

**DOCUMENTS  
FOR DRY VACUUM PUMP**

DOC. No. **7312-Q8T181**

REV. **0**

CUSTOMER

COMPLETE IN **10** SHEETS  
WITH COVER

FINAL USER

PROJECT

SERVICE

JOB No.

EBARA SER. No.

ITEM No.

MODEL/ EQUIP. EV-PA250 / EV-PA500 SET

TO SET

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ES Component Section

ISSUED BY Components Engineering Department  
Components Division

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REV.	PAGE	DATE	APP'D	BY

APPROVED BY H.Arai 1,Nov'18

CHECKED BY \_\_\_\_\_

PREPARED BY N.Takahashi 16,Oct,'18



**EBARA** CORPORATION

## 1. Detailed Specifications

The following tables and figures should be consulted for pump specification, dimension and performance details.

Table 1.1 Specifications

Model		EV-PA250	EV-PA500
Pumping Speed ( Gas ballast setting) *2		230 L/min ( 200 L/min )	500 L/min ( 430 L/min )
Ultimate Pressure ( Gas ballast setting) *2		0.5 Pa ( 2.0 Pa )	
Connection	Gas Inlet	NW25	NW40
	Gas Outlet	NW 25	
Approx. power at ultimate pressure (Max Power)		240W (380W)	270W (600W)
Approx. Weight		16kg	21kg
Ambient Temperature *3		5 - 30°C	
Cooling System		Air Cooling	
Power Supply	Phase/Volt/Freq	Single Phase , 100 -230V±10%, 50/60Hz	
	Power capacity	450VA	660VA
	Connection	HIRAKAWA HEWTECH Corp. CM-11	
Gas Ballast *2	Connection	Rc1/8 Female	
	Flow rate	> 8.4 Pam <sup>3</sup> /s (at atmosphere pressure)	
	Gas type	Dry Air or N <sub>2</sub>	
Control Signal		D-sub 15Pin	
CP Rating		10A	
Acoustic noise test data *6		58 dB(A)	

