Hydraulic

Non-Leak Coupler

Model BGA/BGB
Model BGC/BGD
Model BGP/BGS
Model BBP/BBS
Model BNP/BNS
Model BJP/BJS
Model BFP/BFS

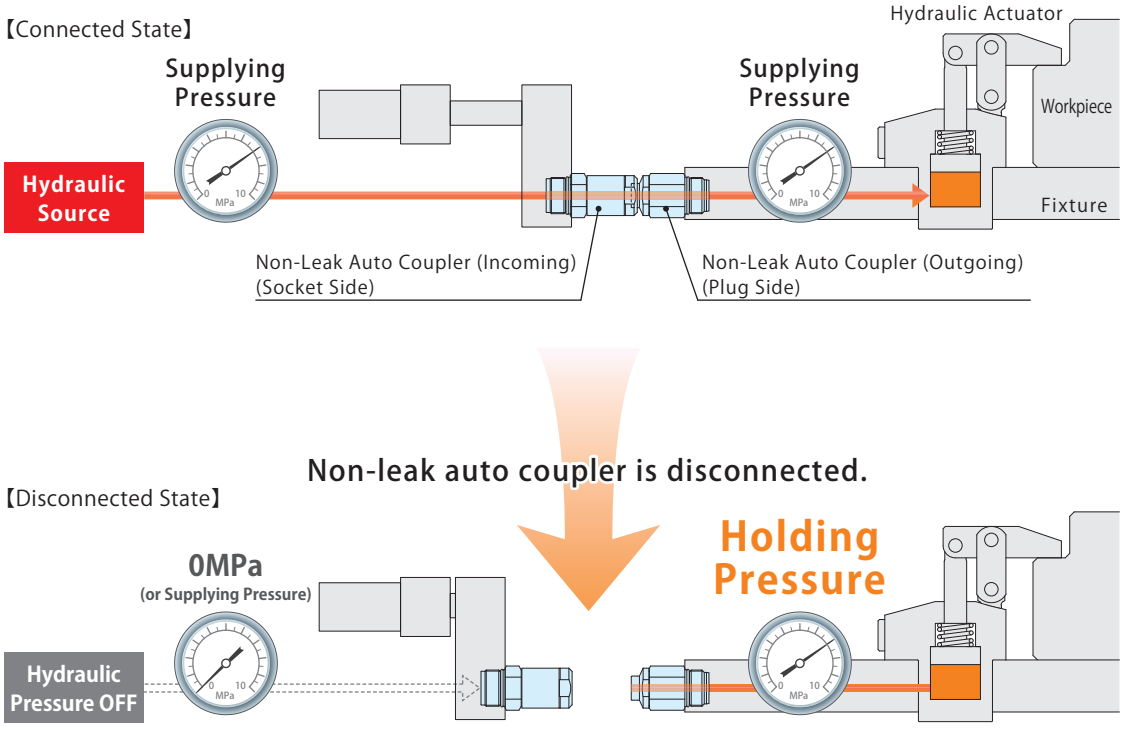
Coupler to maintain the outgoing side pressure after disconnected under pressure.

The actuator can be separated from the hydraulic source, holding the pressure by itself.

What is a Non-leak coupler?

Non-leak coupler has non-leak mechanism and allows both couplers (plug and socket) to be disconnected under pressure.
The actuator can be separated from the hydraulic source, holding the pressure by itself.

Non-leak auto coupler with pilot check valve has non-leak function and pilot check valve.
Pilot check valve makes a smooth connection and disconnection of coupler with no reacting force, since it can hold the pressure at fixture side even when the supply of pressure is stopped with coupler connected condition.



Note : 1. Supplying/Not Supplying of hydraulic pressure to the socket side of the coupler during connected or disconnected condition depends on the model of Auto Coupler. Please refer to each page for detail if necessary.

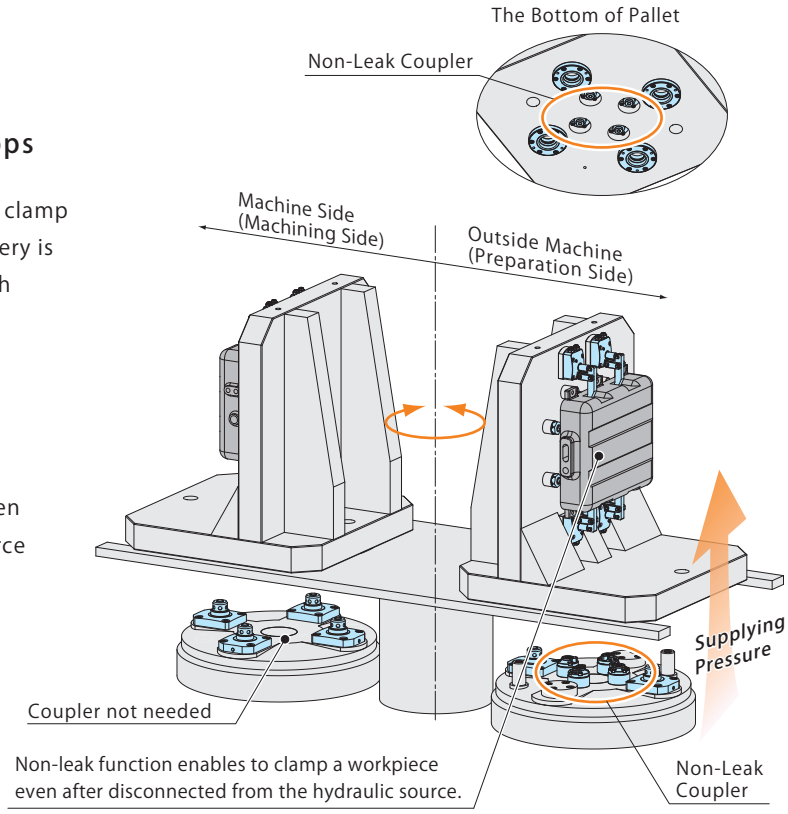
Advantages

Cut Off Unwanted Circuit Loops

The installation of rotary joint for work clamp circuit or coupler at the side of machinery is unnecessary because it is operated with aligning mechanism.

Energy Saving

Hydraulic pressure is required only when exchanging workpieces. Hydraulic source can be shut off after disconnection.



	Model BGA/BGB	Model BGC/BGD	Model BGP/BGS	Model BBP/BBS
Pilot Check Valve	 → P.1107	 → P.1111	 → P.1115	 → P.1119
Classification	Non-Leak Coupler with Pilot Check Valve	Non-Leak Coupler with Pilot Check Valve	Non-Leak Coupler with Pilot Check Valve	Low Pressing Force Non-Leak Coupler with Pilot Check Valve
Operating Pressure Range	1 ~ 7MPa	1 ~ 7MPa / 7 ~ 25MPa	1 ~ 7MPa	5 ~ 25MPa
Features	Screw Mounted (Space-Saving)	Bolt Mounted		
	Low Pressing Force (with Pilot Check Valve)			
		with Air Blow Function		with Air Blow Function

	Model BNP/BNS	Model BJP/BJS	Model BFP/BFS
Disconnectable Under Pressure	 → P.1123	 → P.1127	 → P.1131
Classification	Non-Leak Coupler	Non-Leak Coupler	Non-Leak Coupler
Operating Pressure Range	1 ~ 7MPa / 7 ~ 25MPa	1 ~ 7MPa / 7 ~ 30MPa	1 ~ 7MPa
Features	Screw Mounted (Space-Saving)	Bolt Mounted	
	Disconnectable Under Pressure		
		with Air Blow Function	

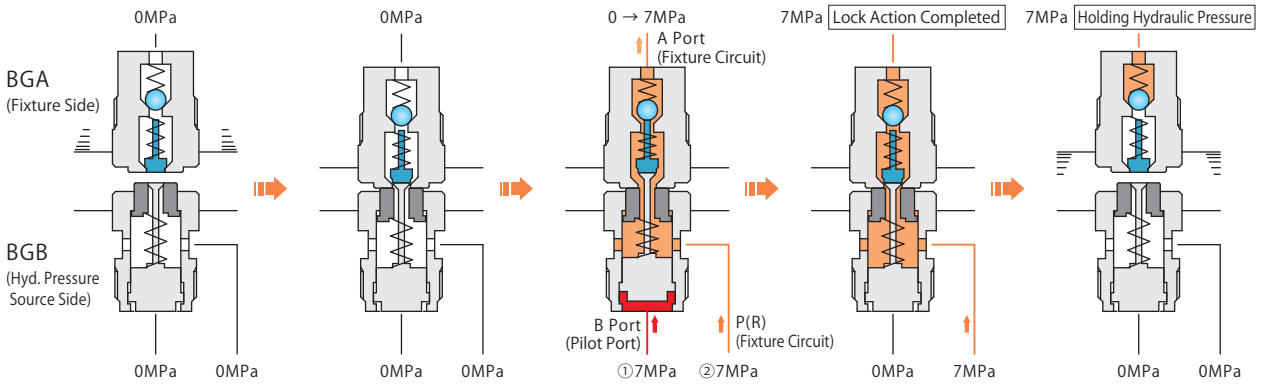
Non-Leak Coupler
with Pilot Check Valve
Model BGA/BGB

Feature

Pilot check valve makes a smooth connection and disconnection of coupler with no reaction force.
It holds the fixture-side pressure even when the supply of pressure is stopped with coupler connected condition.

Action Description (at 7MPa)

Lock Operation



Stop the hydraulic supply when connecting each port to the BGB side.

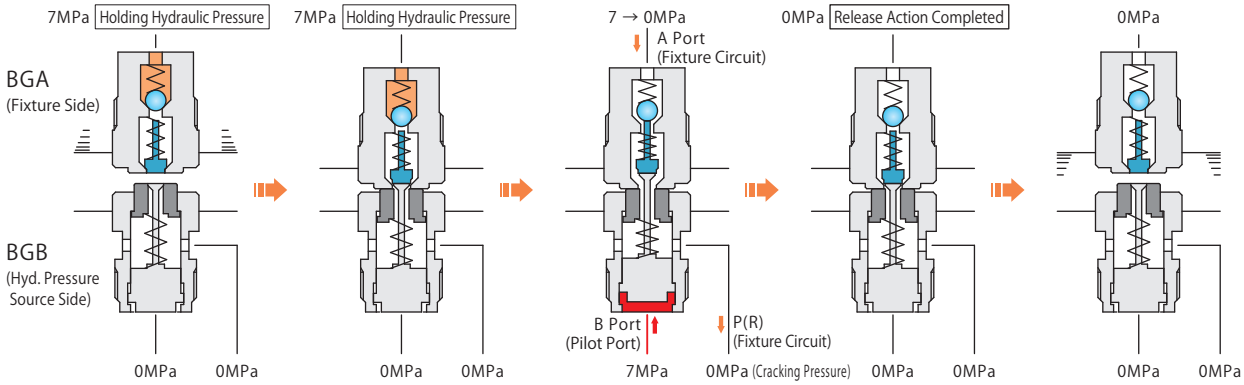
Connection Completed

① Supply hydraulic pressure to the pilot port B to open the check valve of BGA.
② After that, supply hydraulic pressure to the fixture circuit P (R).

After locking (pressurizing) of the fixture circuit is completed, stop the hydraulic supply to the pilot port B.

Disconnect the coupler after stopping the hydraulic supply to the fixture circuit P (R).

Release Operation



Stop the hydraulic supply when connecting each port to the BGB side.

Connection Completed

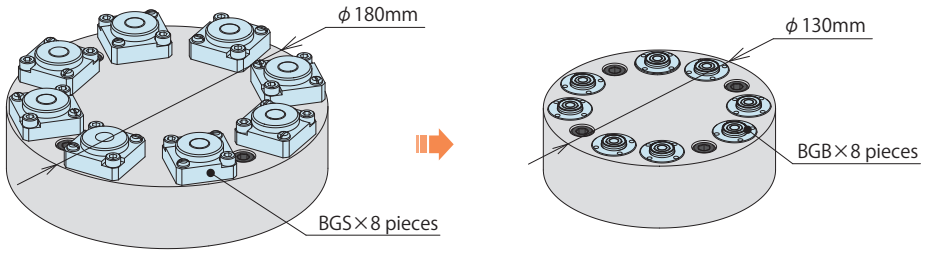
Supply hydraulic pressure to the pilot port B to open the check valve of BGA.

After releasing the pressure of the fixture circuit is completed, stop the hydraulic supply to the pilot port B.

Notes :

1. The drawings are simplified and different from the actual components.
2. Conditions of internal parts may be different from this drawing depending on connecting status, etc.

BGA/BGB is more compact than our previous model. For smaller footprint fixtures.



※ These drawings above show the eight hydraulic pressure source side couplers each of our previous model BGP/BGS and the new model BGA/BGB on the rotary table.

Model No. Indication

BG A 022 0 - 0M

1 2

1 Style

A : Fixture Side (Outgoing Side)

B : Hydraulic Pressure Source Side (Incoming Side)

2 Design No.

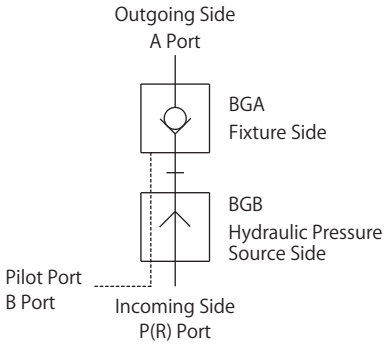
0 : Revision Number

Specifications

Model No.			
	Fixture Side		**BGA0220-0M**
	Pressure Source Side		**BGB0220-0M**
Operating Pressure		MPa	1.0 ~ 7.0
Withstanding Pressure		MPa	10.5
Min. Passage Area		mm²	11.0
Offset Tolerance		mm	±1
Angular Deviation (Offset Tolerance)		DEG.	0.3
Operating Temperature		℃	0 ~ 70
Usable Fluid			General Hydraulic Oil Equivalent to ISO-VG-32
Pilot Pressure ※1		MPa	Holding Pressure P / 5.1 + 0.5 or more
Spring Force when Connecting		kN	0.1
Reaction Force under Pressure	Operating Pressure	at 7 MPa	1.18
		at P MPa	0.154 × P + 0.1

Note : ※1. P : Holding Pressure (MPa)

Circuit Symbol

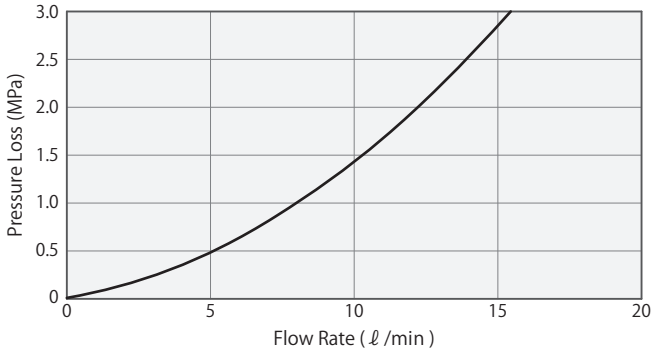


※ Filter is placed at front and back of check valve at the BGA side.

