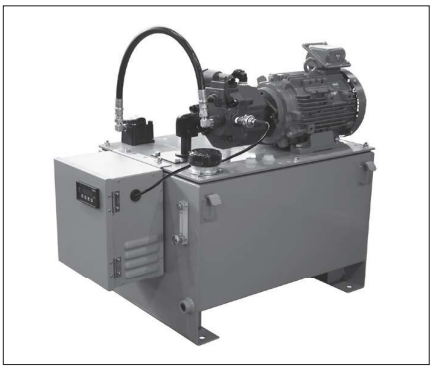
Energy-Saving Standard Hydraulic Power Unit YA-e Pack

YA-e pack has obtained extensive energy-saving effect by combination of the variable displacement piston pump which can hold pressure and the personal inverter controller which controls rotational frequency by detecting a load pressure.



● Significant Reduction of Power Consumption

E-YA37 type of this power unit, compared to current YA pack, has reduced max. 70% of power consumption at full cut-off pressure.

● Low Heat Generation

E-YA37 type of this power unit, compared to current YA pack, has reduced more than 20°C of the fluid temperature increase at full cut-off pressure.

● Low Noise

By decreasing the motor speed at full cut-off pressure, it is possible to reduce the noise level extensively.

● Discharge volume can be set to a certain volume at 50/60 Hz.

YA-e pack can set the rotation speed at the maximum output flow less than 1800 r/min, regardless the power supply frequency.
(The minimum rotation speed is 300 r/min with the suction capacity of pump)

● Easy to configure the control circuit

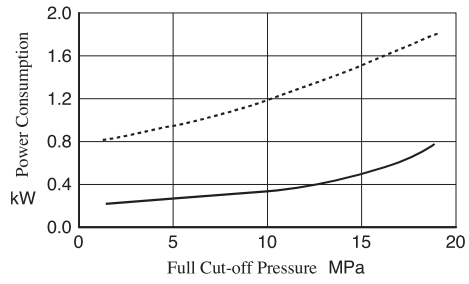
The control circuit with modular valve is available, so it is possible to configure the control circuit compactly.

● Continuous operation is possible even at breakdown of the pressure sensor or the inverter

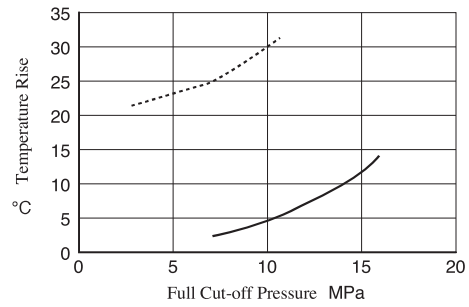
Operation at a certain rotation speed is possible even without receiving a signal from the pressure sensor due to breaking of wire or malfunction of the pressure sensor. In case of malfunction of the inverter itself, the same operation mentioned above is possible by reconnecting of the primary power supply to the motor.

Characteristics Comparison with Standard Type

● Power Consumption at Full Cut-off Pressure

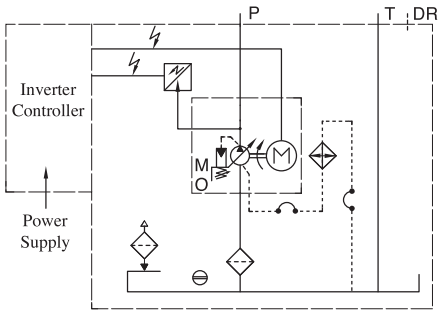


● Oil Temperature Increase in the Reservoir

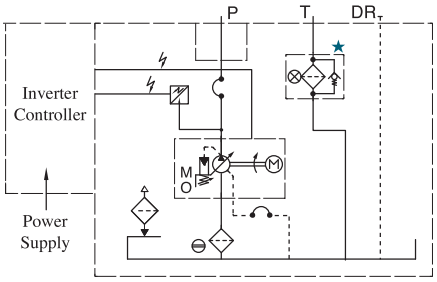


Standard Type <YA37, 3.7 kW, 1800 r/min>
Energy-Saving Type <E-YA37, 3.7 kW, 300 r/min>

Hydraulic Circuit



E-YA16-B-2



E-YA∗-∗-6/10

★ 60L (E-YA∗-∗-6) is option embedded.

