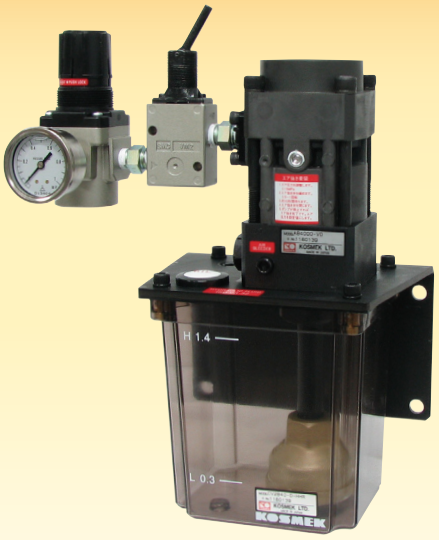
Air Hydraulic Unit

Model CV
Model CK
Model CP/CPB
Model CPC/CQC
Model CB
Model CC
Model AB
Model AC

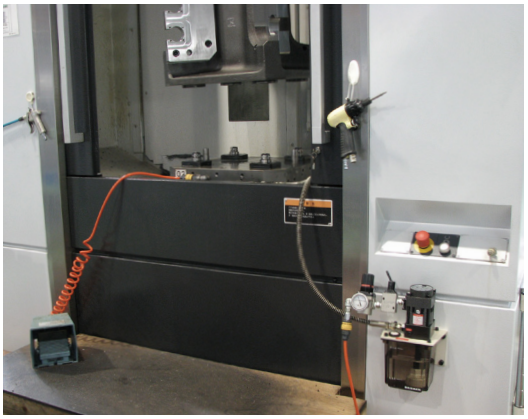


Hydraulic pressure can be generated easily by using factory air pressure

Wide variety from simple single circuit to multiple circuits unit with non-leak valve.

Easily to generate low to high hydraulic pressure.

Hydraulic pressure can be generated easily by using factory air pressure. Compact and easy set up.

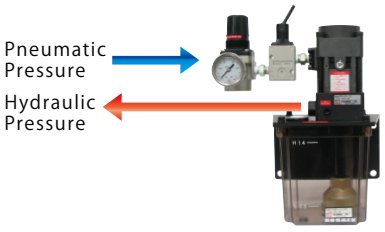


Safety

If a blackout occurs and the air supply is cut off , the air hydraulic unit with a non-leak valve can hold the hydraulic pressure at the current actuator state.

Energy-Saving

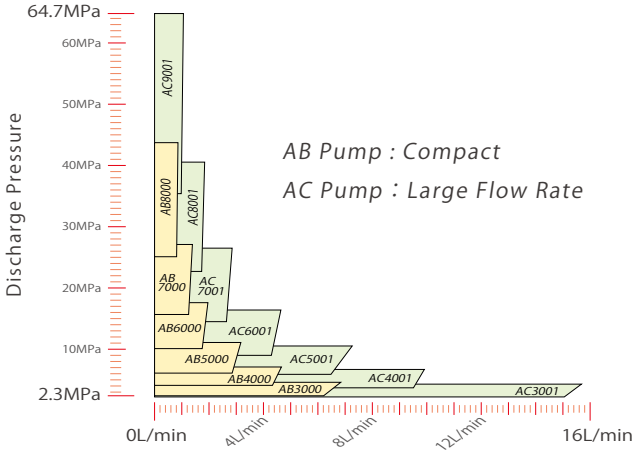
Pump activates when the hydraulic pressure is rising. After the hydraulic pressure reaches as specified, air pressure and hydraulic pressure are balanced then pump is stopped.

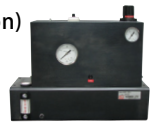


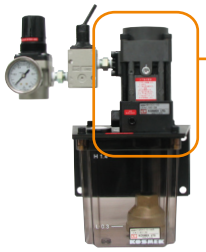
After the hydraulic pressure reaches as specified, air pressure and hydraulic pressure are balanced then pump is stopped.

Wide Variations

Air driven hydraulic pump unit has a wide pressure range from low to high and discharge pressure range.



		Discharge Pressure	Features
Hydraulic Unit (For Single Action) Model CV → P.983		2.4～43.5MPa (AB Pump) 2.3～64.7MPa (AC Pump)	With Selector Valve for Manual Control (Standard); With Solenoid Valve for Electrical Control
Hydraulic Unit (For Double/Single Action) Model CK → P.985		3.9～7.0MPa (AB4000-□Pump) 15.5～27.0MPa (AB7000-□Pump)	With Non-Leak Valve
Hydraulic Unit Model CP/CPB → P.989		2.5～30.0MPa (AB Pump)	With Solenoid Valve for Electrical Control (Standard)
Hydraulic Unit Model CPC/CQC → P.993		2.5～30.0MPa (AC Pump)	
Pump Unit Model CB → P.997		2.4～43.5MPa (AB Pump) 2.5～30.0MPa (At BC,BH connected)	Pump & valve is assembled separately Used in conjunction with the Model BC / BH Unit
Pump Unit Model CC → P.999		2.3～64.7MPa (AC Pump) 2.5～30.0MPa (At BC,BH connected)	



AB/AC Pump

Discharge pressure and discharge amount of oil is different depending on pump.
Please refer to AB pump/AC pump specification for details on operating pneumatic pressure, discharge pressure and discharge flow rate.

	Model No.	Discharge Pressure※1 MPa	Air Consumption Nm³/min	Lift	Noise	Usable Fluid
AB Pump Model AB → P.1001 	AB3000	2.4 ～ 4.3	0.4 Nm³/min	below 0.6m	82～85dB	General Hydraulic Oil Water-Glycol Silicon Oil
	AB4000	3.9 ～ 7.0				
	AB5000	6.0 ～ 11.0				
	AB6000	10.0 ～ 17.5				
	AB7000	15.5 ～ 27.0				
	AB8000	25.0 ～ 43.5				
AC Pump Model AC → P.1001 	AC3001	2.3 ～ 4.2	1.0 Nm³/min	below 1.0m		
	AC4001	3.6 ～ 6.6				
	AC5001	5.8 ～ 10.6				
	AC6001	8.9 ～ 16.3				
	AC7001	14.4 ～ 26.4				
	AC8001	22.6 ～ 41.4				
	AC9001	35.3 ～ 64.7				

Note ※1. Discharge pressure is set when air pressure range is between 0.3～0.5MPa.

Hydraulic Unit (For Single Action)

Model CV

Features

- Manual Control for Single Action (Solenoid valve option is also available.)
- Without Non-Leak Valve
- One Circuit Control Unit

Model No. Indication

CV 2 B4 0 – 0 – HH R – ☐

1 2 3 4 5 6 7

1 Tank Capacity

2 : 2ℓ (Actual Amount for Use 1.1ℓ)※1
5 : 5ℓ (Actual Amount for Use 3.1ℓ)

※1. 5: When AC pump is selected, only 5.0ℓ tank is selectable.

2 Pump Part Number (Pump Pressure Code)

B3 : AB3000-V☐
B4 : AB4000-V☐
B5 : AB5000-V☐
B6 : AB6000-V☐
B7 : AB7000-V☐
B8 : AB8000-V☐
C3 : AC3001-V☐
C4 : AC4001-V☐
C5 : AC5001-V☐
C6 : AC6001-V☐
C7 : AC7001-V☐
C8 : AC8001-V☐
C9 : AC9001-V☐

3 Design No.

0 : Revision Number

4 Fluid Code

0 : General Hydraulic Oil (See Hydraulic Fluid List P.1043)
S : Silicon Oil
G : Water-Glycol (except AB8000/AC8001/AC9001) (Tank is made of steel.)

※ For fluids other than those described in the fluid code, please contact us.

5 Control Method

HH : Mechanical Selector Valve Option (Standard)
5A : Solenoid Valve Option (DC24V)
1A : Solenoid Valve Option (AC100V)
F : Foot Switch

6 Component Directly Mounted on the Air Supply Side

R : Air Regulator (Standard)
D : With a Filter Regulator (Automatic Drain Option)

7 Unit of Pressure Gauge

Blank : MPa (Standard)
P : PSI

Specifications

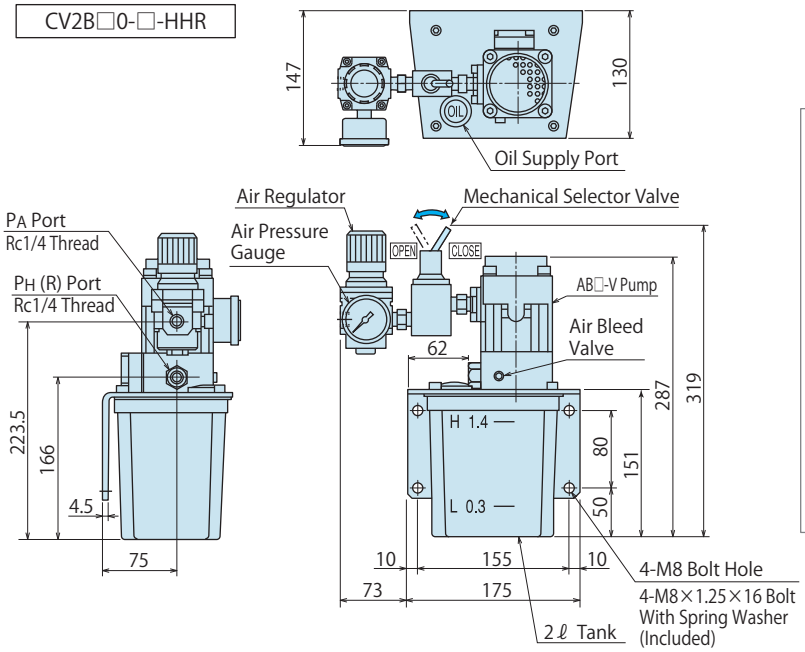
Model No.	CV□B30	CV□B40	CV□B50	CV□B60	CV□B70	CV□B80
Pump Part Number	AB3000-V□	AB4000-V□	AB5000-V□	AB6000-V□	AB7000-V□	AB8000-V□
Discharge Hydraulic Pressure ※2 MPa	2.4～4.3	3.9～7.0	6.0～11.0	10.0～17.5	15.5～27.0	25.0～43.5
Air Consumption Nm³/min	0.4					
Tank Capacity ℓ	2:2ℓ (Actual Amount for Use 1.1ℓ) / 5:5ℓ (Actual Amount for Use 3.1ℓ)					
Operating Temperature ℃	0～70					
Usable Fluid	Model No. : Fluid Code					

Model No.	CV5C30	CV5C40	CV5C50	CV5C60	CV5C70	CV5C80	CV5C90
Pump Part Number	AC3001-V□	AC4001-V□	AC5001-V□	AC6001-V□	AC7001-V□	AC8001-V□	AC9001-V□
Discharge Hydraulic Pressure ※2 MPa	2.3～4.2	3.6～6.6	5.8～10.6	8.9～16.3	14.4～26.4	22.6～41.4	35.3～64.7
Air Consumption Nm³/min	1.0						
Tank Capacity ℓ	5ℓ (Actual Amount for Use 3.1ℓ)						
Operating Temperature ℃	0～70						
Usable Fluid	Model No. : Fluid Code						

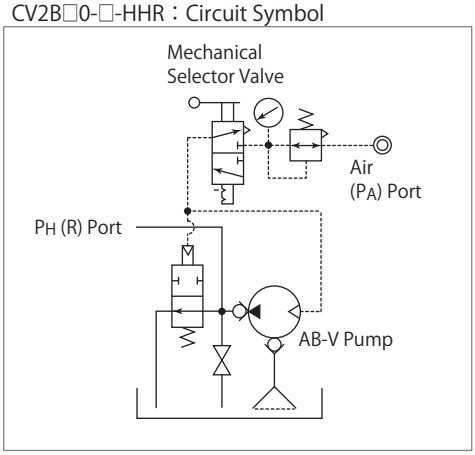
Notes ※2. Discharge pressure is set when air pressure range is between 0.3～0.5MPa.
1. Please see AB/AC pump performance curve for discharged oil volume (P.1003).

External Dimensions / Circuit Symbol

CV2B□0-□-HHR

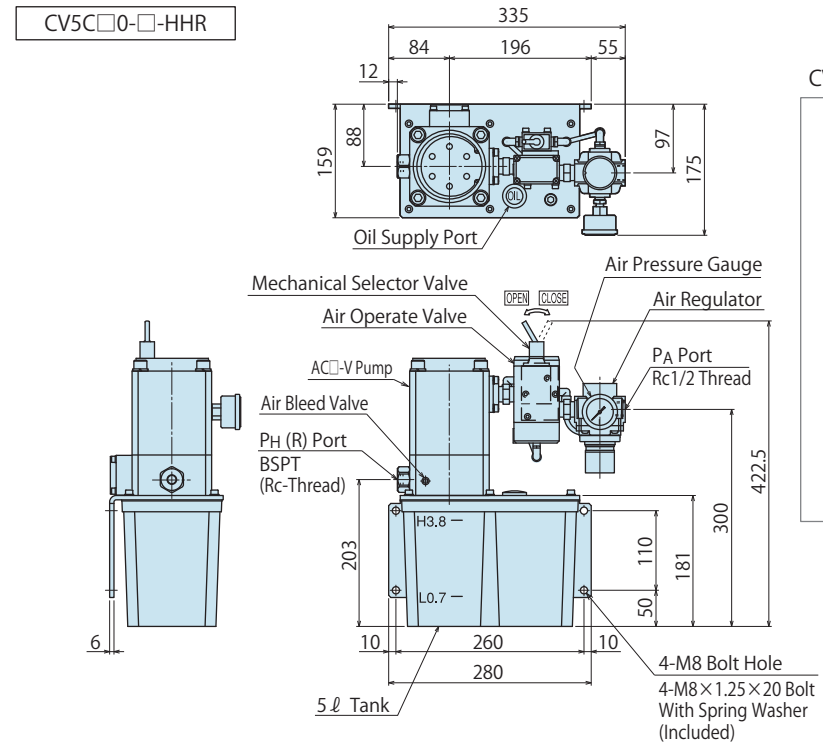


CV2B□0-□-HHR：Circuit Symbol

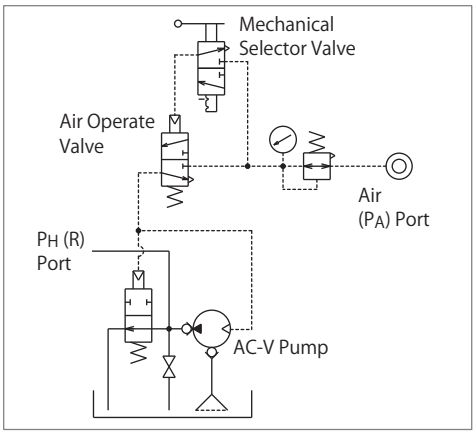


Note
1. Please contact us if using outside specification range shown.

CV5C□0-□-HHR



CV5C□0-□-HHR：Circuit Symbol



Pump Code	AC3001/AC4001	AC5001～AC9001
PH (R) Port BSPT (Rc-Thread)	Rc3/8	Rc1/4

Note
1. Please contact us if using outside specification range shown.

