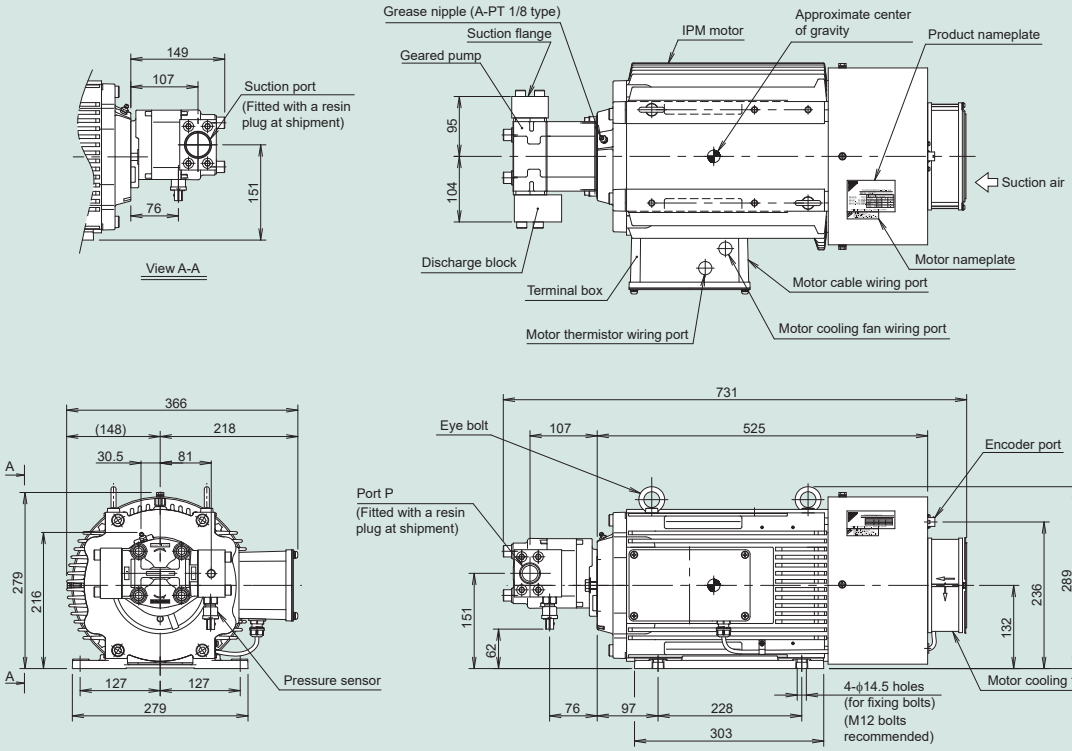
(*1) "Pressure sensor orientation" indicates the orientation of the pressure sensor viewed from the pump side.

* The motor pump needs to be secured horizontally on the machine or tank. Also, secure a clearance of at least 100 mm at the suction side of the motor cooling fan.
In addition, a clearance of at least 100 mm from the pump or solenoid valve is required at the exhaust side, with good ventilation assured by mounting a cover provided with ventilation holes or other means.

External Dimension Diagrams (Motor pump 200 V/400 V Single pump type)

200 V 50 L/min 24.5 MPa

SUT00S5025-40-L-N0432

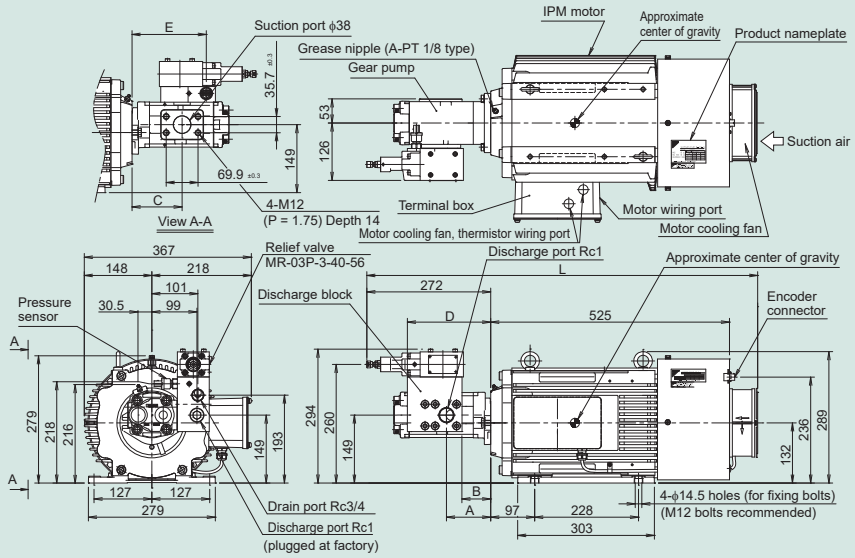


Model code	Power supply specifications	Pump specifications	Suction port	Discharge port	Drain port	Pressure sensor orientation (*1)	Suction flange
SUT00S5025-40-L-N0432	200 V	Single	Rc1-1/4	Rc1	-	Bottom	Incorporated

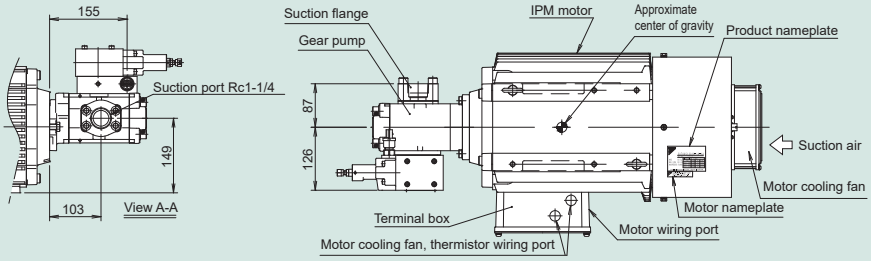
(*1) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.

200 V 150 L/min 17.6 MPa
400 V 130 L/min 17.6 MPa, 130 L/min 20.6 MPa, 150 L/min 17.6 MPa

SUT00S15018-40-A
SUT00S13018-40YA-N0218
SUT00S13021-40YA-N0286
SUT00S15018-40YA



SUT00S13018-40YA-N0218 with suction flange

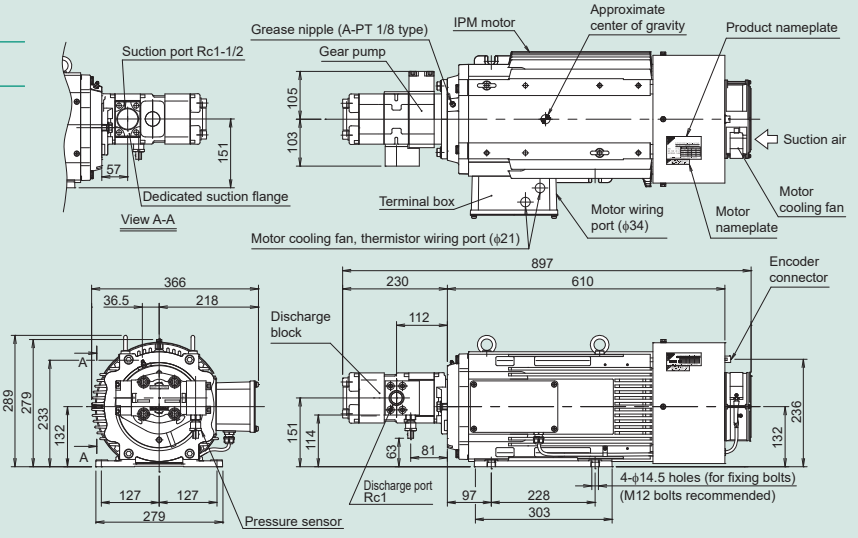


Model code	Power supply specifications	Pump specifications	L	A	B	C	D	E	Suction port	Discharge port	Drain port	Pressure sensor orientation (*1)	Suction flange
SUT00S15018-40-A	200 V	Single	854	97	63	110	183	163	ϕ38	Rc1	Rc3/4	(L)	None
SUT00S13018-40YA-N0218	400 V	Single	850	90	55	103	175	155	Rc1-1/4	Rc1	Rc3/4	(L)	Incorporated
SUT00S13021-40YA-N0286	400 V	Single	850	90	55	103	175	155	Rc1-1/4	Rc1	Rc3/4	(L)	Incorporated
SUT00S15018-40YA	400 V	Single	854	97	63	110	183	163	ϕ38	Rc1	Rc3/4	(L)	None

(*1) "Pressure sensor orientation" indicates the orientation of the pressure sensor viewed from the pump side.

400V 200L/min 17.6MPa

SUT00S20018-40YL-N0340



Model code	Power supply specifications	Pump specifications	Suction port	Discharge port	Drain port	Pressure sensor orientation (*1)	Suction flange
SUT00S20018-40YL-N0340	400 V	Single	Rc1-1/2	Rc1	–	Bottom	With dedicated part

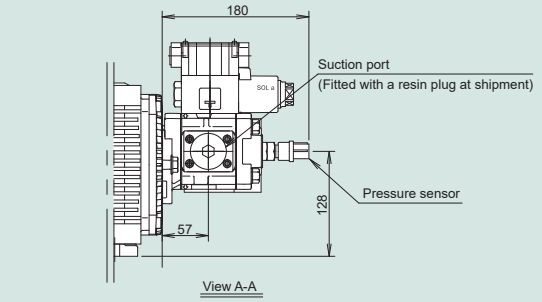
(*1) "Pressure sensor orientation" indicates the orientation of the pressure sensor viewed from the pump side.

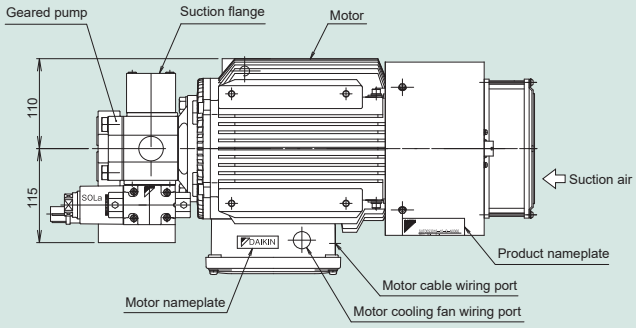
* The motor pump needs to be secured horizontally on the machine or tank. Also, secure a clearance of at least 100 mm at the suction side of the motor cooling fan.
In addition, a clearance of at least 100 mm from the pump or solenoid valve is required at the exhaust side, with good ventilation assured by mounting a cover provided with ventilation holes or other means.

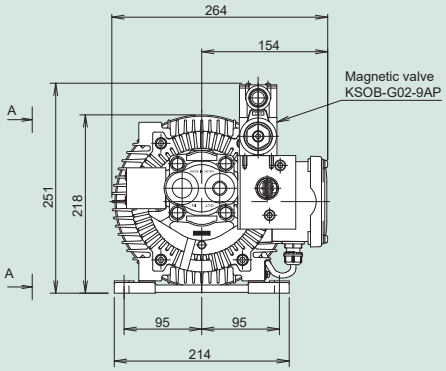
External Dimension Diagrams (Motor pump 200 V/400 V double pump type)

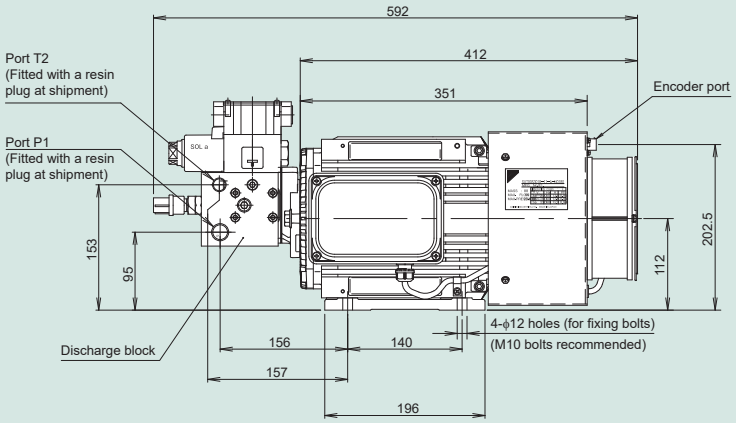
200 V 30 L/min 20.6 MPa

SUT00D3021-30-B-N0436







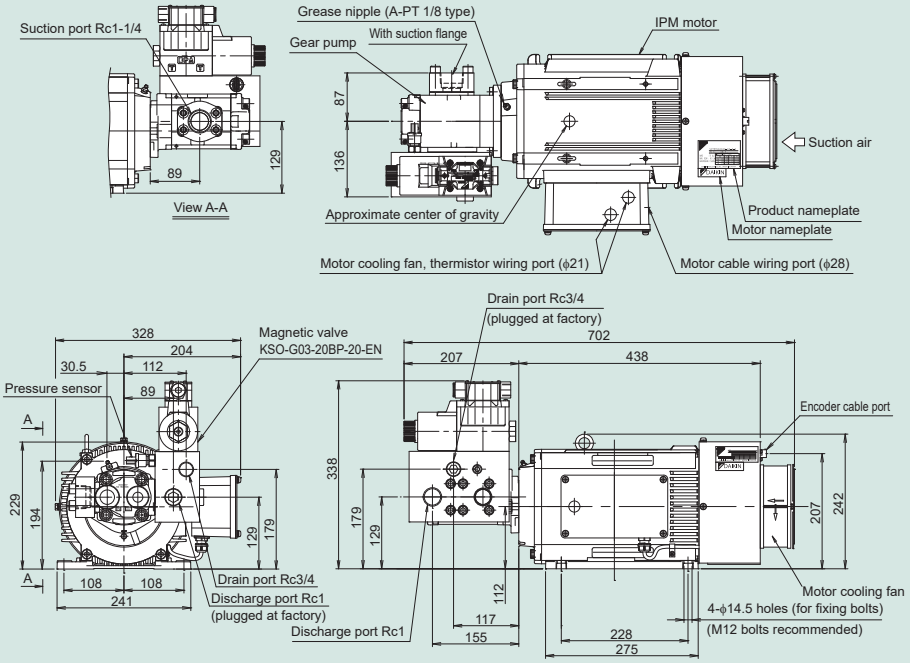


Model code	Power supply specifications	Pump specifications	Suction port	Discharge port	Return port (T2)	Pressure sensor orientation (*1)	Suction flange
SUT00D3021-30-B-N0436	200 V	Double	Rc1	Rc1/2	Rc3/8	Front	Incorporated

(*1) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.

200 V 80 L/min 20.6 MPa
400 V 80 L/min 17.6 MPa

SUT00D8021-40-B-N0323
SUT00D8021-40YB-N0324

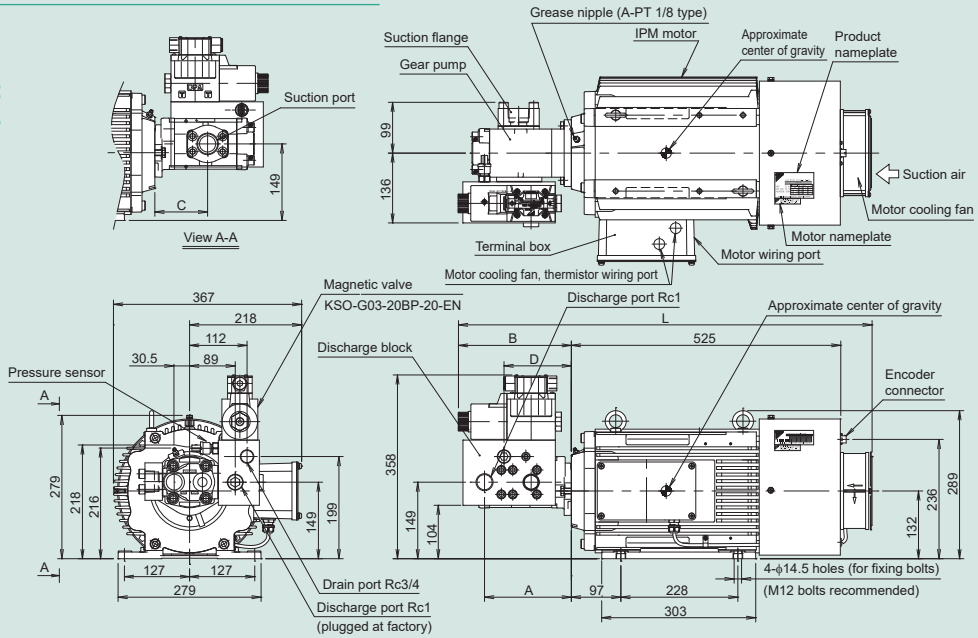


Model code	Power supply specifications	Pump specifications	Suction port	Discharge port	Drain port	Pressure sensor orientation (*1)	Suction flange
SUT00D8021-40-B-N0323	200 V	Double	Rc1-1/4	Rc1	Rc3/4	(L)	Incorporated
SUT00D8021-40YB-N0324	400 V	Double	Rc1-1/4	Rc1	Rc3/4	(L)	Incorporated

(*1) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.

