

Hydraulic Compact Cylinder

Model LL

Model LLR

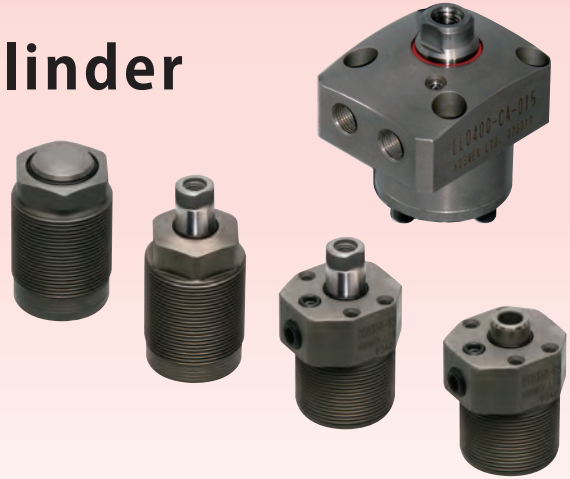
Model LLU

Model DP

Model DR

Model DS

Model DT



Simple and Compact Linear Cylinder

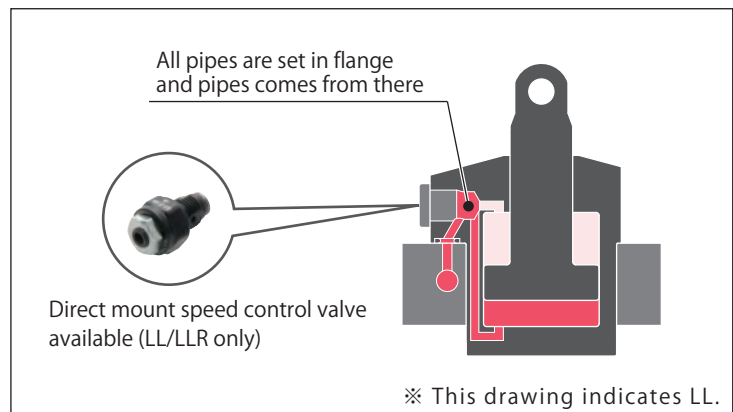
LL/LLR/LLU is designed for the customer to be able to set the stroke from every 1mm.

- **LL/LLR/LLU : Double Action Linear Cylinder**

It is possible to set the stroke every 1mm (1mm ~ 200mm). This is the double action cylinder that pursue the best of compact to be made of the customer demands.

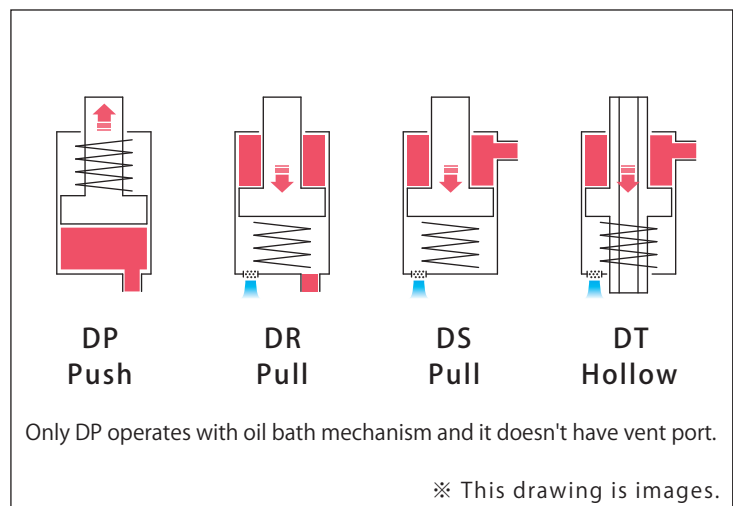
There are two piping methods.




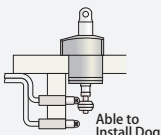
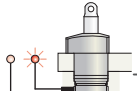

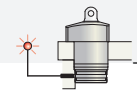


- With gasket option, less of the piping on fixture is achieved.
- With piping option, ports get together on flange, which leads to easier piping.







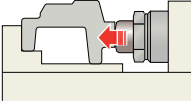
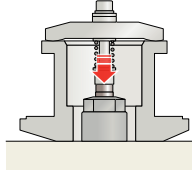
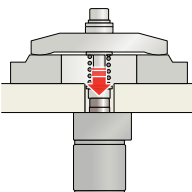
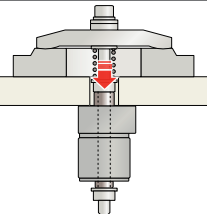
- **DP/DR/DS/DT : Single Action Cylinder**

The compact single action cylinder corresponds to the pressure range from high to low.



Double Action Model MAX 7MPa		 Model LL → P.639	 Model LLR → P.639	 Model LLU → P.639
Classification		Double Action Linear Cylinder Top Flange	Double Action Linear Cylinder Bottom Flange	Double Action Linear Cylinder Bottom Flange (Compact)
Operating Pressure Range		0.5~7MPa ※1	0.5~7MPa	0.5~7MPa
Standard Model		External Dimensions → P.649	External Dimensions → P.671	External Dimensions → P.677
Action Confirmation	Double End Rod Option for Dog  Able to Install Dog	External Dimensions → P.653	External Dimensions → P.675	External Dimensions → P.681
	Air Sensing Manifold Option 	External Dimensions → P.655	—	—
	Air Sensing Piping Option  Able to Install Air Sensor	External Dimensions → P.657	—	—
	Air Sensing Manifold Option for Retract End 	External Dimensions → P.661	—	—
	Air Sensing Piping Option for Retract End  Able to Install Air Sensor	External Dimensions → P.665	—	—
Accessories	Speed Control Valve Plug 	BZL, BZX, JZG → P.727		

※ 1. The operating pressure range of air sensor for release position is from 1 ~ 7MPa.

Single Action Model MAX 25MPa		 Model DP → P.683	 Model DR → P.693	 Model DS → P.699	 Model DT → P.707
Classification		Single Action Push Cylinder Threaded Body Model	Single Action Pull Cylinder Threaded Body Model	Single Action Pull Cylinder Threaded Body Model / Bottom Flange	Single Action Hollow Cylinder Threaded Body Model / Bottom Flange
Operating Pressure Range		0.8~25MPa	1~25MPa	1~25MPa	1~25MPa
Action					
Accessories Piping Block → P.1023, P.1029		DZ-M DZ-P DZ-C DZ-B	DZ-R DZ-C DZ-B	DZ-C DZ-B	DZ-C DZ-B

- High-Power Series
- Pneumatic Series
- Hydraulic Series**
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Hole Clamp
 - SFA
 - SFC
- Swing Clamp
 - LHA
 - LHC
 - LHS
 - LHW
 - LT/LG
 - TLA-2
 - TLB-2
 - TLA-1
- Link Clamp
 - LKA
 - LKC
 - LKW
 - LM/LJ
 - TMA-2
 - TMA-1
- Work Support
 - LD
 - LC
 - TNC
 - TC
- Air Sensing Lift Cylinder
 - LLW
- Compact Cylinder**
 - LL
 - LLR
 - LLU
 - DP
 - DR
 - DS
 - DT
- Block Cylinder
 - DBA
 - DBC
- Control Valve
 - BZL
 - BZT
 - BZX/JZG
- Pallet Clamp
 - VS
 - VT
- Expansion Locating Pin
 - VL
 - VM
 - VJ
 - VK
- Pull Stud Clamp
 - FP
 - FQ
- Customized Spring Cylinder
 - DWA/DWB

Hydraulic Single Action Compact Cylinder

Model DP

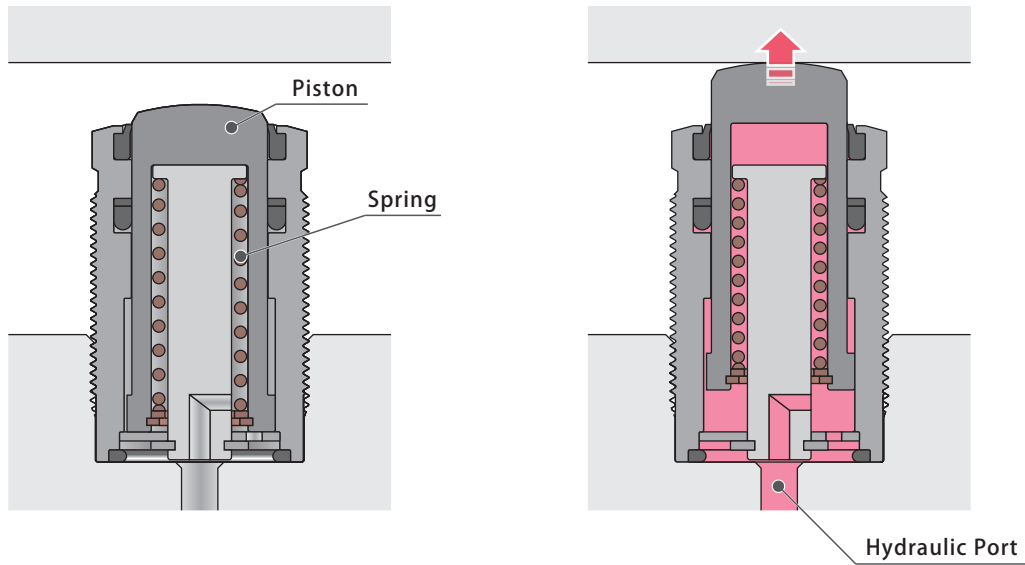
Low Pressure / High Pressure (0.8~25MPa)
Push Cylinder (Threaded Body)



Index

Hydraulic Compact Cylinder Digest	P.637
Action Description / Application Examples	P.684
Model No. Indication	P.685
Specifications	P.686
Performance Curve	P.686
External Dimensions	
• Shape of Piston Tip : Female Threaded (DP-A)	P.687
• Shape of Piston Tip : Round Model (DP-R)	P.689
• Shape of Piston Tip : Oscillating Pad Model (DP-P/DP-Q)	P.691
Accessories	
• Manifold Block (Common Items of Other Models)	P.1023
• Piping Block / Nut (Common Items of Other Models)	P.1029
Cautions	
• Notes for Hydraulic Compact Cylinder	P.715
• Cautions (Common)	P.1043
• Installation Notes • Hydraulic Fluid List • Notes on Hydraulic Cylinder Speed Control Circuit	
• Notes on Handling • Maintenance/Inspection • Warranty	

● Action Description



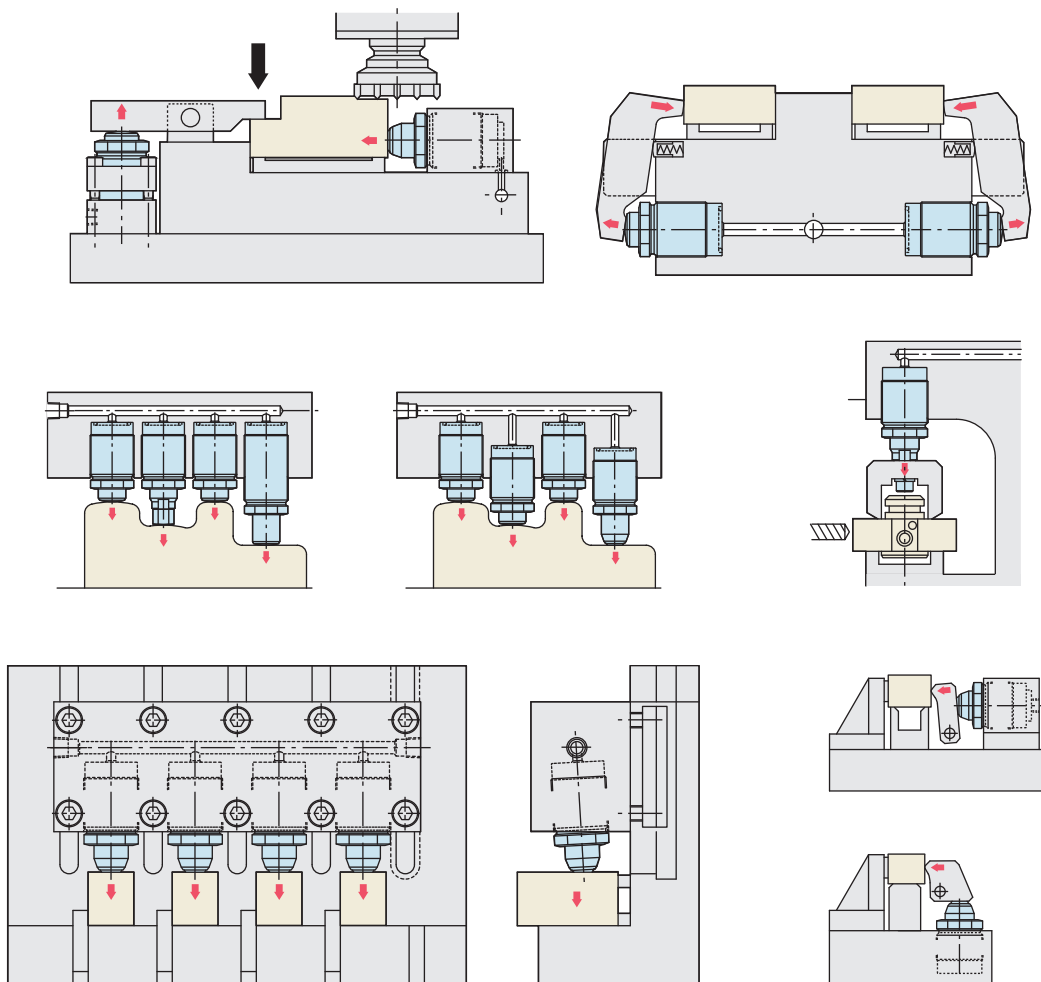
When releasing (Initial position)

Piston moves to release position by spring force.
(Piston retracted)

When locking

When hydraulic pressure is supplied, the piston is operated by the force of the hydraulic pressure.
(Piston extended)

● Application Examples



High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

Hole Clamp

SFA

SFC

Swing Clamp

LHA

LHC

LHS

LHW

LT/LG

TLA-2

TLB-2

TLA-1

Link Clamp

LKA

LKC

LKW

LM/LJ

TMA-2

TMA-1

Work Support

LD

LC

TNC

TC

Air Sensing Lift Cylinder

LLW

Compact Cylinder

LL

LLR

LLU

DP

DR

DS

DT

Block Cylinder

DBA

DBC

Control Valve

BZL

BZT

BZX/JZG

Pallet Clamp

VS

VT

Expansion Locating Pin

VL

VM

VJ

VK

Pull Stud Clamp

FP

FQ

Customized Spring Cylinder

DWA/DWB

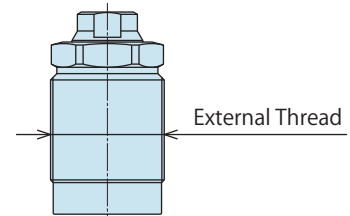
Model No. Indication

DP **022** **1** - **A** **M**

1
2
3
4

1 Body Size

016 : External Thread M16×1.5	045 : External Thread M45×1.5
022 : External Thread M22×1.5	055 : External Thread M55×2
024 : External Thread M24×1.5	065 : External Thread M65×2
030 : External Thread M30×1.5	080 : External Thread M80×2
036 : External Thread M36×1.5	



2 Design No. (Revision Number)

0 : **1** Body Size : 016 selected

1 : **1** Body Size : 022~080 selected

3 Shape of Piston Tip

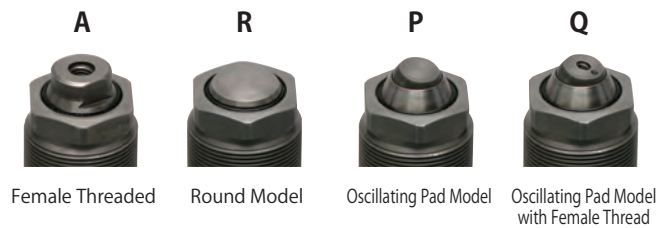
A : Female Threaded

R : Round Model

P : Oscillating Pad Model

Q : Oscillating Pad Model with Female Thread

※ The body size of P model and Q model is 022 ~080.



4 Stroke Code

S : Short Stroke

M : Standard Stroke

L : Long Stroke

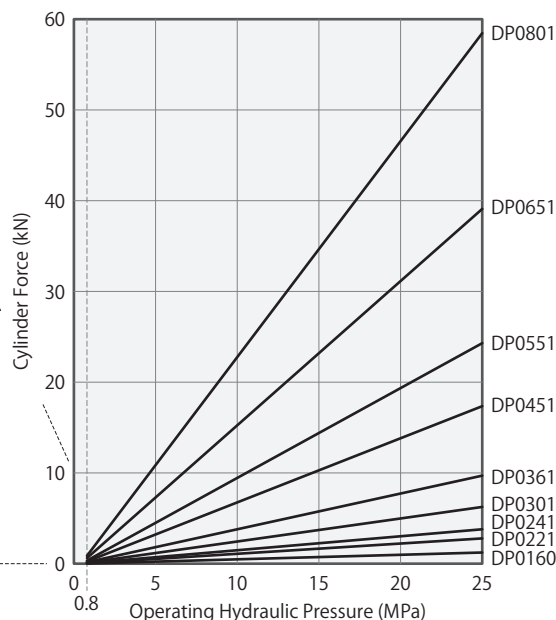
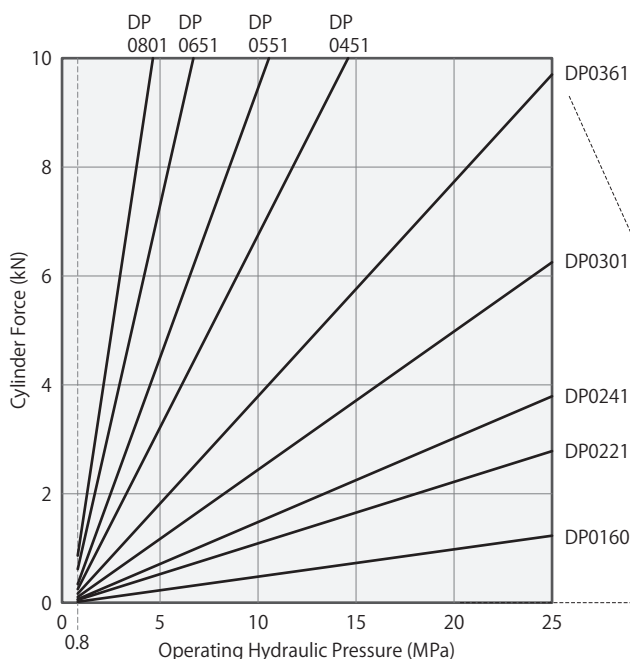
Specifications

Model No.	DP0160			DP0221			DP0241			DP0301			DP0361			DP0451			DP0551			DP0651			DP0801																													
Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L																								
Stroke	mm			6	10	16	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25	12	20	32	16	25	40	16	25	40																								
Cylinder Force (Calculation Formula) kN	F=(0.050×P)-0.024			F=(0.113×P)-0.041			F=(0.154×P)-0.060			F=(0.254×P)-0.099			F=(0.394×P)-0.150			F=(0.707×P)-0.319			F=(0.990×P)-0.452			F=(1.59×P)-0.657			F=(2.38×P)-1.04																													
Cylinder Area	cm ²			0.5			1.1			1.5			2.5			3.9			7.1			9.9			15.9			23.8																										
Cylinder Capacity	cm ³			0.3	0.5	0.8	0.7	1.1	1.8	1.2	1.8	3.1	2	3.1	5.1	3.9	6.3	9.9	7.1	11.3	17.7	11.9	19.8	31.7	25.4	39.8	63.6	38	59.4	95																								
Release Spring Force	N			12.5~23.5			25.7~41.2			32.6~59.7			50.1~99.1			79.4~150			157~319			236~452			353~657			564~1040																										
Max. Operating Pressure	MPa																											25																										
Min. Operating Pressure	MPa																											0.8																										
Withstanding Pressure	MPa																											37.5																										
Operating Temperature	°C																											0~70																										
Mass	kg			0.03	0.04	0.05	0.06	0.08	0.1	0.08	0.1	0.15	0.15	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.8	0.8	1.0	1.3	1.4	1.7	2.2	2.2	2.7	3.6																								

Note 1. Cylinder output F (kN) can be calculated by inputting hydraulic supply pressure P (MPa) in the formula above.

Performance Curve

Model No.	Cylinder Force (kN)																								
	1MPa	2MPa	3MPa	4MPa	5MPa	6MPa	7MPa	8MPa	9MPa	10MPa	11MPa	12MPa	13MPa	14MPa	15MPa	16MPa	17MPa	18MPa	19MPa	20MPa	21MPa	22MPa	23MPa	24MPa	25MPa
DP0160	0.03	0.08	0.13	0.18	0.23	0.28	0.33	0.38	0.43	0.48	0.53	0.58	0.63	0.68	0.73	0.78	0.83	0.88	0.93	0.98	1.0	1.1	1.1	1.2	1.2
DP0221	0.07	0.19	0.30	0.41	0.52	0.64	0.75	0.86	0.98	1.1	1.2	1.3	1.4	1.5	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.6	2.7	2.8
DP0241	0.09	0.25	0.40	0.56	0.71	0.86	1.0	1.2	1.3	1.5	1.6	1.8	1.9	2.1	2.3	2.4	2.6	2.7	2.9	3.0	3.2	3.3	3.5	3.6	3.8
DP0301	0.16	0.41	0.66	0.92	1.2	1.4	1.7	1.9	2.2	2.4	2.7	2.9	3.2	3.5	3.7	4.0	4.2	4.5	4.7	5.0	5.2	5.5	5.7	6.0	6.3
DP0361	0.24	0.64	1.0	1.4	1.8	2.2	2.6	3.0	3.4	3.8	4.2	4.6	5.0	5.4	5.8	6.2	6.5	6.9	7.3	7.7	8.1	8.5	8.9	9.3	9.7
DP0451	0.39	1.1	1.8	2.5	3.2	3.9	4.6	5.3	6.0	6.8	7.5	8.2	8.9	9.6	10.3	11.0	11.7	12.4	13.1	13.8	14.5	15.2	15.9	16.6	17.4
DP0551	0.54	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.4	10.4	11.4	12.4	13.4	14.4	15.4	16.4	17.4	18.4	19.3	20.3	21.3	22.3	23.3	24.3
DP0651	0.93	2.5	4.1	5.7	7.3	8.9	10.5	12.1	13.7	15.2	16.8	18.4	20.0	21.6	23.2	24.8	26.4	28.0	29.6	31.1	32.7	34.3	35.9	37.5	39.1
DP0801	1.3	3.7	6.1	8.5	10.9	13.2	15.6	18.0	20.4	22.8	25.1	27.5	29.9	32.3	34.7	37.0	39.4	41.8	44.2	46.6	48.9	51.3	53.7	56.1	58.5



High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

Hole Clamp

SFA
SFC

Swing Clamp

LHA
LHC
LHS
LHW
LT/LG
TLA-2
TLB-2
TLA-1

Link Clamp

LKA
LKC
LKW
LM/LJ
TMA-2
TMA-1

Work Support

LD
LC
TNC
TC

Air Sensing Lift Cylinder

LLW

Compact Cylinder

LL
LLR
LLU
DP
DR
DS
DT

Block Cylinder

DBA
DBC

Control Valve

BZL
BZT
BZX/JZG

Pallet Clamp

VS
VT

Expansion Locating Pin

VL
VM
VJ
VK

Pull Stud Clamp

FP
FQ

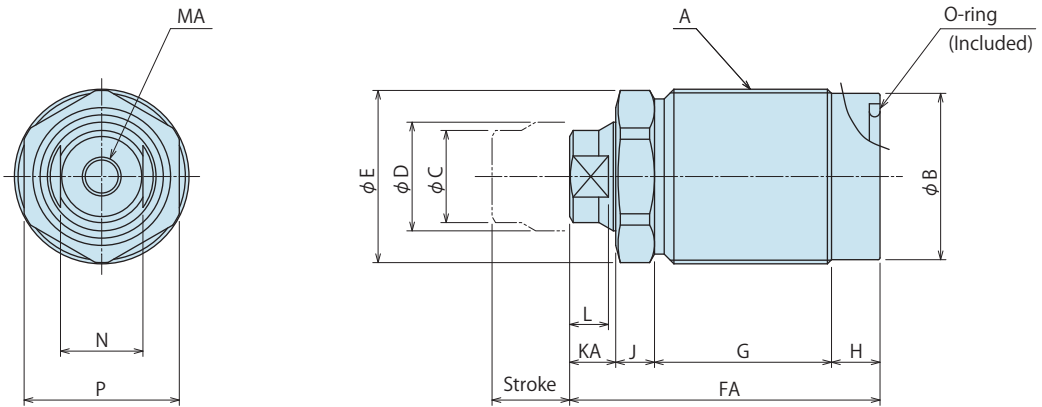
Customized Spring Cylinder

DWA/DWB

External Dimensions

Shape of Piston Tip **A** : Female Threaded

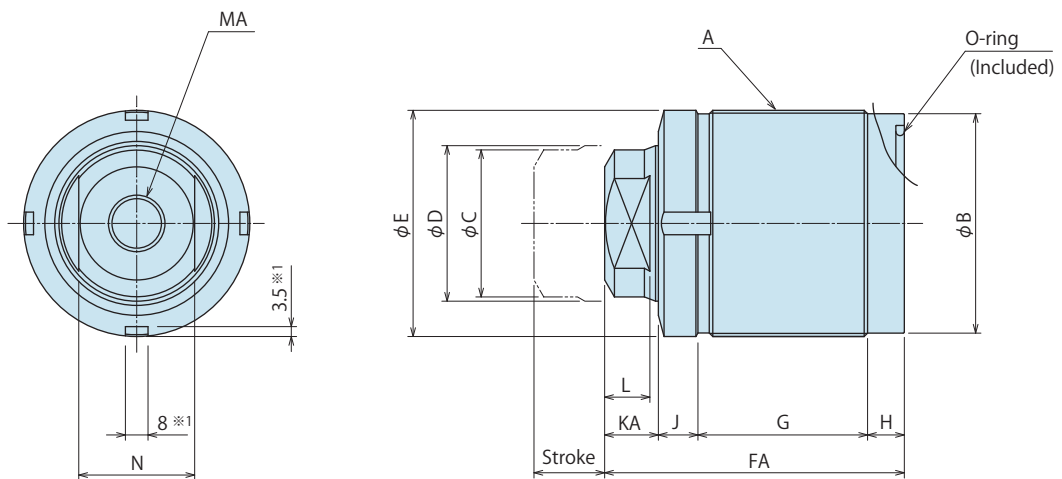
※The drawing below shows DP0160-A□ / DP0221-A□ / DP0241-A□ / DP0301-A□ / DP0361-A□ / DP0451-A□ / DP0551-A□ / DP0651-A□.



