각 고객처님께

2025 년 10 월

주식회사 코스멕

35MPa 사양 워크 서포트
모델 변경 공지 (model TNC→TNE)

배계

귀사의 무궁한 발전을 기원합니다. 평소 각별한 배려를 해 주셔서 깊이 감사드립니다.
다름이 아니옵고 수제의 건에 대해서 하기와 같이 연락드리오니
진심으로 양해 부탁드립니다.

탈탄소 사회를 향한 설비의 다운사이징에 공헌할 수 있도록, 이하 제품의 모델 변경을 실시합니다.

1. 형식

상품명	현행품의 형식	신제품의 형식
워크 서포트	TNC□□□3	TNE□□□0

2. 현행품과의 호환성

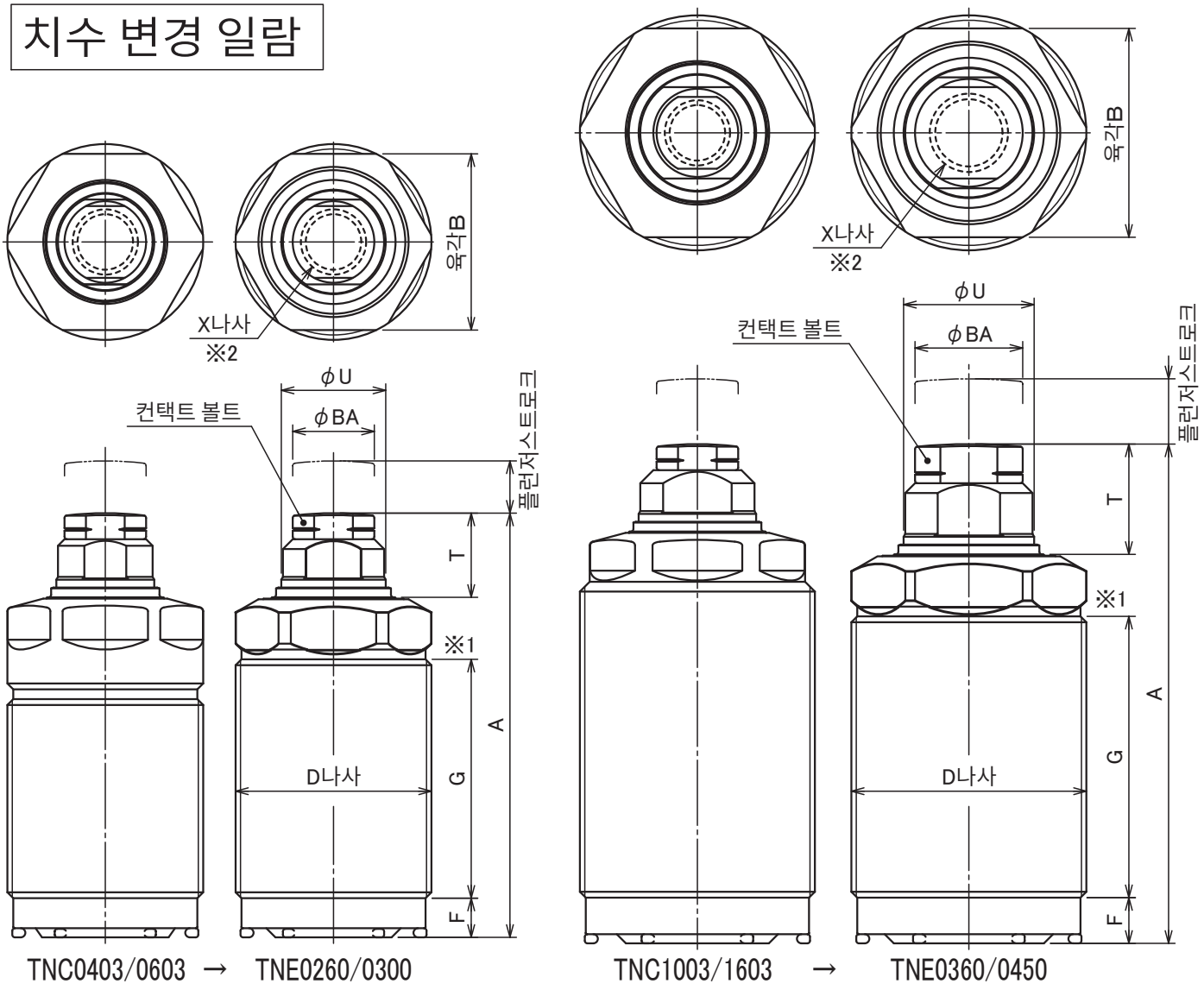
- 서포트력은 현행품의 약 1.5~2 배로 향상되었으며, 현행품과 교체 할 경우에는 가공 정밀도 등의 향상이 예상됩니다.
- 본체의 설치 치수는 현행품과 호환됩니다.
  단, 별지「치수 변경 일람」의 ※ 도장에 대해서는 반드시 확인하시고, 간섭 등의 문제가 있는 경우는 당사 영업 담당자에게 말씀해 주십시오.

3. 변경 시기

- 2025 년 12 월 말부터 신제품 TNE 를 순차적으로 출하할 예정입니다.
- 사이즈·옵션 등이 다른 제품을 동일 오더로 발주하는 경우는, 신,구 형식이 혼재되어 불편을 끼치는 경우도 있으니 양해 부탁드립니다.
- 현행품인 TNC 에 대해서는, 대단히 죄송합니다만, 당사의 재고가 소진되는 대로, 순차적으로 판매를 중지하므로 양해 부탁드립니다.

앞으로도 성능과 품질 향상을 위해 노력할 예정이오니, 계속해서 많은 관심 부탁드립니다.

치수 변경 일람



(mm)

형식		TNC0403 → TNE0260	TNC0603 → TNE0300	TNC1003 → TNE0360	TNC1603 → TNE0450
A		변경 없음	변경 없음	변경 없음	변경 없음
B		변경 없음	변경 없음	30 → 32	36 → 41
D		변경 없음(M26×1.5)	변경 없음(M30×1.5)	변경 없음(M36×1.5)	변경 없음(M45×1.5)
F		변경 없음	변경 없음	변경 없음	변경 없음
G ※1		26.5 → 32.6	30.5 → 36.6	48.4 → 43.1	53.4 → 51.7
T		변경 없음	변경 없음	13.4 → 16.9	17.9 → 18.8
U		12 → 14	15 → 16	18 → 20	22 → 25
X(호칭×깊이) ※2		M8×12 → M10×11	변경 없음(M10×11)	M10×11 → M12×13	변경 없음(M12×13)
BA		11.5 → 12.5	변경 없음	12.5 → 16.5	변경 없음
플런저스트로크		변경 없음	변경 없음	변경 없음	변경 없음
플런저 스프링력 ※3	L타입	4.0～5.8N → 5.3～ 7.8N	4.7～7.8N → 6.6～ 9.7N	5.8～ 9.7N → 9.3～14.6N	8.3～14.6N → 11.8～18.6N
	H타입	5.6～8.0N → 7.0～11.0N	6.2～11.0N → 9.0～13.5N	7.8～13.5N → 12.1～21.9N	10.1～22.0N → 15.4～33.4N
35MPa시 서포트력		4.4kN → 9.4kN	7.1kN → 11.5kN	11.7kN → 17.9kN	16.3kN → 24.8kN
21MPa시 서포트력		2.3kN → 5.2kN	3.8kN → 6.5kN	6.2kN → 10.1kN	8.7kN → 14.0kN
사용 압력 범위		변경 없음(7～35MPa)			

※1.장착 바닥면의 매립이 깊은 경우는 G 치수 상부와의 간섭을 확인해 주십시오.

※2.기존의 콘택트 볼트를 유용하는 경우는, X나사 사이즈의 적합성을 확인해 주십시오.

※3.경량, 얇은 워크 등에 사용하는 경우는 플런저 스프링의 적합성을 확인하시기 바랍니다.

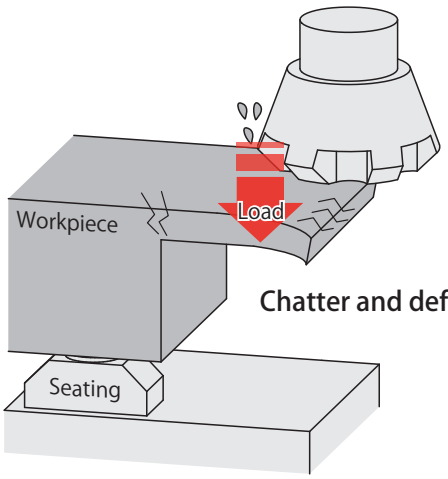
Hydraulic Work Support

Model LD
Model LDD
Model LC
Model TNC
Model TND
Model TC

Strong Support from opposite side when load is exerted

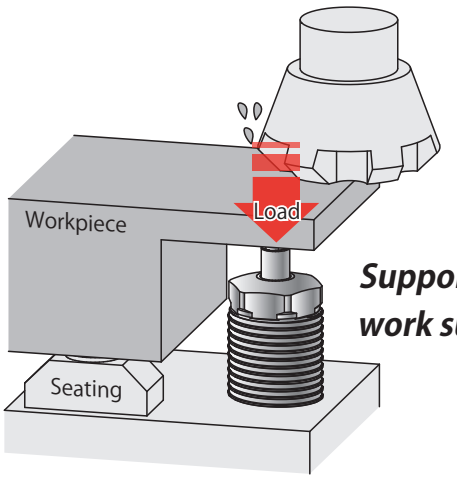
Pioneer and leading innovator of hydraulic work support collet technology.

Work support eliminates chattering while machining and prevents deformation by the cutting load.



Chatter and deformation

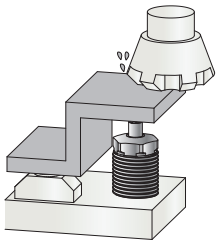
< No work support >



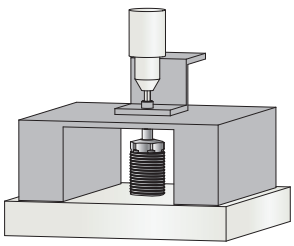
Support by work support

< With work support >

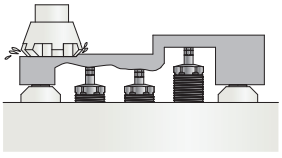
Application Examples



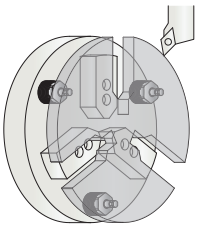
To avoid chattering during machining of thin-walled sections



To back up the screw fastener machine and a nut-runner



Workpiece with different heights



To avoid the radial chatter on lathe machining

Single-Acting Model

		Model LD → P.721	Model LC → P.745	Model TNC → P.775	Model TC → P.797	Model LCW Not on this catalog
Classification		Low Pressure Threaded	Low Pressure Top Flange	High Pressure Threaded	High Pressure Top Flange	Low Pressure Top Flange
Operating Pressure Range		2.5 ~ 7MPa	2.5 ~ 7MPa	7～35MPa	7～25MPa	2.5 ~ 7MPa
Standard Hydraulic Advance Model		External Dimensions → P.731	External Dimensions → P.757	External Dimensions → P.785	External Dimensions → P.807	
Options	Hydraulic Advance Short Model	External Dimensions → P.731	—	—	—	
	Hydraulic Advance Long Stroke Model	External Dimensions → P.733	External Dimensions → P.759	External Dimensions → P.787	External Dimensions → P.809	
	Spring Advance Model Spring Advance Short Model	External Dimensions → P.735	External Dimensions → P.763	External Dimensions → P.789	External Dimensions → P.811	
	Spring Advance Long Stroke Model	External Dimensions → P.737	External Dimensions → P.765	External Dimensions → P.789	★	
	Air Sensing Option	External Dimensions → P.739	External Dimensions → P.769	External Dimensions → P.791	★	
	Rodless Hollow Model	—	External Dimensions → P.767	—	External Dimensions → P.813	
Accessories	Manifold Block	—	LZ-MP → P.1336	—	LZ-MP → P.1336	
	Piping Block	LZ-S/SQ DZ-C/R → P.1341	—	TNZ-S/SQ → P.1345	—	
	Speed Control Valve Plug	—	BZL、BZX、JZG BZS → P.947	—	BZT、BZX、JZG → P.947	
	Air Vent	—	XLC-VENT → P.817	—	XLC-VENT → P.817	

Further info on the website.