200 V 130 L/min 20.6 MPa, 150 L/min 20.6 MPa
400 V 130 L/min 20.6 MPa, 150 L/min 20.6 MPa

SUT00D13021-40-B-N0321
SUT00D15021-40-B-N0365
SUT00D13021-40YB-N0322
SUT00D15021-40YB-N0358



Model code	Power supply specifications	Pump specifications	L	A	B	C	D	Suction port	Discharge port	Drain port	Pressure sensor orientation (*1)	Suction flange
SUT00D13021-40-B-N0321	200 V	Double	802	169	220	103	131	Rc1-1/4	Rc1	Rc3/4	(L)	Incorporated
SUT00D15021-40-B-N0365	200 V	Double	811	177	228	110	139	Rc1-1/2	Rc1	Rc3/4	(L)	Incorporated
SUT00D13021-40YB-N0322	400 V	Double	802	169	220	103	131	Rc1-1/4	Rc1	Rc3/4	(L)	Incorporated
SUT00D15021-40YB-N0358	400 V	Double	811	177	228	110	139	Rc1-1/2	Rc1	Rc3/4	(L)	Incorporated

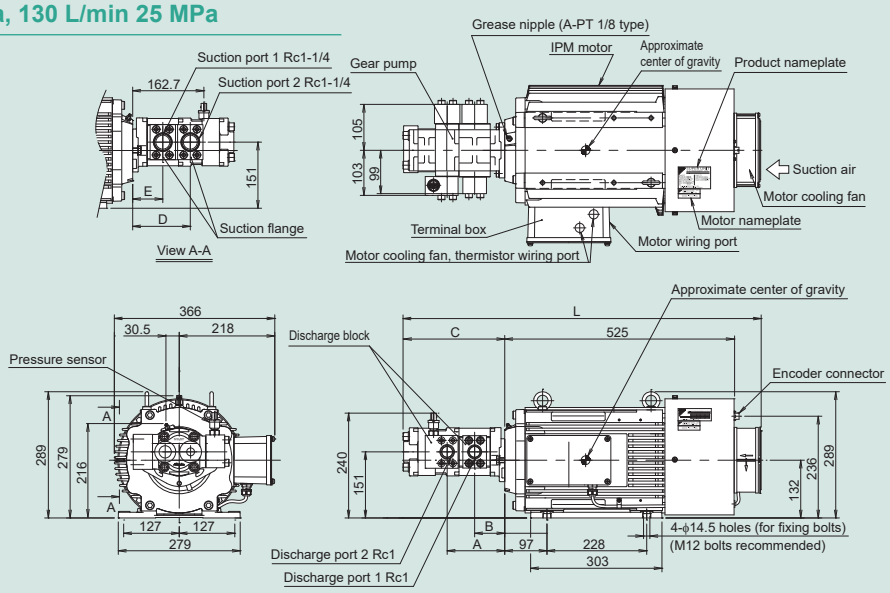
(*1) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.

* The motor pump needs to be secured horizontally on the machine or tank. Also, secure a clearance of at least 100 mm at the suction side of the motor cooling fan.
In addition, a clearance of at least 100 mm from the pump or solenoid valve is required at the exhaust side, with good ventilation assured by mounting a cover provided with ventilation holes or other means.

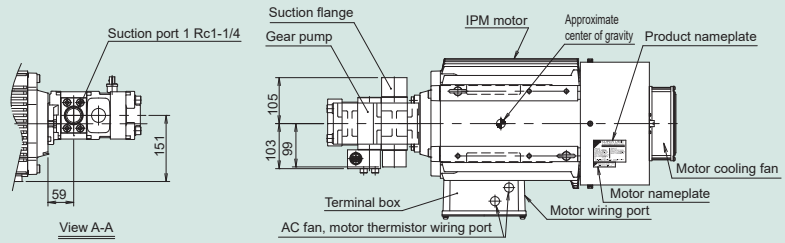
External Dimension Diagrams (Motor pump 200 V/400 V double pump type)

200 V 200 L/min 20.6 MPa
400 V 200 L/min 20.6 MPa, 130 L/min 25 MPa

SUT00D20021-40-L
S-SUT00D20021-40YL
S-SUT00D13025-40YL



S-SUT00D13025-40YL (pump section, suction flange on 1 port)

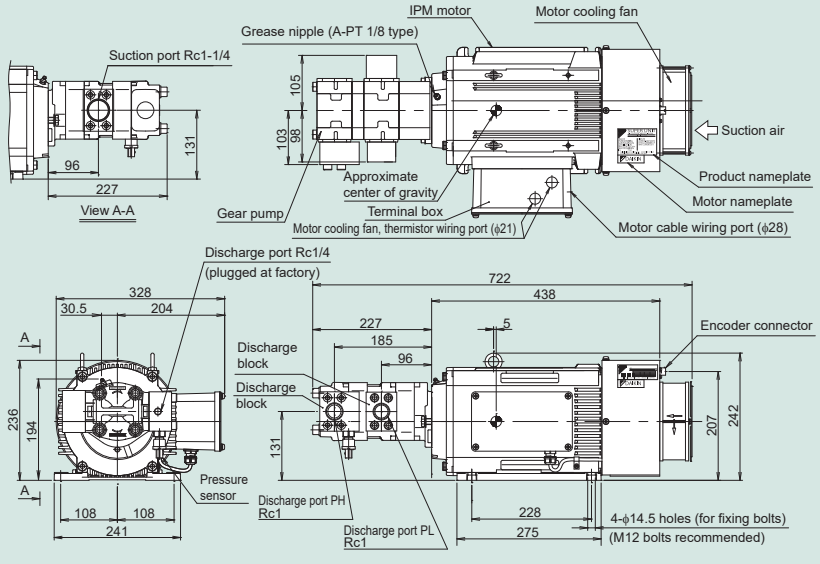


Model code	Power supply specifications	Pump specifications	L	A	B	C	D	E	Suction port 1	Suction port 2	Discharge port	Drain port	Pressure sensor orientation (*1)	Suction flange
SUT00D20021-40-L	200 V	Double	815	132	69	232	132	69	Rc1-1/4	Rc1-1/4	Rc1	Rc1	Top	2 pcs. provided
S-SUT00D20021-40YL	400 V	Double	819	131.6	68.6	232	131.6	68.6	Rc1-1/4	Rc1-1/4	Rc1	Rc1	Top	2 pcs. provided
S-SUT00D13025-40YL	400 V	Double	799	116	59	212	–	59	Rc1-1/4	–	Rc1	Rc1	Top	Incorporated

(*1) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.

400 V 80 L/min 25 MPa

S-SUT00D8025-40YL

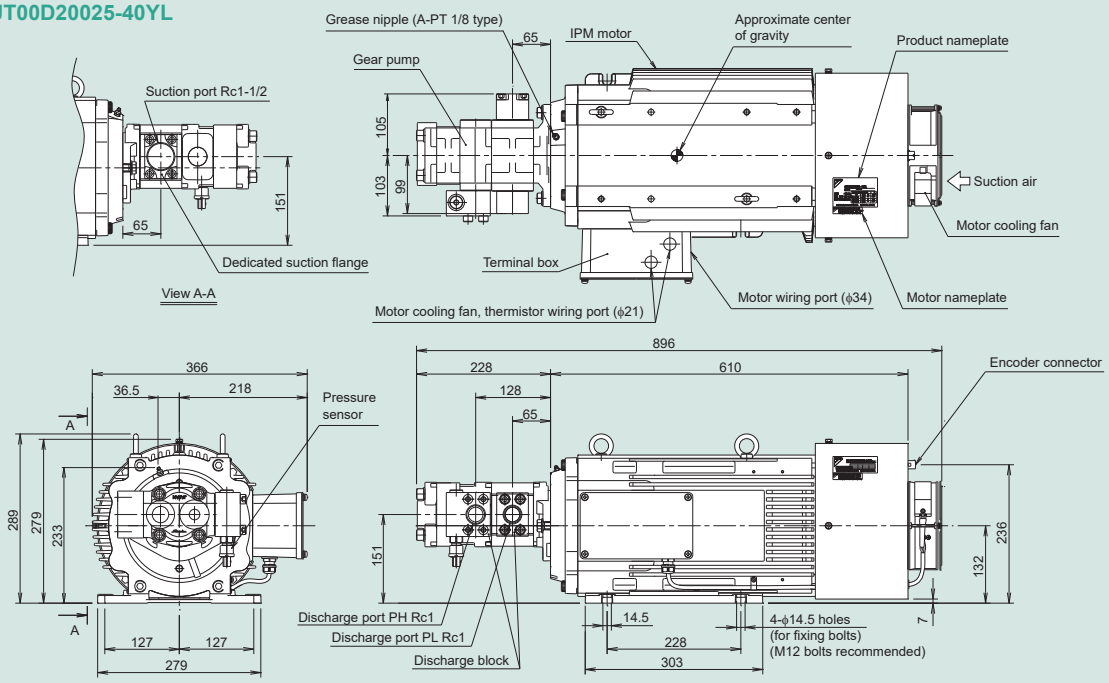


Model code	Power supply specifications	Pump specifications	Suction port	Discharge port PL	Discharge port PH	Pressure sensor orientation (*1)	Suction flange
S-SUT00D8025-40YL	400 V	Double	Rc1-1/4	Rc1	Rc1	Bottom	Incorporated

(*1) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.

400 V 200 L/min 25 MPa

S-SUT00D20025-40YL

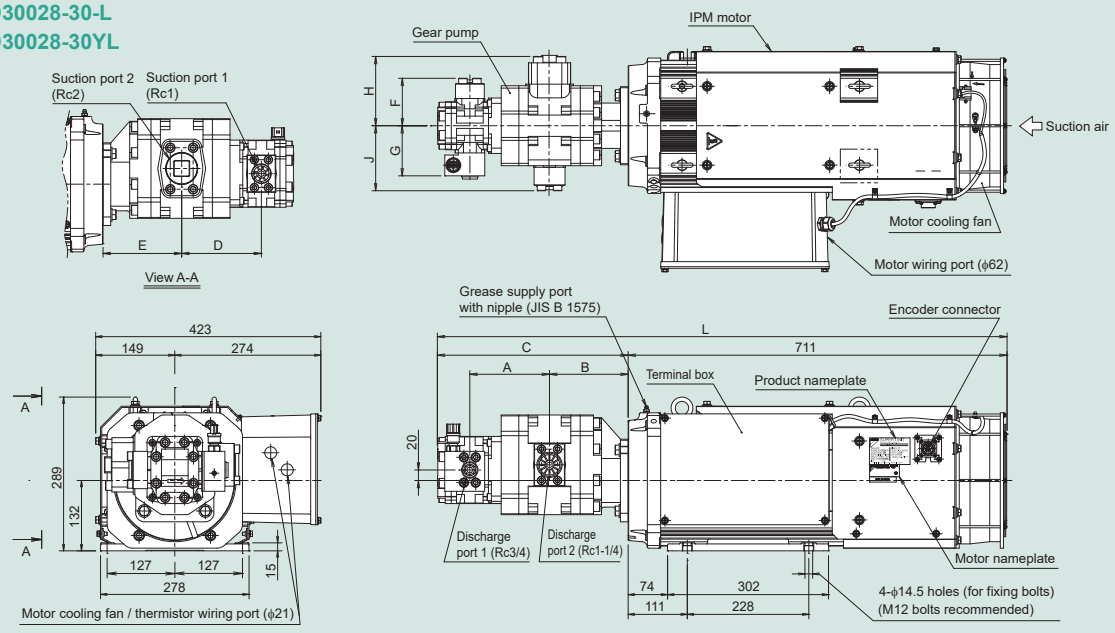


Model code	Power supply specifications	Pump specifications	Suction port	Discharge port PL	Discharge port PH	Pressure sensor orientation (*1)	Suction flange
S-SUT00D20025-40YL	400 V	Double	Rc1-1/2	Rc1	Rc1	Bottom	With dedicated part

(*1) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.

200 V/400 V 220 L/min 28 MPa
200 V/400 V 300 L/min 28 MPa

SUT00D22028-30-L
SUT00D22028-30YL
SUT00D30028-30-L
SUT00D30028-30YL



Model code	Power supply specifications	Pump specifications	L	A	B	C	D	E	F	G	H	J	Suction port 1	Suction port 2	Discharge port 1	Discharge port 2	Pressure sensor orientation (*1)	Suction flange
SUT00D22028-30-L	200 V	Double	1,044	140	133	333	140	133	89	94	122	119	Rc1	Rc1-1/2	Rc3/4	Rc1-1/4	Top	Incorporated
SUT00D22028-30YL	400 V	Double	1,044	140	133	333	140	133	89	94	122	119	Rc1	Rc1-1/2	Rc3/4	Rc1-1/4	Top	Incorporated
SUT00D30028-30-L	200 V	Double	1,069	150	148	358	150	148	89	94	130	122	Rc1	Rc2	Rc3/4	Rc1-1/4	Top	Incorporated
SUT00D30028-30YL	400 V	Double	1,069	150	148	358	150	148	89	94	130	122	Rc1	Rc2	Rc3/4	Rc1-1/4	Top	Incorporated

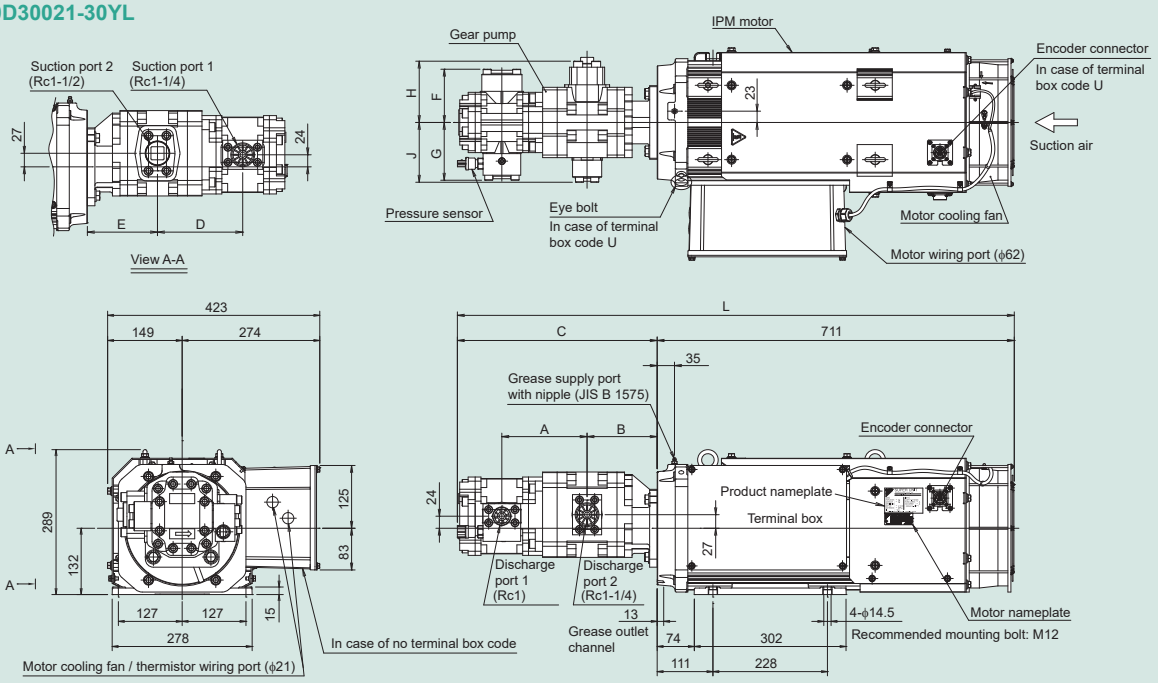
(*1) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.