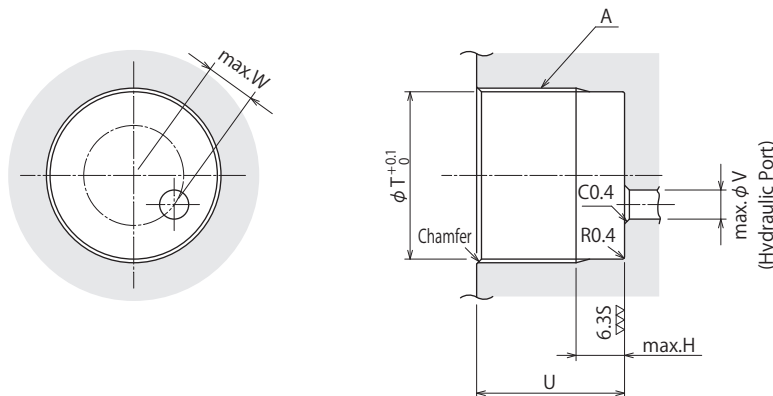
※The drawing below shows DP0801-A□.

Note

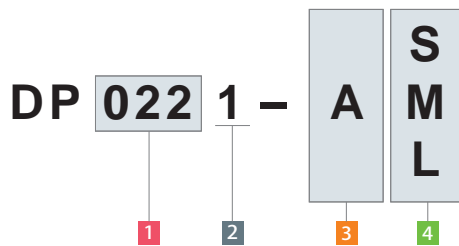
※1.Unlike other body size, a hook spanner is required. Prepare a hook spanner of the appropriate size.



Machining Dimensions of Mounting Area



Model No. Indication



(Format Example : DP0160-AS、DP0361-AM)

- 1** Body Size
- 2** Design No.
- 3** Shape of Piston Tip
- 4** Stroke Code

Note

1 Body Size "016" = **2** Design No. "0"

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	DP0160-A			DP0221-A			DP0241-A			DP0301-A			DP0361-A			DP0451-A			DP0551-A			DP0651-A			DP0801-A					
Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L
Stroke	6	10	16	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25	12	20	32	16	25	40	16	25	40	16	25	40
A (Nominal × Pitch)	M16×1.5			M22×1.5			M24×1.5			M30×1.5			M36×1.5			M45×1.5			M55×2			M65×2			M80×2					
B	14.3			20.3			22.3			28.3			34.3			43.3			52.6			62.6			77.6					
C	7.5			11.2			13			17			19			28			34.5			42			52					
D	8			12			14			18			22.4			30			35.5			45			55					
E	15.5			21.2			24.5			30			35.5			45			55			66			80					
FA	35	41	50	35	43	56	39.5	47	63.5	43.5	52.5	72	51	64	85	59	72	94.5	64	79.5	102	78	94	123.5	88	106	137			
G	18.5	24.5	33.5	13	21	34	17.5	25	41.5	18	27	46.5	23.5	36.5	57.5	23	36	58.5	27	42.5	65	35	51	80.5	42	60	91			
H	6			8			8			9			10			12			12			13			13					
J	5			7			7			8			8			12			12			14			14					
KA	5.5			7			7			8.5			9.5			12			13			16			19					
L	4			5.5			5.5			7			8			10			11			13			16					
MA (Nominal×Pitch×Depth)	M5×0.8×8			M6×1×7			M6×1×7			M8×1.25×10			M8×1.25×10			M10×1.5×11			M12×1.75×12			M16×2×16			M20×2.5×20					
N	7			10			10			14			17			24			30			36			41					
P	14			19			22			27			32			41			50			60			-					
T	14.5			20.5			22.5			28.5			34.5			43.5			53			63			78					
U	(min.)	12	12	12	14	14	14	14	14	14	15	15	15	16	16	16	18	18	18	20	20	20	25	25	25	25	25	25		
	(max.)	23	29	38	20	28	41	24	32	48	26	35	54	32	45	66	34	47	69	38	53	76	47	63	92	54	72	103		
V	3			3			3			6			6			8			8			8			8					
W	0			3.5			5.5			6			8			10			13			19			25					
Chamfer	C1			C1			C1			C1			C1			C1			C1.5			C1.5			C1.5					
O-ring	1BP9			AS568-015(90°)			AS568-017(90°)			AS568-020(90°)			AS568-120(90°)			1BP31.5			1BP39			1BP50			AS568-230(90°)					

High-Power
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler
Hydraulic Unit

Manual Operation
Accessories

Cautions / Others

Hole Clamp

SFA
SFC

Swing Clamp

LHA
LHC
LHS
LHW
LT/LG
TLA-2
TLB-2
TLA-1

Link Clamp

LKA
LKC
LKW
LM/LJ
TMA-2
TMA-1

Work Support

LD
LC
TNC
TC

Air Sensing
Lift Cylinder

LLW

Compact Cylinder

LL
LLR
LLU
DP
DR
DS
DT

Block Cylinder

DBA
DBC

Control Valve

BZL
BZT
BZX/JZG

Pallet Clamp

VS
VT

Expansion
Locating Pin

VL
VM
VJ
VK

Pull Stud Clamp

FP
FQ

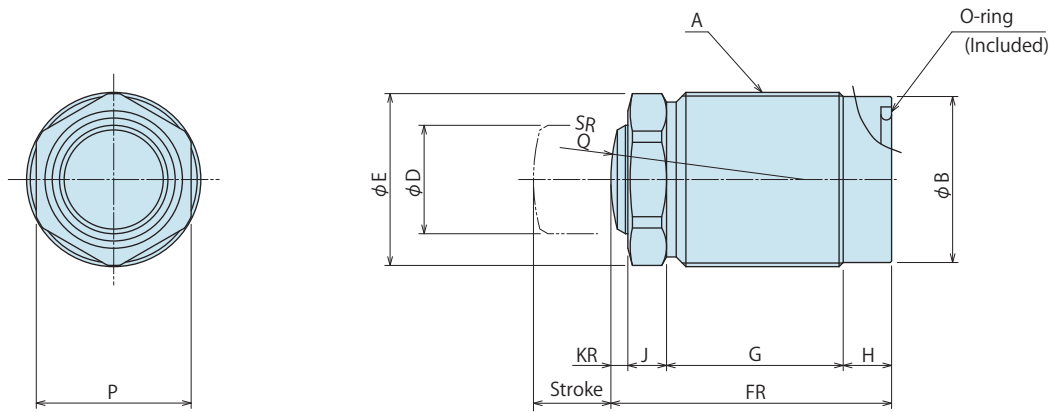
Customized
Spring Cylinder

DWA/DWB

External Dimensions

Shape of Piston Tip \square : Round Model

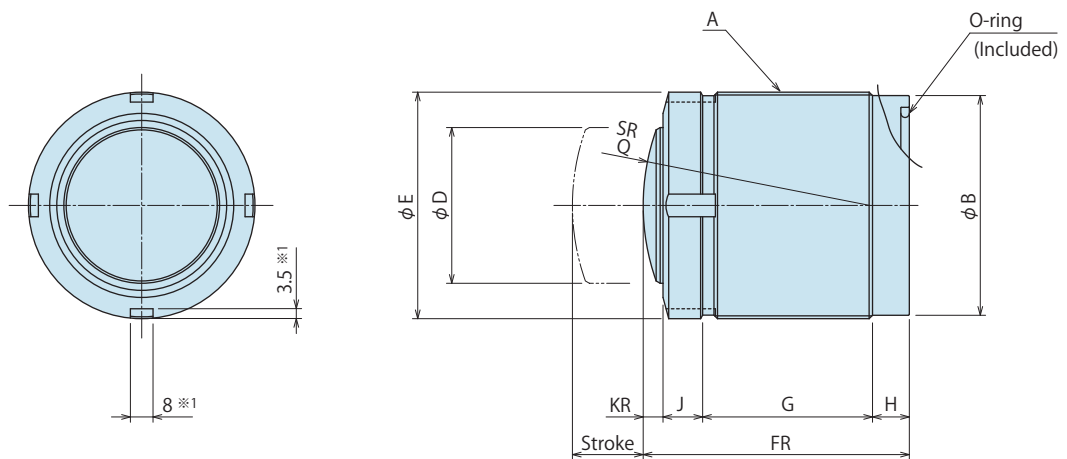
※The drawing below shows DP0160-R□ / DP0221-R□ / DP0241-R□ / DP0301-R□ / DP0361-R□ / DP0451-R□ / DP0551-R□ / DP0651-R□.



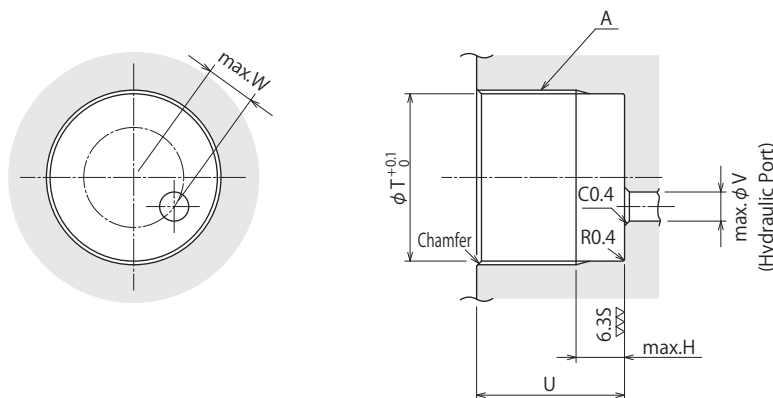
※The drawing below shows DP0801-R□.

Note

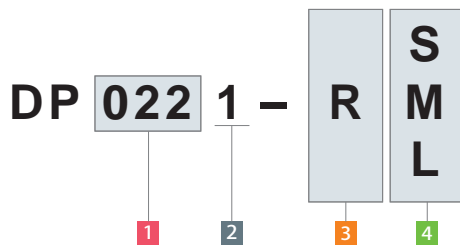
※1. Unlike other body size, a hook spanner is required. Prepare a hook spanner of the appropriate size.



Machining Dimensions of Mounting Area



Model No. Indication



(Format Example : DP0160-RS、DP0361-RM)

- 1 Body Size
- 2 Design No.
- 3 Shape of Piston Tip
- 4 Stroke Code

Note

1 Body Size "016" = 2 Design No. "0"

External Dimensions and Machining Dimensions for Mounting

(mm)

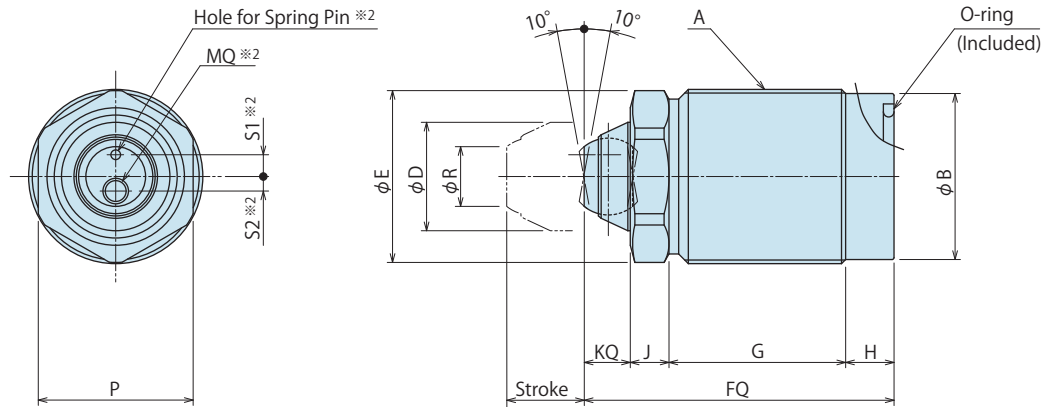
Model No.	DP0160-R			DP0221-R			DP0241-R			DP0301-R			DP0361-R			DP0451-R			DP0551-R			DP0651-R			DP0801-R					
Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L
Stroke	6	10	16	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25	12	20	32	16	25	40	16	25	40	16	25	40
A (Nominal × Pitch)	M16×1.5			M22×1.5			M24×1.5			M30×1.5			M36×1.5			M45×1.5			M55×2			M65×2			M80×2					
B	14.3			20.3			22.3			28.3			34.3			43.3			52.6			62.6			77.6					
D	8			12			14			18			22.4			30			35.5			45			55					
E	15.5			21.2			24.5			30			35.5			45			55			66			80					
FR	31	37	46	30.5	38.5	51.5	35	42.5	59	38	47	66.5	45	58	79	51	64	86.5	56	71.5	94	68	84	113.5	76	94	125			
G	18.5	24.5	33.5	13	21	34	17.5	25	41.5	18	27	46.5	23.5	36.5	57.5	23	36	58.5	27	42.5	65	35	51	80.5	42	60	91			
H	6			8			8			9			10			12			12			13			13					
J	5			7			7			8			8			12			12			14			14					
KR	1.5			2.5			2.5			3			3.5			4			5			6			7					
P	14			19			22			27			32			41			50			60			-					
Q	16			20			25			30			40			50			60			70			80					
T	14.5			20.5			22.5			28.5			34.5			43.5			53			63			78					
U	(min.)	12	12	12	14	14	14	14	14	14	15	15	15	16	16	16	18	18	18	20	20	20	25	25	25	25	25	25		
	(max.)	23	29	38	20	28	41	24	32	48	26	35	54	32	45	66	34	47	69	38	53	76	47	63	92	54	72	103		
V	3			3			3			6			6			8			8			8			8					
W	0			3.5			5.5			6			8			10			13			19			25					
Chamfer	C1			C1			C1			C1			C1			C1			C1.5			C1.5			C1.5					
O-ring	1BP9			AS568-015(90°)			AS568-017(90°)			AS568-020(90°)			AS568-120(90°)			1BP31.5			1BP39			1BP50			AS568-230(90°)					

- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Hole Clamp
 - SFA
 - SFC
- Swing Clamp
 - LHA
 - LHC
 - LHS
 - LHW
 - LT/LG
 - TLA-2
 - TLB-2
 - TLA-1
- Link Clamp
 - LKA
 - LKC
 - LKW
 - LM/LJ
 - TMA-2
 - TMA-1
- Work Support
 - LD
 - LC
 - TNC
 - TC
- Air Sensing Lift Cylinder
 - LLW
- Compact Cylinder
 - LL
 - LLR
 - LLU
 - DP
 - DR
 - DS
 - DT
- Block Cylinder
 - DBA
 - DBC
- Control Valve
 - BZL
 - BZT
 - BZX/JZG
- Pallet Clamp
 - VS
 - VT
- Expansion Locating Pin
 - VL
 - VM
 - VJ
 - VK
- Pull Stud Clamp
 - FP
 - FQ
- Customized Spring Cylinder
 - DWA/DWB

External Dimensions

Shape of Piston Tip □ : Oscillating Pad Model □ : Oscillating Pad Model with Female Thread.

※The drawing below shows DP0221-Q□ / DP0241-Q□ / DP0301-Q□ / DP0361-Q□ / DP0451-Q□ / DP0551-Q□ / DP0651-Q□.
 The DP-P type does not have a pin hole and screw hole of ※2 part.

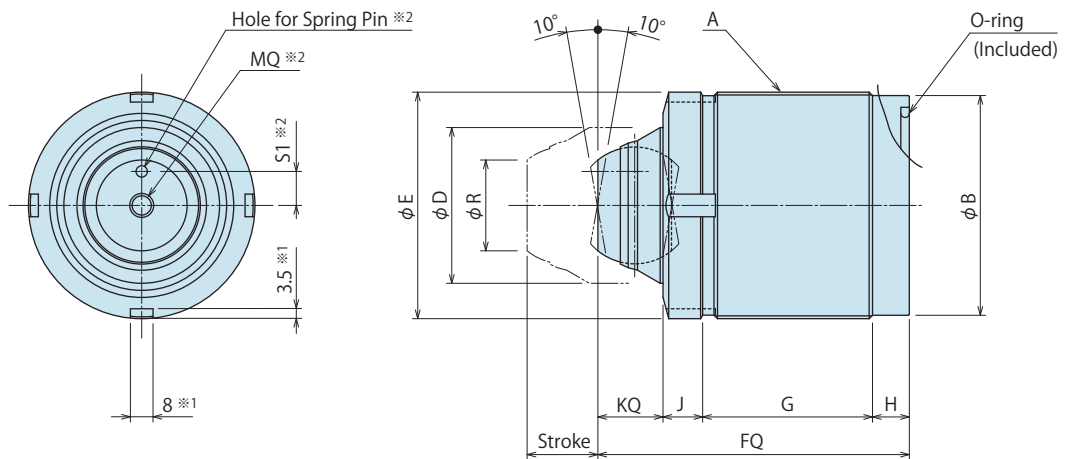


※The drawing below shows DP0801-Q□.

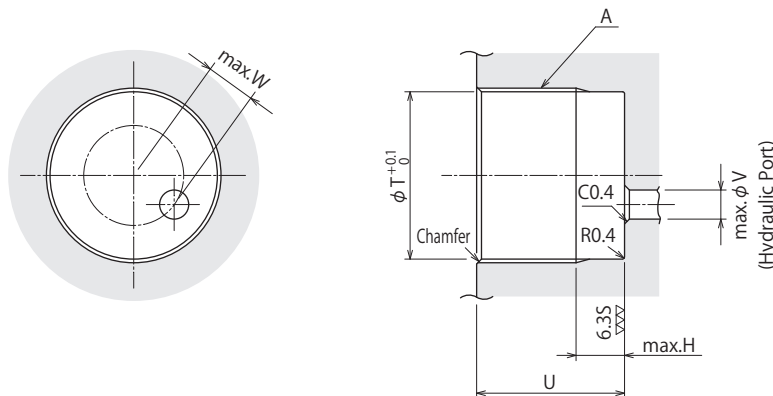
The DP-P type does not have a pin hole and screw hole of ※2 part.

Note

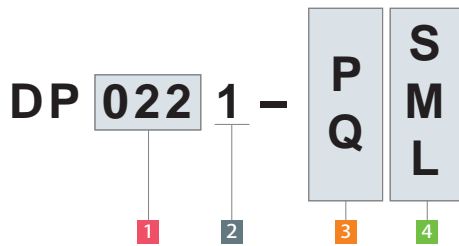
※1.Unlike other body size, a hook spanner is required. Prepare a hook spanner of the appropriate size.



Machining Dimensions of Mounting Area



Model No. Indication



(Format Example : DP0221-PS、DP0361-QM)

- 1** Body Size
- 2** Design No.
- 3** Shape of Piston Tip
- 4** Stroke Code

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	DP0221-P DP0221-Q			DP0241-P DP0241-Q			DP0301-P DP0301-Q			DP0361-P DP0361-Q			DP0451-P DP0451-Q			DP0551-P DP0551-Q			DP0651-P DP0651-Q			DP0801-P DP0801-Q			
	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	
Stroke	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25	12	20	32	16	25	40	16	25	40	
A (Nominal × Pitch)	M22×1.5			M24×1.5			M30×1.5			M36×1.5			M45×1.5			M55×2			M65×2			M80×2			
B	20.3			22.3			28.3			34.3			43.3			52.6			62.6			77.6			
D	12			14			18			22.4			30			35.5			45			55			
E	21.2			24.5			30			35.5			45			55			66			80			
FQ	32	40	53	38.5	46	62.5	42	51	70.5	51	64	85	60	73	95.5	67	82.5	105	82	98	127.5	92	110	141	
G	13	21	34	17.5	25	41.5	18	27	46.5	23.5	36.5	57.5	23	36	58.5	27	42.5	65	35	51	80.5	42	60	91	
H	8			8			9			10			12			12			13			13			
J	7			7			8			8			12			12			14			14			
KQ	4			6			7			9.5			13			16			20			23			
MQ (Nominal×Pitch×Depth) ^{※2}	M3×0.5×6			M3×0.5×8			M4×0.7×7			M5×0.8×10			M6×1×8			M6×1×11			M6×1×11			M8×1.25×13			
P	19			22			27			32			41			50			60			-			
R	7.4			7.7			10.7			12.3			17.3			22.2			27.1			32.1			
S1 ^{※2}	2			2			3.5			4.5			6			8			10			12			
S2 ^{※2}	1.5			2			2.5			0			0			0			0			0			
Hole for Spring Pin (Diameter × Depth) ^{※2}	φ2×4			φ2×4			φ2×4			φ2×4			φ3×6			φ3×6			φ3×6			φ4×8			
T	20.5			22.5			28.5			34.5			43.5			53			63			78			
U	(min.)	14	14	14	14	14	14	15	15	15	16	16	16	18	18	18	20	20	20	25	25	25	25	25	25
	(max.)	20	28	41	24	32	48	26	35	54	32	45	66	34	47	69	38	53	76	47	63	92	54	72	103
V	3			3			6			6			8			8			8			8			
W	3.5			5.5			6			8			10			13			19			25			
Chamfer	C1			C1			C1			C1			C1			C1.5			C1.5			C1.5			
O-ring	AS568-015(90°)			AS568-017(90°)			AS568-020(90°)			AS568-120(90°)			1BP31.5			1BP39			1BP50			AS568-230(90°)			

Note ※2. This dimension is for DP-Q. The DP-P type does not have a pin hole and screw hole of ※2 part.

Regarding the piston tip of DP0221-Q□, DP0241-Q□, DP0301-Q□, and DP0361-Q□, please mount the attachment (which has to be arranged by customer), so that foreign materials doesn't enter from the hole of MQ thread.