※ Please contact us for details of ★ part.

Hydraulic Work Support

Model TNC

High Pressure (7 ~ 35MPa)

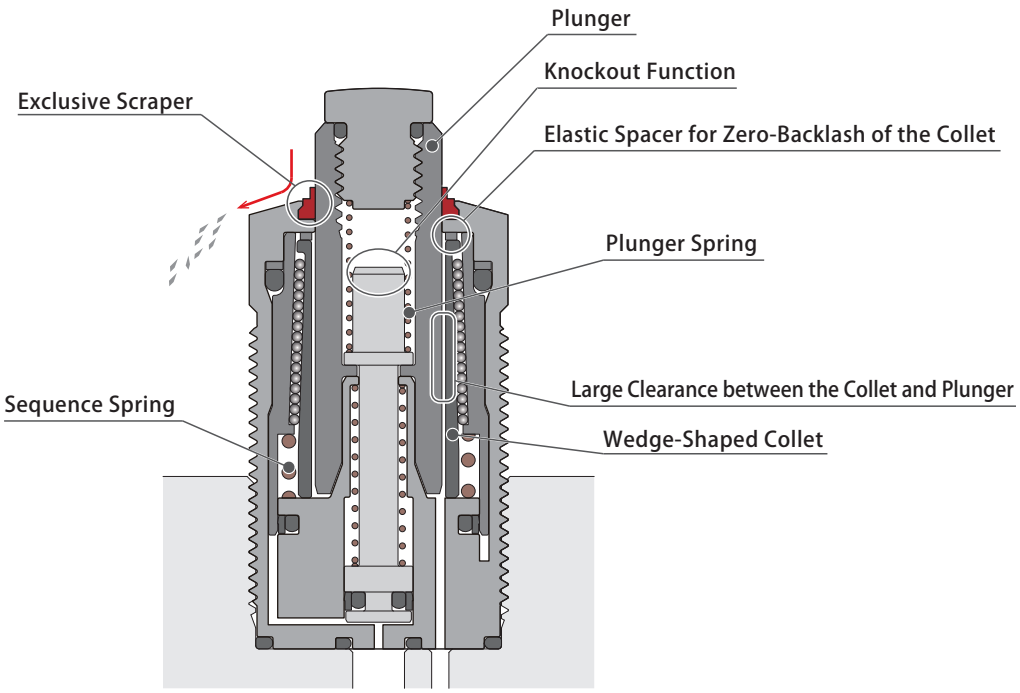
Single Action • Threaded Body Model

Powerful Support • Smooth Action

- Design number update improved environmental durability.
- New options added. Model TNC-EQ、TNC-M-Q

Index

Cross Section



Ensuring powerful support and smooth action.

KOSMEK was the first to develop the collet design in 1996.
Compared with the traditional sleeve design, it ensures powerful gripping force via a wedge effect.
In addition, a larger gap between collet and plunger is designed to prevent sticking and allow smoother action.
The load applied to the workpiece is soft with only plunger spring force.

Concrete Workpiece Touch

As the collet gripping the plunger is always pressed downwards by “elastic spacer” , it helps prevent tilting when locked and the clearance with the workpiece.

Certain Sequence Action

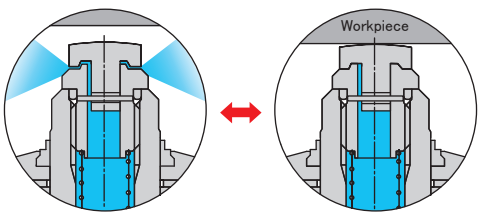
As it is equipped with a powerful sequencing spring, the action sequences as such;
Plunger goes up→ workpiece touches→ collet locks. This is carried out via one hydraulic circuit system.

Superior Environmental Durability NEW

The work support can be used in various environments withthe exclusive scraper to prevent the accumulation of dustsuch as cutting chips and the knockout function to release adherence after a long-time machine stop.

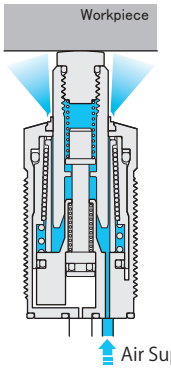
Air Sensing Option

Enables plunger advance action confirmation.
Suitable for automation.



Sensing OPEN (OFF)　　Sensing CLOSE (ON)

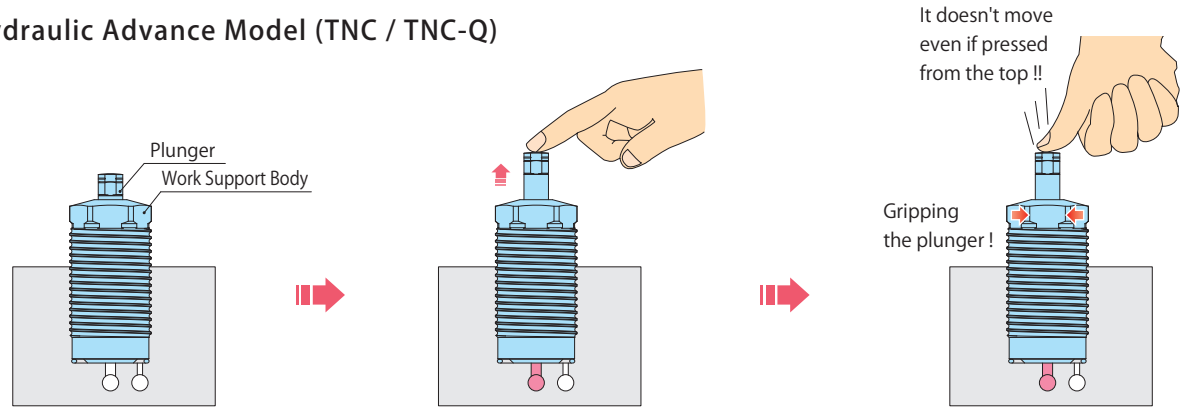
Air Purging Possible



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
LG/LT
TLA-2
TLB-2
TLA-1
Link Clamp
LKA
LKC
LKW
LJ/LM
TMA-2
TMA-1
Work Support
LD
LC
TNC
TC
Air Sensing Lift Cylinder
LLW
Linear Cylinder / Compact Cylinder
LL
LLR
LLU
DP
DR
DS
DT
Block Cylinder
DBA/DBC
Centering Vise
FVA
FVD
FVC
Control Valve
BZL
BZT
BZX/JZG
BZS
Pallet Clamp
VS/VT
Expansion Locating Pin
VFL/VFM
VFJ/VFK
Pull Stud Clamp
FP
FQ
Customized Spring Cylinder
DWA/DWB

Action Description

Hydraulic Advance Model (TNC / TNC-Q)



Hydraulic Pressure：OFF
The state of plunger down.

Hydraulic Pressure：ON
Plunger rises with oil pressure
and stops after touching workpiece.

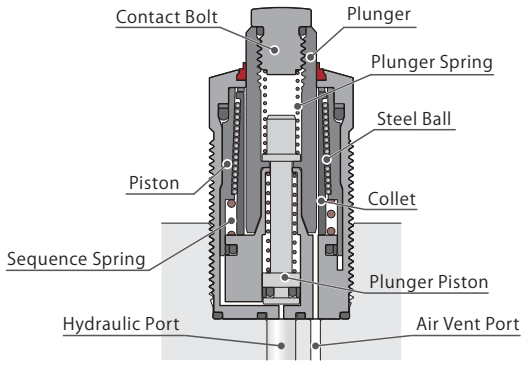
Hydraulic Pressure：ON
Once it is in the stopped position where it touches the workpiece, the plunger doesn't go down even if pressed from above.

Air Sensing Option (TNC-M/TNC-M-E/TNC-M-Q)

Available to check action by connecting the air sensor at vent port and then detecting differential pressure.
Please refer to the air sensor page for further details.

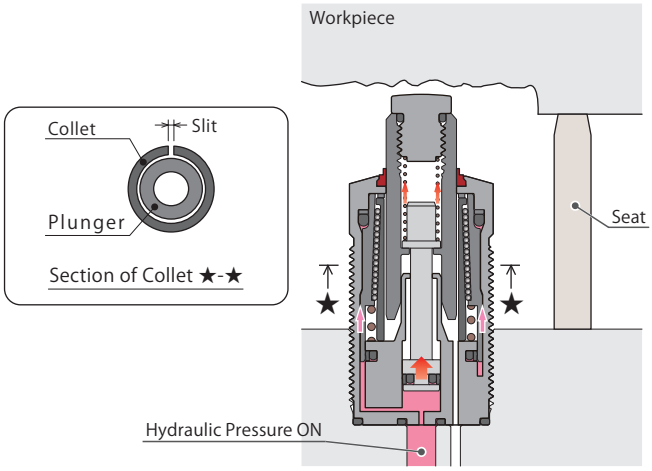
Internal Action Description

Hydraulic Advance model TNC



When Releasing (Cross Section)

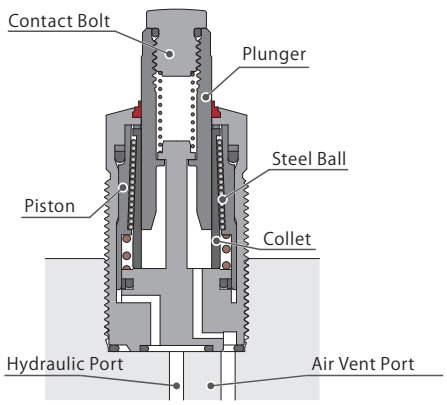
Plunger lowered



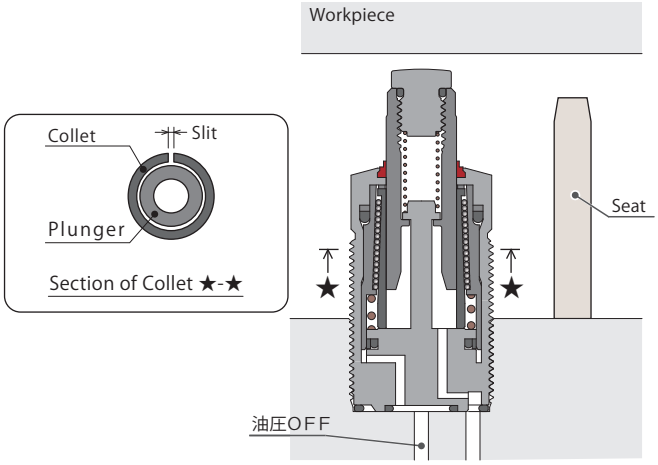
Plunger Rises

Plunger piston rises first when hydraulic pressure is supplied. With this action, the plunger rises up via the plunger spring.

