

Bringing valuable
"water" to you

 **KAWAMOTO PUMP**

**Inverter Control Automatic
Water Supply Unit**

PUMPER® KF

KF2-A·P/KF2-T/KF2-R



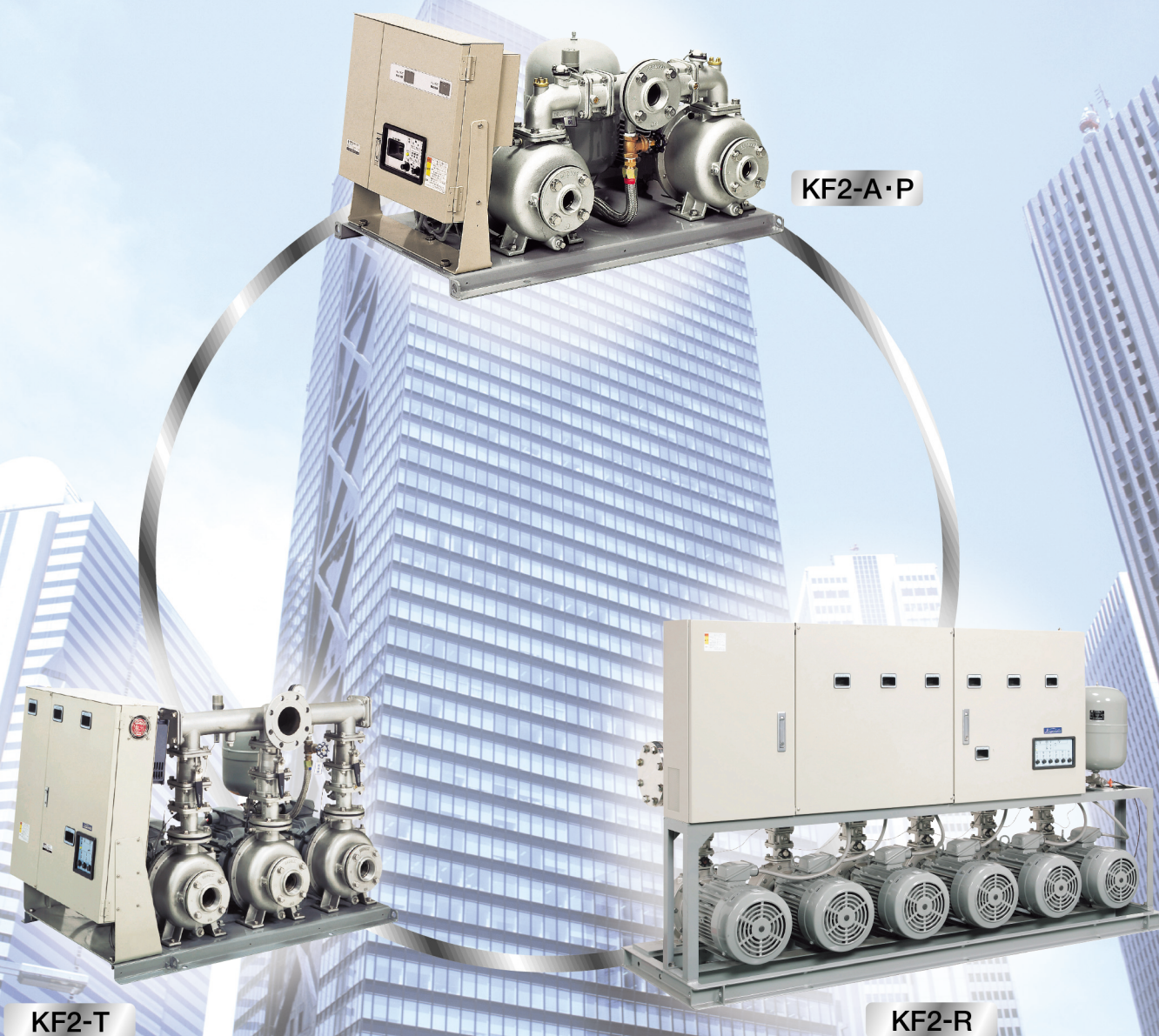
Alternate·Parallel~
Max 6 Pumps Rotary

Reliable Back up
Operation Function

Stainless Steel
Silent & Clean

MOTOR
IE3/IE4

Ver. 1.0



Kawamoto

PUMPER® KF



Energy-saving · silent · clean · constant pressure
at estimated water supply

Application Water supply to buildings,

silent · clean · constant pressure
terminal outlet high-quality automatic
unit

factories, industry, small regional drinking water, other general water supply

KAWAMOTO

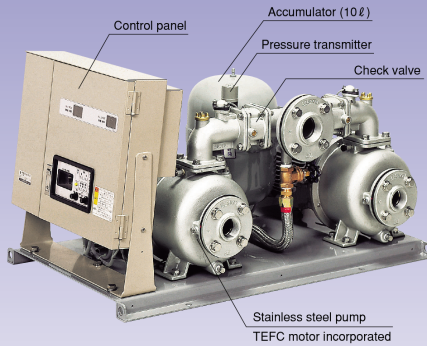
Alternate · alternate & parallel operation

Compact 3 pumps rotary water supply unit

Rotary operation multiple pump unit to handle even large water amount.
Operation of up to six pumps has been incorporated into a series

KF2-A·P

PAT.



STANDARD MOTOR IE4

Stainless steel casting with INVERTER PUMPER® KF2

Optional selection: motor IE3

Constant pressure at estimated terminal outlet
40% energy-saving operation

The pump speed is controlled by an inverter according to the fluctuations in the water amount used, thereby reducing pressure fluctuations at the estimated terminal outlet, and leading to a maximum 40% save in energy.
(Comparison of type KF2 and KAWAMOTO conventional product KNV)
(Comparison of type KF2-R and KAWAMOTO conventional product type KNVR)

High power factor and higher harmonic measures

Using the high power factor devices *1 with a DC reactor provided as a standard for each pump, basic electricity rates can be reduced by 5% (in Japan) and the generation of higher harmonics can be suppressed. *2 Complete measures against noise are also taken with the surge killer and noise filter for main circuit and control circuit.
(A high efficiency noise filter is incorporated for the type KF2-R.)
*1. Power factor 85.5% or more
*2. Complies with the "Higher harmonic suppression measure procedures for general-purpose inverter (input current 20A or less) set by the Japan Electrical Machine Industry Association.

Multi-function control panel

In addition to the inverter, earth leakage circuit breaker (with Alarm), digital voltage, current and operation frequency display provided for each pump, various maintenance functions including a cumulative operation hour, cumulative number of starts display and alarm buzzer are provided for each pump. This guarantees reliable protection functions as well as long-term stable water supply.
An inflow motorized valve circuit * is also provided as a standard.
(* Excluding 0.75kW and below with Type KF2.)

Reliable backup functions

Water supply suspension are avoided as much as possible with the backup functions that kick in when there is pump failure, inverter failure as well as pressure transmitter failure and control PCB failure. (type KF2-R)
Emergency back up operation switch is equipped with for avoiding water supply suspension caused by control printed circuit failure.

Stainless Steel Precision Casting

Precision cast steel stainless steel is used for the pump's casing and flange, etc., so there is no worry of strain.
For the water contact sections, stainless steel, resin and CAC (BC) parts are used so there is no worry of red discolorment of water.

High-response, high-pumping properties

A new control method with fast pressure response and small pressure fluctuation width has been incorporated. Coupled with the high pumping performance provided with the high efficiency 3D impeller enables quiet, powerful and smooth water supply.

Low-noise totally enclosed motor

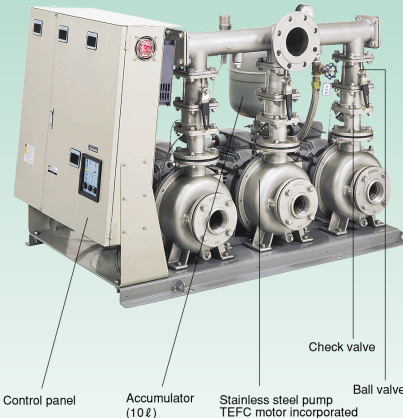
A low-noise totally enclosed motor has been incorporated as a standard for all models. This long-life motor is resistant against insulation deterioration caused by dust or moisture absorption.

Compact and lightweight for installation work improvement

The type KF2 is a compact and lightweight unit with 520mm height (3.7kW or less) enabling installation even under a reservoir tank.
With the type KF2, the suction and discharge flanges are arranged at the same direction, and the discharge pipe is arranged at the center of the unit.
The volume of the type KF2-R has been reduced by up to 45% compared to the conventional type SKF3.
The discharge direction can be set to either the left or right side.

KF2 -T

PAT.



Control Panel



Inverter (for each pump)
Earth leakage circuit breaker (Control PCB · heater)

Maintenance is easy since individual ball valves are adopted



Control panel
Accumulator (10ℓ)
Stainless steel pump
TEFC motor incorporated
Check valve
Ball valve

Temperature detective function

Thermo sensor for each pump is adopted

Heater terminal

A heater terminal is provided as a standard making heater installation easier.

Individual sluice valve at discharge side

Sluice valve (stainless steel ball valve) at discharge side as standard (except KF2-A·P)

Unified domestic standards

Use with either 50Hz or 60Hz and positive or negative suction is possible.

Standard specifications

Control method	Constant pressure at estimated terminal outlet using frequency control (constant discharge pressure also possible)
Operation method	Alternate or alternate/parallel and multiple pump rotation (max. six pump operation)
Installation place	Indoors (ambient temperature 0 to 40°C, humidity 90% or less, altitude 1,000m or less)
Liquid	Clean water, 0 to 40°C
Pump (material)	Stainless steel multi-stage turbine pump (impeller: resin or CAC406 (BC6) or SCS13, shaft: water contact section SUS304, casing: SCS13)
Motor	TEFC indoor : 3.7kW and below , TEFC outdoor : 5.5kW or over
No. of poles	2 poles (max. frequency during automatic operation: 60 Hz)
Suction conditions	Positive suction (0 to 5m (*1)) or negative suction (suction total head within -6m (*2))
Power supply	3 phase 380V~440V (200V is also available), single phase 200V (KF2: 0.4, 0.75, 1.1kW)
Companion flange shape	JIS 10K thin type
Paint color	Control panel: gray (5Y7/1), accumulator: gray (10Y5.5/0.5), others: gray (2.5PB5.1/0.8)
(Munsell No.)	

(*1) 3m for 40-5.5kW, 50-7.5kW. Consult KAWAMOTO PUMP in ease of exceeding 5m positive suction
(*2) Suction actual head -within 4m, For 0.4kW, suction total head within -4m

(Note) Consult KAWAMOTO PUMP for when using flashing valve and using the pump for long periods with small discharge amount.

Special accessories

- Discharge direction change connecting pipe (Stainless steel) Bore: 40~65mm
- Level relay (For low water level detection, excluding single operation)

Electrode holder/Electrode bar



Model	
EHC-3N	3P Without resistor
EHC-4N	4P Without resistor
EHC-3	3P with resistor
EHC-4	4P with resistor
Electrode	1m
Electrode separator	3P
Nut	

Foot valve (In case of suction lift up use)

VFVF2 foot valve with lever (With 3m stainless steel wire)
• VF2: Rust free resin material

Stainless steel foot valve
• Using SCS13 for main parts, hard and long life.



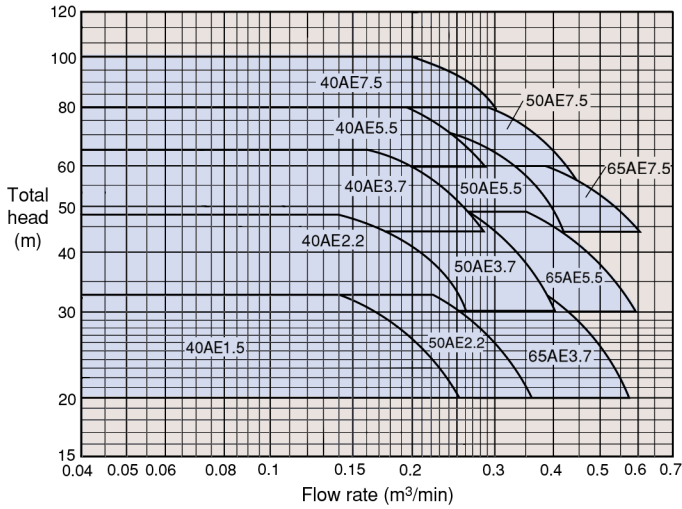
Resin
VF2 type
Bore: 32 ~ 80mm

Cast iron
VF type
Bore: 40 ~ 80mm
VF type (flange type) is also available.