High-Power
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler
Hydraulic Unit

Manual Operation
Accessories

Cautions / Others

Hole Clamp

SFA
SFC

Swing Clamp

LHA
LHC
LHS
LHW
LT/LG
TLA-2
TLB-2
TLA-1

Link Clamp

LKA
LKC
LKW
LM/LJ
TMA-2
TMA-1

Work Support

LD
LC
TNC
TC

Air Sensing
Lift Cylinder

LLW

Compact Cylinder

LL
LLR
LLU
DP
DR
DS
DT

Block Cylinder

DBA
DBC

Control Valve

BZL
BZT
BZX/JZG

Pallet Clamp

VS
VT

Expansion
Locating Pin

VL
VM
VJ
VK

Pull Stud Clamp

FP
FQ

Customized
Spring Cylinder

DWA/DWB

Hydraulic Single Action Compact Cylinder

Model DR

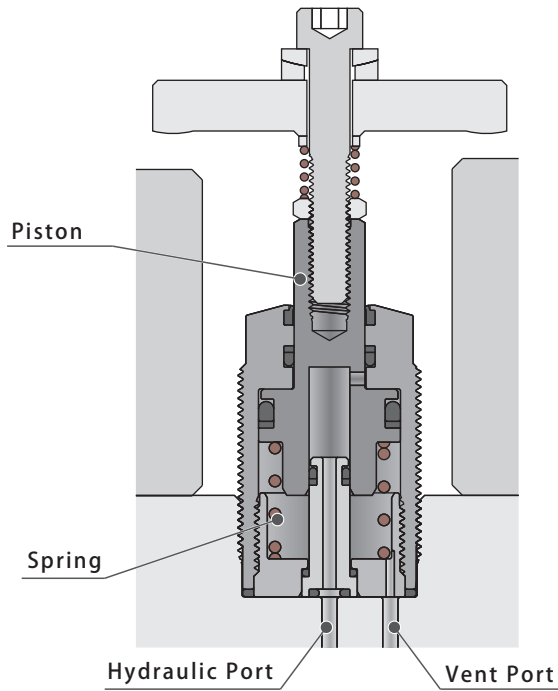
Low Pressure / High Pressure (1~25MPa)
Pull Cylinder (Threaded Body)



Index

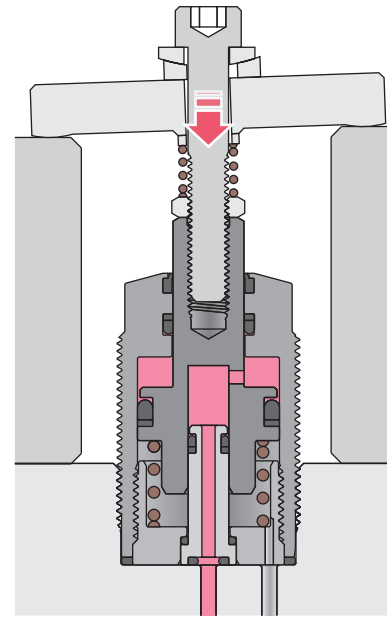
Hydraulic Compact Cylinder Digest	P.637
Action Description / Application Examples	P.694
Model No. Indication	P.695
Specifications	P.696
Performance Curve	P.696
External Dimensions	P.697
Accessories	
• Piping Block / Nut (Common Items of Other Models)	P.1029
Cautions	
• Notes for Hydraulic Compact Cylinder	P.715
• Cautions (Common)	P.1043
• Installation Notes • Hydraulic Fluid List • Notes on Hydraulic Cylinder Speed Control Circuit • Notes on Handling • Maintenance/Inspection • Warranty	

Action Description



When releasing (Initial position)

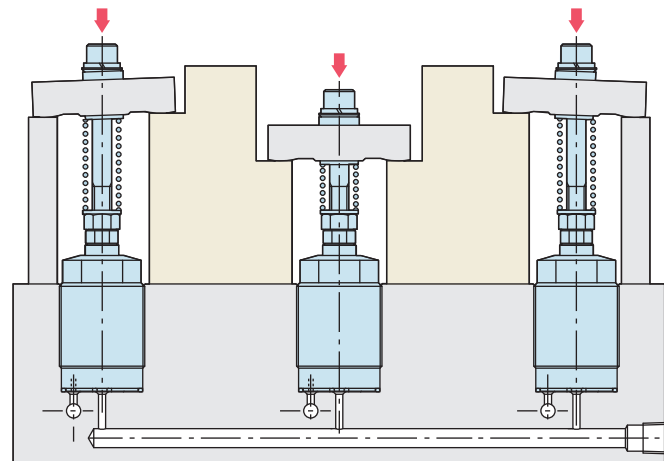
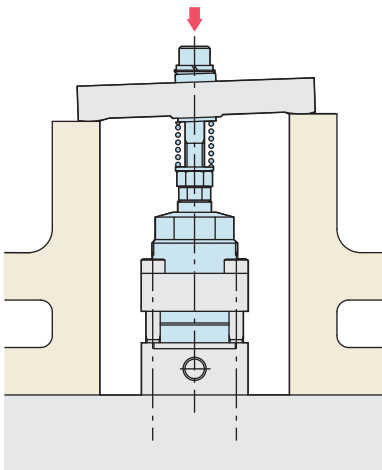
Piston moves to release position by spring force.
(Piston extended)



When locking

When hydraulic pressure is supplied, the piston is operated by the force of the hydraulic pressure.
(Piston retracted)

Application Examples



High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler
Hydraulic Unit

Manual Operation
Accessories

Cautions / Others

Hole Clamp

- SFA
- SFC

Swing Clamp

- LHA
- LHC
- LHS
- LHW
- LT/LG
- TLA-2
- TLB-2
- TLA-1

Link Clamp

- LKA
- LKC
- LKW
- LM/LJ
- TMA-2
- TMA-1

Work Support

- LD
- LC
- TNC
- TC

Air Sensing
Lift Cylinder

- LLW

Compact Cylinder

- LL
- LLR
- LLU
- DP
- DR**
- DS
- DT

Block Cylinder

- DBA
- DBC

Control Valve

- BZL
- BZT
- BZX/JZG

Pallet Clamp

- VS
- VT

Expansion
Locating Pin

- VL
- VM
- VJ
- VK

Pull Stud Clamp

- FP
- FQ

Customized
Spring Cylinder

- DWA/DWB

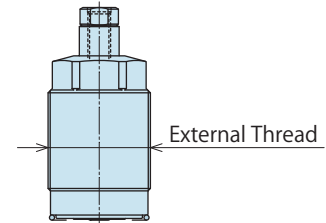
● Model No. Indication

DR **022** **1** - **M**

1
2
3

1 Body Size

022 : External Thread M22×1.5	045 : External Thread M45×1.5
024 : External Thread M24×1.5	055 : External Thread M55×2
030 : External Thread M30×1.5	065 : External Thread M65×2
036 : External Thread M36×1.5	080 : External Thread M80×2



2 Design No.

1 : Revision Number

3 Stroke Code

S : Short Stroke
M : Standard Stroke
L : Long Stroke

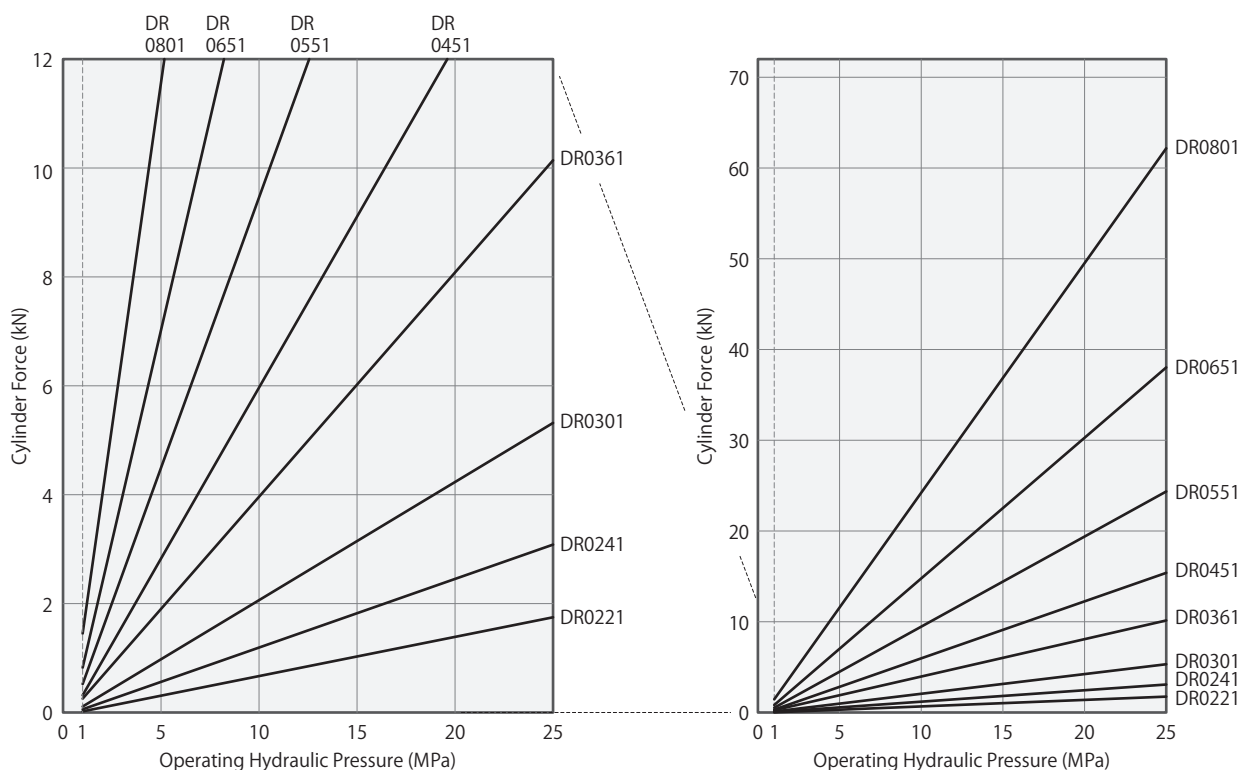
Specifications

Model No.	DR0221			DR0241			DR0301			DR0361			DR0451			DR0551			DR0651			DR0801																										
Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L																					
Stroke	mm			4	6	10	5	8	12	6	10	16	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25																					
Cylinder Force (Calculation Formula)	kN			F=(0.072×P)-0.051			F=(0.126×P)-0.067			F=(0.217×P)-0.108			F=(0.412×P)-0.175			F=(0.628×P)-0.313			F=(0.993×P)-0.471			F=(1.55×P)-0.726			F=(2.53×P)-1.08																							
Cylinder Area	cm ²			0.7			1.3			2.2			4.1			6.3			9.9			15.5			25.3																							
Cylinder Capacity	cm ³			0.3	0.4	0.7	0.6	1.0	1.5	1.3	2.2	3.5	2.5	4.1	6.6	5.0	7.5	12.6	7.9	11.9	19.9	15.5	24.9	38.9	25.3	40.5	63.3																					
Release Spring Force	N			30.2~50.8			38.8~67.2			56.5~108			92~175			141~313			213~471			327~726			513~1076																							
Max. Operating Pressure	MPa																								25																							
Min. Operating Pressure	MPa																								1.0																							
Withstanding Pressure	MPa																								37.5																							
Operating Temperature	°C																								0~70																							
Mass	kg			0.07	0.08	0.1	0.1	0.1	0.15	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.3	1.5	1.8	2.2	2.5	3.0																				

Note 1. Cylinder output F (kN) can be calculated by inputting hydraulic supply pressure P (MPa) in the formula above.

Performance Curve

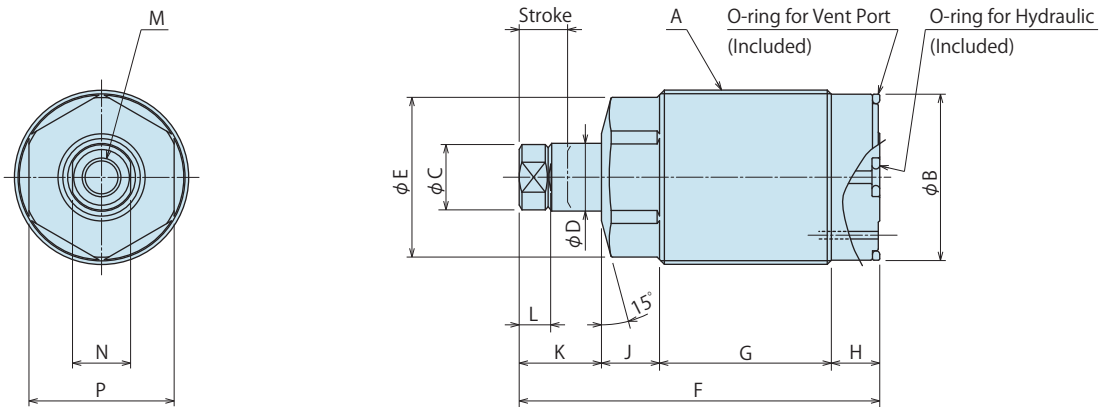
Model No.	Cylinder Force (kN)																								
	1MPa	2MPa	3MPa	4MPa	5MPa	6MPa	7MPa	8MPa	9MPa	10MPa	11MPa	12MPa	13MPa	14MPa	15MPa	16MPa	17MPa	18MPa	19MPa	20MPa	21MPa	22MPa	23MPa	24MPa	25MPa
DR0221	0.02	0.09	0.17	0.24	0.31	0.38	0.45	0.53	0.60	0.67	0.74	0.81	0.89	0.96	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.7	1.7
DR0241	0.06	0.19	0.31	0.44	0.56	0.69	0.82	0.94	1.1	1.2	1.3	1.4	1.6	1.7	1.8	1.9	2.1	2.2	2.3	2.5	2.6	2.7	2.8	3.0	3.1
DR0301	0.11	0.33	0.54	0.76	0.98	1.2	1.4	1.6	1.8	2.1	2.3	2.5	2.7	2.9	3.1	3.4	3.6	3.8	4.0	4.2	4.5	4.7	4.9	5.1	5.3
DR0361	0.24	0.65	1.1	1.5	1.9	2.3	2.7	3.1	3.5	3.9	4.4	4.8	5.2	5.6	6.0	6.4	6.8	7.2	7.6	8.1	8.5	8.9	9.3	9.7	10.1
DR0451	0.32	0.94	1.6	2.2	2.8	3.5	4.1	4.7	5.3	6.0	6.6	7.2	7.9	8.5	9.1	9.7	10.4	11.0	11.6	12.2	12.9	13.5	14.1	14.8	15.4
DR0551	0.52	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5	10.5	11.4	12.4	13.4	14.4	15.4	16.4	17.4	18.4	19.4	20.4	21.4	22.4	23.4	24.4
DR0651	0.82	2.4	3.9	5.5	7.0	8.6	10.1	11.7	13.2	14.8	16.3	17.9	19.4	21.0	22.5	24.1	25.6	27.2	28.7	30.3	31.8	33.4	34.9	36.5	38.0
DR0801	1.5	4.0	6.5	9.0	11.6	14.1	16.6	19.2	21.7	24.2	26.8	29.3	31.8	34.3	36.9	39.4	41.9	44.5	47.0	49.5	52.1	54.6	57.1	59.6	62.2



- High-Power Series
- Pneumatic Series
- Hydraulic Series**
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Hole Clamp
 - SFA
 - SFC
- Swing Clamp
 - LHA
 - LHC
 - LHS
 - LHW
 - LT/LG
 - TLA-2
 - TLB-2
 - TLA-1
- Link Clamp
 - LKA
 - LKC
 - LKW
 - LM/LJ
 - TMA-2
 - TMA-1
- Work Support
 - LD
 - LC
 - TNC
 - TC
- Air Sensing Lift Cylinder
 - LLW
- Compact Cylinder**
 - LL
 - LLR
 - LLU
 - DP
 - DR**
 - DS
 - DT
- Block Cylinder
 - DBA
 - DBC
- Control Valve
 - BZL
 - BZT
 - BZX/JZG
- Pallet Clamp
 - VS
 - VT
- Expansion Locating Pin
 - VL
 - VM
 - VJ
 - VK
- Pull Stud Clamp
 - FP
 - FQ
- Customized Spring Cylinder
 - DWA/DWB

External Dimensions

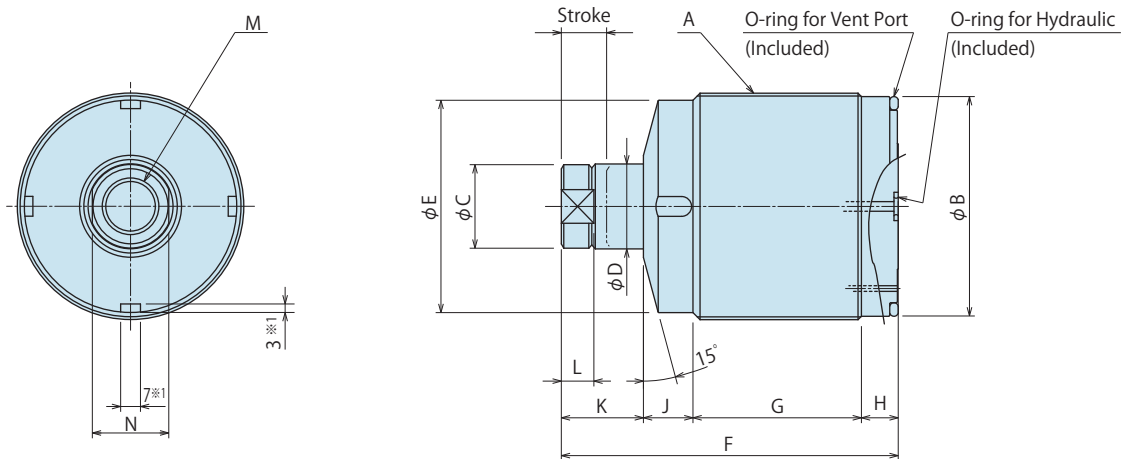
※The drawing below shows DR0221-□ / DR0241-□ / DR0301-□ / DR0361-□ / DR0451-□ / DR0551-□ / DR0651-□.



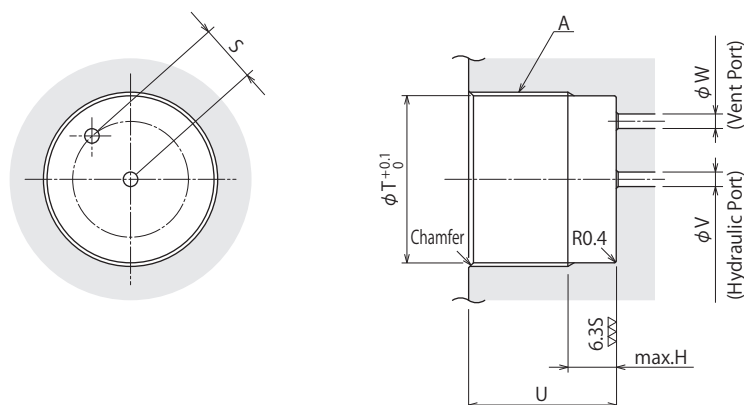
※The drawing below shows DR0801-□.

Note

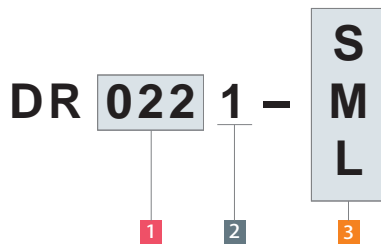
※1.Unlike other body size, a hook spanner is required. Prepare a hook spanner of the appropriate size.



Machining Dimensions of Mounting Area



Model No. Indication



(Format Example : DR0221-S, DR0361-M)

1 Body size**2** Design No.**3** Stroke Code

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	DR0221			DR0241			DR0301			DR0361			DR0451			DR0551			DR0651			DR0801		
	Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L		
Stroke	4	6	10	5	8	12	6	10	16	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25
A (Nominal × Pitch)	M22×1.5			M24×1.5			M30×1.5			M36×1.5			M45×1.5			M55×2			M65×2			M80×2		
B	20.3			22.3			28.3			34.3			43.3			52.6			62.6			77.6		
C	9.5			9.5			11.5			13.5			15.5			19.5			24.5			29.5		
D	10			10			12			14			16			20			25			30		
E	19			21.2			26.5			33			40			50			60			75		
F	48.5	53.5	65.5	51.5	59.5	71.5	59.5	71.5	88.5	63	74.5	91.5	72	83	103	79	91	112	93	109	135	103	119	145
G	23.5	26.5	34.5	25	30	38	28.5	36.5	47.5	28	35.5	46.5	33	40	52	33	41	54	42	52	69	49.5	59.5	76.5
H	8			8			9			10			12			12			13			13		
J	8			8.5			10			12			12			16			17			17.5		
K	9	11	15	10	13	17	12	16	22	13	17	23	15	19	27	18	22	30	21	27	36	23	29	38
L	4.5			4.5			5.5			6.5			6.5			8.5			10			11.5		
M (Nominal×Pitch×Depth)	M6×1×11			M6×1×11			M8×1.25×18			M8×1.25×18			M10×1.5×20			M12×1.75×22			M16×2×28			M20×2.5×31		
N	8			8			10			12			14			17			22			27		
P	17			19			24			30			36			46			55			-		
S	7			7~7.5			7~10.5			10.5~13.5			12.5~16			14.5~20			18.5~25.5			24.5~32		
T	20.5			22.5			28.5			34.5			43.5			53			63			78		
U	(min.)	14	14	14	14	14	15	15	15	16	16	16	18	18	18	20	20	20	25	25	25	25	25	25
	(max.)	31	34	42	32	37	45	37	45	56	37	45	56	44	51	63	44	52	65	54	64	81	62	72
V	3			3			3			3			5			5			5			5		
W	3			3			3			3			5			5			5			5		
Chamfer	C1			C1			C1			C1			C1			C1.5			C1.5			C1.5		
O-ring for Hydraulic	1BP5			1BP5			1BP5			1BP5			1BP7			1BP7			1BP7			1BP7		
O-ring for Vent Port	AS568-017(90°)			AS568-018(90°)			AS568-022(90°)			AS568-026(90°)			AS568-128(90°)			AS568-133(90°)			AS568-140(90°)			AS568-232(90°)		

Hydraulic Single Action Compact Cylinder

Model DS

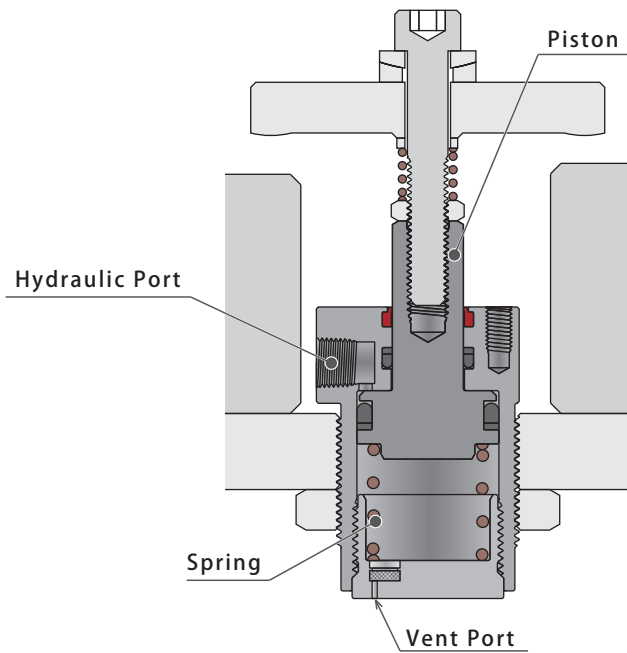
Low Pressure / High Pressure (1~25MPa)
Pull Cylinder (Threaded Body/Bottom Flange)



Index

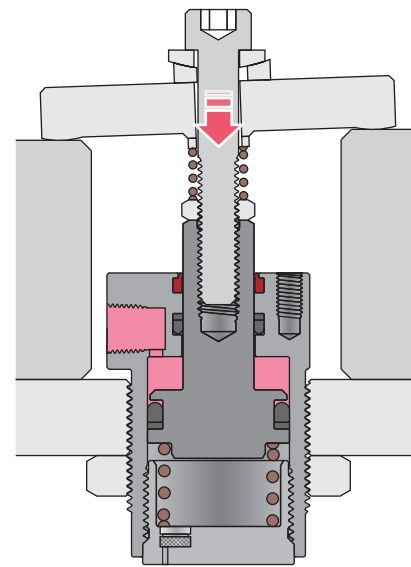
Hydraulic Compact Cylinder Digest	P.637
Action Description / Application Examples	P.700
Model No. Indication	P.701
Specifications	P.702
Performance Curve	P.702
External Dimensions	
• Piping Method : Gasket Option (DS-G)	P.703
• Piping Method : Piping Option (DS-S)	P.705
Accessories	
• Piping Block / Nut (Common Items of Other Models)	P.1029
Cautions	
• Notes for Hydraulic Compact Cylinder	P.715
• Cautions (Common)	P.1043
• Installation Notes • Hydraulic Fluid List • Notes on Hydraulic Cylinder Speed Control Circuit	
• Notes on Handling • Maintenance/Inspection • Warranty	

Action Description



When releasing (Initial position)

