

Inverter ECORICH HYBRID POWER UNIT



ECO-RICH

Fusion of Hydraulic and Motor / Inverter Technology

First in the world



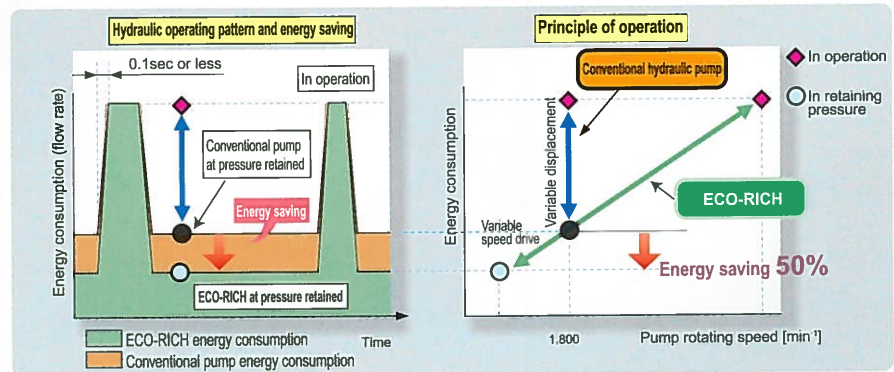
● Epoch-making energy saving 50% (Compared to our product, when pressure is retained)

- ◆ Drastic energy saving by reducing the motor rotating speed under pressure-retained condition
- ◆ Our original SR motor control unit of high efficiency and compact fixed-displacement pump are employed.

● High-speed response

- ◆ Special SR motor, which has low inertia and generates high torque at low speed, and high-speed response inverter
- ◆ Response equivalent to or higher than conventional variable displacement pump (Pressure retained ⇔ operation at maximum flow rate: 0.1sec or less)

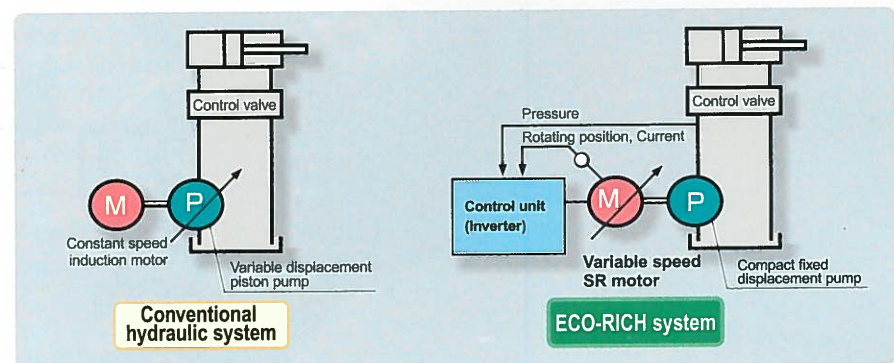
Principle of energy saving



● Autonomous energy-saving pressure — flow rate control

- ◆ Supplies required flow according to load condition by monitoring the pressure.
- ◆ Holds necessary pressure and operates at the minimum rotating speed required to compensate for leakage from circuit in retaining pressure. Rotates at high speed and supplies required flow when hydraulic actuator operates.

System configuration



● Space-saving and Resources-saving

- ◆ Resources-saving type with compact, lightweight, and simple structure with no permanent magnet (50% compared to our conventional unit)
- ◆ Minimized fluid is supplied at low-speed rotation to improve the hydraulic oil in deterioration.

● Easy installation and easy operation

- ◆ Only connect to 200V commercial power source to operate.
- ◆ Pressure and flow rate can be set on the touch panel.
- ◆ Pressure and flow rate are legibly displayed in digital.

Nomenclature

EHU ※※ ※ - ※ ※※ - A ※ - ※※ - ※ - ※※※※※※

1 2 1 3 4 5 6 7 8 9

1 Basic

EHU : ECO-RICH EHU series
EHU**R:ECO-RICH EHU/R series

2 Pump maximum flow rate

14 : 14 L/min
25 : 25 L/min
30 : 28.5L/min
40 : 40 L/min

3 Output characteristic

L :
M :

4 Maximum operating pressure

04: 4.0 MPa
07: 7.0 MPa

5 Control system

A : Pressure compensated control

6 Specifications of control unit

No symbol: Without reactor
(In case of EHU14(25)-L04)
E : With reactor
(In case of EHU25-L07, M07,EHU30-M07)
*EHU40R series equipped DC reactor without

7 Design No.

10 : EHU40R-M07
30 : Other than EHU40R-M07

May change according to model change.