K

YA-e Pack

Specifications

Model Numbers	Geometric Displacement of Pump cm^3/rev	Max. Operating Pres. MPa	Pres. Adj. Range MPa	Reservoir Capacity L	Electric Motor 50 Hz : 200 V AC 60 Hz : 200/220/230 V AC	Mass (excluding hydraulic fluid) kg
E-YA10-B-6-2.2-51	10.0	7	1.2 - 7	60	2.2 kW×4P	89
E-YA10-C-10-2.2-51		16	2.0 - 16	100		115
E-YA10-C-10-3.7-51					3.7 kW×4P	126
E-YA16-B-2-0.75-52	15.8	7	1.2 - 7	18	0.75 kW×4P	47
E-YA16-B-2-1.5-50				18	1.5 kW×4P	51
E-YA16-B-2-2.2-50					2.2 kW×4P	58
E-YA16-B-6-2.2-50				60		90
E-YA16-B-6-3.7-50					3.7 kW×4P	104
E-YA16-B-10-2.2-50				100	2.2 kW×4P	115
E-YA16-C-10-3.7-50		16	2.0 - 16		3.7 kW×4P	131
E-YA16-C-10-5.5-50					5.5 kW×4P	159
E-YA16-C-10-7.5-50					7.5 kW×4P	172
E-YA22-B-6-2.2-50	22.2	7	1.2 - 7	60	2.2 kW×4P	90
E-YA22-B-6-3.7-50					3.7 kW×4P	104
E-YA22-B-10-2.2-50				100	2.2 kW×4P	120
E-YA22-B-10-3.7-50					3.7 kW×4P	156
E-YA22-C-10-5.5-50		16	2.0 - 16		5.5 kW×4P	159
E-YA22-C-10-7.5-50					7.5 kW×4P	172
E-YA37-B-10-3.7-50	36.9	7	1.2 - 7	100	3.7 kW×4P	151
E-YA37-B-16-5.5-50				160	5.5 kW×4P	189
E-YA37-B-16-7.5-50					7.5 kW×4P	197