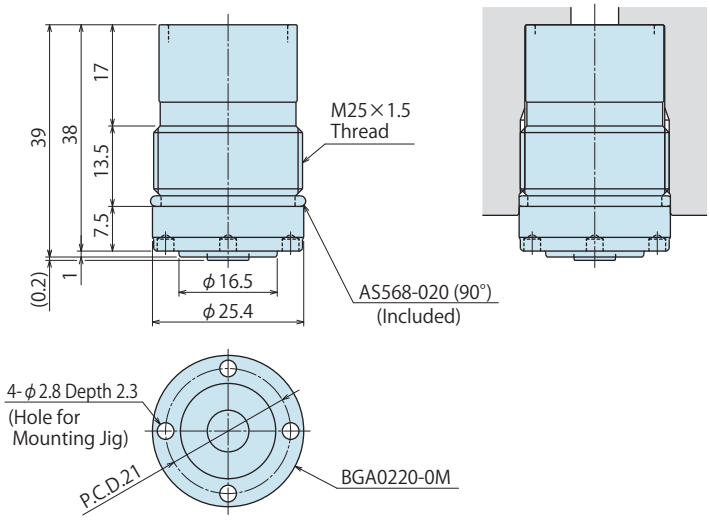
Flow Rate - Pressure Loss Characteristic Graph

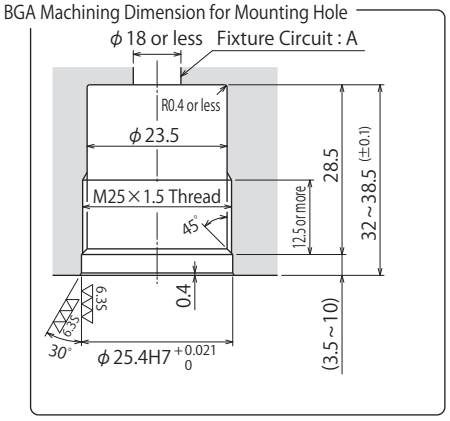
The fluid used on this data is general hydraulic oil equivalent to ISO-VG-32 (30~40℃).

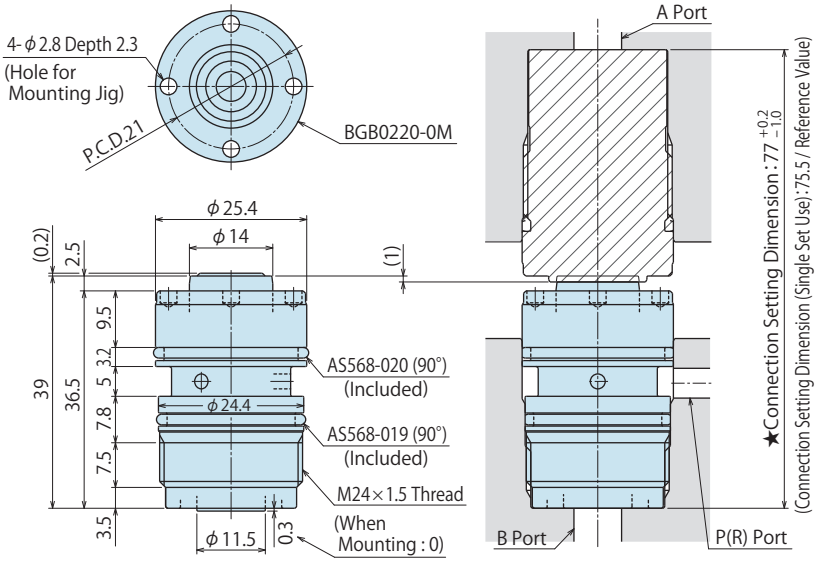
Pressure Loss (MPa)	Flow Rate (ℓ/min)
0	0
0.5	5.0
1.0	7.9
2.0	12.2
3.0	15.4

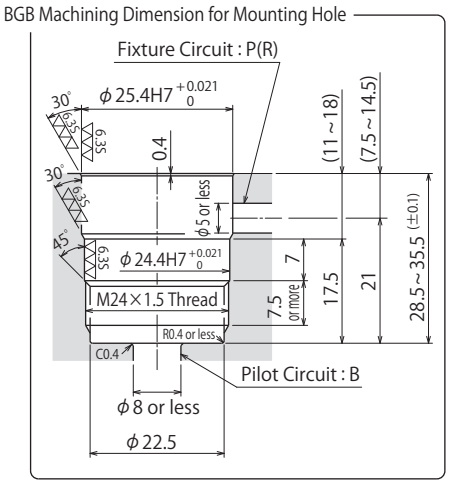


External Dimensions









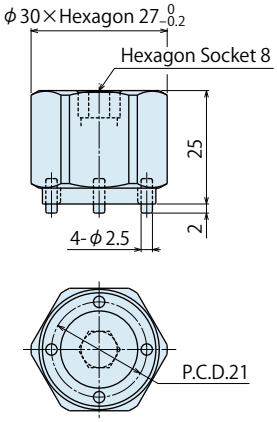
Note :

1. In the case that there is stopper, please follow the ★connection dimension in the drawing.

Model No.	Weight (kg)	Mounting Jig Model No.	Tightening Torque (N·m)
BGA0220-0M	0.1	ZZB0010	25
BGB0220-0M	0.1		

Accessory : Mounting Jig

BGA/BGB is mounted with this mounting jig.
Tightening Torque: 25N·m



Model No. Indication

ZZB0010

Design No.
(Revision Number)

Cautions (BGA/BGB)

1. Please do not connect or disconnect while pressurizing each port of the socket sides. (Do not use a pilot check modular valve in the control circuit. After stopping pressure supply, pressure will be remained between the pilot check modular valve and BGB.)
2. Take precautionary measures not to produce back pressure in ports B and P(R) of the socket sides when pressure supply is stopped. (less than 0.2MPa is available)
3. Perform air bleeding of the circuit sufficiently prior to operation. (Oil drip amount can increase.)
4. Ensure there are no contaminants or chips while connecting.
   (Cover the surface to ensure that contaminants and chips do not stick to the surface.)
5. Exceeding allowable offset will cause damage on to the internal parts.
6. Remove burrs from the cross section area of each hydraulic port after machining.
7. When pressing up to the connection-limit, use the force higher than the reaction force, but lower than 2.5kN.
8. Please install Accumulator (model JSS), if there are any chances of pressure dropping during the holding condition.

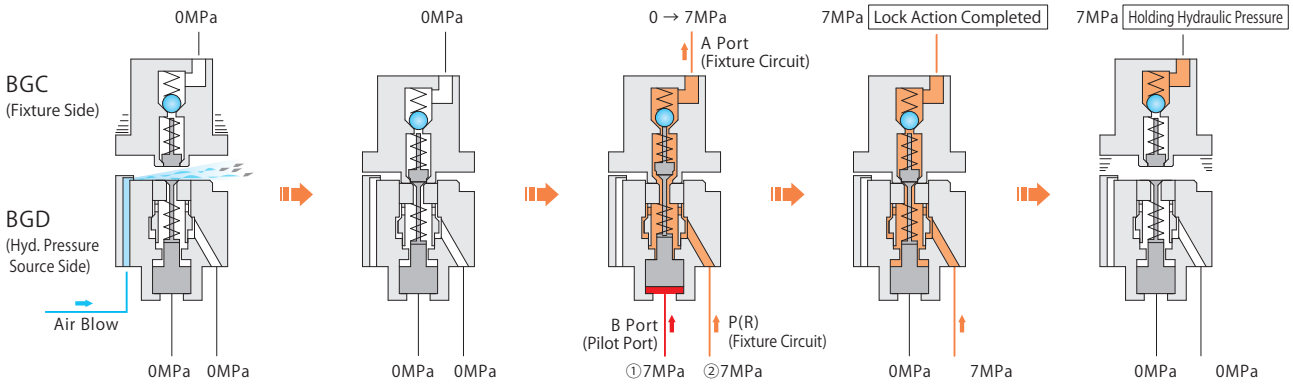
Non-Leak Coupler
with Pilot Check Valve
Model BGC/BGD

Feature

Pilot check valve makes a smooth connection and disconnection of coupler with no reaction force.
It holds the fixture-side pressure even when the supply of pressure is stopped with coupler connected condition.
BGD (hydraulic pressure source side) has air blow function.

Action Description (at 7MPa)

Lock Operation



Stop the hydraulic supply when connecting each port to the BGD side. The connecting surface can be cleaned by air blow.

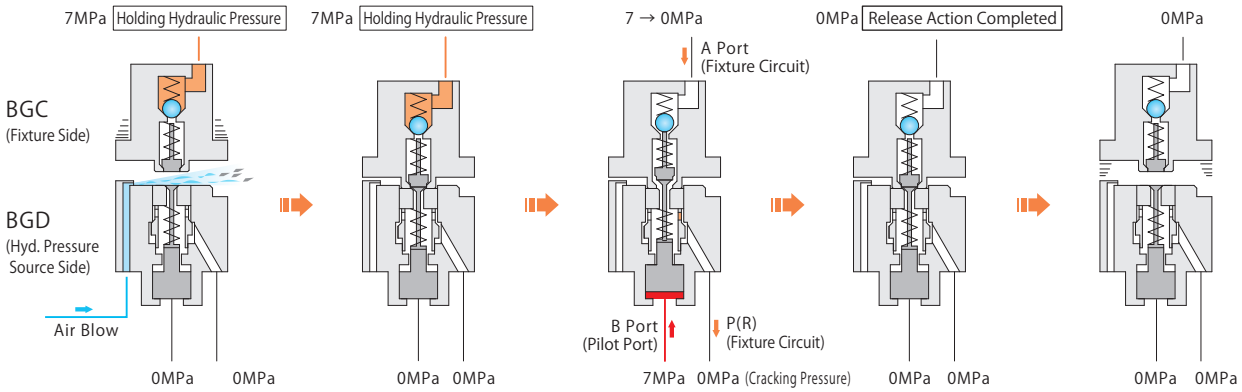
Connection Completed

① Supply hydraulic pressure to the pilot port B to open the check valve of BGC.
② After that, supply hydraulic pressure to the fixture circuit P (R).

After locking (pressurizing) of the fixture circuit is completed, stop the hydraulic supply to the pilot port B.

Disconnect the coupler after stopping the hydraulic supply to the fixture circuit P (R).

Release Operation



Stop the hydraulic supply when connecting each port to the BGD side. The connecting surface can be cleaned by air blow.

Connection Completed

Supply hydraulic pressure to the pilot port B to open the check valve of BGC.

After releasing the pressure of the fixture circuit is completed, stop the hydraulic supply to the pilot port B.

Notes :

1. The drawings are simplified and different from the actual components.
2. Conditions of internal parts may be different from this drawing depending on connecting status etc.
3. The check valve of BGD prevents excessive oil spouting in case the fixture circuit is pressurized while disconnected (due to operational failure, etc.).

Model No. Indication

BG D 2 2 1 - 0 G2
1 2 3 4

1 Style

C : Plug (Fixture Side)
D : Socket (Hydraulic Pressure Source Side)

2 Pressure Code (Operating Pressure Range)

2 : 1.0 ~ 7.0 MPa
5 : 7.0 ~ 25.0 MPa

3 Design No.

1 : Revision Number

4 Piping Method

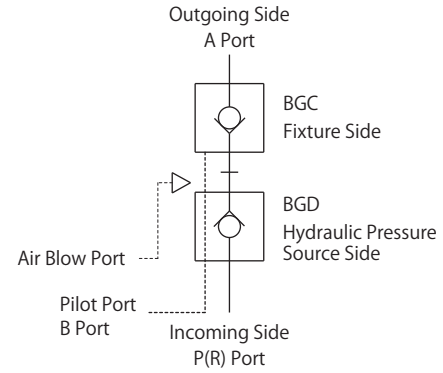
Blank : 1 When C is chosen
G2 : 1 When D is chosen

Specifications

Model No.	Fixture Side	BGC221-0	BGC251-0
	Pressure Source Side	BGD221-0G2	BGD251-0G2
Operating Pressure MPa		1.0 ~ 7.0	7.0 ~ 25.0
Withstanding Pressure MPa		10.5	37.5
Min. Passage Area mm^2		10.2	
Offset Tolerance mm		±1	
Angular Deviation (Offset Tolerance) DEG.		0.3	
Operating Temperature ℃		0 ~ 70	
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32	
Pilot Pressure ※1 MPa		Holding Pressure P / 4.5 + 0.5 or more	
Spring Force when Connecting kN		0.1	
Reaction Force under Pressure kN	Operating Pressure at 25 MPa	—	3.17
	Operating Pressure at 7 MPa	0.96	
	Operating Pressure at P MPa	0.1227 × P + 0.1	

Note : ※1. P : Holding Pressure (MPa)

Circuit Symbol

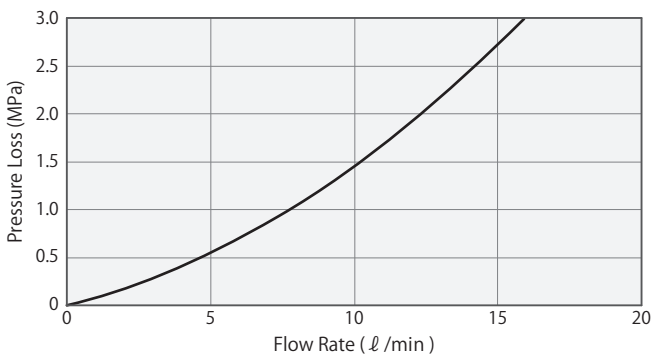


※ Filter is placed at front and back of check valve at the BGC side.
The check valve of the BGD side does not have non-leak function.

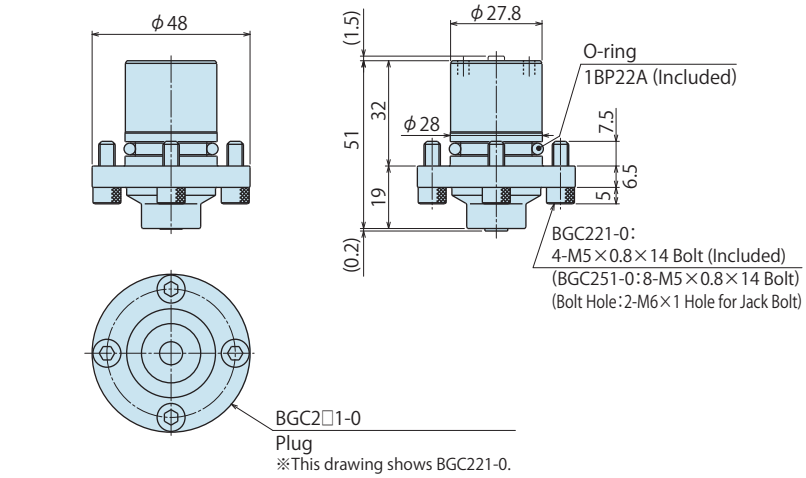
Flow Rate - Pressure Loss Characteristic Graph

The fluid used on this data is general hydraulic oil equivalent to ISO-VG-32 (30~40℃).