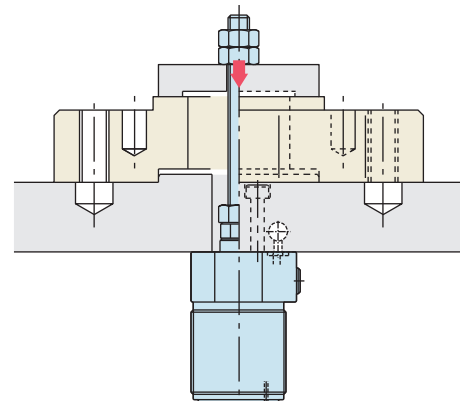
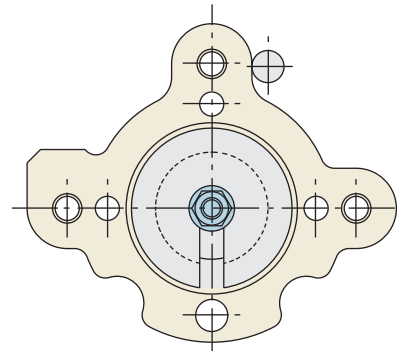
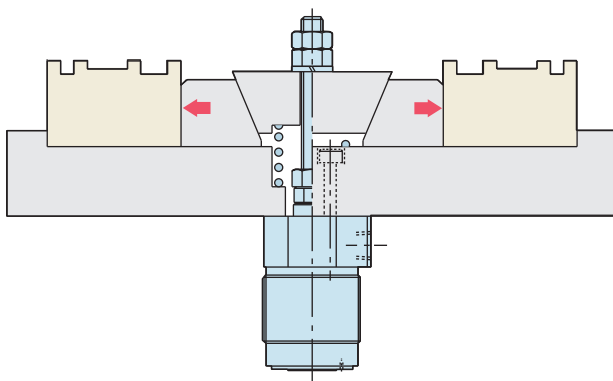
Piston moves to release position by spring force.
(Piston extended)



When locking

When hydraulic pressure is supplied, the piston is operated by the force of the hydraulic pressure.
(Piston retracted)

Application Examples



High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

Hole Clamp

- SFA
- SFC

Swing Clamp

- LHA
- LHC
- LHS
- LHW
- LT/LG
- TLA-2
- TLB-2
- TLA-1

Link Clamp

- LKA
- LKC
- LKW
- LM/LJ
- TMA-2
- TMA-1

Work Support

- LD
- LC
- TNC
- TC

Air Sensing Lift Cylinder

- LLW

Compact Cylinder

- LL
- LLR
- LLU
- DP
- DR
- DS**
- DT

Block Cylinder

- DBA
- DBC

Control Valve

- BZL
- BZT
- BZX/JZG

Pallet Clamp

- VS
- VT

Expansion Locating Pin

- VL
- VM
- VJ
- VK

Pull Stud Clamp

- FP
- FQ

Customized Spring Cylinder

- DWA/DWB

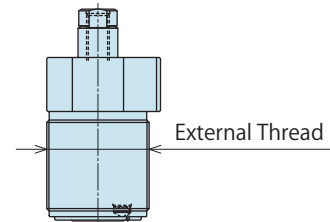
Model No. Indication

DS **022** **1** - **S** **M**

1
2
3
4

1 Body Size

022 : External Thread M22×1.5	045 : External Thread M45×1.5
024 : External Thread M24×1.5	055 : External Thread M55×2
030 : External Thread M30×1.5	065 : External Thread M65×2
036 : External Thread M36×1.5	080 : External Thread M80×2



2 Design No.

1 : Revision Number

3 Piping Method

G : Gasket Option (With R Thread Plug)
S : Piping Option (Rc Thread)



4 Stroke Code

S : Short Stroke
M : Standard Stroke
L : Long Stroke

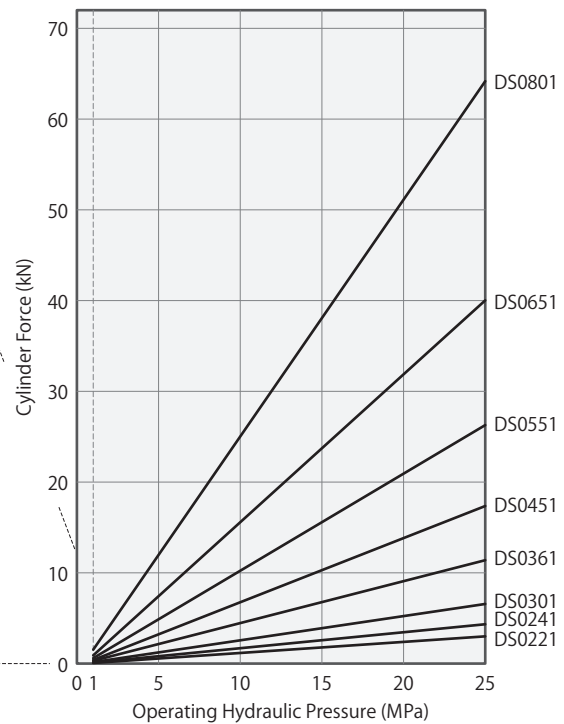
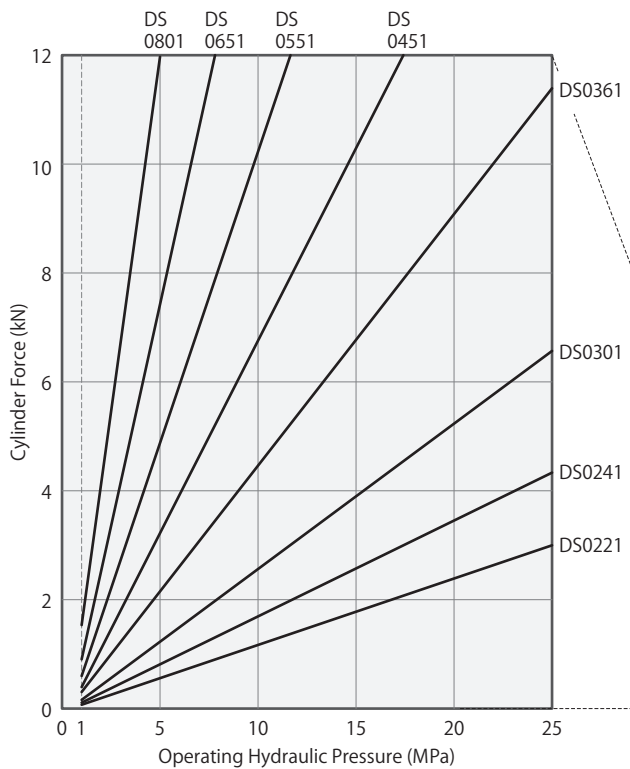
Specifications

Model No.	DS0221			DS0241			DS0301			DS0361			DS0451			DS0551			DS0651			DS0801							
Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L		
Stroke	mm			4	6	10	5	8	12	6	10	16	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25		
Cylinder Force (Calculation Formula)	kN			F=(0.122×P)-0.051			F=(0.176×P)-0.067			F=(0.267×P)-0.108			F=(0.462×P)-0.175			F=(0.707×P)-0.313			F=(1.07×P)-0.471			F=(1.63×P)-0.726			F=(2.61×P)-1.08				
Cylinder Area	cm ²			1.2			1.8			2.7			4.6			7.1			10.7			16.3			26.1				
Cylinder Capacity	cm ³			0.5	0.7	1.2	0.9	1.4	2.1	1.6	2.7	4.3	2.8	4.6	7.4	5.7	8.5	14.1	8.6	12.9	21.4	16.3	26.1	40.8	26.1	41.8	65.3		
Release Spring Force	N			30.2~50.8			38.8~67.2			56.5~108			92~175			141~313			213~471			327~726			513~1076				
Max. Operating Pressure	MPa																								25				
Min. Operating Pressure	MPa																								1.0				
Withstanding Pressure	MPa																								37.5				
Operating Temperature	°C																								0~70				
Mass	kg			0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.4	1.6	2.0	2.2	2.5	3.0

Note 1. Cylinder output F (kN) can be calculated by inputting hydraulic supply pressure P (MPa) in the formula above.

Performance Curve

Model No.	Cylinder Force (kN)																								
	1MPa	2MPa	3MPa	4MPa	5MPa	6MPa	7MPa	8MPa	9MPa	10MPa	11MPa	12MPa	13MPa	14MPa	15MPa	16MPa	17MPa	18MPa	19MPa	20MPa	21MPa	22MPa	23MPa	24MPa	25MPa
DS0221	0.07	0.19	0.32	0.44	0.56	0.68	0.80	0.93	1.0	1.2	1.3	1.4	1.5	1.7	1.8	1.9	2.0	2.1	2.3	2.4	2.5	2.6	2.8	2.9	3.0
DS0241	0.11	0.29	0.46	0.64	0.81	0.99	1.2	1.3	1.5	1.7	1.9	2.0	2.2	2.4	2.6	2.7	2.9	3.1	3.3	3.5	3.6	3.8	4.0	4.2	4.3
DS0301	0.16	0.43	0.69	0.96	1.2	1.5	1.8	2.0	2.3	2.6	2.8	3.1	3.4	3.6	3.9	4.2	4.4	4.7	5.0	5.2	5.5	5.8	6.0	6.3	6.6
DS0361	0.29	0.75	1.2	1.7	2.1	2.6	3.1	3.5	4.0	4.4	4.9	5.4	5.8	6.3	6.8	7.2	7.7	8.1	8.6	9.1	9.5	10.0	10.5	10.9	11.4
DS0451	0.39	1.1	1.8	2.5	3.2	3.9	4.6	5.3	6.1	6.8	7.5	8.2	8.9	9.6	10.3	11.0	11.7	12.4	13.1	13.8	14.5	15.2	15.9	16.7	17.4
DS0551	0.60	1.7	2.7	3.8	4.9	5.9	7.0	8.1	9.2	10.2	11.3	12.4	13.4	14.5	15.6	16.6	17.7	18.8	19.9	20.9	22.0	23.1	24.1	25.2	26.3
DS0651	0.90	2.5	4.2	5.8	7.4	9.1	10.7	12.3	13.9	15.6	17.2	18.8	20.5	22.1	23.7	25.4	27.0	28.6	30.2	31.9	33.5	35.1	36.8	38.4	40.0
DS0801	1.5	4.1	6.8	9.4	12.0	14.6	17.2	19.8	22.4	25.0	27.6	30.2	32.9	35.5	38.1	40.7	43.3	45.9	48.5	51.1	53.7	56.3	59.0	61.6	64.2



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

- Hole Clamp
 - SFA
 - SFC

- Swing Clamp
 - LHA
 - LHC
 - LHS
 - LHW
 - LT/LG
 - TLA-2
 - TLB-2
 - TLA-1

- Link Clamp
 - LKA
 - LKC
 - LKW
 - LM/LJ
 - TMA-2
 - TMA-1

- Work Support
 - LD
 - LC
 - TNC
 - TC

- Air Sensing Lift Cylinder
 - LLW

- Compact Cylinder**
 - LL
 - LLR
 - LLU
 - DP
 - DR
 - DS**
 - DT

- Block Cylinder
 - DBA
 - DBC

- Control Valve
 - BZL
 - BZT
 - BZX/JZG

- Pallet Clamp
 - VS
 - VT

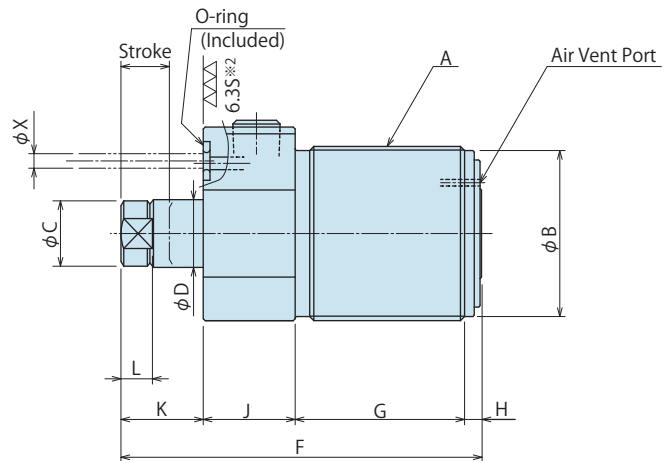
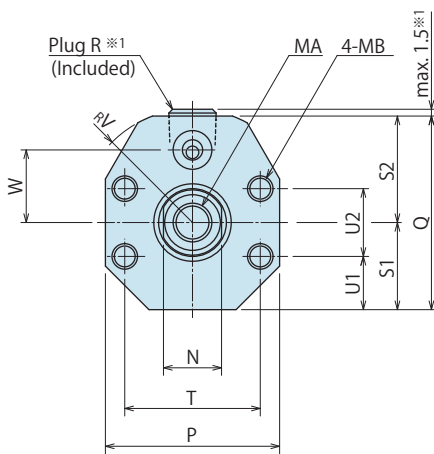
- Expansion Locating Pin
 - VL
 - VM
 - VJ
 - VK

- Pull Stud Clamp
 - FP
 - FQ

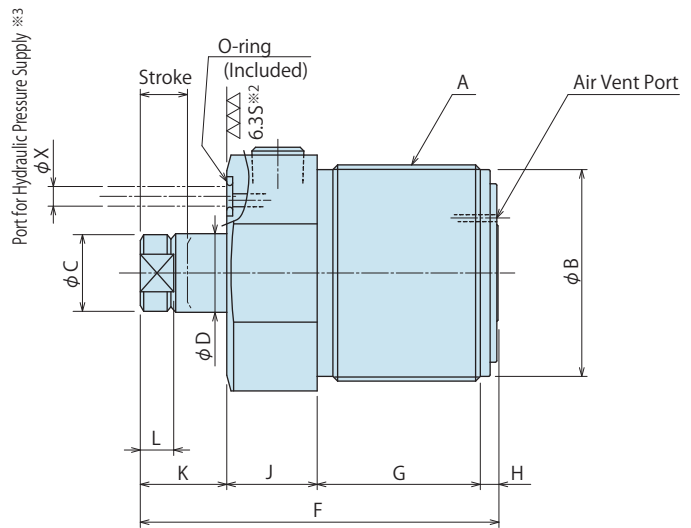
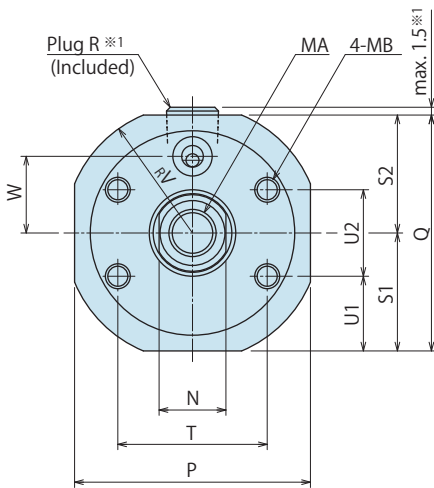
- Customized Spring Cylinder
 - DWA/DWB

External Dimensions

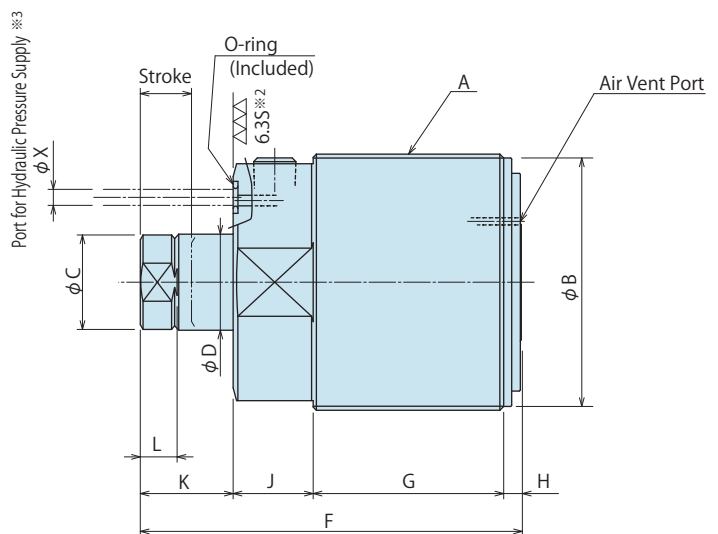
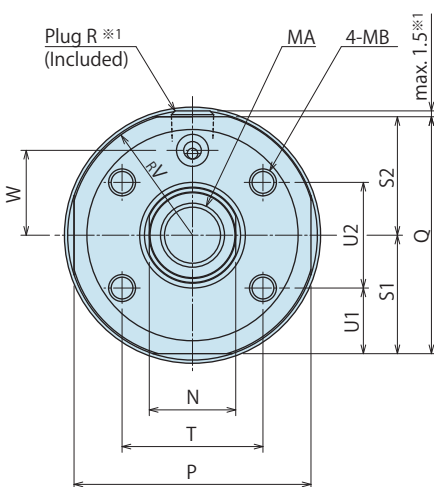
※The drawing below shows DS0221-G□ / DS0241-G□ / DS0301-G□ / DS0361-G□ / DS0451-G□.



※The drawing below shows DS0551-G□ / DS0651-G□.



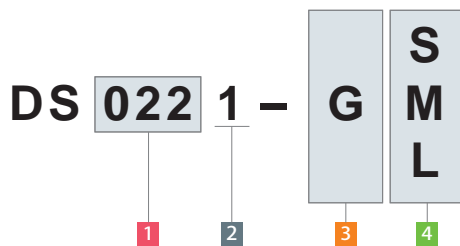
※The drawing below shows DS0801-G□.



Notes

- ※1. The R-thread plug is screwed in before shipping. There will be some variation in how far the plug protrudes.
- ※2. The part of the DS mounting surface that touches the O ring should have a roughness of $\sqrt{6.35}$.
- ※3. Shows the recommendation for the hole drilled by the customer for the supply of hydraulic pressure. Make sure there are no burrs around the connection and no cutting chips or other foreign material inside.

Model No. Indication



(Format Example : DS0221-GS, DS0361-GM)

- 1** Body Size
- 2** Design No.
- 3** Piping Method G : Gasket Option
- 4** Stroke Code

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	DS0221-G			DS0241-G			DS0301-G			DS0361-G			DS0451-G			DS0551-G			DS0651-G			DS0801-G		
	Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L		
Stroke	4	6	10	5	8	12	6	10	16	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25
A (Nominal × Pitch)	M22×1.5			M24×1.5			M30×1.5			M36×1.5			M45×1.5			M55×2			M65×2			M80×2		
B	20.3			22.3			28.3			34.3			43.3			52.6			62.6			77.6		
C	9.5			9.5			11.5			13.5			15.5			19.5			24.5			29.5		
D	10			10			12			14			16			20			25			30		
F	48.5	53.5	65.5	51.5	59.5	71.5	59.5	71.5	88.5	63	74.5	91.5	72	83	103	79	91	112	93	109	135	103	119	145
G	19	22	30	21	26	34	25	33	44	27.5	35	46	29.5	36.5	48.5	33.5	41.5	54.5	44.5	54.5	71.5	49.5	59.5	76.5
H	3.5			3.5			3.5			3.5			4.5			4.5			4.5			5.5		
J	17			17			19			19			23			23			23			25		
K	9	11	15	10	13	17	12	16	22	13	17	23	15	19	27	18	22	30	21	27	36	23	29	38
L	4.5			4.5			5.5			6.5			6.5			8.5			10			11.5		
MA (Nominal×Pitch×Depth)	M6×1×11			M6×1×11			M8×1.25×18			M8×1.25×18			M10×1.5×20			M12×1.75×22			M16×2×30			M20×2.5×31		
MB (Nominal×Pitch×Depth) ^{※4}	M4×0.7×7			M4×0.7×7			M5×0.8×8			M5×0.8×8			M6×1×11			M6×1×11			M8×1.25×13			M8×1.25×13		
N	8			8			10			12			14			17			22			27		
P	22			24			30			36			45			60			67			74		
Q	31			32			37			40			50			60			67			74		
R	R1/8			R1/8			R1/8			R1/8			R1/4			R1/4			R1/4			R1/4		
S1	11			12			15			18			22.5			30			33.5			37		
S2	20			20			22			22			27.5			30			33.5			37		
T	16			18			22			28			36			38			42			44		
U1	5			6			8			11			13.5			19			20.5			20.5		
U2	12			12			14			14			18			22			26			33		
V	21.5			21.5			23.4			23.5			29.5			32.5			36.5			38.5		
W	13			13			15			15			17.5			19.5			23			26.5		
X	3			3			3			3			5			5			5			5		
O-ring	1BP5			1BP5			1BP5			1BP5			1BP7			1BP7			1BP7			1BP7		

Note ※ 4. Mounting bolts are not provided. Order bolts of the appropriate length.

High-Power
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler
Hydraulic Unit

Manual Operation
Accessories

Cautions / Others

Hole Clamp

SFA
SFC

Swing Clamp

LHA
LHC
LHS
LHW
LT/LG
TLA-2
TLB-2
TLA-1

Link Clamp

LKA
LKC
LKW
LM/LJ
TMA-2
TMA-1

Work Support

LD
LC
TNC
TC

Air Sensing
Lift Cylinder

LLW

Compact Cylinder

LL
LLR
LLU
DP
DR
DS
DT

Block Cylinder

DBA
DBC

Control Valve

BZL
BZT
BZX/JZG

Pallet Clamp

VS
VT

Expansion
Locating Pin

VL
VM
VJ
VK

Pull Stud Clamp

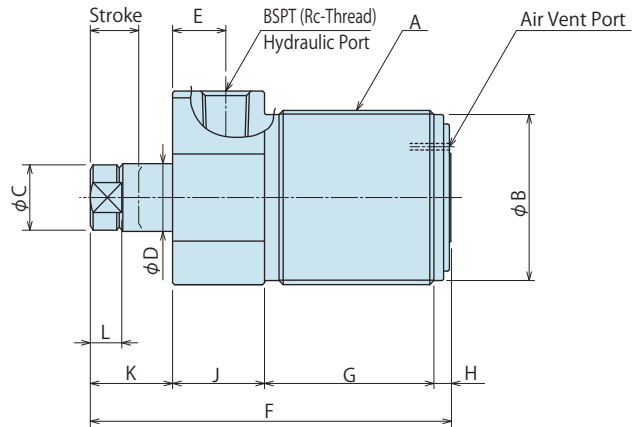
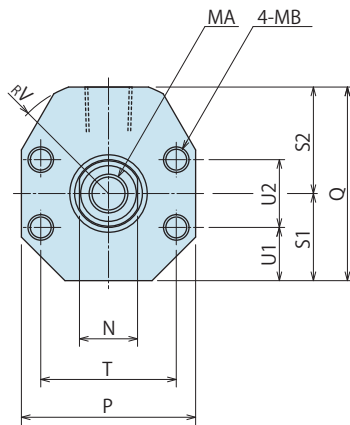
FP
FQ

Customized
Spring Cylinder

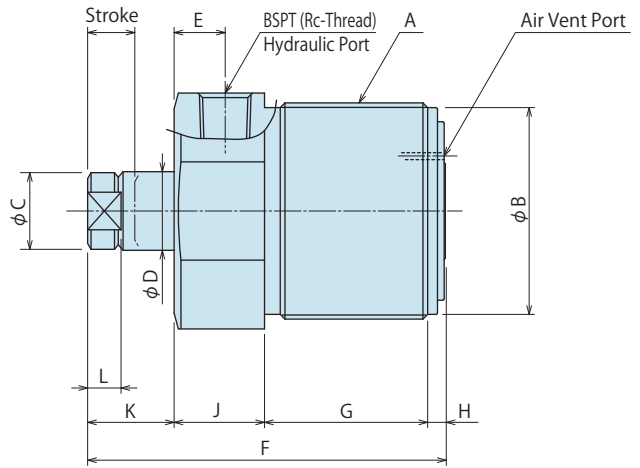
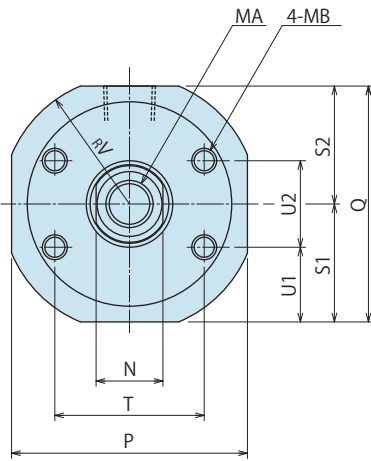
DWA/DWB

External Dimensions

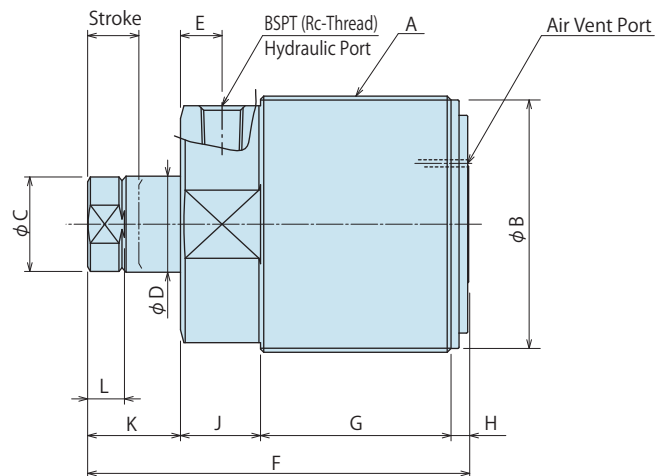
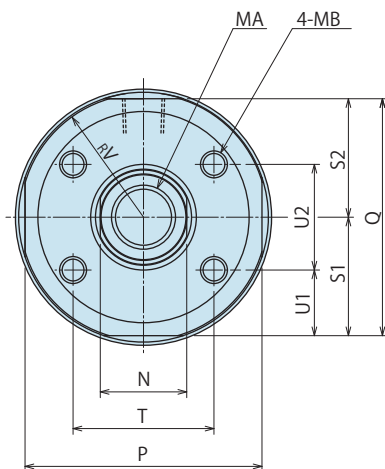
※The drawing below shows DS0221-S□ / DS0241-S□ / DS0301-S□ / DS0361-S□ / DS0451-S□.