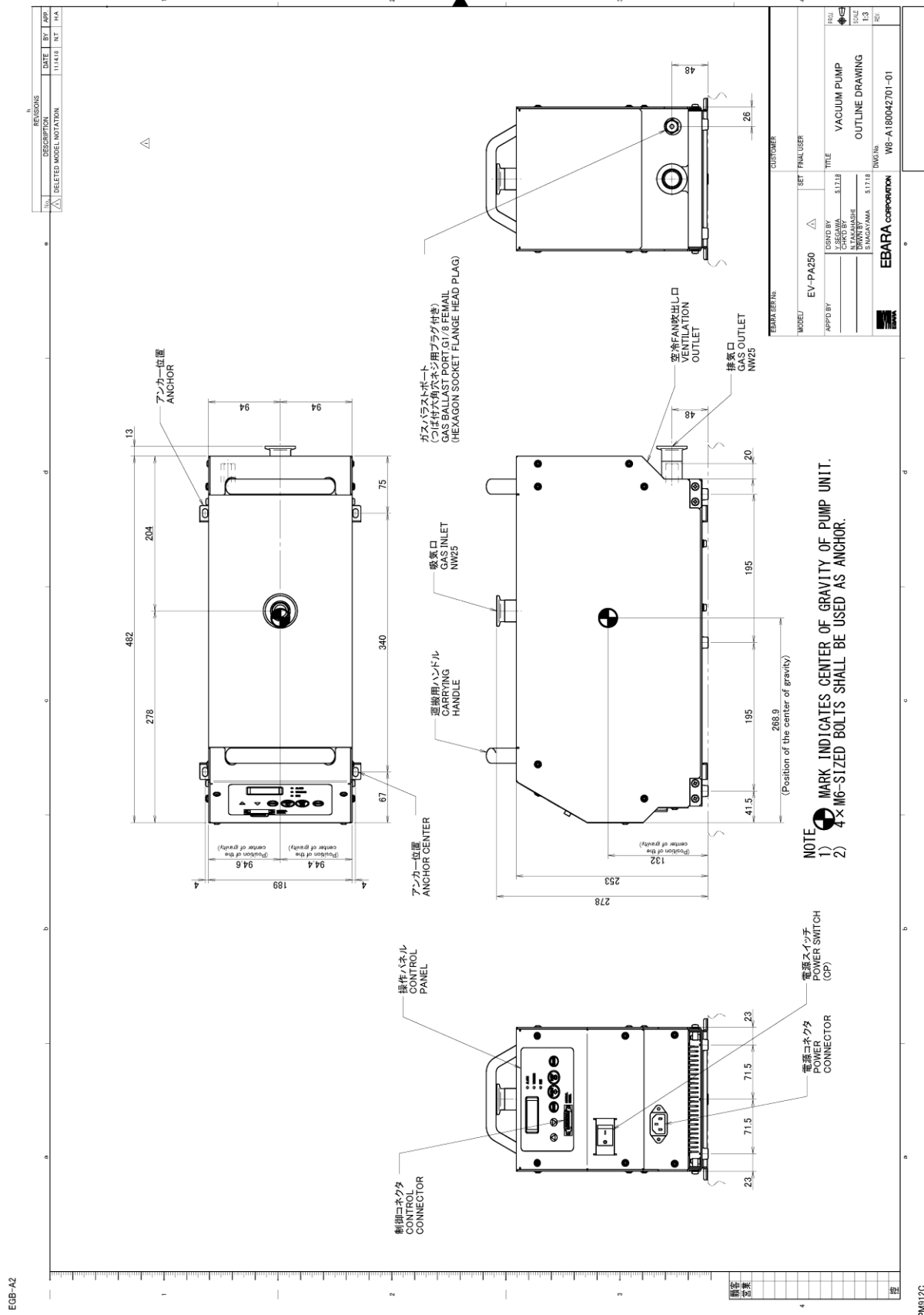
EV-PA type series are designed for clean vacuum applications.

- \*1 Do not exhaust corrosive gas and flammable gas with this pump. Moreover, it is not possible to use it for the usage in which a reaction by-products is generated.
- \*2 The gas ballast flow rate is set by a built-in orifice. (at atmosphere pressure)  
When the gas ballast is supplied with pressurized gas, install regulator at the gas ballast port which is the connection type Rc1/8 Female. And adjust the supply pressure to 0.05MPa (Gauge) pressure or less to set the gas ballast flow rate to 8.4Pam<sup>3</sup>/s.  
The pumping speed and the ultimate pressure might be effected by the gas ballast flow rate. Install valve, check valve, and filter to the ballast port if necessary.  
The ability for moisture exhaust in the gas ballast is 10g/hr at the maximum.
- \*3 The ambient air temperature must be less than 30°C.
- \*4 An earth leakage breaker and the emergency stop switch are not put on this pump. It is necessary to install it based on the law and the standard in the installation region.
- \*5 Since the judgment based on Japanese regulation of foreign trade control is required, please ask EBARA when the product written in this document is exported outside Japan.
- \*6 Measured on the following condition
  - (1) Pump is operating under ultimate pressure. (No gas ballast)
  - (2) Measured at 1m distance from cover.