Spring Advance model TNC-E

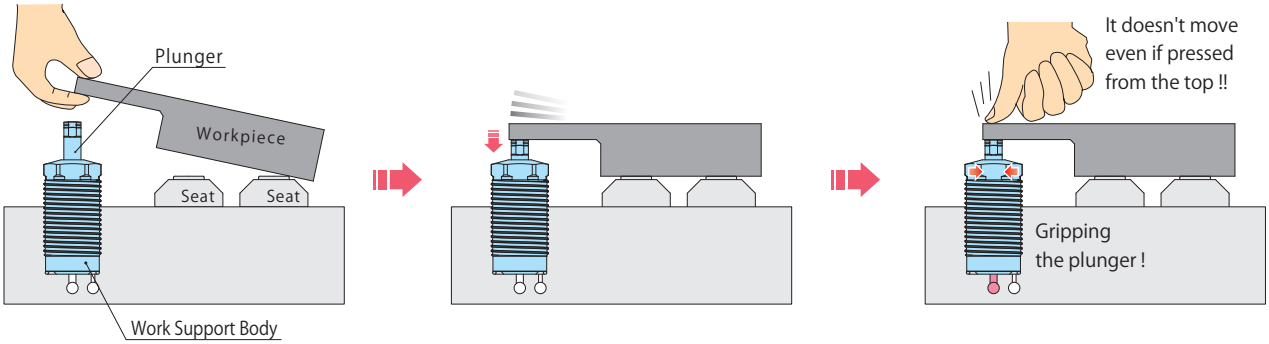


When Releasing (Cross Section)



Released State(Plunger Rises)

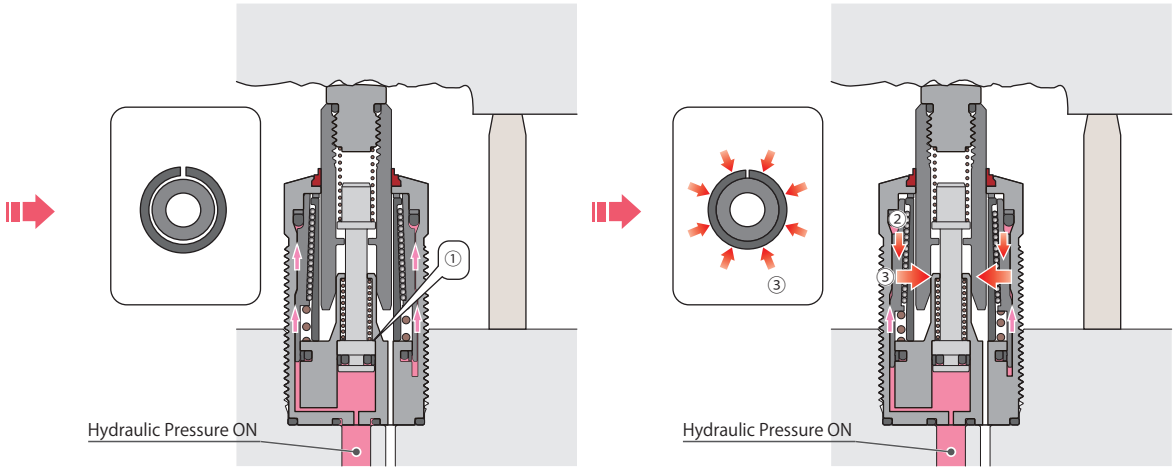
● Spring Advance Model (TNC-E/TNC-EQ)



Hydraulic Pressure : OFF
The state of plunger up.

Hydraulic Pressure : OFF
When workpiece rests on the work support, plunger goes down due to the weight of workpiece and is balanced.

Hydraulic Pressure : ON
Once it is in the stopped position where it touches the workpiece, the plunger doesn't go down even if pressed from above.

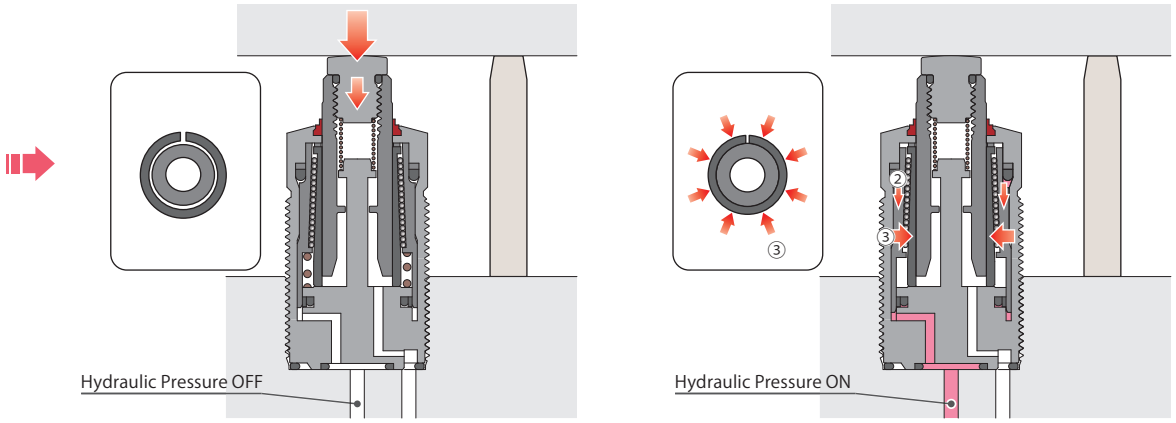


Plunger Softly Contacts a Workpiece

After the plunger contacts any part of a workpiece such as its casting surface, hydraulic pressure thrust of the plunger piston stops at the action end shown as ① on above picture.

Locked State

② When the pressure rises more than the sequential spring force, the piston outside of the collet starts to press down.
③ Wedge-shaped collet powerfully grips the plunger via steel balls of taper surface inside the piston, and locking is completed.



Workpiece Set (Plunger goes down)

Locked State

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
LG/LT
TLA-2
TLB-2
TLA-1
Link Clamp
LKA
LKC
LKW
LJ/LM
TMA-2
TMA-1
Work Support
LD
LC
TNC
TC
Air Sensing Lift Cylinder
LLW
Linear Cylinder / Compact Cylinder
LL
LLR
LLU
DP
DR
DS
DT
Block Cylinder
DBA/DBC
Centering Vise
FVA
FVD
FVC
Control Valve
BZL
BZT
BZX/JZG
BZS
Pallet Clamp
VS/VT
Expansion Locating Pin
VFL/VFM
VFJ/VFK
Pull Stud Clamp
FP
FQ
Customized Spring Cylinder
DWA/DWB

Model No. Indication

TNC 040 3 - L □ - □

1 2 3 4 5

1 Support Force

040：Support Force 4.4kN at 35MPa
060：Support Force 7.1kN at 35MPa
100：Support Force 11.7kN at 35MPa
160：Support Force 16.3kN at 35MPa

2 Design No.

3 ：Revision Number

3 Plunger Spring Force

L ：Low Spring Force
H ：High Spring Force
Blank：For 5 Option **Q**

4 Plunger Action Confirmation

Blank：None (Standard)
M ：Air Sensing Option ※1

5 Option

Blank： Hydraulic Advance Model (Standard)
Q ： Hydraulic Advance Long Stroke Model ※1
E ： Spring Advance Model ※1
EQ ： Spring Advance Long Stroke Model

	● = Available Option			
4 Plunger Action Confirmation Symbol 5 Option Symbol	M26×1.5 TNC 0403	M30×1.5 TNC 0603	M36×1.5 TNC 1003	M45×1.5 TNC 1603
Blank	●	●	●	●
Q	●	●	●	●
E	●	●	●	●
EQ	●	●	●	●
M	●	●	●	●
M-Q	●	●	●	●
M-E	●	●	●	●
M-EQ	●	●	●	●

Note：
※1. Please contact us for detailed specification and external dimensions for the combination of 4 **M**：Air Sensing Option and 5 **Q**：Long Stroke Model.

Specifications

Option 5 Blank / E

Model No.		TNC0403-□ TNC0403-□M TNC0403-□-E TNC0403-□M-E	TNC0603-□ TNC0603-□M TNC0603-□-E TNC0603-□M-E	TNC1003-□ TNC1003-□M TNC1003-□-E TNC1003-□M-E	TNC1603-□ TNC1603-□M TNC1603-□-E TNC1603-□M-E
Support Force at 35MPa kN		4.4	7.1	11.7	16.3
Support Force (Calculation Formula) ※2 kN		0.15×P−0.73	0.24×P−1.18	0.39×P−1.95	0.54×P−2.72
Plunger Stroke mm		6.5	8	10	12
Effective Stroke	5 Option Blank	6.0	7.5	9.5	11.5
Cylinder Capacity cm³	5 Option Blank	0.3	0.6	1.1	1.8
	5 Option E	0.1	0.1	0.3	0.4
Plunger Spring Force N ※3	L: Low Spring Force	4.0～5.8	4.7～7.8	5.8～9.7	8.3～14.6
	H: High Spring Force	5.6～8.0	6.2～11.0	7.8～13.5	10.1～22.0
Max. Operating Pressure MPa		35			
Min. Operating Pressure MPa		7			
Operating Temperature ℃		0～70			
Weight kg		0.15	0.2	0.3	0.75

Option 5 Q

Model No.	TNC0403-Q	TNC0603-Q	TNC1003-Q	TNC1603-Q
Support Force at 35MPa kN	4.4	7.1	11.7	16.3
Support Force (Calculation Formula) ※2 kN	0.15×P−0.73	0.24×P−1.18	0.39×P−1.95	0.54×P−2.72
Plunger Stroke mm	13	16	20	24
Effective Stroke 5 Option Q	12.5	15.5	19.5	23.5
Cylinder Capacity cm³	0.6	1.0	1.9	3.1
Plunger Spring Force ※3 N	6.1～11.4	6.2～12.9	7.8～20.4	10.1～24.8
Max. Operating Pressure MPa	35			
Min. Operating Pressure MPa	7			
Operating Temperature ℃	0～70			
Weight kg	0.2	0.3	0.4	0.95

Notes: ※2. P in the formula for support force indicates the hydraulic pressure (MPa).
※3. The plunger spring force indicates the spring design value. It may vary depending on sliding resistance of the plunger and characteristic of the spring , etc. Please read it as a reference value of workpiece contact force. For the workpiece contact force of 4 M: Air sensing option, refer to the air sensing option on P.793.