Hydraulic Unit (For Double/Single Action)

Model CK

Features

- Manual Control for Double Action/Single Action
- With Non-Leak Valve (Hydraulic pressure is held, even after air supply is cut off.)
- Portable

Model No. Indication

CK 3 B4 1 – NN – 0

1 2 3 4 5

1 Tank Capacity

3 : 3ℓ (Actual Amount for Use 1.4ℓ)

2 Pump Part Number (Pump Pressure Code)

B4 : AB4000-□

B7 : AB7000-□

3 Design No.

1 : Revision Number

4 Circuit Symbol

NN : Double Action 1 Circuit (Mechanical Valve at the Position of 3, 1 Piece)

A : Single Action 1 Circuit (Mechanical Valve at the Position of 2, 1 Piece)

AA : Single Action 2 Circuit (Mechanical Valve at the Position of 2, 2 Pieces)

5 Usable Fluid

0 : General Hydraulic Oil (See Hydraulic Fluid List P.1043)

S : Silicon Oil

G : Water-Glycol

※ For fluids other than those described in the fluid code, please contact us.

Note

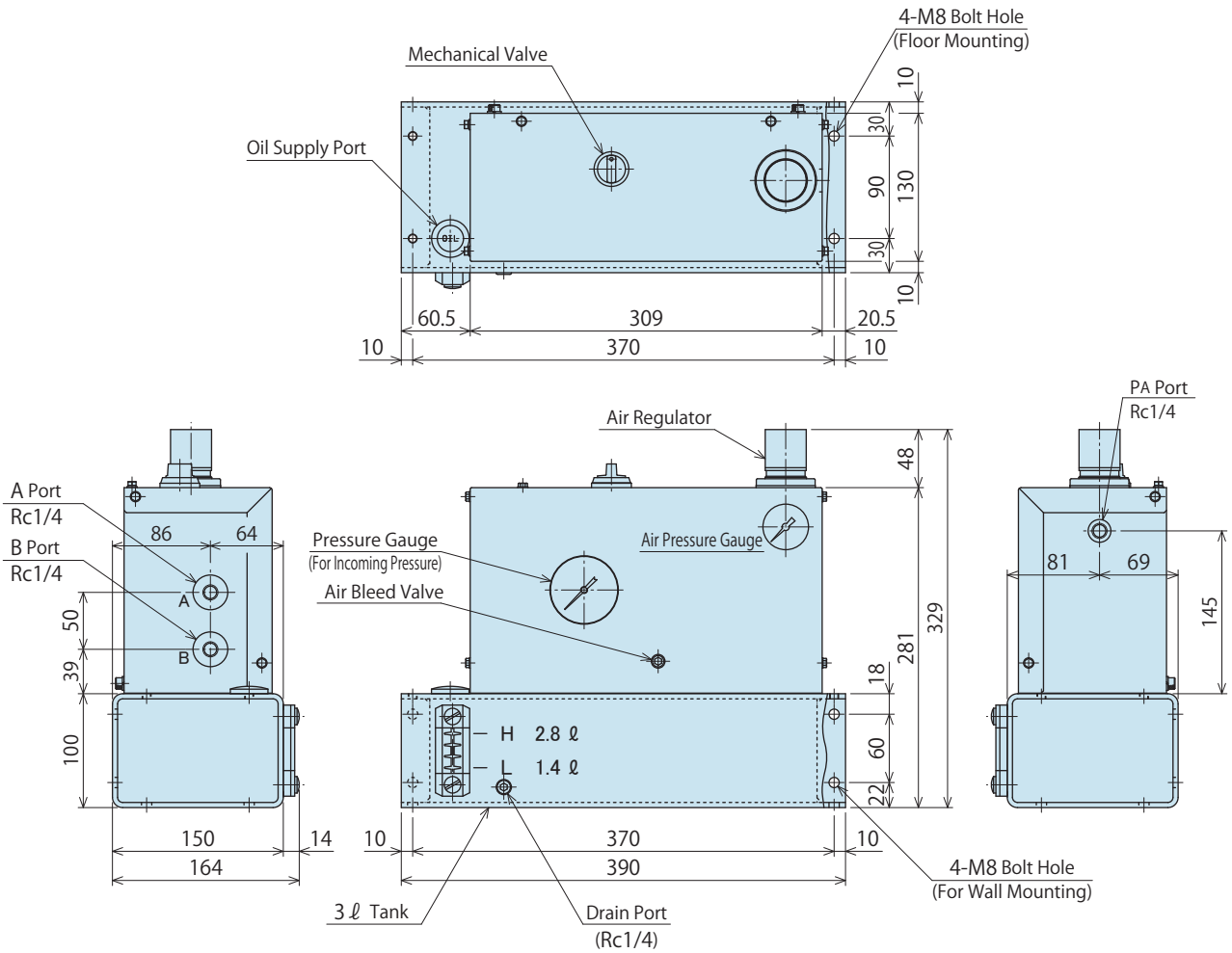
1. Option: with handle or air filter.
   Please contact us for further information. Please keep in mind that the handle and air filter as option are not available together.

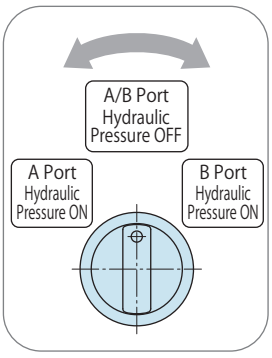
Specifications

Model No.	CK3B41-□-□	CK3B71-□-□
Pump Part Number	AB4000-□	AB7000-□
Non-Leak Valve Part Number	BA2011-0	BA5011-0
Discharge Hydraulic Pressure ※1 MPa	3.9～7.0	15.5～27.0
Air Consumption Nm³/min	0.4	
Tank Capacity ℓ	3ℓ (Actual Amount for Use 1.4ℓ)	
Operating Temperature ℃	0～70	
Usable Fluid	Model No. : Fluid Code	

Notes ※1. Discharge pressure is set when air pressure range is between 0.3～0.5MPa.
1. Please see AB pump performance curve for discharged oil volume (P.1003).

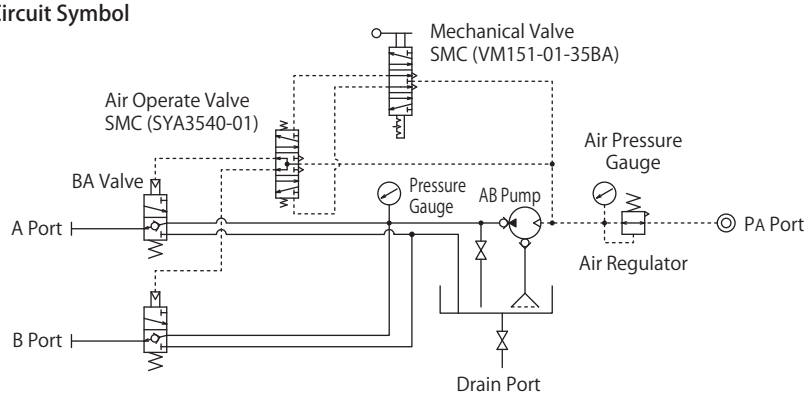
External Dimensions / Circuit Symbol: Double Action 1 Circuit CK3□1-NN-□



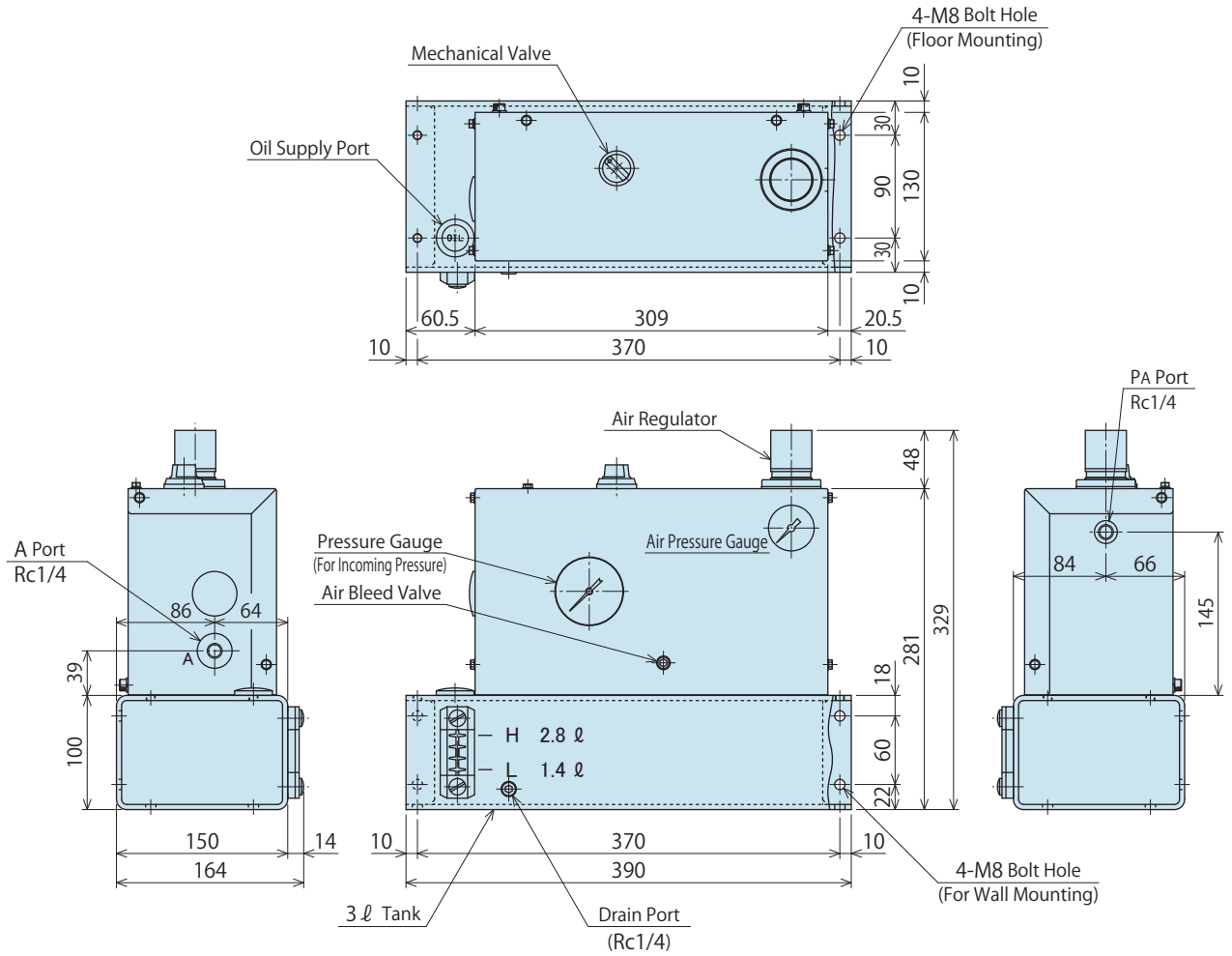


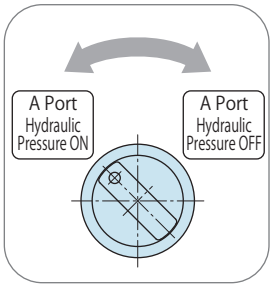
Mechanical Valve Detail
(3 Positions)

Circuit Symbol



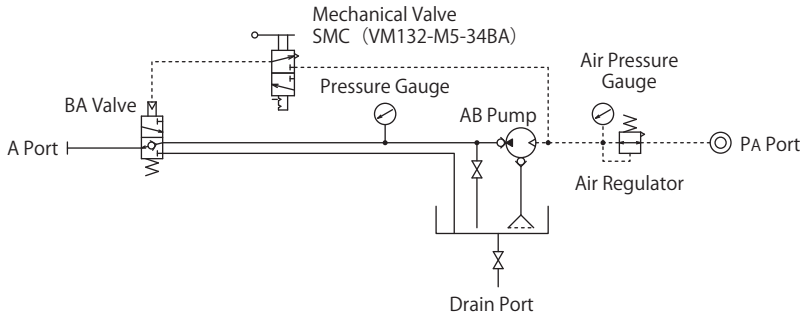
External Dimensions / Circuit Symbol: Single Action 1 Circuit CK3□1-A-□



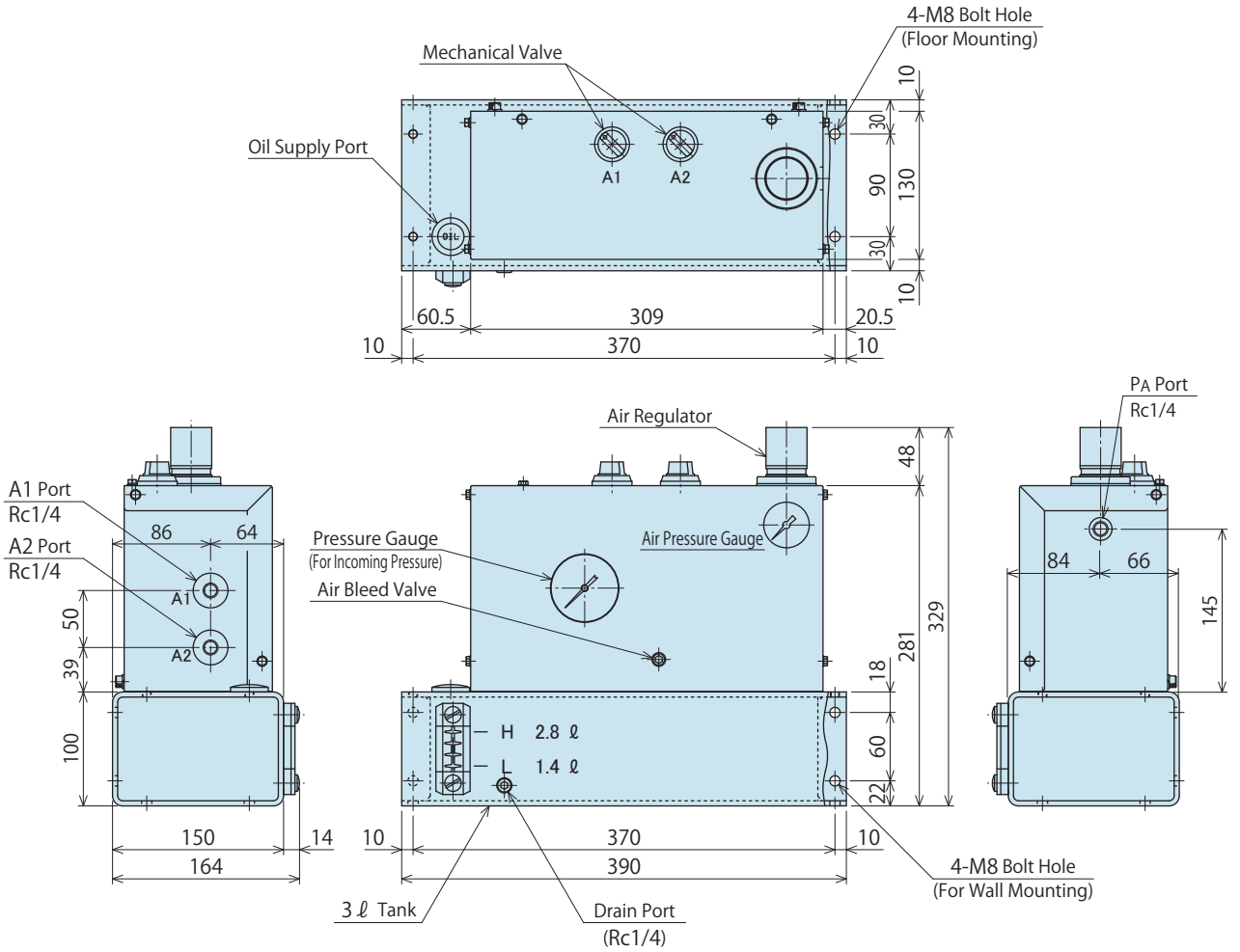


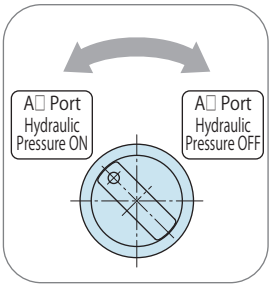
Mechanical Valve Detail
(2 Positions)