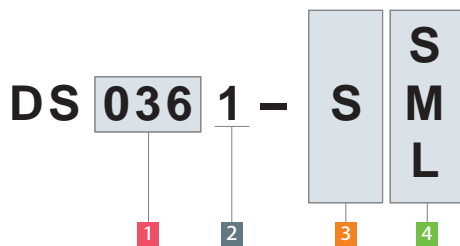
※The drawing below shows DS0551-S□ / DS0651-S□.



※The drawing below shows DS0801-S□.



Model No. Indication



(Format Example : DS0361-SS、DS0801-SM)

- 1** Body Size
- 2** Design No.
- 3** Piping Method S : Piping Option
- 4** Stroke Code

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	DS0221-S			DS0241-S			DS0301-S			DS0361-S			DS0451-S			DS0551-S			DS0651-S			DS0801-S		
	Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L		
Stroke	4	6	10	5	8	12	6	10	16	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25
A (Nominal × Pitch)	M22×1.5			M24×1.5			M30×1.5			M36×1.5			M45×1.5			M55×2			M65×2			M80×2		
B	20.3			22.3			28.3			34.3			43.3			52.6			62.6			77.6		
C	9.5			9.5			11.5			13.5			15.5			19.5			24.5			29.5		
D	10			10			12			14			16			20			25			30		
E	9			9			11			11			13			13			13			13		
F	48.5	53.5	65.5	51.5	59.5	71.5	59.5	71.5	88.5	63	74.5	91.5	72	83	103	79	91	112	93	109	135	103	119	145
G	19	22	30	21	26	34	25	33	44	27.5	35	46	29.5	36.5	48.5	33.5	41.5	54.5	44.5	54.5	71.5	49.5	59.5	76.5
H	3.5			3.5			3.5			3.5			4.5			4.5			4.5			5.5		
J	17			17			19			19			23			23			23			25		
K	9	11	15	10	13	17	12	16	22	13	17	23	15	19	27	18	22	30	21	27	36	23	29	38
L	4.5			4.5			5.5			6.5			6.5			8.5			10			11.5		
MA (Nominal×Pitch×Depth)	M6×1×11			M6×1×11			M8×1.25×18			M8×1.25×18			M10×1.5×20			M12×1.75×22			M16×2×30			M20×2.5×31		
MB (Nominal×Pitch×Depth) ^{※1}	M4×0.7×7			M4×0.7×7			M5×0.8×8			M5×0.8×8			M6×1×11			M6×1×11			M8×1.25×13			M8×1.25×13		
N	8			8			10			12			14			17			22			27		
P	22			24			30			36			45			60			67			74		
Q	31			32			37			40			50			60			67			74		
Rc	Rc1/8			Rc1/8			Rc1/8			Rc1/8			Rc1/4			Rc1/4			Rc1/4			Rc1/4		
S1	11			12			15			18			22.5			30			33.5			37		
S2	20			20			22			22			27.5			30			33.5			37		
T	16			18			22			28			36			38			42			44		
U1	5			6			8			11			13.5			19			20.5			20.5		
U2	12			12			14			14			18			22			26			33		
V	21.5			21.5			23.4			23.5			29.5			32.5			36.5			38.5		

Note ※ 1. Mounting bolts are not provided. Order bolts of the appropriate length.

High-Power
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler
Hydraulic Unit

Manual Operation
Accessories

Cautions / Others

Hole Clamp

SFA
SFC

Swing Clamp

LHA
LHC
LHS
LHW
LT/LG
TLA-2
TLB-2
TLA-1

Link Clamp

LKA
LKC
LKW
LM/LJ
TMA-2
TMA-1

Work Support

LD
LC
TNC
TC

Air Sensing
Lift Cylinder

LLW

Compact Cylinder

LL
LLR
LLU
DP
DR
DS
DT

Block Cylinder

DBA
DBC

Control Valve

BZL
BZT
BZX/JZG

Pallet Clamp

VS
VT

Expansion
Locating Pin

VL
VM
VJ
VK

Pull Stud Clamp

FP
FQ

Customized
Spring Cylinder

DWA/DWB

Hydraulic Single Action Compact Cylinder

Model DT

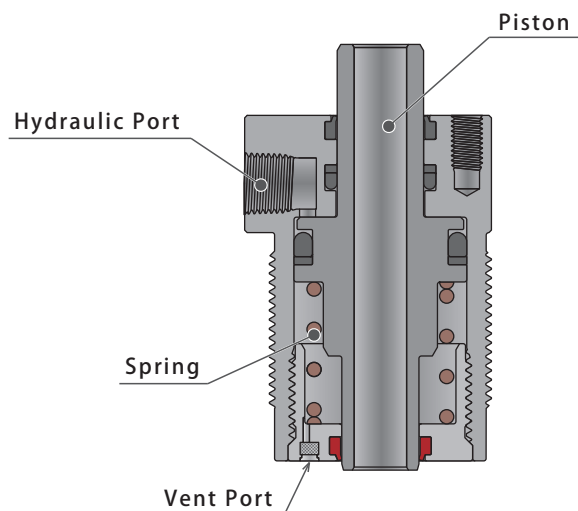
Low Pressure / High Pressure (1~25MPa)
Hollow Cylinder (Threaded Body / Bottom Flange)



Index

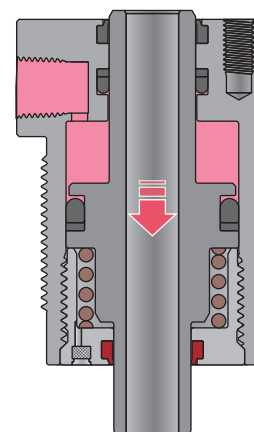
Hydraulic Compact Cylinder Digest	P.637
Action Description / Application Examples	P.708
Model No. Indication	P.709
Specifications	P.710
Performance Curve	P.710
External Dimensions	
• Piping Method : Gasket Option (DT-G)	P.711
• Piping Method : Piping Option (DT-S)	P.713
Accessories	
• Nut (Common Items of Other Models)	P.1029
Cautions	
• Notes for Hydraulic Compact Cylinder	P.715
• Cautions (Common)	P.1043
• Installation Notes • Hydraulic Fluid List • Notes on Hydraulic Cylinder Speed Control Circuit	
• Notes on Handling • Maintenance/Inspection • Warranty	

● Action Description



When releasing (Initial position)

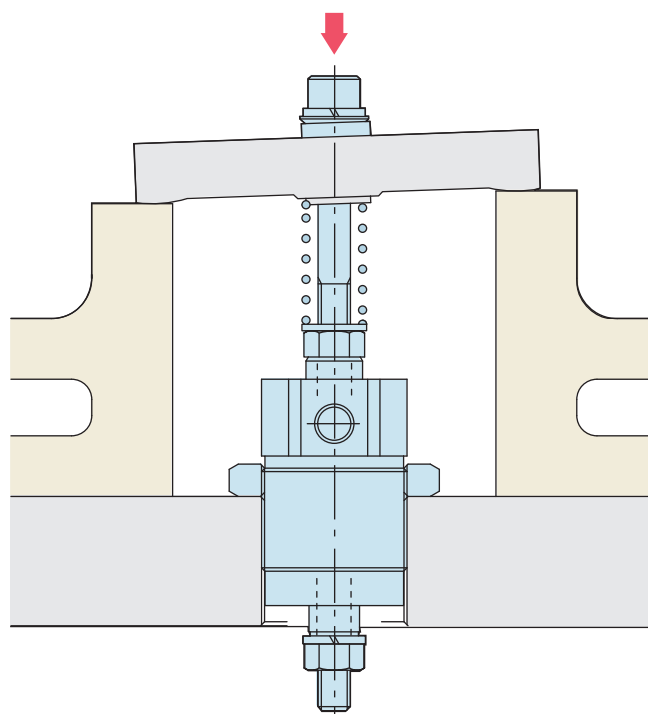
Piston moves to release position by spring force.



When locking

When hydraulic pressure is supplied, the piston is operated by the force of the hydraulic pressure.

● Application Examples



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

Hole Clamp
SFA
SFC

Swing Clamp
LHA
LHC
LHS
LHW
LT/LG
TLA-2
TLB-2
TLA-1

Link Clamp
LKA
LKC
LKW
LM/LJ
TMA-2
TMA-1

Work Support
LD
LC
TNC
TC

Air Sensing Lift Cylinder
LLW

Compact Cylinder
LL
LLR
LLU
DP
DR
DS
DT

Block Cylinder
DBA
DBC

Control Valve
BZL
BZT
BZX/JZG

Pallet Clamp
VS
VT

Expansion Locating Pin
VL
VM
VJ
VK

Pull Stud Clamp
FP
FQ

Customized Spring Cylinder
DWA/DWB

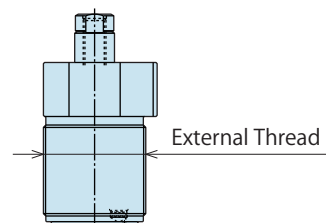
Model No. Indication

DT **036** **1** - **S** **M**

1 2 3 4

1 Body Size

- 036** : External Thread M36×1.5
- 045** : External Thread M45×1.5
- 055** : External Thread M55×2
- 065** : External Thread M65×2
- 080** : External Thread M80×2



2 Design No.

- 1** : Revision Number

3 Piping Method

- G** : Gasket Option (With R Thread Plug)
- S** : Piping Option (Rc Thread)



4 Stroke Code

- S** : Short Stroke
- M** : Standard Stroke
- L** : Long Stroke

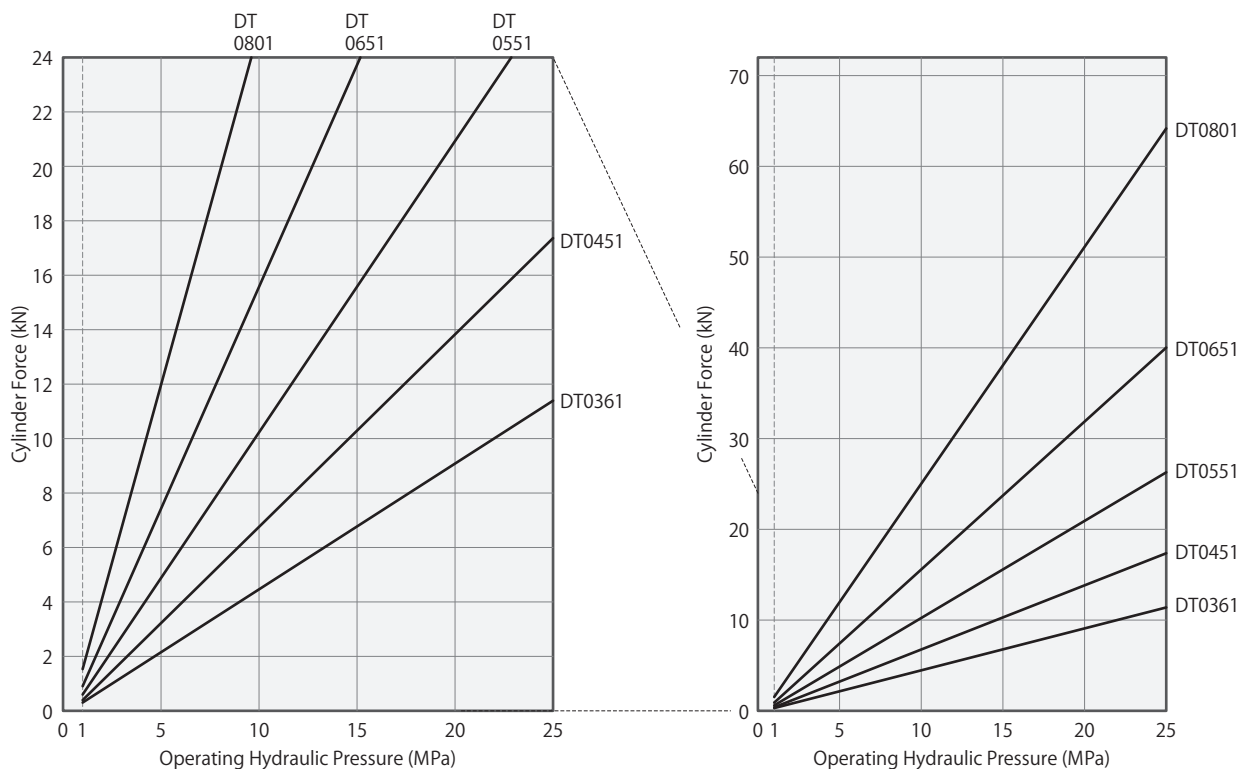
Specifications

Model No.	DT0361			DT0451			DT0551			DT0651			DT0801		
Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L
Stroke	mm			mm			mm			mm			mm		
Stroke	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25
Cylinder Force (Calculation Formula)	kN			kN			kN			kN			kN		
Cylinder Force (Calculation Formula)	F=(0.462×P)-0.175			F=(0.707×P)-0.313			F=(1.07×P)-0.471			F=(1.63×P)-0.726			F=(2.61×P)-1.08		
Cylinder Area	cm ²			cm ²			cm ²			cm ²			cm ²		
Cylinder Area	4.6			7.1			10.7			16.3			26.1		
Cylinder Capacity	cm ³			cm ³			cm ³			cm ³			cm ³		
Cylinder Capacity	2.8	4.6	7.4	5.7	8.5	14.1	8.6	12.9	21.4	16.3	26.1	40.8	26.1	41.8	65.3
Release Spring Force	N			N			N			N			N		
Release Spring Force	92~175			141~313			213~471			327~726			513~1076		
Max. Operating Pressure	MPa														
Max. Operating Pressure	25														
Min. Operating Pressure	MPa														
Min. Operating Pressure	1.0														
Withstanding Pressure	MPa														
Withstanding Pressure	37.5														
Operating Temperature	°C														
Operating Temperature	0~70														
Mass	kg			kg			kg			kg			kg		
Mass	0.3	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.3	1.5	1.8	2.0	2.2	2.7

Note 1. Cylinder output F (kN) can be calculated by inputting hydraulic supply pressure P (MPa) in the formula above.

Performance Curve

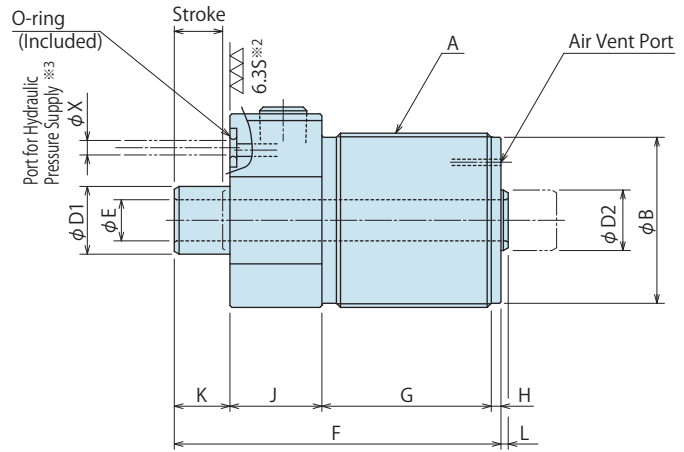
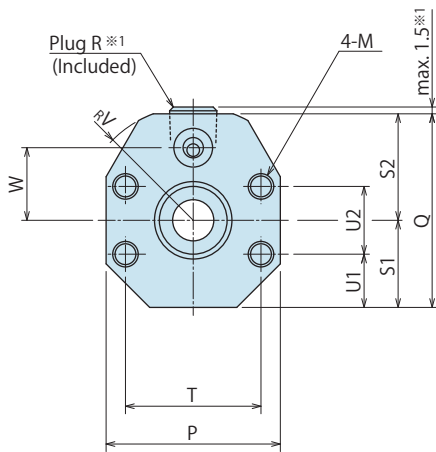
Model No.	Cylinder Force (kN)																								
	1MPa	2MPa	3MPa	4MPa	5MPa	6MPa	7MPa	8MPa	9MPa	10MPa	11MPa	12MPa	13MPa	14MPa	15MPa	16MPa	17MPa	18MPa	19MPa	20MPa	21MPa	22MPa	23MPa	24MPa	25MPa
DT0361	0.29	0.75	1.2	1.7	2.1	2.6	3.1	3.5	4.0	4.4	4.9	5.4	5.8	6.3	6.8	7.2	7.7	8.1	8.6	9.1	9.5	10.0	10.5	10.9	11.4
DT0451	0.39	1.1	1.8	2.5	3.2	3.9	4.6	5.3	6.1	6.8	7.5	8.2	8.9	9.6	10.3	11.0	11.7	12.4	13.1	13.8	14.5	15.2	15.9	16.7	17.4
DT0551	0.60	1.7	2.7	3.8	4.9	5.9	7.0	8.1	9.2	10.2	11.3	12.4	13.4	14.5	15.6	16.6	17.7	18.8	19.9	20.9	22.0	23.1	24.1	25.2	26.3
DT0651	0.90	2.5	4.2	5.8	7.4	9.1	10.7	12.3	13.9	15.6	17.2	18.8	20.5	22.1	23.7	25.4	27.0	28.6	30.2	31.9	33.5	35.1	36.8	38.4	40.0
DT0801	1.5	4.1	6.8	9.4	12.0	14.6	17.2	19.8	22.4	25.0	27.6	30.2	32.9	35.5	38.1	40.7	43.3	45.9	48.5	51.1	53.7	56.3	59.0	61.6	64.2



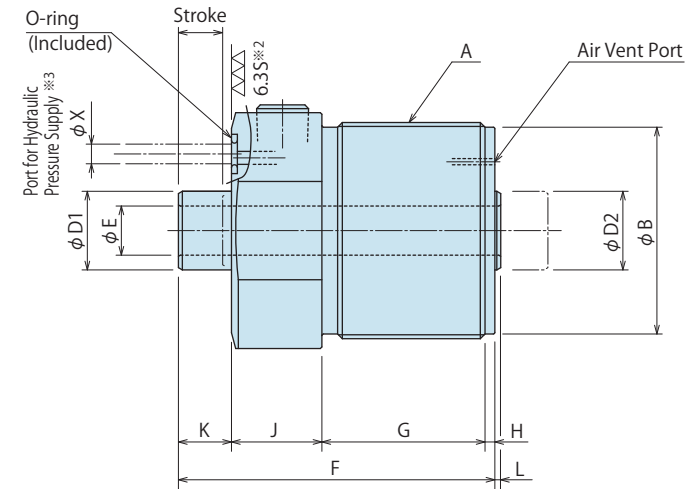
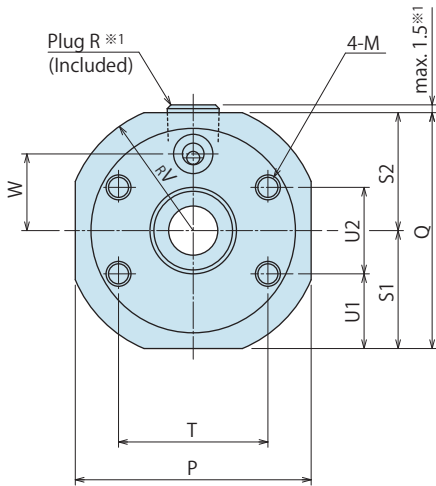
- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Hole Clamp
 - SFA
 - SFC
- Swing Clamp
 - LHA
 - LHC
 - LHS
 - LHW
 - LT/LG
 - TLA-2
 - TLB-2
 - TLA-1
- Link Clamp
 - LKA
 - LKC
 - LKW
 - LM/LJ
 - TMA-2
 - TMA-1
- Work Support
 - LD
 - LC
 - TNC
 - TC
- Air Sensing Lift Cylinder
 - LLW
- Compact Cylinder
 - LL
 - LLR
 - LLU
 - DP
 - DR
 - DS
 - DT**
- Block Cylinder
 - DBA
 - DBC
- Control Valve
 - BZL
 - BZT
 - BZX/JZG
- Pallet Clamp
 - VS
 - VT
- Expansion Locating Pin
 - VL
 - VM
 - VJ
 - VK
- Pull Stud Clamp
 - FP
 - FQ
- Customized Spring Cylinder
 - DWA/DWB

External Dimensions

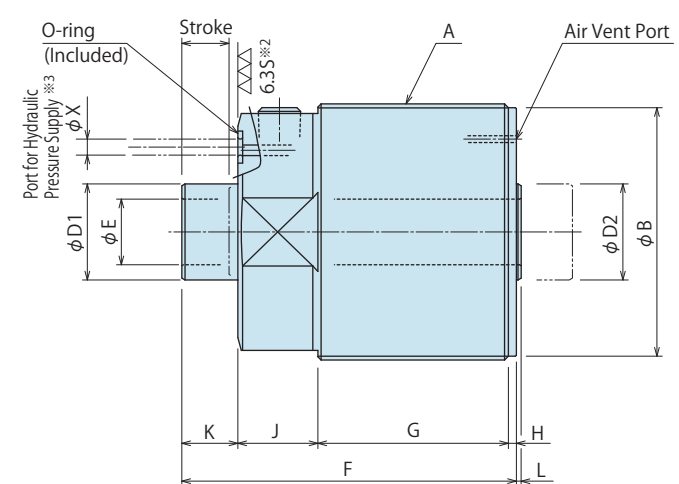
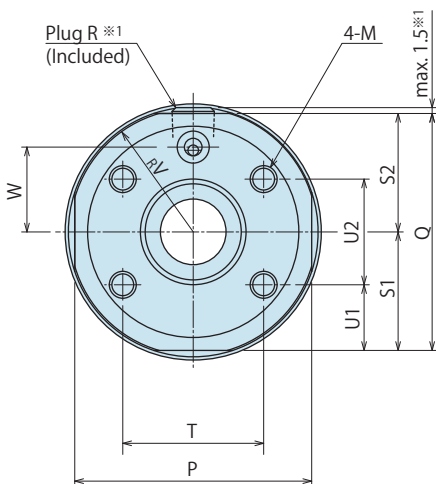
※The drawing below shows DT0361-G□ / DT0451-G□.



※The drawing below shows DT0551-G□ / DT0651-G□.



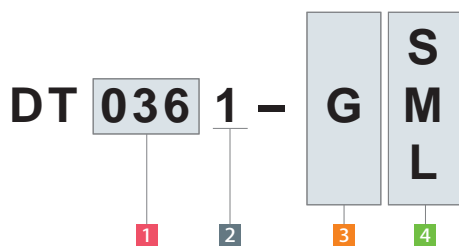
※The drawing below shows DT0801-G□.



Notes

- ※1. The R-thread plug is screwed in before shipping. There will be some variation in how far the plug protrudes.
- ※2. The part of the DT mounting surface that touches the O ring should have a roughness of 6.35.
- ※3. Shows the recommendation for the hole drilled by the customer for the supply of hydraulic pressure. Make sure there are no burrs around the connection and no cutting chips or other foreign material inside.

Model No. Indication



(Format Example : DT0361-GS, DT0801-GM)

- 1** Body Size
- 2** Design No.
- 3** Piping Method G: Gasket Option
- 4** Stroke Code

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	DT0361-G			DT0451-G			DT0551-G			DT0651-G			DT0801-G		
Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L
Stroke	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25
A (Nominal × Pitch)	M36×1.5			M45×1.5			M55×2			M65×2			M80×2		
B	34.3			43.3			52.6			62.6			77.6		
D1	14			16			20			25			30		
D2	12.5			16			20			25			30		
E	8.5			10.5			12.5			16.5			20.5		
F	56	67.5	84.5	64.5	75.5	95.5	68.5	80.5	101.5	81.5	97.5	123.5	88.5	104.5	130.5
G	27.5	35	46	29.5	36.5	48.5	33.5	41.5	54.5	44.5	54.5	71.5	49.5	59.5	76.5
H	2			2.5			2.5			2.5			2.5		
J	19			23			23			23			25		
K	7.5	11.5	17.5	9.5	13.5	21.5	9.5	13.5	21.5	11.5	17.5	26.5	11.5	17.5	26.5
L	1.5			1.5			1.5			1.5			1.5		
M (Nominal×Pitch×Depth) ^{※4}	M5×0.8×8			M6×1×11			M6×1×11			M8×1.25×13			M8×1.25×13		
P	36			45			60			67			74		
Q	40			50			60			67			74		
R	R1/8			R1/4			R1/4			R1/4			R1/4		
S1	18			22.5			30			33.5			37		
S2	22			27.5			30			33.5			37		
T	28			36			38			42			44		
U1	11			13.5			19			20.5			20.5		
U2	14			18			22			26			33		
V	23.5			29.5			32.5			36.5			38.5		
W	15			17.5			19.5			23			26.5		
X	3			5			5			5			5		
O-ring	1BP5			1BP7			1BP7			1BP7			1BP7		

Note ※ 4. Mounting bolts are not provided. Order bolts of the appropriate length.