* The motor pump needs to be secured horizontally on the machine or tank. Also, secure a clearance of at least 100 mm at the suction side of the motor cooling fan.
In addition, a clearance of at least 100 mm from the pump or solenoid valve is required at the exhaust side, with good ventilation assured by mounting a cover provided with ventilation holes or other means.

External Dimension Diagrams (Motor pump 200 V/400 V double pump type)

200 V/400 V 260 L/min 20.6 MPa
200 V/400 V 300 L/min 20.6 MPa

SUT00D26021-30-L
SUT00D26021-30YL
SUT00D30021-30-L
SUT00D30021-30YL



Model code	Power supply specifications	Pump specifications	L	A	B	C	D	E	F	G	H	J	Suction port 1	Suction port 2	Discharge port 1	Discharge port 2	Pressure sensor orientation (*1)	Suction flange
SUT00D26021-30-L	200 V	Double	1,094	162	133	383	162	133	106	115	122	119	Rc1-1/4	Rc1-1/2	Rc1	Rc1-1/4	Rear	Incorporated
SUT00D26021-30YL	400 V	Double	1,094	162	133	383	162	133	106	115	122	119	Rc1-1/4	Rc1-1/2	Rc1	Rc1-1/4	Rear	Incorporated
SUT00D30021-30-L	200 V	Double	1,109	170	140	398	170	140	106	115	122	119	Rc1-1/4	Rc1-1/2	Rc1	Rc1-1/4	Rear	Incorporated
SUT00D30021-30YL	400 V	Double	1,109	170	140	398	170	140	106	115	122	119	Rc1-1/4	Rc1-1/2	Rc1	Rc1-1/4	Rear	Incorporated

(*1) “Pressure sensor orientation” indicates the orientation of the pressure sensor viewed from the pump side.

* The motor pump needs to be secured horizontally on the machine or tank. Also, secure a clearance of at least 100 mm at the suction side of the motor cooling fan.
In addition, a clearance of at least 100 mm from the pump or solenoid valve is required at the exhaust side, with good ventilation assured by mounting a cover provided with ventilation holes or other means.

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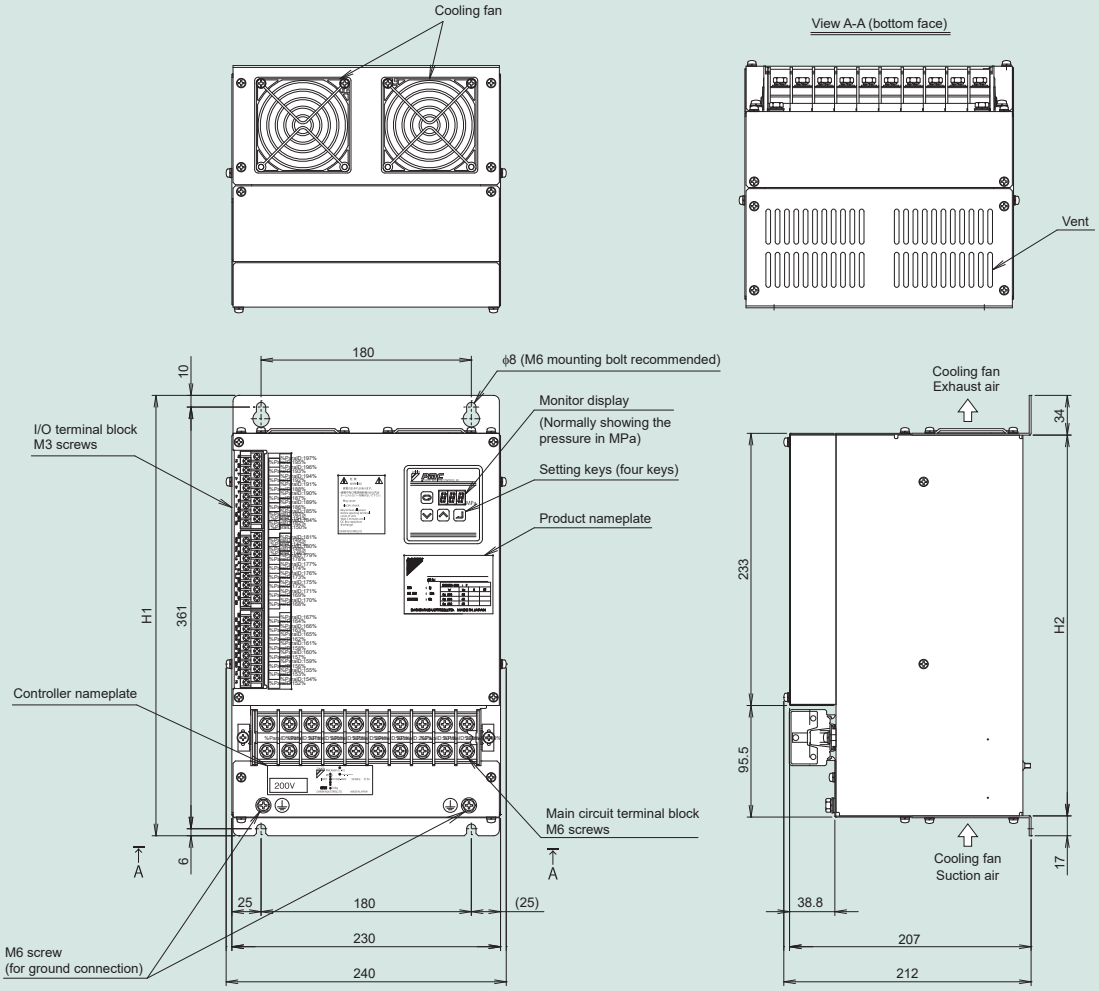
External Dimension Diagrams (Controller 200 V/400 V single/double pump type)

200 V 30 to 200 L/min 17.6 MPa, 20.6 MPa, 24.5 MPa (Single/double pump)
400 V 50 to 200 L/min 17.6 MPa, 20.6 MPa, 24.5 MPa (Single/double pump)

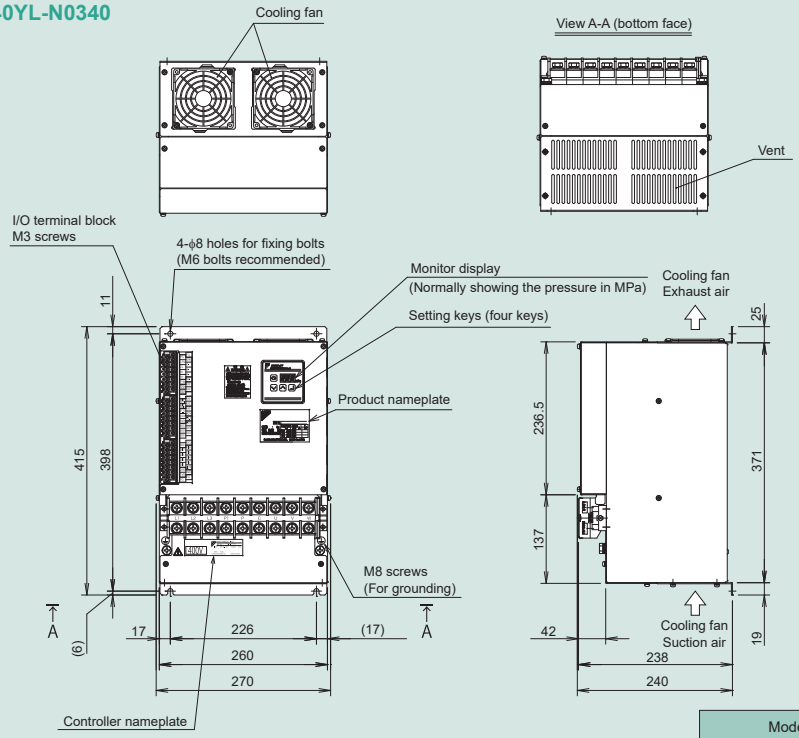
SUT00S3018-30-A
SUT00S5021-40-A
SUT00S8018-40-A
SUT00S5025-40-L-N0432
SUT00S15018-40-A
SUT00S5021-40YA-N0265
SUT00S8018-40YA
SUT00S13018-40YA-N0218
SUT00S13021-40YA-N0286
SUT00S15018-40YA
SUT00D3021-30-B-N0436
SUT00D8021-40-B-N0323
SUT00D13021-40-B-N0321
SUT00D15021-40-B-N0365
SUT00D20021-40-L
SUT00D8021-40YB-N0324
SUT00D13021-40YB-N0322
SUT00D15021-40YB-N0358
SUT00D20021-40YL



Model code	Power supply specifications	Pump specifications	H1	H2
SUT00S3018-30-A	200 V	Single	377	326
SUT00S5021-40-A				
SUT00S8018-40-A				
SUT00S5025-40-L-N0432			379	328
SUT00S15018-40-A				
SUT00S5021-40YA-N0265	400 V	Single	377	361
SUT00S8018-40YA				
SUT00S13018-40YA-N0218				
SUT00S13021-40YA-N0286			379	328
SUT00S15018-40YA				
SUT00D3021-30-B-N0436	200 V	Double	377	326
SUT00D8021-40-B-N0323				
SUT00D13021-40-B-N0321			379	328
SUT00D15021-40-B-N0365				
SUT00D20021-40-L				
SUT00D8021-40YB-N0324	400 V	Double	377	326
SUT00D13021-40YB-N0322			379	328
SUT00D15021-40YB-N0358				
SUT00D20021-40YL				

400 V 200 L/min 17.6 MPa (Single pump)

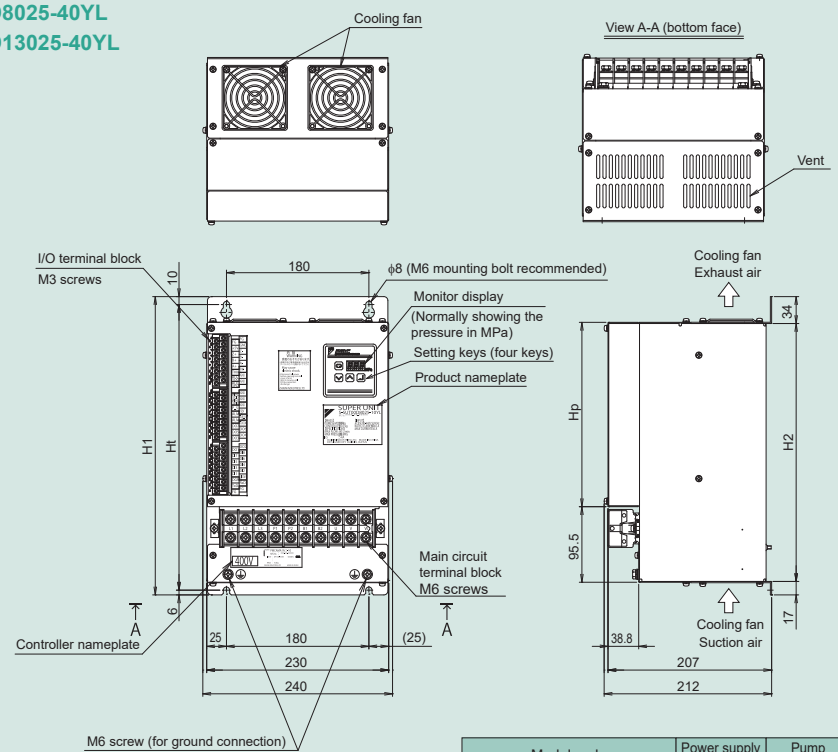
SUT00S20018-40YL-N0340



Model code	Power supply specifications	Pump specifications
SUT00S20018-40YL-N0340	400 V	Single

400 V 80 L/min 25 MPa, 130 L/min 25 MPa (Double pump)

S-SUT00D8025-40YL
S-SUT00D13025-40YL



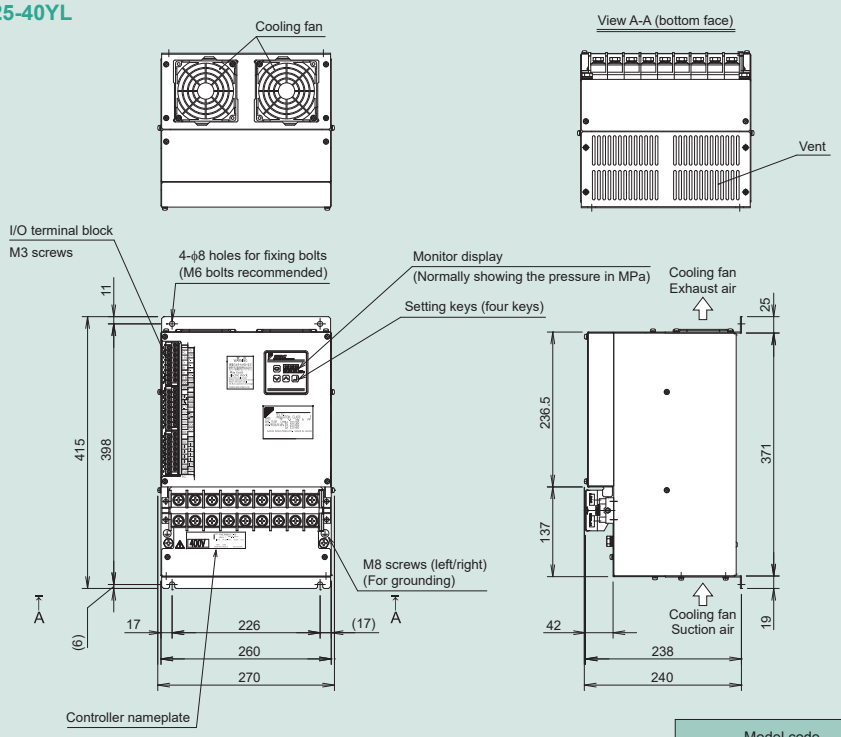
Model code	Power supply specifications	Pump specifications	H1	H2	Ht	Hp
S-SUT00D8025-40YL	400 V	Double	377	326	361	233
S-SUT00D13025-40YL			379	328	363	235

* The controller needs to be mounted vertically on a wall inside the electrical cabinet, with a clearance of at least 100 mm secured above and below and a clearance of at least 30 mm for wiring and maintenance at the left and right.