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
LG/LT
TLA-2
TLB-2
TLA-1
Link Clamp
LKA
LKC
LKW
LJ/LM
TMA-2
TMA-1
Work Support
LD
LC
TNC
TC
Air Sensing Lift Cylinder
LLW
Linear Cylinder / Compact Cylinder
LL
LLR
LLU
DP
DR
DS
DT
Block Cylinder
DBA/DBC
Centering Vise
FVA
FVD
FVC
Control Valve
BZL
BZT
BZX/JZG
BZS
Pallet Clamp
VS/VT
Expansion Locating Pin
VFL/VFM
VFJ/VFK
Pull Stud Clamp
FP
FQ
Customized Spring Cylinder
DWA/DWB

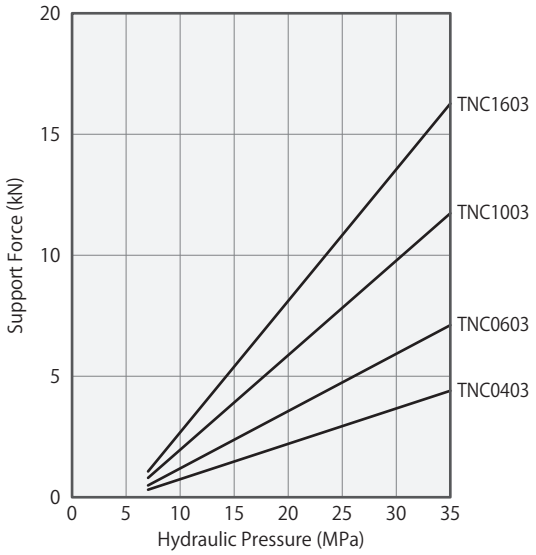
Performance Curve (TNC-□ : Hydraulic Advance Model / TNC-□-E : Spring Advance Model)

Applicable Model

TNC 040 3 - L H - Blank E

1 Support Force 5 Option : Blank, E

Support Force Graph ※ This graph shows the support force under static load condition.

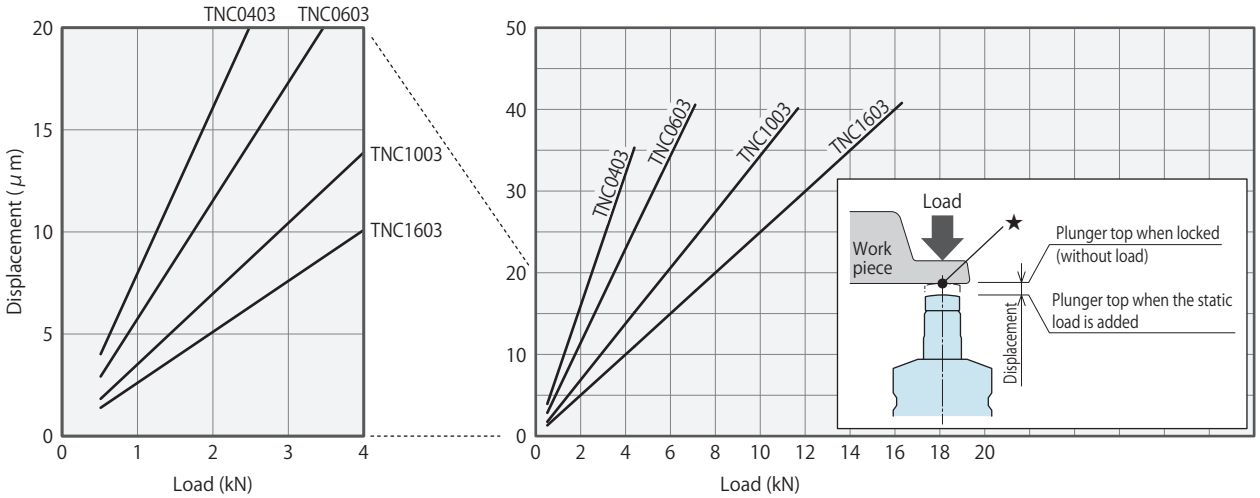


	Support Force (kN)			
Model No.	TNC0403-□	TNC0603-□	TNC1003-□	TNC1603-□
Hydraulic Pressure (MPa)	TNC0403-□-E	TNC0603-□-E	TNC1003-□-E	TNC1603-□-E
35	4.4	7.1	11.7	16.3
32.5	4.0	6.5	10.7	14.9
30	3.7	5.9	9.8	13.6
27.5	3.3	5.3	8.8	12.2
25	2.9	4.7	7.8	10.9
22.5	2.6	4.1	6.8	9.5
20	2.2	3.6	5.9	8.1
17.5	1.8	3.0	4.9	6.8
15	1.5	2.4	3.9	5.4
12.5	1.1	1.8	2.9	4.1
10	0.7	1.2	2.0	2.7
7.5	0.4	0.6	1.0	1.4
Support Force Formula ※1 kN	0.15×P-0.73	0.24×P-1.18	0.39×P-1.95	0.54×P-2.72

Note : ※1. P : Operating Hydraulic Pressure (MPa)

Load / Displacement Graph

※ This graph shows the static load-displacement of a single work support at supply hydraulic pressure 35MPa.
(Not including the displacement of the workpiece side due to unevenness at ★ mark and surrounding clamps.)



Performance Curve (TNC-Q : Hydraulic Advance Long Stroke Model / TNC-EQ : Spring Advance Long Stroke Model)

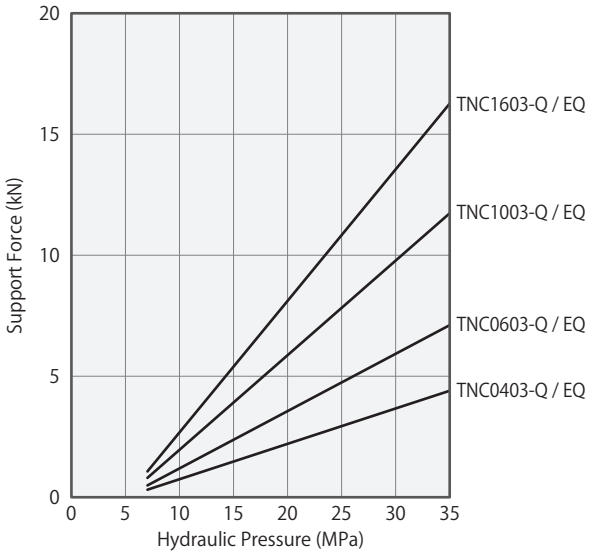
Applicable Model

TNC 040 3 - Q / EQ

5 Option : Q

1 Support Force

Support Force Graph ※ This graph shows the support force under static load condition.

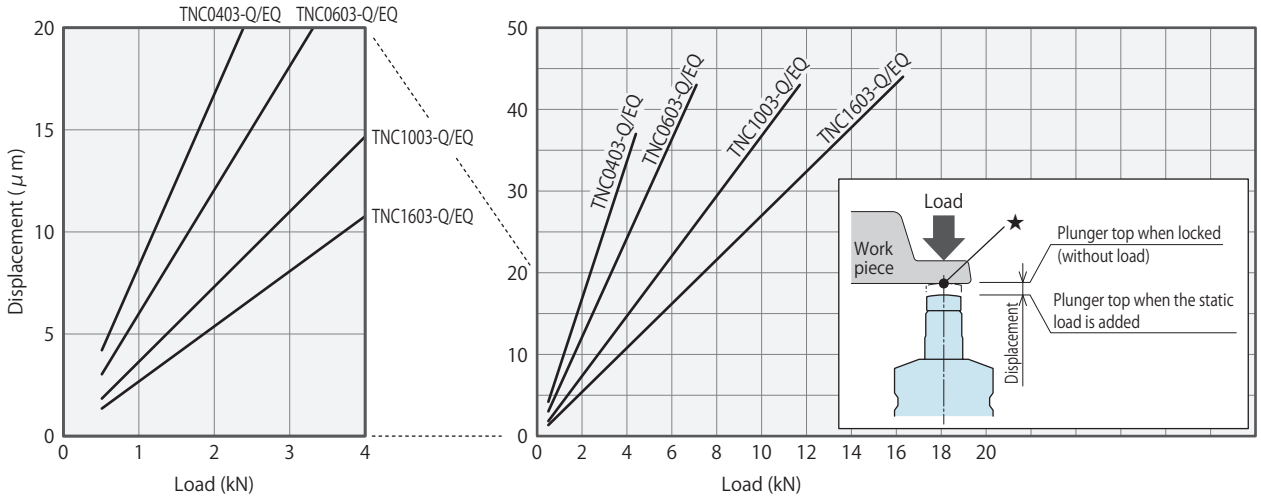


Model No.	Support Force (kN)			
	TNC0403-Q	TNC0603-Q	TNC1003-Q	TNC1603-Q
Hydraulic Pressure (MPa)	TNC0403-EQ	TNC0603-EQ	TNC1003-EQ	TNC1603-EQ
35	4.4	7.1	11.7	16.3
32.5	4.0	6.5	10.7	14.9
30	3.7	5.9	9.8	13.6
27.5	3.3	5.3	8.8	12.2
25	2.9	4.7	7.8	10.9
22.5	2.6	4.1	6.8	9.5
20	2.2	3.6	5.9	8.1
17.5	1.8	3.0	4.9	6.8
15	1.5	2.4	3.9	5.4
12.5	1.1	1.8	2.9	4.1
10	0.7	1.2	2.0	2.7
7.5	0.4	0.6	1.0	1.4
Support Force Formula ※1 kN	0.15×P-0.73	0.24×P-1.18	0.39×P-1.95	0.54×P-2.72

Note : ※1. P : Operating Hydraulic Pressure (MPa)

Load / Displacement Graph

※ This graph shows the static load-displacement of a single work support at supply hydraulic pressure 35MPa.
(Not including the displacement of the workpiece side due to unevenness at ★ mark and surrounding clamps.)



※ The Displacement of TNC-Q : Long Stroke Model is larger than that of TNC : Standard Model.

Performance Curve (TNC-□M：Hydraulic Advance Air Sensing Option / TNC-□M-E：Spring Advance Air Sensing Option)

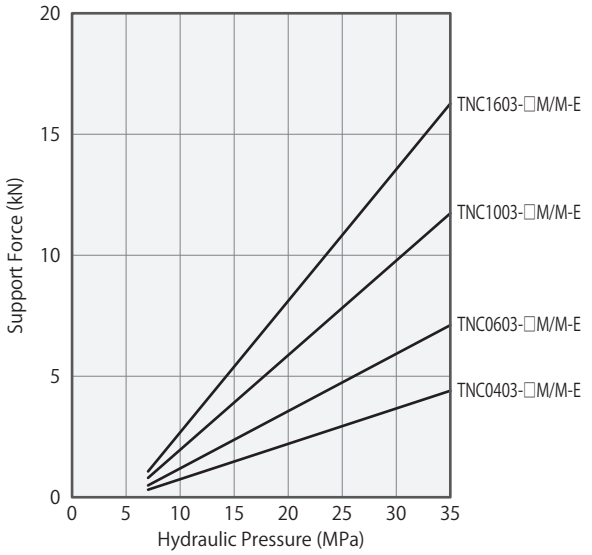
Applicable Model

TNC 040 3 - L/H M - Blank/E

1 Support Force　5 Option：Blank, E

4 Plunger Action Confirmation：M

Support Force Graph ※ This graph shows the support force under static load condition.