High-Power
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler
Hydraulic Unit

Manual Operation
Accessories

Cautions / Others

Hole Clamp

SFA
SFC

Swing Clamp

LHA
LHC
LHS
LHW
LT/LG
TLA-2
TLB-2
TLA-1

Link Clamp

LKA
LKC
LKW
LM/LJ
TMA-2
TMA-1

Work Support

LD
LC
TNC
TC

Air Sensing
Lift Cylinder

LLW

Compact Cylinder

LL
LLR
LLU
DP
DR
DS
DT

Block Cylinder

DBA
DBC

Control Valve

BZL
BZT
BZX/JZG

Pallet Clamp

VS
VT

Expansion
Locating Pin

VL
VM
VJ
VK

Pull Stud Clamp

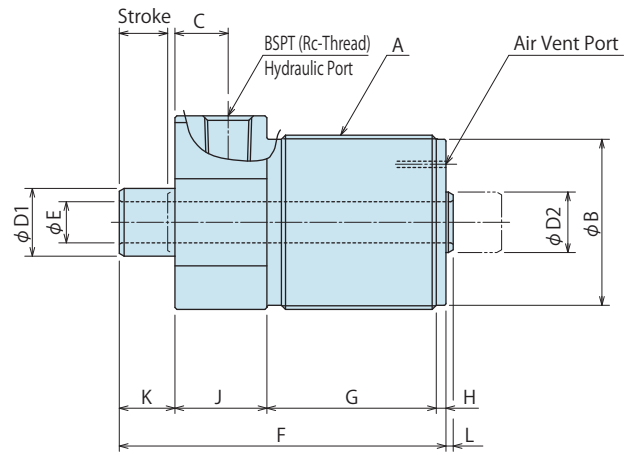
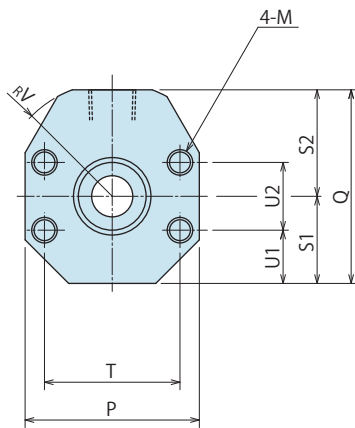
FP
FQ

Customized
Spring Cylinder

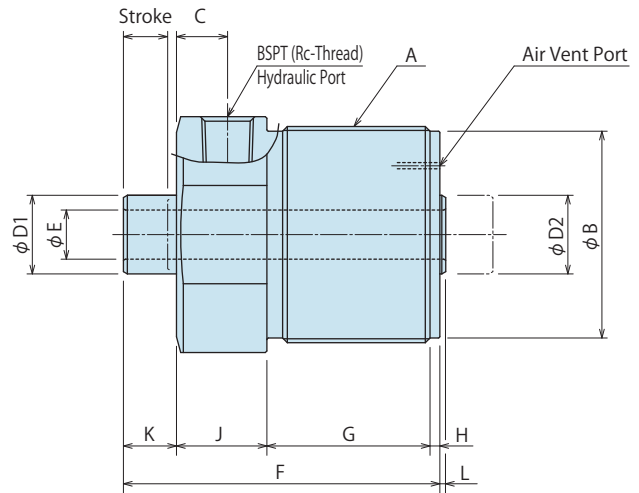
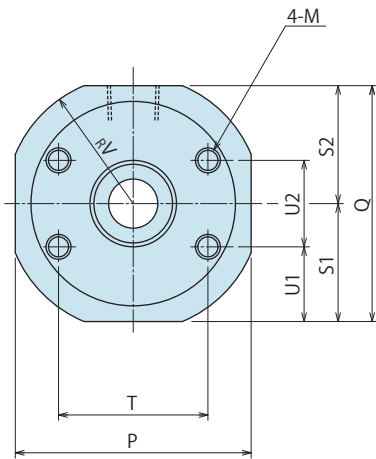
DWA/DWB

External Dimensions

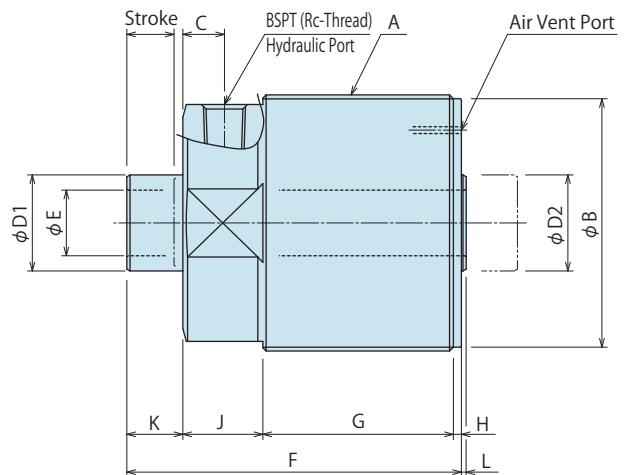
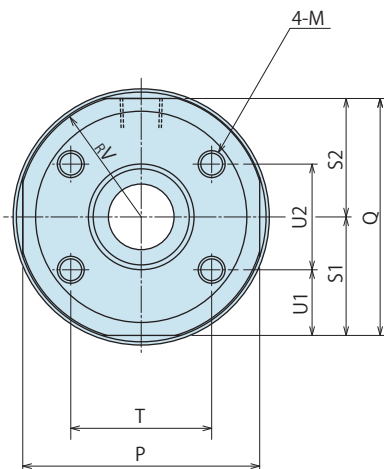
※The drawing below shows DT0361-S□ / DT0451-S□.



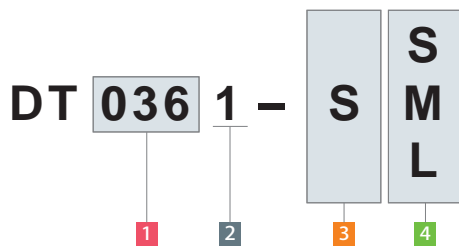
※The drawing below shows DT0551-S□ / DT0651-S□.



※The drawing below shows DT0801-S□.



Model No. Indication



(Format Example : DT0361-SS、DT0801-SM)

- 1 Body Size
- 2 Design No.
- 3 Piping Method S : Piping Option
- 4 Stroke Code

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	DT0361-S			DT0451-S			DT0551-S			DT0651-S			DT0801-S		
Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L
Stroke	6	10	16	8	12	20	8	12	20	10	16	25	10	16	25
A (Nominal × Pitch)	M36×1.5			M45×1.5			M55×2			M65×2			M80×2		
B	34.3			43.3			52.6			62.6			77.6		
C	11			13			13			13			13		
D1	14			16			20			25			30		
D2	12.5			16			20			25			30		
E	8.5			10.5			12.5			16.5			20.5		
F	56	67.5	84.5	64.5	75.5	95.5	68.5	80.5	101.5	81.5	97.5	123.5	88.5	104.5	130.5
G	27.5	35	46	29.5	36.5	48.5	33.5	41.5	54.5	44.5	54.5	71.5	49.5	59.5	76.5
H	2			2.5			2.5			2.5			2.5		
J	19			23			23			23			25		
K	7.5	11.5	17.5	9.5	13.5	21.5	9.5	13.5	21.5	11.5	17.5	26.5	11.5	17.5	26.5
L	1.5			1.5			1.5			1.5			1.5		
M (Nominal×Pitch×Depth) ^{※1}	M5×0.8×8			M6×1×11			M6×1×11			M8×1.25×13			M8×1.25×13		
P	36			45			60			67			74		
Q	40			50			60			67			74		
Rc	Rc1/8			Rc1/4			Rc1/4			Rc1/4			Rc1/4		
S1	18			22.5			30			33.5			37		
S2	22			27.5			30			33.5			37		
T	28			36			38			42			44		
U1	11			13.5			19			20.5			20.5		
U2	14			18			22			26			33		
V	23.5			29.5			32.5			36.5			38.5		

Note ※ 1. Mounting bolts are not provided. Order bolts of the appropriate length.

High-Power
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler
Hydraulic Unit

Manual Operation
Accessories

Cautions / Others

Hole Clamp

SFA
SFC

Swing Clamp

LHA
LHC
LHS
LHW
LT/LG
TLA-2
TLB-2
TLA-1

Link Clamp

LKA
LKC
LKW
LM/LJ
TMA-2
TMA-1

Work Support

LD
LC
TNC
TC

Air Sensing
Lift Cylinder

LLW

Compact Cylinder

LL
LLR
LLU
DP
DR
DS
DT

Block Cylinder

DBA
DBC

Control Valve

BZL
BZT
BZX/JZG

Pallet Clamp

VS
VT

Expansion
Locating Pin

VL
VM
VJ
VK

Pull Stud Clamp

FP
FQ

Customized
Spring Cylinder

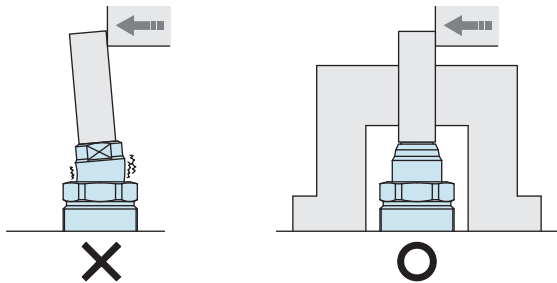
DWA/DWB

Cautions

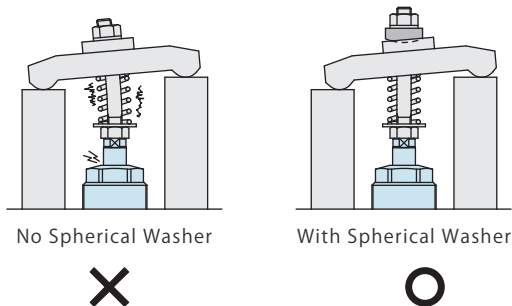
● Notes for Design LL/LLR/LLU/DP/DR/DS/DT common

- 1) Check Specifications
 - Please use each product according to the specifications.
- 2) Notes for Circuit Design
 - Please read "Notes on Hydraulic Cylinder Speed Control Circuit" on P.1044 to assist with proper hydraulic circuit designing.
 - Ensure there is no possibility of supplying hydraulic pressure to the push and pull ports simultaneously.
- 3) Notes for Pipe Design
 - It is recommended to select as large diameter pipes as possible. The back pressure is proportional to the pipe size, so if the pipes are small the release and lock times will be longer. In particular, single-action types are largely affected by the number of uses, pipe length and the inner diameter of pipes and hoses, so caution is necessary.
- 4) When using on a welding fixture, the exposed area of piston rod should be protected.
 - If spatter gets onto the sliding surface it could lead to malfunction and fluid leakage.
- 5) The Load Direction Given to the Piston Rod
 - Make sure no force is applied to the piston rod outside the axial direction. Usage like the one shown in the figure below will apply a large bending stress to the piston rod and must be avoided.

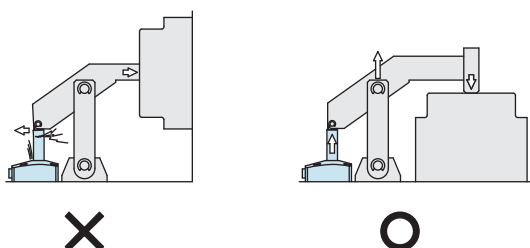
In case that force is loaded except from the axial direction



When clamping workpieces of different heights

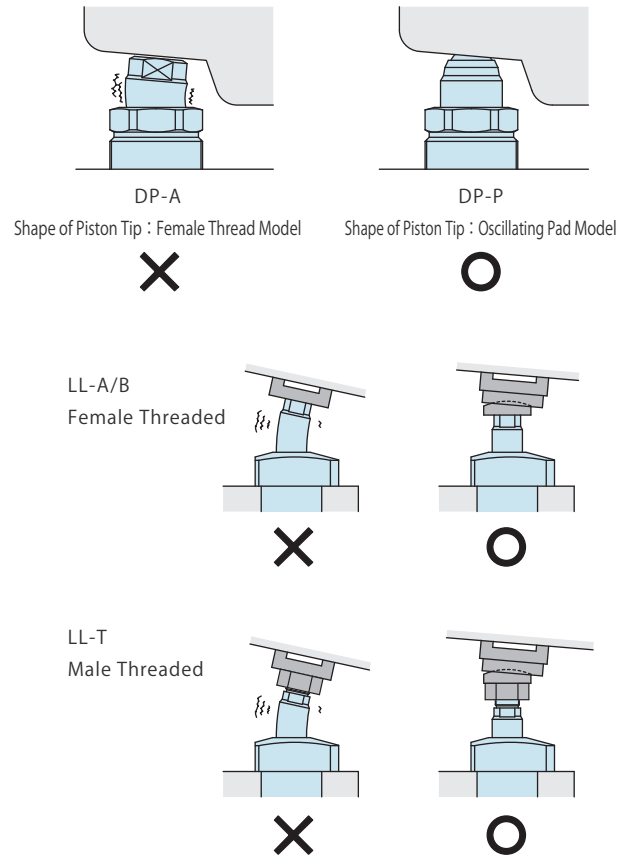


A Combination with Link Mechanism



- 6) When clamping on a sloped surface on the workpiece.
 - When clamping an inclined surface the design should be such that when looking from the clamp side the clamp area is level. Make sure the clamp surface and clamp mounting surface are parallel. Workpieces may move and piston rods may slip when clamps are used on inclined surfaces. (When the workpiece is a casting, it is recommended that spiked attachments be used for clamps on draft angles.)

When clamping a sloped surface



- 7) LLR/LLU : Offset Size
 - LLR/LLU exterior dimension described in this catalogue is when offset dimension is 0mm. When setting offset size, please confirm Notes on each page.

- 8) DP/DR/DS/DT : Considerations for Attachments
 - Whenever possible, use lightweight attachments. Using attachments that weigh more than the release spring force will result in release failures.

● Installation Notes LL/LLR/LLU

1) Check the Usable Fluid

- Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.1043).

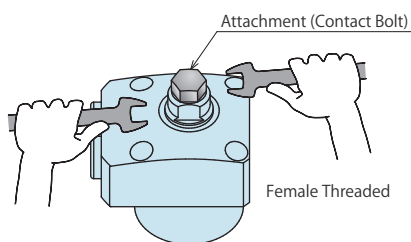
2) Mounting the Unit

- When mounting the clamp, use four hexagon socket bolts for mounting (with tensile strength of 12.9) and tighten them with the torque shown in the chart below. Tightening with greater torque than recommended can depress the seating surface or break the bolt.

Model No.	Thread Size	Tightening Torque (N·m)
LL/LLR/LLU0360	M4×0.7	3.2
LL/LLR/LLU0400	M5×0.8	6.3
LL/LLR/LLU0480	M5×0.8	6.3
LL/LLR/LLU0550	M6×1	10
LL/LLR/LLU0650	M6×1	10
LL/LLR/LLU0750	M8×1.25	25
LL/LLR/LLU0900	M10×1.5	50
LL/LLR/LLU1050	M12×1.75	80

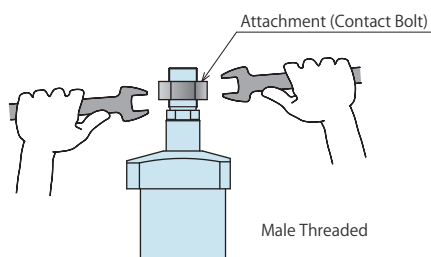
3) Mounting the Attachments

- When inserting or removing an attachment, always use a wrench on the piston rod to keep it from turning. When inserting or removing an attachment, tighten it with the torque shown in the chart below.



LL/LLR/LLU□-□A/B : Female Threaded

Model No.	Thread Size	Tightening Torque (N·m)
LL/LLR/LLU0360-□A/B	M6×1	10
LL/LLR/LLU0400-□A/B	M8×1.25	16
LL/LLR/LLU0480-□A/B	M8×1.25	16
LL/LLR/LLU0550-□A/B	M10×1.5	40
LL/LLR/LLU0650-□A/B	M12×1.75	63
LL/LLR/LLU0750-□A/B	M16×2	100
LL/LLR/LLU0900-□A/B	M20×2.5	125
LL/LLR/LLU1050-□A/B	M24×3	250



LL/LLR/LLU□-□T : Male Threaded

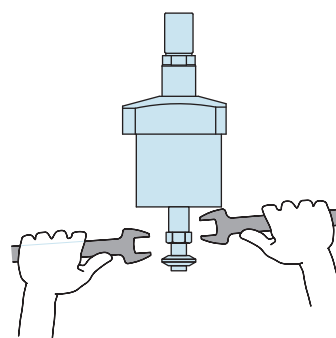
Model No.	Thread Size	Tightening Torque (N·m)
LL/LLR/LLU0360-□T	M10×1.25	40
LL/LLR/LLU0400-□T	M12×1.25	63
LL/LLR/LLU0480-□T	M14×1.5	80
LL/LLR/LLU0550-□T	M16×1.5	100
LL/LLR/LLU0650-□T	M20×1.5	125
LL/LLR/LLU0750-□T	M24×1.5	250
LL/LLR/LLU0900-□T	M30×1.5	315
LL/LLR/LLU1050-□T	M36×1.5	400

4) Speed Adjustment

- Adjust the rod operating speed less than 100mm/sec both the push and pull operation. Excessive cylinder speed will accelerate wear and lead to component damage.
- Only adjust the speed after releasing the air from the circuit. If air is mixed in the circuit you will not be able to accurately adjust the speed.
- Turn the speed control valve gradually from the low-speed side (small flow) to the high-speed side (large flow) to adjust the speed.

5) Notes on dual rod option (-D) for dog application.

- When attaching dog, set up the piston so that it will not turn around. Fix the width part at the front of the dog and then mount it. Torque values for the mounting screw are shown in the table below.



Model No.	Thread Size	Tightening Torque (N·m)
LL/LLR/LLU0360-□□D	M5×0.8	6.3
LL/LLR/LLU0400-□□D	M6×1	10
LL/LLR/LLU0480-□□D	M8×1.25	25
LL/LLR/LLU0550-□□D	M8×1.25	25
LL/LLR/LLU0650-□□D	M8×1.25	25
LL/LLR/LLU0750-□□D	M10×1.5	50
LL/LLR/LLU0900-□□D	M10×1.5	50
LL/LLR/LLU1050-□□D	M10×1.5	50

High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

Hole Clamp

SFA
SFC

Swing Clamp

LHA
LHC
LHS
LHW
LT/LG
TLA-2
TLB-2
TLA-1

Link Clamp

LKA
LKC
LKW
LM/LJ
TMA-2
TMA-1

Work Support

LD
LC
TNC
TC

Air Sensing Lift Cylinder

LLW

Compact Cylinder

LL
LLR
LLU
DP
DR
DS
DT

Block Cylinder

DBA
DBC

Control Valve

BZL
BZT
BZX/JZG

Pallet Clamp

VS
VT

Expansion Locating Pin

VL
VM
VJ
VK

Pull Stud Clamp

FP
FQ

Customized Spring Cylinder

DWA/DWB

※ Please refer to P.1043 for common cautions.

• Installation Notes • Hydraulic Fluid List • Notes on Hydraulic Cylinder Speed Control Circuit
• Notes on Handling • Maintenance/Inspection • Warranty

● Cautions

● Notes on Design and Installation

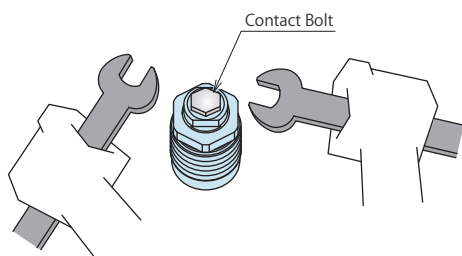
DP

- 1) Be careful not to damage the O-ring.
 - When mounting to a fixture, be careful not to damage the O-ring on the bottom mounting surface.
Apply an appropriate amount of grease to the O-ring.
(If the O-ring is inserted while dry it could be damaged.)
- 2) Be careful not to let the piston fall out.
 - If the piston falls out of the cylinder during assembly always attach the O-ring to the bottom after inserting the piston into the cylinder.
If the O-ring is inserted first it could get crushed and severed.
- 3) Mounting the Unit
 - When mounting the unit, tighten it with the torque shown in the chart below.

Model No.	Thread Size	Tightening Torque (N·m)
DP0160	M16×1.5	16
DP0221	M22×1.5	40
DP0241	M24×1.5	63
DP0301	M30×1.5	100
DP0361	M36×1.5	250
DP0451	M45×1.5	400
DP0551	M55×2	※630
DP0651	M65×2	※1000
DP0801	M80×2	※1600

(The chart above shows the tightening torque for when the maximum hydraulic pressure is attached.)
※ The torque is large, so use impact tightening or a locking device.

- 4) Mounting contact bolt.
 - ① When inserting or removing the contact bolt always use a wrench on the piston rod to keep it from turning.



- ② When inserting the contact bolt, tighten it with the torque shown in the chart below.

Model No.	Thread Size	Tightening Torque (N·m)
DP0160	M5×0.8	4.0
DP0221	M6×1	5.0
DP0241	M6×1	8.0
DP0301	M8×1.25	16
DP0361	M8×1.25	25
DP0451	M10×1.5	50
DP0551	M12×1.75	100
DP0651	M16×2	200
DP0801	M20×2.5	400

(The chart above shows the tightening torque for when the maximum hydraulic pressure is attached.)

- ③ The DP-Q type has a screw hole at the end for attachments.
When removing an attachment or attaching it to the end, make sure that no cutting oil or other foreign materials get inside through the screw hole and perform the work in a clean environment.
Do not use the cylinder without the attachment in place.

5) Check the Usable Fluid

- Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.1043).

● Notes on Design and Installation

DR

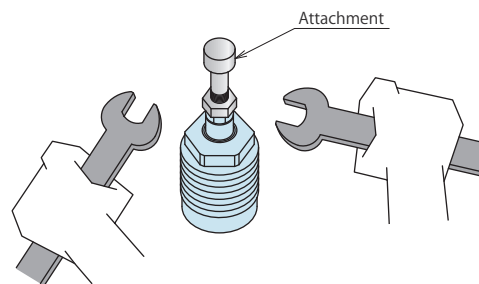
- 1) Be careful not to damage the O-ring.
 - When mounting to a fixture, be careful not to damage the O-ring on the bottom mounting surface.
Apply an appropriate amount of grease to the O-ring.
(If the O-ring is inserted while dry it could be damaged.)
- 2) Mounting the Unit
 - When mounting the unit, tighten it with the torque shown in the chart below.

Model No.	Thread size	Tightening torque (N·m)
DR0221	M22×1.5	20
DR0241	M24×1.5	32
DR0301	M30×1.5	63
DR0361	M36×1.5	125
DR0451	M45×1.5	250
DR0551	M55×2	400
DR0651	M65×2	※800
DR0801	M80×2	※1600

(The chart above shows the tightening torque for when the maximum hydraulic pressure is attached.)
※ The torque is large, so use impact tightening or a locking device.

3) Mounting Attachments

- ① When inserting or removing an attachment, always use a wrench on the piston rod to keep it from turning.



- ② When inserting an attachment, tighten it with the torque shown in the chart below.

Model No.	Thread Size	Tightening Torque (N·m)
DR0221	M6×1	4.0
DR0241	M6×1	6.3
DR0301	M8×1.25	12.5
DR0361	M8×1.25	25
DR0451	M10×1.5	50
DR0551	M12×1.75	100
DR0651	M16×2	200
DR0801	M20×2.5	400

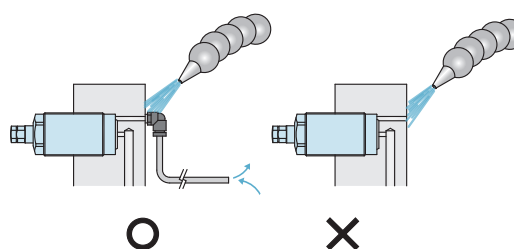
(The chart above shows the tightening torque for when the maximum hydraulic pressure is attached.)