8 Option Symbol

No symbol: With fixed relief valve.
V : With variable relief valve.

9 Non-standard No.

No symbol: Standard

Notes: EHU40R-M07 is improved in higher efficiency and higher saving energy(with IPM motor),compared with conventional EHU40-M07.
The outside size (W×H×D) is changed. 700mm×446mm×500mm → 700mm×516mm×500mm

Specifications

[Main specifications]

Model	Motor capacity (Nominal)	Tank capacity (L)	Max. operating pressure (MPa)	Max. flow rate (L/min)	Weight (kg) (excluding hydraulic oil)
EHU14-L04	Equivalent to 0.75kW	10	4.0	14.0	43
EHU25-L04	Equivalent to 1.5kW			25.0	
EHU25-L07	Equivalent to 2.2kW	30	7.0	28.5	45
EHU25-M07	Equivalent to 2.8kW				46
EHU30-M07	Equivalent to 2.8kW				6.0
EHU40-M07	Equivalent to 3.7kW	30	7.0	40.0	57

Notes: 1. Max flow rate in operating continuously at max.

Operating pressure:

• EHU14/25/30 : 5.0 L/min • EHU40R-M07 : 8.0 L/min

2. Min. PC pressure set: 1.5MPa

When PC pressure is adjusted, minimum rotating speed must be reset at 350min⁻¹, and pressure of safety valve must be reset at PC pressure +0.5MPa.(EHU40R-M07 has a safety valve built-in adjusted at 7.5MPa. Even if it is used at low pressure, it is not necessary to reset. For more information, refer to 'Instruction Manual'.)

3. Please adopt a Super Unit(SUT), when bigger capacity of tank and higher pressure are required.

4. On EHU40R series. Multiple Pressure and Flow control up to 4 pre-input patterns is available, which is selected with input signal from Machine mail board. Moreover Shock-less control, which is set increase/decrease time of Pressure/Flow, is also available.

[Rated current]

Model	Rated current (A)			Thermal set value (A)
	200V 50Hz	200V 60Hz	220V 60Hz	
EHU14-L04	7.3	7.3	7.0	15
EHU25-L04	7.9	7.9	7.5	
EHU25-L07	5.7	5.7	5.3	15
EHU25-M07	9.1	9.1	8.5	
EHU30-M07	9.6	9.6	8.7	
EHU40R-M07	11.2	10.9	10.0	20

Notes: 1. Use the electric wire which suitable for AWG14(2sq~2.5sq).

2. It is not necessary to equip over current thermal on Eco-Rich, because Eco-Rich equipped Inverter controller which is included over current protection. If you would use additional thermal, there is some possibility.

3. Power supply: 200V/50Hz, 200V/60Hz, 220V/60Hz. Allowable power fluctuation ±10%

[Alarm/External input signal]

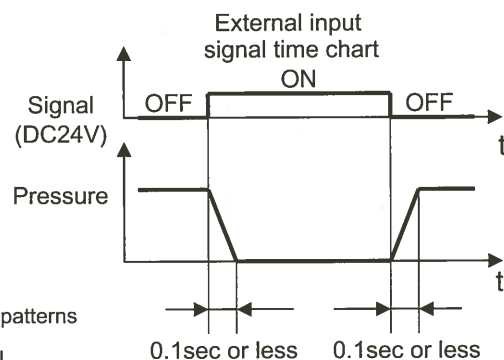
Model	Alarm signal	External input function
EHU14-L04	COM-ALMa: Nomal Closed	None
EHU25-L04	COM-ALMa: Nomal Open	
EHU25-L07	Alarm signal capacity: DC24V, 0.5A (Min. load current 10mA) (at resistance load)	Remote ON/OFF control
EHU25-M07		
EHU30-M07		
EHU40R-M07		

Notes: 1. Remote switching ON/OFF is available with input signal(DINO).

(To use this function, DC24V±1V, 0.5A power capacity is needed.)