Circuit Symbol



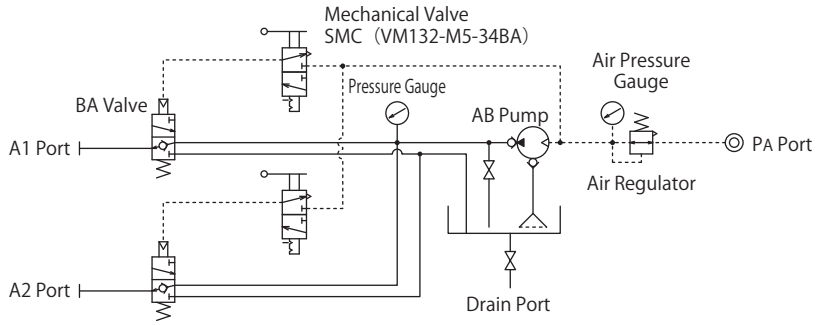
External Dimensions / Circuit Symbol: Single Action 2 Circuit CK3□1-AA-□





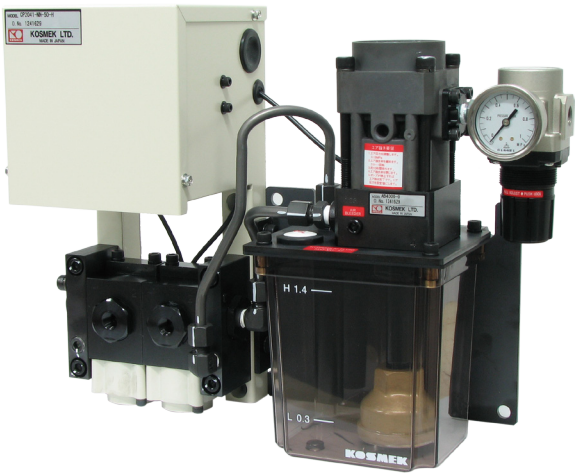
Mechanical Valve Detail
(2 Positions)

Circuit Symbol



Hydraulic Unit (For Double/Single Action)

Model CP



Features

- Electrical Control for Double Action/Single Action
- With Non-Leak Valve (Hydraulic pressure is held, even after air supply is cut off.)
- Compact with AB Pump Installed • Tank Capacity 2 ℓ

Model No. Indication

CP **2** **04** **1** - **YYYY** - **5** **0** - **□** **□** **(7.0MPa)**

1 2 3 4 5 6 7 8 9

1 Tank Capacity

2 : 2 ℓ (Actual Amount for Use 1.1 ℓ)

※ Please refer to Model CPB for 5 ℓ Tank.

2 Pump Part Number (Pump Pressure Code)

03 : AB3000-□
04 : AB4000-□
05 : AB5000-□
06 : AB6000-□
07 : AB7000-□
08 : AB8000-□

3 Design No.

1 : Revision Number

4 Circuit Symbol

NN : Double Solenoid Valve Control for Double Action Circuit
YY : Double Solenoid Valve Control for Double Action Circuit (With JBA Pressure Switch)
A : Single Solenoid Valve Control for Single Action Circuit
C : Single Solenoid Valve Control for Single Action Circuit (With JBA Pressure Switch)
U : Double Solenoid Valve Control for Single Action Circuit (With JBA Pressure Switch)

Entry Example
Double Action One Circuit (with JBA)×2 → **YYYY**
Single Action One Circuit/Single Solenoid Valve×2 → **AA**

※Please contact us if using other circuits.

5 Control Voltage

1 : AC100V
2 : AC200V
3 : AC110V
4 : AC220V
5 : DC 24V

6 Fluid Code

0 : General Hydraulic Oil (See Hydraulic Fluid List P.1043)
S : Silicon Oil
G : Water•Glycol (Iron Tank)

※ For fluids other than those described in the fluid code, please contact us.

7 Option

Blank : Standard
H : With Piping Block
G : With a Main Pressure Gauge

8 Unit of Pressure Gauge

Blank : MPa (Standard)
P : PSI

9 Operating Pressure

Please indicate operating pressure with the unit of measurement. (Please inform us with proper unit symbols.)

Entry Example At 5.5MPa → **(5.5MPa)**
At 25MPa → **(25.0MPa)**
At 700PSI → **(700PSI)**

Specifications

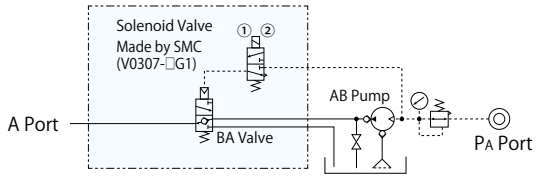
Model No.	CP2031	CP2041	CP2051	CP2061	CP2071	CP2081
Pump Part Number	AB3000-□	AB4000-□	AB5000-□	AB6000-□	AB7000-□	AB8000-□
Non-Leak Valve Part Number	BA2011-0	BA2011-0	BA5011-0	BA5011-0	BA5011-0	BA5011-0
Discharge Hydraulic Pressure ※1 MPa	2.5～4.3	3.9～7.0	6.0～11.0	10.0～17.5	15.5～27.0	25.0～30.0
Air Consumption Nm³/min	0.4					
Tank Capacity ℓ	2:2ℓ (Actual Amount for Use 1.1ℓ)					
Control Voltage	Model No. : Control Voltage					
Operating Temperature ℃	0～70					
Usable Fluid	Model No. : Fluid Code					
Operation Frequency	Pump Operating Cycles : less than 500 hours/year (2 hrs/day) ※Actual Discharge Time					
Pressure Switch Part Number (Pressure Increase Detection) ※2	JBA0700-0G	JBA0700-0G	JBA0700-0G	JBA2700-0G	JBA2700-0G	JBA2700-0G
Air Solenoid Valve	Single Solenoid Valve: VO307-□G1 / Double Solenoid Valve: SYJ5240-□G					
Suction Filter	JF1030:174μm (100 mesh)					

Notes ※1. Discharge pressure is set when air pressure range is between 0.3～0.5MPa.
Regarding AB8000-□ pump, due to the max. operating pressure of BA5011-0 valve, air pressure supply should be at 0.3 to 0.36MPa.
※2. Standard setting value of pressure switch should be 70% of the operating pressure.
1. Please see AB pump performance curve for discharged oil volume. (P.1003)
2. If hydraulic oil having viscosity higher than the shown, activating time increases.
3. In case of a low ambient temperature, action time increases because of high viscosity of hydraulic oil.
4. When air contains a large amount of moisture or air supply is located at the end, always equip with an automatic drain air filter.
5. When the hydraulic circuit is equipped with a pressure gauge, install a damper or use an oil filled (glycerin) pressure gauge to prevent pressure gauge damage due to pressure surging.
6. Provide enough space at the bottom of the unit to compensate for hydraulic oil change. (Tank cleaning and suction strainer tightening becomes easier.)

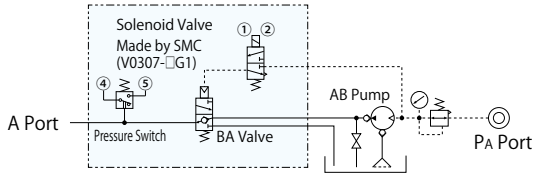
Circuit Symbol/Circuit Reference ※Please contact us if using other circuits.

Circuit Symbol	Circuit (Reference)	Number of Circuits	BA Valve Number of Connection	Air Solenoid Valve	Pressure Switch
A	Single Action Actuator Circuit	1	1	Single Solenoid Valve	—
C		1	1	Single Solenoid Valve	○
CC		2	2	Single Solenoid Valve	○
U		1	1	Double Solenoid Valve	○
UU		2	2	Double Solenoid Valve	○
NN	Double Action Actuator Circuit	1	2	Double Solenoid Valve	—
YY		1	2	Double Solenoid Valve	○
YYYY		2	4	Double Solenoid Valve	○

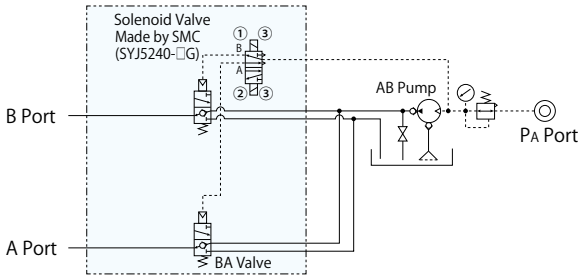
A Single Action 1 Circuit



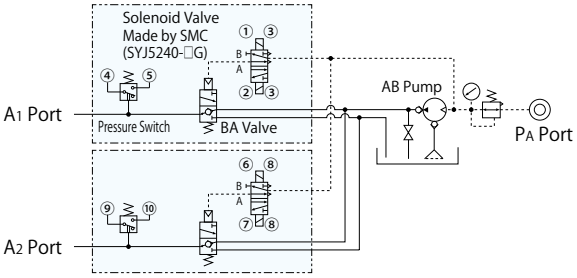
C Single Action 1 Circuit (With Pressure Switch)



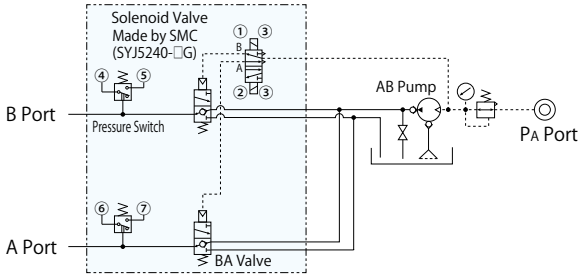
NN Double Action 1 Circuit



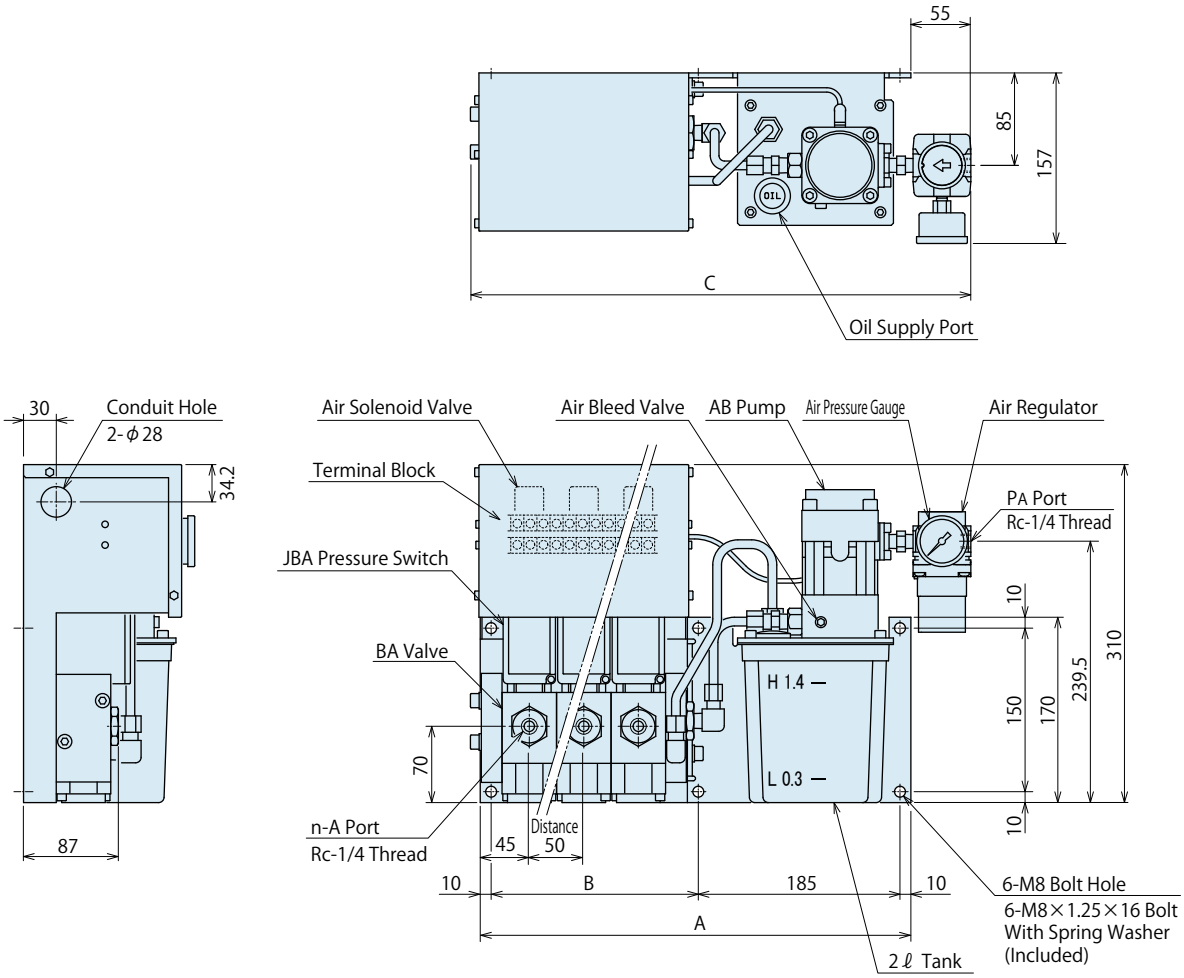
UU Single Action 2 Circuit (With Pressure Switch)



YY Double Action 1 Circuit (With Pressure Switch)



External Dimensions



BA Valve Number of Connection	1 Connection	2 Connections	3 Connections	4 Connections
A	295	345	395	445
B	90	140	190	240
C	359	409	459	510

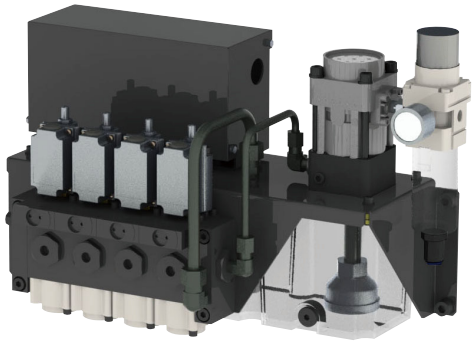
Note

1. Please contact us for the specification (water-glycol, with option piping block, with source pressure indicator) other than the drawing above.

MEMO

Hydraulic Unit (For Double/Single Action)

Model CPB



Features

- Electrical Control for Double Action/Single Action
- With Non-Leak Valve (Hydraulic pressure is held, even after air supply is cut off.)
- Compact with AB Pump Installed
- Tank Capacity 5 ℓ

Notes:
※1.When selecting 7 Option N: Piping Port NPT Thread, dimensions in the specification sheet and other documents are in inches.
1.Please contact us for specifications and external dimensions for these options.