4) Check the Usable Fluid

- Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.1043).

5) Notes for Air Vent

- There is an air vent at the bottom of the cylinder. Design the fixture in such a way that coolant and other foreign materials do not get inside.
- If it is used without a vent port it may not function properly.

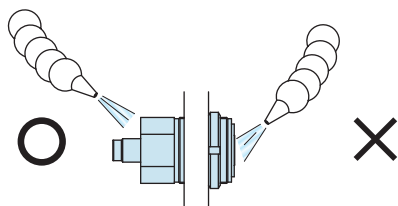


※ Please refer to P.1043 for common cautions.

• Installation Notes • Hydraulic Fluid List • Notes on Hydraulic Cylinder Speed Control Circuit
• Notes on Handling • Maintenance/Inspection • Warranty

● Notes on Design and Installation **DS**

- 1) There is an air vent at the bottom of the cylinder. Design the fixture in such a way that coolant and other foreign materials do not get inside.



2) Mounting the Unit

- When mounting the unit, tighten it with the torque shown in the chart below.
- ① When mounting a cylinder with external thread.

Model No.	Thread Size	Tightening Torque (N·m)
DS0221	M22×1.5	20
DS0241	M24×1.5	32
DS0301	M30×1.5	63
DS0361	M36×1.5	125
DS0451	M45×1.5	250
DS0551	M55×2	400
DS0651	M65×2	※800
DS0801	M80×2	※1600

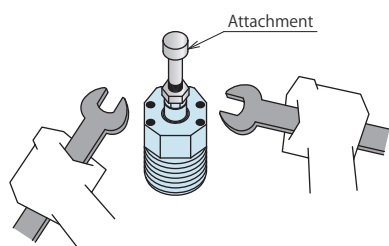
(The chart above shows the tightening torque for when the maximum hydraulic pressure is attached.)
※ The torque is large, so use impact tightening or a locking device.

- ② When mounting the cylinder with bolts.
Use 4 bolts (strength class: 12.9) and tighten them according to the following chart.

Model No.	Thread Size	Tightening Torque (N·m)
DS0221	M4×0.7	4.0
DS0241	M4×0.7	4.0
DS0301	M5×0.8	6.3
DS0361	M5×0.8	6.3
DS0451	M6×1	16
DS0551	M6×1	16
DS0651	M8×1.25	25
DS0801	M8×1.25	25

3) Mounting Attachments

- ① When inserting or removing an attachment, always use a wrench on the piston rod to keep it from turning.



- ② When inserting an attachment, tighten it with the torque shown in the chart below.

Model No.	Thread Size	Tightening Torque (N·m)
DS0221	M6×1	6.3
DS0241	M6×1	8.0
DS0301	M8×1.25	16
DS0361	M8×1.25	30
DS0451	M10×1.5	50
DS0551	M12×1.75	100
DS0651	M16×2	200
DS0801	M20×2.5	400

(The chart above shows the tightening torque for when the maximum hydraulic pressure is attached.)

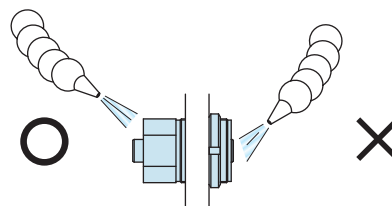
4) Check the Usable Fluid

- Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.1043).

※ Please refer to P.1043 for common cautions. • Installation Notes • Hydraulic Fluid List • Notes on Hydraulic Cylinder Speed Control Circuit • Notes on Handling • Maintenance/Inspection • Warranty

● Notes on Design and Installation **DT**

- 1) There is an air vent at the bottom of the cylinder. Design the fixture in such a way that coolant and other foreign materials do not get inside.



2) Mounting the Unit

- When mounting the unit, tighten it with the torque shown in the chart below.
- ① When mounting a cylinder with external thread.

Model No.	Thread Size	Tightening Torque (N·m)
DT0361	M36×1.5	125
DT0451	M45×1.5	250
DT0551	M55×2	400
DT0651	M65×2	※800
DT0801	M80×2	※1600

(The chart above shows the tightening torque for when the maximum hydraulic pressure is attached.)
※ The torque is large, so use impact tightening or a locking device.

- ② When mounting the cylinder with bolts.
Use 4 bolts (strength class: 12.9) and tighten them according to the following chart.

Model No.	Thread Size	Tightening Torque (N·m)
DT0361	M5×0.8	6.3
DT0451	M6×1	16
DT0551	M6×1	16
DT0651	M8×1.25	25
DT0801	M8×1.25	25

3) Mounting Attachments

- ① When inserting an attachment, tighten it with the torque shown in the chart below.

Model No.	Thread Size	Tightening Torque (N·m)
DT0361	M8×1.25(φ8.5)	30
DT0451	M10×1.5(φ10.5)	50
DT0551	M12×1.75(φ12.5)	100
DT0651	M16×2(φ16.5)	200
DT0801	M20×2.5(φ20.5)	400

(The chart above shows the tightening torque for when the maximum hydraulic pressure is attached.)
Values within parenthesis are for the through-hole in the center of the cylinder.

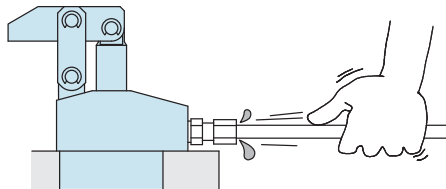
4) Check the Usable Fluid

- Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.1043).

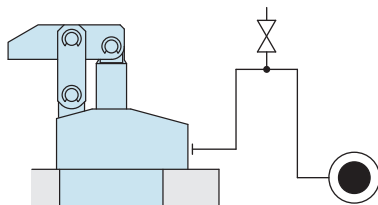
● Cautions

● 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

Maker	ISO Viscosity Grade ISO-VG-32	
	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.

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

Cautions

- Installation Notes (For Hydraulic Series)
- Hydraulic Fluid List
- Notes on Hydraulic Cylinder Speed Control Circuit
- Notes on Handling
- Maintenance/Inspection
- Warranty

Company Profile

- Company Profile
- Our Products
- History

Index

- Search by Alphabetical Order

Sales Offices

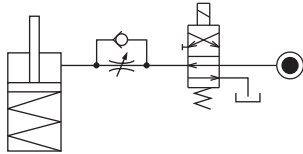
● Notes on Hydraulic Cylinder Speed Control Unit



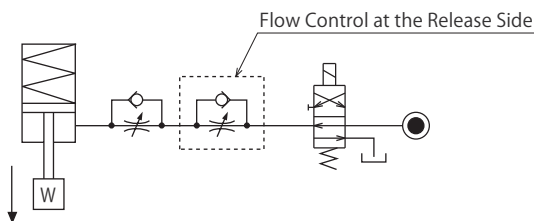
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

● 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

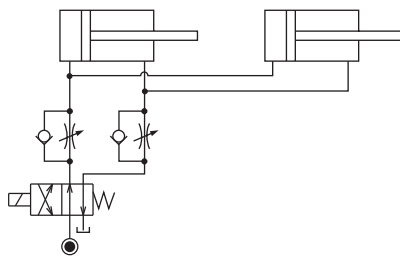
Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system.

However, in the case of controlling LKE, TMA, TLA, both lock side and release side should be meter-in circuit.

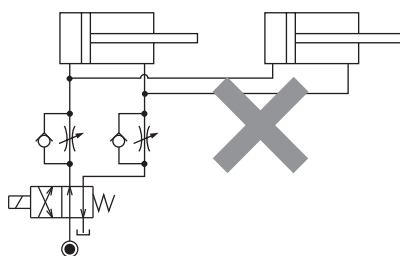
Refer to P.47 for speed adjustment of LKE.

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)

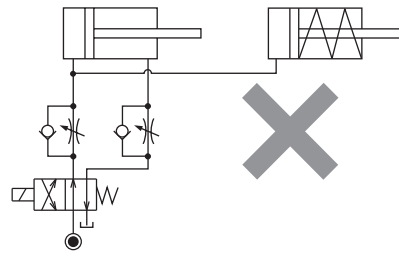


【Meter-in Circuit】 (LKE/TMA/TLA must be controlled with meter-in.)



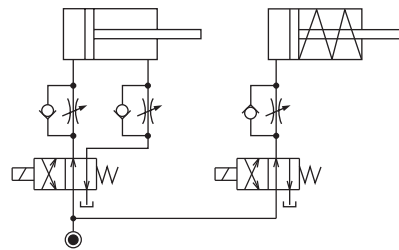
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

- 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.

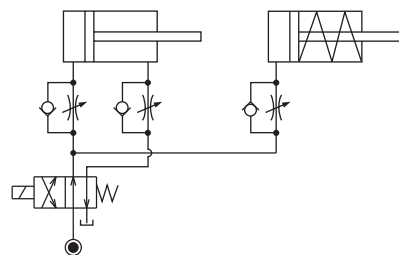


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

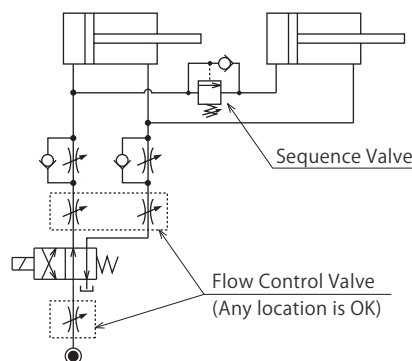
- Separate the control circuit.



- 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.



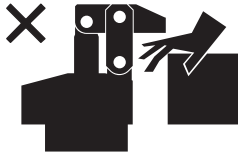
- ② In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action because of the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve 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

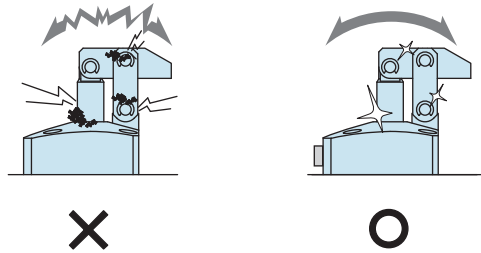
- 1) It should be handled by qualified personnel.
 - The hydraulic machine and air compressor should be handled and maintained by qualified personnel.
- 2) Do not handle or remove the machine unless the safety protocols are ensured.
 - ① The machine and equipment can only be inspected or prepared when 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.



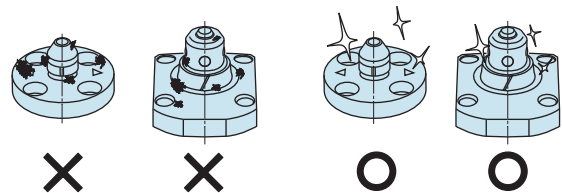
- 4) Do not disassemble or modify.
 - If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

● 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 make 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.

Cautions

[Installation Notes
\(For Hydraulic Series\)](#)
[Hydraulic Fluid List](#)
[Notes on Hydraulic Cylinder
Speed Control Circuit](#)
[Notes on Handling](#)
[Maintenance/
Inspection](#)
[Warranty](#)

Company Profile

[Company Profile](#)
[Our Products](#)
[History](#)

Index

[Search by
Alphabetical Order](#)

Sales Offices

● 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.

Manifold Block

Model WHZ-MD

Model LZY-MD

Model LZ-MS

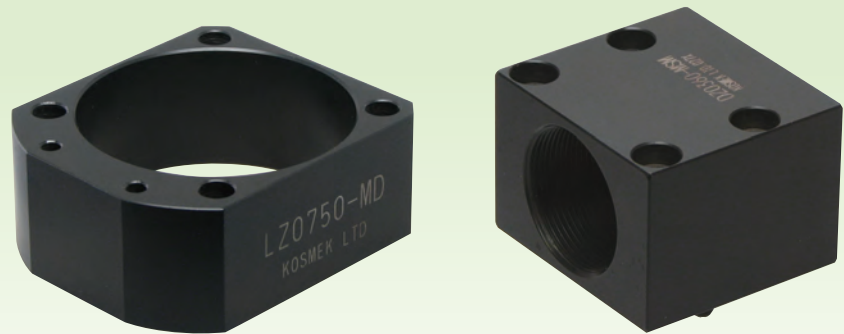
Model LZ-MP

Model TMZ-1MB

Model TMZ-2MB

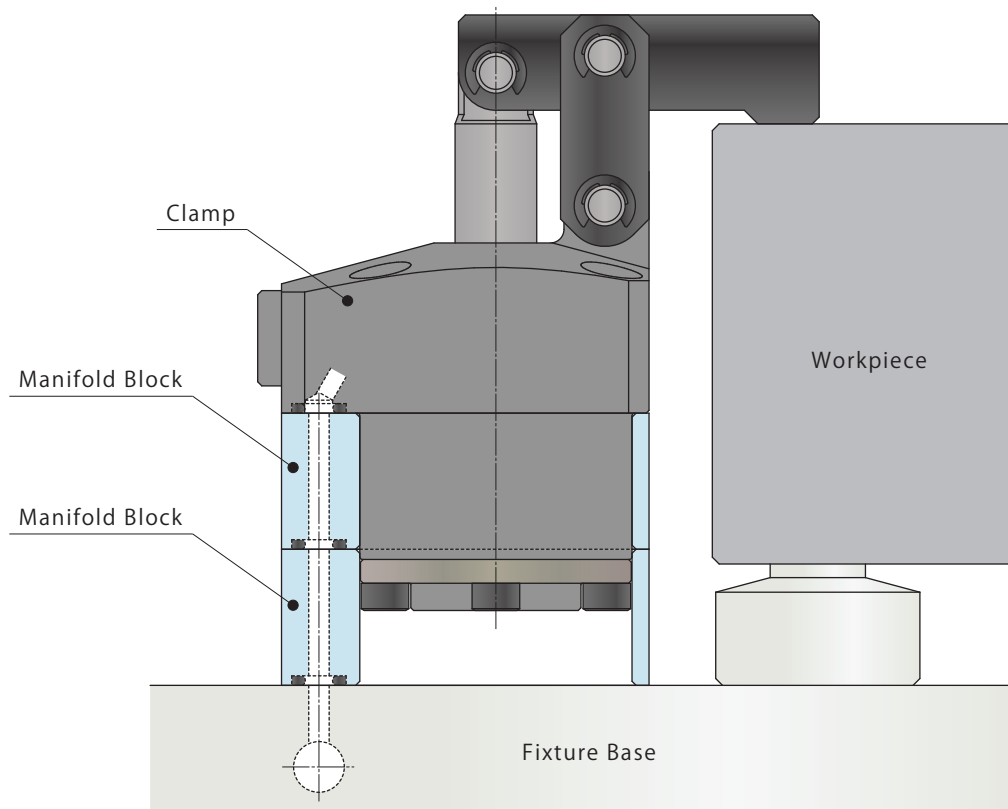
Model DZ-MG

Model DZ-MS



- **Manifold Block**

The mounting height of clamp is adjustable with the manifold block.



Applicable Model

Manifold Block Model No.	Corresponding Item Model No.
Model WHZ-MD	Model WCA Model WHA Model WCE Model WHE
Model LZY-MD	Model LKA Model LKE Model LHC Model LHS Model LKC Model LHA Model LHE Model LL
Model LZ-MS	Model LM Model LT Model LJ Model LG
Model LZ-MP	Model LC Model TC
Model TMZ-1MB	Model TMA-1
Model TMZ-2MB	Model TMA-2
Model DZ-MG□/MS□	Model DP

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

Screw Locator
VXF

Manual Expansion Locating Pin
VX

Manifold Block

- WHZ-MD
- LZY-MD
- LZ-MS
- LZ-MP
- TMZ-1MB
- TMZ-2MB
- DZ-M

Manifold Block / Nut

- DZ-R
- DZ-C
- DZ-P
- DZ-B
- LZ-S
- LZ-SQ
- TNZ-S
- TNZ-SQ

Pressure Switch
JB

Pressure Gauge
JGA/JGB

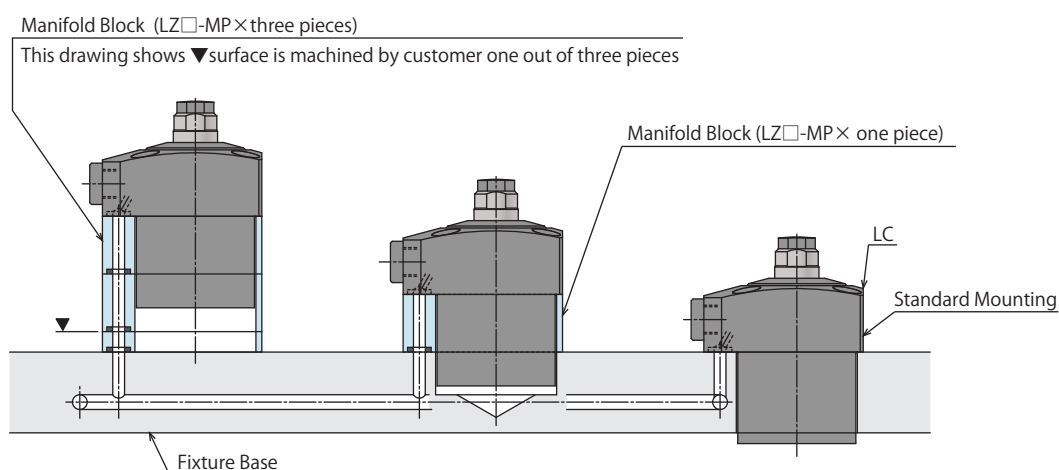
Manifold
JX

Coupler Switch
PS

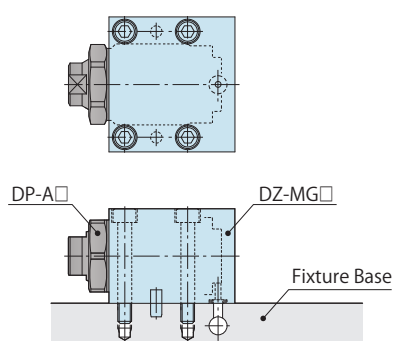
G-Thread Fitting

Application Examples

• Work Support (LC) Application Example



• Push Cylinder (DP) Application Example



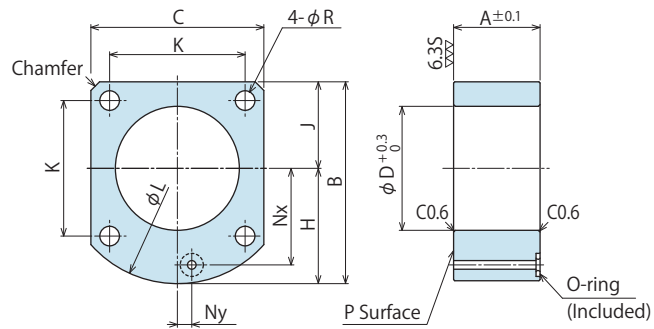
Manifold Block for TMA-1

Model No. Indication

TMZ 040 0 - 1MB

Size
(Refer to following table)

Design No.
(Revision Number)



(mm)

Model No.	TMZ0250-1MB	TMZ0400-1MB	TMZ0600-1MB	TMZ1000-1MB	TMZ1600-1MB	TMZ2500-1MB	TMZ3200-1MB
Corresponding Item Model No.	TMA0250-1	TMA0400-1	TMA0600-1	TMA1000-1	TMA1600-1	TMA2500-1	TMA3200-1
A	18	21	24	28	35	42	46
B	56.5	62	69	83	95	110	122
C	45	51	60	73	85	100	110
D	33	36	43	48	60	70	85
H	34	36.5	39	46.5	52.5	60	67
J	22.5	25.5	30	36.5	42.5	50	55
K	34	40	47	57	65	75	88
L	68	73	80	97	112	129	147
Nx	26	30	33.5	40	45	52.5	60
Ny	5	0	0	0	0	0	0
R	5.5	5.5	6.8	9	11	14	14
Chamfer	3	3	(φ80)	(φ97)	(φ112)	(φ129)	(φ147)
O-ring	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7
Mass kg	0.2	0.3	0.5	0.9	1.4	2.2	2.6

- Notes
1. Material: S45C
 2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the A dimensions as a reference.
 3. If thickness other than A is required, perform additional machining on surface P. Please refer to the drawing.

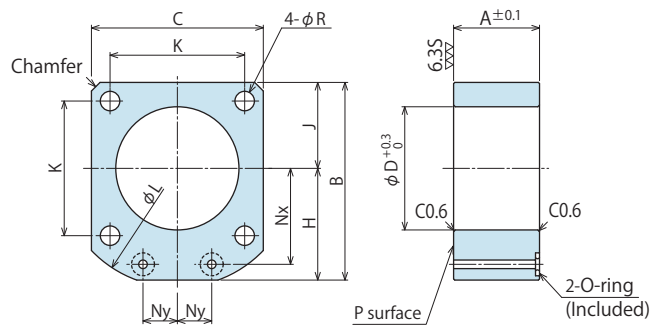
Manifold Block for TMA-2

Model No. Indication

TMZ 048 0 - 2MB

Size
(Refer to following table)

Design No.
(Revision Number)



(mm)

Model No.	TMZ0250-2MB	TMZ0400-2MB	TMZ0600-2MB	TMZ1000-2MB	TMZ1600-2MB	TMZ2500-2MB	TMZ3200-2MB
Corresponding Item Model No.	TMA0250-2	TMA0400-2	TMA0600-2	TMA1000-2	TMA1600-2	TMA2500-2	TMA3200-2
A	15	16	18	20	24	28	32
B	54	61	69	82.5	94.5	109.5	122
C	45	51	60	73	85	100	110
D	33	36	43	48	60	70	85
H	31.5	35.5	39	46	52	59.5	67
J	22.5	25.5	30	36.5	42.5	50	55
K	34	40	47	57	65	75	88
L	68	75	83	100	113	133	147
Nx	26	30	33.5	40	45	52.5	60
Ny	9	10	12	15	16	18.5	20
R	5.5	5.5	6.8	9	11	14	14
Chamfer	3	3	3	4	5	8	(φ147)
O-ring	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7
Mass kg	0.2	0.3	0.4	0.6	0.9	1.5	1.8

- Notes
1. Material: S45C
 2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the A dimensions as a reference.
 3. If thickness other than A is required, perform additional machining on surface P. Please refer to the drawing.

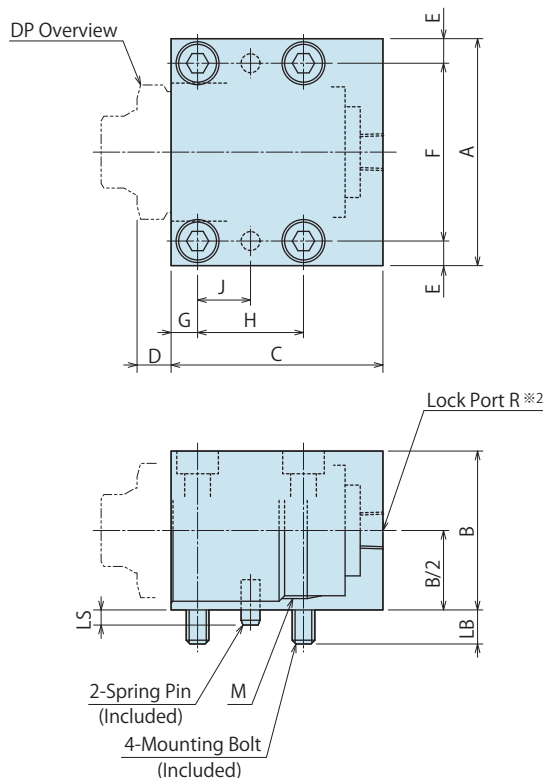
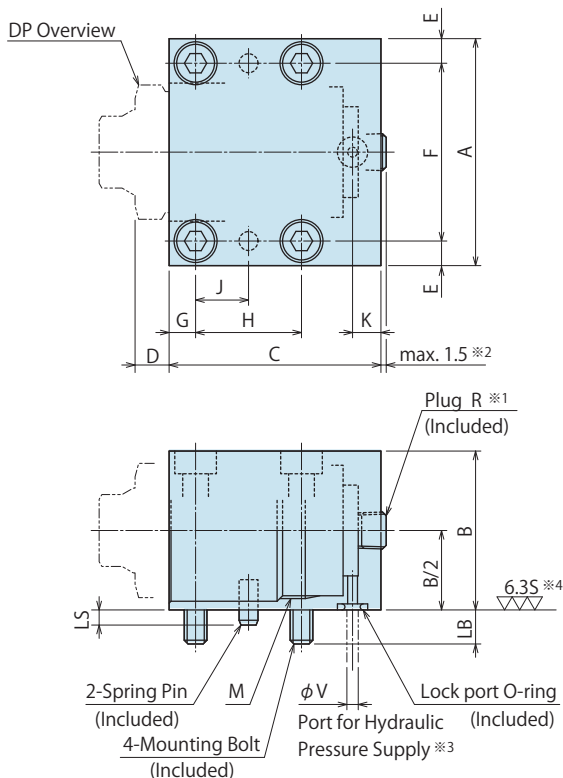
Manifold Block for DP

Model No. Indication



※The drawing below shows DZ□0-MG□ (Gasket option).