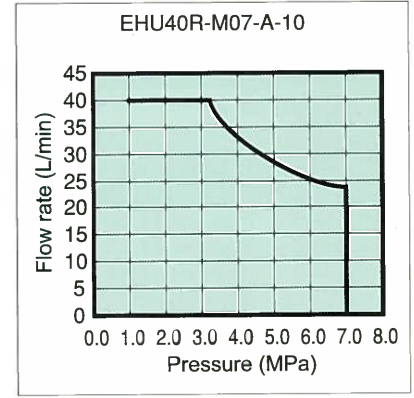
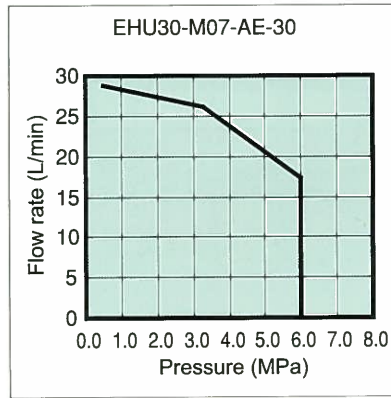
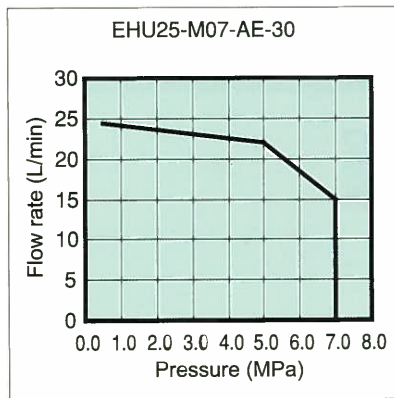
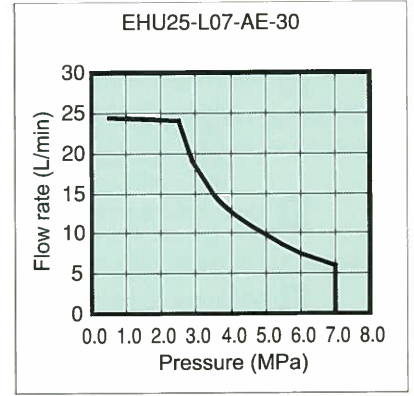
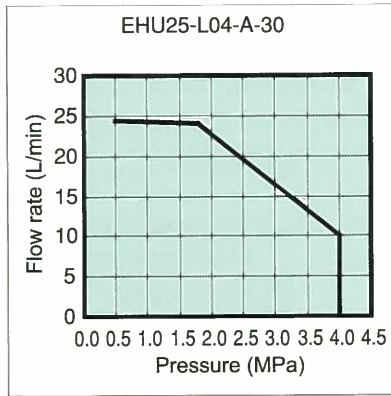
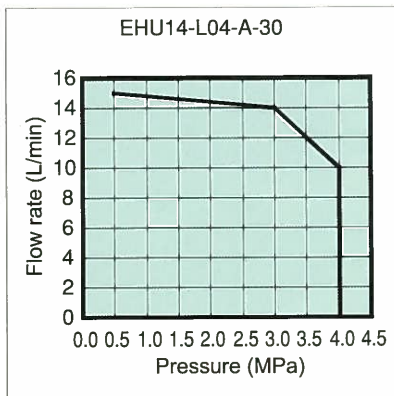
2. On EHU40R, there are 2 other terminals for input signal to select 4 patterns Pressure/Flow setting.