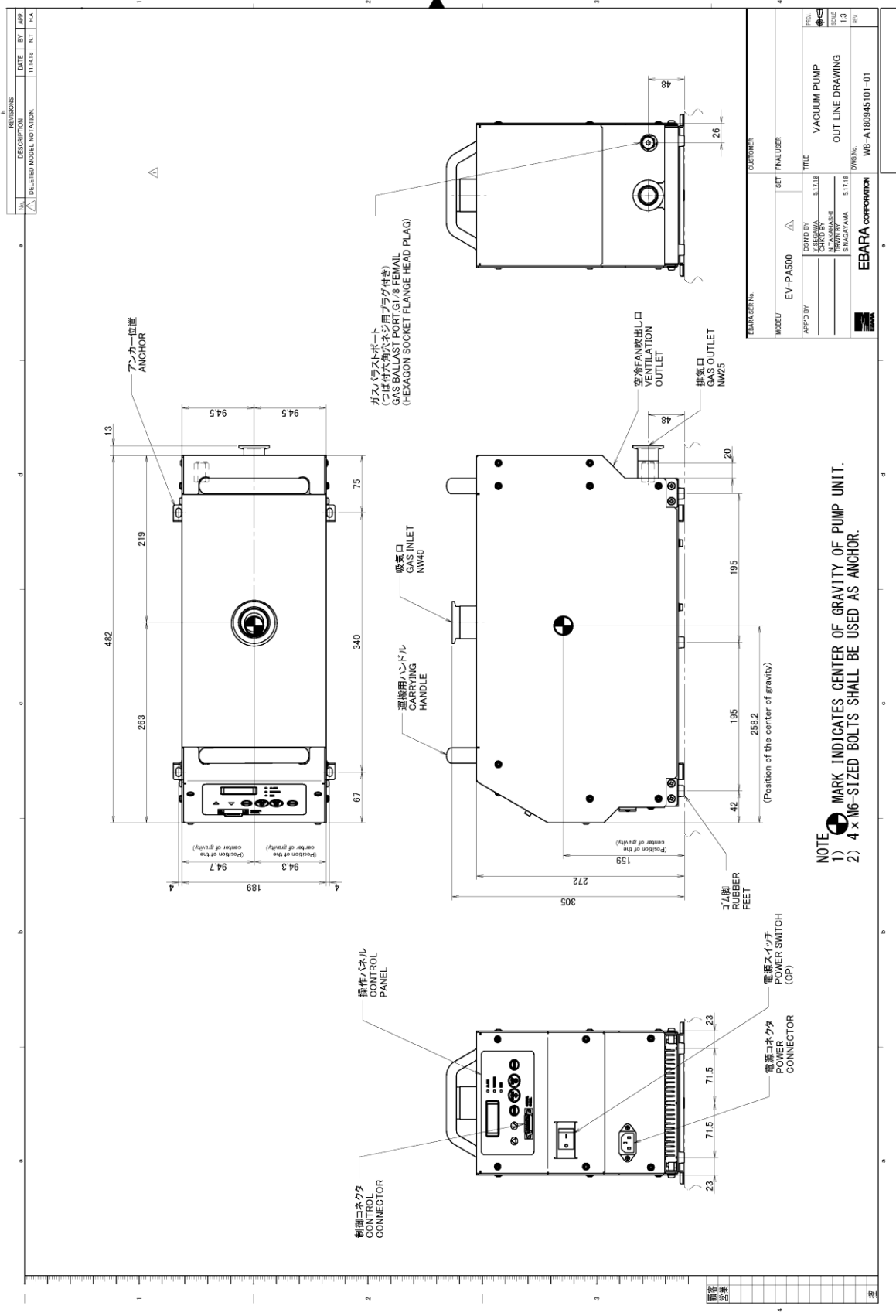
Optional accessories

- Power cable (NR VM602-VM0291 3M NON PB)  
Refer to 2.1
- Control Connector (male/screw size#4-40UNC male)  
Refer to 2.2

OUTLINE DRAWING (EV-PA250, W8-A1800242701-01)