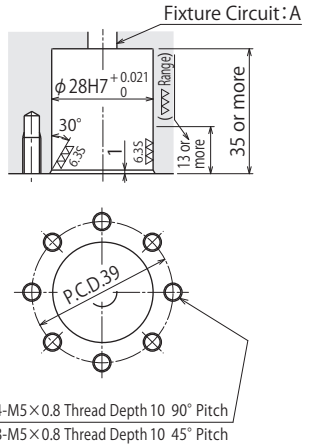
Pressure Loss (MPa)	Flow Rate (ℓ/min)
0	0
0.5	4.9
1.0	7.9
2.0	12.1
3.0	16.0

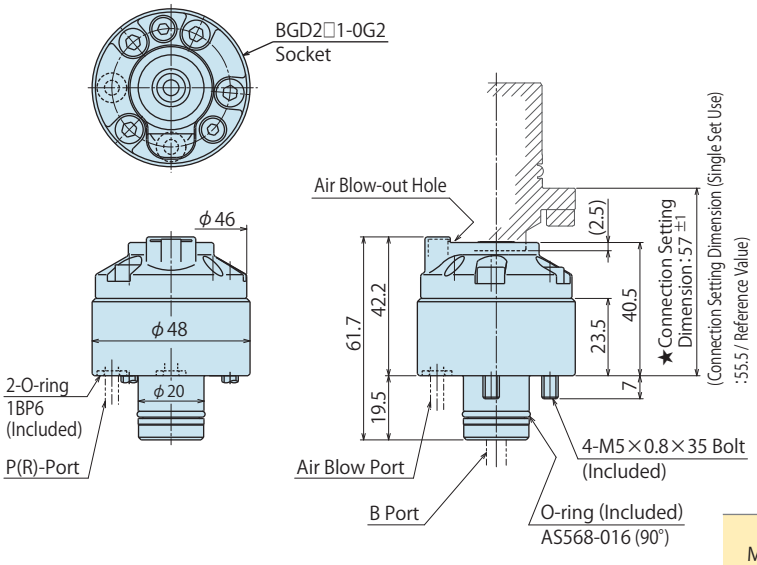


External Dimensions

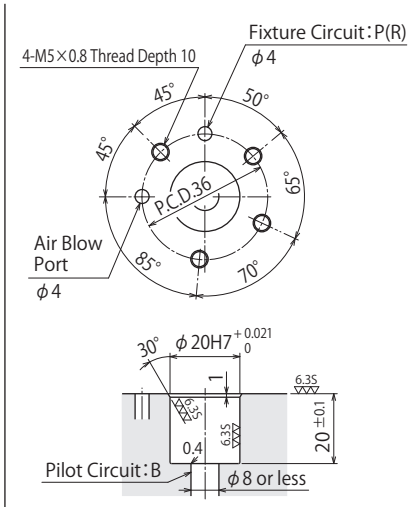


BGC Machining Dimension for Mounting Hole





BGD Machining Dimension for Mounting Hole

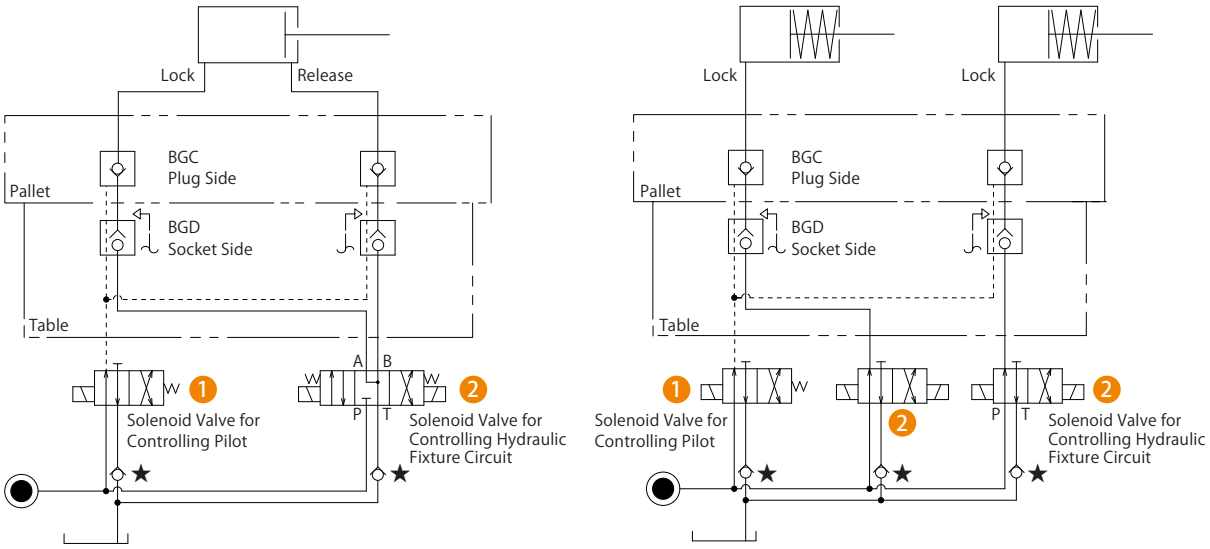


Model No.	Weight (kg)	Mounting Bolt Size	Tightening Torque (N·m)
BGC221-0	0.25	M5×0.8	6.3
BGC251-0	0.25		
BGD221-0G2	0.45		
BGD251-0G2	0.45		

Note : 1. In case of using an additional stopper, please follow the connection dimension ★ in the drawing.

System Circuit Diagram (Example)

Double-Acting Circuit	Single-Acting Circuit



Controlling Double-Acting Circuit

Apply a three-position (center position, ABT connection) solenoid valve for controlling the hydraulic fixture circuit. When connecting or disconnecting BGC/BGD, use the center position to shut off the hydraulic pressure supply. This minimizes the reaction force at BGC/BGD part. In addition, when there is a possibility that back pressure is generated at the T port due to the system, install a check valve for preventing back flow having a cracking pressure of 0.04 MPa or less in the position with ★.
(Otherwise, oil leakage from the tip of the socket or malfunction of the pilot may occur.)

Lock Operation Procedure

1. In the connected condition, supply hydraulic pressure to the pilot circuit to open the check valve of the plug. (Operate Valve 1)
2. Supply the lock side circuit of the hydraulic fixture actuator with hydraulic pressure. (Operate Valve 2)
3. After finishing pressurization, shut off the hydraulic pressure supply to the pilot circuit. (Operate Valve 1)
4. After shutting off the hydraulic pressure to all actuators, disconnect BGC/BGD. (Operate Valve 2 : Center Position)

Release Operation Procedure

1. In the connected condition, supply hydraulic pressure to the pilot circuit to open the check valve of the plug. (Operate Valve 1)
2. Supply the release side circuit of the hydraulic fixture actuator with hydraulic pressure. (Operate Valve 2)

Controlling Single-Acting Circuit

When connecting or disconnecting BGC/BGD, shut off the hydraulic pressure supply to the hydraulic fixture circuit. This minimizes the reaction force at BGC/BGD part. In addition, when there is a possibility that back pressure is generated at the T port due to the system, install a check valve for preventing back flow having a cracking pressure of 0.04 MPa or less in the position with ★.
(Otherwise, oil leakage from the tip of the socket or malfunction of the pilot may occur.)
※1. Select a device that can normally release at pressure less than the cracking pressure.

Lock Operation Procedure

1. In the connected condition, supply hydraulic pressure to the pilot circuit to open the check valve of the plug. (Operate Valve 1)
2. Supply each actuator circuit of the hydraulic fixtures with hydraulic pressure. (Operate Valve 2)
3. After finishing pressurization, shut off the hydraulic pressure supply to the pilot circuit. (Operate Valve 1)
4. After shutting off the hydraulic pressure supply to all the actuators, disconnect BGC/BGD. (Operate Valve 2)

Release Operation Procedure

1. The release operation can be performed by supplying the pilot circuit with hydraulic pressure after connection.
(Individual release can be performed by supplying each actuator with hydraulic pressure in advance after the connection.)

Cautions (BGC/BGD)

1. Since pressurizing reaction force is produced during pressure supply to port P, an additional lock mechanism is required.
2. When a connection limit stopper is added, keep the connection setting dimension ★ in the drawing.
3. The check valve on the socket side fixture circuit P(R) that opens automatically when connected is not a non-leak type.
   The valve is for preventing significant oil blowing out due to incorrect operation (pressurizing in the disconnected condition).
   Do not pressurize under the disconnected condition for the normal control.
4. Please do not connect or disconnect while pressurizing each port of BGD. (Do not use a pilot check modular valve in the control circuit.
   After stopping pressure supply, pressure will be remained between the pilot check modular valve and BGD.)
5. Take precautionary measures not to produce back pressure in ports B and P(R) of BGD sides when pressure supply is stopped.
6. Do not connect the coupler when the end surface is contaminated with cutting chips or coolant.
7. Provide pipes and oil passage holes with sufficient flushing. Note that no filter is provided to the socket side.
8. When pressing up to the connection limit, the force should be higher than the reaction force and lower than 6.0kN.
9. When port P is pressurized, the check valve will not open even after supplying the pilot pressure to port B.
10. The main purpose of air blow function is to clean the surface of the socket side.

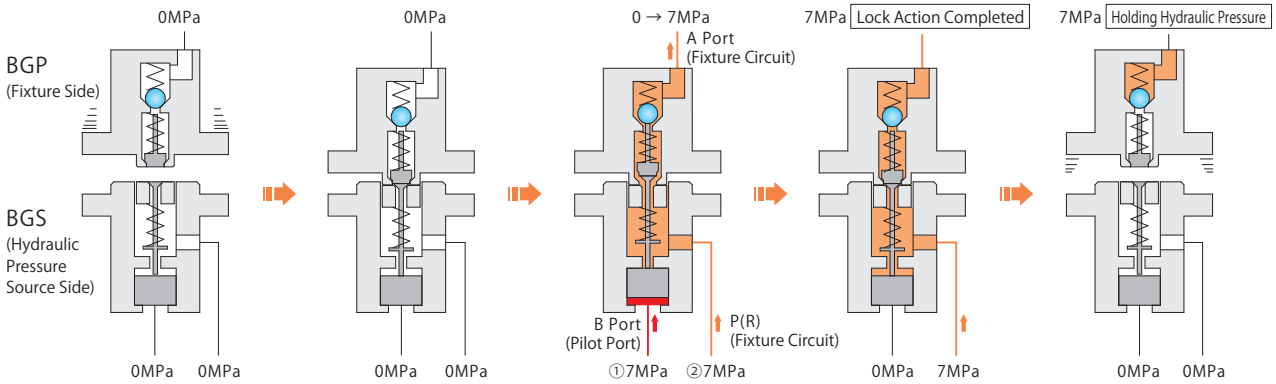
Non-Leak Coupler
with Pilot Check Valve
Model BGP/BGS

Feature

Pilot check valve makes a smooth connection and disconnection of coupler with no reaction force.
It holds the fixture-side pressure even when the supply of pressure is stopped with coupler connected condition.

Action Description (at 7MPa)

Lock Operation



Stop the hydraulic supply when connecting each port to the BGS side.

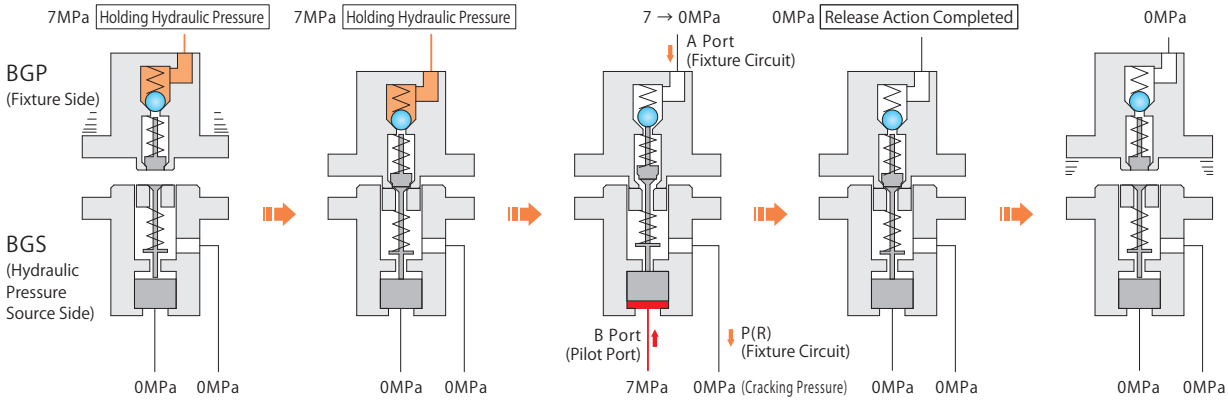
Connection Completed

① Supply hydraulic pressure to the pilot port B to open the check valve of BGP.
② After that, supply hydraulic pressure to the fixture circuit P (R).

After locking (pressurizing) of the fixture circuit is completed, stop the hydraulic supply to the pilot port B.

Disconnect the coupler after stopping the hydraulic supply to the fixture circuit P (R).

Release Operation



Stop the hydraulic supply when connecting each port to the BGS side.

Connection Completed

Supply hydraulic pressure to the pilot port B to open the check valve of BGP.

After releasing the pressure of the fixture circuit is completed, stop the hydraulic supply to the pilot port B.

Notes :

1. The drawings are simplified and different from the actual components.
2. Conditions of internal parts may be different from this drawing depending on connecting status etc.
3. Since the socket side is not provided with a check valve, oil will be spouted when the fixture circuit is pressurized while disconnected (due to operational failure, etc.).

Model No. Indication

BG P 22 1 - 0

1 2

1 Style

P : Plug (Fixture Side)

S : Socket (Hydraulic Pressure Source Side)

2 Design No.

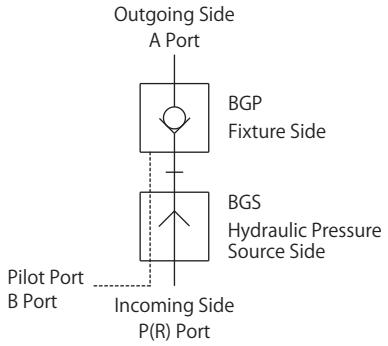
1 : Revision Number

Specifications

Model No.			BGP221-0
	Pressure Source Side		BGS221-0
Operating Pressure	MPa		1.0 ~ 7.0
Withstanding Pressure	MPa		10.5
Min. Passage Area	mm^2		11.0
Offset Tolerance	mm		±1
Angular Deviation (Offset Tolerance)	DEG.		0.3
Operating Temperature	℃		0 ~ 70
Usable Fluid			General Hydraulic Oil Equivalent to ISO-VG-32
Pilot Pressure ※1	MPa		Holding Pressure P / 3.8 + 0.4 or more
Spring Force when Connecting	kN		0.07
Reaction Force under Pressure	kN	Operating Pressure at 7 MPa	0.93
		Operating Pressure at P MPa	0.1227 × P + 0.07

Note : ※1. P : Holding Pressure (MPa)

Circuit Symbol

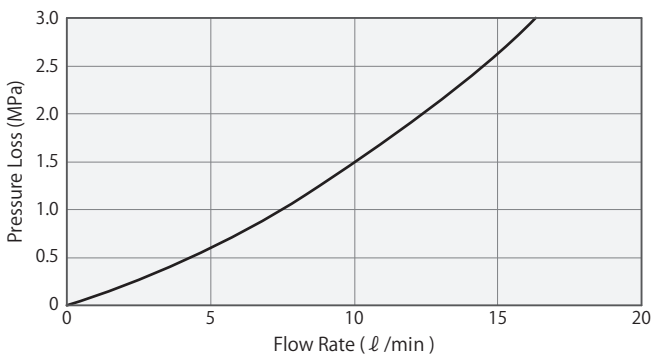


※ Filter is placed at front and back of check valve at the BGP side.
BGS side has no check valve.