Model No. Indication

C P B 4 0 0 0 - 2YY - 5 - □ (7.0MPa)
1 2 3 4 5 6 7 8

1 Tank Capacity

P : 5 ℓ (Actual Amount for Use 3.7 ℓ)

※ Please refer to Model CP for 2 ℓ Tank.

2 Pump Part Number (Pump Pressure Code)

3 : AB3000-□
4 : AB4000-□
5 : AB5000-□
6 : AB6000-□
7 : AB7000-□
8 : AB8000-□

3 Fluid Code

0 : General Hydraulic Oil (See Hydraulic Fluid List P.1043)
S : Silicon Oil
G : Water・Glycol (Iron Tank)
F : Fatty Acid Ester

※ For fluids other than those described in the fluid code, please contact us.

4 Design No.

0 : Revision Number

5 Circuit Symbol (Indicate with the number of circuits and circuit symbol.)

NN : Double Solenoid Valve Control for Double Action Circuit
YY : Double Solenoid Valve Control for Double Action Circuit (With JBA Pressure Switch)
E : Single Solenoid Valve Control for Single Action Circuit
G : Single Solenoid Valve Control for Single Action Circuit (With JBA Pressure Switch)
U : Double Solenoid Valve Control for Single Action Circuit (With JBA Pressure Switch)

Entry Example
Double Action One Circuit (with JBA)×2 → **2YY**
Single Action One Circuit/Single Solenoid Valve×2 → **2E**

※Please contact us if using other circuits.

6 Control Voltage

1 : AC100V
2 : AC200V
3 : AC110V
4 : AC220V
5 : DC 24V

7 Option

Blank : Standard
C : +Common
D : Digital Pressure Sensor
E : Without Filter Regulator
F : Manual-Drain Filter Regulator
G : With Primary Pressure Gauge
H : With Piping Block on the Left
J : With Air Regulator
K0 : With Pressure Gauge for Each Circuit (Without Primary Pressure Gauge)
K1 : With Color Displayed Pressure Gauge for Each Circuit (Without Primary Pressure Gauge)
KG0 : With Pressure Gauge for Each Circuit (With Primary Pressure Gauge)
KG1 : With Color Displayed Pressure Gauge for Each Circuit (With Primary Pressure Gauge)
L : With Pressure Switch Light
N : Piping Port NPT Thread, Pressure Gauge in both PSI/MPa ※1
P : Pressure Gauge in both PSI/MPa
Q0 : With Oil Level Switch (ON when Oil Level Drops)
Q1 : With Oil Level Switch (OFF when Oil Level Drops)
T : Iron Tank

8 Operating Pressure

Please indicate operating pressure with the unit of measurement. (Please inform us with proper unit symbols.)

Entry Example At 5.5MPa → **(5.5MPa)**
At 25MPa → **(25.0MPa)**
At 700PSI → **(700PSI)**

Specifications

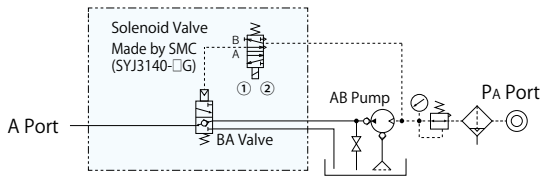
Model No.	CPB30□0	CPB40□0	CPB50□0	CPB60□0	CPB70□0	CPB80□0
Pump Part Number	AB3000-□	AB4000-□	AB5000-□	AB6000-□	AB7000-□	AB8000-□
Non-Leak Valve Part Number	BA2011-0	BA2011-0	BA5011-0	BA5011-0	BA5011-0	BA5011-0
Discharge Hydraulic Pressure ※1 MPa	2.5～4.3	3.9～7.0	6.0～11.0	10.0～17.5	15.5～27.0	25.0～30.0
Air Consumption Nm³/min	0.4					
Tank Capacity ℓ	5∶5ℓ (Actual Amount for Use 3.7ℓ)					
Control Voltage	Model No. : Control Voltage					
Operating Temperature ℃	0～70					
Usable Fluid	Model No. : Fluid Code					
Operation Frequency	Pump Operating Cycles : less than 500 hours/year (2 hrs/day) ※Actual Discharge Time					
Pressure Switch Part Number (Pressure Increase Detection) ※2	JBA0700-0G	JBA0700-0G	JBA0700-0G	JBA2700-0G	JBA2700-0G	JBA2700-0G
Air Solenoid Valve	Single Solenoid Valve: SYJ3140-□G / Double Solenoid Valve: SYJ3240-□G					
Suction Filter	JF1030∶174μm (100 mesh)					

Notes ※1. Discharge pressure is set when air pressure range is between 0.3～0.5MPa.
Regarding AB8000-□ pump, due to the max. operating pressure of BA5011-0 valve, air pressure supply should be at 0.3 to 0.36MPa.
※2. Standard setting value of pressure switch should be 70% of the operating pressure.
1. Please see AB pump performance curve for discharged oil volume. (P.1003)
2. If hydraulic oil having viscosity higher than the shown, activating time increases.
3. In case of a low ambient temperature, action time increases because of high viscosity of hydraulic oil.
4. When the hydraulic circuit is equipped with a pressure gauge, install a damper or use an oil filled (glycerin) pressure gauge to prevent pressure gauge damage due to pressure surging.
5. Provide enough space at the bottom of the unit to compensate for hydraulic oil change. (Tank cleaning and suction strainer tightening becomes easier.)

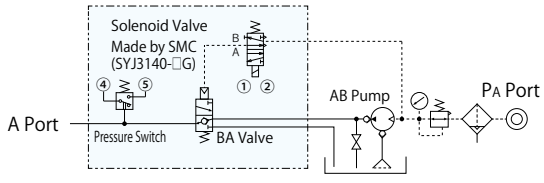
Circuit Symbol/Circuit Reference ※Please contact us if using other circuits.

Circuit Symbol	Circuit (Reference)	Number of Circuits	BA Valve Number of Connection	Air Solenoid Valve	Pressure Switch
E	Single Action Actuator Circuit	1	1	Single Solenoid Valve	—
G		1	1	Single Solenoid Valve	○
2G		2	2	Single Solenoid Valve	○
U		1	1	Double Solenoid Valve	○
2U		2	2	Double Solenoid Valve	○
NN	Double Action Actuator Circuit	1	2	Double Solenoid Valve	—
YY		1	2	Double Solenoid Valve	○
2YY		2	4	Double Solenoid Valve	○

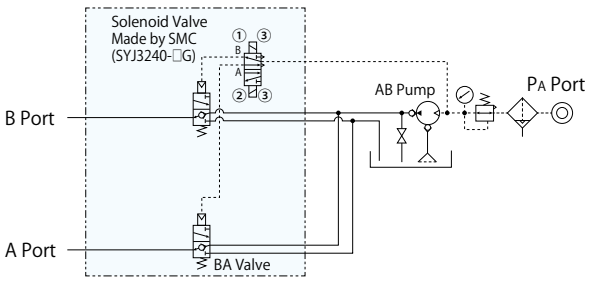
E Single Action 1 Circuit



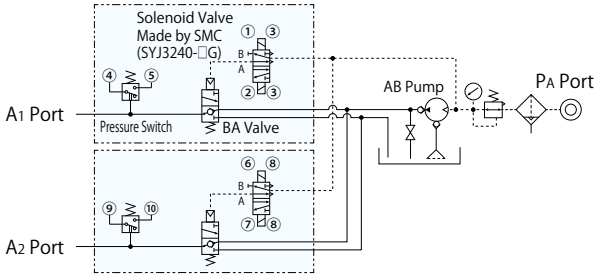
G Single Action 1 Circuit (With Pressure Switch)



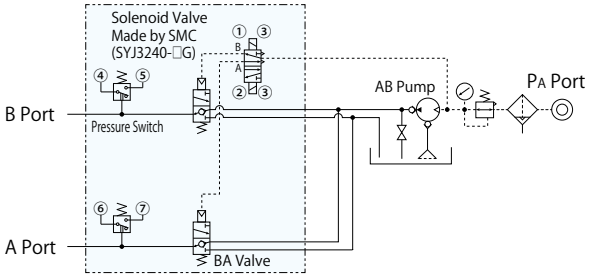
NN Double Action 1 Circuit



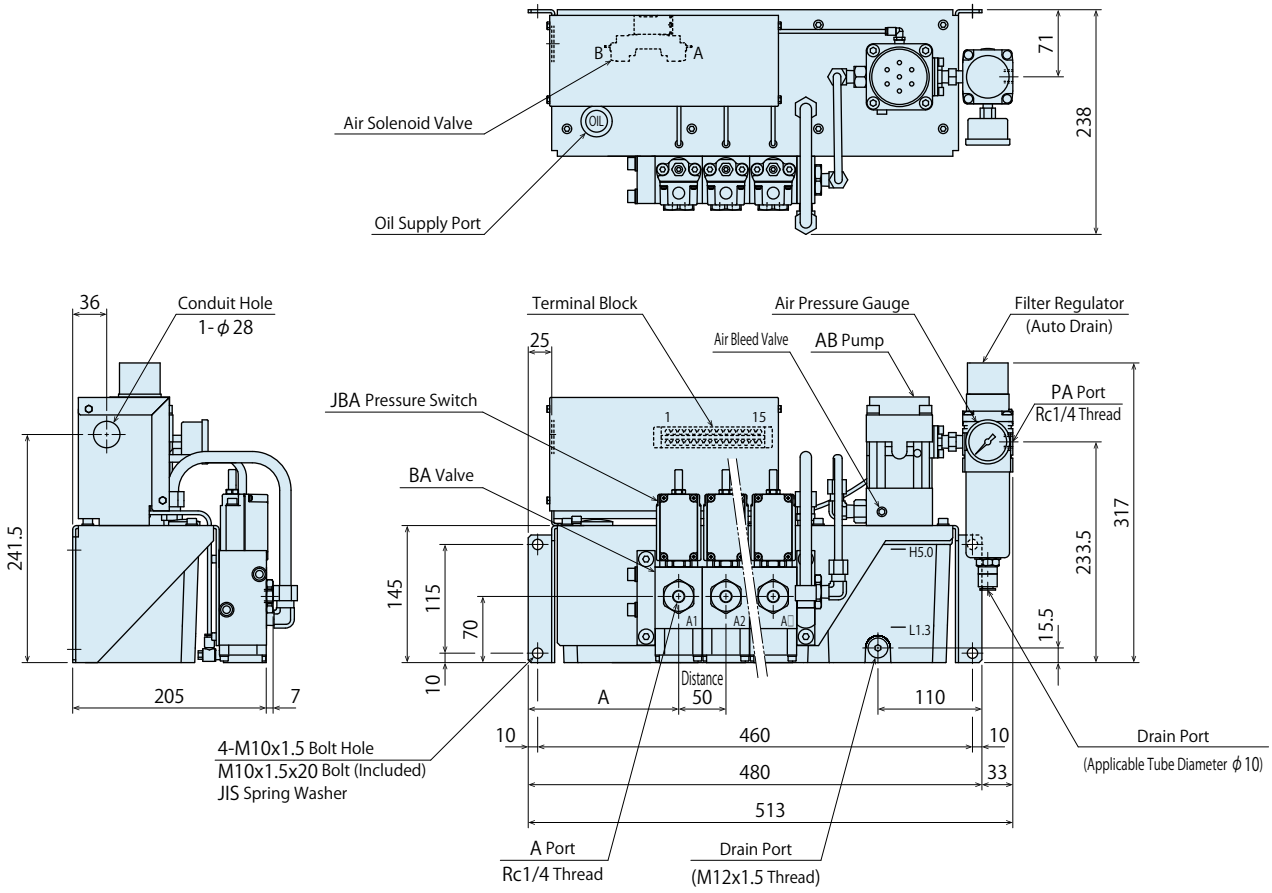
UU Single Action 2 Circuit (With Pressure Switch)



YY Double Action 1 Circuit (With Pressure Switch)



External Dimensions



BA Valve Number of Connection	1 Connection	2 Connection	3 Connection	4 Connection
A	259	209	159	109

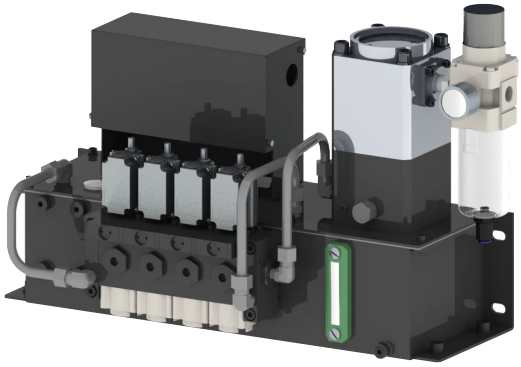
Note

1. Please contact us for specifications and external dimensions for these options.
2. The external dimensions for five circuits and six circuits are different. Please contact us for detail.

MEMO

Hydraulic Unit (For Double/Single Action)

Model CPC/CQC



Features

- Electrical Control for Double Action/Single Action
- With Non-Leak Valve (Hydraulic pressure is held, even after air supply is cut off.)
- The CPC/CQC unit is a hydraulic unit equipped with the AC pump used in a system requiring a flow rate higher than that of the CP/CPB unit

Notes:
※1.When selecting 7 Option N: Piping Port NPT Thread, dimensions in the specification sheet and other documents are in inches.
1.Please contact us for specifications and external dimensions for these options.

Model No. Indication

C P C 4 0 0 0 - 2YY - 5 - □ (7.0MPa)

1 2 3 4 5 6 7 8

1 Tank Capacity

P : 5ℓ (Actual Amount for Use 3.7ℓ)
Q : 10ℓ (Actual Amount for Use 7ℓ) (Iron Tank)

2 Pump Part Number (Pump Pressure Code)

3 : AB3000-□
4 : AB4000-□
5 : AB5000-□
6 : AB6000-□
7 : AB7000-□
8 : AB8000-□

3 Fluid Code

0 : General Hydraulic Oil (See Hydraulic Fluid List P.1043)
S : Silicon Oil
G : Water・Glycol (Iron Tank)
F : Fatty Acid Ester

※ For fluids other than those described in the fluid code, please contact us.

4 Design No.

0 : Revision Number

5 Circuit Symbol (Indicate with the number of circuits and circuit symbol.)

NN : Double Solenoid Valve Control for Double Action Circuit
YY : Double Solenoid Valve Control for Double Action Circuit (With JBA Pressure Switch)
E : Single Solenoid Valve Control for Single Action Circuit
G : Single Solenoid Valve Control for Single Action Circuit (With JBA Pressure Switch)
U : Double Solenoid Valve Control for Single Action Circuit (With JBA Pressure Switch)

Entry Example
Double Action One Circuit (with JBA)×2 → **2YY**
Single Action One Circuit/Single Solenoid Valve×2 → **2E**

※Please contact us if using other circuits.

6 Control Voltage

1 : AC100V
2 : AC200V
3 : AC110V
4 : AC220V
5 : DC 24V

7 Option

Blank : Standard
C : +Common
D : Digital Pressure Sensor
E : Without Filter Regulator
F : Manual-Drain Filter Regulator
G : With Primary Pressure Gauge
H : With Piping Block on the Left
J : With Air Regulator
K0 : With Pressure Gauge for Each Circuit (Without Primary Pressure Gauge)
K1 : With Color Displayed Pressure Gauge for Each Circuit (Without Primary Pressure Gauge)
KG0 : With Pressure Gauge for Each Circuit (With Primary Pressure Gauge)
KG1 : With Color Displayed Pressure Gauge for Each Circuit (With Primary Pressure Gauge)
L : With Pressure Switch Light
N : Piping Port NPT Thread, Pressure Gauge in both PSI/MPa ※1
P : Pressure Gauge in both PSI/MPa
Q0 : With Oil Level Switch (ON when Oil Level Drops)
Q1 : With Oil Level Switch (OFF when Oil Level Drops)
T : Iron Tank (Only for CPC.)