# OUTLINE DRAWING (EV-PA500, W8-A180945101-01)



EGB-A2

PM912C

### Performance Curve

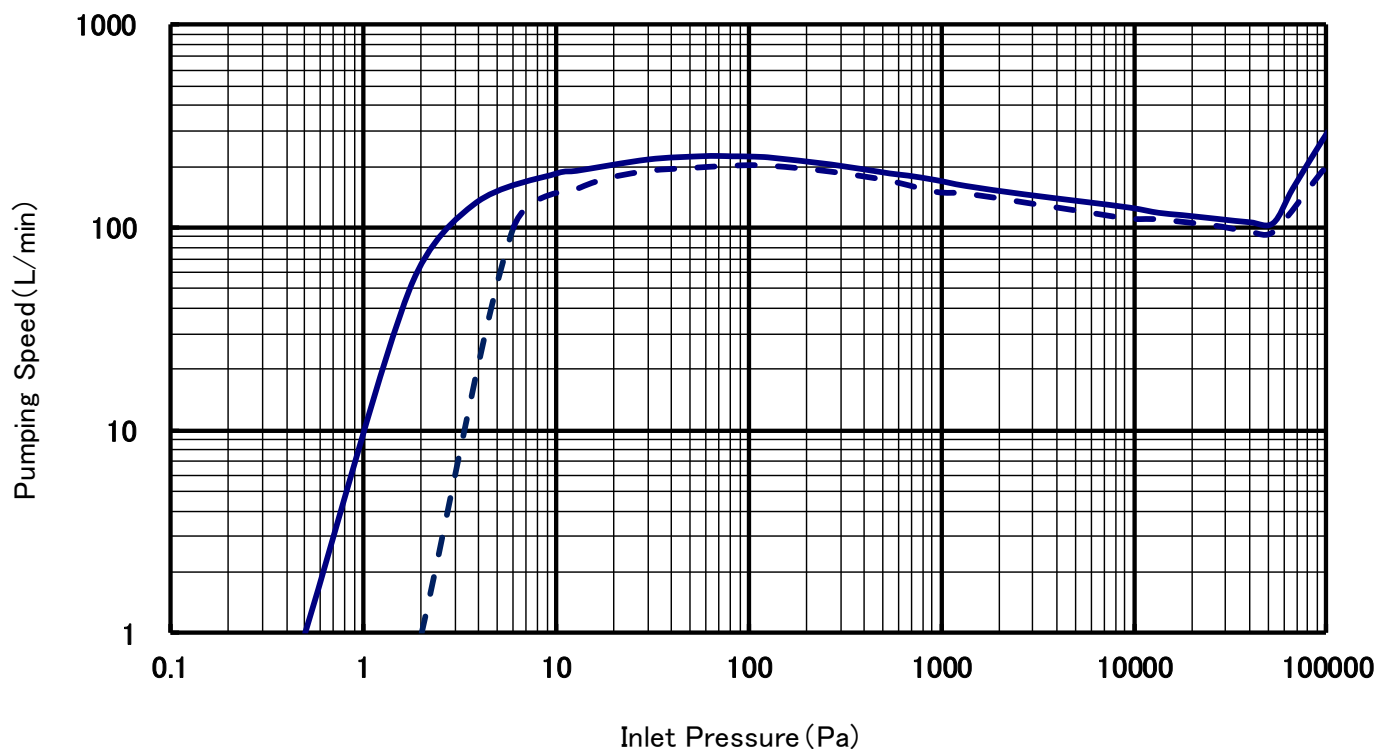


Fig. 1.1 Performance Curve (EV-PA250)  
(Dashed line: Gas ballast setting)