※The drawing below shows DZ□0-MS□ (Piping option).



Notes

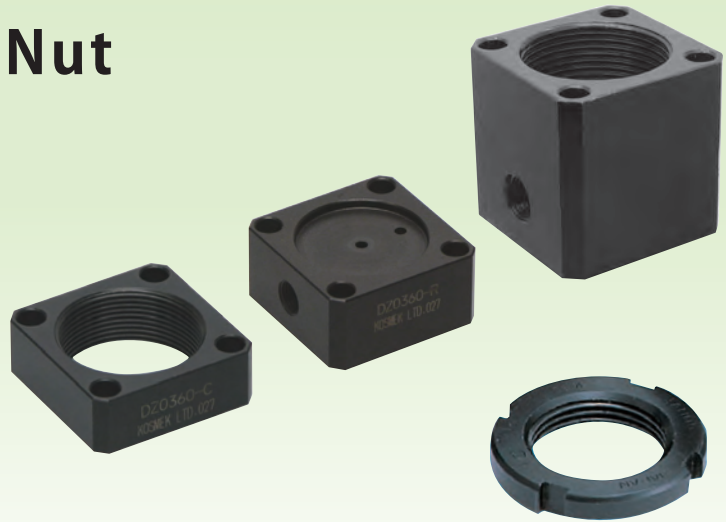
- Material : S45C
- ※1. G-option the R-thread plug is screwed in. There will be some variation in how far the plug protrudes.
- ※2. Plug is not included with the S-option.
- ※3. Shows the recommendation for the hole drilled by the customer for the supply of hydraulic pressure. Make sure there are no burrs around the connection and no cutting chips or other foreign material inside.
- ※4. The surface touching the O-ring should have a roughness of $\sqrt{6.35}$.

Model No.	DZ0160-MG□									DZ0220-MG□			DZ0240-MG□			DZ0300-MG□			DZ0360-MG□			DZ0450-MG□			DZ0550-MG□			DZ0650-MG□			DZ0800-MG□		
	DZ0160-MS□									DZ0220-MS□			DZ0240-MS□			DZ0300-MS□			DZ0360-MS□			DZ0450-MS□			DZ0550-MS□			DZ0650-MS□			DZ0800-MS□		
Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L
Corresponding Item Model No.	DP0160-□									DP0221-□			DP0241-□			DP0301-□			DP0361-□			DP0451-□			DP0551-□			DP0651-□			DP0801-□		
Model No.	DP0160-□									DP0221-□			DP0241-□			DP0301-□			DP0361-□			DP0451-□			DP0551-□			DP0651-□			DP0801-□		
Stroke Code	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L
A	32			38			45			50			60			75			90			105			120								
B	22			28			32			38			42			52			62			72			88								
C	34	40	49	32.5	38.5	51.5	35	42.5	59	38.5	45.5	65	43	56	77	50	63	85.5	56	69.5	92	65	79	108.5	70	88	119						
D	6			8			8			9			9			13			13			15			15								
E	4.5			4.5			6			6			6.5			8.5			10			11			11								
F	23			29			33			38			47			58			70			83			98								
G	5			5			6			6			7			8			9			11			11								
H	12	18	12	18	12	18	12	18	16	22	18	18	18	28	20	30	24	36	30	36	30	42	30	42	34	52	34	52					
J	6	9	6	9	6	9	6	9	8	11	9	11	9	14	10	15	12	18	15	18	15	21	15	21	17	26	17	26					
K	7.5			7.5			7.5			7.5			7.5			11.5			11.5			11.5			11.5								
LB	7			6			8			7			9			11			13			15			15								
LS	3			3			3			4			4			4			4			6			7								
M (Nominal × Pitch)	M16×1.5			M22×1.5			M24×1.5			M30×1.5			M36×1.5			M45×1.5			M55×2			M65×2			M80×2								
R	Rc1/8			Rc1/8			Rc1/8			Rc1/8			Rc1/8			Rc1/4			Rc1/4			Rc1/4			Rc1/4								
Mounting Bolt	M4×0.7×25			M4×0.7×30			M5×0.8×35			M5×0.8×40			M6×1×45			M8×1.25×55			M10×1.5×65			M12×1.75×75			M12×1.75×90								
O-ring	1BP5			1BP5			1BP5			1BP5			1BP5			1BP7			1BP7			1BP7			1BP7								
Spring Pin	φ3×8			φ3×8			φ3×8			φ5×12			φ5×12			φ6×12			φ6×12			φ8×16			φ10×20								
V	3			3			3			5			5			5			5			5			5								
Mass	kg	0.15	0.15	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.4	0.5	0.6	0.6	0.7	1	1	1.2	1.7	1.5	1.8	2.5	2.2	2.8	3.8	3.2	4	5.5					

- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Screw Locator
 - VXF
- Manual Expansion Locating Pin
 - VX
- Manifold Block
 - WHZ-MD
 - LZY-MD
 - LZ-MS
 - LZ-MP
 - TMZ-1MB
 - TMZ-2MB
 - DZ-M
- Manifold Block / Nut
 - DZ-R
 - DZ-C
 - DZ-P
 - DZ-B
 - LZ-S
 - LZ-SQ
 - TNZ-S
 - TNZ-SQ
- Pressure Switch
 - JB
- Pressure Gauge
 - JGA/JGB
- Manifold
 - JX
- Coupler Switch
 - PS
- G-Thread Fitting

Manifold Block / Nut

- Model DZ-R
- Model DZ-C
- Model DZ-P
- Model DZ-B
- Model LZ-S
- Model LZ-SQ
- Model TNZ-S
- Model TNZ-SQ

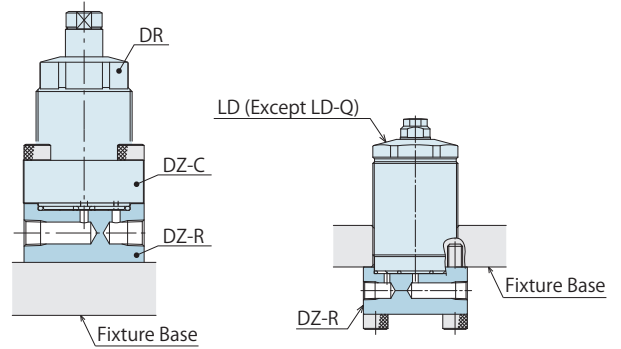


Applicable Model/Application Examples

DZ-R

Manifold Block for
DR/LD/WNC

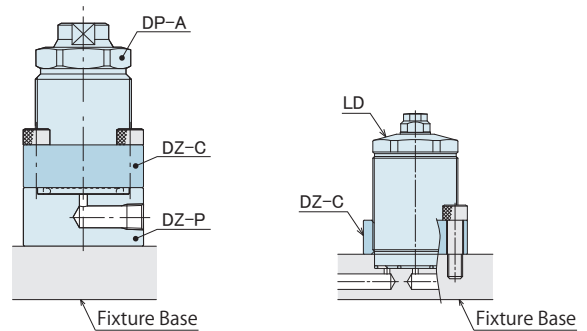
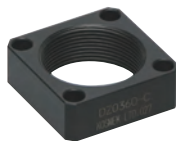
Corresponding Item Model No. : DR / LD / WNC



DZ-C

Flanged Nut for
DP/DR/DS/DT/LD/WNC

Corresponding Item Model No. : DP / DR / DS / DT / LD / WNC



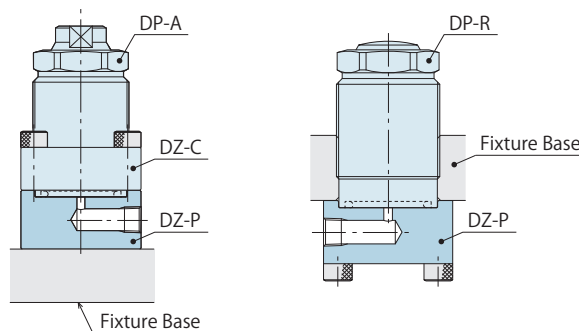
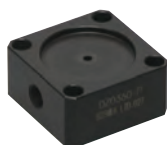
Applicable Model/Application Examples

- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Screw Locator
 - VXF
- Manual Expansion Locating Pin
 - VX
- Manifold Block
 - WHZ-MD
 - LZY-MD
 - LZ-MS
 - LZ-MP
 - TMZ-1MB
 - TMZ-2MB
 - DZ-M
- Manifold Block / Nut
 - DZ-R
 - DZ-C
 - DZ-P
 - DZ-B
 - LZ-S
 - LZ-SQ
 - TNZ-S
 - TNZ-SQ
- Pressure Switch
 - JB
- Pressure Gauge
 - JGA/JGB
- Manifold
 - JX
- Coupler Switch
 - PS
- G-Thread Fitting

DZ-P

Manifold Block for DP

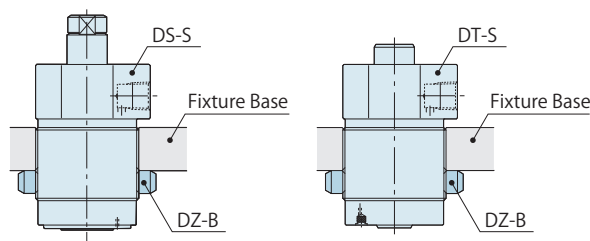
Corresponding Item Model No. :DP



DZ-B

Bulkhead Nut for DP/DR/DS/DT

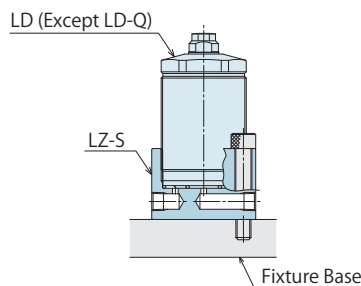
Corresponding Item Model No. :DP / DR / DS / DT



LZ-S

Manifold Block for LD/WNC

Corresponding Item Model No. :LD / WNC



TNZ-S

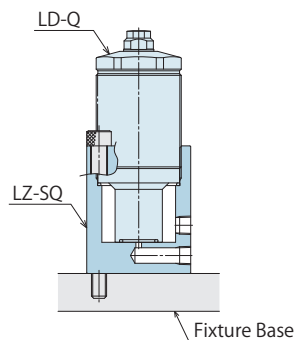
Manifold Block for TNC

Corresponding Item Model No. :TNC

LZ-SQ

Manifold Block for LD-Q

Corresponding Item Model No. :LD-Q



TNZ-SQ

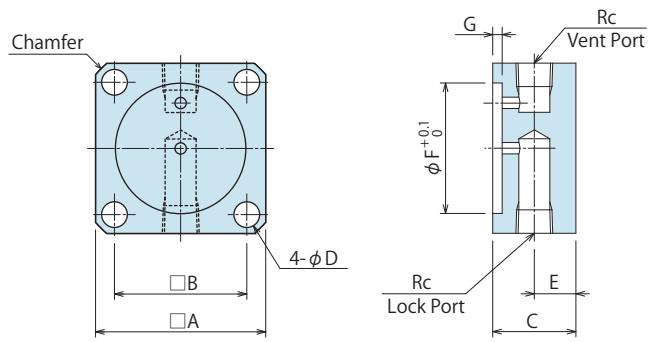
Manifold Block for TNC-Q

Corresponding Item Model No. :TNC-Q

Manifold Block for DR/LD/WNC

Model No. Indication

DZ 036 0 - R
 Size (Refer to following table)
 Design No. (Revision Number)



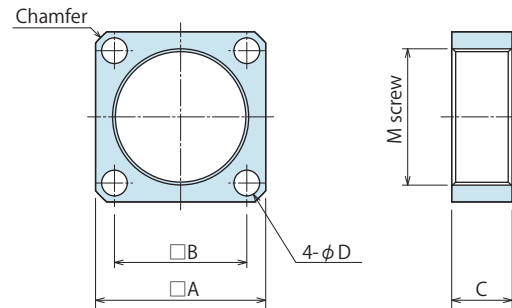
Model No.	DZ0220-R	DZ0240-R	DZ0260-R	DZ0300-R	DZ0360-R	DZ0450-R	DZ0550-R	DZ0600-R	DZ0650-R	DZ0800-R
Corresponding Item Model Number	DR0221 LD0222 WNC0350	DR0241 -	- LD0262*1 WNC0600	DR0301 LD0302*1 WNC1000	DR0361 LD0362*1 WNC1600	DR0451 LD0452*1 WNC3000	DR0551 -	- WNC6000	DR0651 -	DR0801 -
A	28	32	35	38	45	55	70	75	80	90
B	21	23	26	29	35	42	54	59	62	72
C	19	19	19	22	22	25	25	25	25	28
D	4.5	5.5	5.5	5.5	6.8	9	11	11	14	14
E	9.5	9.5	9.5	11	11	12.5	12.5	12.5	12.5	14
F	20.5	22.5	24.5	28.5	34.5	43.5	53	58	63	78
G	2.5	2.5	2.5	2.5	2.5	3.5	3.5	3.5	3.5	4
Rc	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc1/4	Rc1/4	Rc1/4
Chamfer	C2	C3	C3	C3	C3	C4	C5	C4	C5.5	C5.5
Mass kg	0.1	0.2	0.2	0.2	0.3	0.6	0.8	0.9	1.0	1.5

- Notes 1. Material: S45C
 2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the C dimensions as a reference.
 *1. It is not applicable for LD-Q: work support hydraulic advance long stroke option. (Please select from LZ-SQ.)

Flange Nut for DP/DR/DS/DT/LD/WNC

Model No. Indication

DZ 036 0 - C
 Size (Refer to following table)
 Design No. (Revision Number)



Model No.	DZ0160-C	DZ0220-C	DZ0240-C	DZ0260-C	DZ0300-C	DZ0360-C	DZ0450-C	DZ0550-C	DZ0600-C	DZ0650-C	DZ0800-C
Corresponding Item Model Number	DP0160 -	DP0221 DR0221 DS0221 -	DP0241 DR0241 DS0241 -	- LD0262 WNC0600	DP0301 DR0301 DS0301 -	DP0361 DR0361 DS0361 LD0362 WNC1600	DP0451 DR0451 DS0451 DT0361 DT0451 LD0452 WNC3000	DP0551 DR0551 DS0551 DT0551 -	- WNC6000	DP0651 DR0651 DS0651 DT0651 -	DP0801 DR0801 DS0801 DT0801 -
A	25	28	32	35	38	45	55	70	75	80	90
B	18	21	23	26	29	35	42	54	59	62	72
C	12	14	14	14	15	16	18	20	22	25	25
D	4.5	4.5	5.5	5.5	5.5	6.8	9	11	11	14	14
M (Nominal x Pitch)	M16x1.5	M22x1.5	M24x1.5	M26x1.5	M30x1.5	M36x1.5	M45x1.5	M55x2	M60x2	M65x2	M80x2
Chamfer	C2	C2	C3	C3	C3	C3	C4	C5	C4	C5.5	C5.5
Mass kg	0.04	0.04	0.06	0.07	0.08	0.1	0.2	0.4	0.45	0.5	0.6

- Notes 1. Material: S45C
 2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the C dimensions as a reference.

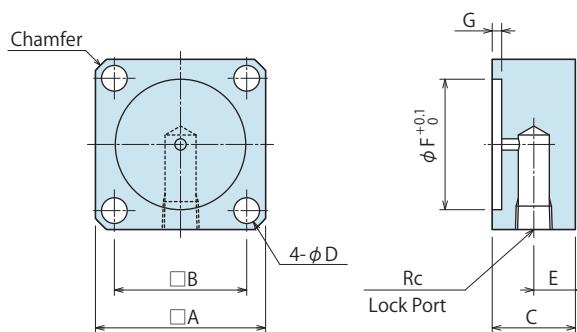
Manifold Block for DP

Model No. Indication

DZ 036 0 - P

Size
(Refer to following table)

Design No.
(Revision Number)



(mm)

Model No.	DZ0160-P	DZ0220-P	DZ0240-P	DZ0300-P	DZ0360-P	DZ0450-P	DZ0550-P	DZ0650-P	DZ0800-P
Corresponding Item Model Number	DP0160	DP0221	DP0241	DP0301	DP0361	DP0451	DP0551	DP0651	DP0801
A	25	28	32	38	45	55	70	80	90
B	18	21	23	29	35	42	54	62	72
C	19	19	19	22	22	25	25	25	28
D	4.5	4.5	5.5	5.5	6.8	9	11	14	14
E	9.5	9.5	9.5	11	11	12.5	12.5	12.5	14
F	14.5	20.5	22.5	28.5	34.5	43.5	53	63	78
G	1.5	2.5	2.5	2.5	2.5	3.5	3.5	3.5	4
Rc	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc1/4	Rc1/4
Chamfer	C2	C2	C3	C3	C3	C4	C5	C5.5	C5.5
Mass kg	0.1	0.1	0.2	0.2	0.3	0.6	0.8	1.0	1.5

- Notes
1. Material : S45C
 2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the C dimensions as a reference.

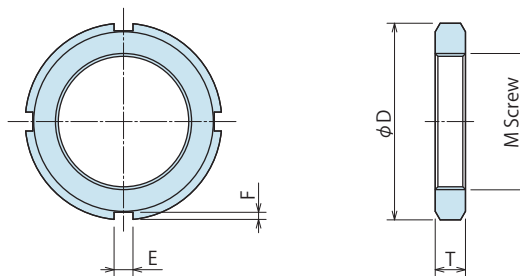
Bulkhead Nut for DP/DR/DS/DT

Model No. Indication

DZ 036 0 - B

Size
(Refer to following table)

Design No.
(Revision Number)



(mm)

Model No.	DZ0160-B	DZ0220-B	DZ0240-B	DZ0300-B	DZ0360-B	DZ0450-B	DZ0550-B	DZ0650-B	DZ0800-B
Corresponding Item Model Number	DP0160	DP0221	DP0241	DP0301	DP0361	DP0451	DP0551	DP0651	DP0801
	-	DR0221	DR0241	DR0301	DR0361	DR0451	DR0551	DR0651	DR0801
	-	DS0221	DS0241	DS0301	DS0361	DS0451	DS0551	DS0651	DS0801
	-	-	-	-	DT0361	DT0451	DT0551	DT0651	DT0801
D	25	32	38	45	52	65	75	85	105
E	4	5	5	5	5	6	7	7	8
F	2	2	2	2	2	2.5	3	3	3.5
M (Nominal × Pitch)	M16×1.5	M22×1.5	M24×1.5	M30×1.5	M36×1.5	M45×1.5	M55×2	M65×2	M80×2
T	5	6	7	7	8	10	11	12	15
Mass kg	0.02	0.03	0.03	0.05	0.08	0.1	0.2	0.3	0.5

- Notes
1. Material : S45C

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

- Screw Locator
 - VXF
- Manual Expansion Locating Pin
 - VX
- Manifold Block
 - WHZ-MD
 - LZY-MD
 - LZ-MS
 - LZ-MP
 - TMZ-1MB
 - TMZ-2MB
 - DZ-M

- Manifold Block / Nut
 - DZ-R
 - DZ-C
 - DZ-P
 - DZ-B
 - LZ-S
 - LZ-SQ
 - TNZ-S
 - TNZ-SQ

- Pressure Switch
 - JB
- Pressure Gauge
 - JGA/JGB

- Manifold
 - JX

- Coupler Switch
 - PS

- G-Thread Fitting

Sales Offices

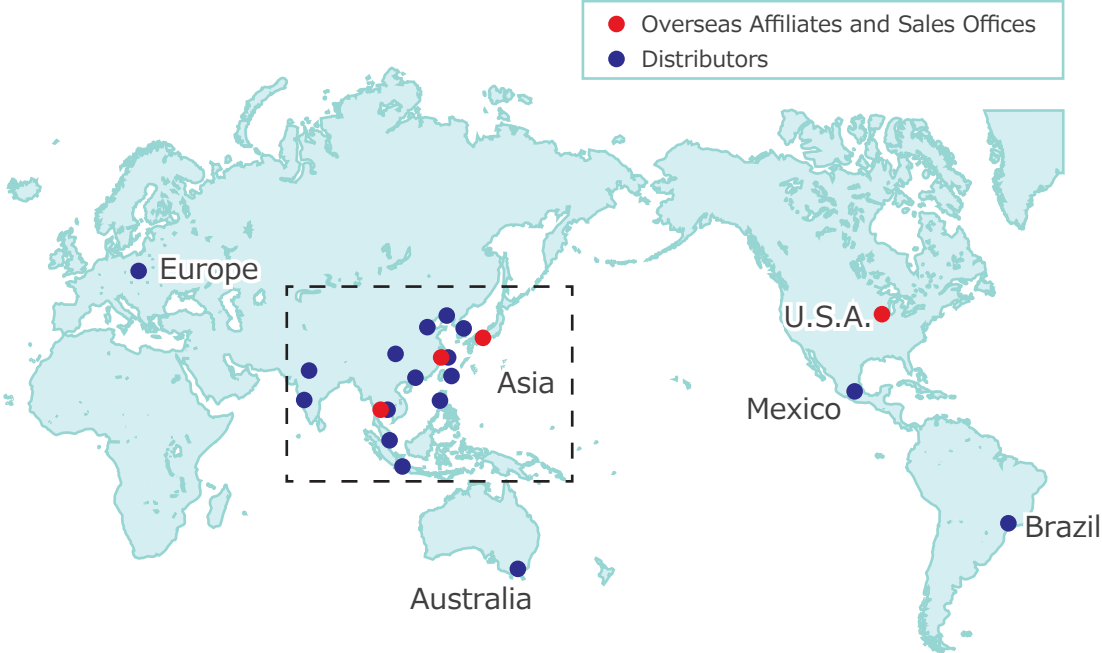
Sales Offices across the World

Japan	TEL. +81-78-991-5162	FAX. +81-78-991-8787
Overseas Sales	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	
USA	TEL. +1-630-241-3465	FAX. +1-630-241-3834
KOSMEK (USA) LTD.	1441 Branding Avenue, Suite 110, Downers Grove, IL 60515 USA	
China	TEL.+86-21-54253000	FAX.+86-21-54253709
KOSMEK (CHINA) LTD. 考世美(上海)貿易有限公司	21/F, Orient International Technology Building, No.58, Xiangchen Rd, Pudong Shanghai 200122., P.R.China 中国上海市浦东新区向城路58号东方国际科技大厦21F室 200122	
Thailand	TEL. +66-2-715-3450	FAX. +66-2-715-3453
Thailand Representative Office	67 Soi 58, RAMA 9 Rd., Suanluang, Suanluang, Bangkok 10250, Thailand	
Taiwan (Taiwan Exclusive Distributor)	TEL. +886-2-82261860	FAX. +886-2-82261890
Full Life Trading Co., Ltd. 盈生貿易有限公司	16F-4, No.2, Jian Ba Rd., Zhonghe District, New Taipei City Taiwan 23511 台湾新北市中和區建八路2號 16F-4 (遠東世紀廣場)	
Philippines (Philippines Exclusive Distributor)	TEL.+63-2-310-7286	FAX. +63-2-310-7286
G.E.T. Inc, Phil.	Victoria Wave Special Economic Zone Mt. Apo Building, Brgy. 186, North Caloocan City, Metro Manila, Philippines 1427	
Europe (Europe Exclusive Distributor)	TEL. +43-463-287587-10	FAX. +43-463-287587-20
KOS-MECH GmbH	Schleppeplatz 2 9020 Klagenfurt Austria	
Indonesia (Indonesia Exclusive Distributor)	TEL. +62-21-5818632	FAX. +62-21-5814857
P.T PANDU HYDRO PNEUMATICS	Ruko Green Garden Blok Z- II No.51 Rt.005 Rw.008 Kedoya Utara-Kebon Jeruk Jakarta Barat 11520 Indonesia	

Sales Offices in Japan

Head Office	TEL.078-991-5115	FAX.078-991-8787
Osaka Sales Office	〒651-2241 兵庫県神戸市西区室谷2丁目1番5号	
Overseas Sales		
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



● FOR FURTHER INFORMATION ON UNLISTED SPECIFICATIONS AND SIZES, PLEASE CALL US.
● SPECIFICATIONS IN THIS CATALOG ARE SUBJECT TO CHANGE WITHOUT NOTICE.

