# **Customized Spring Cylinder**

Model DWA Model DWB



## Spring lock conserves energy.

Cylinders can be customized according to the customer's requirements.

#### Custom Made

Design and calculation of cylinder is very tedious and involves a lot of effort. KOSMEK can do this work for the customer. KOSMEK develops and manufactures spring cylinders according to the customers preference for mounting method, space and capacity. Please contact us directly or by sending an inquiry via our website.

#### • When using the cylinder, power source can be switched off.

This cylinder is locked by spring force and released by hydraulic force. When using cylinder, power source can be switched off.

#### • Cylinder output is stable.

"Spring force = Cylinder output" Unstable and abnormal conditions caused by thermal changes in the fluid are eliminated. Same force is maintained when using the cylinder.

Model No.	Model DWA	Model DWB	
Classification	Single-Acting Push Cylinder Single-Acting Pull Cy		
Action	Spring Lock / Hydraulic Release		
Standard Model	→ P.1099	→ P.1100	
Customized Model	Please contact us directly or send an inquiry via our website.		

Application Examples

**Application Examples** 



High-Power Series

Pneumatic Series

#### Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others



VFL/VFM VFJ/VFK

Pull Stud Clamp FΡ FQ

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Push Cylinder (Spring Lock)





Pull Cylinder (Spring Lock)



#### SModel No. Indication

Single-Acting Push Cylinder



#### 1 Clamping Force

025: 2.5 kN

100: 10 kN

400: 40 kN

 $\ensuremath{\overset{\scriptstyle <}{_{\scriptstyle \sim}}}$  Spring force varies depending on the stroke.

#### 2 Design No.

0 : Revision Number

#### **3** Piping Method

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

#### External Dimensions

\*This drawing shows the status at full stroke.

|--|

Model No.			DWA0250-	DWA1000-	DWA4000-
Stroke		mm		5	
Cylinder A	rea	cm <sup>2</sup>	6.911	19.227	44.461
Cylinder C	apacity	cm <sup>3</sup>	3.5	9.6	22.2
Operating P	ressure (Release Pressure)	MPa		14	
Withstand	ling Pressure	MPa		21	
Operating	Temperature	°C		0 ~ 70	
Spring	Stroke 0mm (When relea	sing)	3.8	15	44
Force	Stroke 3mm (Recommen	ded)	2.6	11	39
kN	Stroke 5mm (At Full Strol	ke)	1.7	8.4	35

Note : 1. Spring force may exhibits hysteresis.

Please contact us for further detail and specification with individual outline drawing.



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			(mm)
Model No.	DWA0250-	DWA1000-	DWA4000-
A (Nominal $\times$ Pitch)	M50×1.5	M75×2	M110×2
В	46	72.5	105
С	11.5	15.5	29.5
D	12	16	30
E	9	11	11
F	95	143	218
G	51	88	154
Н	17	22	25
J	16	21	21
К	11	12	18
L	37	68	124
M1 (Nominal×Pitch ×Depth)	M8×1.25×18	M10×1.5×20	M20×2.5×31
M2 <sup>(Nominal×Pitch</sup> ×Depth)	M4×0.7×8	M6×1×11	M10×1.5×15
N	5.5	6.5	11.5
Р	10	14	27
Q	30°	30°	45°
R	50	75	110
S1	23.5	35.5	53
Т	38	50	65
U	3	5	5
V	16.5	25.5	34.5
W	5	7	8
Х	2	3	3.5
Rc	Rc1/8	Rc1/4	Rc1/4
O-ring (Included)	1BP5	1BP7	1BP7

**DWA External Dimensions** (Single-Acting Push Cylinder)

DWB0250DWB1000DWB4000-



High-Power Series

**Pneumatic Series** 

#### **Hydraulic Series**

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

Hole	Clamp			
	SFA			
	SFC			
Swind	g Clamp			
	LHA			
-	LHC			
-	LHS			
-	LHW			
-	LG/LT			
-	TLA-2			
-	TLB-2			
	TLA-1			
Link (	lamp			
	LKA			
-	LKC			
-	LKW			
-	LJ/LM			
-	TMA-2			
	TMA-1			
Work	Support			
	LD			
-	LC			
-	TNC			
-	TC			
Lift C	ylinder			
	LLW			
Linea	r Cvlinder /			
Comp	oact Cylinder			
-	LL			
-	LLR			
-	LLU			
-	70			
-	DK			
-	DT			
-	UI			
	C 11 1			