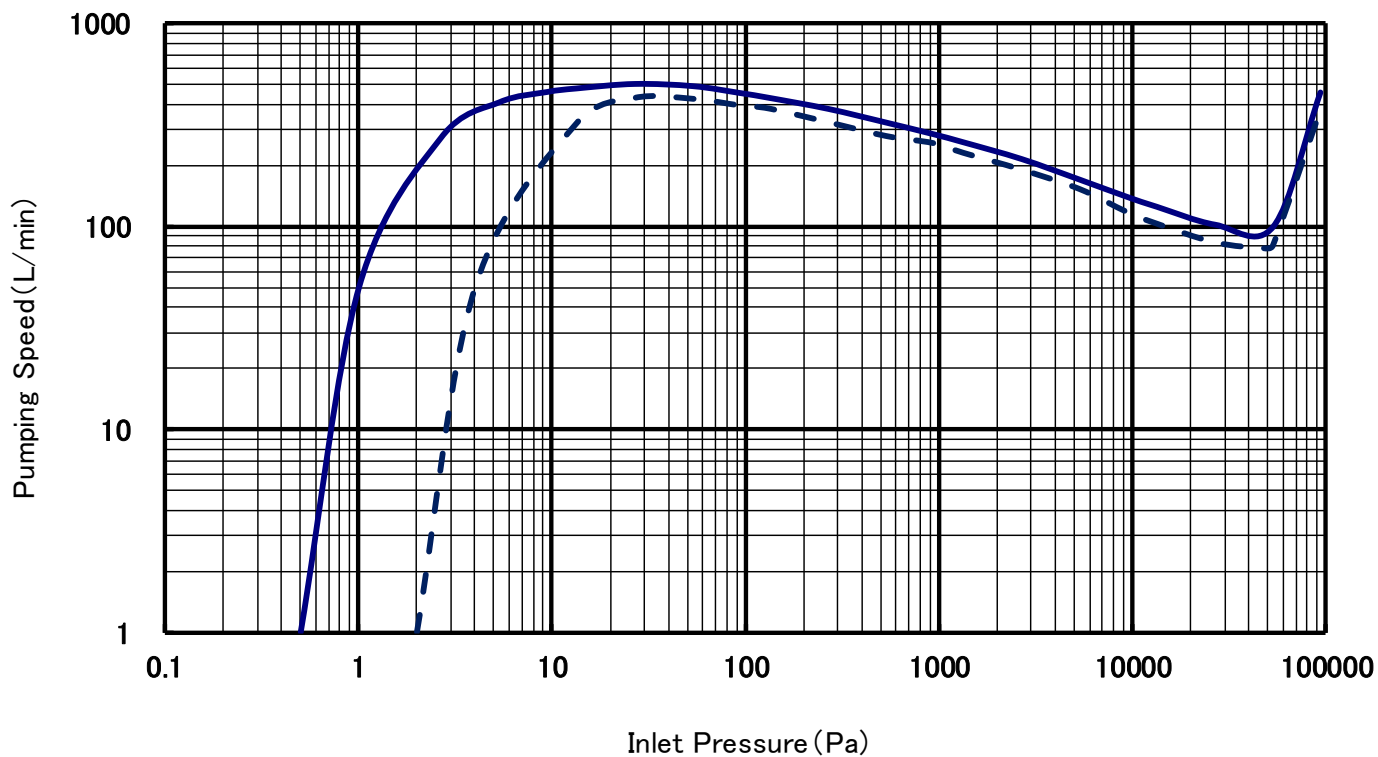


Fig. 1.2 Performance Curve (EV-PA500)  
(Dashed line: Gas ballast setting)