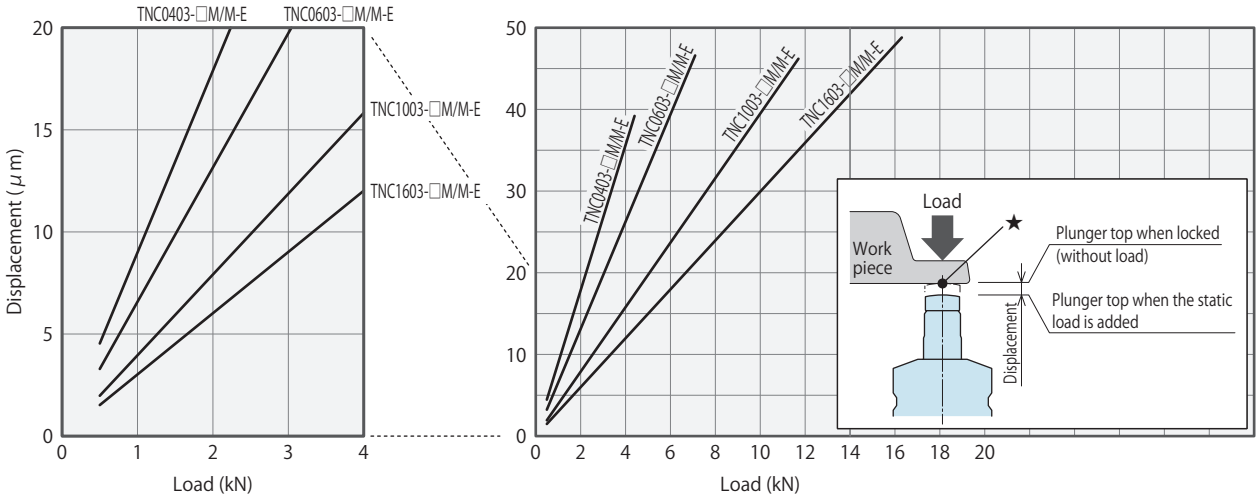


	Support Force (kN)			
Model No.	TNC0403-□M	TNC0603-□M	TNC1003-□M	TNC1603-□M
Hydraulic Pressure (MPa)	TNC0403-□M-E	TNC0603-□M-E	TNC1003-□M-E	TNC1603-□M-E
35	4.4	7.1	11.7	16.3
32.5	4.0	6.5	10.7	14.9
30	3.7	5.9	9.8	13.6
27.5	3.3	5.3	8.8	12.2
25	2.9	4.7	7.8	10.9
22.5	2.6	4.1	6.8	9.5
20	2.2	3.6	5.9	8.1
17.5	1.8	3.0	4.9	6.8
15	1.5	2.4	3.9	5.4
12.5	1.1	1.8	2.9	4.1
10	0.7	1.2	2.0	2.7
7.5	0.4	0.6	1.0	1.4
Support Force Formula ※1 kN	0.15×P-0.73	0.24×P-1.18	0.39×P-1.95	0.54×P-2.72

Note：※1. P : Operating Hydraulic Pressure (MPa)

Load / Displacement Graph

※ This graph shows the static load-displacement of a single work support at supply hydraulic pressure 35MPa.
(Not including the displacement of the workpiece side due to unevenness at ★ mark and surrounding clamps.)

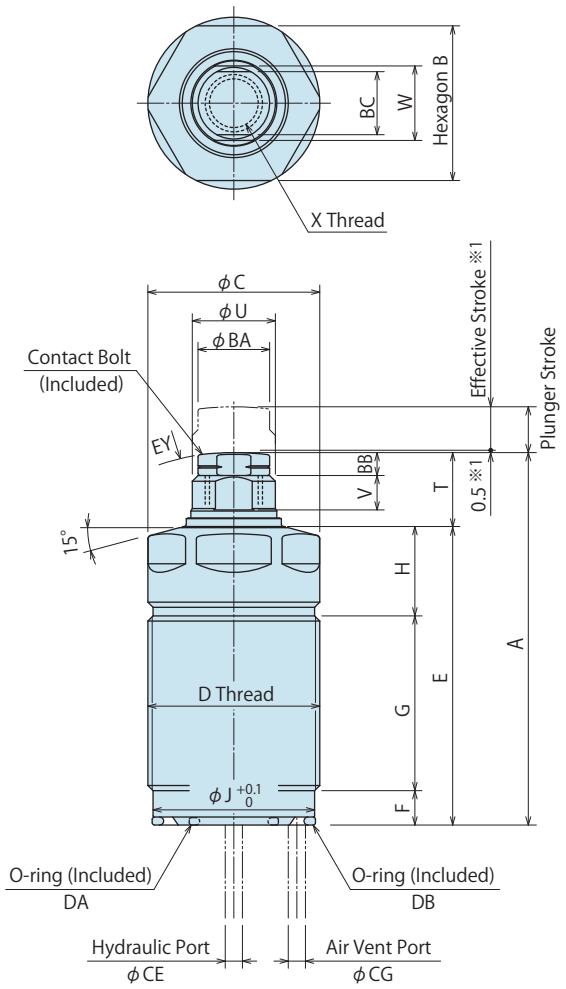


※ The Displacement of TNC-□M / TNC-□M-E：Air Sensing Model is larger than that of TNC/TNC-E：Standard Model.
※ Contact us for TNC-M-Q / TNC-M-EQ.

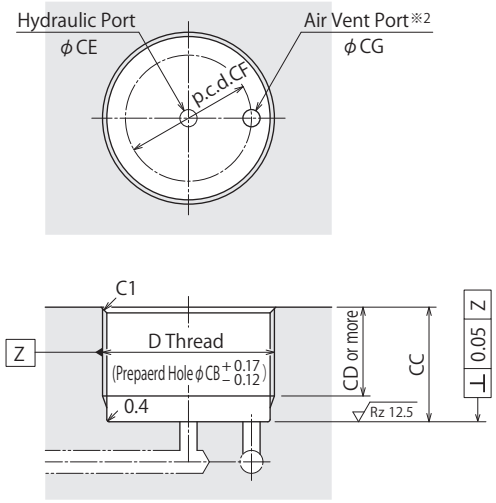
MEMO

External Dimensions

※ This drawing shows the released state of TNC-□ (before the plunger is lifted).



Machining Dimensions of Mounting Area



Note :

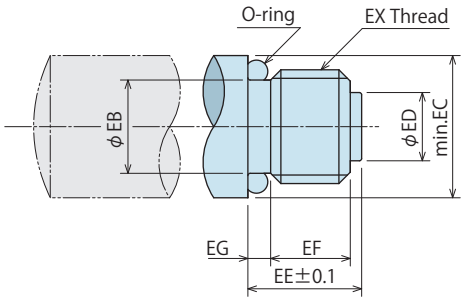
※2. Please keep clear condition at the air vent port, and prevent coolant and chips from entering the port. (Please refer to "Appropriate Measures for the Air Vent Port (P.819)".)

Note :

※1. When the work support touches a workpiece within short stroke range, up to 0.5mm from the plunger retract-end, the force which is larger than the plunger spring force will be applied to the workpiece. Please use the work support within the effective stroke range.

Contact Bolt Design Dimensions

※Reference for designing a contact bolt (attachment) by customer other than the included contact bolt.



Model No. Indication

(Format Example：TNC0403-L)

TNC 040 3– L H

1 Support Force
2 Design No.
3 Plunger Spring Force
4 Plunger Action Confirmation (Blank)
5 Option (Blank)

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	TNC0403-□	TNC0603-□	TNC1003-□	TNC1603-□
Plunger Stroke	6.5	8	10	12
Effective Stroke	6.0	7.5	9.5	11.5
A	60	65	76.5	88
B	24	27	30	36
C	26	30	33	40
D (Nominal×Pitch)	M26×1.5	M30×1.5	M36×1.5	M45×1.5
E	47.1	52.1	63.1	70.1
F	6	6	7	7
G	26.5	30.5	48.4	53.4
H	14.6	15.6	7.7	9.7
J	24.2	28.2	34.2	43.2
T	12.9	12.9	13.4	17.9
U	12	15	18	22
V	6	6	6.5	9
W	10	13	14	19
X (Nominal×Pitch×Depth)	M8×1.25×12	M10×1.5×11	M10×1.5×11	M12×1.75×13
BA	11.5	12.5	12.5	16.5
BB	4	4	4	6
BC	10	11	11	14
CB	24.5	28.5	34.5	43.5
CC	13 ～ 32	13 ～ 36	15 ～ 55	18 ～ 60
CD	CC－5	CC－5	CC－6	CC－6
CE	max. 8	max. 10	max. 10	max. 12
CF	p.c.d. 19	p.c.d. 22	p.c.d. 26	p.c.d. 30
CG	max. 2.5	max. 3	max. 5	max. 6
DA	AS568-013(90)	AS568-014(90)	AS568-015(90)	AS568-017(90)
DB	AS568-020(90)	AS568-022(90)	AS568-026(90)	AS568-030(90)
EY	SR30	SR50	SR50	SR80
Tightening Torque for Main Body ※3	31.5 N·m	50 N·m	63 N·m	80 N·m

Note : ※3. The torque for mounting the body should be as indicated in the table above.
Excessive torque will cause deformation of the body leading to operation failure.
Also, with insufficient torque, O-ring will be damaged resulting in oil leakage.

Contact Bolt Design Dimensions

※Reference for designing a contact bolt (attachment) by customer other than the included contact bolt.

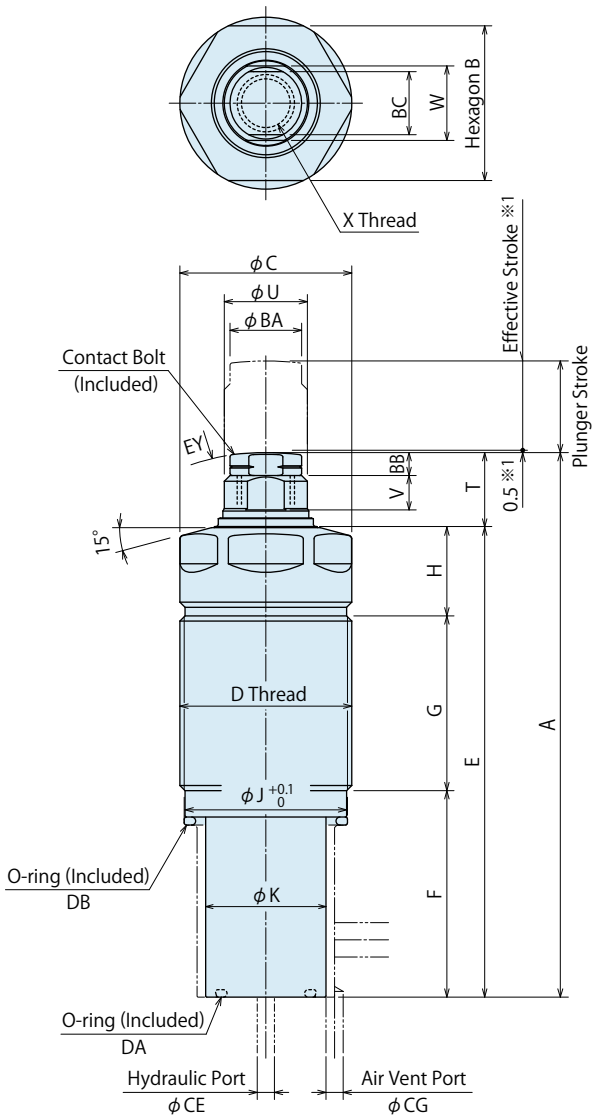
(mm)

Corresponding Product Model	TNC0403-□	TNC0603-□	TNC1003-□	TNC1603-□
EB	5.4	7.4	7.4	9.4
EC	10	12.5	12.5	16.5
ED	5	6	6	7.5
EE	10	10	10	12
EF	7.3	7.3	7.3	8.7
EG	1.7	1.7	1.7	2.3
EX	M8	M10	M10	M12
O-ring	AS568-009(70)	AS568-010(70)	AS568-010(70)	AS568-012(70)
Tightening Torque for Contact Bolt	10N·m	16N·m	16N·m	40N·m
Reference：Material	S45C			
Reference：Quenching Hardness	HRC50~55			
Reference：Surface Finishing	Alkaline Blackening			

Notes :
1. It should be designed according to the weight of contact bolt and the plunger spring force.
2. If using a contact bolt with different dimensions than those shown above, spring force will be different from the values on catalog, and the plunger spring will be damaged leading to malfunctions.