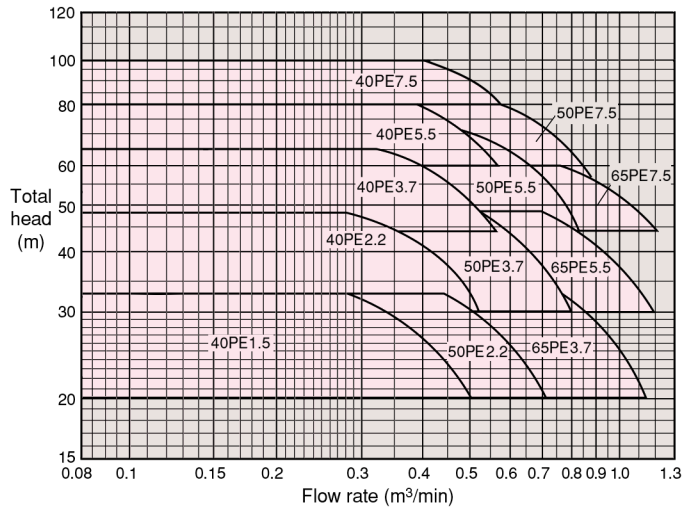
VFS2 type
Bore: 40 ~ 100mm
Screw type

VFS2 type
Bore: 50 ~ 250mm
Flange type

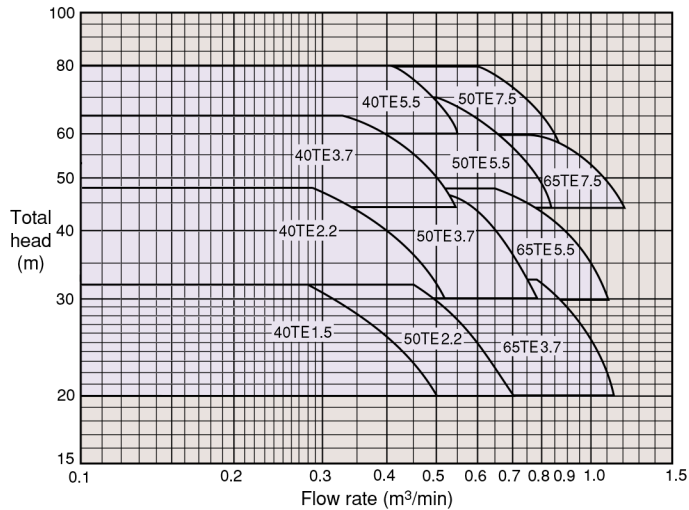
KF2-A (Alternate operation of 2 pumps)



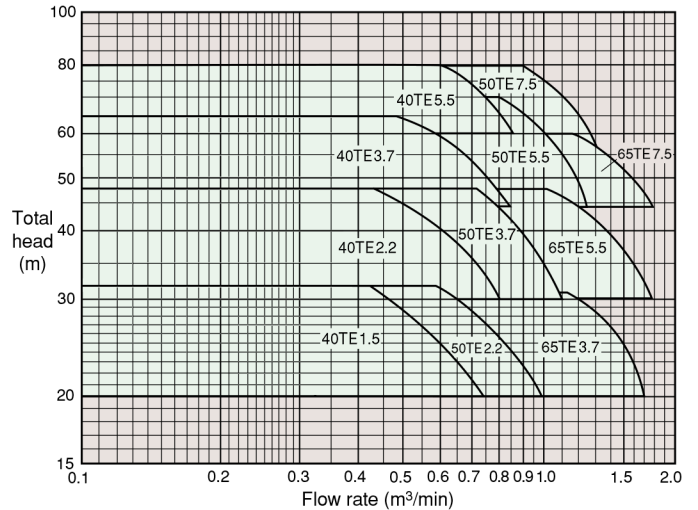
KF2-P (Alternate/parallel operation of 2 pumps)



KF2-T 2/3 Pump Rotary (Special Specification)

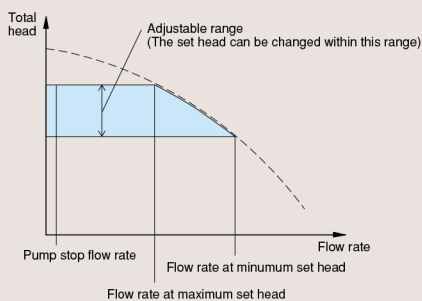


KF2-T 3/3 Pump Rotary (Standard Specification)



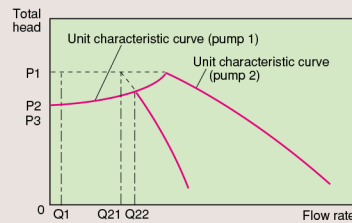
(The specifications indicate the values with the unit loss from the check valve, etc., subtracted.)

Guide to Selection table



- The total head is the value obtained by subtracting the loss caused by the check valve (shock-less valve) from the pump performance.
- When changing the set head, change it within the set head adjustment range. The starting pressure is automatically adjusted to the pressure at estimated terminal outlet -0.04MPa (0.4kg/cm^2).
- The suction conditions must be set within the positive suction 5m to suction total head -4m (-6m for 7.5kW). The maximum flow rate determined by the set head will differ according to the suction conditions.

Explanation of operation



<Alternate, Parallel>

- P1 : Set head
- P2 : Estimated terminal head
- P3 : Starting head ($P2-0.04\text{MPa}$ (0.4kg/cm^2))
- Q1 : Stop flow rate (10l/min)
- Q21, Q22: Parallel-OFF, parallel-ON flow rate
- ※The dotted line shows the case for constant discharge pressure operation.

■Alternate operation

- When water is consumed while the pump is stopped and the pressure drops to $P3$, the pump will start running.
- When the flow rate is $Q1$ or higher, the pump will continue water supply at the constant pressure at estimated terminal outlet.
- When the used water rate drops to below $Q1$, the pump will stop.
- Steps ① to ③ are alternately repeated between the first pump and second pump.

■Alternate/parallel operation

- If the flow rate reaches $Q22$ or higher while the first pump is running, the pressure sensor will activate and the second pump will start for parallel operation.
- When the flow rate drops below $Q21$ during parallel operation, the pressure sensor will activate, the pump started first will stop, and only one pump will run.
- If the flow rate is less than $Q21$, alternate operation will take place.

Specifications Table

■ Specifications table (Pump stop flow rate: 10 ℓ/min)

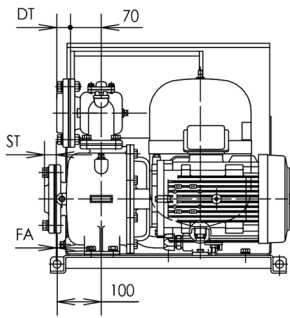
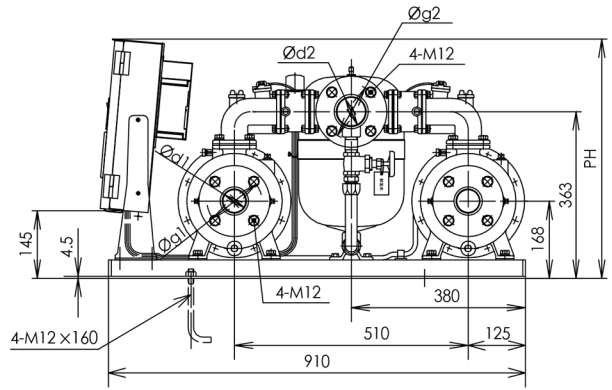
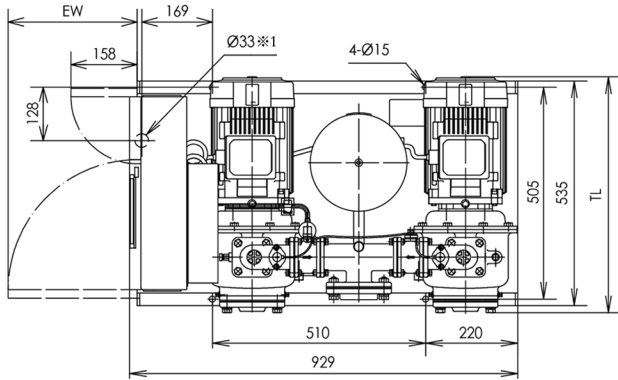
Unit bore mm	Suction bore mm	Operation method	Type	Motor (Maximum number of operation units) kW	Standard specifications			Set head adjustment range m	Accumulator charged pressure MPa{kgf/cm ² }	Sound (*1) dB [A]	Power factor (%)		
					Flow rate ¹ m ³ /min	Total head m	Set head m					Starting pressure MPa{kgf/cm ² }	
40	40	Alternate	KF2-40AE1.5T4A	1.5	0.14	32	32	0.25 {2.5}	20~32	0.12 {1.2}	49~52	89.6	
			KF2-40AE2.2T4A	2.2	0.14	48	48	0.38 {3.9}	30~48	0.20 {2.0}	49~52	89.2	
			KF2-40AE3.7T4A	3.7	0.16	65	65	0.54 {5.5}	44~65	0.31 {3.2}	55~56	88.7	
			KF2-40AE5.5T4A	5.5	0.19	80	80	0.67 {6.8}	60~80	0.44 {4.5}	55~59	87.9	
			KF2-40AE7.5T4A	7.5	0.22	100	100	0.84 {8.6}	80~100	0.73 {7.4}	66~69	90.4	
			KF2-50AE2.2T4A	2.2	0.225	32	32	0.25 {2.5}	20~32	0.12 {1.2}	52~54	89.2	
	50		65	KF2-50AE3.7T4A	3.7	0.265	48	48	0.38 {3.9}	30~48	0.20 {2.0}	54~55	88.7
				KF2-50AE5.5T4A	5.5	0.24	70	70	0.58 {5.9}	44~70	0.34 {3.5}	58~60	87.9
				KF2-50AE7.5T4A	7.5	0.28	80	80	0.67 {6.8}	56~80	0.44 {4.5}	58~63	90.4
50	40	Alternate/parallel	KF2-65AE3.7T4A	3.7	0.38	32	32	0.25 {2.5}	20~32	0.12 {1.2}	54~56	88.7	
			KF2-65AE5.5T4A	5.5	0.35	48	48	0.38 {3.9}	30~48	0.20 {2.0}	58~60	87.9	
			KF2-65AE7.5T4A	7.5	0.38	60	60	0.49 {5.0}	44~60	0.31 {3.2}	58~62	90.4	
			KF2-40PE1.5T4A	1.5 X2	0.28	32	32	0.25 {2.5}	20~32	0.12 {1.2}	49~55	92.5	
			KF2-40PE2.2T4A	2.2 X2	0.28	48	48	0.38 {3.9}	30~48	0.20 {2.0}	49~55	91.6	
			KF2-40PE3.7T4A	3.7 X2	0.32	65	65	0.54 {5.5}	44~65	0.31 {3.2}	55~59	90.3	
			KF2-40PE5.5T4A	5.5 X2	0.38	80	80	0.67 {6.8}	60~80	0.44 {4.5}	55~62	91.4	
			KF2-40PE7.5T4A	7.5 X2	0.44	100	100	0.84 {8.6}	80~100	0.73 {7.4}	66~70	90.4	
			KF2-50PE2.2T4A	2.2 X2	0.45	32	32	0.25 {2.5}	20~32	0.12 {1.2}	52~57	91.6	
65	50	KF2-50PE3.7T4A	3.7 X2	0.53	48	48	0.38 {3.9}	30~48	0.20 {2.0}	54~58	90.3		
		KF2-50PE5.5T4A	5.5 X2	0.48	70	70	0.58 {5.9}	44~70	0.34 {3.5}	58~63	91.4		
		KF2-50PE7.5T4A	7.5 X2	0.56	80	80	0.67 {6.8}	56~80	0.44 {4.5}	58~66	92.7		
80	65	KF2-65PE3.7T4A	3.7 X2	0.76	32	32	0.25 {2.5}	20~32	0.12 {1.2}	54~59	90.3		
		KF2-65PE5.5T4A	5.5 X2	0.70	48	48	0.38 {3.9}	30~48	0.20 {2.0}	58~63	91.4		
		KF2-65PE7.5T4A	7.5 X2	0.76	60	60	0.49 {5.0}	44~60	0.31 {3.2}	58~65	92.7		
80	40	2/3 pump rotary	KF2-40TE1.5T4A	1.5 X2	0.28	32	32	0.25 {2.5}	20~32	0.12 {1.2}	49~55	92.5	
			KF2-40TE2.2T4A	2.2 X2	0.28	48	48	0.38 {3.9}	30~48	0.20 {2.0}	49~55	91.6	
			KF2-40TE3.7T4A	3.7 X2	0.32	65	65	0.54 {5.5}	44~65	0.31 {3.2}	55~59	90.3	
			KF2-40TE5.5T4A	5.5 X2	0.41	80	80	0.67 {6.8}	60~80	0.44 {4.5}	55~62	91.4	
			KF2-50TE2.2T4A	2.2 X2	0.45	32	32	0.25 {2.5}	20~32	0.12 {1.2}	52~57	91.6	
			KF2-50TE3.7T4A	3.7 X2	0.53	48	48	0.38 {3.9}	30~48	0.20 {2.0}	54~58	90.3	
	100		65	KF2-50TE5.5T4A	5.5 X2	0.5	70	70	0.58 {5.9}	44~70	0.34 {3.5}	58~63	91.4
				KF2-50TE7.5T4A	7.5 X2	0.6	80	80	0.67 {6.8}	56~80	0.44 {4.5}	58~66	92.7
				KF2-65TE3.7T4A	3.7 X2	0.76	32	32	0.25 {2.5}	20~32	0.12 {1.2}	54~59	90.3
80	40	3/3 pump rotary	KF2-65TE5.5T4A	5.5 X2	0.66	48	48	0.38 {3.9}	30~48	0.20 {2.0}	58~63	91.4	
			KF2-65TE7.5T4A	7.5 X2	0.76	60	60	0.49 {5.0}	44~60	0.31 {3.2}	58~65	92.7	
			KF2-40TE1.5T4A	1.5 X3	0.42	32	32	0.25 {2.5}	20~32	0.12 {1.2}	49~59	93.2	
			KF2-40TE2.2T4A	2.2 X3	0.42	48	48	0.38 {3.9}	30~48	0.20 {2.0}	49~59	89.1	
			KF2-40TE3.7T4A	3.7 X3	0.48	65	65	0.54 {5.5}	44~65	0.31 {3.2}	55~63	91.7	
			KF2-40TE5.5T4A	5.5 X3	0.6	80	80	0.67 {6.8}	60~80	0.44 {4.5}	55~66	92.5	
	100		65	KF2-50TE2.2T4A	2.2 X3	0.59	32	32	0.25 {2.5}	20~32	0.12 {1.2}	52~61	89.1
				KF2-50TE3.7T4A	3.7 X3	0.7	48	48	0.38 {3.9}	30~48	0.20 {2.0}	54~63	91.7
				KF2-50TE5.5T4A	5.5 X3	0.78	70	70	0.58 {5.9}	44~70	0.34 {3.5}	58~66	92.5
100	65	KF2-50TE7.5T4A	7.5 X3	0.9	80	80	0.67 {6.8}	56~80	0.44 {4.5}	58~67	93.3		
		KF2-65TE3.7T4A	3.7 X3	1.12	32	32	0.25 {2.5}	20~32	0.12 {1.2}	54~63	91.7		
		KF2-65TE5.5T4A	5.5 X3	1.0	48	48	0.38 {3.9}	30~48	0.20 {2.0}	58~65	92.5		
			KF2-65TE7.5T4A	7.5 X3	1.14	60	60	0.49 {5.0}	44~60	0.31 {3.2}	58~67	93.3	

(※1) The noise level is the maximum value given in the specifications. (Reference valve)

(Note) When using large amount flow rate such as a flushing valve, please consult KAWAMOTO PUMP.