External Dimension Diagrams (Controller 200 V/400 V double pump type)

400 V, 200 L/min, 25 MPa (Double pump)

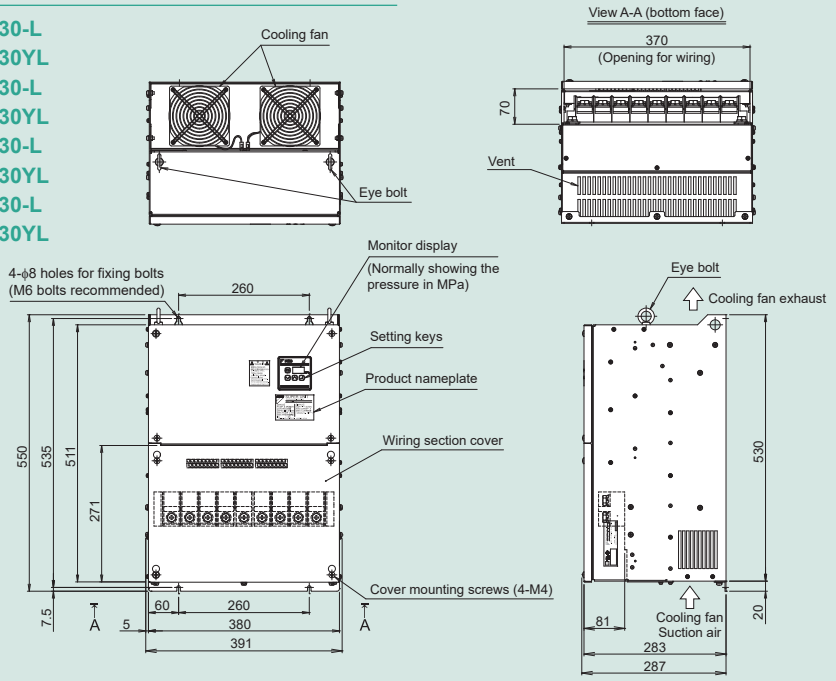
S-SUT00D20025-40YL



Model code	Power supply specifications	Pump specifications
S-SUT00D20025-40YL	400 V	Double

200 V/400 V, 260 L/min, 21 MPa (Double pump)
200 V/400 V, 300 L/min, 21 MPa (Double pump)
200 V/400 V, 220 L/min, 28 MPa (Double pump)
200 V/400 V, 300 L/min, 28 MPa (Double pump)

SUT00D26021-30-L
SUT00D26021-30YL
SUT00D30021-30-L
SUT00D30021-30YL
SUT00D22028-30-L
SUT00D22028-30YL
SUT00D30028-30-L
SUT00D30028-30YL



Model code	Power supply specifications	Pump specifications
SUT00D26021-30-L	200 V	Double
SUT00D26021-30YL	400 V	Double
SUT00D30021-30-L	200 V	Double
SUT00D30021-30YL	400 V	Double

Model code	Power supply specifications	Pump specifications
SUT00D22028-30-L	200 V	Double
SUT00D22028-30YL	400 V	Double
SUT00D30028-30-L	200 V	Double
SUT00D30028-30YL	400 V	Double

* The controller needs to be mounted vertically on a wall inside the electrical cabinet, with a clearance of at least 100 mm secured above and below and a clearance of at least 30 mm for wiring and maintenance at the left and right.

List of Electrical Components

This is a list of electrical components required for SUPER UNITs.

The list shows the model code and quantity for each of the electrical components that are contained in each set model code, that need to be ordered separately, and that are contained in each S-SUT model code.

(*1) Rows assigned a set model code show the electrical components among those required for the SUPER UNIT that are contained in the set, and the quantity of each component. Please order them separately from the SUPER UNIT.

(*2) "Electrical components provided with the product" indicates the electrical components that are provided as accessories to the SUPER UNIT and are packaged with it.

(*3) These are the electrical components that are required for compliance with European CE standards. Please order them separately.

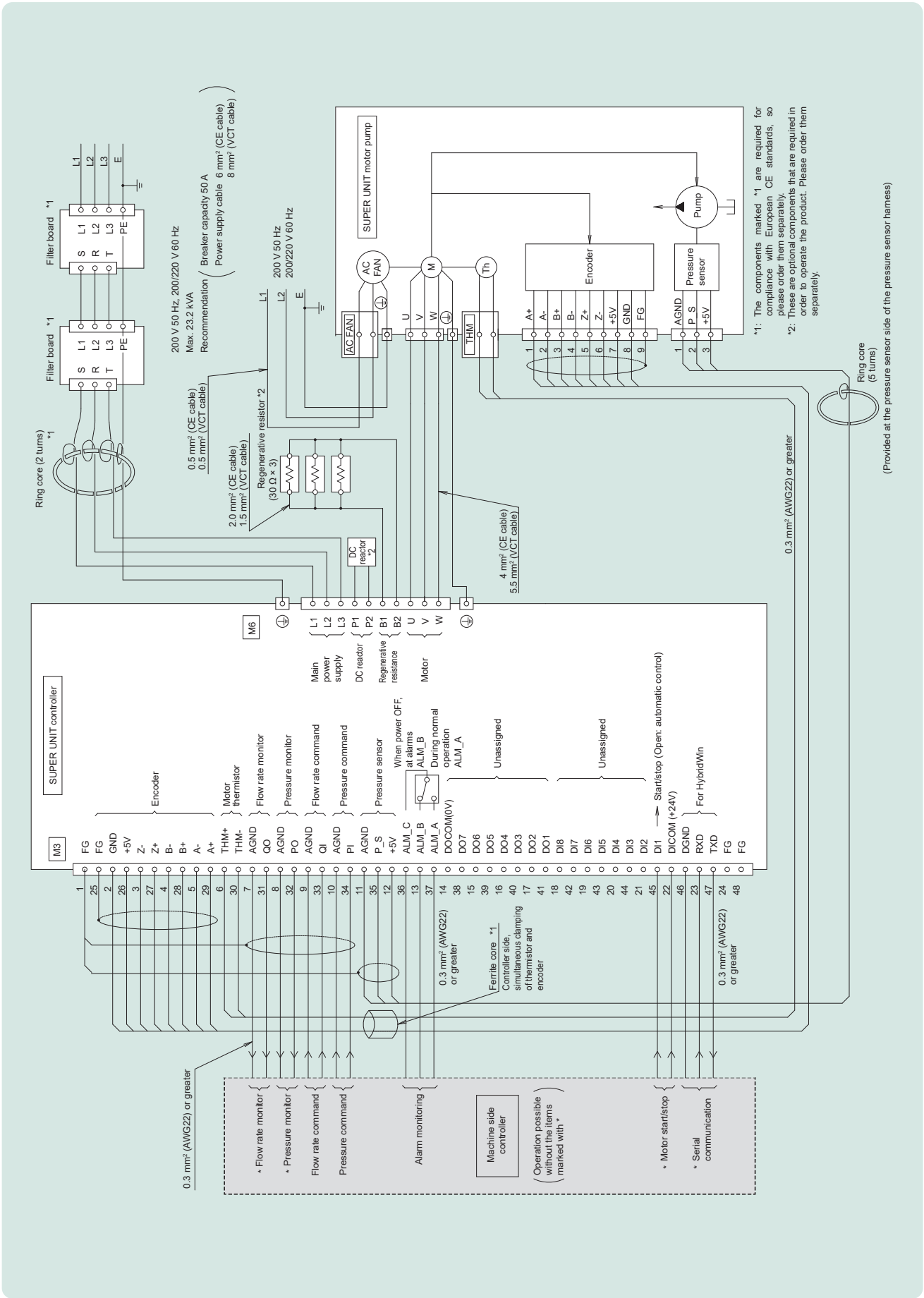
(*4) These are the electrical components that are required for compliance with American UL standards. Please order them separately.

(*5) Noise filter PM-SNF04 can be ordered in place of PM-SNF02.

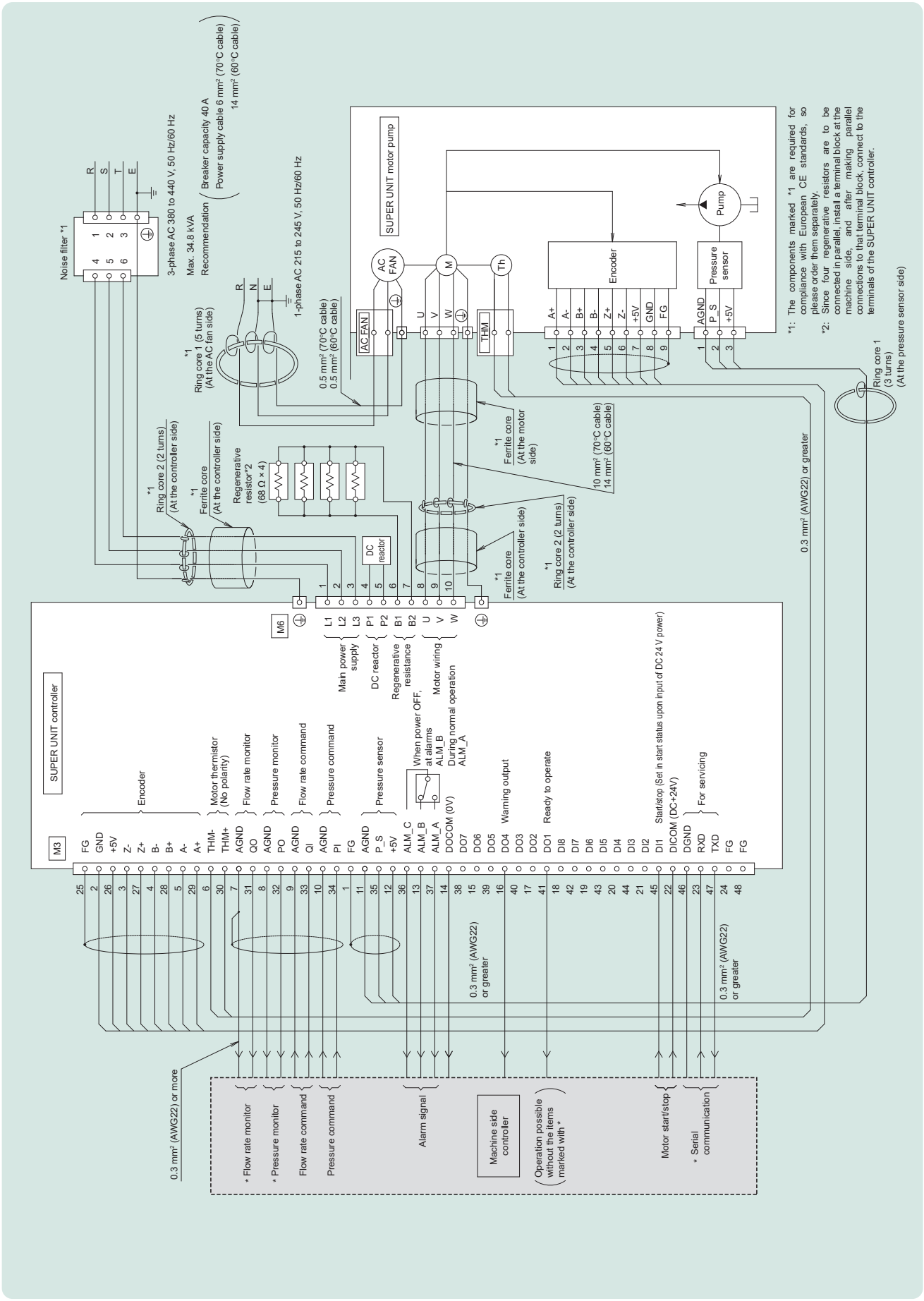
(*6) The regenerative resistors (2 pcs.) of SUT00S5025-10-L-N0432 are 1 kW specifications. When using the unit for applications with high regenerative load factors, additional regenerative resistors will be required.

		SUPER UNIT nomenclature	Electrical component ordering classification/set model code (*1)		DC reactor						Regenerative resistance						Pressure sensor harness				Encoder harness			Noise filter							Ring core			Ferrite core			Surge protector		Fuse
				Specifications	0.5 mH, 55 A	1.9 mH, 27 A	1.0 mH, 55 A	30 A, M6 terminal	0.11 mH 180 A	0.38 mH,110 A	30 Ω, 500 W	10 Ω, 500 W	68 Ω, 500 W	6 Ω, 2000 W	15 Ω, 2000 W	5 m, with ferrite core 2T	5 m, with ring core 3T	5 m, with ring core	10 m, with ring core	9-pin, 5 m	12-pin, 5 m	10-pin, 10 m waterproof plug	9-pin, 10 m	50 A	60 A, Soshin Electric Co.,Ltd.	Okaya Electric Industries Co.,Ltd.	75A, FN3011-75-62	50A, FN3025HP-50-72	FS34783-200-57	100A, FN3258-100-35							LT-C35G102W	CR2L-260/UL	L50QS150V
				Electrical component model code	PM-SDL03	PM-SDL04	PM-SDL05	PM-SDL06	PM-SDL07	PM-SDL08	PM-RB02	PM-RB04	PM-RB06	PM-RB08	PM-RB09	PM-SPH05-001	PM-SPH05-002	PM-SPH05-003	PM-SPH10	PM-SEH05-P22-A09R	PM-SEH05-P22-A12R	PM-SEH10-P20-N10R	PM-SEH10-P22-A09R	PM-SNF01	PM-SNF02	PM-SNF03	PM-SNF04	PM-SNF07	PM-SNF10	PM-SNF11	PM-SRC01	PM-SRC02	PM-SRC03	PM-FC01	PM-FC04	PM-FC05	PM-SPD01	PM-FU01	PM-FU02
Single pump type	200 V	SUT00S3018-30-A	Model code for set order	PM-SOP15				1				2						1			1			1							1			1					
		SUT00S5021-40-A SUT00S8018-40-A	Model code for set order	PM-SOP16				1			3	(*6)						1		1				2							1			1					
		SUT00S5025-40-L-N0432	Electrical components provided with the product (*2)		1							2						1		1						2				1	1			1	1			
		SUT00S15018-40-A	Model code for set order	PM-SOP10	1						6							1		1						(*5)												
			To be ordered separately (*3)																					2	or	2				1	1			1	1			
	400 V	SUT00S5021-40YA-N0265 SUT0S8018-40YA	Model code for set order	PM-SOP04		1							2			1				1																		
			To be ordered separately (*3)																						1				3			1					
		SUT00S13018-40YA-N0218 SUT00S13021-40YA-N0286 SUT00S15018-40YA	Model code for set order	PM-SOP08		1							4				1			1																		
			To be ordered separately (*3)																						1				1	2			3					
		SUT00S20018-40YL-N0340	Model code for set order	PM-SOP12			1						6						1				1																
			To be ordered separately (*3)																									2			2			2					
Double pump type	200 V	SUT00D3021-30-B-N0436	Model code for set order	PM-SOP15				1				2						1			1			1					1			1						
		SUT00D8021-40-B-N0323	Model code for set order	PM-SOP16				1			3							1		1				2					1			1						
		SUT00D13021-40-B-N0321 SUT00D15021-40-B-N0365 SUT00D20021-40-L	Model code for set order	PM-SOP10	1						6							1		1						(*5)												
			To be ordered separately (*3)																						2	or	2			1	1			1	1			
		SUT00D30028-30-L SUT00D22028-30-L SUT00D26021-30-L SUT00D30021-30-L	Electrical components provided with the product (*2)						1					2					1			1													1	3		
			To be ordered separately (*3)																									1			2							
	400 V	SUT00D8021-40YB-N0324	Model code for set order	PM-SOP04		1							2			1				1																		
			To be ordered separately (*3)																						1				3			1					
		SUT00D13021-40YB-N0322 SUT00D15021-40YB-N0358	Model code for set order	PM-SOP08		1							4				1			1																		
			To be ordered separately (*3)																						1				1	2		1	3					
		S-SUT00D20021-40YL S-SUT00D13025-40YL	Electrical components provided with the product (*2)			1							4				1			1																		
			To be ordered separately (*3)																						1				1	2			3					
		S-SUT00D8025-40YL	Electrical components provided with the product (*2)			1							2			1				1																		
			To be ordered separately (*3)																						1				3			1					
		S-SUT00D20025-40YL	Electrical components provided with the product (*2)				1						6						1				1															
			To be ordered separately (*3)																									2			2			2					
		SUT00D22028-30YL SUT00D30028-30YL SUT00D30021-30YL SUT00D26021-30YL	Electrical components provided with the product (*2)							1					2				1			1													1		3	
			To be ordered separately (*3)																										1			2						
			To be ordered separately (*4)																										1			3						