External Dimensions

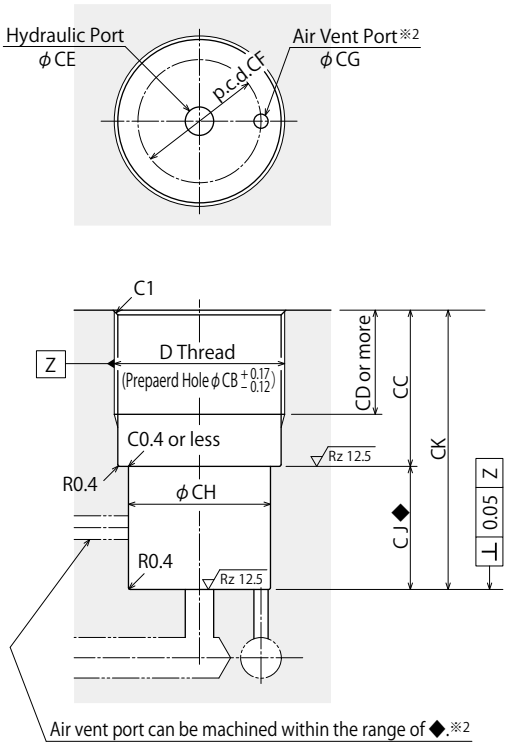
※ This drawing shows the released state of TNC-Q (before the plunger is lifted).



Note :

※1. When the work support touches a workpiece within short stroke range, up to 0.5mm from the plunger retract-end, the force which is larger than the plunger spring force will be applied to the workpiece. Please use the work support within the effective stroke range.

Machining Dimensions of Mounting Area

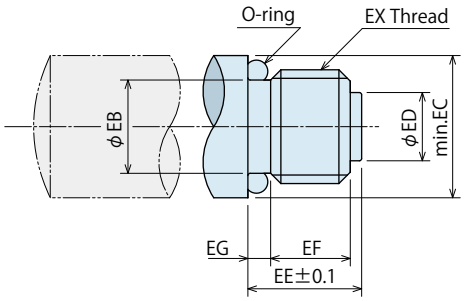


Note :

※2. Please keep clear condition at the air vent port, and prevent coolant and chips from entering the port. (Please refer to "Appropriate Measures for the Air Vent Port (P.819)".)

Contact Bolt Design Dimensions

※Reference for designing a contact bolt (attachment) by customer other than the included contact bolt.



Model No. Indication

(Format Example：TNC0403-Q)

TNC 040 3– Q

1 Support Force
2 Design No.
3 Plunger Spring Force
4 Plunger Action Confirmation (Blank)
5 Option Q

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	TNC0403-Q	TNC0603-Q	TNC1003-Q	TNC1603-Q
Plunger Stroke	13	16	20	24
Effective Stroke	12.5	15.5	19.5	23.5
A	83.5	95	112	137
B	24	27	30	36
C	26	30	33	40
D (Nominal×Pitch)	M26×1.5	M30×1.5	M36×1.5	M45×1.5
E	70.6	82.1	98.6	119.1
F	29.5	36	42.5	56
G	26.5	30.5	48.4	53.4
H	14.6	15.6	7.7	9.7
J	24.2	28.2	34.2	43.2
K	18.5	21	23	27
T	12.9	12.9	13.4	17.9
U	12	15	18	22
V	6	6	6.5	9
W	10	13	14	19
X (Nominal×Pitch×Depth)	M8×1.25×12	M10×1.5×11	M10×1.5×11	M12×1.75×13
BA	11.5	12.5	12.5	16.5
BB	4	4	4	6
BC	10	11	11	14
CB	24.5	28.5	34.5	43.5
CC	13 ～ 32	13 ～ 36	15 ～ 55	18 ～ 60
CD	CC－5	CC－5	CC－6	CC－6
CE	max. 8	max. 10	max. 10	max. 12
CF	p.c.d. 20	p.c.d. 24	p.c.d. 26	p.c.d. 30
CG	max. 2	max. 3	max. 3	max. 5
CH	20	24	30	39
CK	CC＋23.5	CC＋30	CC＋35.5	CC＋49
CJ	23.5	30	35.5	49
DA	AS568-014(90)	AS568-015(90)	AS568-016(90)	AS568-018(90)
DB	AS568-020(90)	AS568-022(90)	AS568-026(90)	AS568-030(90)
EY	SR30	SR50	SR50	SR80
Tightening Torque for Main Body ※3	31.5 N·m	50 N·m	63 N·m	80 N·m

Note : ※3. The torque for mounting the body should be as indicated in the table above.
Excessive torque will cause deformation of the body leading to operation failure.
Also, with insufficient torque, O-ring will be damaged resulting in oil leakage.

Contact Bolt Design Dimensions

※Reference for designing a contact bolt (attachment) by customer other than the included contact bolt.

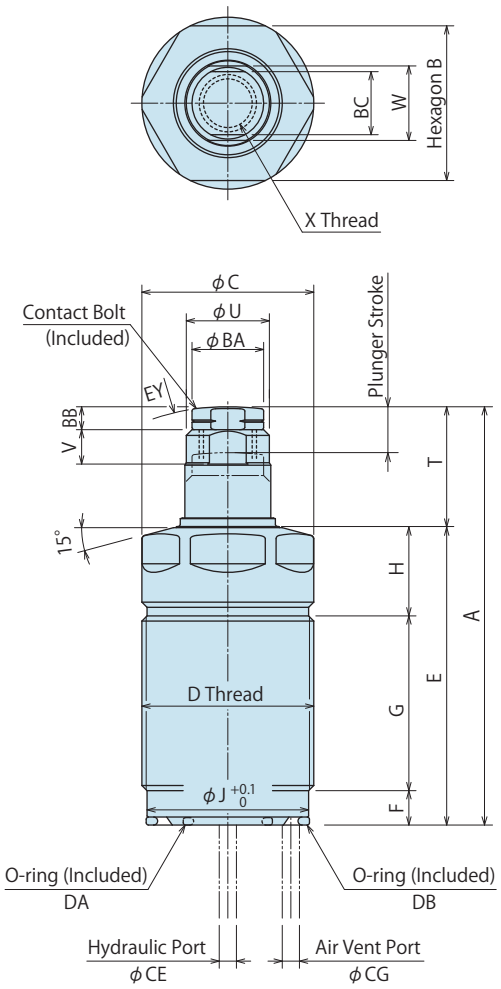
(mm)

Corresponding Product Model	TNC0403-Q	TNC0603-Q	TNC1003-Q	TNC1603-Q
EB	5.4	7.4	7.4	9.4
EC	10	12.5	12.5	16.5
ED	5	6	6	7.5
EE	10	10	10	12
EF	7.3	7.3	7.3	8.7
EG	1.7	1.7	1.7	2.3
EX	M8	M10	M10	M12
O-ring	AS568-009(70)	AS568-010(70)	AS568-010(70)	AS568-012(70)
Tightening Torque for Contact Bolt	10N·m	16N·m	16N·m	40N·m
Reference：Material	S45C			
Reference：Quenching Hardness	HRC50~55			
Reference：Surface Finishing	Alkaline Blackening			

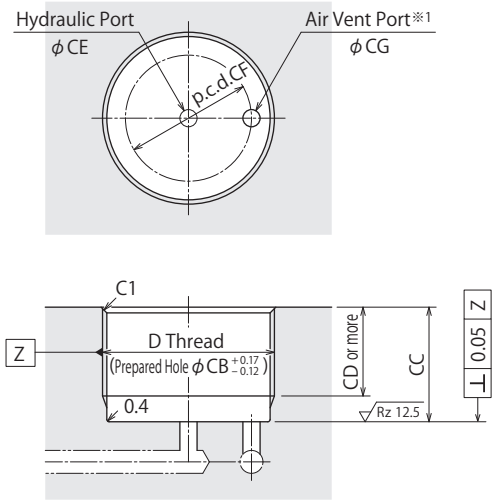
Notes :
1. It should be designed according to the weight of contact bolt and the plunger spring force.
2. If using a contact bolt with different dimensions than those shown above, spring force will be different from the values on catalog, and the plunger spring will be damaged leading to malfunctions.

External Dimensions

※ This drawing shows the released state of release of TNC-□-E (before the plunger is lifted).



Machining Dimensions of Mounting Area

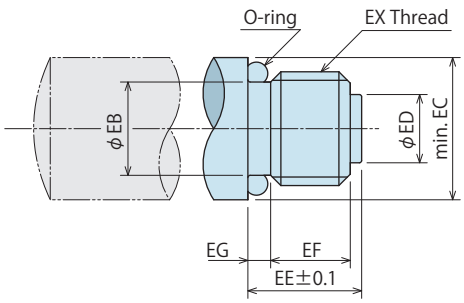


Note :

※1. Please keep clear condition at the air vent port, and prevent coolant and chips from entering the port. (Please refer to "Appropriate Measures for the Air Vent Port (P.819)".)

Contact Bolt Design Dimensions

※Reference for designing a contact bolt (attachment) by customer other than the included contact bolt.



Model No. Indication

(Format Example：TNC0403-L-E、TNC0403-H-EQ)

TNC 040 3 – L H – E EQ

1 Support Force
2 Design No.
3 Plunger Spring Force
4 Plunger Action Confirmation (Blank)
5 Option
E：Spring Advance Model
EQ：Spring Advance Long Stroke Model

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	TNC0403-□-E	TNC0403-□-EQ	TNC0603-□-E	TNC0603-□-EQ	TNC1003-□-E	TNC1003-□-EQ	TNC1603-□-E	TNC1603-□-EQ
Plunger Stroke	6.5	13	8	16	10	20	12	24
A	66.5	73	73	81	86.5	96.5	100	112
B	24		27		30		36	
C	26		30		33		40	
D(Nominal×Pitch)	M26×1.5		M30×1.5		M36×1.5		M45×1.5	
E	47.1		52.1		63.1		70.1	
F	6		6		7		7	
G	26.5		30.5		48.4		53.4	
H	14.6		15.6		7.7		9.7	
J	24.2		28.2		34.2		43.2	
T	19.4	25.9	20.9	28.9	23.4	33.4	29.9	41.9
U	12		15		18		22	
V	6		6		6.5		9	
W	10		13		14		19	
X(Nominal×Pitch×Depth)	M8×12		M10×11		M10×11		M12×13	
BA	11.5		12.5		12.5		16.5	
BB	4		4		4		6	
BC	10		11		11		14	
CB	24.5		28.5		34.5		43.5	
CC	13～32		13～36		15～55		18～60	
CD	CC-5		CC-5		CC-6		CC-6	
CE	max. 8		max. 10		max. 10		max. 12	
CF	p.c.d. 19		p.c.d. 22		p.c.d. 26		p.c.d. 30	
CG	max. 2.5		max. 3		max. 5		max. 6	
DA	AS568-013(90)		AS568-014(90)		AS568-015(90)		AS568-017(90)	
DB	AS568-020(90)		AS568-022(90)		AS568-026(90)		AS568-030(90)	
EY	SR30		SR50		SR50		SR80	
Tightening Torque for Main Body※2	31.5 N·m		50 N·m		63 N·m		80 N·m	

Note : ※2. The torque for mounting the body should be as indicated in the table above.
Excessive torque will cause deformation of the body leading to operation failure.
Also, with insufficient torque, O-ring will be damaged resulting in oil leakage.

Contact Bolt Design Dimensions

※Reference for designing a contact bolt (attachment) by customer other than the included contact bolt.