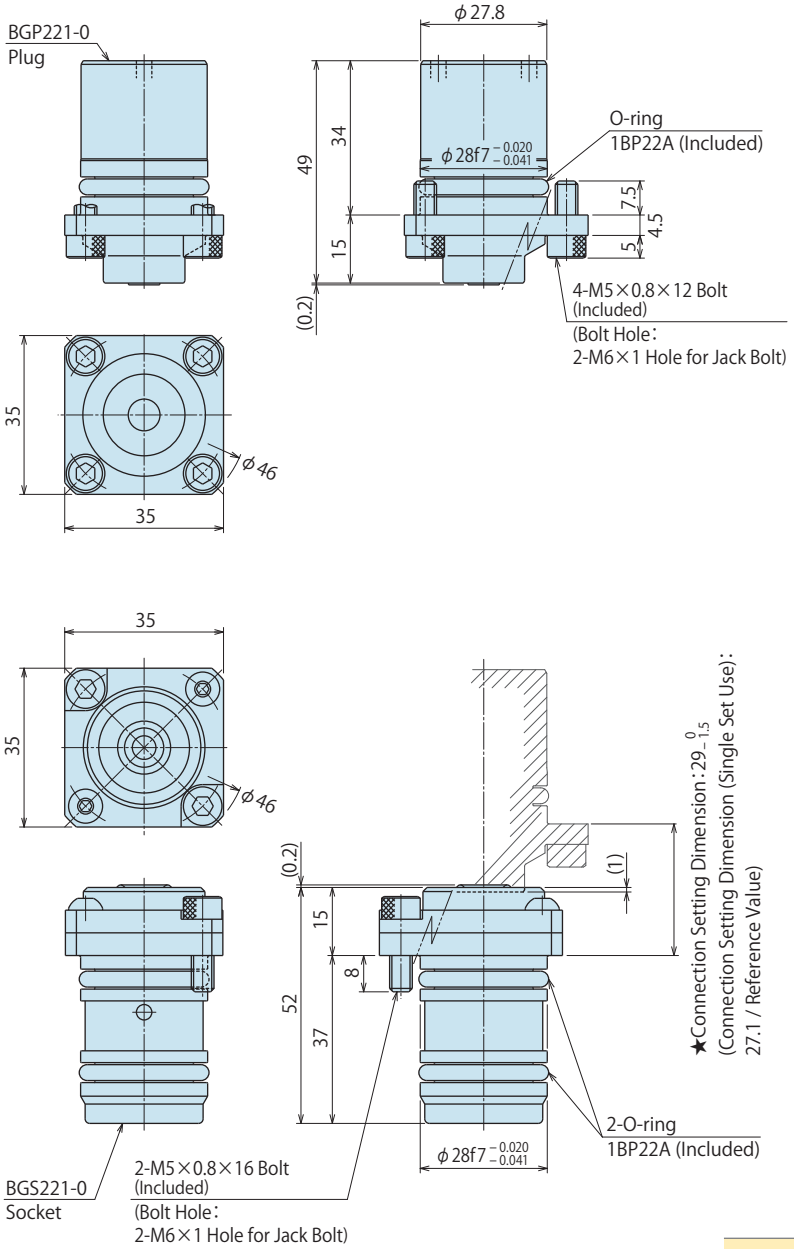
Flow Rate - Pressure Loss Characteristic Graph

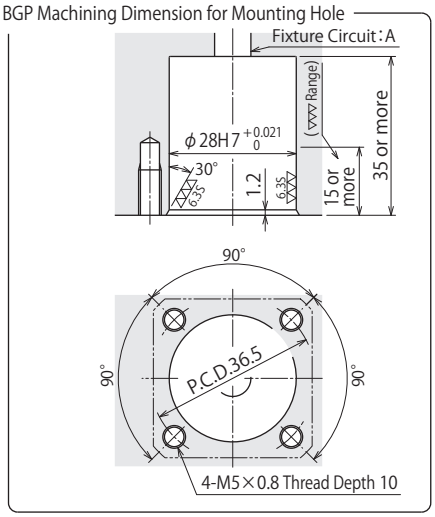
The fluid used on this data is general hydraulic oil equivalent to ISO-VG-32 (30~40℃).

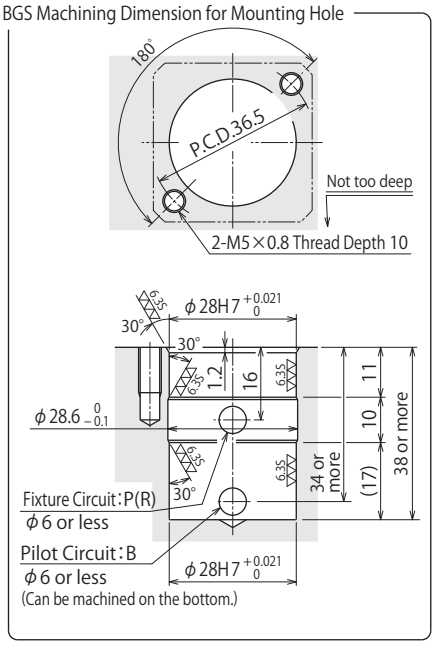
Pressure Loss (MPa)	Flow Rate (ℓ/min)
0	0
0.5	4.2
1.0	7.8
2.0	12.1
3.0	16.4



External Dimensions





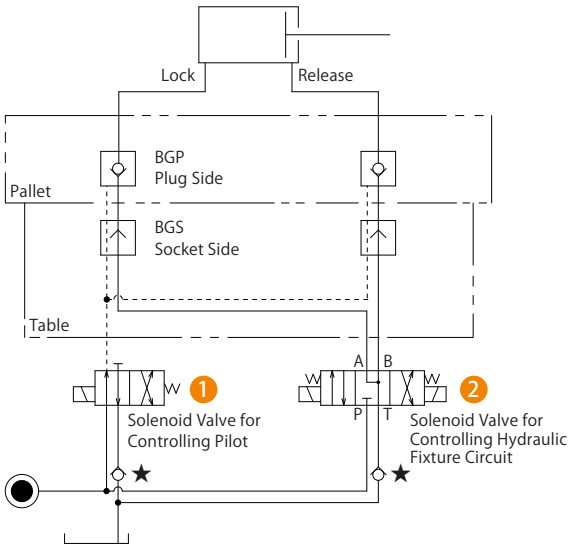


Model No.	Weight (kg)	Mounting Bolt Size	Tightening Torque (N·m)
BGP221-0	0.25	M5×0.8	6.3
BGS221-0	0.22		

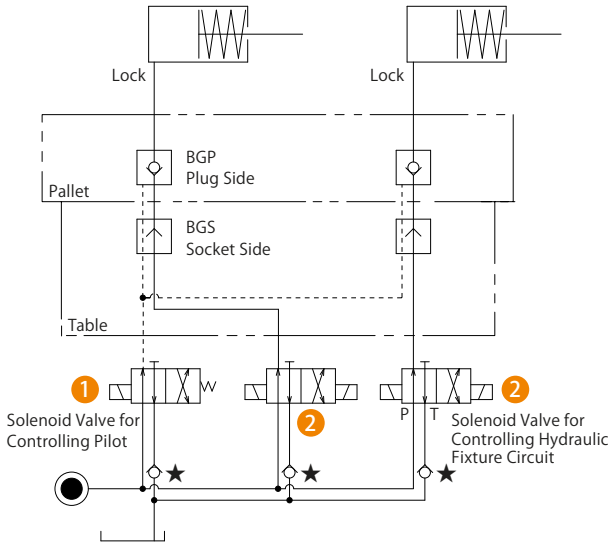
Note : 1. In case of using an additional stopper, please follow the connection dimension ★ in the drawing.

System Circuit Diagram (Example)

Double-Acting Circuit



Single-Acting Circuit



Controlling Double-Acting Circuit

Apply a three-position (center position, ABT connection) solenoid valve for controlling the hydraulic fixture circuit. When connecting or disconnecting BGP/BGS, use the center position to shut off the hydraulic pressure supply. This minimizes the reaction force at BGP/BGS part. In addition, when there is a possibility that back pressure is generated at the T port due to the system, install a check valve for preventing back flow having a cracking pressure of 0.04 MPa or less in the position with ★.
(Otherwise, oil leakage from the tip of the socket or malfunction of the pilot may occur.)

Lock Operation Procedure

1. In the connected condition, supply hydraulic pressure to the pilot circuit to open the check valve of the plug. (Operate Valve 1)
2. Supply the lock side circuit of the hydraulic fixture actuator with hydraulic pressure. (Operate Valve 2)
3. After finishing pressurization, shut off the hydraulic pressure supply to the pilot circuit. (Operate Valve 1)
4. After shutting off the hydraulic pressure to all actuators, disconnect BGP/BGS. (Operate Valve 2 : Center Position)

Release Operation Procedure

1. In the connected condition, supply hydraulic pressure to the pilot circuit to open the check valve of the plug. (Operate Valve 1)
2. Supply the release side circuit of the hydraulic fixture actuator with hydraulic pressure. (Operate Valve 2)

Controlling Single-Acting Circuit

When connecting or disconnecting BGP/BGS, shut off the hydraulic pressure supply to the hydraulic fixture circuit. This minimizes the reaction force at BGP/BGS part. In addition, when there is a possibility that back pressure is generated at the T port due to the system, install a check valve for preventing back flow having a cracking pressure of 0.04 MPa or less in the position with ★.
(Otherwise, oil leakage from the tip of the socket or malfunction of the pilot may occur.)
※1. Select a device that can normally release at pressure less than the cracking pressure.

Lock Operation Procedure

1. In the connected condition, supply hydraulic pressure to the pilot circuit to open the check valve of the plug. (Operate Valve 1)
2. Supply each actuator circuit of the hydraulic fixtures with hydraulic pressure. (Operate Valve 2)
3. After finishing pressurization, shut off the hydraulic pressure supply to the pilot circuit. (Operate Valve 1)
4. After shutting off the hydraulic pressure supply to all the actuators, disconnect BGP/BGS. (Operate Valve 2)

Release Operation Procedure

1. The release operation can be performed by supplying the pilot circuit with hydraulic pressure after connection.
(Individual release can be performed by supplying each actuator with hydraulic pressure in advance after the connection.)

Cautions (BGP/BGS)

1. Since pressurizing reaction force is produced during pressure supply to port P, an additional lock mechanism is required.
2. When a connection limit stopper is added, keep the connection setting dimension ★ in the drawing.
3. Since the BGS is not provided with a check valve, please do not supply pressure when the coupler is disconnected. (Do not use a pilot check modular valve in the control circuit. After stopping pressure supply, pressure will be remained between the pilot check modular valve and BGS.)
4. Take precautionary measures not to produce back pressure in ports B and P(R) of the socket sides when pressure supply is stopped.
5. Do not connect the coupler when the end surface is contaminated with cutting chips or coolant.
(Cover the surface to ensure that contaminants and chips do not stick to the surface.)
6. Remove burrs from the cross section area of each hydraulic port after machining
7. When pressing up to the connection limit, use the force higher than the reaction force and lower than 4.0kN.
8. When port P is pressurized, the check valve will not open even after supplying the pilot pressure to port B.

Low Pressing Force Non-Leak Coupler

with Pilot Check Valve

Model BBP/BBS

Feature

Non-leak auto coupler requires a small amount of pressing force for any operating pressure.
Suitable for simplification of connecting equipment because load to fixture side is small.

Model No. Indication

BB P 50 0 - 0 G

1 2 3

1 Style

P : Plug (Fixture Side)

S : Socket (Hydraulic Pressure Source Side)

3 Piping Method

Blank : Standard Model

G : Gasket Option (only BBP selectable)

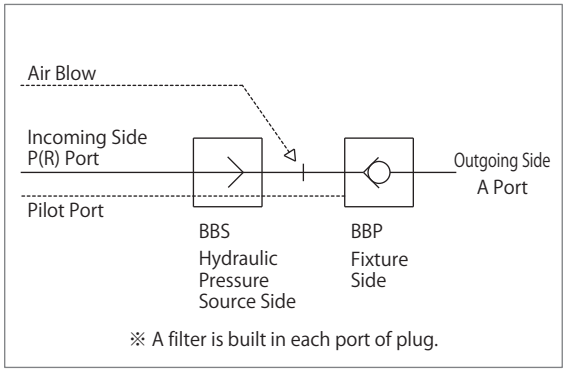
2 Design No.

0 : Revision Number

Specifications

Model No.			BBP500-0	BBP500-0G
	Pressure Source Side		BBS500-0	
Operating Pressure		MPa	5.0 ~ 25.0	
Withstanding Pressure		MPa	37.5	
Min. Passage Area		mm²	11.6	
Offset Tolerance		mm	±1	
Pilot Air Pressure	Operating Pressure	at 25 MPa	0.4 or more	
		at 14 MPa	0.3 or more	
		at 7 MPa	0.2 or more	
Pressing Force Required when Connecting		kN	0.25 or more	
Operating Temperature		℃	0 ~ 70	
Usable Fluid			General Hydraulic Oil Equivalent to ISO-VG-32	

Circuit Symbol

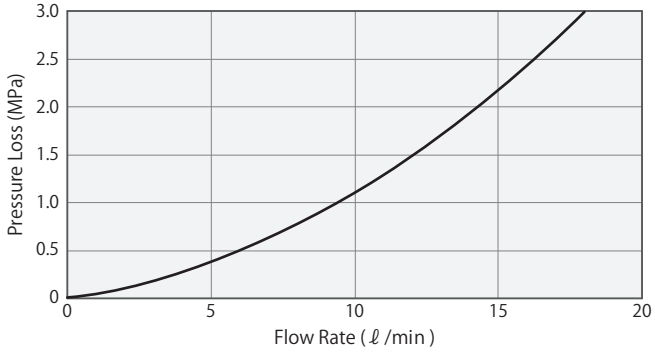


※ A filter is built in each port of plug.