Alternate

Alternate·Parallel (1.5~3.7kW)



■ Dimensions

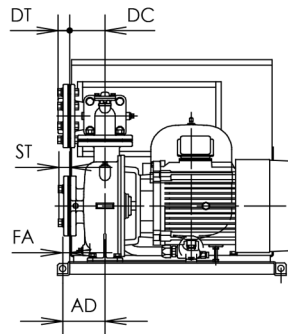
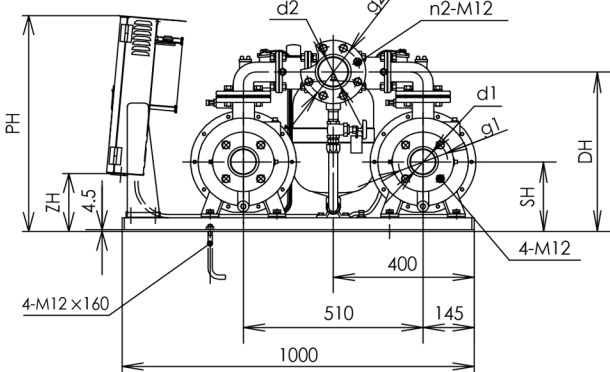
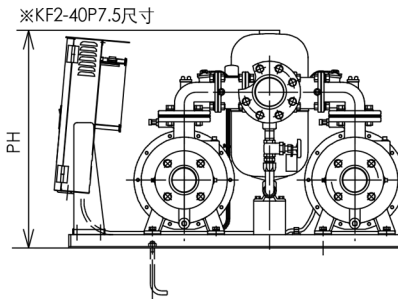
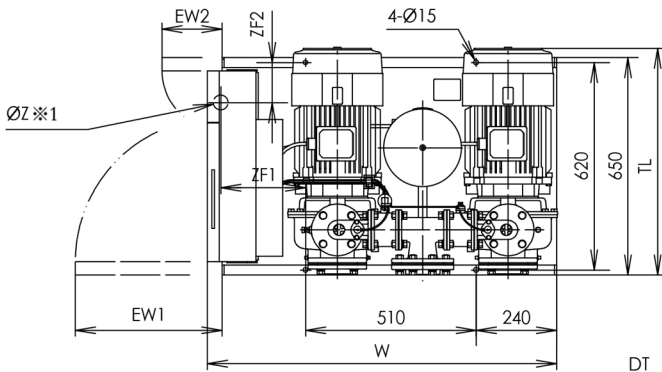
Suction Bore (mm)	Discharge Bore (mm)		Model	Motor (kW)	Combination		Flange						Other		Weight (kg)
	(A)	(P)			FA	TL	d1	g1	d2	g2	ST	DT	PH	EW	
40	40	50	KF2-40(A)PE1.5T4A	1.5	-40	-	40	105	50	120	25	27	520	308	131
40	40	50	KF2-40(A)PE2.2T4A	2.2	2	555	40	105	50	120	25	27	520	308	142
40	40	50	KF2-40(A)PE3.7T4A	3.7	2	613	40	105	50	120	25	27	580	368	166
50	40	65	KF2-50(A)PE2.2T4A	2.2	-40	539	50	120	65	140	27	31	520	308	143
50	40	65	KF2-50(A)PE3.7T4A	3.7	2	615	50	120	65	140	27	31	580	368	167

Unit :mm

※1 The bottom hole of the control panel

Alternate

Alternate·Parallel (5.5~7.5kW) ※including 65(A)PE3.7



Code	Other						Weight (kg)
	EW1	EW2	ZH	ZF1	ZF2	Z	
1	440	189	172	250	130	45	193
2	440	189	172	250	130	45	260
3	440	189	172	250	130	45	195
4	440	189	172	250	130	45	259
5	392	181	142	235	165	33	186
6	440	189	172	250	130	45	204
7	440	189	172	250	130	45	265

※1 The bottom hole of the control panel

■ Dimensions

Unit :mm

Code	Suction Bore (mm)	Discharge Bore (mm)		Model	Motor (kW)	Combination						Flange								
		(A)	(P)			SH	DH	AD	FA	DC	TL	W	PH	d1	d2	g1	g2	n2	ST	DT
1	40	40	50	KF2-40(A)PE5.5T4A	5.5	183	396	118	13	70	651	1045	632	40(PT1·1/2)	50(PT2)	105	120	4	25	25
2	40	40	50	KF2-40(A)PE7.5T4A	7.5	183	396	118	13	70	662	1045	700	40(PT1·1/2)	50(PT2)	105	120	4	25	25
3	50	40	65	KF2-50(A)PE5.5T4A	5.5	183	396	118	13	70	653	1045	632	50(PT2)	65(PT2·1/2)	120	140	4	27	31
4	50	40	65	KF2-50(A)PE7.5T4A	7.5	183	396	118	13	70	664	1045	632	50(PT2)	65(PT2·1/2)	120	140	4	27	31
5	65	50	80	KF2-65(A)PE3.7T4A	3.7	183	421	120	10	100	-	1020	590	65(PT2·1/2)	80(PT3)	140	150	8	31	33
6	65	50	80	KF2-65(A)PE5.5T4A	5.5	203	465	120	20	100	-	1045	632	65(PT2·1/2)	80(PT3)	140	150	8	31	33
7	65	50	80	KF2-65(A)PE7.5T4A	7.5	203	465	120	20	100	-	1045	632	65(PT2·1/2)	80(PT3)	140	150	8	31	33

Control Panel

ECSG3 type

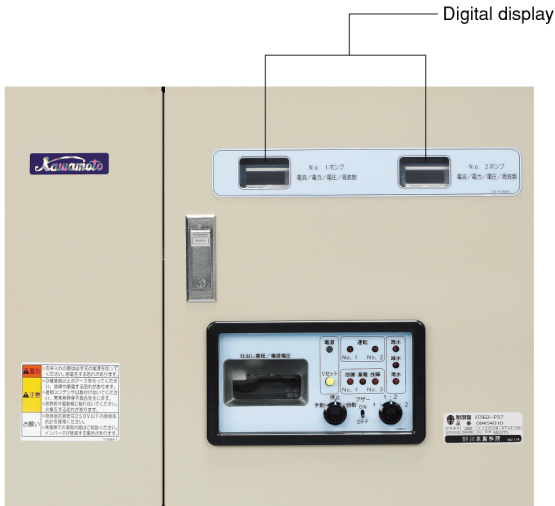


Photo : Example of ECSG3 (below 3.7kw)

- Inverter, DC reactor and Earth leakage circuit breaker for each pump
- Noise filter ● Emergency back up operation function
- Circuit for inflow motorized valve for twin reservoir
- Compatible twin reservoir system (5-pole)

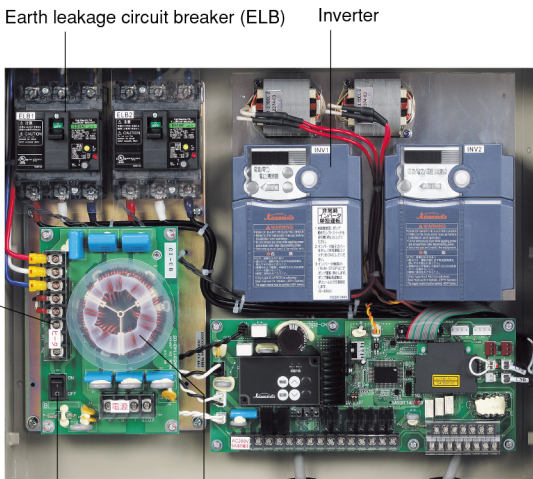
Type	ECSG3-A-P	
Output	1.5kW or more	
Operation method	A alternate, P alternate parallel	
Rated voltage	3 phase 380~440V	
Installation place	Indoors, altitude 1,000m or less, ambient temperature 0 to 40°C, humidity 90% or less	
Main components	Earth leakage circuit breaker (with AL)	For each pump
	DC reactor	For each pump
	Noise filter	For main circuit and control circuit
	Inverter	For each pump
Operation display	Control PCB	With water level sensor
	Power supply	Lamp
	Operation	Lamp (for each pump)
	Discharge head	Digital
	Power voltage, current, frequency	Digital
Trouble alarms	Cumulative operation time/No. of starts	Digital
	Trouble	Lamp (for each pump)
	Pressure drop	Lamp (trouble message)
	Residual current	Lamp
	Pressure transmitter trouble	Lamp (trouble message)
	Full, water level dropping, empty	Lamp
Functions	Water level control	<input type="checkbox"/> Twin reservoir type (5-pole)
	Inflow motorized (solenoid) valve control	<input type="checkbox"/> Twin reservoir type (3-pole)
	Pump trouble	<input type="checkbox"/> (Automatic substitute operation [overload, locking, phase failure, short circuit])
	Inverter trouble	<input type="checkbox"/> (Automatic substitute operation)
External no-voltage signal	Malfunction preventing retry	<input type="checkbox"/> (Refer to following table)
	Buzzer	<input type="checkbox"/> (With ON-OFF switch)
	Operation	<input type="checkbox"/> (independent)
	Trouble	<input type="checkbox"/> (independent)
	Full	<input type="checkbox"/>
	Water level dropping	<input type="checkbox"/>
	Empty	<input type="checkbox"/>

(*) When one special accessory level relay is provided.

List of trouble messages

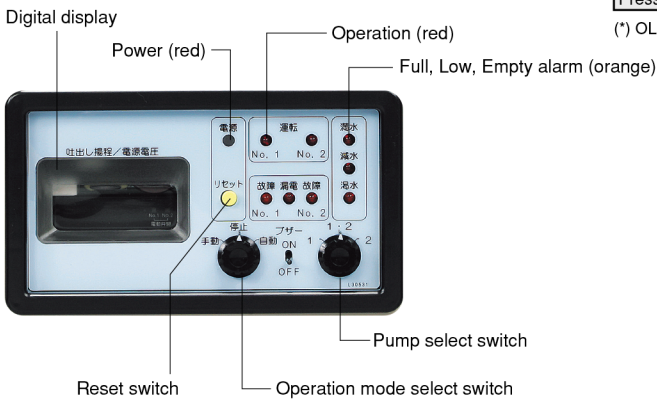
Item	Lamp display	Trouble message	External output	Retry
Inverter	Overload	○Trouble	○	○
	Locking, phase failure			
	Ground fault			
	Over/undervoltage	○Trouble (overvoltage)	OV-LV	○
Inverter heating	○Trouble	OH1	○	—
Memory error	○Trouble	Er1	○	○
Pressure drop	○Trouble	HdL	○	○
Pressure transmitter trouble	○Trouble	PEd	○	—

(*) OL is displayed when the electronic thermal overload protection activates. (There is no retry.)