8 Operating Pressure

Please indicate operating pressure with the unit of measurement. (Please inform us with proper unit symbols.)

Entry Example At 5.5MPa → **(5.5MPa)**
At 25MPa → **(25.0MPa)**
At 700PSI → **(700PSI)**

Specifications

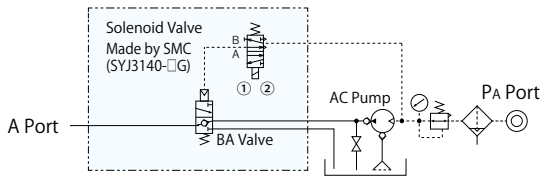
Model No.	C□C30□0	C□C40□0	C□C50□0	C□C60□0	C□C70□0	C□C80□0
Pump Part Number	AC3001-□	AC4001-□	AC5001-□	AC6001-□	AC7001-□	AC8001-□
Non-Leak Valve Part Number	BA2011-0	BA2011-0	BA5011-0	BA5011-0	BA5011-0	BA5011-0
Discharge Hydraulic Pressure ※1 MPa	2.5～4.2	3.6～6.6	5.8～10.6	8.9～16.3	14.4～26.4	22.6～30.0
Air Consumption Nm³/min	1.0					
Tank Capacity ℓ	P：5ℓ (Actual Amount for Use 3.7ℓ) / Q：10ℓ (Actual Amount for Use 7ℓ)					
Control Voltage	Model No. : Control Voltage					
Operating Temperature ℃	0～70					
Usable Fluid	Model No. : Fluid Code					
Operation Frequency	Pump Operating Cycles : less than 500 hours/year (2 hrs/day) ※Actual Discharge Time					
Pressure Switch Part Number (Pressure Increase Detection) ※2	JBA0700-0G	JBA0700-0G	JBA0700-0G	JBA2700-0G	JBA2700-0G	JBA2700-0G
Air Solenoid Valve	Single Solenoid Valve: SYJ3140-□G / Double Solenoid Valve: SYJ3240-□G					
Suction Filter	JF1030：174μm (100 mesh)					

Notes ※1. Discharge pressure is set when air pressure range is between 0.3～0.5MPa.
Regarding AC8001-□ pump, due to the max. operating pressure of BA5011-0 valve, air pressure supply should be at 0.3 to 0.38MPa.
※2. Standard setting value of pressure switch should be 70% of the operating pressure.
1. Please see AB pump performance curve for discharged oil volume. (P.1003)
2. If hydraulic oil having viscosity higher than the shown, activating time increases.
3. In case of a low ambient temperature, action time increases because of high viscosity of hydraulic oil.
4. When the hydraulic circuit is equipped with a pressure gauge, install a damper or use an oil filled (glycerin) pressure gauge to prevent pressure gauge damage due to pressure surging.
5. Provide enough space at the bottom of the unit to compensate for hydraulic oil change. (Tank cleaning and suction strainer tightening becomes easier.)

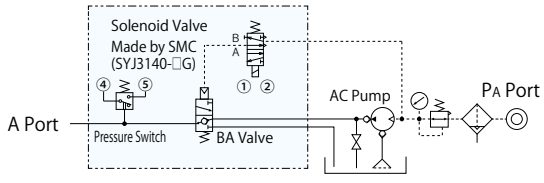
Circuit Symbol/Circuit Reference ※Please contact us if using other circuits.

Circuit Symbol	Circuit (Reference)	Number of Circuits	BA Valve Number of Connection	Air Solenoid Valve	Pressure Switch
E	Single Action Actuator Circuit	1	1	Single Solenoid Valve	—
G		1	1	Single Solenoid Valve	○
2G		2	2	Single Solenoid Valve	○
U		1	1	Double Solenoid Valve	○
2U		2	2	Double Solenoid Valve	○
NN	Double Action Actuator Circuit	1	2	Double Solenoid Valve	—
YY		1	2	Double Solenoid Valve	○
2YY		2	4	Double Solenoid Valve	○

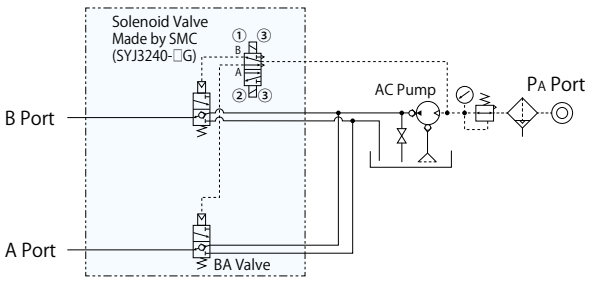
E Single Action 1 Circuit



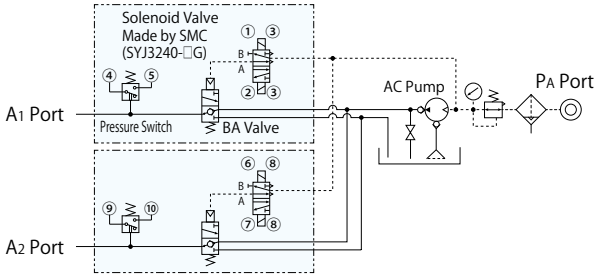
G Single Action 1 Circuit (With Pressure Switch)



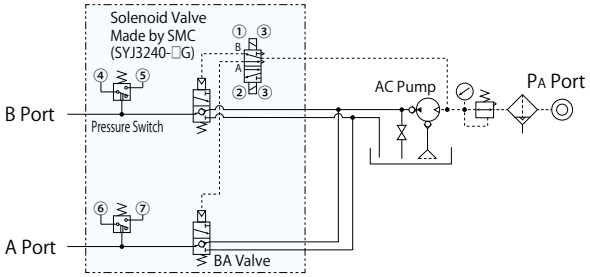
NN Double Action 1 Circuit



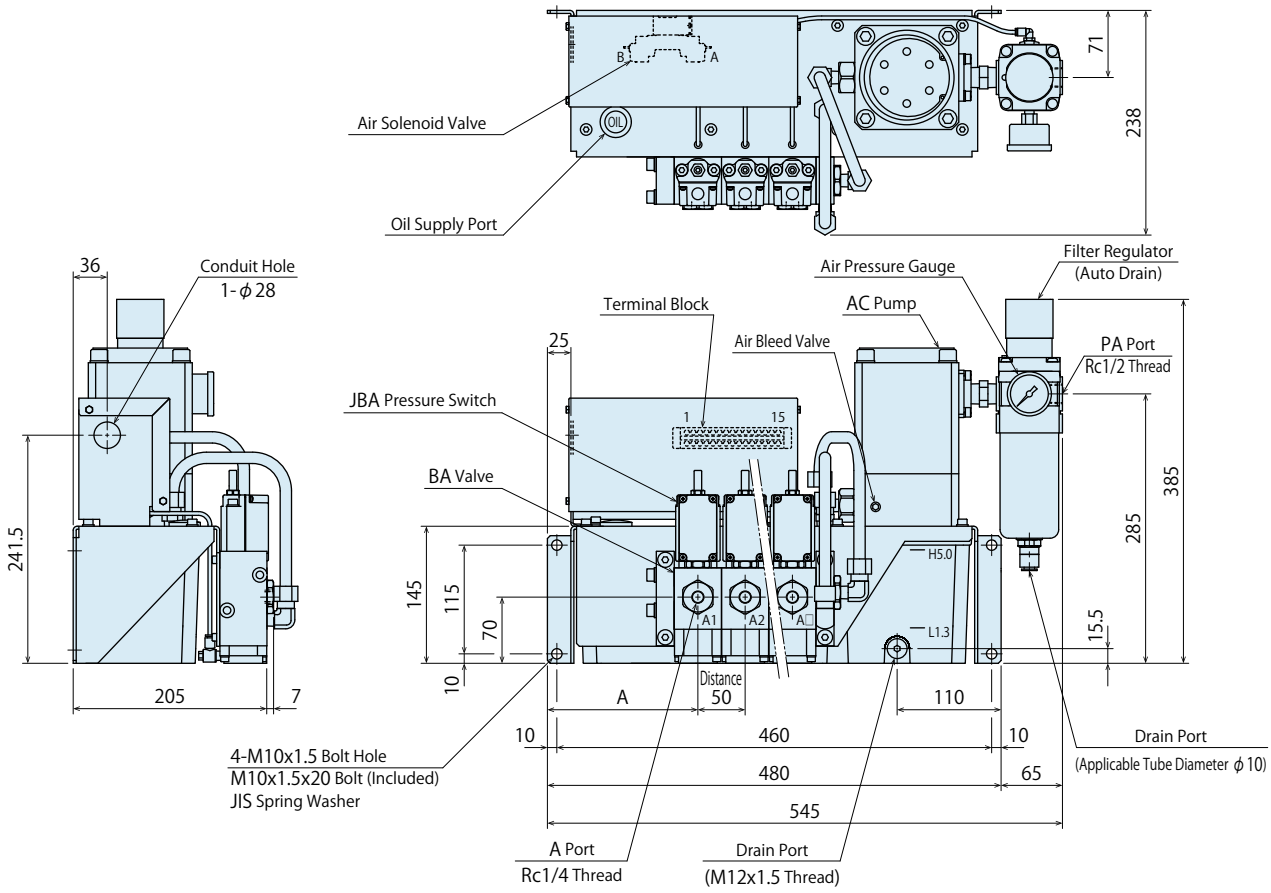
UU Single Action 2 Circuit (With Pressure Switch)



YY Double Action 1 Circuit (With Pressure Switch)



External Dimensions：CPC

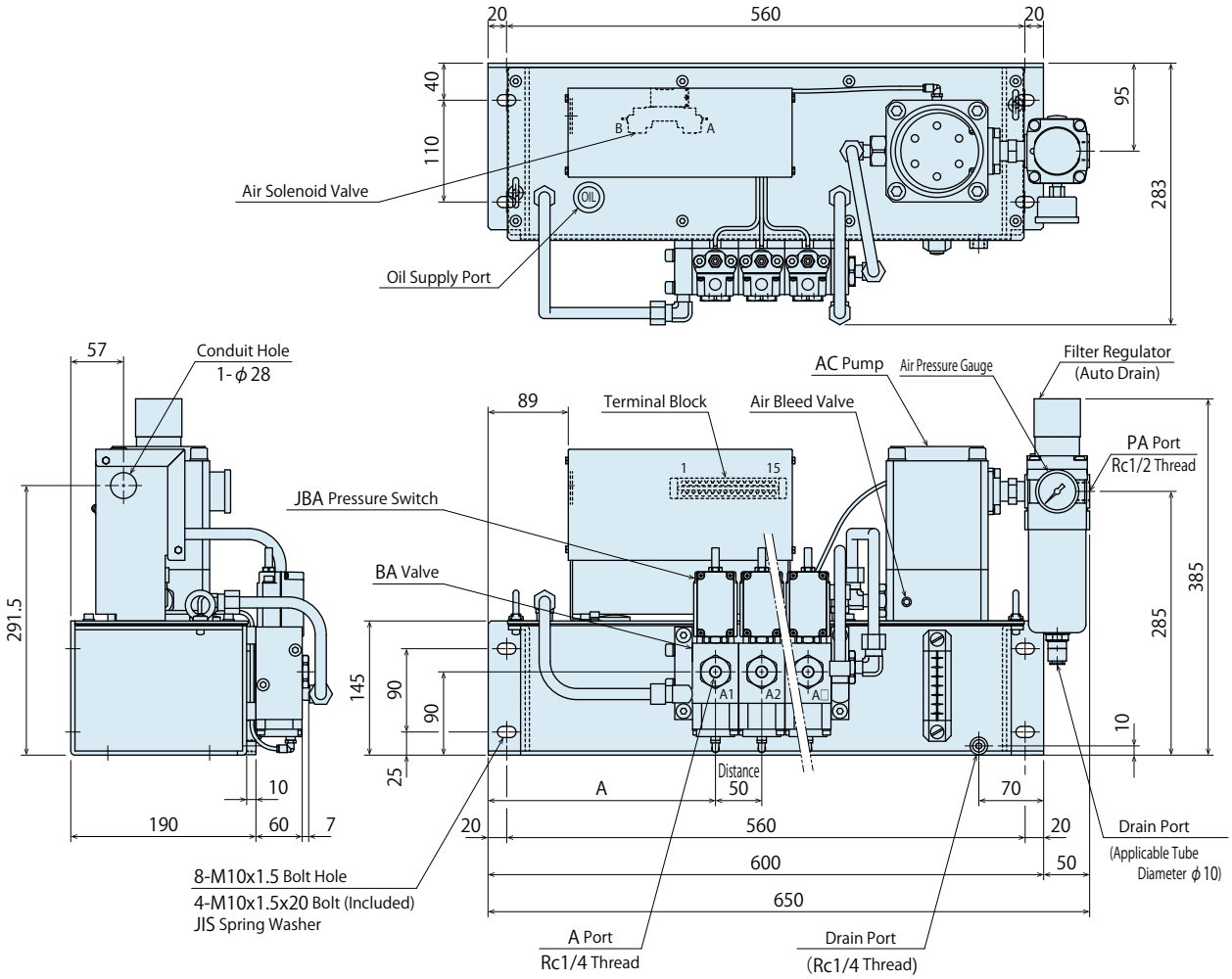


BA Valve Number of Connection	1 Connections	2 Connections	3 Connections	4 Connections
A	259	209	159	109

Note

1. Please contact us for specifications and external dimensions for these options.
2. The external dimensions for five circuits and six circuits are different. Please contact us for detail.

External Dimensions : CQC



BA Valve Number of Connection	1 Connections	2 Connections	3 Connections	4 Connections
A	345.5	295.5	245.5	195.5

Note

1. Please contact us for specifications and external dimensions for these options.
2. The external dimensions for five circuits and six circuits are different. Please contact us for detail.

Pump Unit
(For Double/Single Action)

Model CB

Features

- Pump Unit to use in conjunction with BC / BH Unit
- Compact with AB Pump Installed

※Please refer to P.977, P.979 about BC/BH non-leak valve unit.

Model No. Indication

CB 2 04 0 – 0 – □□

1 2 3 4 5 6

1 Tank Capacity

2 : 2ℓ (Actual Amount for Use 1.1ℓ)
5 : 5ℓ (Actual Amount for Use 3.1ℓ)

2 Pump Part Number (Pump Pressure Code)

03 : AB3000-□
04 : AB4000-□
05 : AB5000-□
06 : AB6000-□
07 : AB7000-□
08 : AB8000-□

3 Design No.

0 : Revision Number

4 Fluid Code

0 : General Hydraulic Oil (See Hydraulic Fluid List P. 1043)
S : Silicon Oil
G : Water-Glycol (except AB8000) (Tank is made of steel.)

※ For fluids other than those described in the fluid code, please contact us.