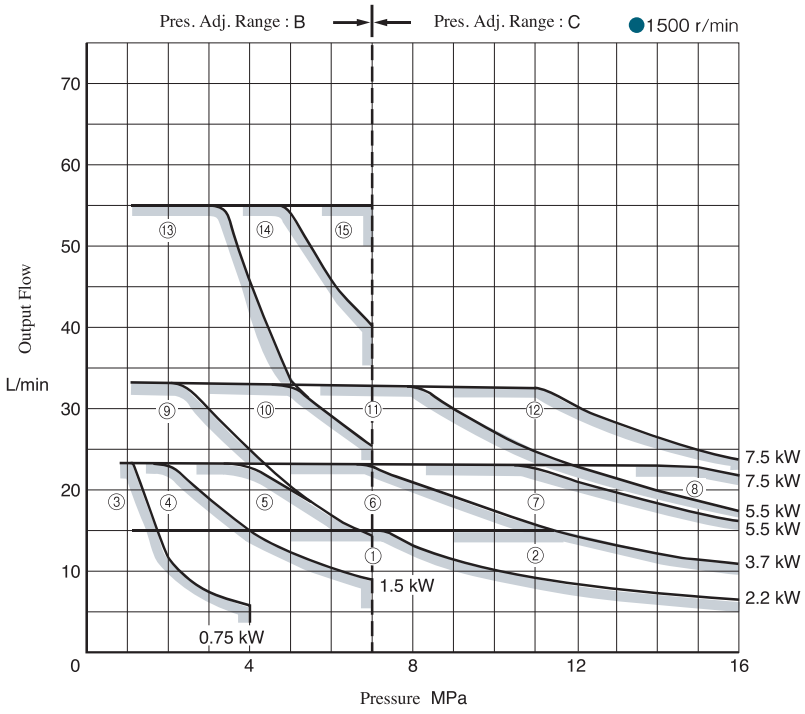
Model Number Designation

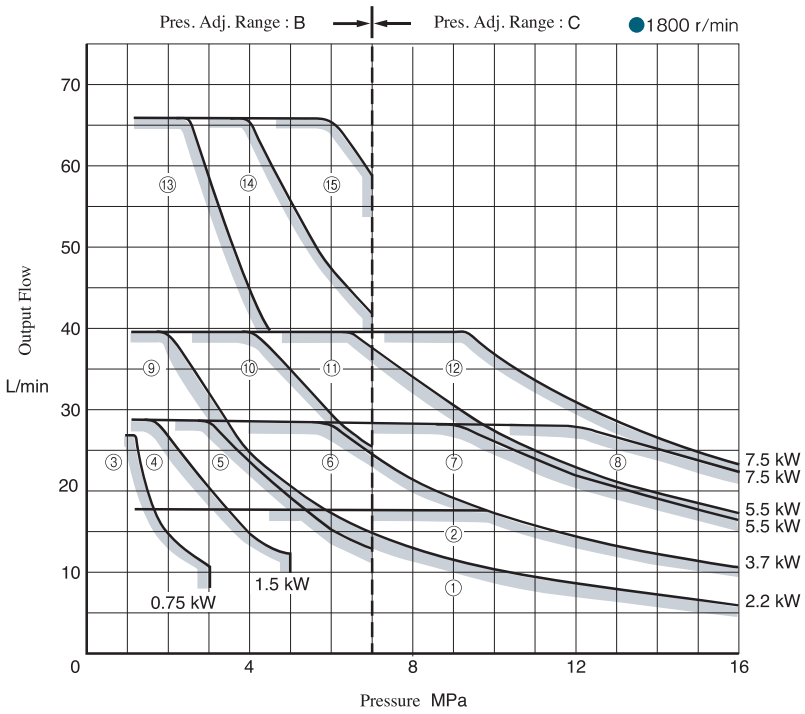
E-YA	16	−B	−6	−2.2	−50
Series Number	Built-in Pump	Pres. Adj. Range ★1 MPa	Reservoir Capacity L	Electric Motor	Design Number
E-YA : Energy-Saving Hydraulic Power Unit YA-e Pack	10 : A10 (10.0 cm^3/rev)	B : 1.2 - 7	6 : 60	2.2 : 2.2 kW×4P	51
		C : 2.0 - 16	10 : 100	2.2 : 2.2 kW×4P	
				3.7 : 3.7 kW×4P	
	16 : AR16 (15.8 cm^3/rev)	B : 1.2 - 7	2 : 18	0.75 : 0.75 kW×4P	52
				1.5 : 1.5 kW×4P	50
				2.2 : 2.2 kW×4P	
		B : 1.2 - 7	6 : 60	2.2 : 2.2 kW×4P	
				3.7 : 3.7 kW×4P	
		B : 1.2 - 7	10 : 100	2.2 : 2.2 kW×4P	
		C : 2.0 - 16	10 : 100	3.7 : 3.7 kW×4P	
				5.5 : 5.5 kW×4P	
				7.5 : 7.5 kW×4P	
	22 : AR22 (22.2 cm^3/rev)	B : 1.2 - 7	6 : 60	2.2 : 2.2 kW×4P	
				3.7 : 3.7 kW×4P	
		B : 1.2 - 7	10 : 100	2.2 : 2.2 kW×4P	
				3.7 : 3.7 kW×4P	
		C : 2.0 - 16	10 : 100	5.5 : 5.5 kW×4P	
				7.5 : 7.5 kW×4P	
	37 : A37 (36.9 cm^3/rev)	B : 1.2 - 7	10 : 100	3.7 : 3.7 kW×4P	
			16 : 160	5.5 : 5.5 kW×4P	
				7.5 : 7.5 kW×4P	

★1. Pressure adjustment range values shown are those of the pump.

Selection Graph

Below portion of the graph is the allowable operating range with regards to rated output of electric motor.