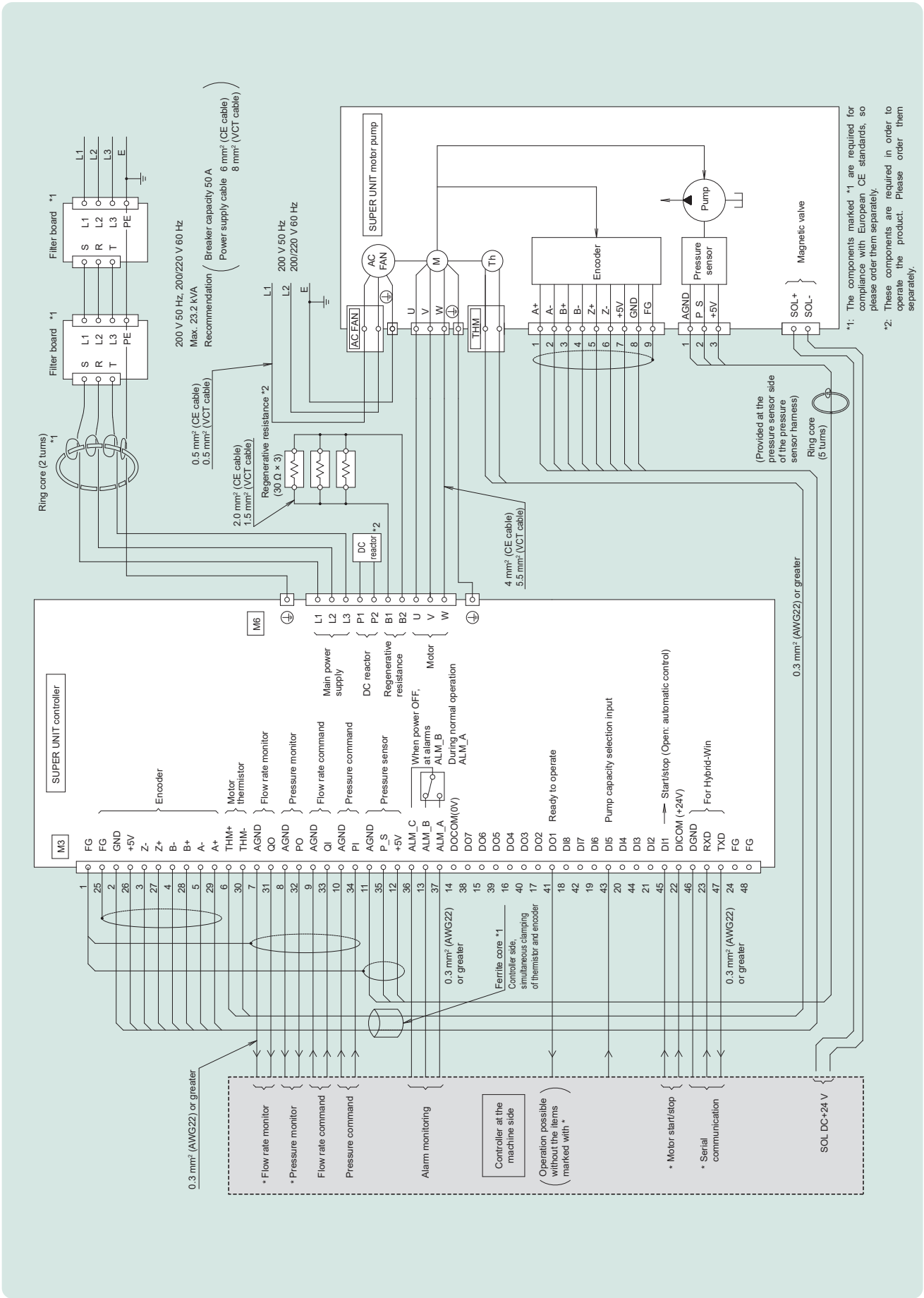
Electric Wiring Diagram (Example with 200 V Single Pump Type SUT00S5021 and SUT00S8018)



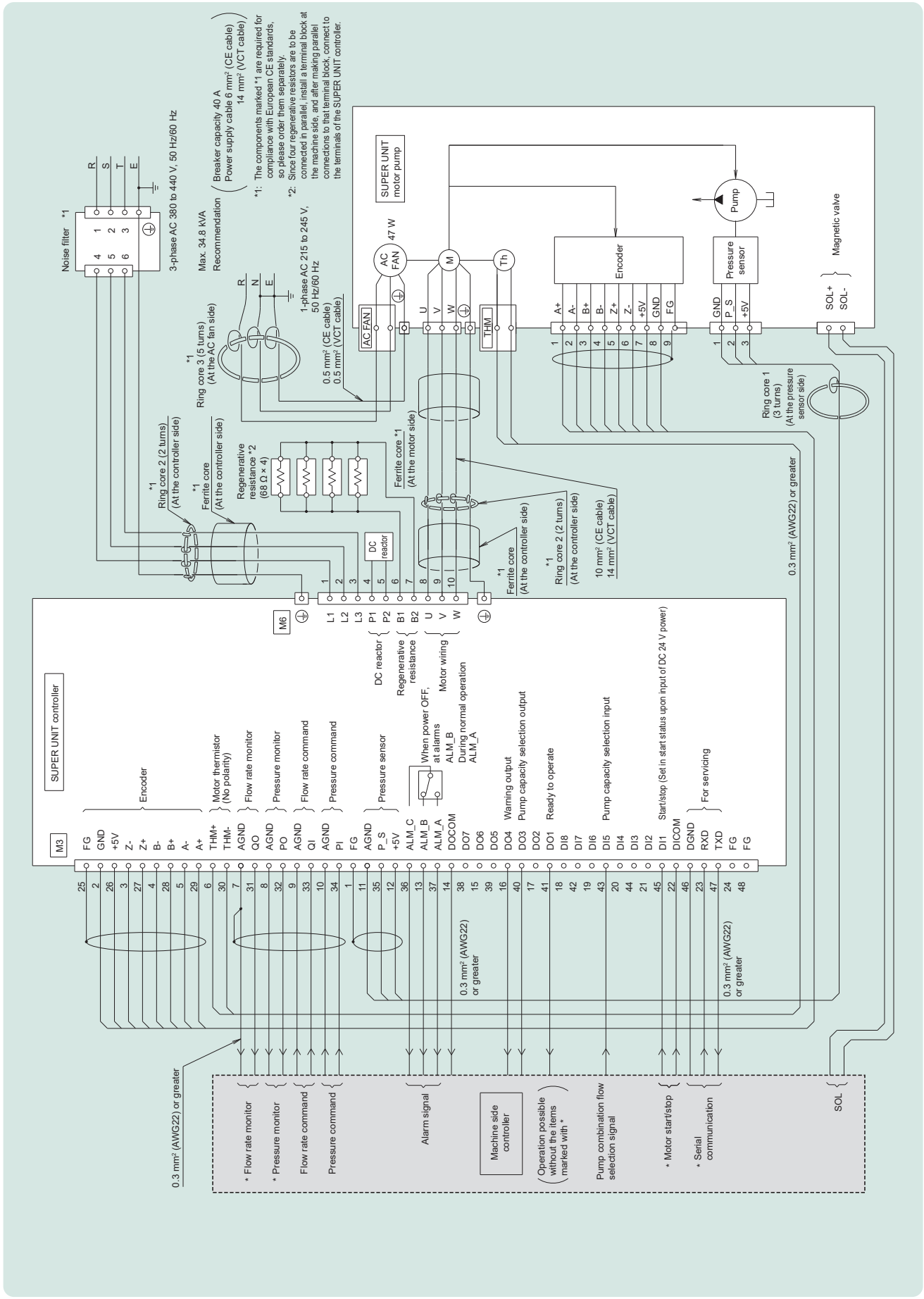
Electric Wiring Diagram (Example with 400 V Single Pump Type SUT00S13018)



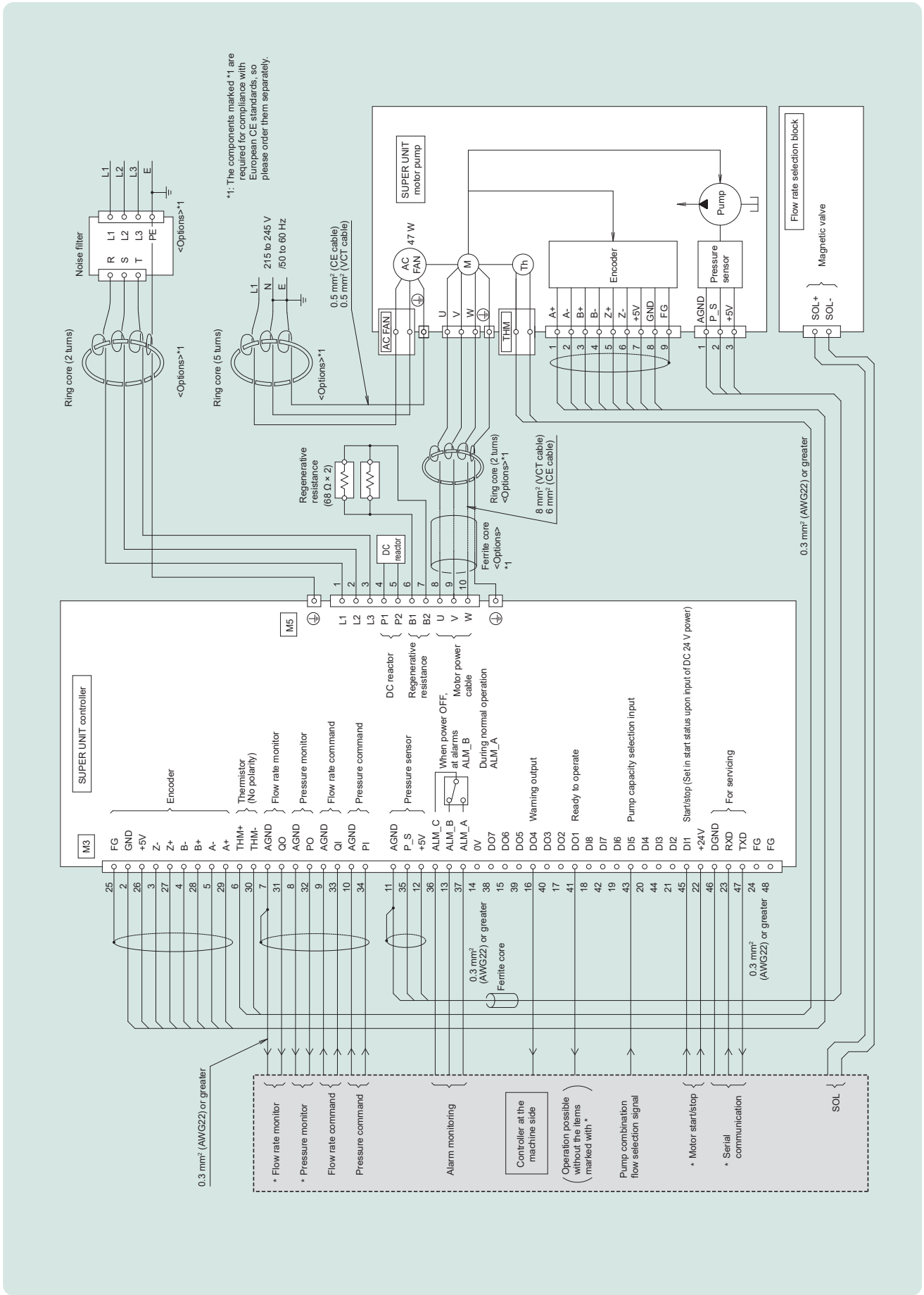
Electric Wiring Diagram (Example with 200 V Double Pump Type SUT00D8021)



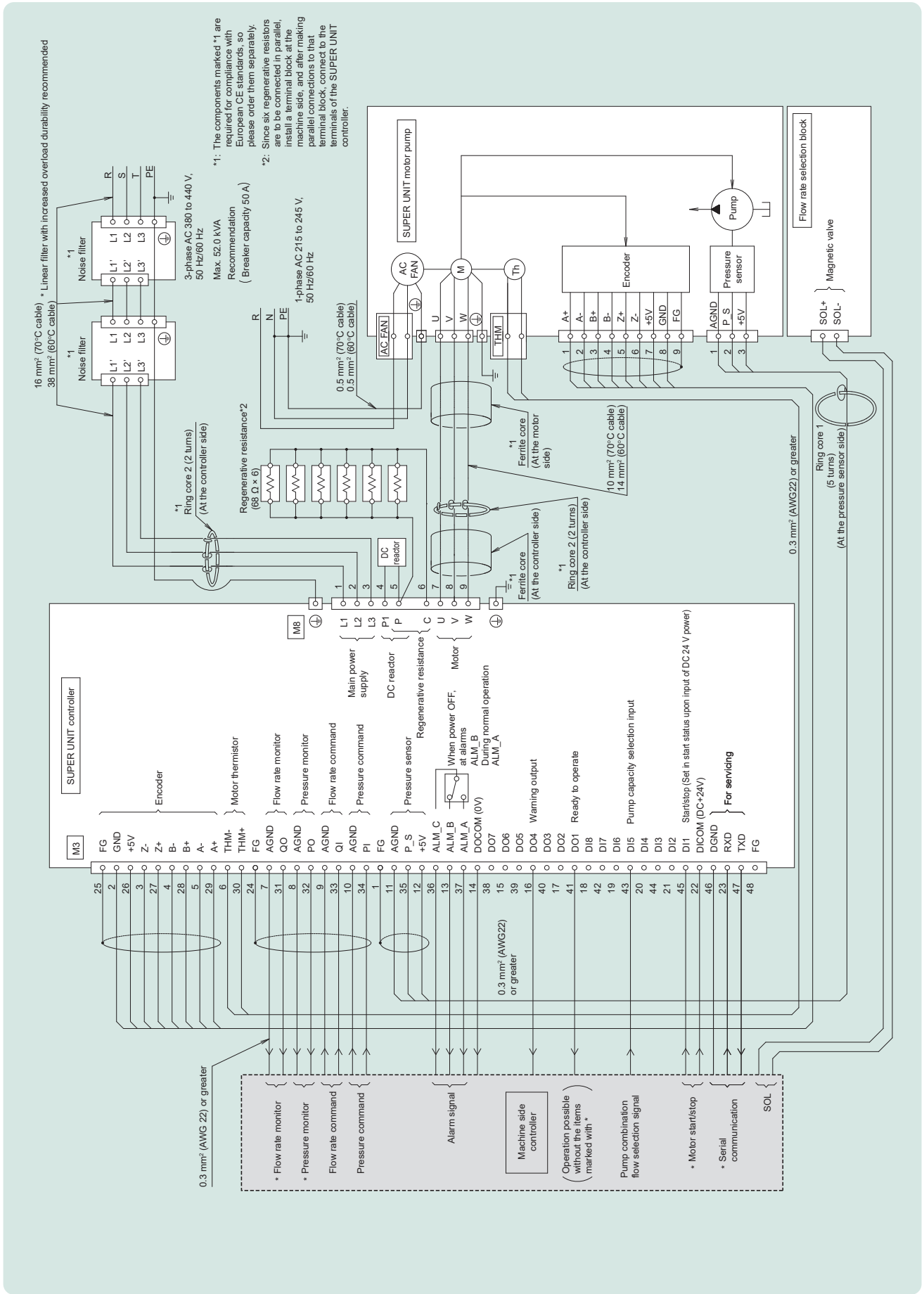
Electric Wiring Diagram (Example with 400 V Double Pump Type SUT00D13021)