Flow Rate - Pressure Loss Characteristic Graph

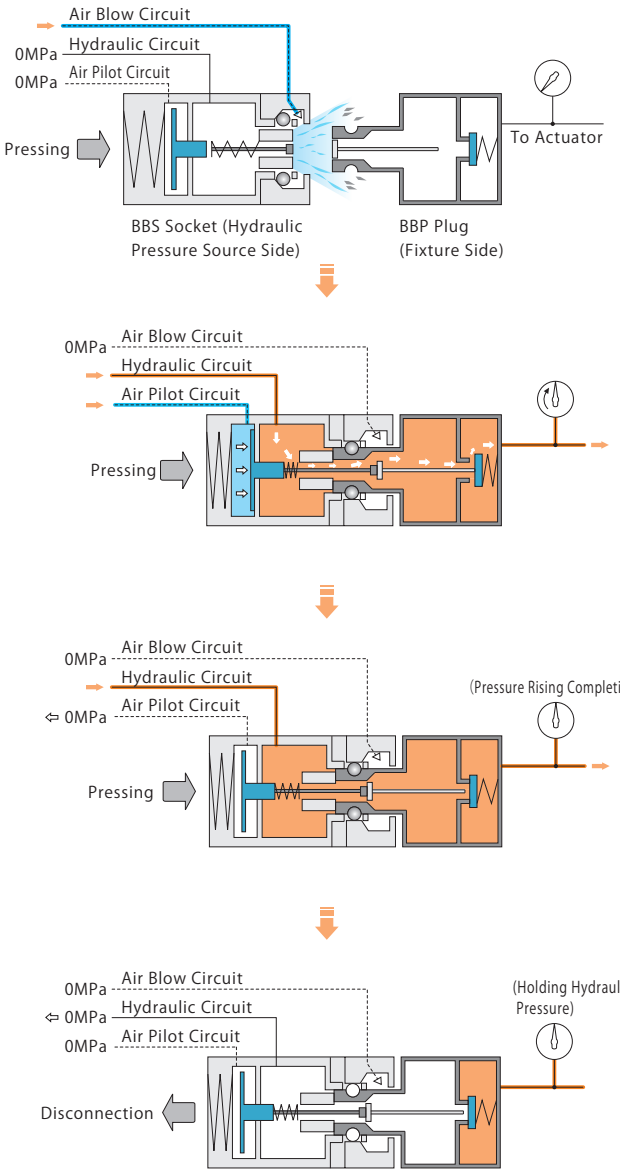
The fluid used on this data is general hydraulic oil equivalent to ISO-VG-32 (30～40℃).

Pressure Loss (MPa)	Flow Rate (ℓ/min)
0	0
0.5	5.9
1.0	9.5
1.5	12.1
2.0	14.2
2.5	16.3
3.0	18.0

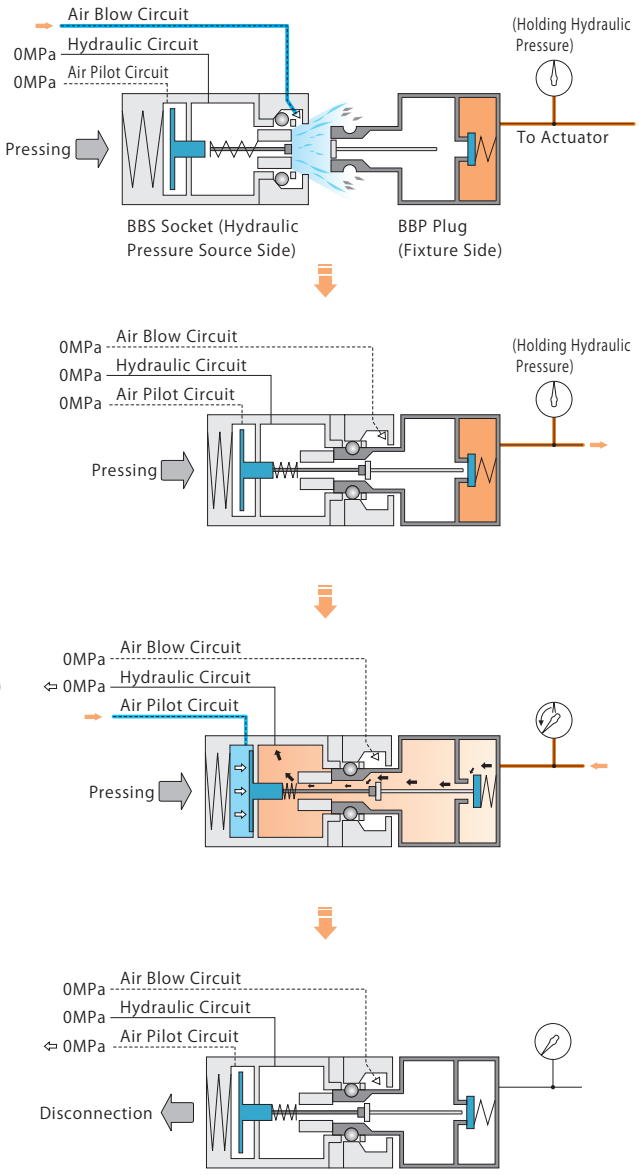


Action Description

Lock Operation

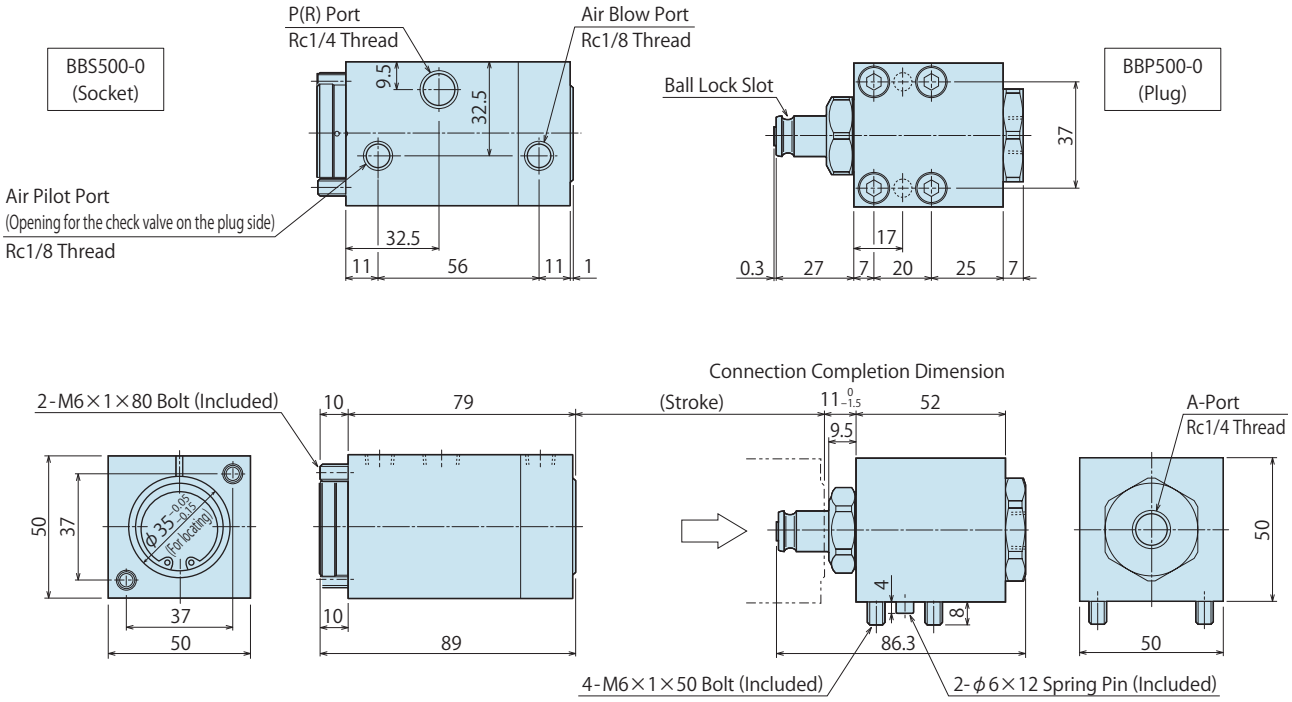


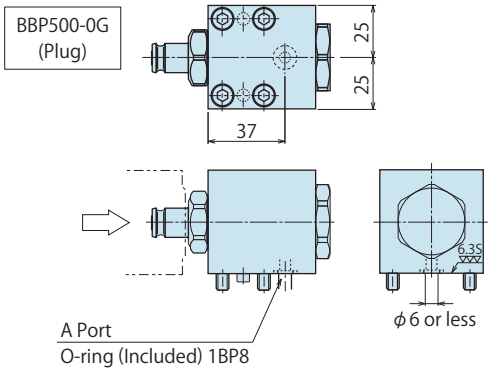
Release Operation



	Operating Procedure	Note
Locking	Connect the socket and plug while supplying air to the air blow circuit.	
	Stop the air blow after the connection.	
	Supply air to the air pilot circuit.	The check valve of the plug side opens.
	Supply oil to the hydraulic circuit. The hydraulic pressure is supplied to the coupler. (plug)	Reaction force created by hydraulic pressure isn't applied on each mounting surface of socket and plug due to the ball lock mechanism. (The spring force is applied, so the pressing force is always required.)
	After finishing hydraulic pressurization of plug side, stop air supply to the air port circuit with the hydraulic pressure supplied.	The check valve of the plug side is closed.
	Stop the hydraulic oil supply to hydraulic circuit.	The hydraulic pressure (plug side) is maintained.
	Disconnect the socket from the plug. The hydraulic pressure (plug side) is maintained.	Always stop the hydraulic oil supply prior to the disconnection. Please choose the proper tank port type valve when using a modular (integrated) directional control valve.
Releasing	Connect the socket and plug while supplying air blow circuit.	
	Stop the air blow after the connection.	Hydraulic pressure of the plug side is maintained since the check valve is closed.
	Supply air to the air pilot circuit. The plug side pressure is released.	The check valve of the plug side opens.
	Stop air supply to the air pilot circuit.	
	Disconnect the socket and the plug.	

External Dimensions





Model No.	Weight (kg)	Mounting Bolt Size	Tightening Torque (N·m)
BBP500-0	1.1	M6×1	10
BBP500-0G	1.1		
BBS500-0	1.4		

Cautions (BBP/BBS)

1. Roughness of mounting surface for option G should be 6.3S.
2. Pressing force when connecting is higher than 0.25kN and lower than 4kN.
3. When using multiple couplers, position accuracy in the stroke direction for machining $\phi 6$ spring pin hole of each plug should be within±0.1.
4. When there is any possibility of chip adhesion on the ball lock slot of BBP, install an adhesion preventive cover or an external air blow nozzle.
5. Do not use the coupler with the connecting surface of the socket faced upward, otherwise contaminants (chips, etc.) will accumulate or enter.
6. The socket side has no check valve. Make sure not to supply hydraulic pressure except when the connection is completed.
7. Since the ball lock mechanism is not for maintaining the connection condition, pressing force is always required.
8. When using two sets of BBP/BBS Couplers with independent air pilot check lines, make sure the check valve of clamping is open on the hydraulic return line until the pressure is at zero. This will prevent excess pressure build up in the auto coupler.
   Once the pressure is maintained at zero, activate the other air pilot to provide hydraulic pressure for retracting or unclamping.
9. If a modular (integrated) type directional control valve is applied and hydraulic power source is commonly used by other circuit as shown above, back pressure may be generated at the tank port and oil may flow out of the end of BBS500 being disconnected depending on the control method.
   To prevent oil from flowing out, provide a check valve (cracking pressure less than 0.04 MPa) at the tank port.
   (However, when a single-acting cylinder is used, ensure that normal release can be achieved even at a cracking pressure of 0.04MPa.)

High-Power Series
Pneumatic Series
Hydraulic Series
Valve / Coupler Hydraulic Unit
Manual Operation Accessories
Cautions / Others

Air Sequence Valve
BWD

Hydraulic Non-Leak Coupler
BGA/BGB
BGC/BGD
BGP/BGS
BBP/BBS
BNP/BNS
BJP/BJS
BFP/BFS

Auto Coupler
JTA/JTB
JTC/JTD
JVA/JVB
JVC/JVD
JVE/JVF
JNA/JNB
JNC/JND
JLP/JLS

Rotary Joint
JR

Hydraulic Valve
BK
BEQ
BT
BLS/BLG
BLB
JSS/JS
JKA/JKB
BMA/BMG
AU/AU-M
BU
BP/JPB
BX
BEP/BSP
BH
BC

Air Hydraulic Unit
CV
CK
CP/CPB
CPC/CQC
CB
CC
AB/AB-V
AC/AC-V

PAT.

Non-Leak Coupler

Model BNP/BNS

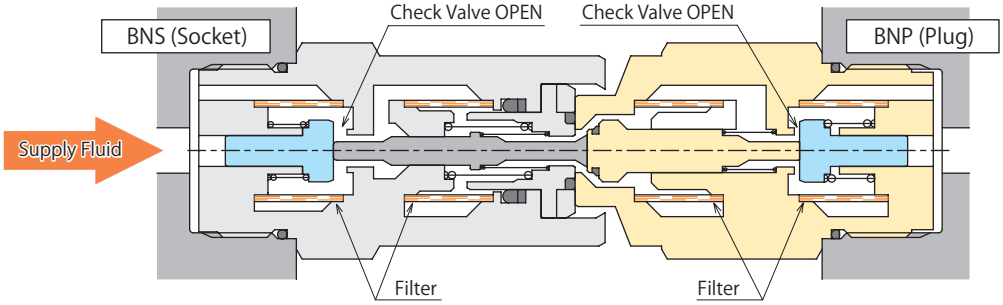
Feature

Non-leak auto coupler equipped with aligning mechanism to enable connection and disconnection under pressurized condition.
It is suitable for saving space in multiple connection because of its screwed end design.

Action Description

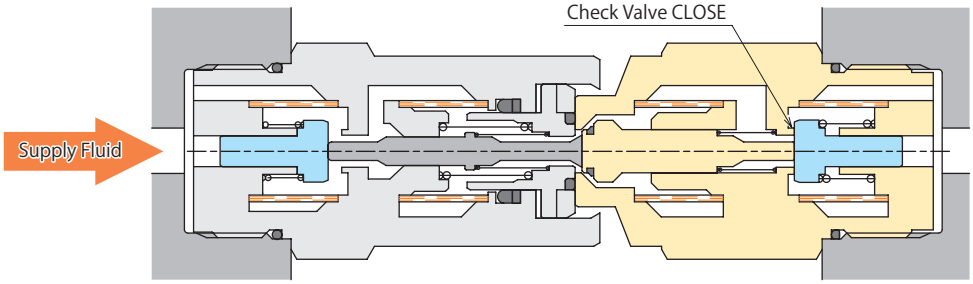
1. When connection is completed

The check valves of both sides are opened, and the fluid supply from the socket side pressurizes the plug side.
Because a reaction force is active at this time, an appropriate pressing force (holding force) is necessary.