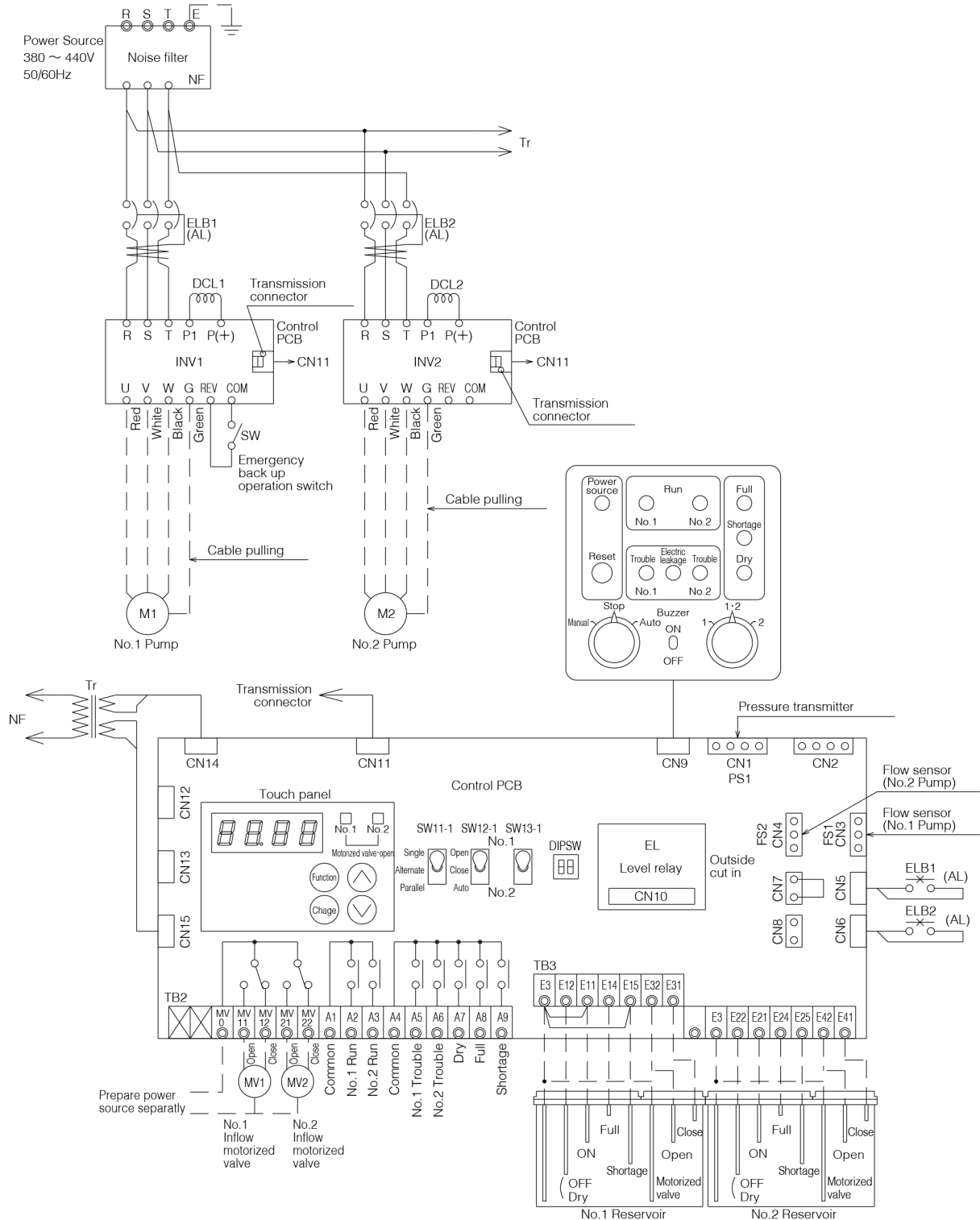


※Emergency back up operation function is equipped

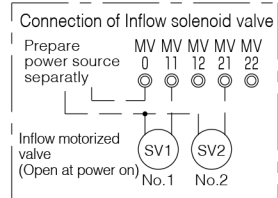
Display detail



Example for 1.5~3.7kW

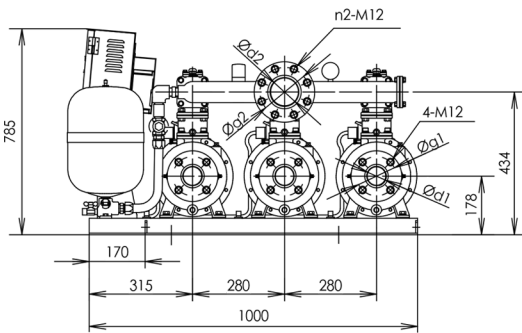
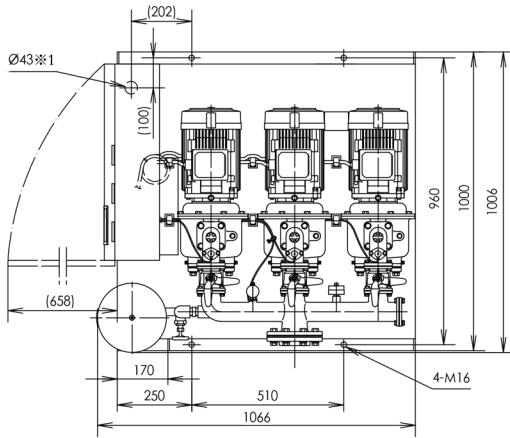


- A1-A9, MV0-MV22 (output terminal · no-voltage)
Terminal capacity 250V·0.8A (induction load)
In case exceeding the above capacity, use it through a relay
In case connect power supply of motorized valve and the above output terminal, be careful the terminal capacity
- Reservoir terminal board
· Disconnect short circuit between E3-E11 · E3-E15 in case using electrode bar
· Connect short circuit between E3-E15 · E3-E25 in case not using water shortage level monitor



3 Pumps Rotary

(1.5~3.7kW)



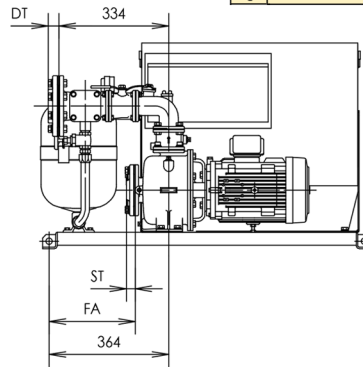
■ Dimensions

Unit:mm

Code	Suction Bore (mm)	Discharge Bore (mm)	Model	Motor (kW)	Combination		Weight (kg)
					FA	ST	
1	40	80	KF2-40TE1.5T4A	1.5	304		195
2	40	80	KF2-40TE2.2T4A	2.2	262		215
3	40	80	KF2-40TE3.7T4A	3.7	262		235
4	50	80	KF2-50TE2.2T4A	2.2	304		215
5	50	80	KF2-50TE3.7T4A	3.7	262		240

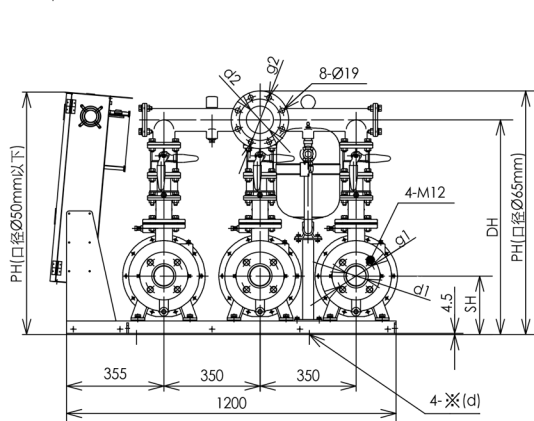
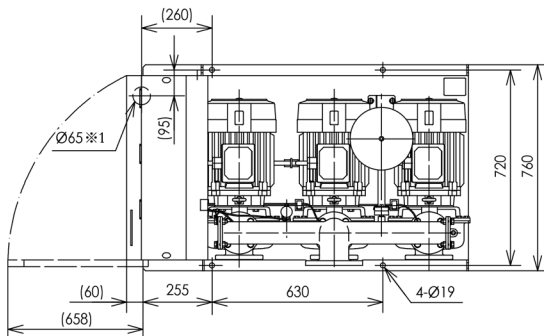
Code	Flange						
	d1	g1	d2	g2	n2	ST	DT
1	PT1 · 1/2	105	PT3	150	8	25	33
2	PT1 · 1/2	105	PT3	150	8	25	33
3	PT1 · 1/2	105	PT3	150	8	25	33
4	PT2	120	PT3	150	8	27	33
5	PT2	120	PT3	150	8	27	33

※1 The bottom hole of the control panel



3 Pumps Rotary

(5.5~7.5kW) ※including 65TE3.7

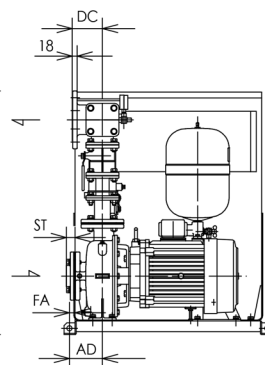


■ Dimensions

Unit:mm

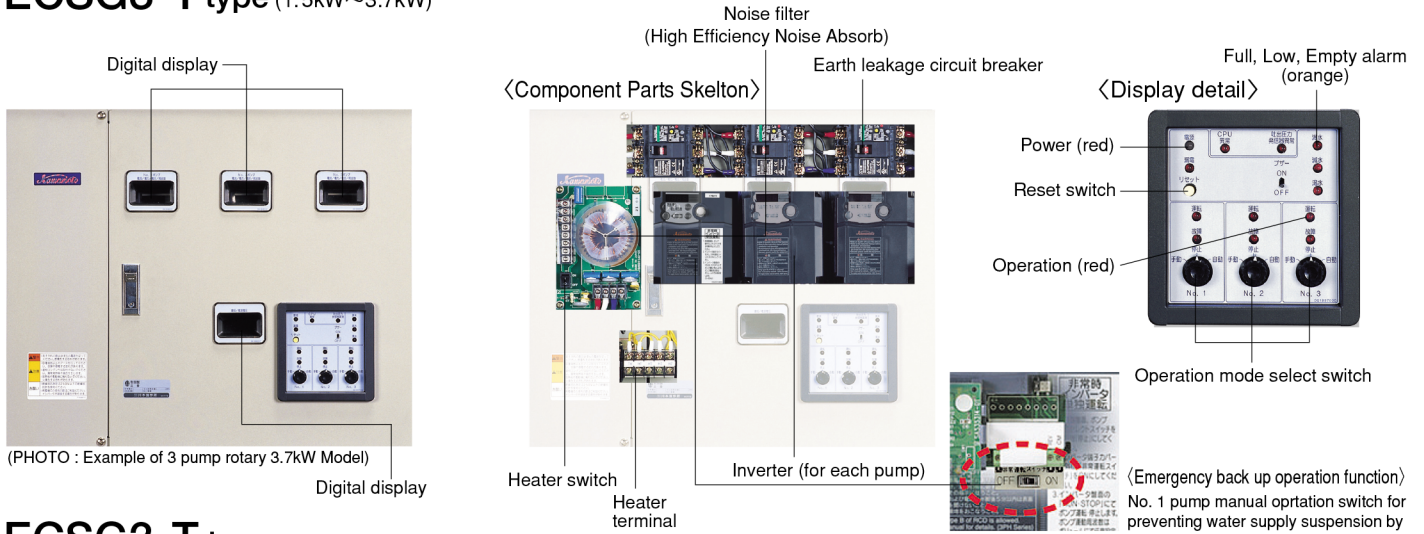
Code	Bore d1 · d2	Model	Motor (kW)	Combination						Mass (kg)	※ d
				DH	SH	PH	AD	FA	DC		
1	40X80	KF2-40TE5.5T4A	5.5X2	669	193	785	118	13	88	362	M16X200
2	50X80	KF2-50TE5.5T4A	5.5X2	669	193	785	118	13	88	371	M16X200
3	50X80	KF2-50TE7.5T4A	7.5X2	669	193	785	118	13	88	425	M16X200
4	65X100	KF2-65TE3.7T4A	3.7X2	736	193	841	120	20	110	279	M16X200
5	65X100	KF2-65TE5.5T4A	5.5X2	781	213	886	120	20	110	380	M16X200
6	65X100	KF2-65TE7.5T4A	7.5X2	781	213	886	120	20	110	437	M16X200

※1 The bottom hole of the control panel



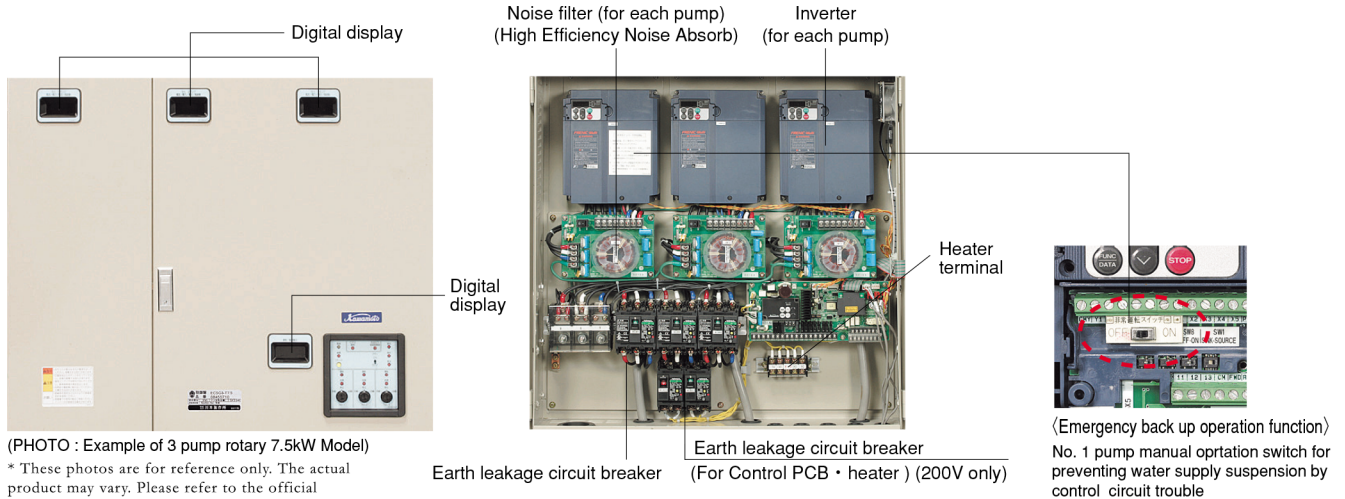
Code	Flange				
	d1	g1	d2	g2	ST
1	Rc1 · 1/2	105	80	150	25
2	Rc2	120	80	150	27
3	Rc2	120	80	150	27
4	Rc2 · 1/2	140	100	175	31
5	Rc2 · 1/2	140	100	175	31
6	Rc2 · 1/2	140	100	175	31

ECSG3-T type (1.5kW~3.7kW)



(PHOTO : Example of 3 pump rotary 3.7kW Model)
Digital display

ECSG3-T type (5.5kW~7.5kW)



(PHOTO : Example of 3 pump rotary 7.5kW Model)
* These photos are for reference only. The actual product may vary. Please refer to the official specifications and drawings.