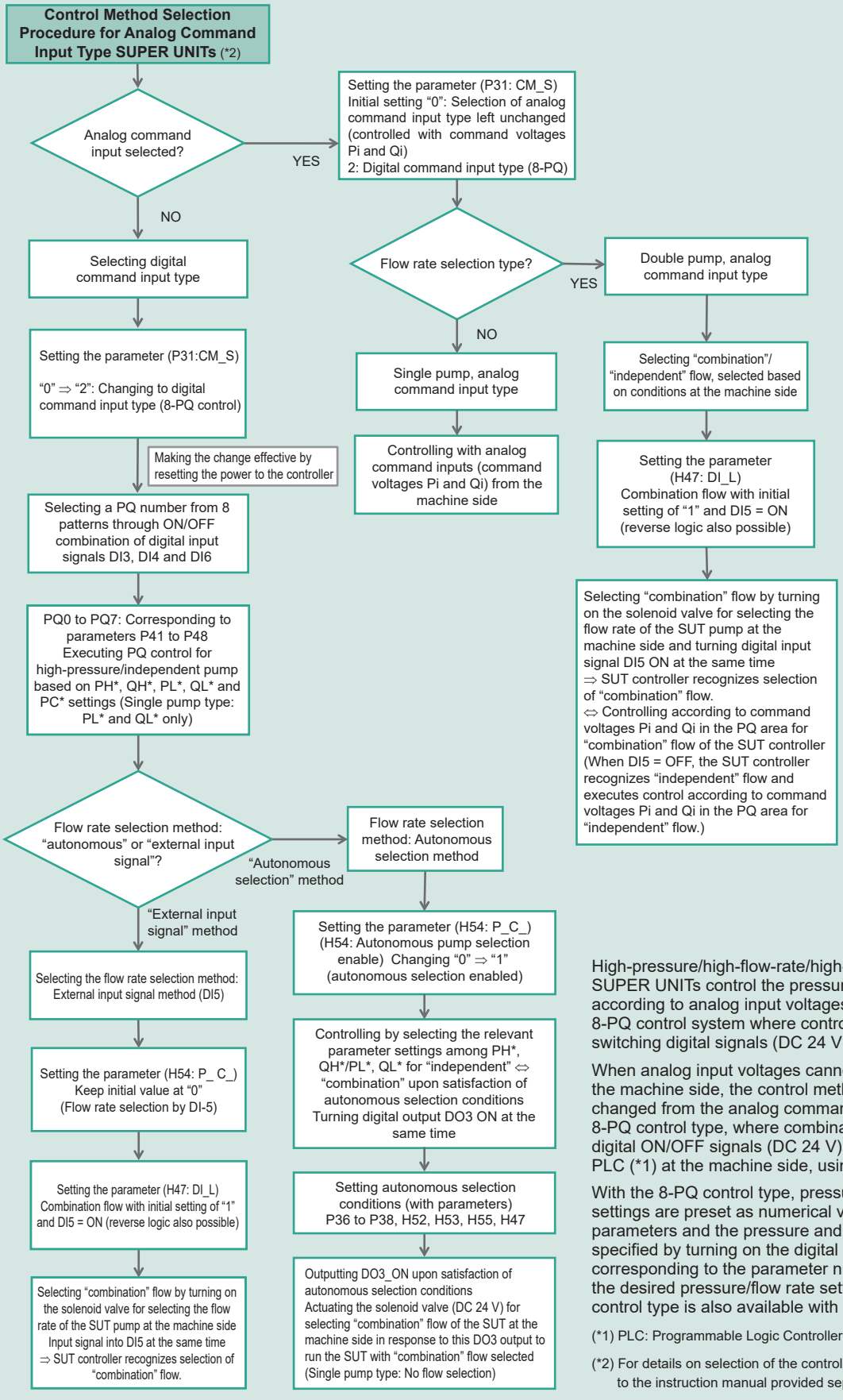
Electric Wiring Diagram (Example with 400 V Double Pump Type S-SUT00D8025)



Electric Wiring Diagram (Example with 400 V Double Pump Type S-SUT00D20025)



8-PQ Control



High-pressure/high-flow-rate/high-accuracy type SUPER UNITs control the pressure and flow rate according to analog input voltages. There is also the 8-PQ control system where control is possible by switching digital signals (DC 24 V) ON and OFF.

When analog input voltages cannot be provided at the machine side, the control method can be changed from the analog command input type to the 8-PQ control type, where combinations of 3-bit digital ON/OFF signals (DC 24 V) are input from a PLC (*1) at the machine side, using a parameter.

With the 8-PQ control type, pressure/flow rate settings are preset as numerical values using 8 parameters and the pressure and flow rate are specified by turning on the digital signal corresponding to the parameter number that holds the desired pressure/flow rate setting. (The 16-PQ control type is also available with some models.)

(*1) PLC: Programmable Logic Controller

(*2) For details on selection of the control method, please refer to the instruction manual provided separately.

The following table shows the settings and details of parameters given in "Control Method Selection Procedure for Analog Command Input Type SUPER UNITs (SUT/S-SUT)". (For details, please refer to the instruction manuals for the analog command input type and for the 8-PQ control type.)

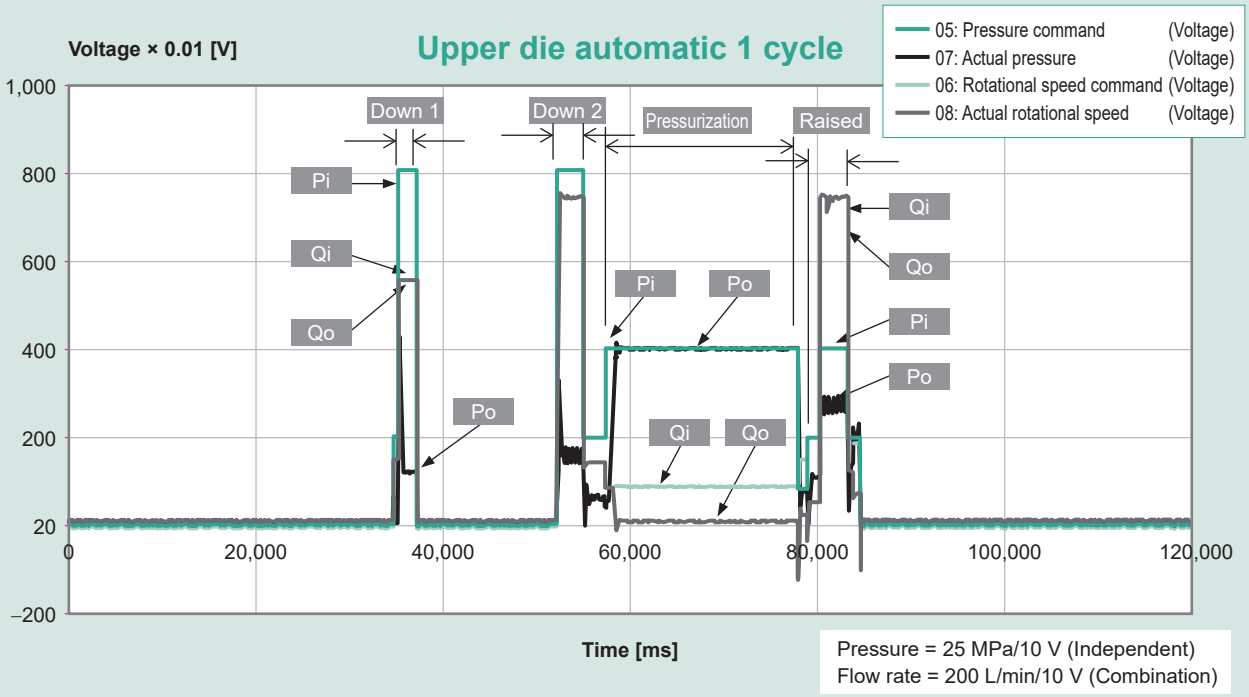
	Parameter No.	Expression	Name	Initial value	Description
	P31	CM_S	Command input target selection	0	Pressure/flow rate command input target selection 0: Analog input 1: Cannot be set (reserved by system) 2: Digital input (8-pattern PQ type (8-PQ))
For setting the pressure/flow rate for each of eight PQ patterns	P41	–	PQ selection 0 (PQ_0)		- Double pump type (*1) PH*: High-pressure (independent) side pressure setting QH*: High-pressure (independent) side flow rate setting PL*: Low-pressure (combination) side pressure setting QL*: Low-pressure (combination) side flow rate setting PC*: Pump selection condition (enabled when using the autonomous selection function) - Single pump type PL*: Low-pressure (combination) side pressure setting QL*: Low-pressure (combination) side flow rate setting
	P42	–	PQ selection 1 (PQ_1)		
	P43	–	PQ selection 2 (PQ_2)		
	P44	–	PQ selection 3 (PQ_3)		
	P45	–	PQ selection 4 (PQ_4)		
	P46	–	PQ selection 5 (PQ_5)		
	P47	–	PQ selection 6 (PQ_6)		
	P48	–	PQ selection 7 (PQ_7)		
For digital input	H47	DI_L	Pump combination flow signal selection	1	Combination/independent selection logic for digital input signal DI5 ON/OFF setting 0: Combination when DI5 = OFF, independent when DI5 = ON 1: Combination when DI5 = ON, independent when DI5 = OFF
	H54	P_C_	Pump autonomous selection enable	0	Double pump autonomous selection enable/disable setting 0: Disabled (pump selection according to digital input DI5) 1: Enabled (autonomous selection according to selection conditions)
For autonomous selection setting (condition)	P36	CS_P	Independent flow selection pressure offset	1.0	Pressure condition setting for autonomous combination ⇒ independent pump selection Switching (to independent flow under the following conditions) "PL*" + "CS_P" < Control pressure
	P37	CS_N	Independent flow selection flow rate offset	100	Flow rate condition setting for autonomous combination ⇒ independent pump selection Switching (to independent flow under the following conditions) Control flow rate < "QH*" - Flow rate conversion of "CS_N"
	P38	CD_P	Combination flow selection pressure offset	1.0	Pressure condition setting for autonomous independent ⇒ combination pump selection Switching (to combination flow under the following conditions) Control pressure < "PL*" - "CD_P"
	H52	CS_T	Independent flow hold time	0.3	Setting the time to maintain independent flow by disabling independent ⇒ combination pump selection, immediately after combination ⇒ independent pump selection
	H53	CD_T	Combination flow hold time	0.3	Setting the time to maintain combination flow by disabling combination ⇒ independent pump selection, immediately after independent ⇒ combination pump selection
	H55	SD_T	Pump combination flow hold time at startup	0.1	Time to maintain combination flow after starting the pumps from the stopped state or standby state
	H47	DI_L	Pump combination flow signal selection	1	Pump capacity selection output logic in the autonomous selection method (switching the solenoid valve for selecting the flow rate at the machine side according to digital output DO3) 0: Combination when DO3 = OFF, independent when DO3 = ON 1: Combination when DO3 = ON, independent when DO3 = OFF

Note 1: "*" in PH*, QH*, PL* and QL* in the above table represents a PQ number from "0" to "7".

Example Control

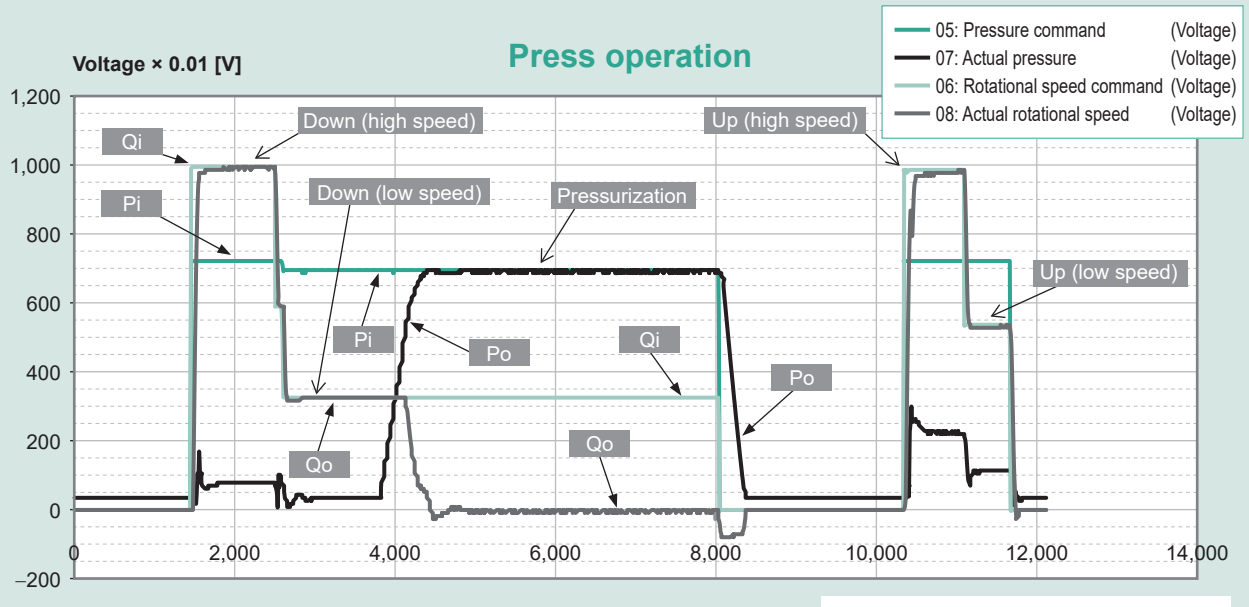
*** The following shows example waveforms while controlling the pressure and flow rate on press machine a SUPER UNIT incorporated.**

Example with S-SUT00D20025-40YL (Pmax = 25 MPa (independent), Qmax = 200 L/min (combination), 400 V specifications)



Pressure = 25 MPa/10 V (Independent)
Flow rate = 200 L/min/10 V (Combination)

Example with SUT00D15021-40-B (Pmax = 20.7 MPa (independent), Qmax = 150 L/min (combination), 200 V specifications)