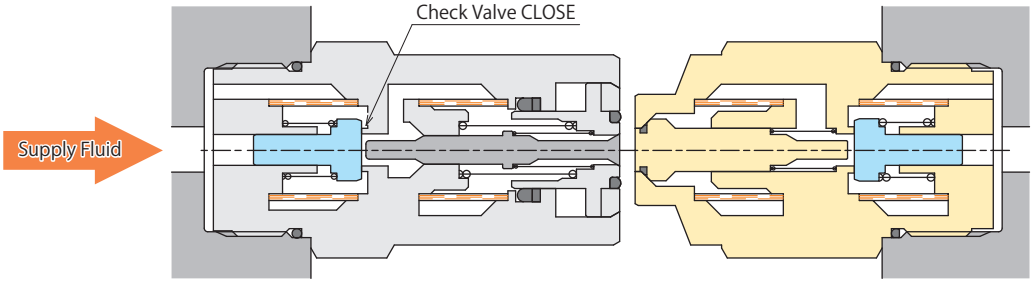
2. During Disconnection

When the socket is pulled back under pressure, the check valve of the plug closes first to maintain the pressure.



3. Disconnected

The check valve of the socket on the fluid supply side is closed, and the coupler can be separated.
(The reaction force is fully active until the BNS valve is closed, and gradually decreases until each end separates.)



Model No. Indication

BN P 2 2 0 - 0A

1 2 3

1 Style

P : Plug (Fixture Side)

S : Socket (Hydraulic Pressure Source Side)

2 Pressure Code (Operating Pressure Range)

2 : 1.0 ~ 7.0 MPa

5 : 7.0 ~ 25.0 MPa

3 Design No.

0 : Revision Number

Specifications

Model No.			BNP220-0A	BNP250-0A
	Pressure Source Side		BNS220-0A	BNS250-0A
Operating Pressure		MPa	1.0 ~ 7.0	7.0 ~ 25.0
Withstanding Pressure		MPa	10.5	37.5
Min. Passage Area		mm^2	11.0	
Offset Tolerance		mm	±1	
Angular Deviation (Offset Tolerance)		DEG.	0.3	
Operating Temperature		℃	0 ~ 70	
Usable Fluid			General Hydraulic Oil Equivalent to ISO-VG-32	
Reaction Force kN	Operating Pressure	at 25 MPa	—	3.23
		at 7 MPa	1.02	
		at P MPa	0.1227 × P + 0.16	

Circuit Symbol

BNS (Socket) Hydraulic Pressure Source Side

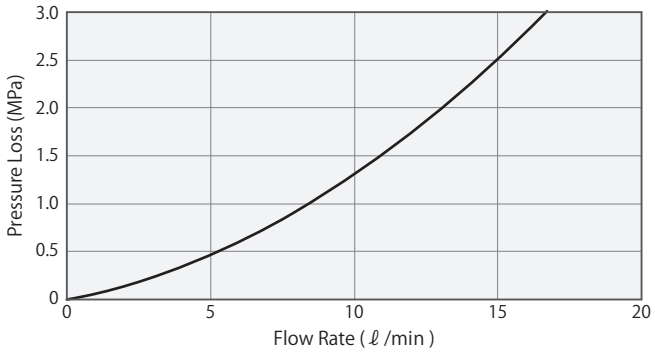
BNP (Plug) Fixture Side

※ Installing filter on both sides of each check valve.

Flow Rate - Pressure Loss Characteristic Graph

The fluid used on this data is general hydraulic oil equivalent to ISO-VG-32 (30~40℃).

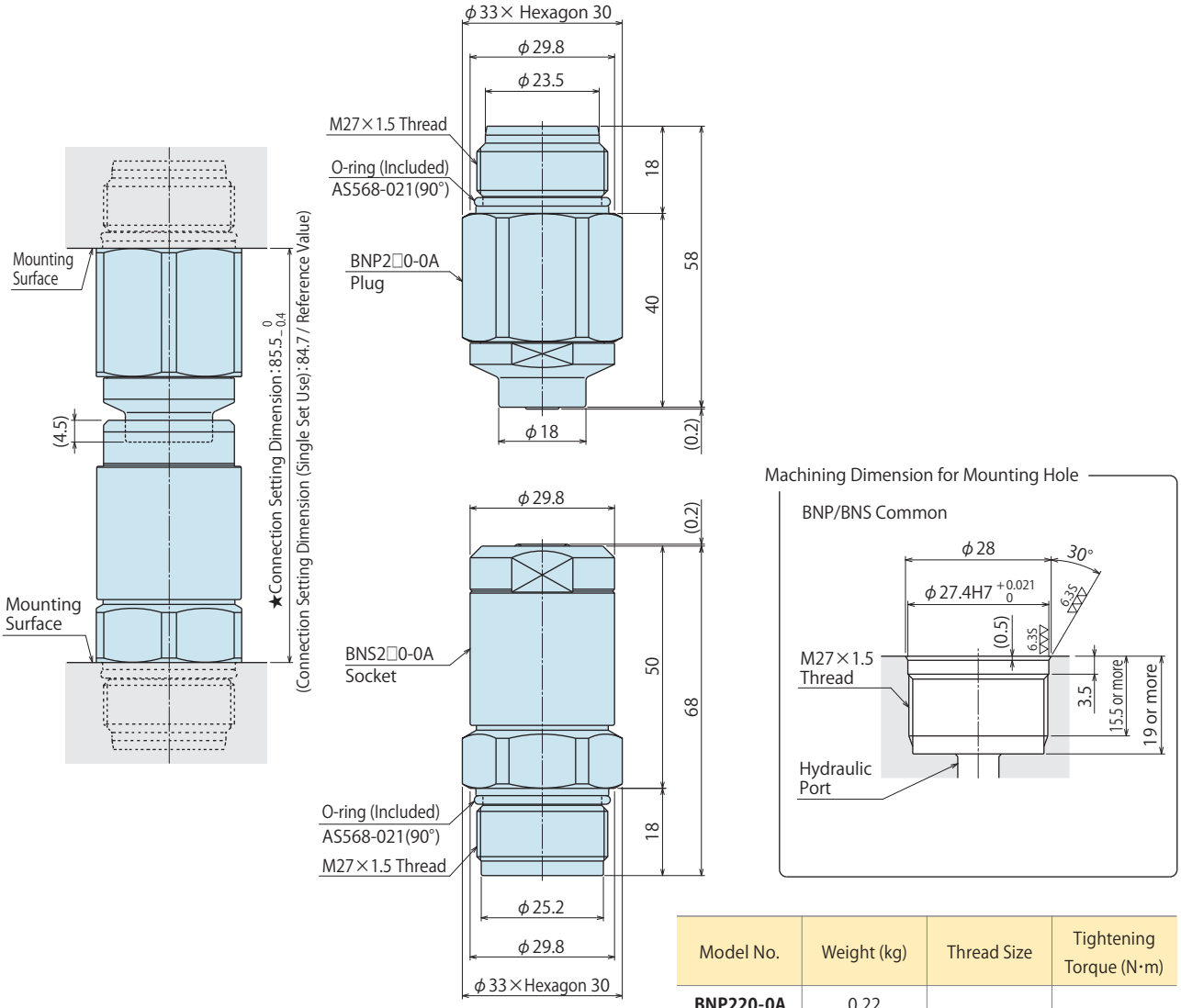
Pressure Loss (MPa)	Flow Rate (ℓ/min)
0	0
0.5	5.3
1.0	8.5
1.5	10.9
2.0	13.0
2.5	14.9
3.0	16.7



High-Power Series
Pneumatic Series
Hydraulic Series
Valve / Coupler Hydraulic Unit
Manual Operation Accessories
Cautions / Others

Air Sequence Valve
BWD
Hydraulic Non-Leak Coupler
BGA/BGB
BGC/BGD
BGP/BGS
BBP/BBS
BNP/BNS
BJP/BJS
BFP/BFS
Auto Coupler
JTA/JTB
JTC/JTD
JVA/JVB
JVC/JVD
JVE/JVF
JNA/JNB
JNC/JND
JLP/JLS
Rotary Joint
JR
Hydraulic Valve
BK
BEQ
BT
BLS/BLG
BLB
JSS/JS
JKA/JKB
BMA/BMG
AU/AU-M
BU
BP/JPB
BX
BEP/BSP
BH
BC
Air Hydraulic Unit
CV
CK
CP/CPB
CPC/CQC
CB
CC
AB/AB-V
AC/AC-V

External Dimensions



Model No.	Weight (kg)	Thread Size	Tightening Torque (N·m)
BNP220-0A	0.22	M27×1.5	10
BNP250-0A	0.22		
BNS220-0A	0.28		
BNS250-0A	0.28		

Cautions (BNP/BNS)

1. When using multiple couplers, please install stopper to be set as a ★ marked set length.
2. In the pressurized condition, please note that reaction force is also applied during connection/disconnection operation.
3. Release the air of the circuit sufficiently prior to operation. (Oil drip amount can increase.)
4. Do not connect them in a condition where chips or coolant adhere to the end surfaces.
   (Cover the surface to ensure that foreign materials and chips do not stick to the surface.)
5. Make sure to use ϕ33×Hex.30 part for installation and removal.
6. Use BNS socket on the hydraulic pressure source side and BNP plug on the fixture side.
7. When pressing up to the connection limit, use the force higher than the reaction force and lower than 6.0kN.

MEMO

PAT.

Non-Leak Coupler

Model BJP/BJS

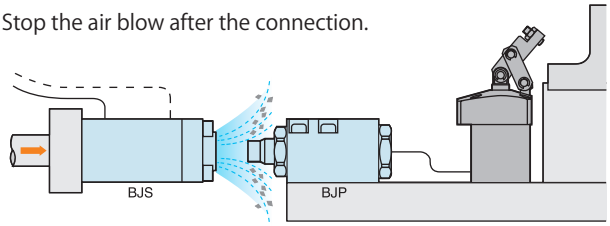
Feature

Non-leak auto coupler equipped with aligning mechanism to enable connection and disconnection under pressurized condition.
BJS (hydraulic pressure side) has an air blow function.

Action Description

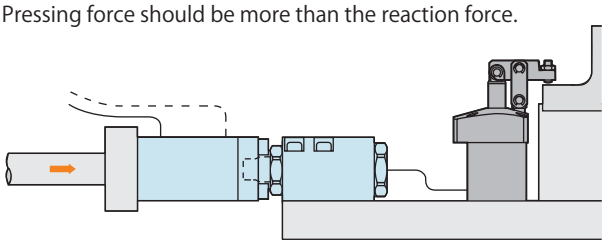
1. Before Connection

Supply air to remove chips adhered around the connection port by air blow.
Stop the air blow after the connection.



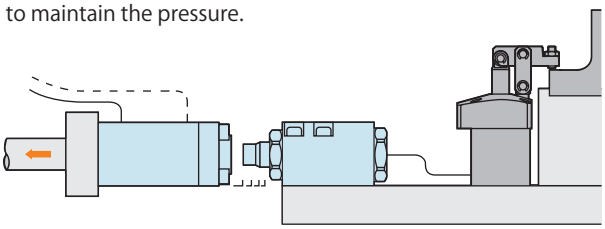
2. Connection Completion

Supply hydraulic pressure to operate an actuator.
Pressing force should be more than the reaction force.



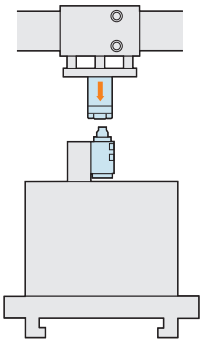
3. Disconnection

The disconnection is performed under pressurized condition to maintain the pressure.

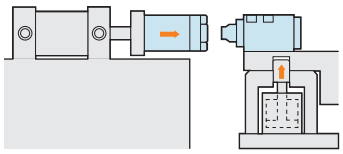


Connection Considering Pressing Force

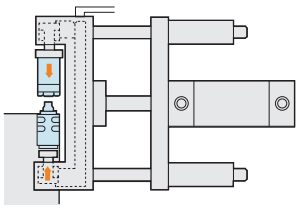
Connection Downward



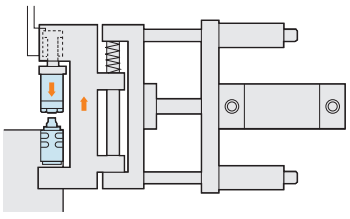
Connection Using Lock Pin



Connection Using Bracket
(Built in the synchronized hydraulic cylinder.)



Connection Using Bracket
(Built in the hydraulic cylinder and spring.)



Model No. Indication

BJ P 2 2 0 - 0 [ ]
1 2 3 4 5

1 Style

P : Plug (Fixture Side)
S : Socket (Hydraulic Pressure Source Side)

2 Port Size

2 : Rc1/4 Thread
3 : Rc3/8 Thread

3 Pressure Code (Operating Pressure Range)

2 : 1.0 ~ 7.0 MPa
5 : 7.0 ~ 30.0 MPa

4 Design No. (Revision Number)

0 : In case of 2 **2** (Rc1/4 Thread)
1 : In case of 2 **3** (Rc3/8 Thread)

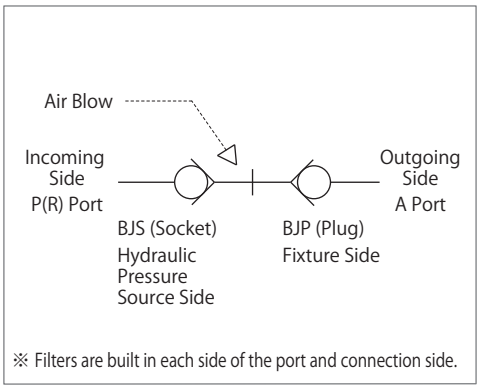
5 Piping Method

Blank : Standard Piping (BJP2 / BJP3 / BJS selectable)
A : Top Surface Piping (only BJP2 selectable)
B : Side Surface Piping (only BJP2 selectable)
G : Gasket Option (only BJP2 / BJP3 selectable)

Specifications

Model No.			BJP220-0□	BJP250-0□	BJP321-0□	BJP351-0□
	Hydraulic Pressure Source Side		BJS220-0	BJS250-0	BJS321-0	BJS351-0
Operating Pressure MPa			1.0 ~ 7.0	7.0 ~ 30.0	1.0 ~ 7.0	7.0 ~ 30.0
Withstanding Pressure MPa			10.5	37.5	10.5	37.5
Min. Passage Area mm^2			10.3		40	29
Offset Tolerance mm			±1			
Angular Deviation (Offset Tolerance) DEG.			0.5			
Operating Temperature ℃			0 ~ 70			
Usable Fluid			General Hydraulic Oil Equivalent to ISO-VG-32			
Reaction Force kN	Operating Pressure	at 25 MPa	—	2.09	—	3.99
		at 7 MPa	0.68		1.22	
		at P MPa	0.0785 × P + 0.13		0.154 × P + 0.14	

Circuit Symbol

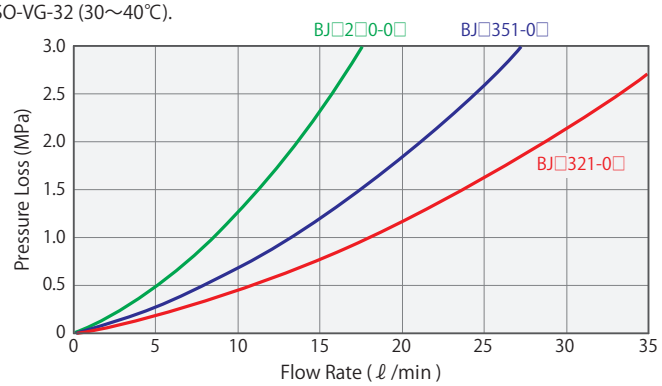


※ Filters are built in each side of the port and connection side.