(mm)

- Block Cylinder DBA/DBC

- FVC Control Valve BZL
  - BZT BZX/JZG BZS
- allet Clamp VS/VT
- Expansion Locating Pin
  - VFL/VFM
  - VFJ/VFK
- ull Stud Clamp FΡ
- FQ

tomized ng Cylinde DWA/DWB

#### Model No. Indication

Single-Acting Pull Cylinder



#### 1 Clamping Force

025: 2.5 kN

100: 10 kN

400: 40 kN

% Spring force varies depending on the stroke.

#### 2 Design No.

**0** : Revision Number

#### 3 Piping Method

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

#### External Dimensions



Model No.	DWB0250-	DWB1000-	DWB4000-	Air Sensing
A (Nominal × Pitch)	M50×1.5	M75×2	M110×2	Lift Cylinder
В	46	72.5	105	LLVV
С	11.5	15.5	29.5	Linear Cylinder Compact Cylin
D	12	16	30	LL
		10	15	
E	9	11	15	
F	90	138	213	DR
G	51	88	154	DS
Н	17	22	25	
J	16	21	21	Block Cylinder
К	6	7	13	Centering Vise
L	37	68	124	FVA
M1 (Nominal×Pitch	M8×125×18	M10×15×20	M20×25×31	FVD
XDepth)     XDepth)	1010/1.25/10	10/1.5/20	10120/2.5/51	FVC
M2 (Noninal×ritch ×Depth)	M4×0.7×8	M6×1×11	M10×1.5×15	Control Valve
Ν	5.5	6.5	11.5	BZL
Р	10	14	27	BZT
Q	30°	30°	45°	BZX/JZ
R	50	75	110	Pallet Clamp
52	20 E	24	E1	VS/VT
52	20.5	54	51	Expansion
Т	38	50	65	Locating Pin
U	3	5	5	VFL/VFI
W	5	7	8	VFJ/VF
Х	2	3	3.5	Pull Stud Clam
Rc	Rc1/8	Rc1/4	Rc1/4	FQ
O-ring (Included)	1BP5	1BP7	1BP7	Customized
				Spring Cylinde

# \*This drawing shows the status at full stroke. M1 φD The Detail for the Rod Tip

# Model No.

Specifications

Stroke		mm		5	
Cylinder A	rea	cm <sup>2</sup>	8.042	21.237	51.530
Cylinder C	apacity	cm³	4.0 10.6 25.765		
Operating F	Pressure (Release Pressure	e) MPa		14	
Withstand	ling Pressure	MPa	21		
Operating	Temperature	°C	0~70		
Spring	Stroke 0mm (When rele	easing)	3.8	15	44
Force	Stroke 3mm (Recomme	ended)	2.6	11	39
kN Stroke 5mm (At Full Stroke)		1.7	8.4	35	

1. Spring force may exhibits hysteresis. Note :

Please contact us for further detail and specification with individual outline drawing.

#### Cautions

- Installation Notes (For Hydraulic Series)
- 1) Check the Usable Fluid
- Please use the appropriate fluid by referring to the Hydraulic Fluid List.
- 2) Procedure before Piping
- The pipeline, piping connector and fixture circuits should be cleaned by thorough flushing.
- The dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
- There is no filter provided with Kosmek's product except for a part of valves which prevents foreign materials and contaminants from getting into the circuit.
- 3) Applying Sealing Tape
- Wrap with tape 1 to 2 times following the screw direction.
- Pieces of the sealing tape can lead to oil leakage and malfunction.
- Please implement piping construction in a clear environment to prevent anything getting in products.
- 4) Air Bleeding of the Hydraulic Circuit
- If the hydraulic circuit has excessive air, the action time may become very long. If air enters the circuit after connecting the hydraulic port or under the condition of no air in the oil tank, please perform the following steps.
- ① Reduce hydraulic pressure to less than 2MPa.
- 2 Loosen the cap nut of pipe fitting closest to the clamp by one full turn.
- ③ Shake the pipeline to loosen the outlet of pipe fitting.Hydraulic fluid mixed with air comes out.