(mm)

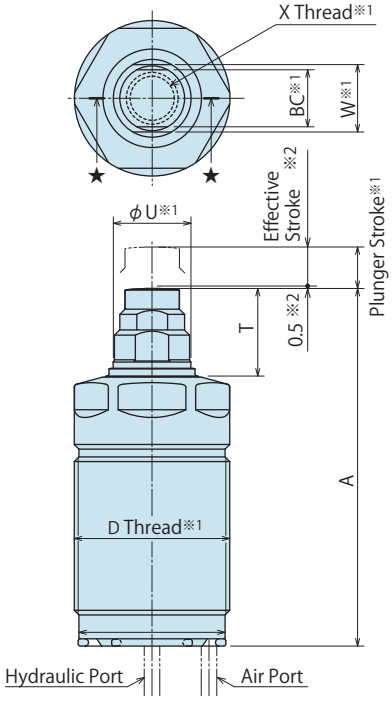
Corresponding Product Model	TNC0403-□-E/EQ	TNC0603-□-E/EQ	TNC1003-□-E/EQ	TNC1603-□-E/EQ
EB	5.4	7.4	7.4	9.4
EC	10	12.5	12.5	16.5
ED	5	6	6	7.5
EE	10	10	10	12
EF	7.3	7.3	7.3	8.7
EG	1.7	1.7	1.7	2.3
EX	M8	M10	M10	M12
O-ring	AS568-009(70)	AS568-010(70)	AS568-010(70)	AS568-012(70)
Tightening Torque for Contact Bolt	10N·m	16N·m	16N·m	40N·m
Reference：Material	S45C			
Reference：Quenching Hardness	HRC50~55			
Reference：Surface Finishing	Alkaline Blackening			

Notes :
1. It should be designed according to the weight of contact bolt and the plunger spring force.
2. If using a contact bolt with different dimensions than those shown above, spring force will be different from the values on catalog, and the plunger spring will be damaged leading to malfunctions.

External Dimensions

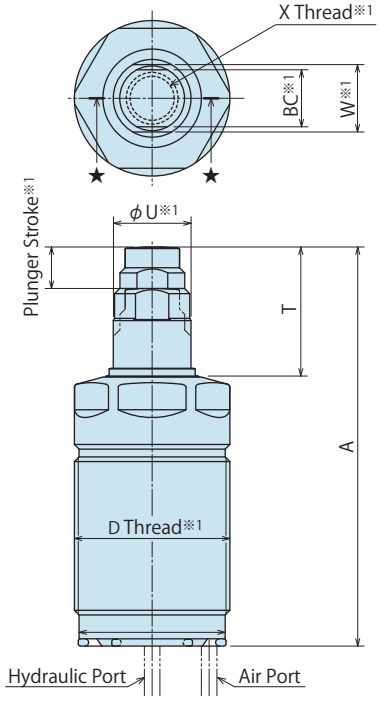
TNC-□M : Hydraulic Advance Model

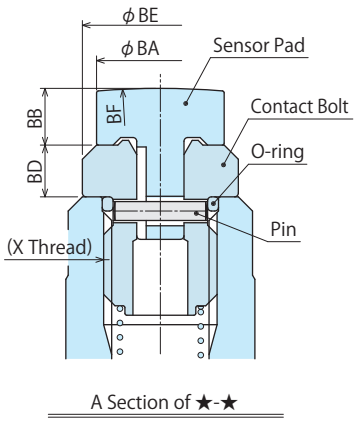
※ This drawing shows the released state of TNC-□M (before the plunger is lifted). Refer to Hydraulic Advance Model (Standard) (P.785, P.786) for unlisted dimensions.



TNC-□M-E : Spring Advance Model

※ This drawing shows the released state of TNC-□M-E (plunger rises). Refer to Spring Advance Model (P.789, P.790) for unlisted dimensions.





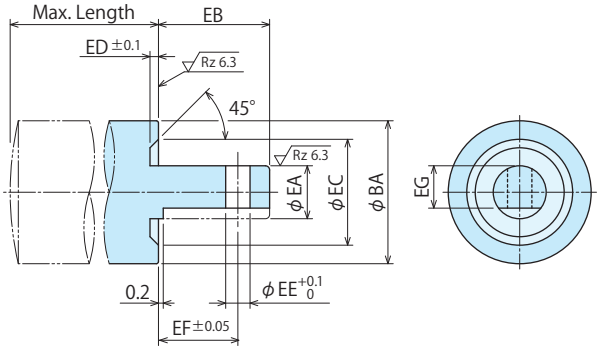
Notes :

※1. Dimensions with ※1 are the same as TNC Standard Model and TNC-E Model.

※2. When the work support touches a workpiece within short stroke range, up to 0.5mm from the plunger retract-end, the force which is larger than the plunger spring force will be applied to the workpiece. Please use the work support within the effective stroke range.

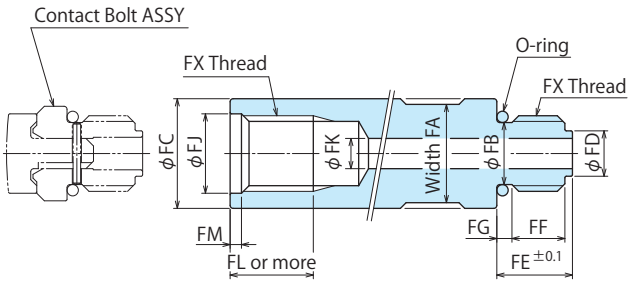
1. Even if the contact bolt for TNC standard model/TNC-E model is exchanged with air sensing option, it does not work as air sensing option. Internal part (plunger) must be changed with air sensor corresponding product.
2. Please contact us for the dimensions of Long Stroke Model.
3. Please refer to P.793, P.794 for Air Sensing Chart.

Sensor Pad Design Dimension



※ When changing the sensor pad, please design it according to the sensor pad design dimensions. (Please contact us when changing the contact bolt.)

Contact Bolt Adapter Design Dimensions



※When a longer contact bolt is required, design it according to the contact bolt adapter design dimensions.

Model No. Indication

TNC 040 3 – L/H M Blank/–E

1 2 3 4 5

※ Contact us for TNC-M-Q、TNC-M-EQ.

(Format Example：TNC0403-HM-E、TNC1003-LM)

1 Support Force
2 Design No.
3 Plunger Spring Force
4 Plunger Action Confirmation：M
5 Option
Blank：Hydraulic Advance Model
E ：Spring Advance Model

External Dimension List

(mm)

Model No.	TNC0403-□M TNC0403-□M-E	TNC0603-□M TNC0603-□M-E	TNC1003-□M TNC1003-□M-E	TNC1603-□M TNC1603-□M-E
Plunger Stroke※1	6.5	8	10	12
Effective Stroke	6.0	7.5	9.5	11.5
A 5 Blank：Hydraulic Advance	64	69	80.5	94
A 5 E：Spring Advance	70.5	77	90.5	106
D (Nominal×Pitch) ※1	M26×1.5	M30×1.5	M36×1.5	M45×1.5
T 5 Blank：Hydraulic Advance	16.9	16.9	17.4	23.9
T 5 E：Spring Advance	23.4	24.9	27.4	35.9
U※1	12	15	18	22
W※1	10	13	14	19
X (Nominal×Pitch×Depth) ※1	M8×12	M10×11	M10×11	M12×13
BA	9.5	10.5	10.5	13.5
BB	4	4	4	6
BC※1	10	11	11	14
BD	4	4	4	6
BE	11.5	12.5	12.5	16.5
BF	SR30	SR50	SR50	SR80
Pin (Diameter×Length)	ϕ1×5.8	ϕ1×7.8	ϕ1×7.8	ϕ2×9.8
O-ring	S6(made by NOK)	S8(made by NOK)	S8(made by NOK)	S10(made by NOK)

Note： ※ 1. Dimensions with ※1 are the same as TNC Standard Model and TNC-E Model.

Sensor Pad Design Dimension List

(mm)

Corresponding Model No.	TNC0403-□M TNC0403-□M-E	TNC0603-□M TNC0603-□M-E	TNC1003-□M TNC1003-□M-E	TNC1603-□M TNC1603-□M-E
EA	$3g7\ ^{-0.002}_{-0.012}$	$4g7\ ^{-0.004}_{-0.016}$	$4g7\ ^{-0.004}_{-0.016}$	$5g7\ ^{-0.004}_{-0.016}$
EB	7.5	7.5	7.5	10.5
EC	7.5	8.5	8.5	10
ED	0.8	0.8	0.8	0.8
EE	1.2	1.2	1.2	2.3
EF	5.3	5.3	5.3	7.5
EG	2.1	3.2	3.2	3.9
Max. Length ※2	max. 8	max. 8	max. 8	max. 12

Note： ※ 2. Sensor response may decrease if the pad is longer than maximum length.

Contact Bolt Adapter Design Dimension List

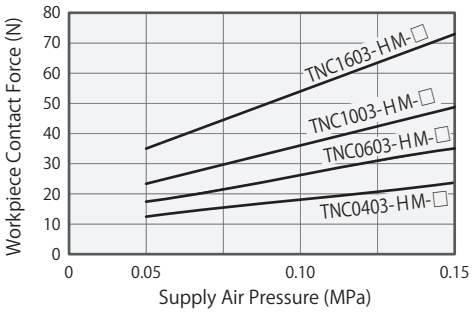
(mm)

Corresponding Model No.	TNC0403-□M	TNC0603-□M TNC1003-□M	TNC1603-□M
FA	10	13	17
FB	6	8.2	10
FC	11.5	14.5	19.5
FD	5	6	7.5
FE	10	10	12
FF	7	7	8
FG	2	2	3
FJ	8.3	10.5	12.3
FK	3	4	5
FL	12	11	13
FM	1.5	1.5	1.5
FX	M8	M10	M12
O-ring	S6(made by NOK)	S8(made by NOK)	S10(made by NOK)
Contact Bolt ASSY	XLD-M8SP	XLC-M10SP	XLC-M12SP
Reference：Material	SCM435 Quenched and Tempered Material		
Reference：Surface Finishing	Nitriding		

Workpiece Contact Force Curve (Reference)

This graph shows the workpiece contact force (reference value) when a work support with Plunger Spring Force **H**：High Spring contacts a workpiece in the middle of plunger stroke.

※ Refer to P.793 for the calculation formula of workpiece contact force.



Air Sensing Option (Plunger Action Confirmation･･･M：Air Sensing Option)

Plunger action is detected by the circuit at the vent port like the drawing below. This is done by detecting the differential pressure between P1 and P2 with air sensor.

Applicable Model

TNC 040 3 - [L / H / Blank] [M] - [Blank / E / Q / EQ]

4 Plunger Action Confirmation：M

- Workpieces even with rough, casting or forged surface can be accurately detected since the structure does not detect the workpiece surface directly.
- Detected with higher accuracy compared to a switch detection with a dog, etc.
- Designed to prevent coolant from entering into the sensing area.