5 Option

Blank : Standard (Air Regulator)
D : With a Filter Regulator (Automatic Drain Option)
Q : With a Level Switch

6 Unit of Pressure Gauge

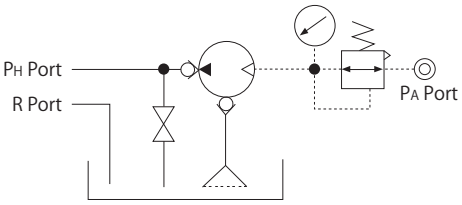
Blank : MPa (Standard)
P : PSI

Specifications

Model No.	CB□030	CB□040	CB□050	CB□060	CB□070	CB□080
Pump Part Number	AB3000-□	AB4000-□	AB5000-□	AB6000-□	AB7000-□	AB8000-□
Discharge Hydraulic Pressure ※1 ※2 MPa	2.4～4.3	3.9～7.0	6.0～11.0	10.0～17.5	15.5～27.0	25.0～43.5
Air Consumption Nm³/min	0.4					
Tank Capacity ℓ	2:2ℓ (Actual Amount for Use 1.1ℓ) / 5:5ℓ (Actual Amount for Use 3.1ℓ)					
Operating Temperature ℃	0～70					
Usable Fluid	Model No. : Fluid Code					
Operation Frequency	Pump Operating Cycles : less than 500 hours/year (2 hrs/day) ※Actual Discharge Time					

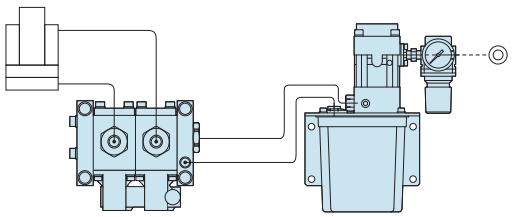
Notes ※1. Discharge pressure is set when air pressure range is between 0.3～0.5MPa.
※2. Please be careful of the operating pressure range of BH / BC unit to be used in combination.
Example: In case of using CB□080 and BH0071 together, actual operating pressure range is 25 to 30MPa. (CB□080 range = 25 to 43.5MPa , BH0071 range = 6 to 30MPa) .
1. Please see AB pump performance curve for discharged oil volume (P.1003).

Circuit Symbol



Application Example

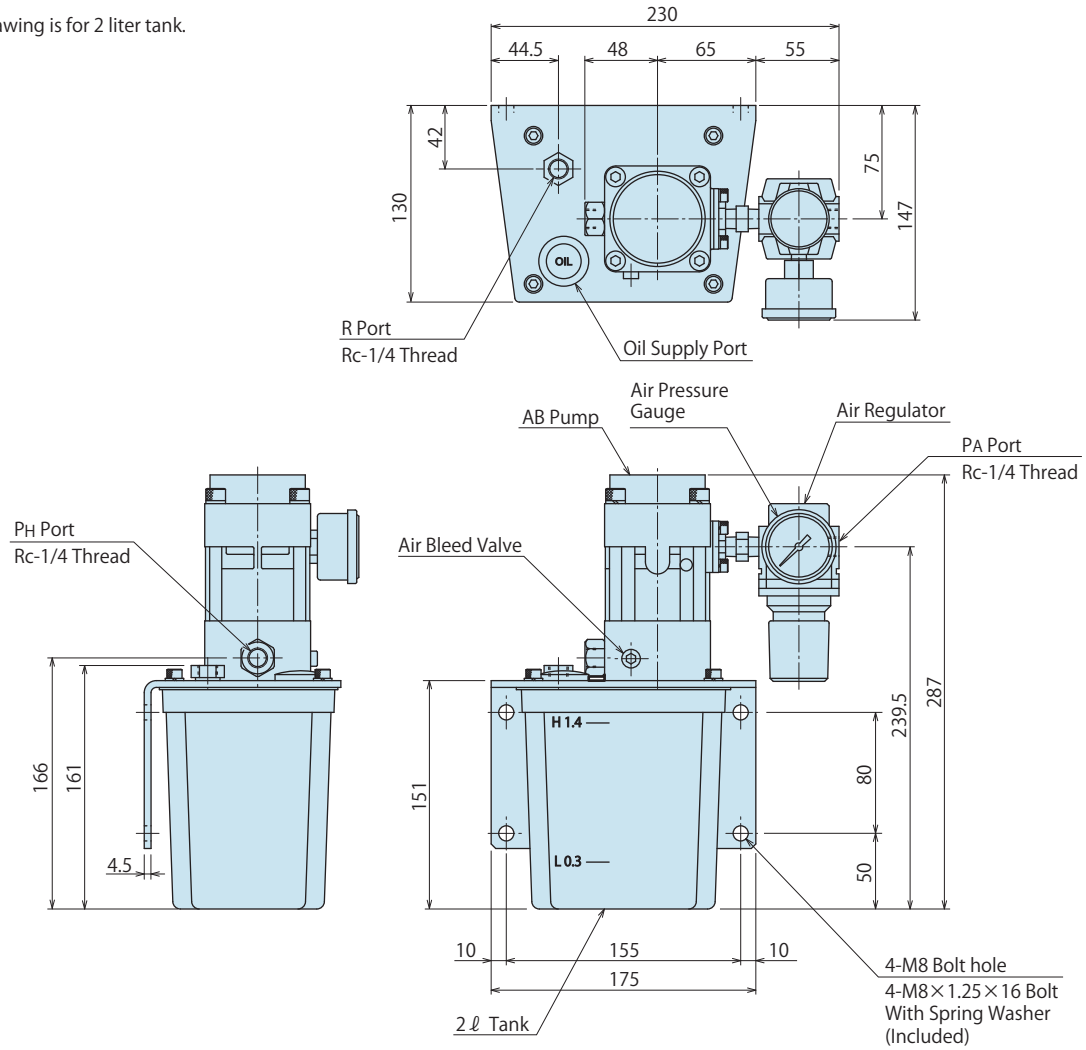
A manual operation of double action cylinder in combination with BH (NN circuit).



BH Non-Leak Valve Unit CB Pump Unit

External Dimensions

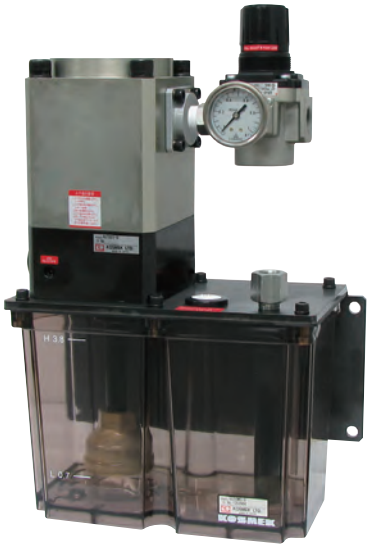
※This drawing is for 2 liter tank.



Note
1. Please contact us for the specification (5.0ℓ tank, water-glycol, with filter regulator, level switch etc.) other than the drawing above.

Pump Unit
(For Double/Single Action)

Model CC



Features

- Pump Unit to use in conjunction with BC / BH Unit
- This unit is a hydraulic unit equipped with the AC pump used in a system requiring a flow rate higher than that of the CB unit.

※Please refer to P.977, P.979 about BC/BH non-leak valve unit.

Model No. Indication

CC 5 04 0 – 0 – □ □

1 2 3 4 5 6

1 Tank Capacity

5 : 5ℓ (Actual Amount for Use 3.1ℓ)

2 Pump Part Number (Pump Pressure Code)

03 : AC3001-□
04 : AC4001-□
05 : AC5001-□
06 : AC6001-□
07 : AC7001-□
08 : AC8001-□
09 : AC9001-□

3 Design No.

0 : Revision Number

4 Fluid Code

0 : General Hydraulic Oil (See Hydraulic Fluid List P.1043)
S : Silicon Oil
G : Water-Glycol (except AC8001/AC9001) (Tank is made of steel.)

※ For fluids other than those described in the fluid code, please contact us.

5 Option

Blank : Standard (Air Regulator)
D : With a Filter Regulator (Automatic Drain Option)
Q : With a Level Switch

6 Unit of Pressure Gauge

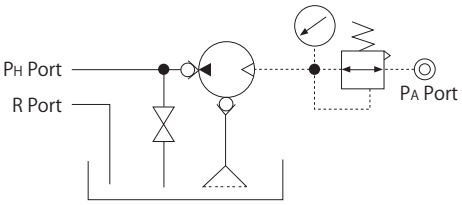
Blank : MPa (Standard)
P : PSI

Specifications

Model No.	CC5030	CC5040	CC5050	CC5060	CC5070	CC5080	CC5090
Pump Part Number	AC3001-□	AC4001-□	AC5001-□	AC6001-□	AC7001-□	AC8001-□	AC9001-□
Discharge Hydraulic Pressure ※1 ※2 MPa	2.3～4.2	3.6～6.6	5.8～10.6	8.9～16.3	14.4～26.4	22.6～41.4	35.3～64.7
Air Consumption Nm³/min	1.0						
Tank Capacity ℓ	5ℓ (Actual Amount for Use 3.1ℓ)						
Operating Temperature ℃	0～70						
Usable Fluid	Model No. : Fluid Code						
Operation Frequency	Pump Operating Cycles : less than 500 hours/year (2 hrs/day) ※Actual Discharge Time						

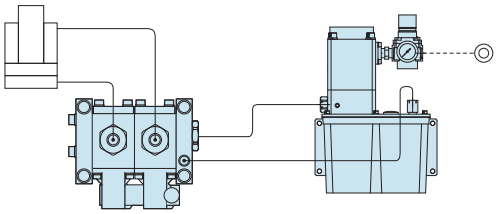
Notes ※1. Discharge pressure is set when air pressure range is between 0.3～0.5MPa.
※2. Please be careful of the operating pressure range of BH / BC unit to be used in combination.
Example: In case of using CC5080 and BH0071 together, actual operating pressure range is 22.6 to 30MPa. (CC5080 range = 22.6 to 41.4MPa , BH0071 range = 6 to 30MPa) .
1. Please see AB pump performance curve for discharged oil volume (P.1003).

Circuit Symbol



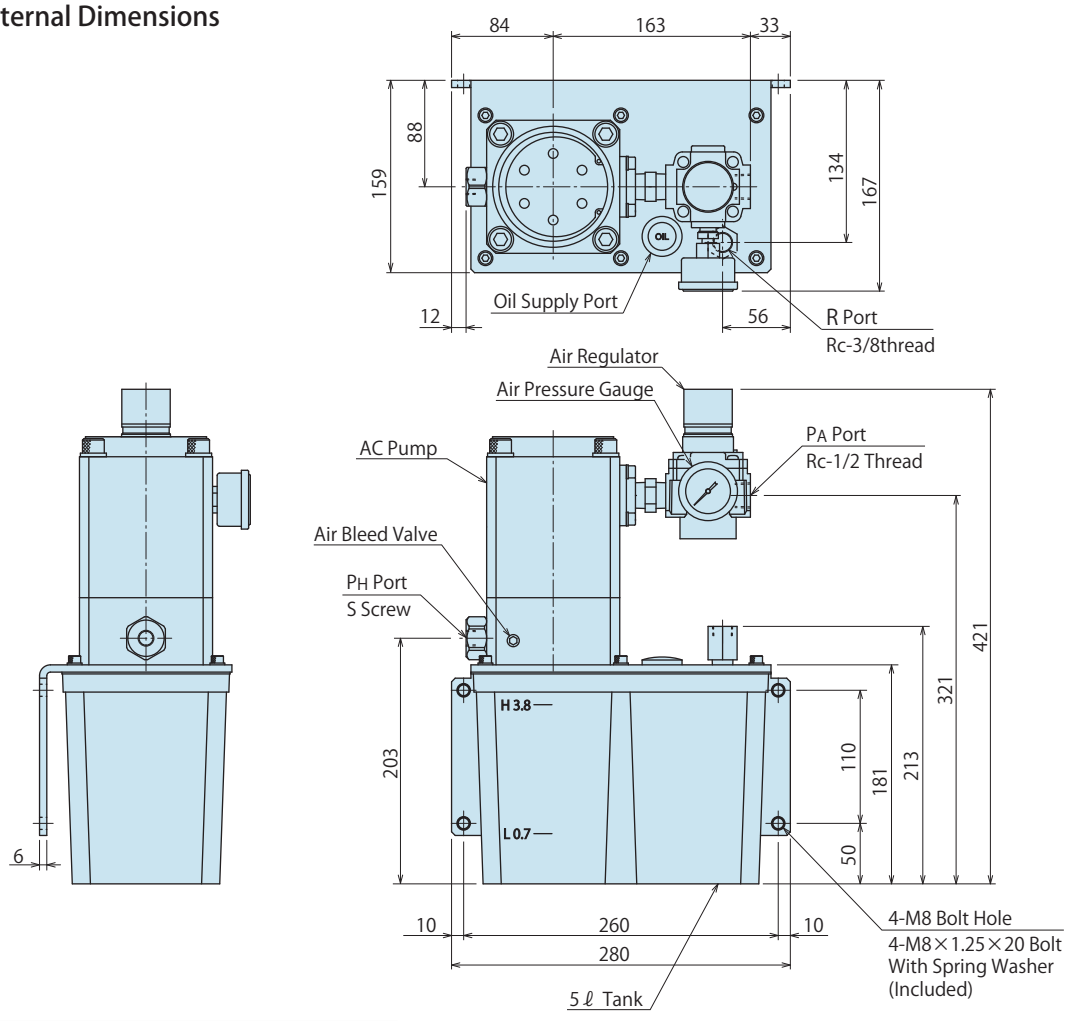
Application Example

A manual operation of double action cylinder in combination with BH (NN circuit).



BH Non-Leak Valve Unit　　CC Pump Unit

External Dimensions



Pump Code	AC3001/AC4001	AC5001~AC9001
S	Rc3/8	Rc1/4

Note
1. Please contact us for the specification (water-glycol, with filter regulator, level switch etc.) other than the drawing above.

AB Pump / AC Pump
(Air Driven Hydraulic Pump)

Model AB/AC

Features

- Air-driven hydraulic pump to generate high-pressure hydraulic-low pressure simply by supplying compressed air.
- Variation of total 13 different sizes and flow rates.
- Applicable to explosion proof specification because no electric motor is used.

Model No. Indication

AB	700	0	–		0
1	2	3		4	5

1 Pump Size

AB : AB Pump (Compact Design, Air Consumption 0.4 Nm³/min)
AC : AC Pump (High Volume of Flow, Air Consumption 1.0 Nm³/min)

2 Pressure Range ※Discharge pressure is set when air pressure range is between 0.3～0.5MPa.

300 :	Discharge Hydraulic Pressure	With AB Pump: 2.4～4.3MPa	With AC Pump: 2.3～4.2MPa
400 :	Discharge Hydraulic Pressure	With AB Pump: 3.9～7.0MPa	With AC Pump: 3.6～6.6MPa
500 :	Discharge Hydraulic Pressure	With AB Pump: 6.0～11.0MPa	With AC Pump: 5.8～10.6MPa
600 :	Discharge Hydraulic Pressure	With AB Pump: 10.0～17.5MPa	With AC Pump: 8.9～16.3MPa
700 :	Discharge Hydraulic Pressure	With AB Pump: 15.5～27.0MPa	With AC Pump: 14.4～26.4MPa
800 :	Discharge Hydraulic Pressure	With AB Pump: 25.0～43.5MPa	With AC Pump: 22.6～41.4MPa
900 :	Discharge Hydraulic Pressure	No AB Pump at this range.	With AC Pump: 35.3～64.7MPa

3 Design No. Revision Number

0 : When AB pump is selected
1 : When AC pump is selected

4 Circuit Symbol

Blank : Standard
V : Valve Built-In Option

5 Usable Fluid

0 : General Hydraulic Oil (See Hydraulic Fluid List P.1043)
S : Silicon Oil
G : Water-Glycol
※ For fluids other than those described in the fluid code, please contact us.