- ④ Tighten the cap nut after bleeding.
- ③ It is more effective to release air at the highest point inside the circuit or at the end of the circuit.

(Set an air bleeding valve at the highest point inside the circuit.)



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

#### Hydraulic Fluid List

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

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

High-Power Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

Cautions Notes on Handling

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① Single acting components should not be used in the same flow control circuit as the double acting components.



Maintenance Inspection Warranty





Installation Notes (For Hydraulic Series)

Hydraulic Fluid List

Notes on Hydraulic Cylinder Speed Control Circuit

Notes on Handling Maintenance/Inspection

Warranty

#### Notes on Hydraulic Cylinder Speed Control Unit

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

Flow Control Circuit for Single Acting Cylinder

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

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



Flow Control Circuit for Double Acting Cylinder Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system. However, in the case of controlling LKE, TMA, TLA, both lock side and release side should be meter-in circuit. Refer to P.75 for speed adjustment of LKE. For TMA and TLA, if meter-out circuit is used, abnormal high

pressure is created, which causes oil leakage and damage.

[Meter-out Circuit] (Except LKE/TMA/TLA)



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



erratic or very slow.

In the case of meter-out circuit, the hydraulic circuit should

The release action of the single acting cylinders may become

be designed with the following points.

Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.  $\bigcirc$  Separate the control circuit.



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



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



#### Cautions

- Notes on Handling
- 1) It should be operated by qualified personnel.
- The hydraulic machine and air compressor should be operated and maintained by qualified personnel.
- 2) Do not operate or remove the product unless the safety protocols are ensured.
- ① The machine and equipment can only be inspected or prepared when it is confirmed that the safety devices are in place.
- ② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
- ③ After stopping the product, do not remove until the temperature drops.
- ④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.
- Do not touch a clamp (cylinder) while it is working.
   Otherwise, your hands may be injured due to clinching.



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

#### Maintenance and Inspection

- 1) Removal of the Machine and Shut-off of Pressure Source
- Before the machine is removed, make sure that safety devices and preventive devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
- Make sure there is no abnormality in the bolts and respective parts before restarting.
- 2) Regularly clean the area around the piston rod and plunger.
- If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning and fluid leakage.



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



- If disconnecting by couplers, air bleeding should be carried out on a regular basis to avoid air mixed in the circuit.
- 5) Regularly tighten nut, bolt, pin, cylinder, pipe line and others to ensure proper use.
- 6) Make sure the hydraulic fluid has not deteriorated.
- 7) Make sure there is a smooth action without an irregular noise.
- Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.
- The products should be stored in the cool and dark place without direct sunshine or moisture.
- 9) Please contact us for overhaul and repair.

Warranty



High-Power Series

Pneumatic Series

#### Pheum

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

### Cautions

(For Hydraulic Series) Hydraulic Fluid List

> Notes on Hydraulic Cylinder Speed Control Circuit

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Warranty

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#### Warranty

- 1) Warranty Period
- The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.
- 2) Warranty Scope
- If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.
   Defects or failures caused by the following are not covered.
- ① If the stipulated maintenance and inspection are not carried out.
- ② If the product is used while it is not suitable for use based on the operator's judgment, resulting in defect.
- ③ If it is used or operated in an inappropriate way by the operator.(Including damage caused by the misconduct of the third party.)
- 4 If the defect is caused by reasons other than our responsibility.
- (5) If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
- ⑥ Other caused by natural disasters or calamities not attributable to our company.
- ⑦ Parts or replacement expenses due to parts consumption and deterioration.

(Such as rubber, plastic, seal material and some electric components.)

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



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# **Global Network**









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