3. Please use AWG22(0.3sq) or equivalent for alarm and input signal.

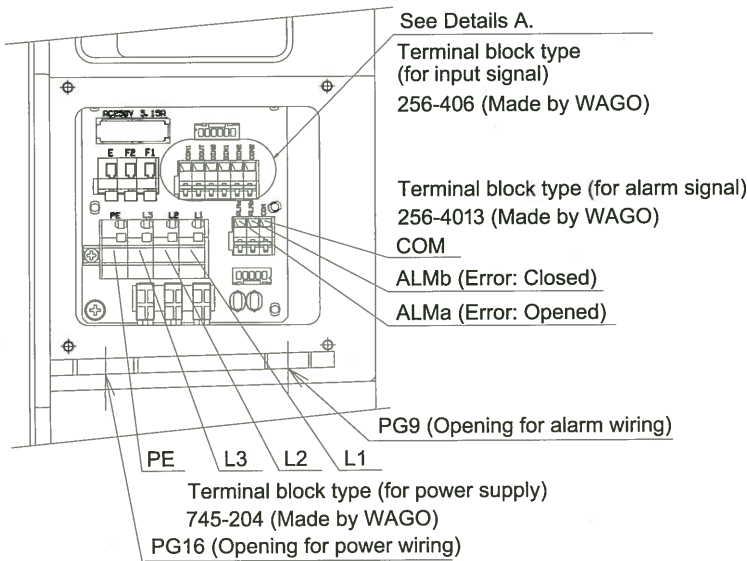


Specifications

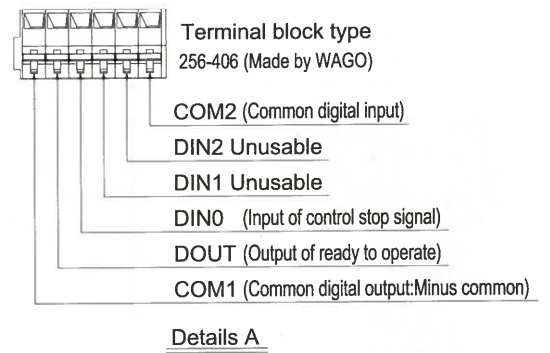
Output characteristic (P-Q characteristic)



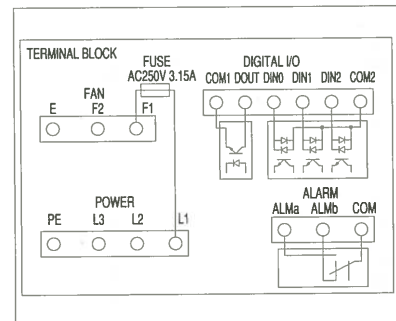
Details of terminal box (EHU14,25,30)



Control unit wiring layout



Note 1. On EHU+-L04 size, this terminal block is not equipped. If necessary, please consult DAIKIN.