- Inverter, DC reactor and residual current circuit breaker for each pump
- Noise filter, Circuit for inflow motorized valve for twin reservoir
- Emergency backup operation function (1.5~7.5kW)
- Compatible twin reservoir system (5 pole)

Type	ECSG3-T	
Operation method	3 pumps rotary {2/3 or 3/3(standard)}	Trouble display
Installation place	Indoor, altitude 1,000m or less, ambient temperature 0 to 40°C, humidity 90% or less	Trouble
		Lamp(for each pump)
main components	Earth leakage circuit breaker(with AL)	Residual current
	DC reactor	Lamp
Operation display	Noise filter	Pressure transmitter trouble
	Inverter	Lamp(trouble message)
Operation display	Control PCB	Full, water level dropping, empty
	Power supply	Lamp
Operation display	Operation	Water level control
	Discharge head	Digital
Operation display	Power voltage,current,frequency	Inflow motorized(solenoid)valve
	Cumulative operation time·No. of start	Digital
External nonvoltage signal	Functions	Pump trouble
		Water level dropping
External nonvoltage signal	Functions	Inverter trouble
		Emergency backup operation
External nonvoltage signal	Functions	Discharge pressure transmitter trouble
		Operation
External nonvoltage signal	Functions	CPU trouble
		Trouble
External nonvoltage signal	Functions	Buzzer
		Full
External nonvoltage signal	Functions	Emergency backup operation
		Water level
External nonvoltage signal	Functions	Operation
		dropping
External nonvoltage signal	Functions	Trouble

(※1) 1.5~7.5kW

List of trouble message

Item	Lamp display	Trouble message	External output (individual trouble)	Retry
Sudden over current (Locking, output side short circuit, ground fault)	○trouble	OC1~3	○	○
Electri thermal relay work(overload)	○trouble	OL1/OLU	○	—
Low voltage	○trouble	LU	○	—
Excess voltage	○trouble	OU1~3	○	○
Phase failure	○trouble	OPL	○	—
Overheat	○trouble	OH1	○	—
Memory trouble	○trouble	Er1	○	—
CPU trouble	○trouble	Er3	○	—
Communication trouble	○trouble	Er8	○	—
Data save error at low voltage	○trouble	ErF	○	—
Pressure drop	○trouble	HdL	○	○
Pressure transmitter trouble	○ Pressure transmitter trouble	PEd	○	—
Control PCB trouble	○CPU trouble	CPE	○	—
Large flow rate operation	—	PE2	—	—

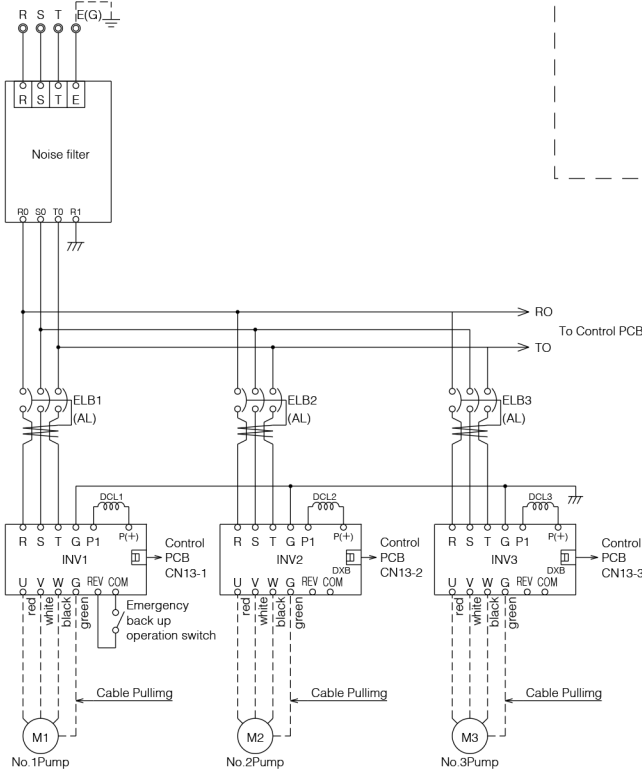


Lightning surge protection are taken on the "Pumper KF2 and KF2-R" as a standard. However, in special installation places such as on mountain peaks or when the earth resistance is large, the attenuation effect of the lightning surge absorber will drop, so earth the earthing wire to one point with the shortest distance, and always provide special Class 3 (Class C) earthing from this device.

Control Panel Wiring Diagram

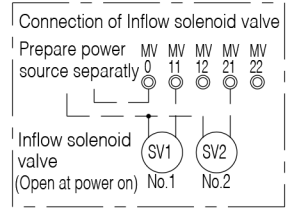
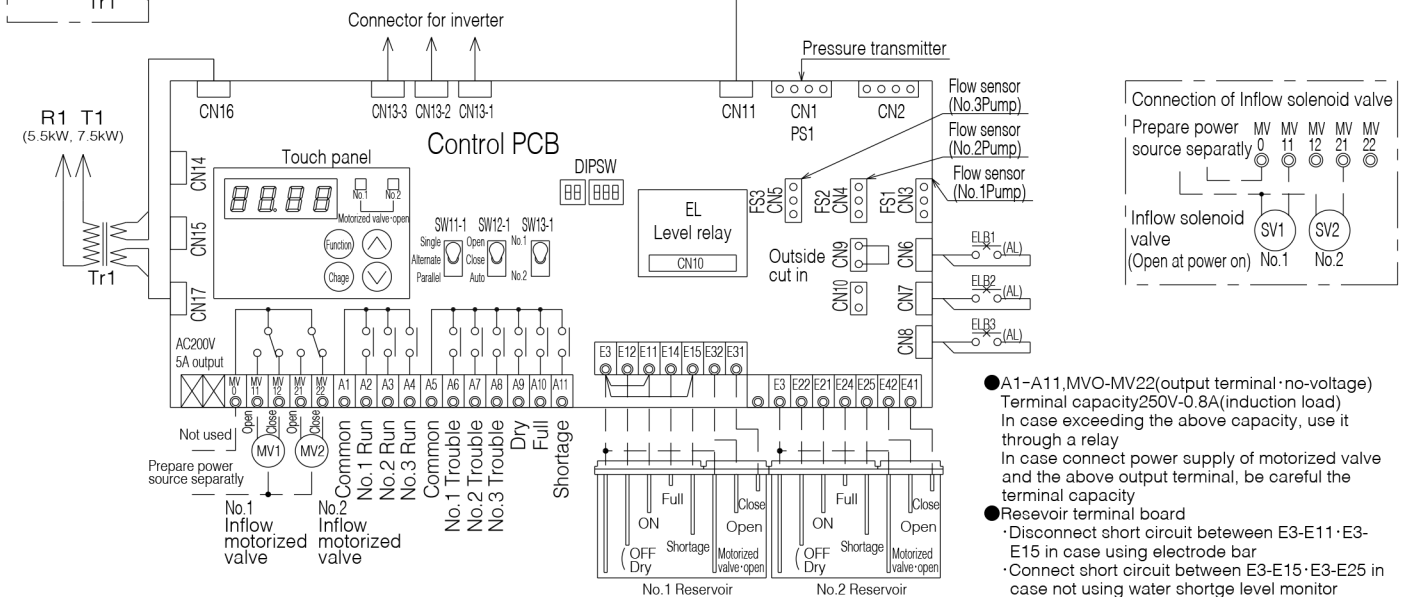
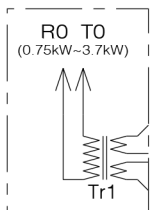
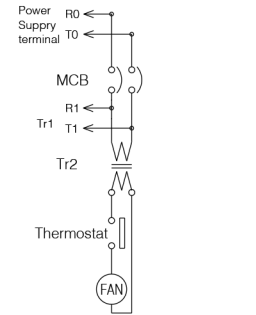
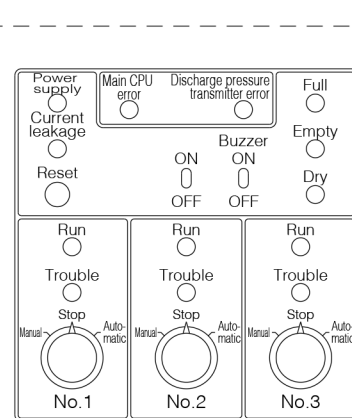
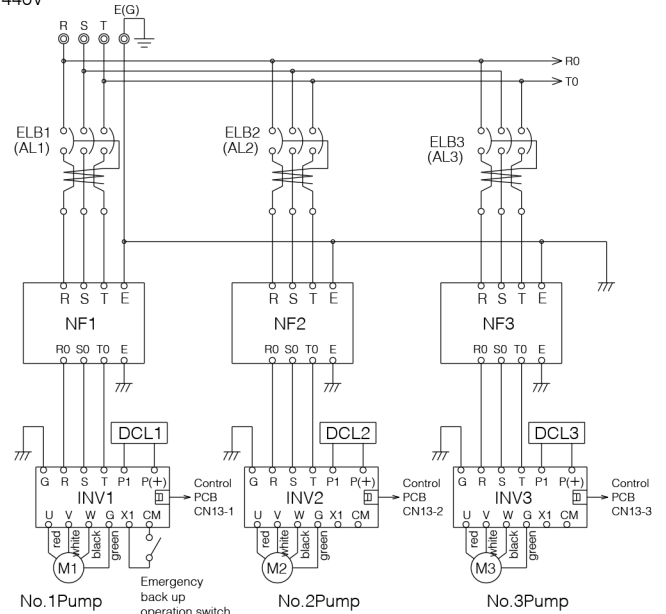
Less than 3.7kW

Power source
AC380~440V
50/60Hz



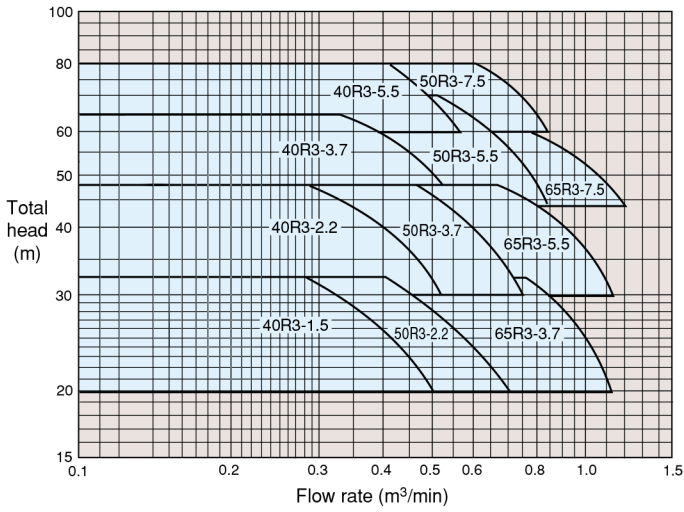
More than 5.5kW

Power source
AC380~440V
50/60Hz

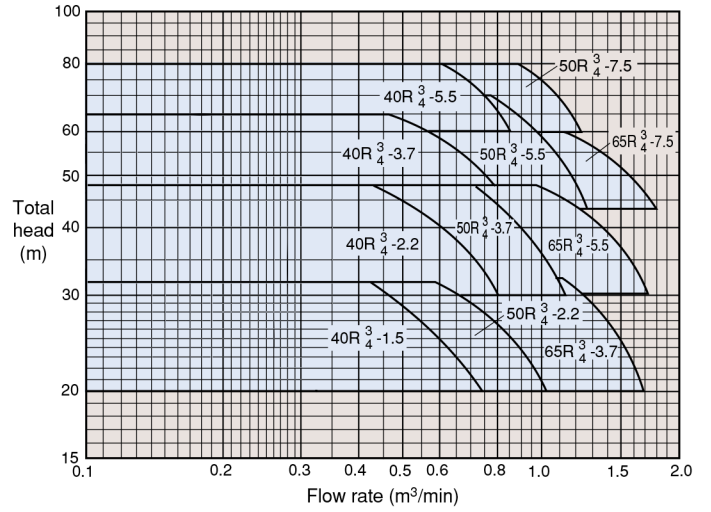


- A1-A11, MVO-MV22 (output terminal · no-voltage)
Terminal capacity: 250V-0.8A (induction load)
In case exceeding the above capacity, use it through a relay
In case connect power supply of motorized valve and the above output terminal, be careful the terminal capacity
- Reservoir terminal board
· Disconnect short circuit between E3-E11 · E3-E15 in case using electrode bar
· Connect short circuit between E3-E15 · E3-E25 in case not using water shortage level monitor