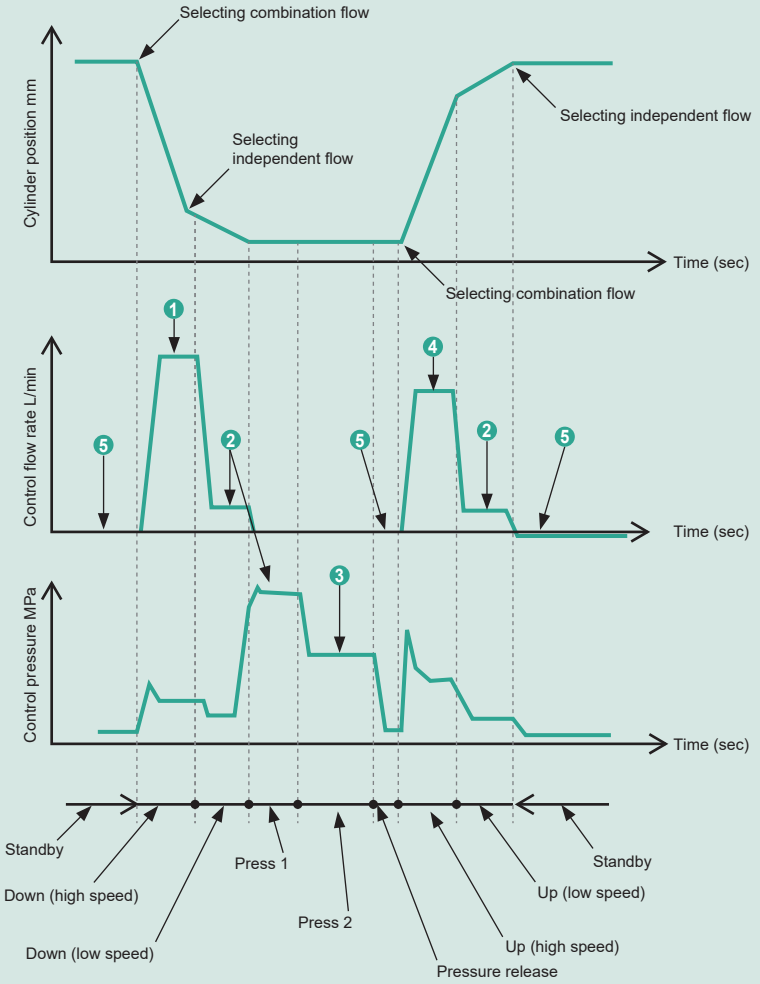


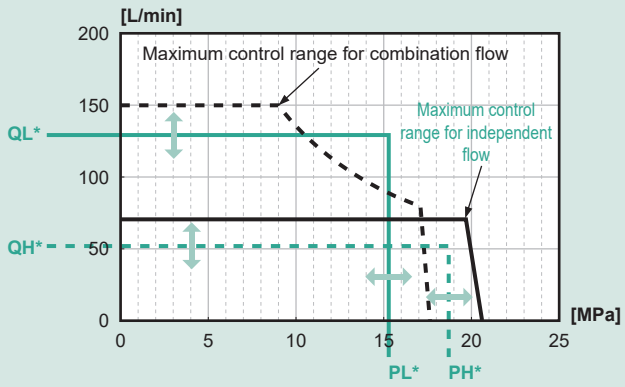
Pressure = 20.7 MPa/10 V (Independent)
Flow rate = 150 L/min/10 V (Combination)

Example Timing Chart for Cylinder Operation and Signals on a Press Machine

Example Press Operation (Down-Press-Up) in 8-PQ Control (SUT00D15021, 200 V Specifications)

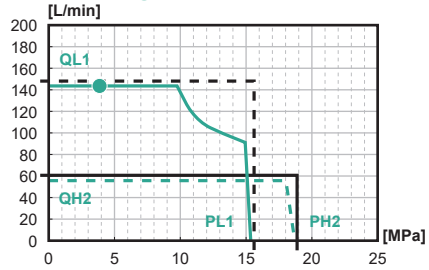
The following shows an operation example using five setting patterns by setting the pressure and flow rate for each process for PQ numbers 0 to 4, corresponding to PQ setting charts ❶ to ❺.
(In this example, the selection of combination/independent flow is controlled from the machine using an external signal (DI5).)



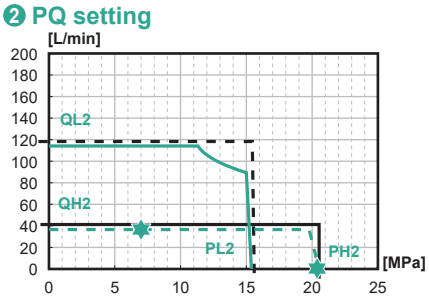


8-PQ Setting Example with SUT00D15021-40-B-N0365
Up to eight patterns of the flow rate for combination flow (QL*), pressure for combination flow (PL*), flow rate for independent flow (QH*) and pressure for independent flow (PH*) can be set using parameters. The PQ settings shown in the charts to the right are the example setting patterns applied to each of the operating ranges in the figures above.

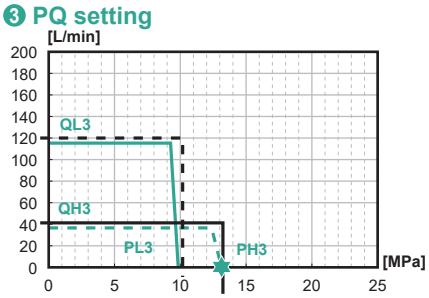
❶ PQ setting



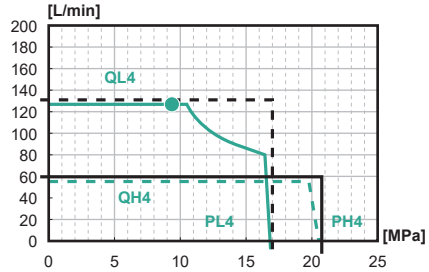
❷ PQ setting



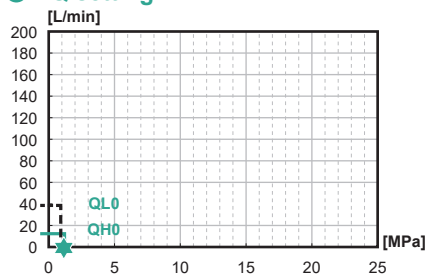
❸ PQ setting



❹ PQ setting



❺ PQ setting

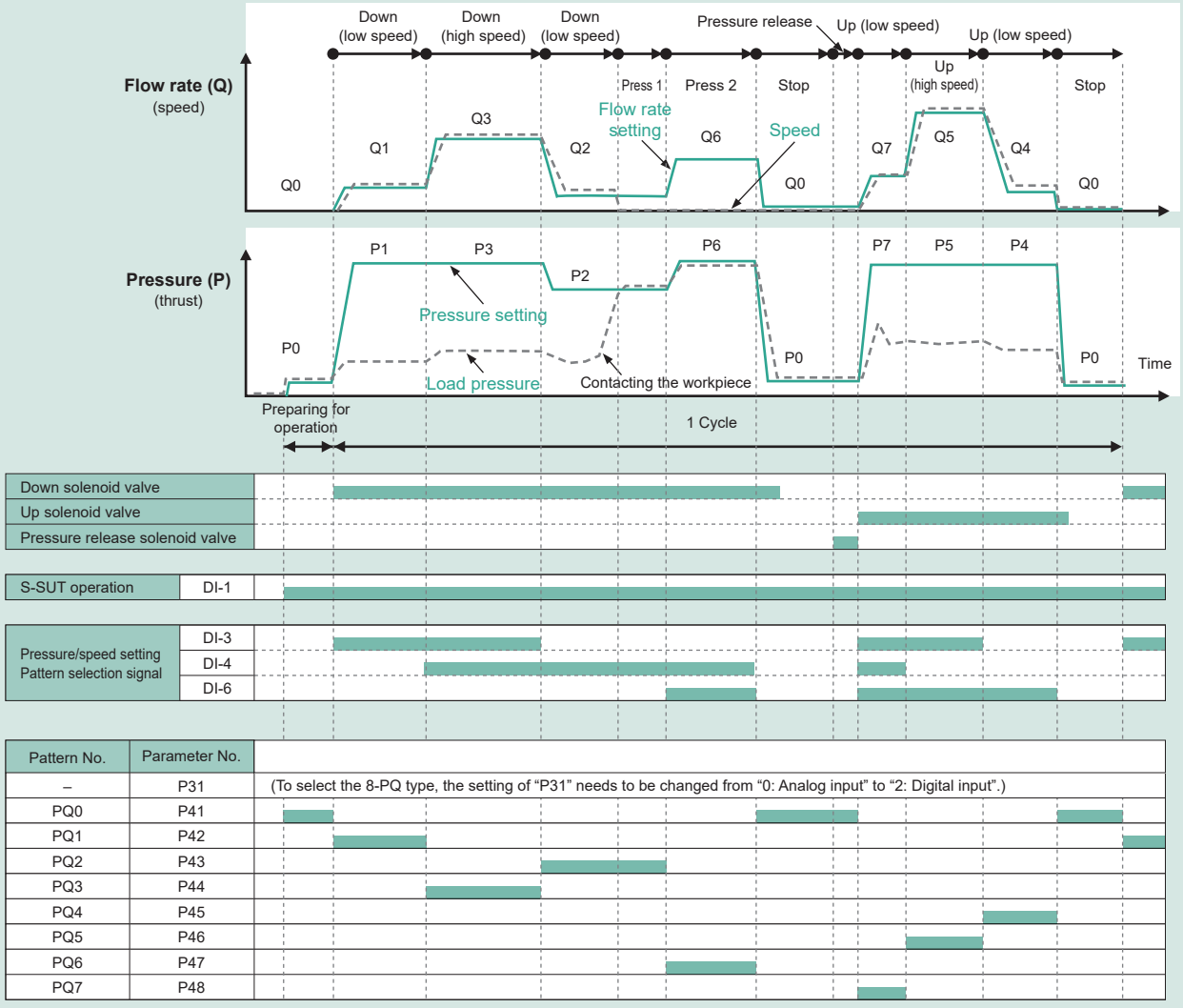


● indicates an example operating point when combination flow is selected.
★ indicates an example operating point when independent flow is selected.

Example Timing Chart for Cylinder Operation and Signals on a Press Machine

Example of 8-PQ Function: Example Timing Chart with SUT00S/S-SUT00S (Single Pump, 8-PQ Type)

Example Timing in 8-PQ Control (Single Pump)



Pattern No.	Parameter No.	
–	P31	(To select the 8-PQ type, the setting of “P31” needs to be changed from “0: Analog input” to “2: Digital input”.)
PQ0	P41	
PQ1	P42	
PQ2	P43	
PQ3	P44	
PQ4	P45	
PQ5	P46	
PQ6	P47	
PQ7	P48	

Digital Selection Signals and PQ Numbers

DI-3	DI-4	DI-6	Pattern No.
off	off	off	PQ0
on	off	off	PQ1
off	on	off	PQ2
on	on	off	PQ3
off	off	on	PQ4
on	off	on	PQ5
off	on	on	PQ6
on	on	on	PQ7

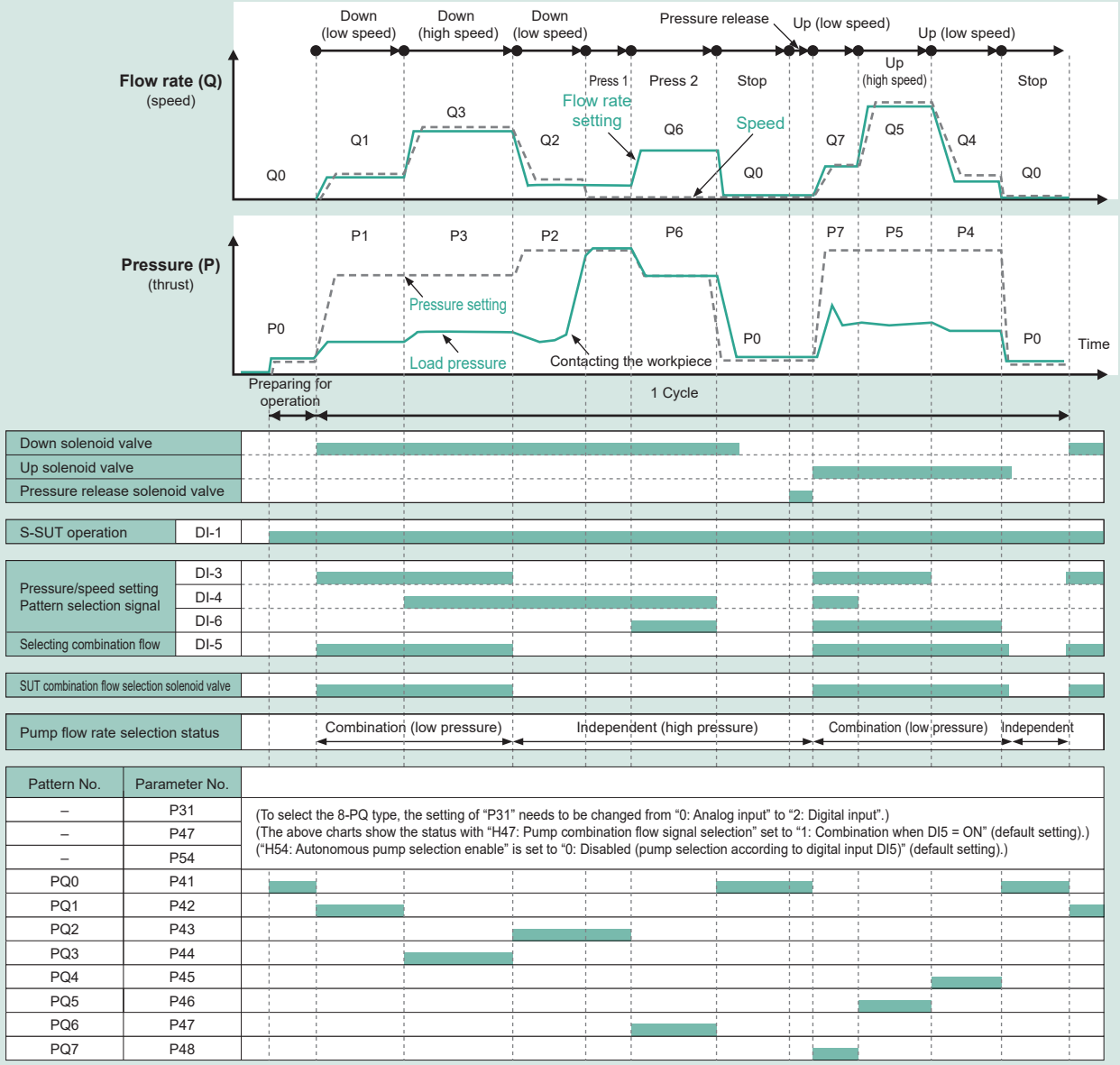
PQ Numbers and Example Pressure/Flow Rate Settings

	PL* [MPa]	QL* [L/min]
PQ0	0.5	0.0
PQ1	16.0	10.0
PQ2	12.0	8.0
PQ3	16.0	70.0
PQ4	16.0	6.0
PQ5	16.0	80.0
PQ6	17.6	50.0
PQ7	16.0	10.0

Note: The analog command input type is selected by the default parameter settings of SUT/S-SUT before shipment. (Parameter P31 (command input target selection) is set to “0: Analog input”.)
The setting of parameter P31 needs to be changed to “2: Digital input (8-PQ)”. (The setting change takes effect upon restarting the power.)
To achieve shockless control on a machine, the flow rate, pressure, response time and other settings need to be adjusted according to the machine.

Example of 8-PQ Function: Example Timing Chart with SUT00D13021 (Double Pump, 8-PQ Type, Flow Rate Selection by External Signal)

Example Timing with 8-PQ, Double Pump, External Signal (DI5) Selection Specifications



Pattern No.	Parameter No.	
–	P31	(To select the 8-PQ type, the setting of "P31" needs to be changed from "0: Analog input" to "2: Digital input".) (The above charts show the status with "H47: Pump combination flow signal selection" set to "1: Combination when DI5 = ON" (default setting).) ("H54: Autonomous pump selection enable" is set to "0: Disabled (pump selection according to digital input DI5)" (default setting).)
–	P47	
–	P54	
PQ0	P41	
PQ1	P42	
PQ2	P43	
PQ3	P44	
PQ4	P45	
PQ5	P46	
PQ6	P47	
PQ7	P48	

Digital Selection Signals and PQ Numbers

DI-3	DI-4	DI-6	Pattern No.
off	off	off	PQ0
on	off	off	PQ1
off	on	off	PQ2
on	on	off	PQ3
off	off	on	PQ4
on	off	on	PQ5
off	on	on	PQ6
on	on	on	PQ7

PQ Numbers and Example Pressure/Flow Rate Settings

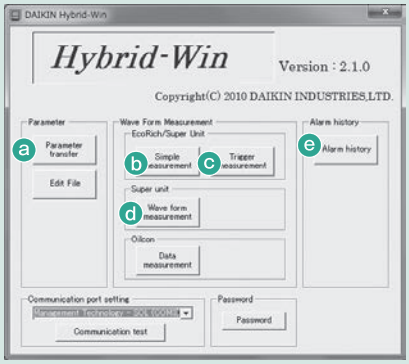
	PH* [MPa]	QH* [L/min]	PL* [MPa]	QL* [L/min]	PC*
PQ0	1.0	5.0	1.0	10.0	1
PQ1	20.6	30.0	12.0	50.0	1
PQ2	20.6	30.0	18.0	30.0	1
PQ3	20.7	30.0	12.0	130.0	1
PQ4	20.6	30.0	14.0	30.0	1
PQ5	20.6	30.0	18.0	130.0	1
PQ6	17.0	40.0	17.6	40.0	1
PQ7	20.6	30.0	18.0	50.0	1

Note: This example shows operation of SUT00D13021 (200 V specifications) with 8-PQ type and flow rate selection by external signal (DI5) selected.
Flow rate selection by the 8-PQ function can also be used in the autonomous selection mode. For details on the 8-PQ control, please refer to the instruction manual provided separately.
To achieve shockless control on a machine, the flow rate, pressure, response time and other settings need to be adjusted according to the machine.