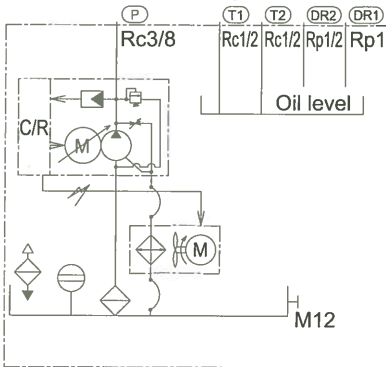


Wiring diagram

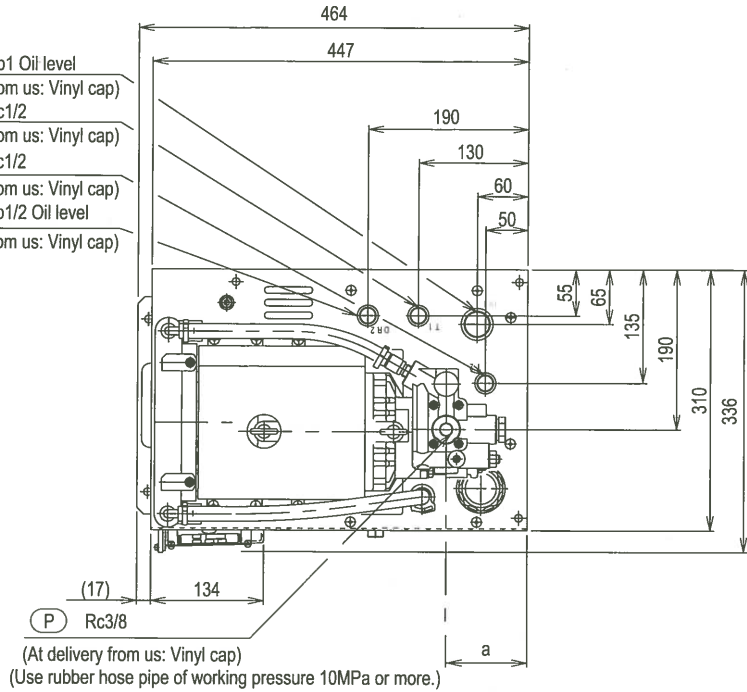
Dimension Table

EHU14
EHU25
EHU30

Hydraulic circuit diagram

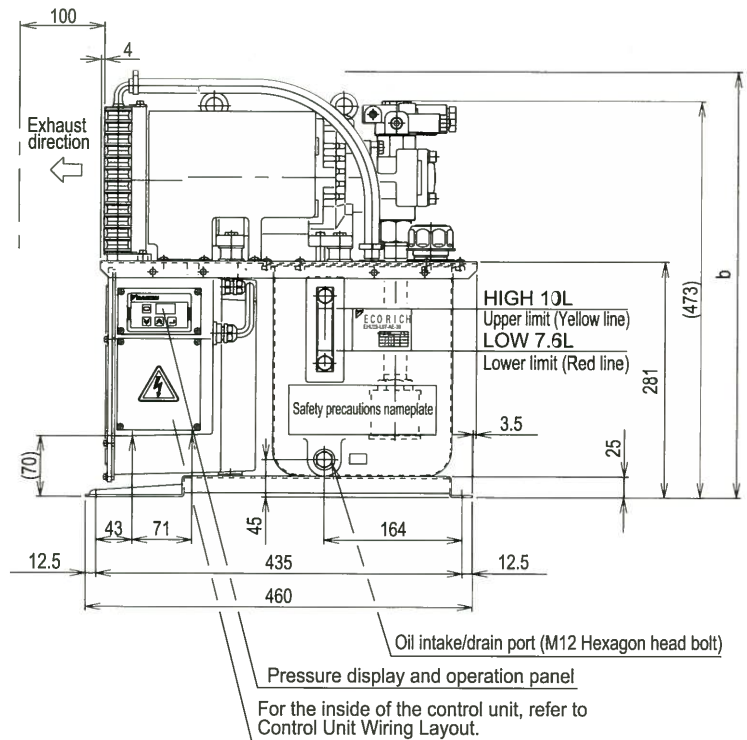
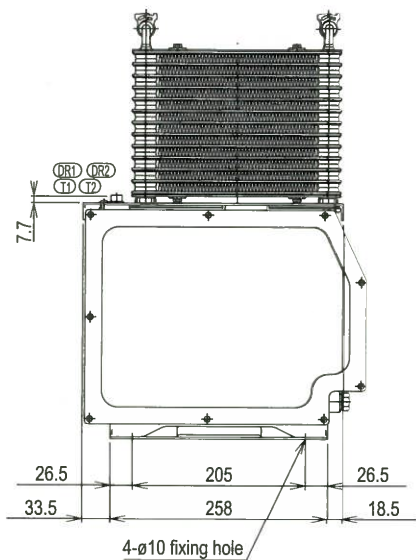


- (DR1) Dp1 Oil level
(At delivery from us: Vinyl cap)
- (T1) Rc1/2
(At delivery from us: Vinyl cap)
- (T2) Rc1/2
(At delivery from us: Vinyl cap)
- (DR2) Rp1/2 Oil level
(At delivery from us: Vinyl cap)



Dimension Table

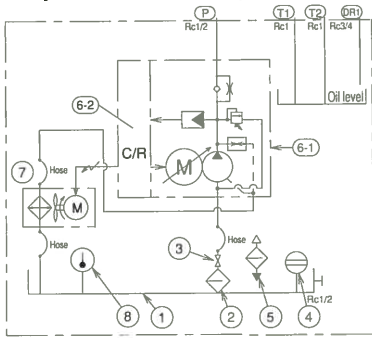
	a	b
EHU14-L04	126.5	483
EHU25-L04	96.5	508
EHU25-L07	96.5	508
EHU25-M07	76.5	509
EHU30-M07	76.5	508