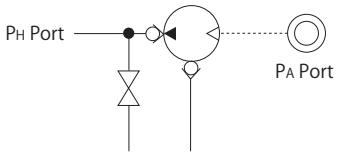
Specifications

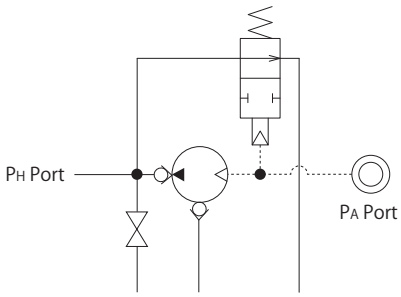
Model No.	AB3000-□□	AB4000-□□	AB5000-□□	AB6000-□□	AB7000-□□	AB8000-□□
Discharge Hydraulic Pressure ※1 MPa	2.4～4.3	3.9～7.0	6.0～11.0	10.0～17.5	15.5～27.0	25.0～43.5
Air Consumption Nm^3/min	0.4					
Operating Air Pressure Range MPa	0.15 ～ 0.7					
Lift m	below 0.6					
Noise dB	82～85					
Usable Fluid ※2	Model No. : Fluid Code					
Applicable Suction Filter ※3	JF1030					
Mass kg	2.4					

Model No.	AC3001-□□	AC4001-□□	AC5001-□□	AC6001-□□	AC7001-□□	AC8001-□□	AC9001-□□
Discharge Hydraulic Pressure ※1 MPa	2.3～4.2	3.6～6.6	5.8～10.6	8.9～16.3	14.4～26.4	22.6～41.4	35.3～64.7
Air Consumption Nm^3/min	1.0						
Operating Air Pressure Range MPa	0.15 ～ 0.7						
Lift m	below 1.0						
Noise dB	82～85						
Usable Fluid ※2	Model No. : Fluid Code						
Applicable Suction Filter ※3	JF1040	JF1030					
Mass kg	8.8						

Notes ※1. Discharge pressure is set when air pressure range is between 0.3～0.5MPa.
※2. For fluids other than those described in the fluid code, please contact us.
※3. Suction filter and suction pipe is not attached. If it is needed, please prepare separately.

Circuit Symbol





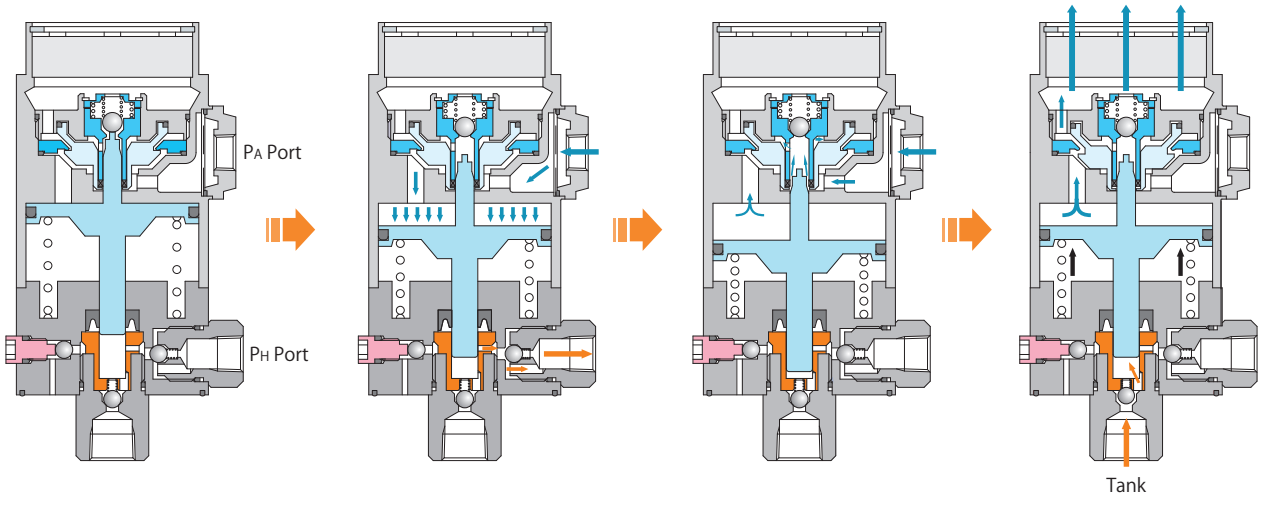
4 Circuit Symbol **Blank** : Standard

4 Circuit Symbol **V** : Valve Built-In Option

Action Description

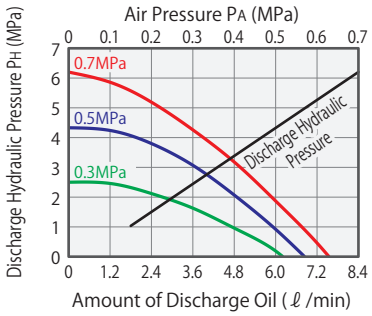
Actions ① through ④ are repeated to discharge oil. When "Air pressure X Piston area" balances with "Hydraulic Pressure X Plunger area", the piston stops automatically.

①Initial Position ②Discharge Process ③Air Supply Switching ④Suction Process (Air Vent)

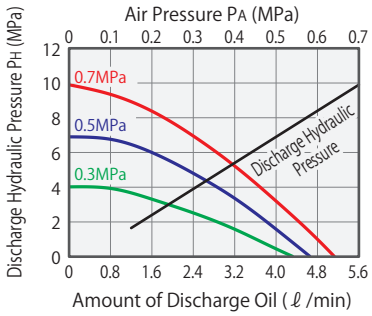


Performance Curve

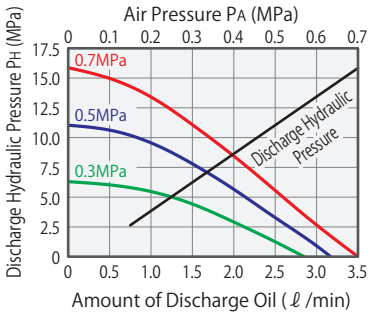
AB3000 Calculation Formula PH = 9.4(PA−0.04)



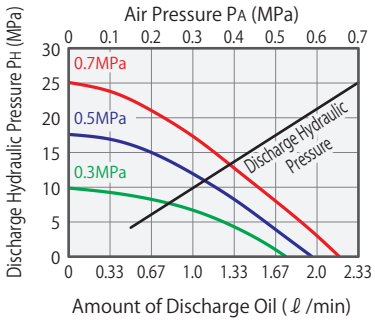
AB4000 Calculation Formula PH = 15(PA−0.04)



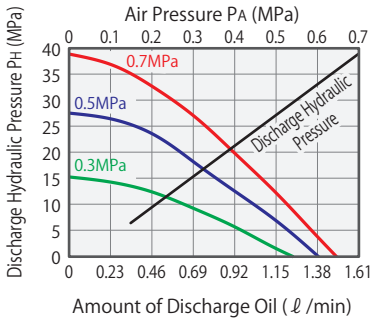
AB5000 Calculation Formula PH = 24(PA−0.04)



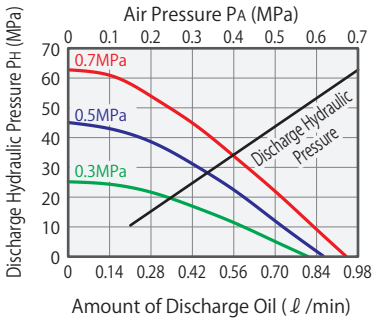
AB6000 Calculation Formula PH = 38(PA−0.04)



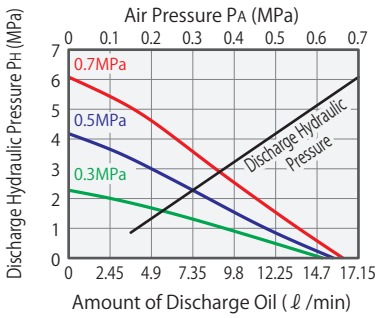
AB7000 Calculation Formula PH = 59(PA−0.04)



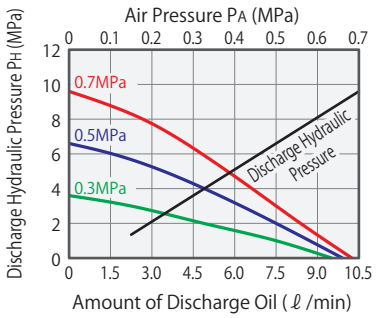
AB8000 Calculation Formula PH = 95(PA−0.04)



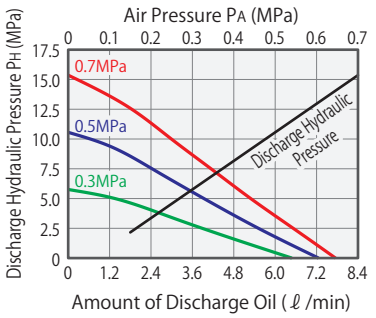
AC3001 Calculation Formula PH = 9.5(PA−0.06)



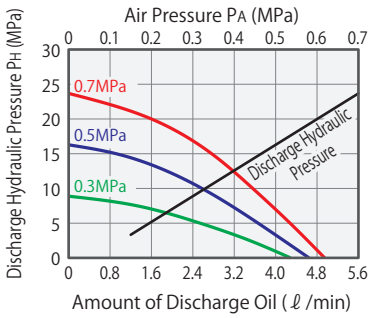
AC4001 Calculation Formula PH = 15(PA−0.06)



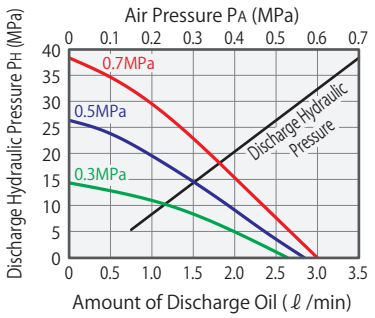
AC5001 Calculation Formula PH = 24(PA−0.06)



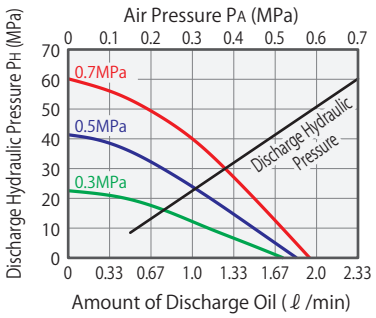
AC6001 Calculation Formula PH = 37(PA−0.06)



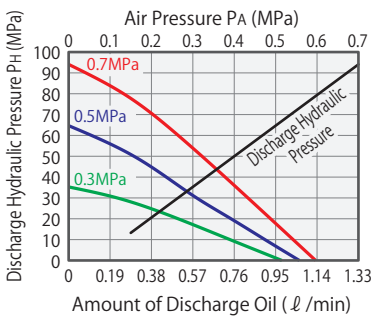
AC7001 Calculation Formula PH = 60(PA−0.06)



AC8001 Calculation Formula PH = 94(PA−0.06)



AC9001 Calculation Formula PH = 147(PA−0.06)



※PH: Discharge Pressure (MPa)
PA: Air Pressure (MPa)

Pump Performance Curve

【How to calculate necessary air supply pressure for the set discharge pressure】
- This can be determined by drawing a line from the discharge pressure PH - - - - .

(Example) Air pressure necessary for oil discharge pressure of 7MPa is obtained about 0.51 Mpa.

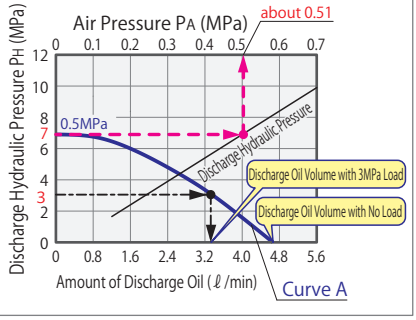
【How to calculate discharge pressure from the air pressure】
- Discharge pressure PH can be calculated by putting the air pressure PA into the formula.

(Example) Discharge pressure is about 7MPa when air pressure is 0.51MPa.

【How to calculate oil discharge volume】
- You can determine the amount of oil discharged from the A ——— curve.

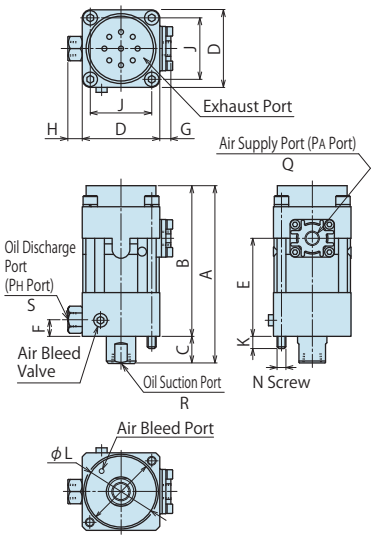
(Example) At air pressure 0.5MPa with no load, discharge oil volume is about 4.6 ℓ /min. When the pump running load is 3MPa, the discharge oil volume is about 3.3 ℓ /min.

AB4000 Calculation Formula PH = 15(PA−0.04)

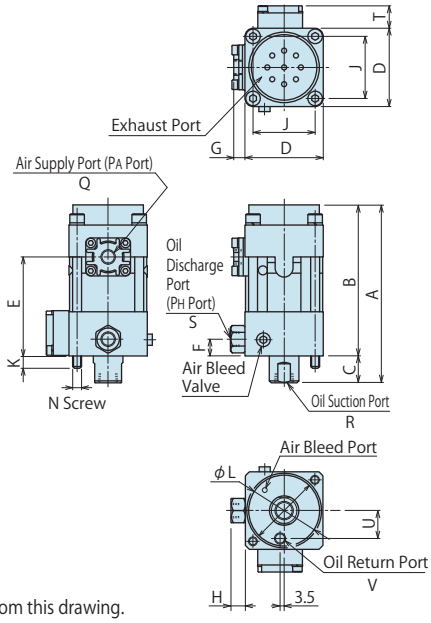


External Dimensions

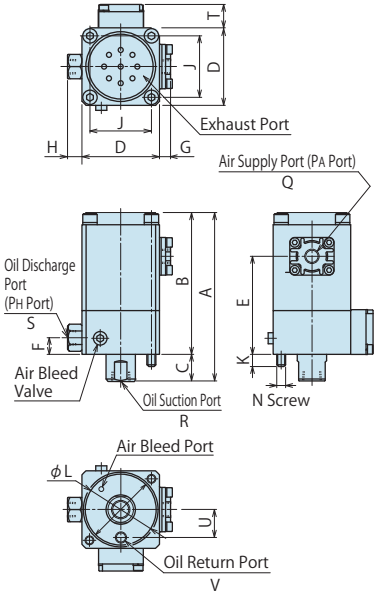
AB/AC



AB-V (Valve Built-In Option)

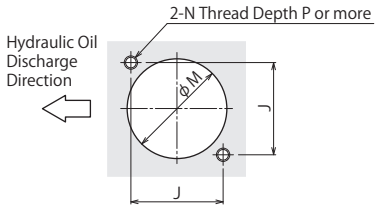


AC-V (Valve Built-In Option)



※Some parts of AC pump appearance is different from this drawing.