Maintenance/Management Tool (Hybrid-Win)

Hybrid-Win is a software tool that connects your personal computer running Windows 7/8/10 to a SUPER UNIT through communications (RS232C) to enable editing/saving of SUPER UNIT parameters and measurement of waveforms that result from the pressure/flow rate control.
Hybrid–win and its instruction manual are available from the website (https://www.daikinpmc.com) after registering as a member.
A personal computer and an RS232C/USB conversion cable are necessary.

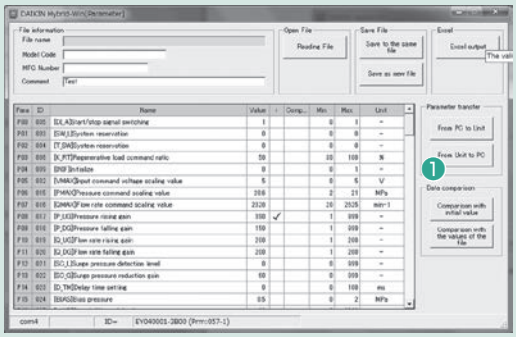
PC tool Hybrid-Win



Startup Window of Hybrid-Win

Hybrid-Win can also be used for maintenance of other hybrid products from DAIKIN such as ECORICH products and oil cooling units.
The startup window has the [Parameter transfer], [Simple measurement], [Trigger measurement], [Wave form measurement] and [Alarm history] buttons as shown in the figure to the left to provide access to the major functions of Hybrid-Win. Some basic functions are covered here.
(Please refer to the instruction manual provided separately for details.)

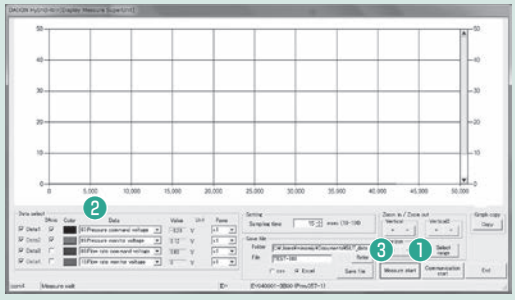
- ⓐ : [Parameter transfer]
- ⓑ : Waveform measurement: [Simple measurement]
- ⓒ : [Trigger measurement]
- ⓓ : Waveform measurement: [Wave form measurement]
- ⓔ : [Alarm history]



ⓐ Loading Parameters from SUPER UNIT (Parameter Transfer)

Clicking the “From Unit to PC” button transfers parameter data from the Super Unit to the personal computer and displays the parameters on the Hybrid-Win window shown to the left.
The parameters can be edited and saved in this window.

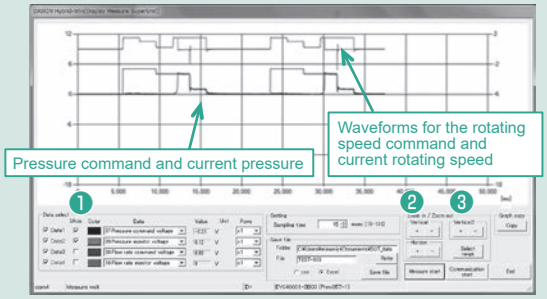
- ❶ : [From Unit to PC] button



ⓓ Measuring Waveforms of SUPER UNIT

Click the [Communication start] button and select four data types to be displayed.
Clicking the [Measure start] button starts the measurement and the waveforms are displayed on the software screen as shown in the figure to the left over an extended period (90 seconds, when the sampling time is set to 15 ms for example) until the [measure stop] button is clicked.
The waveform data can also be saved in the Excel graph format.

- ❶ : [Communication start] button
- ❷ : Selecting data to be displayed
- ❸ : [Measure start] button



Zooming the Measured Waveforms In/Out

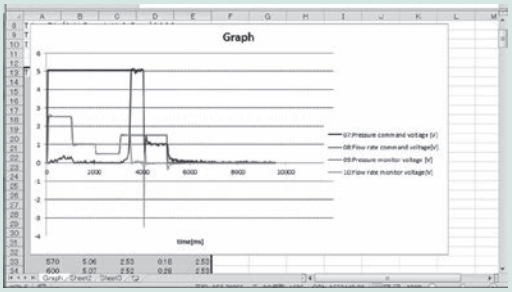
By checking “2Axis” for data types to be displayed, the chart can be zoomed along each of the vertical axes as shown in the figure to the left. The figure to the left shows the waveforms with the command pressure (voltage) and current pressure (voltage) assigned to the left axis, the command rotating speed (voltage) and current rotating speed (voltage) assigned to the right axis, and both axes zoomed using the “Vertical” and “Vertical 2” [+] buttons. It is also possible to zoom the chart along the horizontal axis (time).
This function can be used for monitoring waveforms on the screen while the SUPER UNIT is running and saving some significant waveforms as Excel data.

- ❶ : Selecting data type to be displayed as “2Axis”
- ❷ : “Vertical” zoom in/out buttons
- ❸ : “Vertical 2” zoom in/out buttons

Window Displayed by Clicking ⓒ [Trigger measurement]

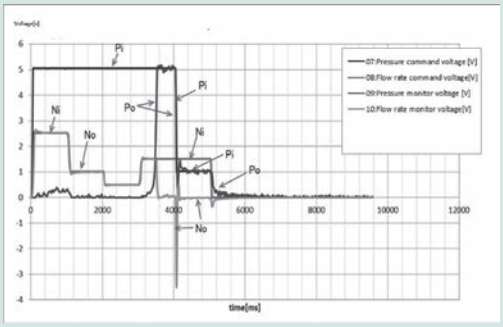
This window appears when the [Communication start] button is clicked after the [Trigger measurement] button in the start window to enable selection of the sampling time, four data types to be measured and trigger conditions.
When the trigger conditions are satisfied after clicking the [Measurement start] button, the measurement starts and the waveforms are displayed as an Excel graph upon completing the measurement. (When Excel is selected as the file saving format) When the sampling time is set to 20 ms for example, measurement is possible for 5.1 seconds. It is also possible to save the data in the CSV format.

❶ : [Communication start] button
❷ : Selecting "Measurement data"
❸ : "Trigger condition setting"
❹ : [Measurement start] button



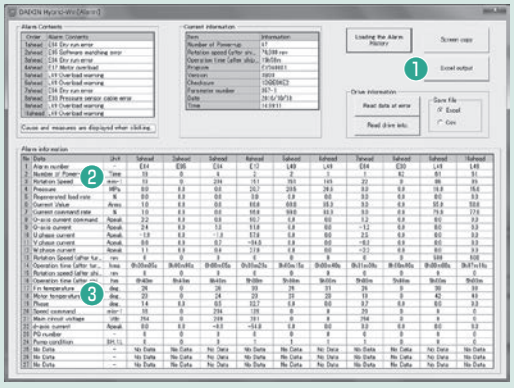
Measurement Results when Excel File Selected as the Target with ⓑ [Simple measurement] or ⓒ [Trigger measurement]

When Excel file is selected as the file saving format with the [Simple measurement] or [Trigger measurement] function, Excel window as shown in the figure to the left automatically appears upon completing the measurement to show the measurement data in a graph.
The graph can be adjusted for better visibility by correcting/modifying its time axis and vertical axes using Excel, and saved as Excel data.



Example of Measured Waveforms after being Edited in Excel

When Excel file is selected as the file saving format with the [Simple measurement] or [Trigger measurement] function, the waveforms are displayed in an Excel graph automatically upon completing the measurement. The figure to the left shows an example after editing the displayed waveforms for better visibility.



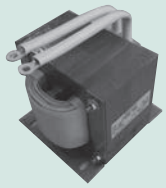
Alarm Window Displayed by Clicking ⓔ [Alarm history]

The window displays details on the latest 10 alarms.
Information on the alarms including the alarm number and the total operating time at the occurrence of the alarm can be checked in the table as shown in the figure to the left. The data can also be saved as Excel data or in other formats.

❶ : [Excel output] button
❷ : Alarm number
❸ : Total operating time (after shipment)

External/Installation Dimension Diagrams for Electrical Components

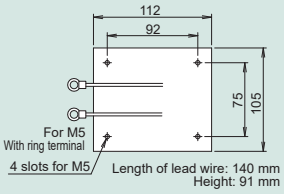
DC reactor



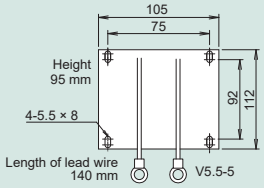
PM-SDL03/PM-SDL04

PM-SDL05

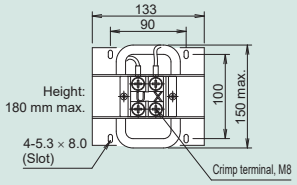
PM-SDL03



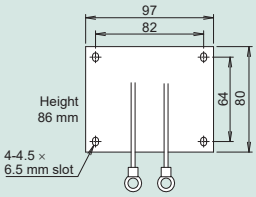
PM-SDL04



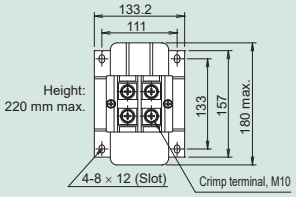
PM-SDL05



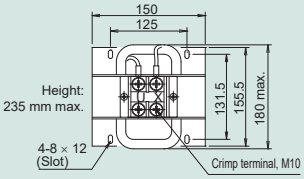
PM-SDL06



PM-SDL07

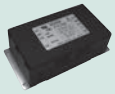


PM-SDL08



Noise filter

PM-SNF01

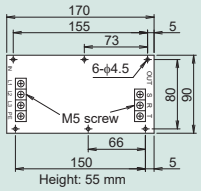


PM-SNF02

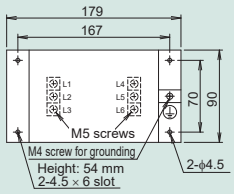
PM-SNF03

PM-SNF07

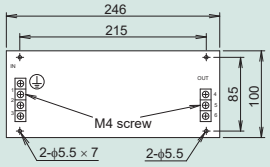
PM-SNF01



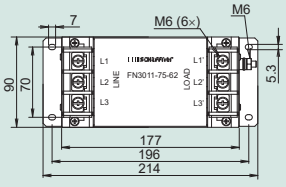
PM-SNF02



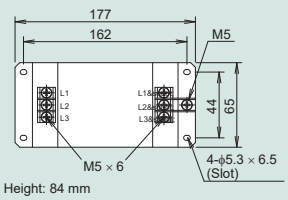
PM-SNF03



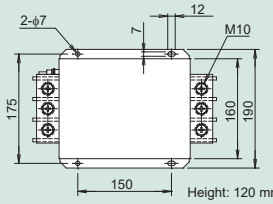
PM-SNF04



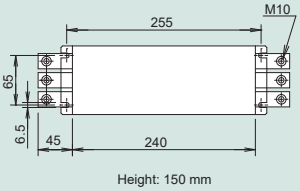
PM-SNF05



PM-SNF10

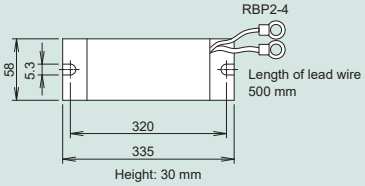


PM-SNF11



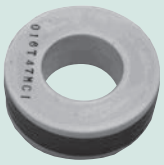
Regenerative resistance

PM-RB02

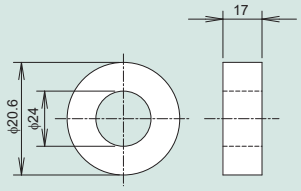


PM-RB02 :	30 Ω	500 W
PM-RB04 :	10 Ω	500 W
PM-RB06 :	68 Ω	500 W
PM-RB08 :	6 Ω	2,000 W
PM-RB09 :	15 Ω	2,000 W

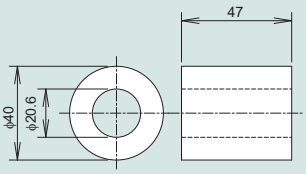
Ring core



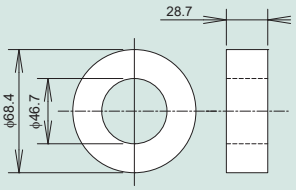
PM-SRC01



PM-SRC02



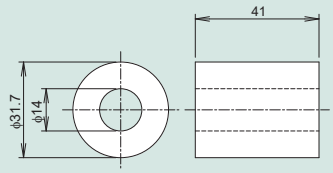
PM-SRC03



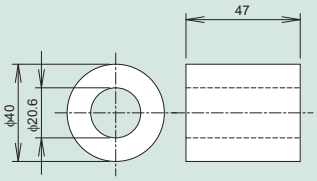
Ferrite core

PM-FC01

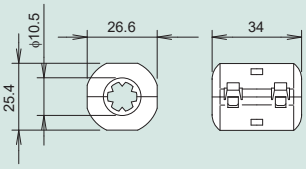
PM-FC01



PM-FC04



PM-FC05



Pressure sensor harness/encoder harness

PM-SPH05/PM-SH10 Pressure sensor harness

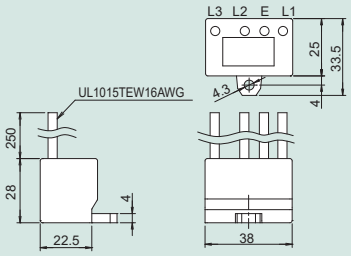
Model code	Cable length	Remarks
PM-SPH05-001	5 m	With ferrite core 2T
PM-SPH05-002		With ring core 3T
PM-SPH05-003		Ring core
PM-SPH10	10 m	Ring core

PM-SEH05-P22-A09R/PM-SEH05-P22-A12R encoder harness

Model code	Cable length	Remarks
PM-SEH05-P22-A09R	5 m	9-pin
PM-SEH05-P22-A12R		12-pin
PM-SEH10-P22-A09R	10 m	9-pin
PM-SEH10-P20-N10R		10-pin water-proof plug

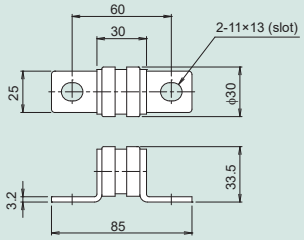
Surge protector

PM-SPD01

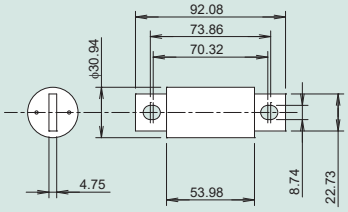


Fuse

PM-FU01



PM-FU02



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