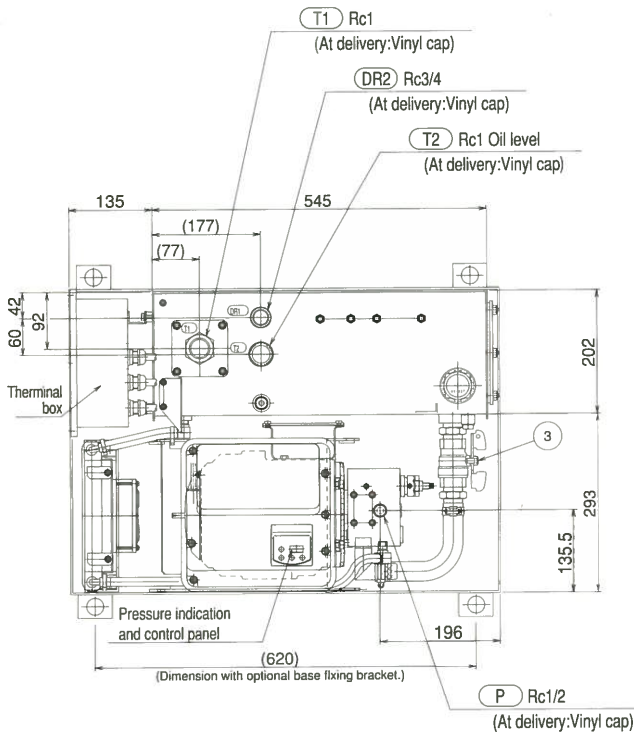
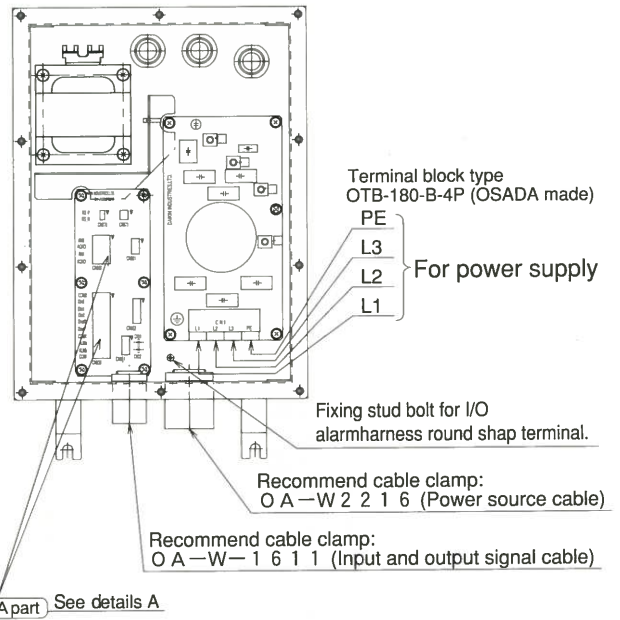
Dimensions