Machining Dimension for Mounting Hole (Common)



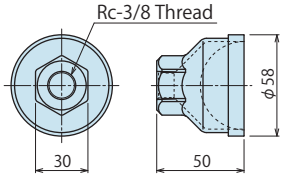
Model No.	AB□0	AC3001/4001	AC5001~9001
A	160	220.5	213.5
B	136	188.5	
C	24	32	25
D	70	110	
E	88.5	140	
F	15	22	
G	10	13	
H	13	17	
J	55.5	87	
K	11	15	
L	64	99.5	
M	60	95	
N	M8×1.25	M12×1.75	
P	13	18	
Q	Rc1/4	Rc1/2	
R	Rc3/8	Rc1/2	Rc3/8
S	Rc1/4	Rc3/8	Rc1/4
T	20	30	
U	25	40	
V	Rc1/8	Rc1/4	

Caution (AB/AC)

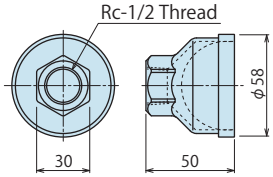
1. When using an air circuit on the incoming side of the pump, please make sure to install the air filter and regulator.
   It can cause a malfunction due to dust in the piping.
2. Always use a suction filter at the pump suction side.
   If you are not using Kosmek filter, we recommended using 100 or more mesh.
3. Use a pipe having no rust or scale internally as a suction pipe. Remove burrs from thread part sufficiently.
   When installing apply a seal material such as seal tape to prevent air from entering.
4. AB/AC pump is not suitable for continuous operation (circulation or open circuit). Always use in a closed circuit.
   Continuous operation results in packing wear, adversely affecting the pump life.
5. When installing a purchased hydraulic valve in the hydraulic circuit, the pump may not balance to stop due to internal leakage of the valve.
   Continuous operation reduces the pump life. Use a non-leak valve and control valve made by Kosmek.
6. The pump discharges oil in pulses. An accumulator can be installed to reduce pulsations.

Accessories (Suction Filter)

JF1030



JF1040



Model No. Indication

JF 103 0

- 103: Size (Refer to left drawing)
- 0: Design No. (Revision Number)

Model No.	JF1030		JF1040
Applicable Pump Part Number	AB□0 AC5001 AC6001 AC7001	AC8001 AC9001	AC3001 AC4001

Cautions

Installation Notes (For Hydraulic Series)

1) Check the Usable Fluid

- Please use the appropriate fluid by referring to the Hydraulic Fluid List.

2) Procedure before Piping

- The pipeline, piping connector and fixture circuits should be cleaned by thorough flushing.
- The dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
- There is no filter provided with Kosmek' s product except for a part of valves which prevents foreign materials and contaminants from getting into the circuit.

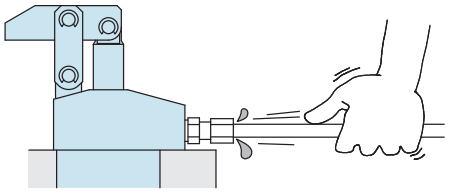
3) Applying Sealing Tape

- Wrap with tape 1 to 2 times following the screw direction.
- Pieces of the sealing tape can lead to oil leakage and malfunction.
- In order to prevent a foreign substance from going into the product during the piping work, it should be carefully cleaned before working.

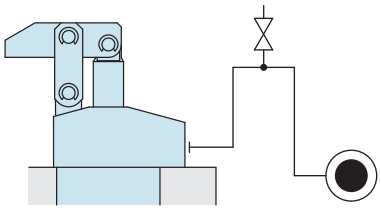
4) Air Bleeding of the Hydraulic Circuit

- If the hydraulic circuit has excessive air, the action time may become very long. If air enters the circuit after connecting the hydraulic port or under the condition of no air in the oil tank, please perform the following steps.

① Reduce hydraulic pressure to less than 2MPa.
② Loosen the cap nut of pipe fitting closest to the clamp by one full turn.
③ Wiggle the pipeline to loosen the outlet of pipe fitting.
Hydraulic fluid mixed with air comes out.



④ Tighten the cap nut after bleeding.
⑤ It is more effective to bleed air at the highest point inside the circuit or at the end of the circuit.
(Set an air bleeding valve at the highest point inside the circuit.)



5) Checking Looseness and Retightening

- At the beginning of the machine installation, the bolt and nut may be tightened lightly. Check the looseness and re-tighten as required.

Hydraulic Fluid List

ISO Viscosity Grade ISO-VG-32

Maker	Anti-Wear Hydraulic Oil	Multi-Purpose Hydraulic Oil
Showa Shell Sekiyu	Tellus S2 M 32	Morlina S2 B 32
Idemitsu Kosan	Daphne Hydraulic Fluid 32	Daphne Super Multi Oil 32
JX Nippon Oil & Energy	Super Hyrando 32	Super Mulpus DX 32
Cosmo Oil	Cosmo Hydro AW32	Cosmo New Mighty Super 32
ExxonMobil	Mobil DTE 24	Mobil DTE 24 Light
Matsumura Oil	Hydol AW-32	
Castrol	Hyspin AWS 32	

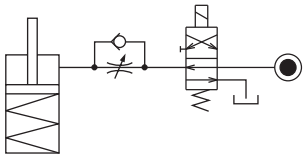
Note As it may be difficult to purchase the products as shown in the table from overseas, please contact the respective manufacturer.

Notes on Hydraulic Cylinder Speed Control Unit

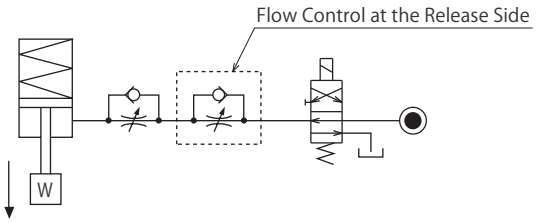
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

Flow Control Circuit for Single Acting Cylinder

For spring return single acting cylinders, restricting flow during release can extremely slow down or disrupt release action. The preferred method is to control the flow during the lock action using a valve that has free-flow in the release direction. It is also preferred to provide a flow control valve at each actuator.



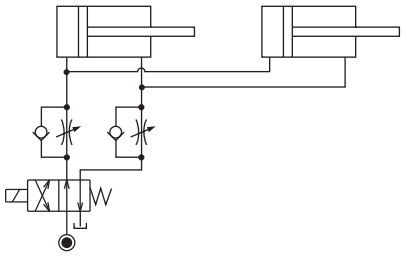
Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow. (Please add flow control to release flow if the lever weight is put on at the time of release action when using swing clamps.)



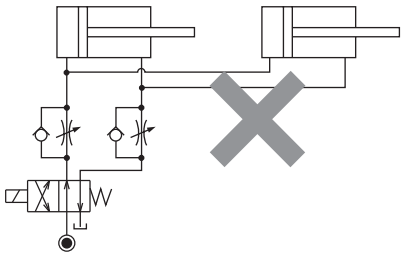
Flow Control Circuit for Double Acting Cylinder

Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system.
However, in the case of controlling LKE, TMA, TLA, both lock side and release side should be meter-in circuit.
Refer to P.47 for speed adjustment of LKE.
For TMA and TLA, if meter-out circuit is used, abnormal high pressure is created, which causes oil leakage and damage.

【Meter-out Circuit】(Except LKE/TMA/TLA)

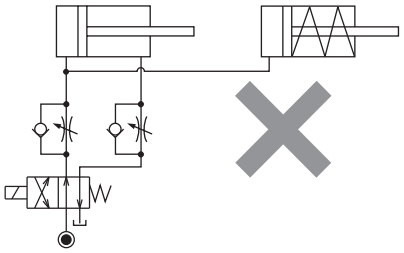


【Meter-in Circuit】(LKE/TMA/TLA must be controlled with meter-in.)



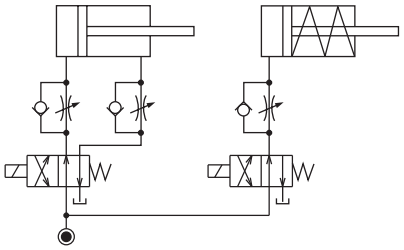
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

① Single acting components should not be used in the same flow control circuit as the double acting components.
The release action of the single acting cylinders may become erratic or very slow.

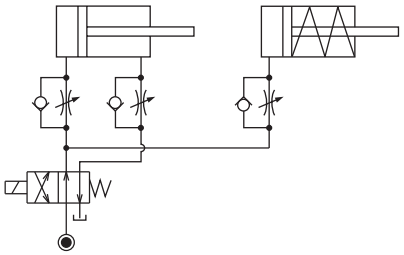


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

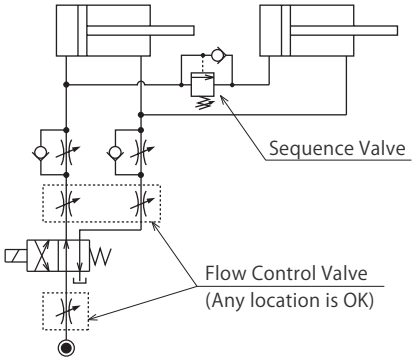
○ Separate the control circuit.



○ Reduce the influence of double acting cylinder control unit.
However, due to the back pressure in tank line, single action cylinder is activated after double action cylinder works.



② In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action because of the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve or pressure switches for clamping detection. If the back pressure is more than the set pressure then the system will not work as it is designed to.



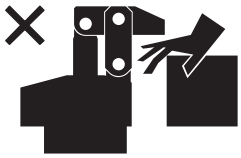
Cautions

Notes on Handling

1) It should be handled by qualified personnel.
- The hydraulic machine and air compressor should be handled and maintained by qualified personnel.

2) Do not handle or remove the machine unless the safety protocols are ensured.
① The machine and equipment can only be inspected or prepared when it is confirmed that the preventive devices are in place.
② Before the machine is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
③ After stopping the machine, do not remove until the temperature cools down.
④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.

3) Do not touch clamps (cylinder) while clamps (cylinder) is working. Otherwise, your hands may be injured due to clinching.

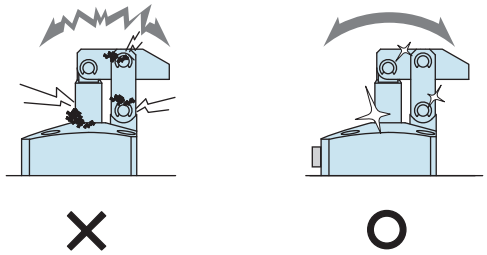


4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

Maintenance and Inspection

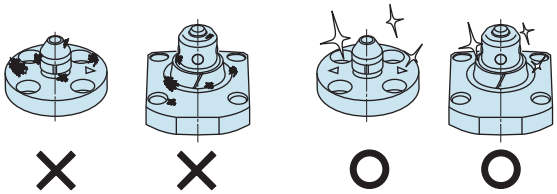
1) Removal of the Machine and Shut-off of Pressure Source
- Before the machine is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
- Make sure there is no abnormality in the bolts and respective parts before restarting.

2) Regularly clean the area around the piston rod and plunger.
- If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning , fluid leakage and air leaks.



3) Please clean out the reference surface regularly (taper reference surface and seating surface) of locating machine .(VS/VT/VL/VM/VJ/VK/WVS/WM/WK/VX/VXF)

- Location products, except VX/VXF model, can remove contaminants with cleaning functions.
  When installing pallets makes sure there is no thick sludge like substances on pallets.
- Continuous use with dirt on components will lead to locating functions not work properly, leaking and malfunction.



4) If disconnecting by couplers on a regular basis, air bleeding should be carried out daily to avoid air mixed in the circuit.

5) Regularly tighten nuts, bolts, pins, cylinders and pipe line to ensure proper use.

6) Make sure the hydraulic fluid has not deteriorated.

7) Make sure there is smooth action and no abnormal noise.
- Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.

8) The products should be stored in the cool and dark place without direct sunshine or moisture.

9) Please contact us for overhaul and repair.

Warranty

1) Warranty Period

- The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.

2) Warranty Scope

- If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.
  Defects or failures caused by the following are not covered.

① If the stipulated maintenance and inspection are not carried out.
② If the product is used while it is not suitable for use based on the operator's judgment, resulting in defect.
③ If it is used or handled in inappropriate way by the operator.
(Including damage caused by the misconduct of the third party.)
④ If the defect is caused by reasons other than our responsibility.
⑤ If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
⑥ Other caused by natural disasters or calamities not attributable to our company.
⑦ Parts or replacement expenses due to parts consumption and deterioration.
(Such as rubber, plastic, seal material and some electric components.)

Damages excluding from direct result of a product defect shall be excluded from the warranty.

Sales Offices

Sales Offices across the World

Japan Overseas Sales	**TEL. +81-78-991-5162**	FAX. +81-78-991-8787 KOSMEK LTD. 1-5, 2-chome, Murotani, Nishi-ku, Kobe-city, Hyogo, Japan 651-2241 〒651-2241　兵庫県神戸市西区室谷2丁目1番5号
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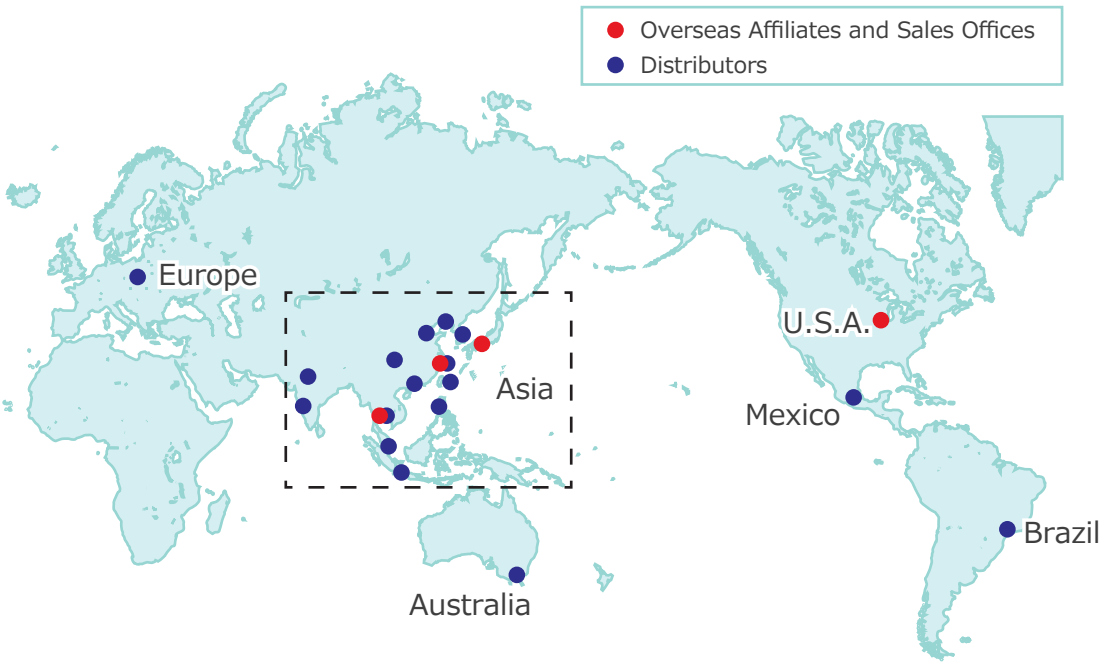
Global Network



Asia Detailed Map

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