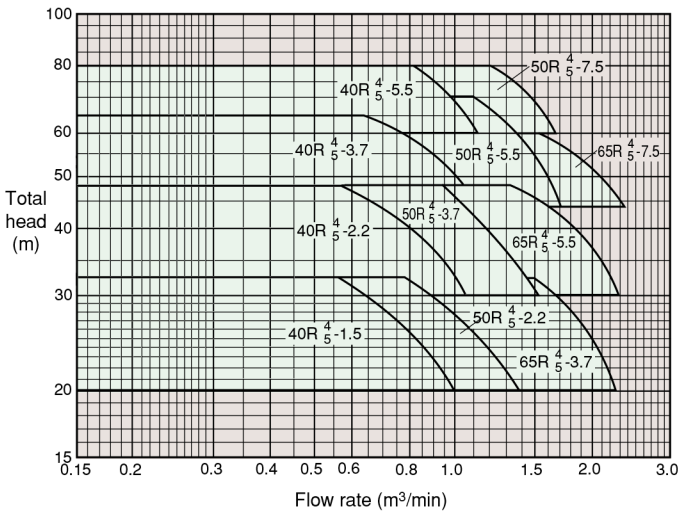
KF2-R3 2/3 Pumps Rotary



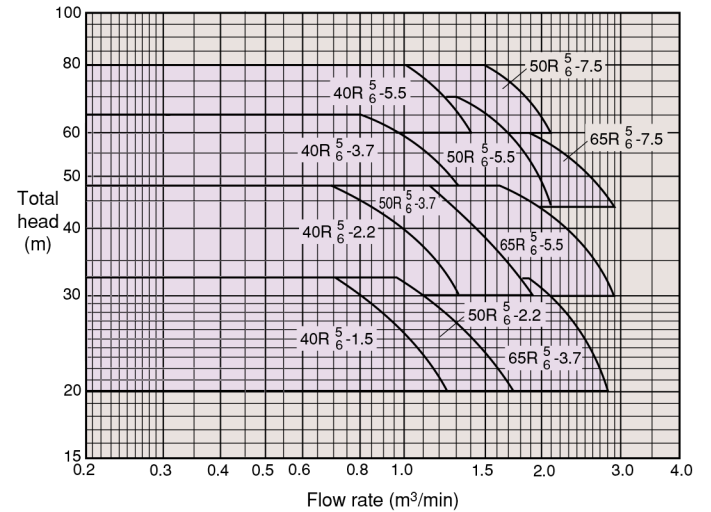
KF2-R3·4 3/3, 3/4 Pumps Rotary



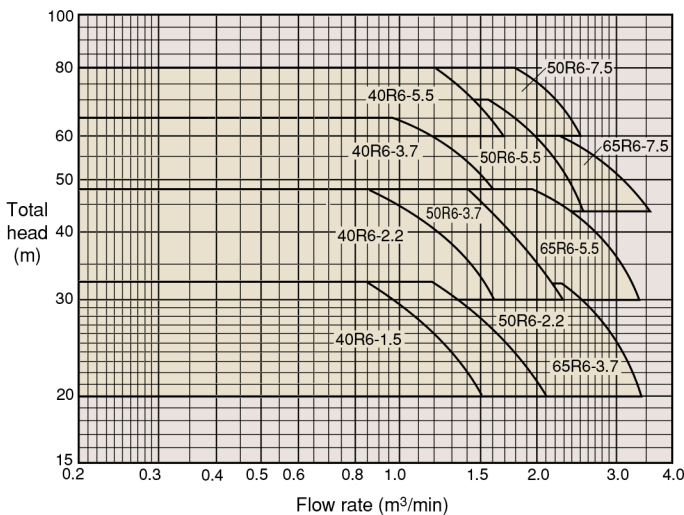
KF2-R4·5 4/4, 4/5 Pumps Rotary



KF2-R5·6 5/5, 5/6 Pumps Rotary

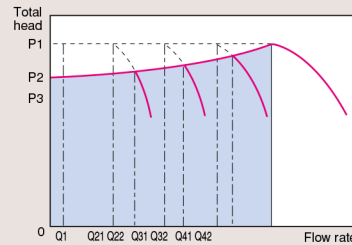


KF2-R6 6/6 Pumps Rotary



(The specifications indicate the values with the unit loss from the check valve, etc., subtracted.)

Explanation of operation



<Example for four-pump rotary>

- P1: Set head
- P2: Estimated terminal head
- P3: Starting head (P2-0.04MPa (0.4kg/cm²))
- Q1: Stop flow rate (10l/min)
- Q21, Q22: 2nd pump ON/OFF flow rate
- Q31, Q32: 3rd pump ON/OFF flow rate
- Q41, Q42: 4th pump ON/OFF flow rate
- * The dotted line shows the case for constant discharge pressure operation.

- ① When water is used while the pump is stopped and the pressure drops to P3, the pump will start running.
- ② When the flow rate is between Q1 and Q21 or more, the water supply will continue at the constant pressure at estimated terminal outlet.
- ③ When the flow rate drops to below Q1, the pump will stop.
- ④ If the flow rate is less than Q21, alternate operation will take place.
- ⑤ If the flow rate reaches Q22 or higher while the first pump is running, the second pump will start up and two-pump operation will take place. If the flow rate increases more, the pumps will start up in order of the third pump and fourth pump as Q32 and Q42 are reached, and operation of up to four pumps will take place.
- ⑥ When the flow rate drops below Q41 during four-pump operation, the pressure detector will activate, and the number of operating pumps will be reduced to three pumps. If the used water rate drops further to Q31 or Q21, the pumps will be reduced accordingly, and either two-pump or one-pump operation will take place.
- ⑦ When the flow rate drops to below Q1, the pump will stop.

※ Performance curves and technical information are subject to change without notice. Consult KAWAMOTO PUMP for exact pump specifications.

Specifications Table

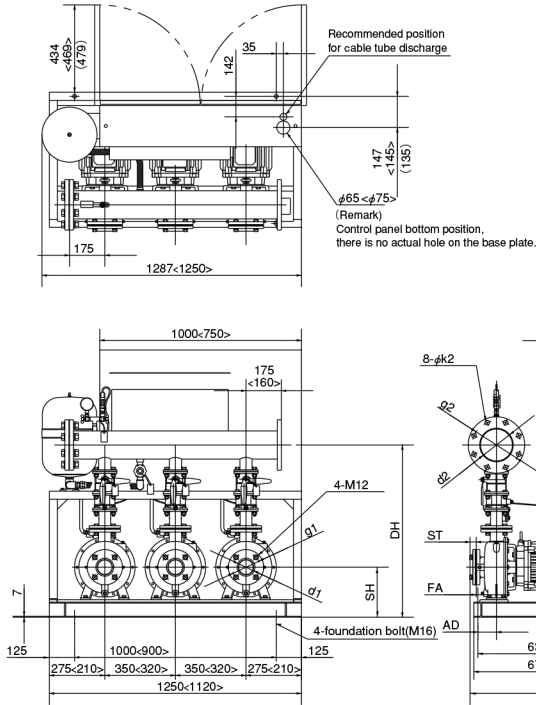
■ Specifications table (Pump stop flow rate: 10 ℓ/min)

Unit bore mm	Suction bore mm	Operation method	Type	Motor (Maximum number of operation units) kW	Standard specifications			Set head adjustment range m	Accumulator charged pressure MPa[kgf/cm ²]	Sound (*1) dB [A]	Power factor (%)	
					Flow rate m ³ /min	Total head m	Set head m					
80	40	2/3 pumps rotary	KF2-40R3E1.5T4	1.5 X2	0.28	32	32	0.25 [2.5]	20~32	0.19 [1.9]	55	92.5
			KF2-40R3E2.2T4	2.2 X2	0.28	48	48	0.38 [3.9]	30~48	0.29 [3.0]	55	91.6
			KF2-40R3E3.7T4	3.7 X2	0.32	65	65	0.54 [5.5]	48~65	0.42 [4.3]	59	90.3
			KF2-40R3E5.5T4	5.5 X2	0.41	80	80	0.67 [6.8]	60~80	0.58 [5.9]	62	91.4
100	50		KF2-50R3E2.2T4	2.2 X2	0.4	32	32	0.25 [2.5]	20~32	0.19 [1.9]	57	91.6
			KF2-50R3E3.7T4	3.7 X2	0.47	48	48	0.38 [3.9]	30~48	0.29 [3.0]	58	90.3
			KF2-50R3E5.5T4	5.5 X2	0.5	70	70	0.58 [5.9]	44~70	0.50 [5.1]	63	91.4
			KF2-50R3E7.5T4	7.5 X2	0.6	80	80	0.67 [6.8]	60~80	0.58 [5.9]	66	92.7
125	65		KF2-65R3E3.7T4	3.7 X2	0.76	32	32	0.25 [2.5]	20~32	0.19 [1.9]	59	90.3
			KF2-65R3E5.5T4	5.5 X2	0.66	48	48	0.38 [3.9]	30~48	0.32 [3.3]	63	91.4
			KF2-65R3E7.5T4	7.5 X2	0.76	60	60	0.49 [5.0]	44~60	0.42 [4.3]	65	92.7
			KF2-40R3(4)E1.5T4	1.5 X3	0.42	32	32	0.25 [2.5]	20~32	0.19 [1.9]	59	93.2
80	40	KF2-40R3(4)E2.2T4	2.2 X3	0.42	48	48	0.38 [3.9]	30~48	0.29 [3.0]	59	89.1	
		KF2-40R3(4)E3.7T4	3.7 X3	0.48	65	65	0.54 [5.5]	48~65	0.42 [4.3]	63	91.7	
		KF2-40R3(4)E5.5T4	5.5 X3	0.6	80	80	0.67 [6.8]	60~80	0.58 [5.9]	66	92.5	
		KF2-50R3(4)E2.2T4	2.2 X3	0.59	32	32	0.25 [2.5]	20~32	0.19 [1.9]	61	89.1	
100	50	KF2-50R3(4)E3.7T4	3.7 X3	0.7	48	48	0.38 [3.9]	30~48	0.29 [3.0]	63	91.7	
		KF2-50R3(4)E5.5T4	5.5 X3	0.78	70	70	0.58 [5.9]	44~70	0.50 [5.1]	66	92.5	
		KF2-50R3(4)E7.5T4	7.5 X3	0.9	80	80	0.67 [6.8]	60~80	0.58 [5.9]	67	93.3	
		KF2-65R3(4)E3.7T4	3.7 X3	1.12	32	32	0.25 [2.5]	20~32	0.19 [1.9]	63	91.7	
125	65	KF2-65R3(4)E5.5T4	5.5 X3	1.0	48	48	0.38 [3.9]	30~48	0.32 [3.3]	65	92.5	
		KF2-65R3(4)E7.5T4	7.5 X3	1.14	60	60	0.49 [5.0]	44~60	0.42 [4.3]	67	93.3	
		KF2-40R4(5)E1.5T4	1.5 X4	0.56	32	32	0.25 [2.5]	20~32	0.19 [1.9]	61	89.9	
		KF2-40R4(5)E2.2T4	2.2 X4	0.56	48	48	0.38 [3.9]	30~48	0.29 [3.0]	61	90.3	
80	40	KF2-40R4(5)E3.7T4	3.7 X4	0.64	65	65	0.54 [5.5]	48~65	0.42 [4.3]	65	92.3	
		KF2-40R4(5)E5.5T4	5.5 X4	0.8	80	80	0.67 [6.8]	60~80	0.58 [5.9]	68	93.2	
		KF2-50R4(5)E2.2T4	2.2 X4	0.79	32	32	0.25 [2.5]	20~32	0.19 [1.9]	63	90.3	
		KF2-50R4(5)E3.7T4	3.7 X4	0.94	48	48	0.38 [3.9]	30~48	0.29 [3.0]	65	92.3	
100	50	KF2-50R4(5)E5.5T4	5.5 X4	1.1	70	70	0.58 [5.9]	44~70	0.50 [5.1]	67	93.2	
		KF2-50R4(5)E7.5T4	7.5 X4	1.19	80	80	0.67 [6.8]	60~80	0.58 [5.9]	68	93.6	
		KF2-65R4(5)E3.7T4	3.7 X4	1.52	32	32	0.25 [2.5]	20~32	0.19 [1.9]	64	92.3	
		KF2-65R4(5)E5.5T4	5.5 X4	1.3	48	48	0.38 [3.9]	30~48	0.32 [3.3]	66	93.2	
125	65	KF2-65R4(5)E7.5T4	7.5 X4	1.52	60	60	0.49 [5.0]	44~60	0.42 [4.3]	69	93.6	
		KF2-40R5(6)E1.5T4	1.5 X5	0.7	32	32	0.25 [2.5]	20~32	0.19 [1.9]	62	90.8	
		KF2-40R5(6)E2.2T4	2.2 X5	0.7	48	48	0.38 [3.9]	30~48	0.29 [3.0]	62	91.7	
		KF2-40R5(6)E3.7T4	3.7 X5	0.8	65	65	0.54 [5.5]	48~65	0.42 [4.3]	66	92.7	
100	40	KF2-40R5(6)E5.5T4	5.5 X5	1.0	80	80	0.67 [6.8]	60~80	0.58 [5.9]	69	93.4	
		KF2-50R5(6)E2.2T4	2.2 X5	0.98	32	32	0.25 [2.5]	20~32	0.19 [1.9]	64	91.7	
		KF2-50R5(6)E3.7T4	3.7 X5	1.17	48	48	0.38 [3.9]	30~48	0.29 [3.0]	66	92.7	
		KF2-50R5(6)E5.5T4	5.5 X5	1.3	70	70	0.58 [5.9]	44~70	0.50 [5.1]	68	93.4	
125	50	KF2-50R5(6)E7.5T4	7.5 X5	1.48	80	80	0.67 [6.8]	60~80	0.58 [5.9]	69	93.6	
		KF2-65R5(6)E3.7T4	3.7 X5	1.87	32	32	0.25 [2.5]	20~32	0.19 [1.9]	65	92.7	
		KF2-65R5(6)E5.5T4	5.5 X5	1.62	48	48	0.38 [3.9]	30~48	0.32 [3.3]	67	93.4	
		KF2-65R5(6)E7.5T4	7.5 X5	1.9	60	60	0.49 [5.0]	44~60	0.42 [4.3]	70	93.6	
150	65	KF2-40R6E1.5T4	1.5 X6	0.84	32	32	0.25 [2.5]	20~32	0.19 [1.9]	63	91.4	
		KF2-40R6E2.2T4	2.2 X6	0.84	48	48	0.38 [3.9]	30~48	0.29 [3.0]	63	92.1	
		KF2-40R6E3.7T4	3.7 X6	0.96	65	65	0.54 [5.5]	48~65	0.42 [4.3]	67	93.4	
		KF2-40R6E5.5T4	5.5 X6	1.2	80	80	0.67 [6.8]	60~80	0.58 [5.9]	70	93.5	
125	50	KF2-50R6E2.2T4	2.2 X6	1.18	32	32	0.25 [2.5]	20~32	0.19 [1.9]	65	92.1	
		KF2-50R6E3.7T4	3.7 X6	1.4	48	48	0.38 [3.9]	30~48	0.29 [3.0]	67	93.4	
		KF2-50R6E5.5T4	5.5 X6	1.56	70	70	0.58 [5.9]	44~70	0.50 [5.1]	69	93.5	
		KF2-50R6E7.5T4	7.5 X6	1.78	80	80	0.67 [6.8]	60~80	0.58 [5.9]	70	93.7	
150	65	KF2-65R6E3.7T4	3.7 X6	2.24	32	32	0.25 [2.5]	20~32	0.19 [1.9]	66	93.4	
		KF2-65R6E5.5T4	5.5 X6	1.95	48	48	0.38 [3.9]	30~48	0.32 [3.3]	68	93.5	
		KF2-65R6E7.5T4	7.5 X6	2.28	60	60	0.49 [5.0]	44~60	0.42 [4.3]	71	93.7	