EHU40R

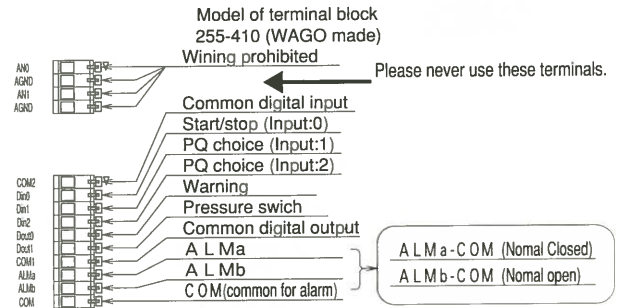
Hydraulic circuit diagram



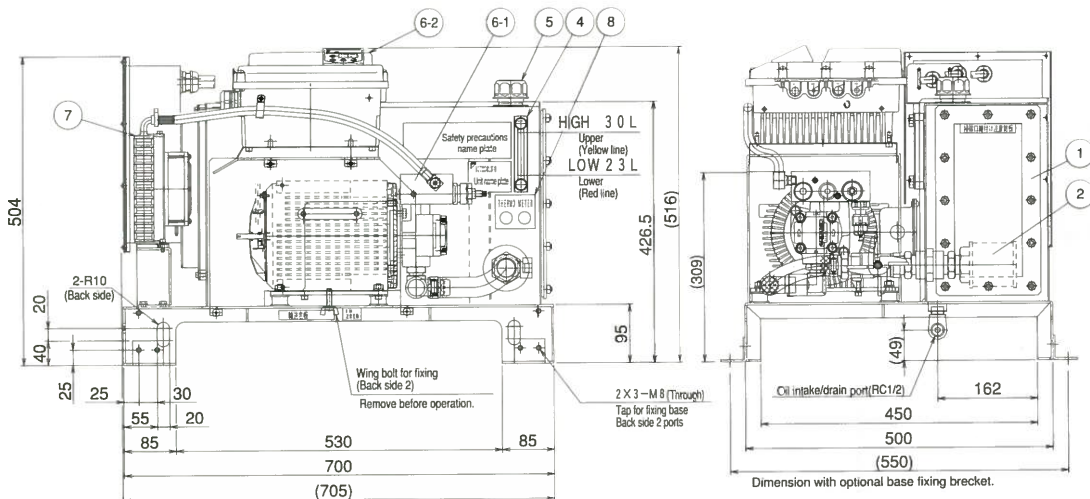
Detail of terminal box



Details A



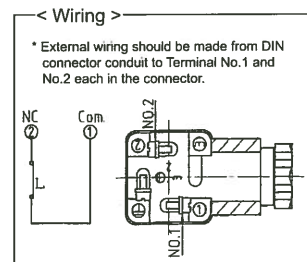
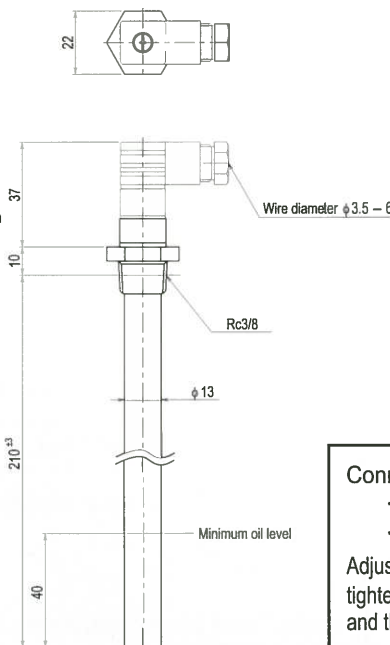
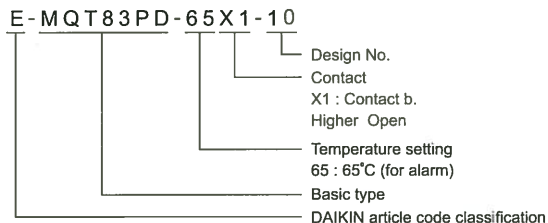
Wiring figure of controller



ECO-RICH optional parts

Following optional parts are available for extra safety in operating ECO-RICH. These switches can be easily mounted onto the unit top plate to detect abnormal oil temperature rise and abnormal oil level drop.

1. Temperature switch (Model: E-MQT83PD-65X1-10)



Specifications:

- Max. operating voltage 24V DC
- Operating current 0.05A-0.5A
- Contact resistance 30mΩ or less
- Protection IP65
- Temperature when alarm is output 65°C
- Abnormal temperature rise Open
- DIFF 5-8deg

Others

Thermostat VDE0631

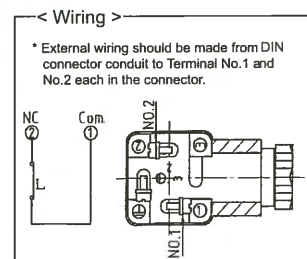
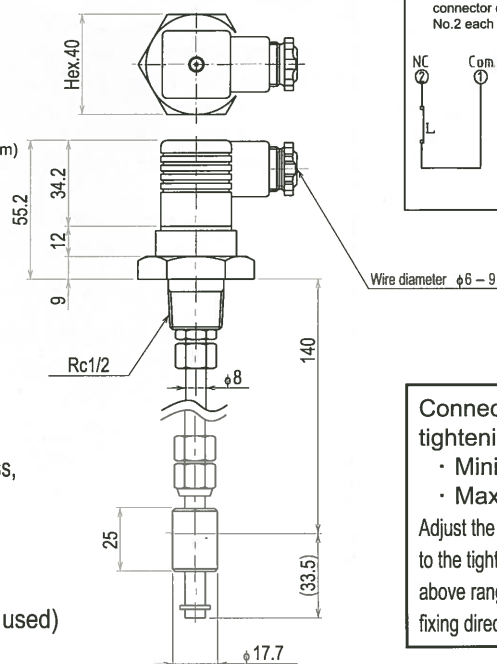
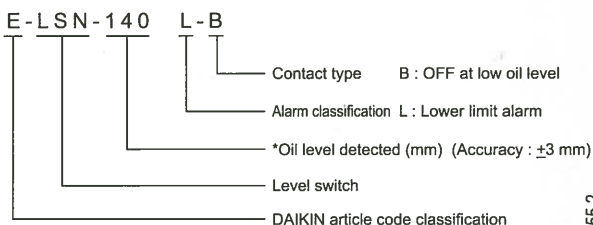
Connection (Rc3/8) tightening torque

- Minimum 20N · m
- Maximum 40N · m

Adjust the wiring direction according to the tightening torque within the above range and the DIN connector fixing direction.