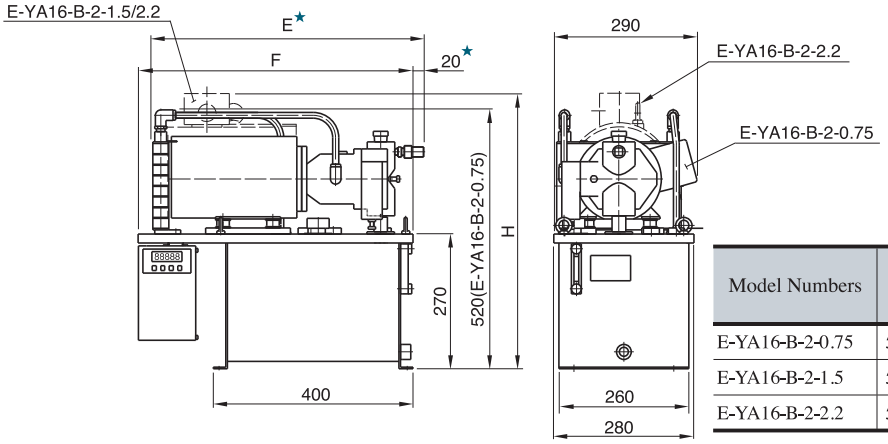




No.	Model Numbers
①	E-YA10-B-6-2.2 E-YA10-C-10-2.2
②	E-YA10-C-10-3.7
③	E-YA16-B-2-0.75
④	E-YA16-B-2-1.5
⑤	E-YA16-B-2-2.2 E-YA16-B-6-2.2 E-YA16-B-10-2.2
⑥	E-YA16-B-6-3.7 E-YA16-C-10-3.7
⑦	E-YA16-C-10-5.5
⑧	E-YA16-C-10-7.5
⑨	E-YA22-B-6-2.2 E-YA22-B-10-2.2
⑩	E-YA22-B-6-3.7 E-YA22-B-10-3.7
⑪	E-YA22-C-10-5.5
⑫	E-YA22-C-10-7.5
⑬	E-YA37-B-10-3.7
⑭	E-YA37-B-16-5.5
⑮	E-YA37-B-16-7.5

Dimensions

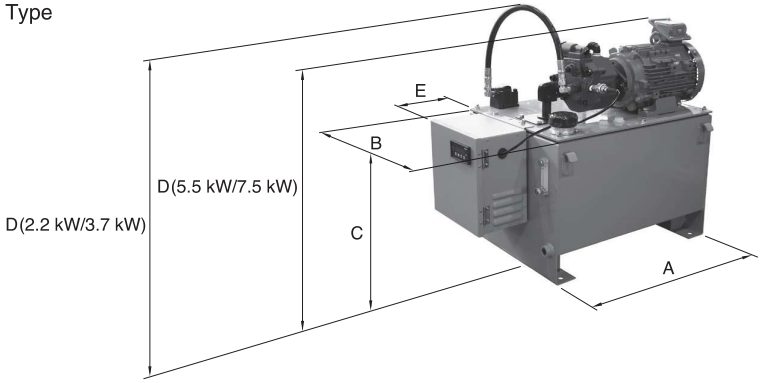
18L Tank Type



Model Numbers	E	F	H	Reservoir Capacity L	Electric Motor
E-YA16-B-2-0.75	530	510	—	18	0.75kW×4P
E-YA16-B-2-1.5	570	550	545		1.5kW×4P
E-YA16-B-2-2.2	595	550	555		2.2kW×4P

Note) The dimensions of hydraulic power unit except ★ part are same as the standard type YA pack, please refer to page K-26.

60L/100L/160L Tank Type



Model Numbers	Dimensions mm					Reservoir Capacity L	Electric Motor
	A	B	C	D	E		
E-YA10-B-6-2.2	600	450	410	740	175	60	2.2 kW×4P
E-YA10-C-10-2.2	750	500	470	820	175	100	2.2 kW×4P
E-YA10-C-10-3.7							3.7 kW×4P
E-YA16-B-6-2.2	600	450	410	740	175	60	2.2 kW×4P
E-YA16-B-6-3.7							3.7 kW×4P
E-YA16-B-10-2.2	750	500	470	820	175	100	2.2 kW×4P
E-YA16-C-10-3.7	750	500	470	820	175		3.7 kW×4P
E-YA16-C-10-5.5				910	200		5.5 kW×4P
E-YA16-C-10-7.5							7.5 kW×4P
E-YA22-B-6-2.2	600	450	410	750	175	60	2.2 kW×4P
E-YA22-B-6-3.7							3.7 kW×4P
E-YA22-B-10-2.2	750	500	470	820	175	100	2.2 kW×4P
E-YA22-B-10-3.7							3.7 kW×4P
E-YA22-C-10-5.5				910	200		5.5 kW×4P
E-YA22-C-10-7.5							7.5 kW×4P
E-YA37-B-10-3.7	750	500	470	840	175	100	3.7 kW×4P
E-YA37-B-16-5.5	790	600	550	990	200	160	5.5 kW×4P
E-YA37-B-16-7.5							7.5 kW×4P

Note) The dimensions of hydraulic power unit except ★ part are same as the standard type YA pack, please refer to pages K-24, K-25 and K-27 - K-30.
In case of some models, the electric motor or the drain cooler could overhang the tank.