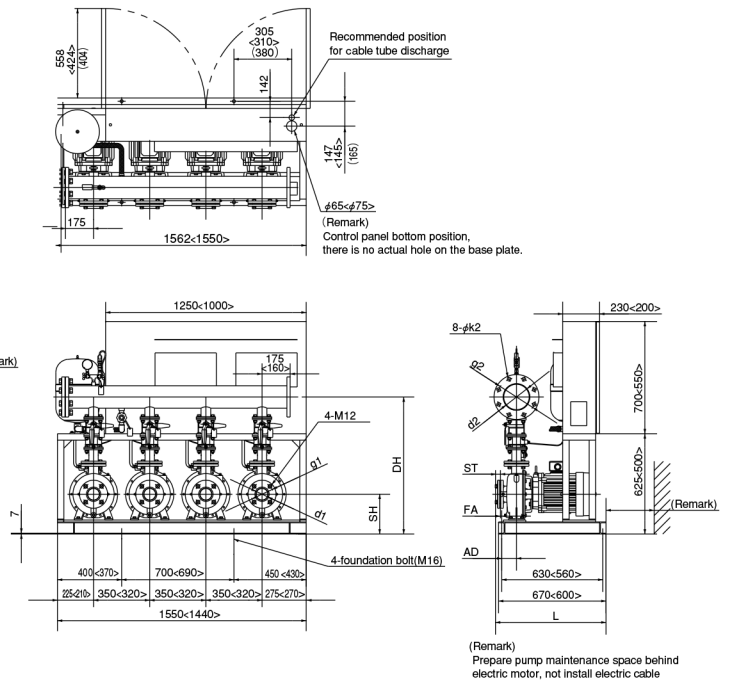
(*1) The noise level is the maximum value given in the specifications. (Reference value)

(Note) When using large amount flow rate such as a flushing valve, please consult KAWAMOTO PUMP.

3 Pumps Rotary



4 Pumps Rotary



Flange (Common in 3 pumps and 4 pumps rotary operation models.)

Unit bore mm	suction bore mm	Flange							
		d1	g1	d2	g2	n2	k2	ST	
65	32	PT1 $\frac{1}{4}$	100	65	140	4	19	25	
		PT1 $\frac{1}{2}$	100	65	140	4	19	25	
		PT1 $\frac{3}{4}$	100	65	140	4	19	25	
80	40	PT1 $\frac{1}{2}$	105	80	150	8	19	25	
		PT1	105	80	150	8	19	25	
		PT1 $\frac{3}{4}$	105	80	150	8	19	25	
100	50	PT2	120	100	175	8	19	27	
		PT2	120	100	175	8	19	27	
125	65	PT2 $\frac{1}{2}$	140	125	210	8	23	31	

Dimension table ※ There are holes also for power supply cable(with rubber bush) below 3.7kw models. () is less than 3.7kW models. () is 65mm-3.7kW model. Foundation bolts are optional accessory.

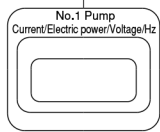
	Unit bore mm	suction bore mm	type	Motor kW	Combinations					Weight kg	Vibration Proof bed			
					SH	DH	FA	L	AD					
3 pumps rotary	80	40	KF2-40R3E1.5T4	1.5	178	676	-35	-	95	227	QGP-88	PW-1101J221-1		
			KF2-40R3E2.2T4	2.2	178	676	7	611	95	250				
			KF2-40R3E3.7T4	3.7	178	676	7	611	95	270	QGP-92	PW-1301J221		
			KF2-40R3E5.5T4	5.5	228	745	15	689	90	403				
	100	50	KF2-50R3E2.2T4	2.2	178	676	-35	613	95	250	QGP-88	PW-1101J221-1		
			KF2-50R3E3.7T4	3.7	178	676	7	613	95	275				
			KF2-50R3E5.5T4	5.5	228	745	15	691	90	409	QGP-92	PW-1301J221 PW-1301J221-1 PW-1301J221		
			KF2-50R3E7.5T4	7.5	228	745	15	691	90	476				
			KF2-65R3E3.7T4	3.7	228	809	8	689	92	368				
4 pumps rotary	80	40	KF2-65R3E5.5T4	5.5	248	854	8	689	92	440	QGP-92	PW-1301J221-1		
			KF2-65R3E7.5T4	7.5	248	854	8	689	92	507				
			100	50	KF2-40R4E1.5T4	1.5	178	676	-35	-	95	291	QGP-89	PW-1451J351-1 PW-1451J351-2
					KF2-40R4E2.2T4	2.2	178	676	7	611	95	322		
	KF2-40R4E3.7T4	3.7			178	676	7	611	95	347	QGP-93	PW-1601J281 PW-1451J351-1		
	KF2-40R4E5.5T4	5.5			228	745	15	689	90	527				
	125	65	KF2-50R4E2.2T4	2.2	178	676	-35	613	95	321	QGP-89	PW-1451J351-2 PW-1601J281		
			KF2-50R4E3.7T4	3.7	178	676	7	613	95	353				
KF2-50R4E5.5T4			5.5	228	745	15	691	90	532	QGP-93	PW-1601J281-1 PW-1601J281			
KF2-50R4E7.5T4			7.5	228	745	15	691	90	622					
125	65	KF2-65R4E3.7T4	3.7	228	809	8	689	92	463	QGP-93	PW-1601J281-1 PW-1601J281			
		KF2-65R4E5.5T4	5.5	248	854	8	689	92	572					
			KF2-65R4E7.5T4	7.5	248	854	8	689	92	657				

L is omitted in case L ≤ 600.
(-) shows reverse direction to the drawing

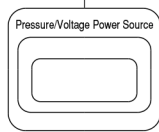
Control Panel

ECSG3-R type

(PHOTO : 6 Pumps Rotary 3.7 kW Model)



Display Detail



Display Detail

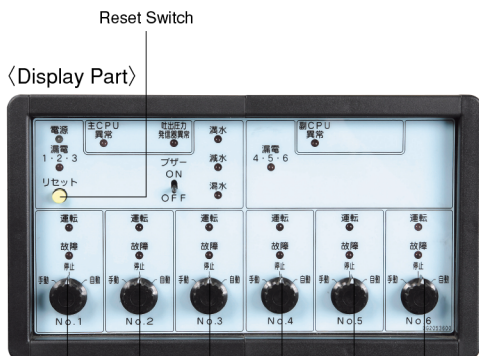
Noise Filter
(High Efficiency Noise Absorb)

Earth leakage circuit breaker
and DC Reactor



Inverter

Heater Terminal



Operation Mode Select Switch

- Inverter, DC reactor and Earth leakage circuit breaker for each pump
- Noise filter, double tank type inflow motorized valve circuit
- Compatible twin reservoir (5-pole)
- Backup functions for pressure transmitter trouble and control PCB trouble

Type	ECSG3-R	
Operation method	Multiple pump control rotary (three to six pump operation)	
Rated voltage	3 phase 380~440V (200V is also available)	
Installation place	Indoors, altitude 1,000m or less, ambient temperature 0 to 40°C, humidity 90% or less	
Main components	Earth leakage circuit breaker (with AL)	Pump, control circuit, heater circuit, inflow motorized valve circuit
	DC reactor	For each pump
	Noise filter	High efficiency noise absorption material incorporated (for main circuit and control circuit)
	Inverter	For each pump
Operation display	Control PCB	Control PCB, display PCB, water level PCB
	Power supply	Lamp
	Operation	Lamp (for each pump)
	Discharge head	Digital
Trouble alarms	Power voltage, current, frequency	Digital
	Cumulative operation time/No. of starts	Digital
	Trouble	Lamp (for each pump)
	Pressure drop	Lamp (trouble message)
Functions	Residual current	Lamp (trouble message)
	Pressure transmitter trouble	Lamp (trouble message)
	Full, water level dropping, empty	Lamp
	Water level control	○Twin reservoir type (5-pole)
External no-voltage signal	Inflow motorized (solenoid) valve control	○Twin reservoir type(3-pole)
	Pump trouble	○(Backup operation [overload, locking, phase failure, short circuit])
	Inverter trouble	○(Backup operation)
	Malfunction preventing retry	○(Refer to following table)
External no-voltage signal	Pressure transmitter trouble	○(Backup operation)
	Control PCB trouble	○(Backup operation)
	Buzzer	○(With ON-OFF switch)
	Operation	○(group)
External no-voltage signal	Trouble	○(Group and independent)
	Full	○
	Water level dropping	○
	Empty	○

List of trouble messages (type KF2-R)

	Item	Lamp display	Trouble message	External output	Retry	Backup operation
Inverter	Overload	○Trouble	OL	○	—	○
	Locking, phase failure	○Trouble	OC1 to 3	○	—	○
	Ground fault	○Trouble	OC1 to 3	○	—	○
	Over/under voltage	○Trouble	OV-LV	○	○	○
	Inverter heating	○Trouble	OH1	○	—	○
Pressure drop	Pressure drop	○Trouble	HdL	○	—	○
	Pressure transmitter trouble	○Trouble	PEd	○	—	○
	Control PCB trouble	○Trouble	ECU	○	—	○

Back up (substitutional) operation

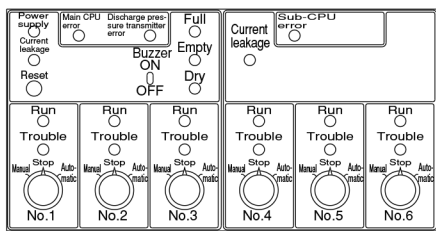
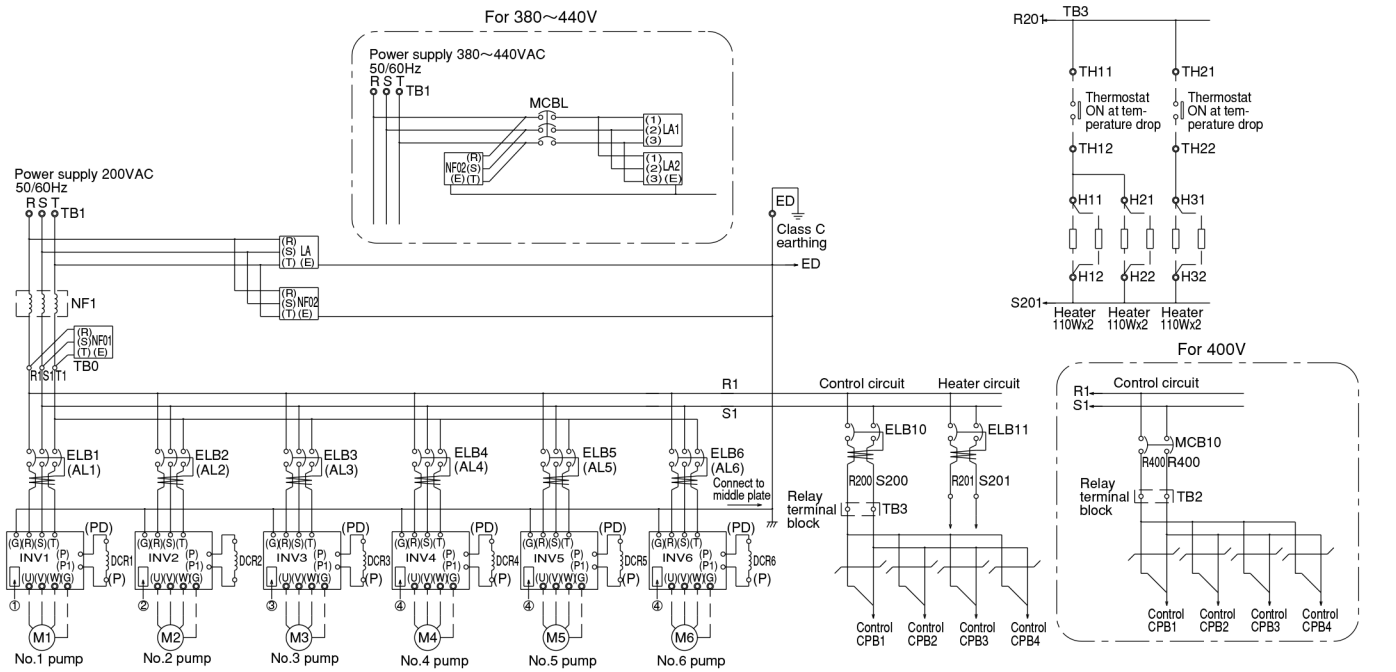
If trouble occurs, a normal control PCB, inverter and pump are automatically selected, and operation is continued.



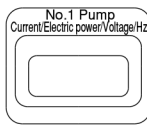
Lightning measures

Lightning surge protection are taken on the "Pumper KF2 and KF2-R" as a standard. However, in special installation places such as on mountain peaks or when the earth resistance is large, the attenuation effect of the lightning surge absorber will drop, so earth the earthing wire to one point with the shortest distance, and always provide special Class 3 (Class C) earthing from this device.