Flow Rate - Pressure Loss Characteristic Graph

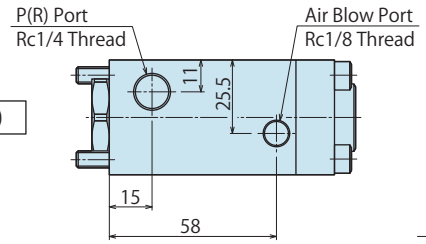
The fluid used on this data is general hydraulic oil equivalent to ISO-VG-32 (30~40℃).

Pressure Loss (MPa)	Flow Rate (ℓ/min)		
	BJP2□0-0□ BJS2□0-0	BJP321-0□ BJS321-0	BJP351-0□ BJS351-0
0	0	0	0
0.5	5.2	11.0	8.1
1.0	8.4	17.6	13.1
1.5	11.4	24.2	17.7
2.0	13.5	28.6	21.0
2.5	15.6	33.0	24.2
3.0	17.7	37.4	27.4

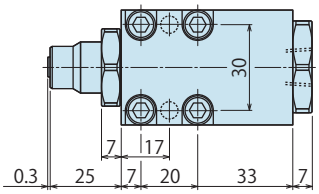


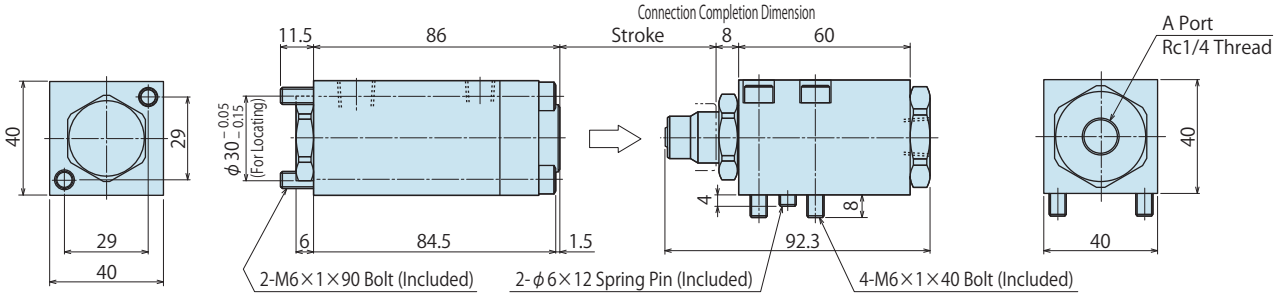
External Dimensions (BJ□2□0-0□)

BJS2□0-0 (Socket)



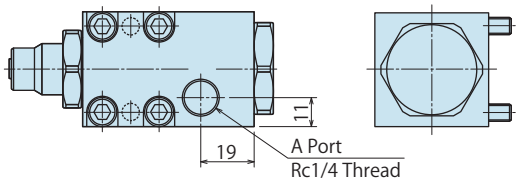
BJP2□0-0 (Plug)





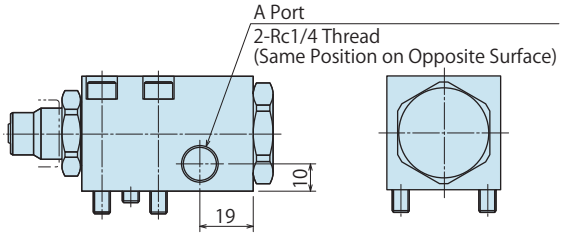
BJP2□0-0A (Plug)

※ Unlisted dimensions are the same as BJP2□0-0.



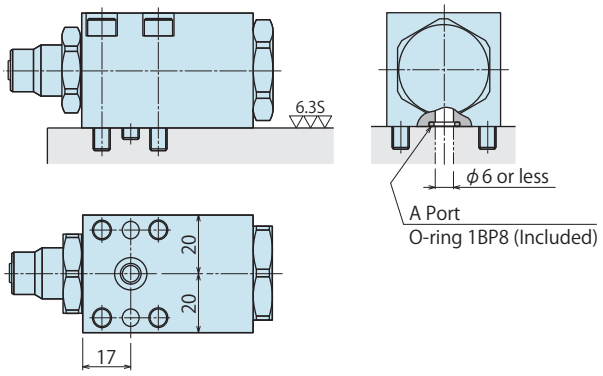
BJP2□0-0B (Plug)

※ Unlisted dimensions are the same as BJP2□0-0.



BJP2□0-0G (Plug)

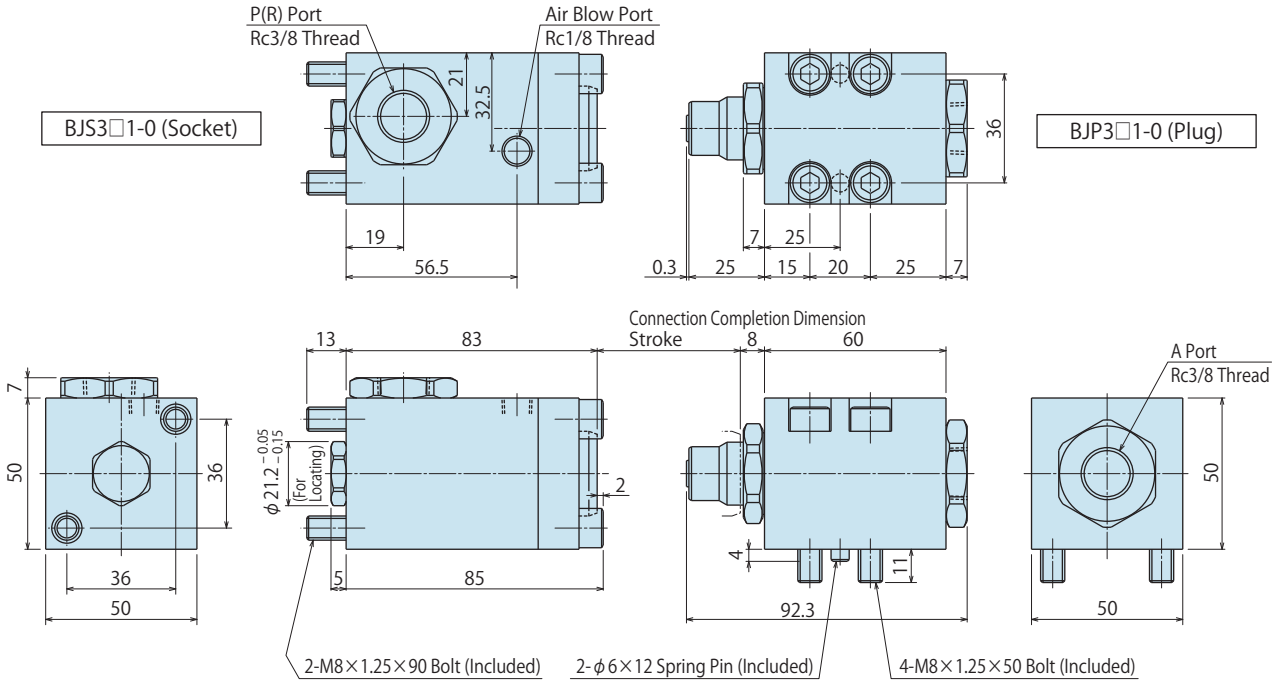
※ Unlisted dimensions are the same as BJP2□0-0.



Model No.	Weight (kg)	Mounting Bolt Size	Tightening Torque (N·m)
BJP2□0-0□	0.8	M6×1	10
BJS2□0-0	0.9		

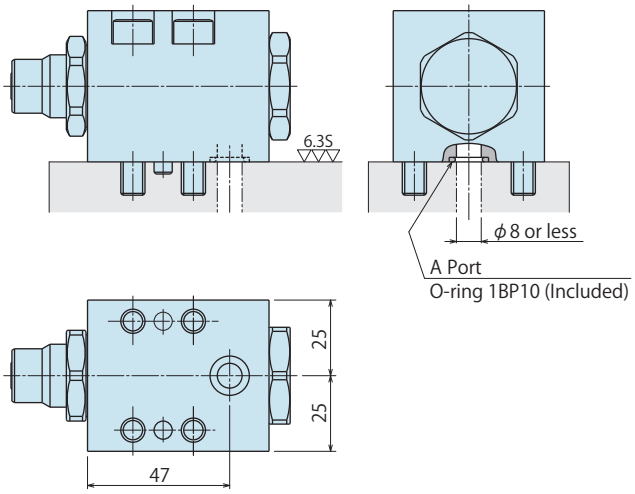
External Dimensions (BJ□3□1-0□)

BJS3□1-0 (Socket)



BJP3□1-0G (Plug)

※ Unlisted dimensions are the same as BJP3□1-0.



Model No.	Weight (kg)	Mounting Bolt Size	Tightening Torque (N·m)
BJP3□1-0□	1.1	M8×1.25	25
BJS3□1-0	1.4		

Cautions (BJP/BJS)

1. Roughness of mounting surface (O-ring seal surface) of **G** : Gasket option should be 6.3S or better.
2. Pressing force for connection should be more than the reaction force and less than 6kN (for BJ□2) or 9kN (for BJ□3).
3. When using multiple couplers, position accuracy in the stroke direction for machining ϕ6 spring pin hole of each plug should be within±0.1.
4. After mounting, perform air bleeding sufficiently. Failure to do so may affect an amount of spillage (oil drip).
5. Minimize the disconnection speed to prevent the pressure value right after the disconnection and the amount of spillage (oil drip) from being affected. (It may change depending on the operating condition)
6. Do not use the coupler with the connecting surface of BJS. Otherwise contaminants (chips and so on) may accumulate or enter.

Non-Leak Coupler

Model BFP/BFS

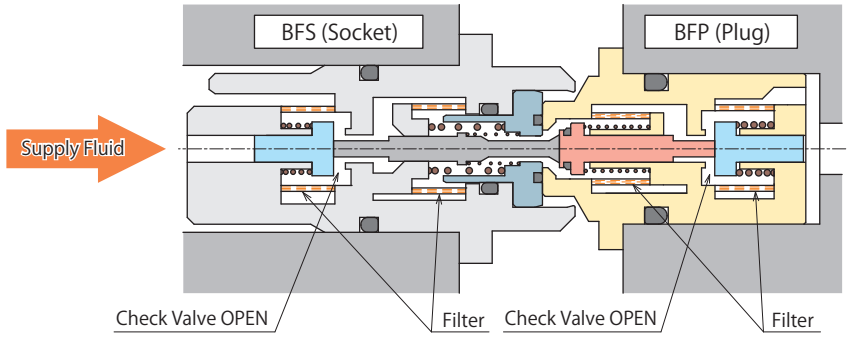
Feature

Non-leak auto coupler equipped with aligning mechanism to enable connection and disconnection under pressurized condition.

Action Description

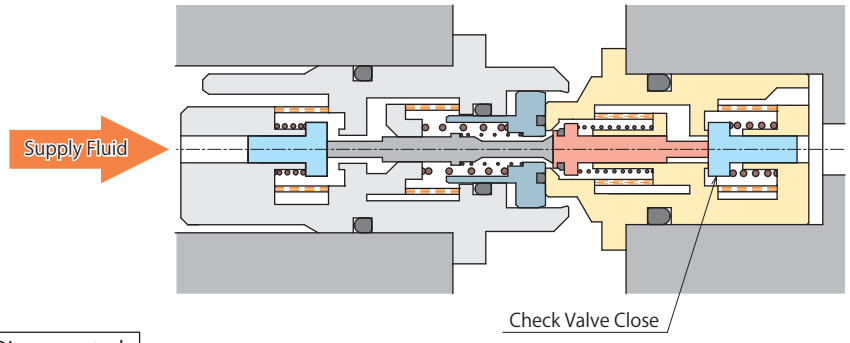
1. When connection is completed

The check valves of both sides are opened, and the fluid supply from the socket side pressurizes the plug side.
Because a reaction force is active at this time, an appropriate pressing force (holding force) is necessary.



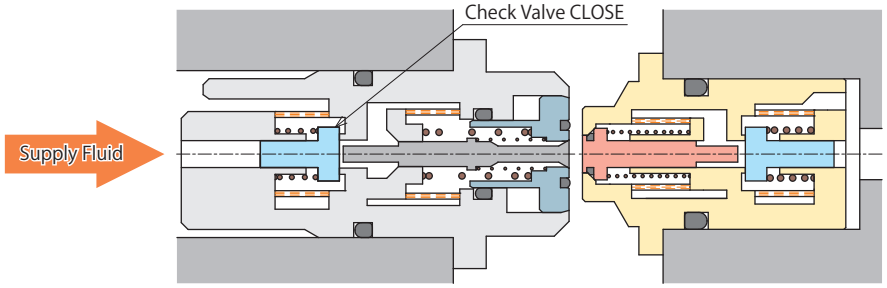
2. During Disconnection

When the socket is pulled back under pressure, the check valve of the plug closes first to maintain the pressure.



3. Disconnected

The check valve which is inside BFS on the fluid supply side is closed.
(Reaction force is fully activated until BFS valve closes, and it gradually decreases until each end separates.)



Model No. Indication

BF P 2 2 0 - 0

1 2 3

1 Style

P : Plug (Fixture Side)

S : Socket (Hydraulic Pressure Source Side)

2 Pressure Code (Operating Pressure Range)

2 : 1.0 ~ 7.0 MPa

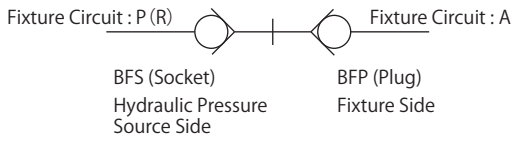
3 Design No.

0 : Revision Number

Specifications

Model No.	Fixture Side		**BFP220-0**
	Pressure Source Side		**BFS220-0**
Operating Pressure		MPa	1.0 ~ 7.0
Withstanding Pressure		MPa	10.5
Min. Passage Area		mm^2	11
Offset Tolerance		mm	±1
Angular Deviation (Offset Tolerance)		DEG.	0.3
Operating Temperature		℃	0 ~ 70
Usable Fluid			General Hydraulic Oil Equivalent to ISO-VG-32
Reaction Force under Pressure kN	Operating Pressure	at 7 MPa	1.02
		at P MPa	0.1227 × P + 0.16

Circuit Symbol

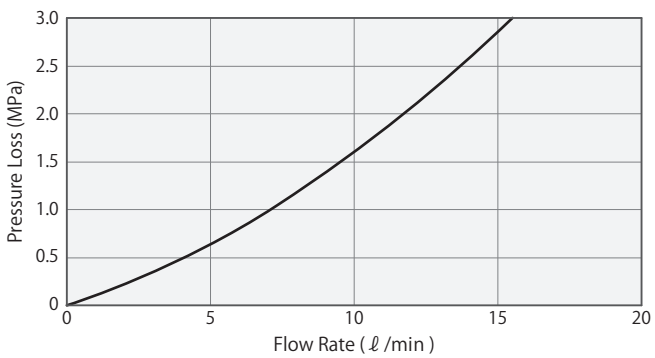


※ Filter is placed at front and back of check valve.