Interchangeability between Current and New Models

As of E-YA16 type, the design number of some models has changed from 50 to 52 due to change of built-in electric motor.

Changes

Mass

Current		New	
Model Numbers	Mass kg	Model Numbers	Mass kg
E-YA16-B-2-0.75-50	48	E-YA16-B-2-0.75-52	47

Interchangeability in Installation

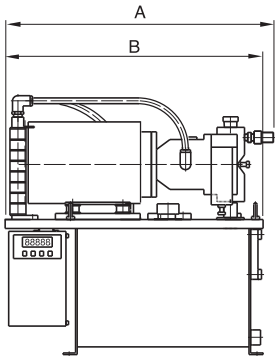
Yes

Specifications / Characteristics

Those of current and new models are same except for the mass.

Dimensions

New dimensions are the same as current except for those in the chart below.



Current or New	A	B
Current	570	550
New	530	510

Energy-Saving Control System for Hydraulic Units

Energy-saving effect can be obtained by adding this system to an existing unit and carrying out simple adjustments.



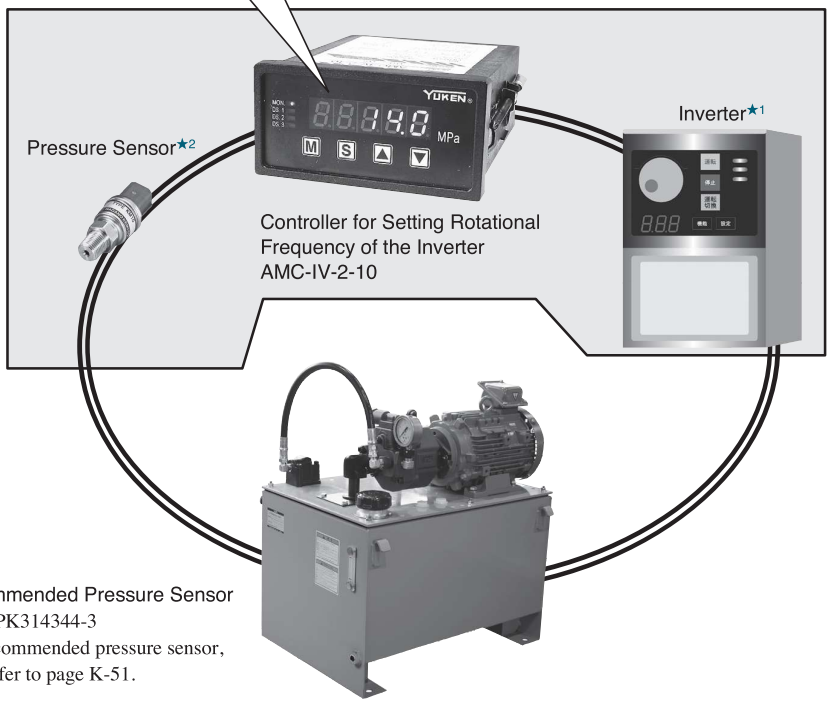
System Configuration

Use the hydraulic pump and electric motor of the current equipment, add the controller for setting rotational frequency of the inverter, the pressure sensor, and the inverter, and only carry out simple adjustments.

Due to adopt the select indication system, it is possible to indicate the five descriptions below.

①Input for pressure sensor (indicate pressure)
②Output for inverter
③Simple power calculation value
④Sequence input/output code
⑤Alarm output code

★1. Recommended Inverter
A product which performance higher than the sensorless vector control type should be used.



★2. Recommended Pressure Sensor
・1501-PK314344-3
As of recommended pressure sensor, please refer to page K-51.