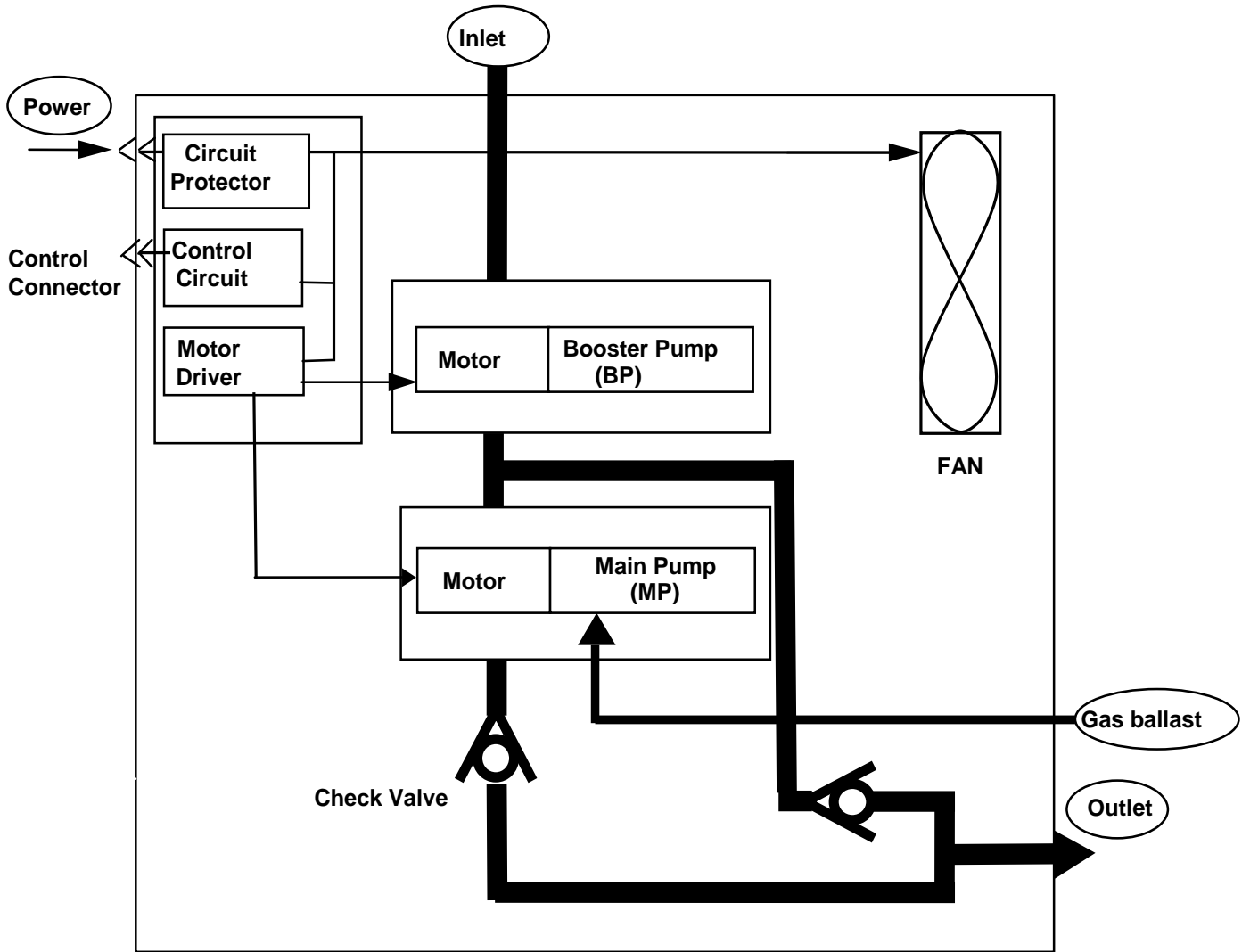


Fig. 1.3 System Flow

## 2. Electrical connection

### 2.1 Connecting of the power supply

Wire the connector for the main power supply (100-230V±10% AC at 1-phase, 50/60Hz,).

Use the power cable recommended in Table 2.2

Transient overvoltage on power supply: Installation category 2 of IEC60364-4-433

Table 2.1 Receptacle Specification

Pump model	EV-PA250	EV-PA500
Receptacle type	CM-11	
Recap. Manufacture	HIRAKAWA HEWTECH Corp.	
Plug type (100V)	VM0291	
Plug type (200V)	VM0303B	
Power capacity VA	450	660

Table 2.2 Recommended Power Cable

Area	Voltage	Type	Manufacture	Specification	Suitable wire
Japan US	100V~125V	NR VM602-VM0291 3M NON PB	HIRAKAWA HEWTECH Corp.	13A 125VCA 3m	AWG #16
Japan US EU	200~230V	NR VM0303B 3M NON PB		10A 250VAC 3m Power outlet Terminal: No plug	AWG #18