Model applicable: EHU14-L04 (0.75kW)-EHU25-M07 (2.8kW) Tank port (T1, T2) & Drain port (DR1, DR2) and EHU40R-M07 (3.7kW) Tank port (T1, T2) & Drain port (DR1). Use bushing or other joints to mount.

2. Level switch (Model: E-DLSN-140L-B-10)



Specifications

- Max. operating voltage 24V DC/AC
- Max. operating current 0.05A DC/AC
- Contact resistance 1Ω or less
- Protection IP65
- CE standard Non-applicable (Operating voltage 24V or less, Components: DIN connector, as lead switch is employed)
- Oil level when alarm is output EHU14-25 7L or less Open EHU40 (1/2x3/4 bushing used) 22L or less Open

Connection (Rc1/2) tightening torque

- Minimum 20N · m
- Maximum 50N · m

Adjust the wiring direction according to the tightening torque within the above range and the DIN connector fixing direction.

Model applicable: EHU14-L04(0.75kW)-EHU25-M07(2.8kW) Drain port DR2(Rc1/2) can be directly mounted. (Other ports cannot be equipped with.)

EHU40R-M07(3.7kW) Drain port DR1 (Rc3/4) can be mounted with bushing (1/2 × 3/4). (Other port cannot be mounted.)

Note: In normal operation, it is considered to be Normal. In test run or when oil is not in the tank, the contact is opened (OFF). It is not abnormal.

**ECO-RICH
Handling**

The following are the essential requirements in operating ECO-RICH. For more information, refer to "Instruction Manual".

● Ambient conditions

1. Ambient temperature: 0-35°C, Ambient humidity: 20-85%RH, Altitude: 4,000m or below and indoors

● Actuating oil

1. Mineral hydraulic oil should be used. Others (Hydrated, Synthetic) cannot be used.
2. Use ISO VG32-68 hydraulic oil or its equivalent at viscosity of 15 - 400mm²/s and tank temperature of 0 - 60°C.
3. Oil cleanliness should be NAS10 or below.

● Installation and piping

1. Use the eyebolt on the upper unit to move ECO-RICH.
Attach the rubber vibration isolator protective bolt and spacer. If transported without the bolt and the spacer, the rubber vibration isolator may be damaged and ECO-RICH may drop. Take care not to give high impact due to drop or collision in transporting.
2. The unit is a stationary type. Fix it on a level place free of vibration with bolts.
3. Do not place any obstacle within 10cm from the motor and the oil cooler suction and exhaust areas.
Install the unit in a well ventilated area to give off heat.
4. Use flexible hose in piping.
5. Before operating, make sure to remove the rubber vibration isolator protective bolt and spacer. If failed, noise and vibration may be high.

● Wiring

1. When wire is connected from the main power, required protectors should be installed and wiring must conform to laws, regulations, and standards applicable. (For example, the unit should be equipped with the electric circuit conforming to Europe Standard EN60204-1 to protect against over current or short circuit and control unit overload.)
The unit should be equipped with short circuit breaker to prevent against electric shock and other dangerous matters.
2. According to the wiring diagram on the back of the terminal cover, securely connect with the wire of correct size. Make sure to ground the hose terminal (Class 3 or higher).

● Other precautions

1. When the hydraulic unit has any abnormality, an alarm is displayed and the unit is locked.
2. Failures or malfunctions of this unit may result in danger to human body. If necessary, install any safety device to the equipment. To prevent serious accidents and damage caused by failures of this unit, take necessary actions for safety on the equipment.
3. It takes 5 - 10 seconds for this hydraulic unit to start up after powered ON. During this time, the alarm signal circuit is open. It is not abnormal.
4. Do not turn ON/OFF main power source frequently. It may cause of damage on Inverter components. If necessary, please use internal ON/OFF function with input signal.

The DAIKIN GROUP is a specialist of energy-saving equipment including process equipment, air conditioning equipment, and power monitoring system. We can propose total solutions for your plant.

DAIKIN INDUSTRIES, LTD. Oil Hydraulics Division**■ Osaka Office**

DAIKIN Esaka Building, Tarumi-cho 3-21-3, Suita, Osaka, Japan 564-0062
TEL. 81-6-6378-8764 FAX. 81-6-6378-8737

E-mail Address: hyd_eco@daikin.co.jp

Home Page: <http://www.daikin.co.jp>