Existing Hydraulic Unit
Equipped with Variable Displacement Piston Pump and Induction Motor：0.75 - 7.5 kW

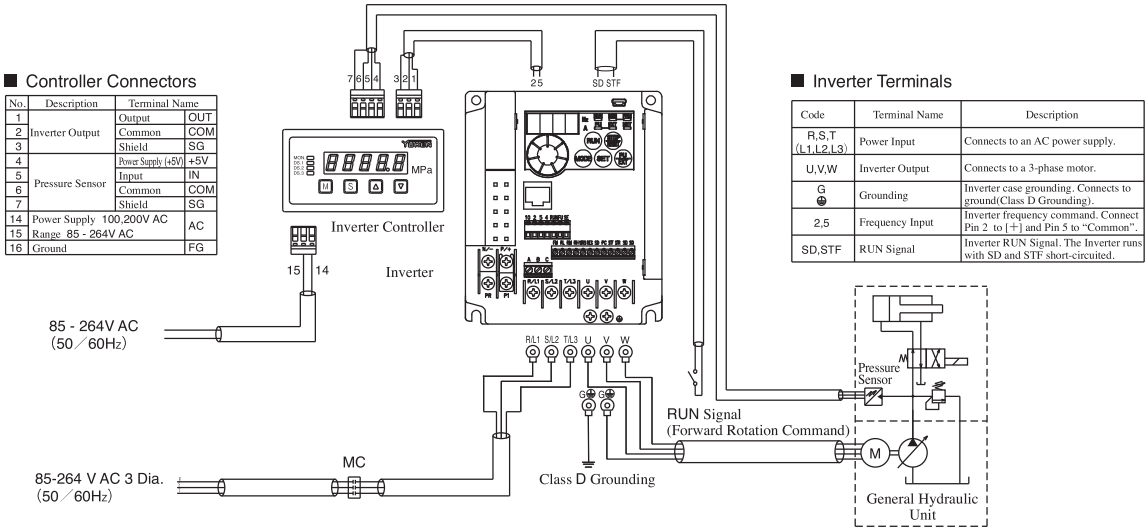
Inverter Connection Example

■ Controller Connectors

No.	Description	Terminal Name	
1	Inverter Output	Output	OUT
2		Common	COM
3		Shield	SG
4	Pressure Sensor	Power Supply (+5V)	+5V
5		Input	IN
6		Common	COM
7		Shield	SG
14	Power Supply 100,200V AC		AC
15	Range 85 - 264V AC		
16	Ground		FG

■ Inverter Terminals

Code	Terminal Name	Description
R,S,T (L1,L2,L3)	Power Input	Connects to an AC power supply.
U,V,W	Inverter Output	Connects to a 3-phase motor.
G	Grounding	Inverter case grounding. Connects to ground(Class D Grounding).
2,5	Frequency Input	Inverter frequency command. Connect Pin 2 to [+] and Pin 5 to "Common".
SD,STF	RUN Signal	Inverter RUN Signal. The Inverter runs with SD and STF short-circuited.

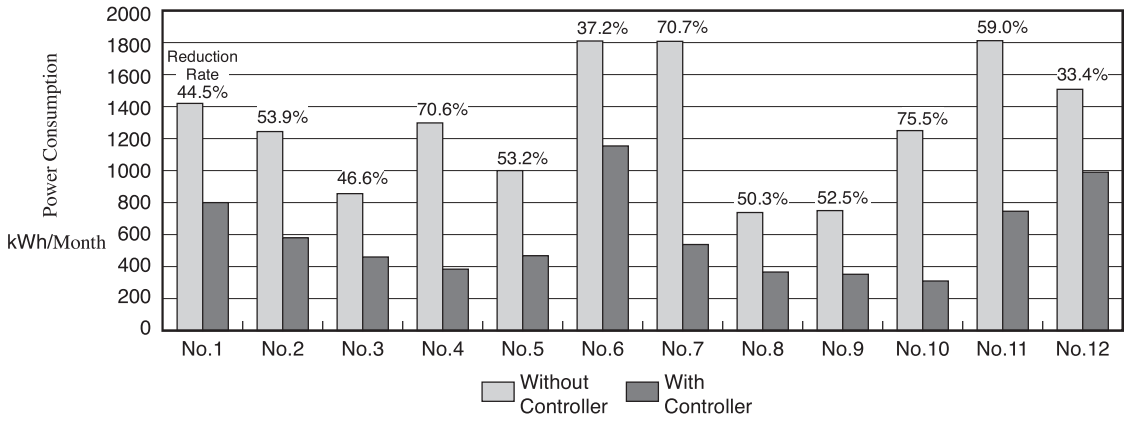


Example of Reduction Rate of Power Consumption

Machining Line for Automobile Parts

Operating Condition ①Operating Time / Day：24 h Operating Days / Month：22Days Total Operating Time / Month：528 h
②Operating Time / Day：18 h Operating Days / Month：22Days Total Operating Time / Month：396 h