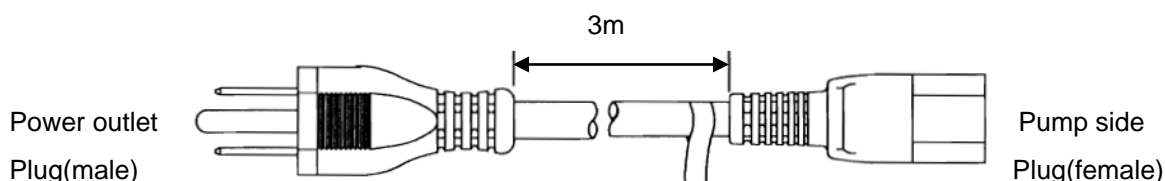


Fig.2.1 Sketch of Power cable (NR VM602-VM0291 3M NON PB)

If you have any requirement about the power cable, please contact EBARA or your dealer.

**【Caution】** Do not use the power cable adapter.

**【Caution】** Connect the grounding wire.

**【Caution】** Grinding at power outlet should be checked by qualified.



## 2. 2 Control Signal Wiring

Connect wires to the control connector for remote operation and remote monitoring. Tables 2.3, 2.4 and Fig. 2.2 show the pin assignments.

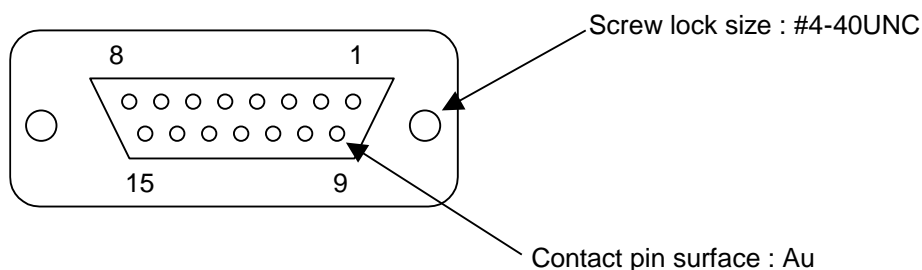


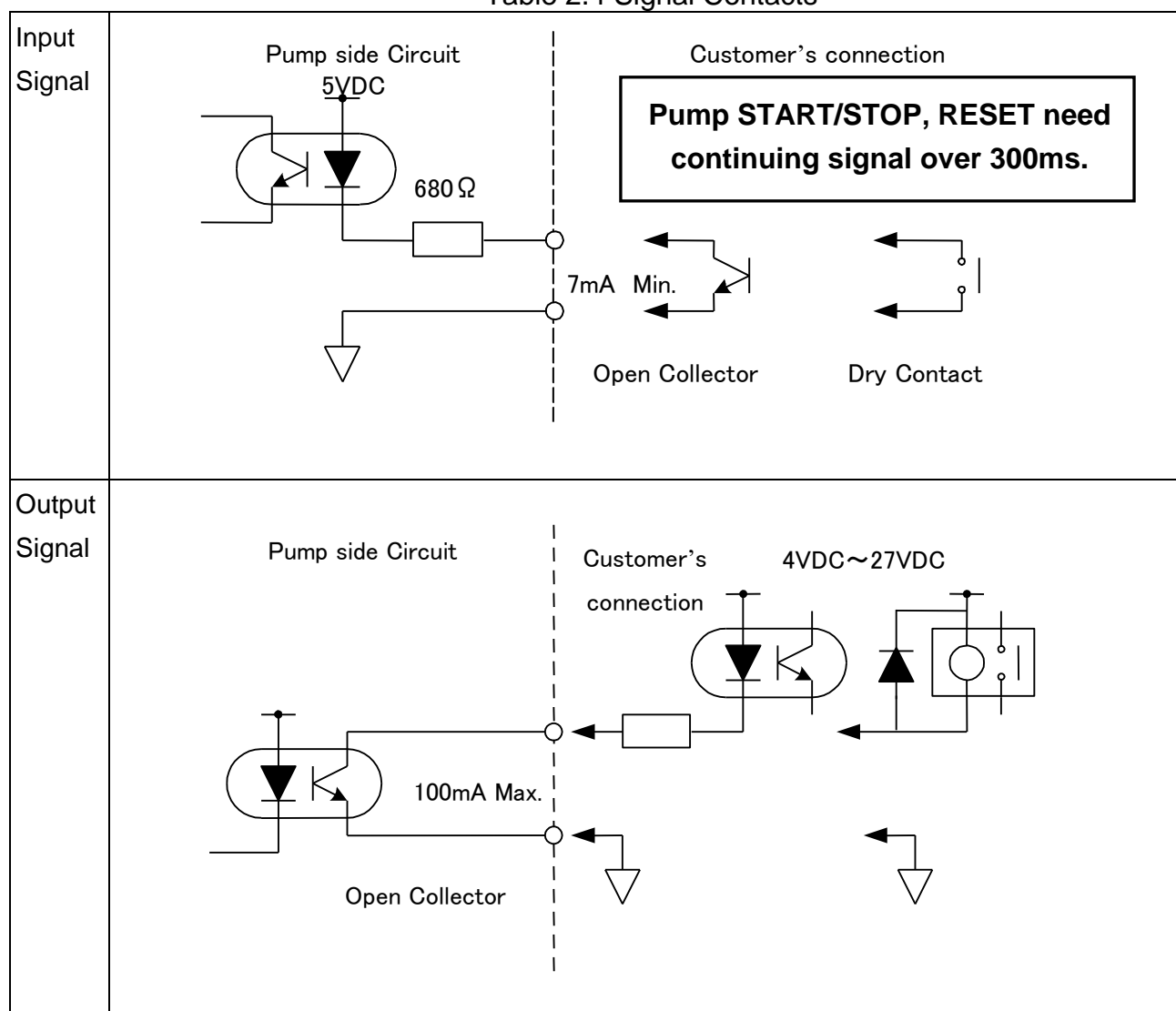
Fig. 2.2 15 Pin D Sub-Miniature Female Receptacle  
(As seen from connecting side)

Table 2.3 Control Connector Pin Assignments

Pin. No.	Signal name	I/O	Signal type
1	PUMP START/STOP (+)	IN	Run: CLOSE, Alternate
2	RESET (+)	IN	Reset: CLOSE, Alternate
3	PUMP START/STOP STATUS (+)	OUT	Run: CLOSE, Alternate
4	RESERVED (+)	OUT	
5	WARNING STATUS (+)	OUT	WARNING: OPEN, Alternate
6	ALARM STATUS (+)	OUT	ALARM: OPEN, Alternate
7	REMOTE STATUS (+)	OUT	REMOTE: CLOSE
8	-		
9	PUMP START/STOP (-)		
10	RESET (-)		
11	PUMP START/STOP STATUS (-)		
12	RESERVED (-)		
13	WARNING STATUS (-)		
14	ALARM STATUS (-)		
15	REMOTE STATUS (-)		

PUMP START/STOP, RESET need continuing signal over 300ms.

Table 2.4 Signal Contacts



**【Caution】** Do not wire vacant pins.

**【Caution】** Apply a voltage between 4 VDC and 27V DC on the equipment side, do not apply DC5V power on the equipment side.

The pump provides DC5V power for input signal and the output signals are generated from an open collector.

**【Caution】** Wire all signals with correct polarity(SIG./COM.)

**【Caution】** When output signals energize an inductive load such as a relay, insert a diode (100V, 1A class) to limit the back electromotive force during de-energization.