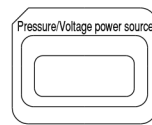
Control Panel Wiring Diagram



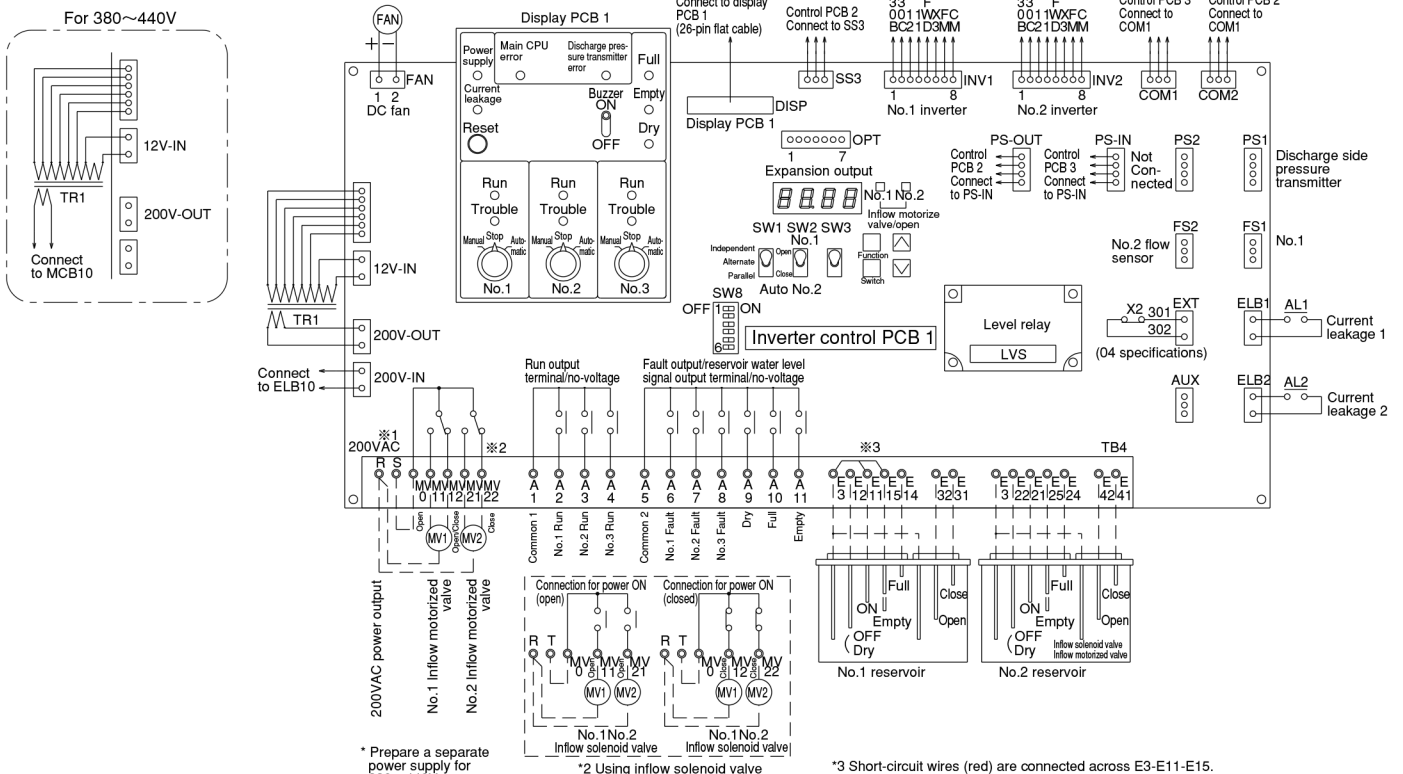
Display Detail



*2 Display Detail



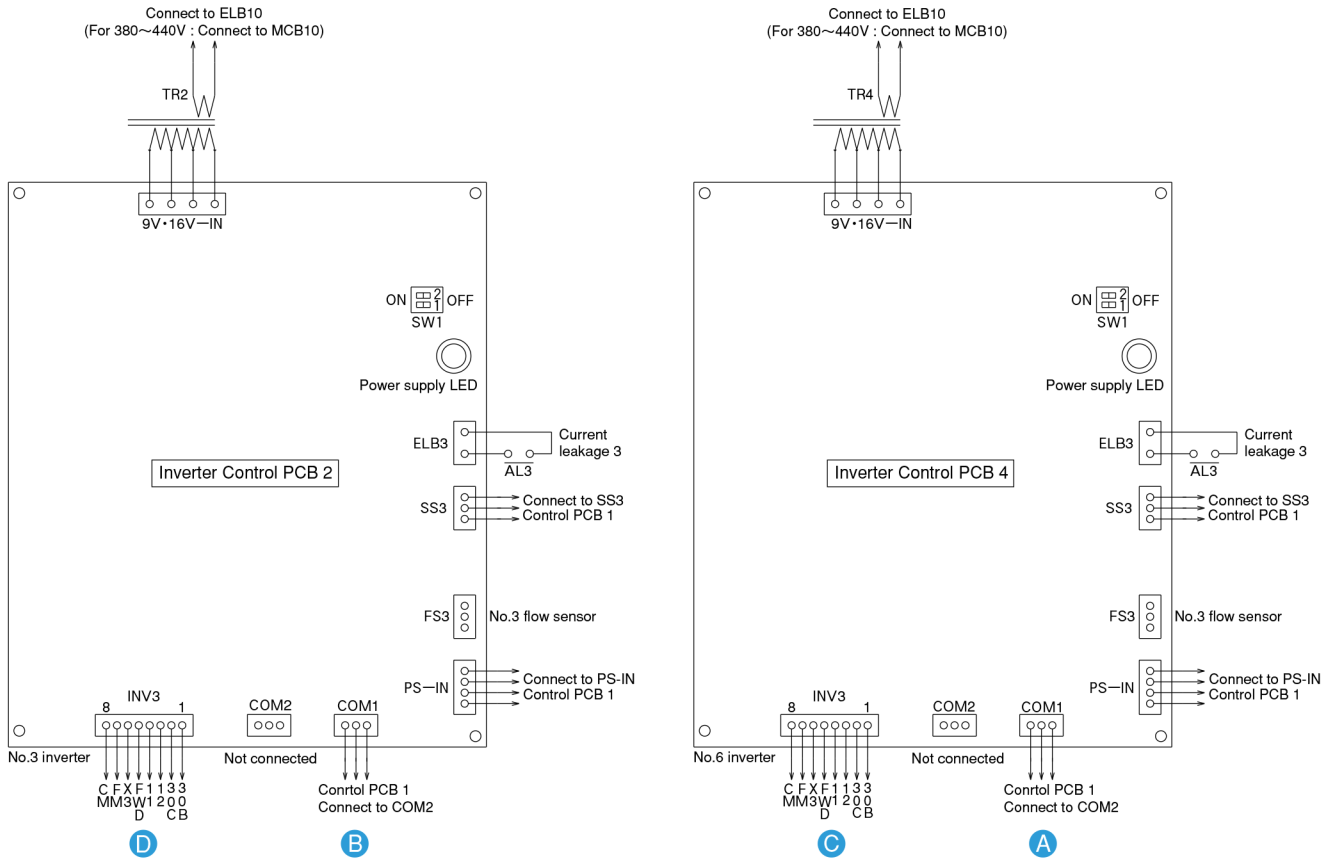
*3 Display Detail



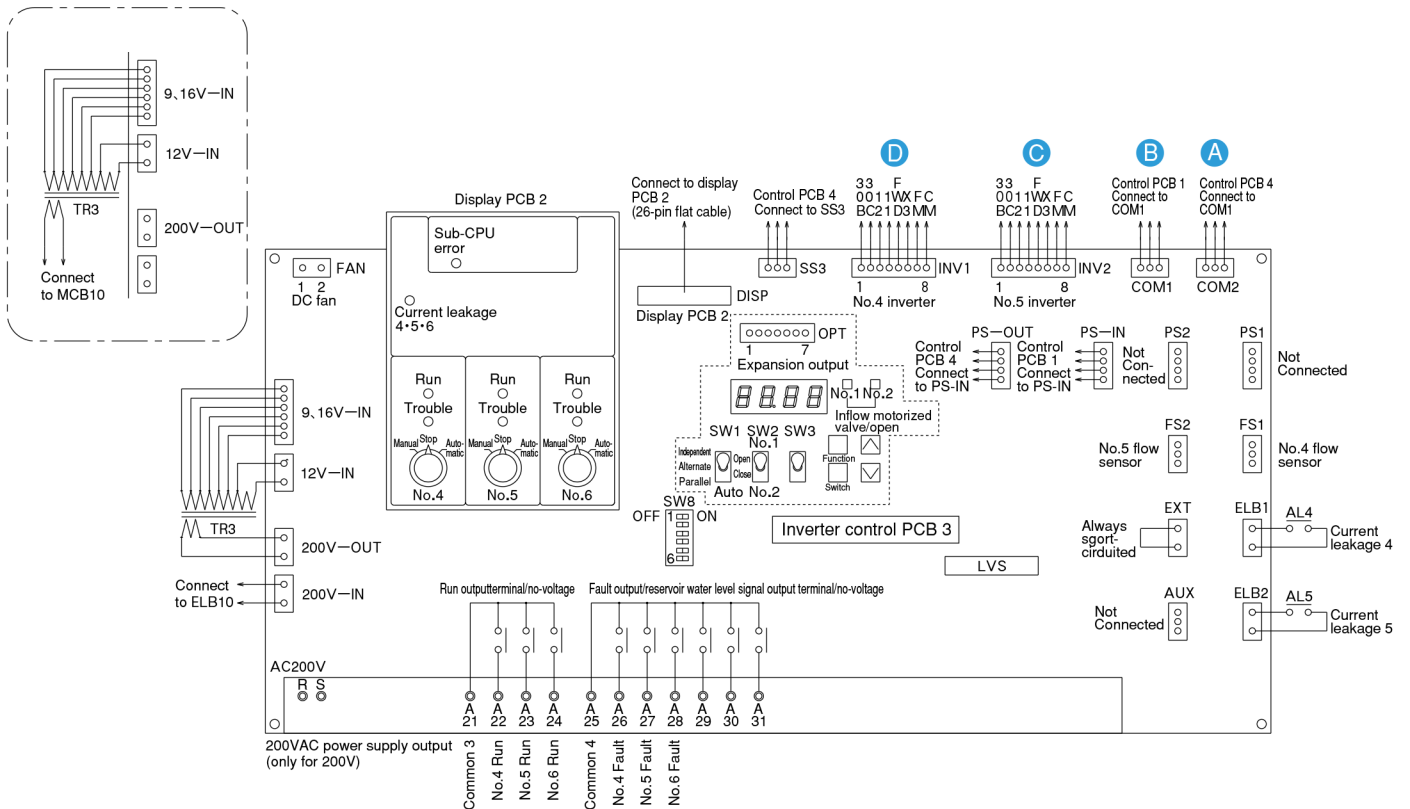
* Prepare a separate power supply for 380~440V.

*2 Using inflow solenoid valve

*3 Short-circuit wires (red) are connected across E3-E11-E15. Remove these short-circuit wires when using the electrode rod.



For 380~440V



A B C D shows connecting part for each wiring diagram

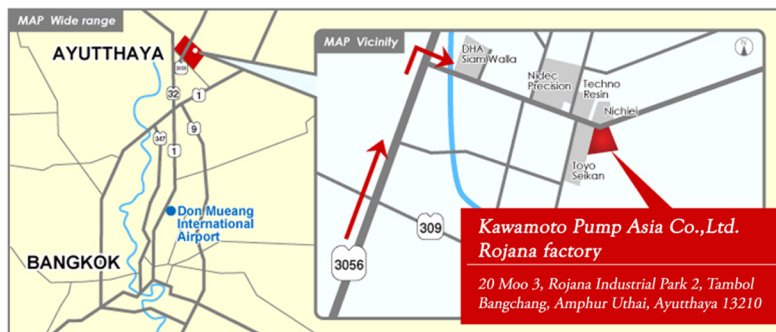
Kawamoto Pump Asia Co., Ltd.

 THAILAND



Ayutthaya factory

Tel. 03-574-6860



Rojana Factory

Rojana Industrial Park 2, Ayutthaya

Bangkok Sales Office

Bangkok sales office

E-mail. kpa@kawamoto-pump.co.th

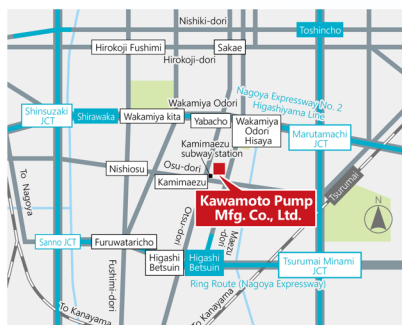
Tel. 02-024-6606



**Promphan building 3
7th Floor**

Kawamoto Pump Mfg. Co., Ltd.

 JAPAN



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**SAFETY
PRECAUTIONS**

- Always read the instruction manual carefully before starting to ensure correct use.
- Select a product which matches the application. Using the pump in an incorrect application could lead to faults.
- Always follow the Electrical Facility Technology Standards and in-house standards and safety and accurately select and complete electrical wiring work.
- Always ground the unit and install the dedicated residual current circuit breaker. There is a risk of failure or electric shock in the event of a failure or residual current. Consult your dealer for information on grounding the unit.

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Website: www.kawamoto-pump.co.th

For any question about pumps, please contact your nearest distributor

Name	KF2-A·P·T·R
No.	0810 ⑥/E