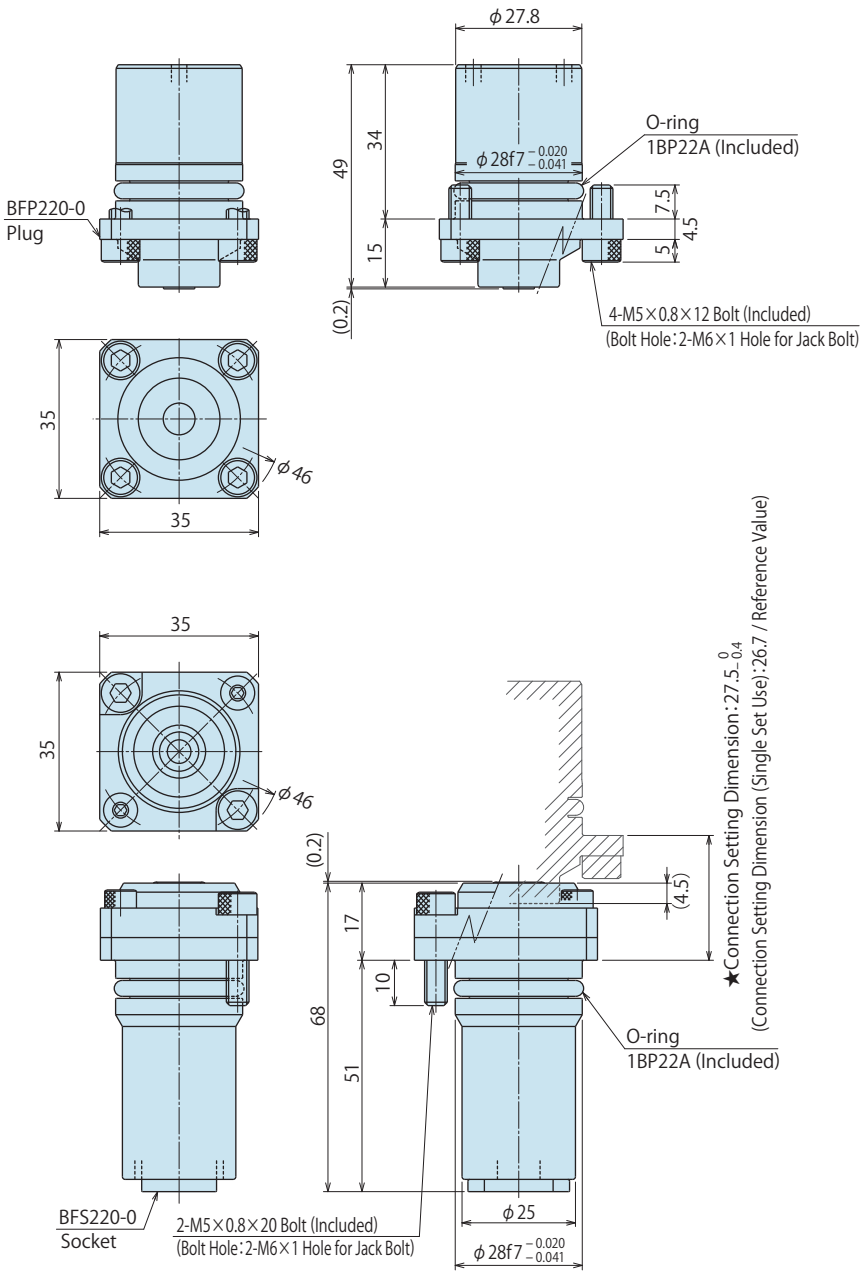
Flow Rate - Pressure Loss Characteristic Graph

The fluid used on this data is general hydraulic oil equivalent to ISO-VG-32 (30~40℃).

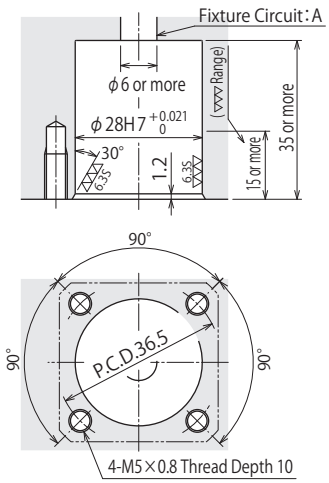
Pressure Loss (MPa)	Flow Rate (ℓ/min)
0	0
0.5	4.1
1.0	7.4
2.0	11.5
3.0	15.6



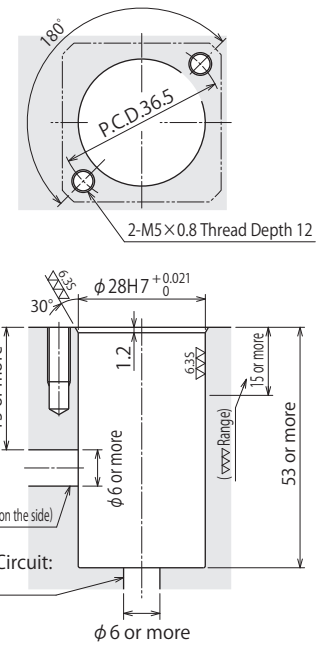
External Dimensions



BFP Machining Dimension for Mounting Hole



BFS Machining Dimension for Mounting Hole



Model No.	Weight (kg)	Mounting Bolt Size	Tightening Torque (N·m)
BFP220-0	0.25	M5×0.8	6.3
BFS220-0	0.30		

Cautions (BFP/BFS)

1. When using multiple couplers, please install stopper to be set as a ★ marked set length.
2. Please note that a reaction force is also applied during connecting/disconnecting operation under pressure.
3. Release the air of the circuit sufficiently prior to operation. (Oil drip amount can increase.)
4. Do not connect them when chips or coolant adhered to the end surfaces.
   (Cover the surface to ensure that contaminants and chips do not attach to the surface.)
5. Use BFS socket on the hydraulic pressure source side and BFP plug on the fixture side.
6. When pressing up to the connection limit, use the force higher than the reaction force and lower than 4.0kN
7. Use all attached bolts with hex holes (strength division 12.9) and tighten the body with torque as shown in the table.

MEMO

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.

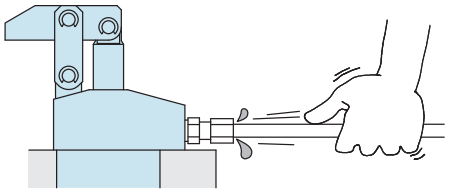
3) Applying Sealing Tape

- Wrap with tape 1 to 2 times following the screw direction.
- Pieces of the sealing tape can lead to oil leakage and malfunction.
- Please implement piping construction in a clear environment to prevent anything getting in products.

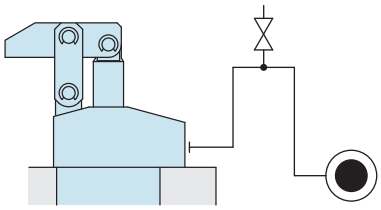
4) Air Bleeding of the Hydraulic Circuit

- 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 Shake 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 release 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	

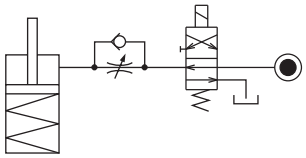
Note : Please contact manufacturers when customers require products in the list above.

Notes on Hydraulic Cylinder Speed Control Unit

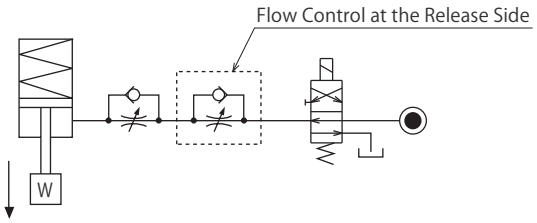
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

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.



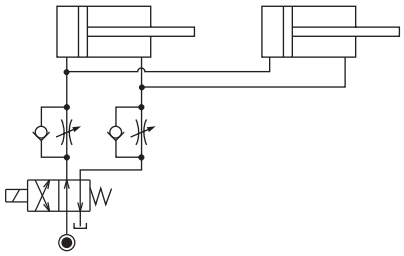
Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow. (Please add flow control to release flow if the lever weight is put on at the time of release action when using swing clamps.)



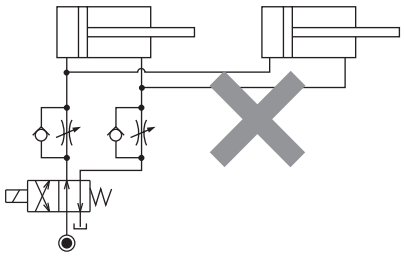
Flow Control Circuit for Double Acting Cylinder

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.75 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)

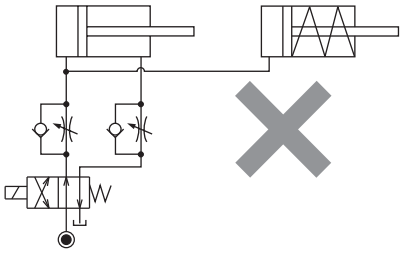


【Meter-in Circuit】(LKE/TMA/TLA must be controlled with meter-in.)



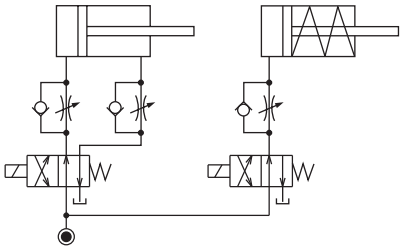
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

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.

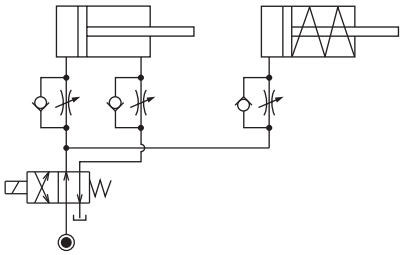


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

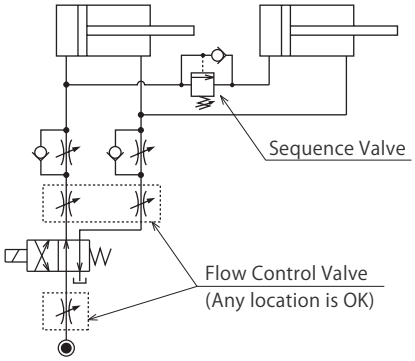
○ Separate the control circuit.



○ 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.



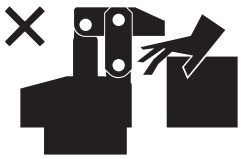
Cautions

Notes on Handling

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

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

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

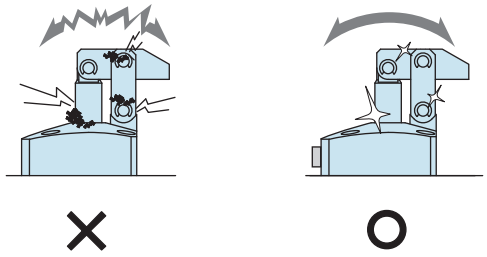


4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

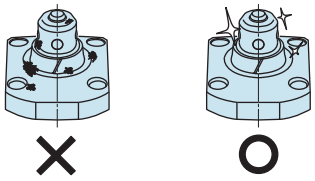
Maintenance and Inspection

1) Removal of the Machine and Shut-off of Pressure Source
- Before the machine is removed, make sure that safety devices and preventive devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
- 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 and fluid leakage.



3) Please clean out the reference surfaces on a regular basis (taper reference surface and seating surface) of the locating products. (VS/VT/VFL/VFM/VFJ/VFK/WVS/VWM/VWK/VX/VXE/VXF)
- The locating products, except VX/VXE/VXF model, can remove contaminants with cleaning functions. However, hardened cutting chips, adhesive coolant and others may not be removed. Make sure there are no contaminants before installing a workpiece/pallet.
- Continuous use with contaminant on components will lead to locating accuracy failure, malfunction and fluid leakage.



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

5) Regularly tighten nut, bolt, pin, cylinder, pipe line and others to ensure proper use.

6) Make sure the hydraulic fluid has not deteriorated.

7) Make sure there is a smooth action without an irregular 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 operated in an 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

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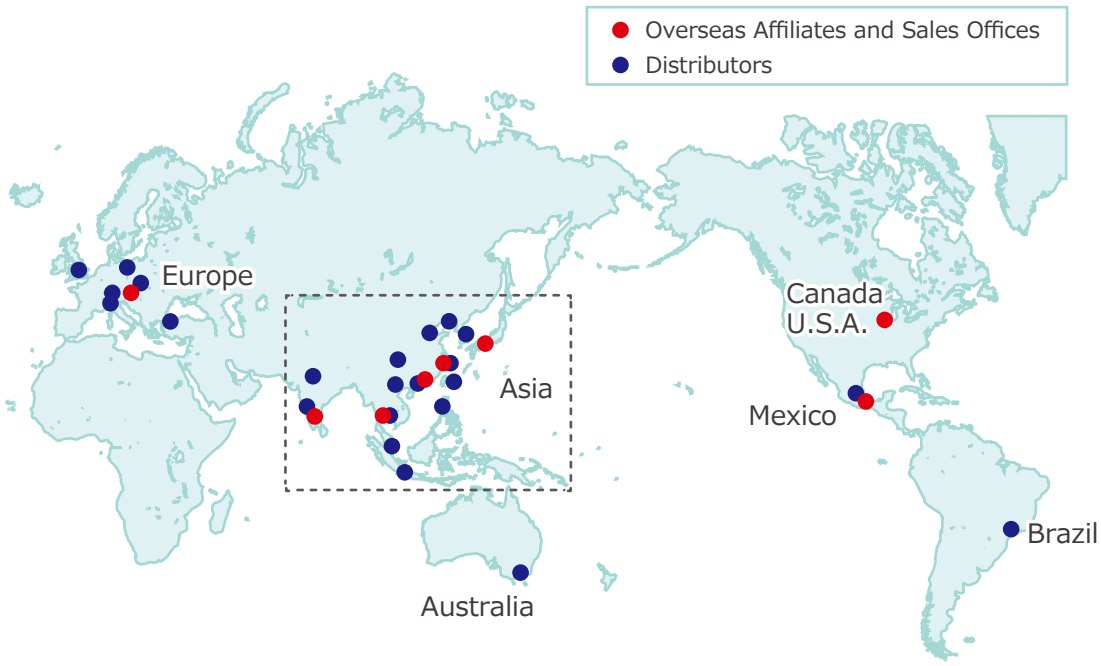
Tokyo Sales Office	**TEL. 048-652-8839**	FAX. 048-652-8828 〒331-0815　埼玉県さいたま市北区大成町4丁目81番地
Nagoya Sales Office	**TEL. 0566-74-8778**	FAX. 0566-74-8808 〒446-0076　愛知県安城市美園町2丁目10番地1
Fukuoka Sales Office	**TEL. 092-433-0424**	FAX. 092-433-0426 〒812-0006　福岡県福岡市博多区上牟田1丁目8-10-101

Global Network



Asia Detailed Map

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