NO.	Name of Machines	Hydraulic Pump			Electric Motor kW	Operating Condition	Cycle Time S	Power Consumption kWh/Month		Reduction Power kWh/Month	Reduction Rate %
		Type	Geometric Displacement of Pump cm^3/rev	Pressure Setting MPa				Without Controller	With Controller		
1	Transfer Machine	Vane	100	3.5	7.5	①	76	1,424	790	634	44.5
2	Transfer Machine	Vane	100	3.6	7.5	①	76	1,243	573	670	53.9
3	Transfer Machine	Vane	100	2.6	7.5	②	77	849	453	396	46.6
4	Transfer Machine	Vane	75	3.4	5.5	①	77	1,300	382	918	70.6
5	Transfer Machine	Vane	75	3.2	5.5	②	59	999	468	531	53.2
6	Washing Machine	Vane	100	3.5	7.5	①	58	1,809	1,136	673	37.2
7	Gear Cutting Machine	Piston	63	4.0	5.5	①	16	1,811	530	1,281	70.7
8	Gear Cutting Machine	Piston	36.9	4.0	5.5	②	32	723	359	364	50.3
9	Gear Cutting Machine	Piston	36.9	4.0	5.5	②	42	735	349	386	52.5
10	Gear Cutting Machine	Vane	30	5.5	5.5	①	22	1,250	306	944	75.5
11	Gear Cutting Machine	Piston	36.9	5.2	5.5	①	46	1,811	742	1,069	59.0
12	Gear Cutting Machine	Vane	31.8	4.0	7.5	①	34	1,498	997	501	33.4
Total								15,452	7,085	8,367	54.1



Controller for Setting Rotational Frequency of the Inverter

Specifications

Descriptions \ Model Numbers	AMC–IV–2–10
Output Voltage for Inverter	3 Ranges Selectable (0 - +5 V, +1 - +5 V, +0.5 - +4.5 V)
Input Voltage for Pressure Sensor	3 Ranges Selectable (0 - +5 V, +1 - +5 V, +0.5 - +4.5 V)
Power Supply for Pressure Sensor	+5 V Max. 0.5 W
Sequence Input Signal	AC Photocoupler Input Resistance to limit the Current 3.3 kΩ Name: IN1 / IN2 / INC Description: RUN / Alarm Reset / Input Common
Sequence Output Signal	Open Collector Output (Photocoupler Insulated) Max. Supply Voltage 35 V・50 mA Name: OUT1 / IN2 / OUTC Description: Low Rotational Frequency / Alarm / Output Common
Voltage for Power Supply	85 - 264 V AC 50/60 Hz
Power Consumption	Less than 6 VA
Ambient Temperature	0 - 50°C
Mass	0.3 kg

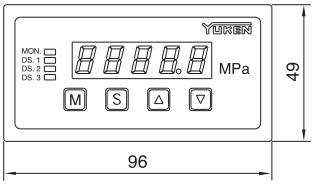
Model Number Designation

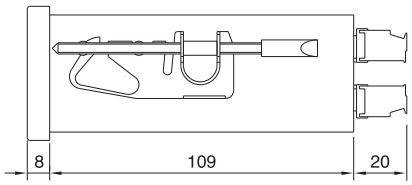
AMC—IV	—2	—10
Series Number	Function Category	Design Number
AMC-IV：Controller for Setting Rotational Frequency of the Inverter	2：High-Function Type	10

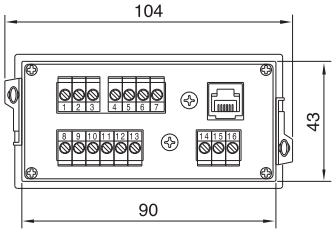
★1. This energy-saving system has no model numbers as for system itself, so when ordering this system, please indicate the model numbers of the controller for setting rotational frequency of the inverter and those of the pressure sensor.

★2. Also available with the simple model (with auto-tuning function) that is easy to set up. For details, please contact us separately.

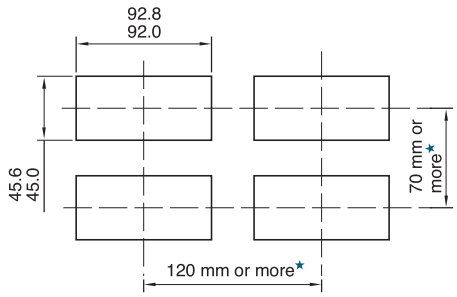
AMC-IV-2-10







Panel Cutout Dimensions



★The value for using several controllers.

Detail of Terminal Block

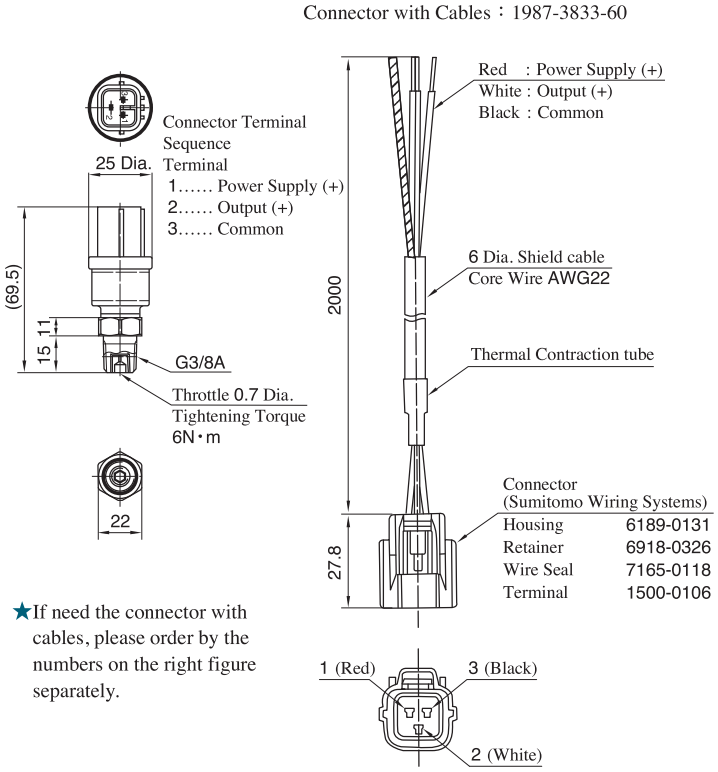
No.	Terminal Name			No.	Terminal Name		
1	Inverter Output	Output	OUT	11	Sequence Output	Low Inverter Frequency Signal	OUT1
2		Common	COM	12		Alarm	OUT2
3		Shield	SG	13		Output Common	OUTC
4	Pressure Sensor	Power Supply	+5V	14	Power Supply Range 85 - 264 [V] AC		AC
5		Input	IN	15	Power Supply 100·200 [V] AC		
6		Common	COM	16	Ground		FG
7		Shield	SG				
8	Sequence Input	RUN	IN1				
9		Alarm Reset	IN2				
10		Input Common	INC				

Pressure Sensor

1501-PK314344-3

Specifications

Descriptions \ Model Numbers	1501-PK314344-3
Rated Pressure Range	0 - 35 MPa
Allowable Max. Pres.	52.5 MPa
Output Range	0.5 - 4.5 V (Supply Voltage 5.00 V)
Supply Voltage	5.0±0.5 V DC (Output is proportional to supply voltage.)
Current Consumption	10 mA or less
Load Resistance	10 kΩ or more
Load Capacity	1000 pF or less
Output Impedance	10 Ω or less
Insultation Resistance	100 MΩor more (50 V DC)
Voltage Resistance	150 V AC (1 min)
Precision	±1.0 % F.S. (23±2°C) ±3.0 % F.S. (Temperature Compensated Range)
Response Time	1 ms or less
Operating Temperature Range	−40 - +120°C
Temperature Compensated Range	−30 - +120°C
Vibration-Proof	147 m/s^2 (33.3 - 200 Hz)
Shock-Proof	490 m/s^2 (11 ms or less)
Dust-Proof / Water-Proof	IP 65
Approx. Mass	80 g



★If need the connector with cables, please order by the numbers on the right figure separately.

K Energy-Saving Control System