Structure Drawing

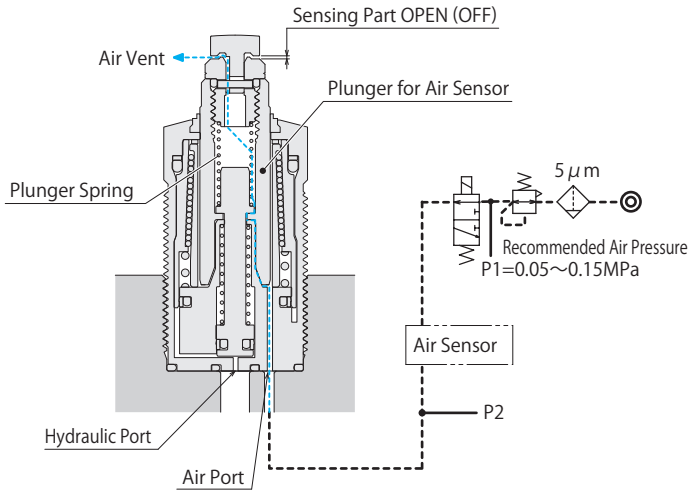
Recommended Operating Air Pressure：0.05 ~ 0.15MPa

Recommended Air Sensor

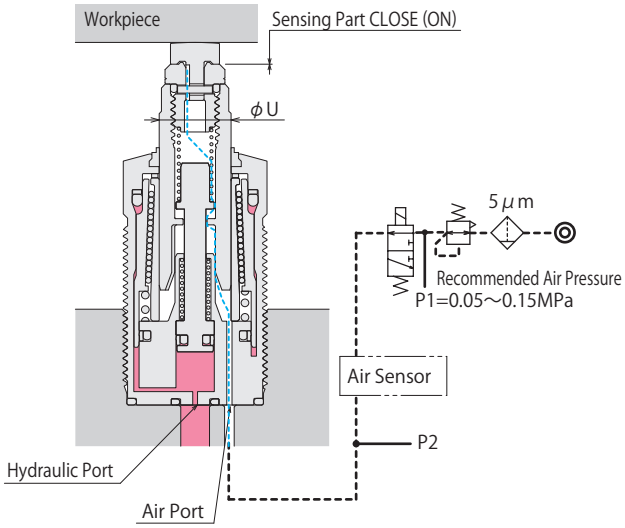
Manufacturer	SMC	CKD
Name	Air Catch Sensor	Gap Switch
Model No.	ISA3-G	GPS3-E

● The Number of Work Supports Connected per Air Sensor：1 ~ 4

TNC Released State (Air Sensor OFF)



TNC Plunger Extends・Contacts Workpiece (Air Sensor ON)



Workpiece Contact Force Formula when using Air Sensor ※1

Workpiece Contact Force (N) = Plunger Spring Force (N) + Supply Air Pressure (MPa) × U^2 (mm) × π ／ 4

Model No.		TNC0403-□M-□	TNC0603-□M-□	TNC1003-□M-□	TNC1603-□M-□
U mm		12	15	18	22
Plunger※2 Spring Force N	**L** : Low Spring Force	4.0～5.8	4.7～7.8	5.8～9.7	8.3～14.6
	H : High Spring Force	5.6～8.0	6.2～11.0	7.8～13.5	10.1～22.0
	Q : Hydraulic Advance Long Stroke Model	6.1～11.4	6.2～12.9	7.8～20.4	10.1～24.8
	EQ : Spring Advance Long Stroke Model				

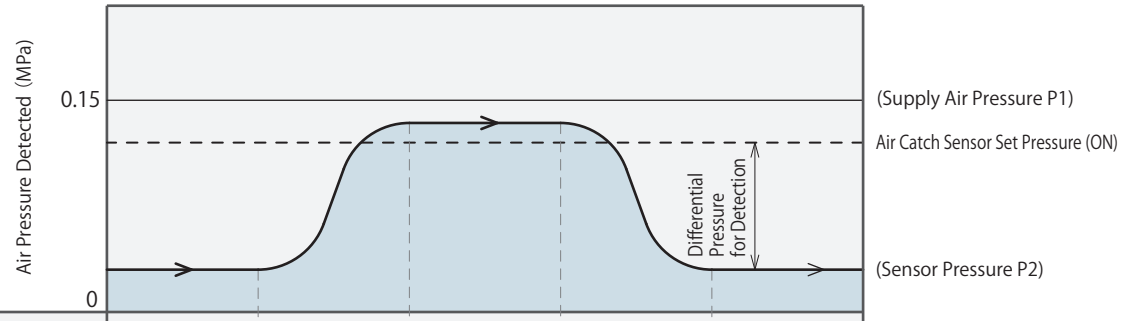
Notes :

※1. Please prepare a stopper if necessary when using light and/or thin workpiece. Otherwise it might be pushed up by work support.

※2. The plunger spring force indicates the spring design value.
It may vary depending on sliding resistance of the plunger and characteristic of the spring , etc. Please read it as a reference value of workpiece contact force.

Air Sensing Chart

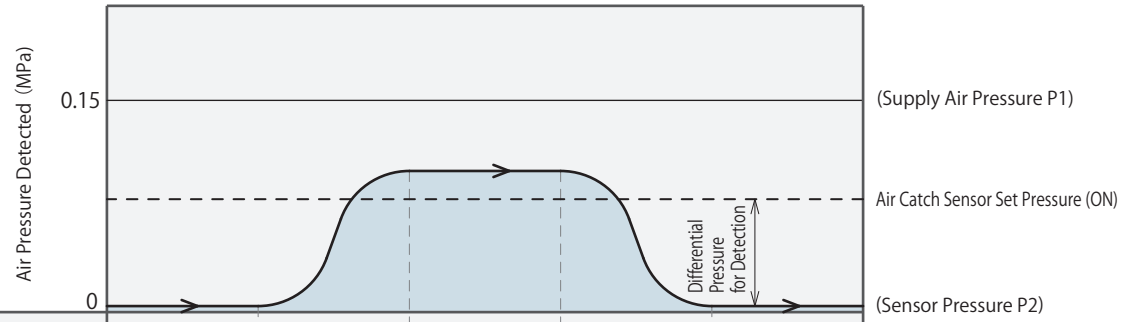
Connect one work support with one air catch sensor
Supply Pressure of Air Catch Sensor P1=0.15MPa



Air Catch Sensor		OFF	OFF→ON	ON	ON→OFF	OFF
Hydraulic Advance Model	Hydraulic Valve	Hydraulic Pressure OFF	Hydraulic Pressure ON	Hydraulic Pressure ON	Hydraulic Pressure OFF	Hydraulic Pressure OFF
	Work Support Action	Released State	Ascending Completed Locking State	Locking Completed	Releasing State Descending State	Releasing Completed
Spring Advance Model	Hydraulic Valve	Hydraulic Pressure OFF	Hydraulic Pressure OFF	Hydraulic Pressure ON	Hydraulic Pressure OFF	Hydraulic Pressure OFF
	Work Support Action	Released State	Loading Workpiece	Locking Completed	Unloading Workpiece	Releasing Completed

Note : 1. Depending on the usage condition, the detection differential pressure may be decreased by repeated action.
Please contact us for overhaul when the detection differential pressure is decreased.

Connect four work supports with one air catch sensor
Supply Pressure of Air Catch Sensor P1=0.15MPa



Air Catch Sensor		OFF	OFF→ON	ON	ON→OFF	OFF
Hydraulic Advance Model	Hydraulic Valve	Hydraulic Pressure OFF	Hydraulic Pressure ON	Hydraulic Pressure ON	Hydraulic Pressure OFF	Hydraulic Pressure OFF
	Work Support Action	Released State	Ascending Completed Locking State	Locking Completed	Releasing State Descending State	Releasing Completed
Spring Advance Model	Hydraulic Valve	Hydraulic Pressure OFF	Hydraulic Pressure OFF	Hydraulic Pressure ON	Hydraulic Pressure OFF	Hydraulic Pressure OFF
	Work Support Action	Released State	Loading Workpiece	Locking Completed	Unloading Workpiece	Releasing Completed

Notes : 1. Depending on the usage condition, the detection differential pressure may be decreased by repeated action.
Please contact us for overhaul when the detection differential pressure is decreased.
2. In order to carry out stabilized detection, the number of work supports connected per air sensor should be four or less.

Notes

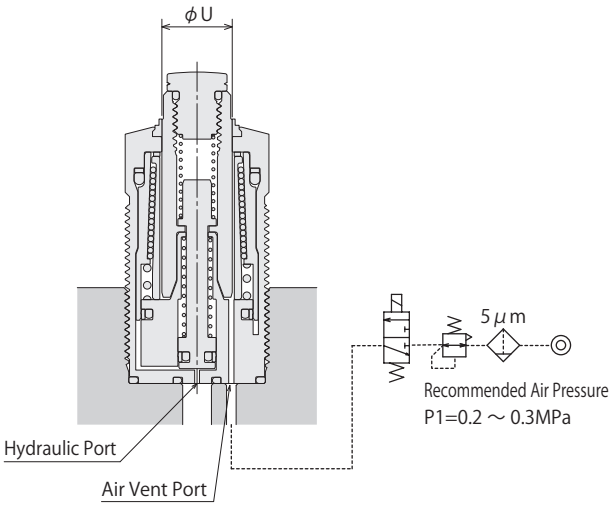
1. This specification is designed for confirming the plunger action of the work support.
If it is used for confirming the close contact with the workpiece, other clamping (force) is necessary.
2. If the plunger goes up too fast, it may bounce back and locks itself. Resulting in a gap with the workpiece and possible damage to the internal parts due to the impact force. Set the plunger action time at 0.5-1.0 sec. to adjust the air supply with the flow control valve with check valve (meter-in), and make sure that there is no clearance with the workpiece for operation.
3. The sensor air port needs to have air supply at all the times. If it is used when the air supply is shut off, the coolant or cutting chips may contaminate the sensing area, leading to malfunctioning of the work support and breakage of the air sensor.
4. Even if the contact bolt for TNC standard model/TNC-E model is exchanged with air sensing option, it does not work as air sensing option. Internal part (plunger) must be changed with air sensor corresponding product.
5. In certain circumstances it has been known for the plunger to move slower through continued use because of the airflow change in the circuit, turn the operating air supply off fully to reset the work support.

Air Purge Function

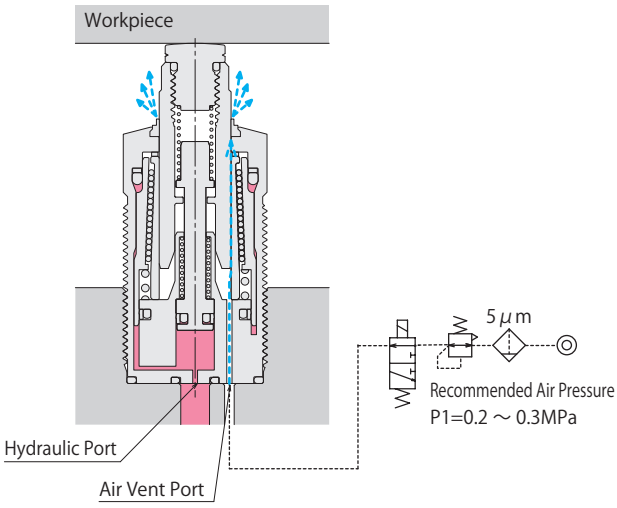
The special dust seal that features low friction and high sealing capabilities is used in TNC. However, when using TNC in worse condition, air purge function is available by providing the circuit to the air vent port like the drawing below.

Structure Drawing

TNC Plunger Descending and at Releasing State (Air Supply OFF) ※1



TNC Plunger Ascending and at Locking State (Air Supply ON) ※1



Workpiece Contact Force Formula when Using Air Purge Function ※2

Workpiece Contact Force (N) = Plunger Spring Force (N) + Supply Air Pressure (MPa) × U^2 (mm) × π ／ 4

Model No.		TNC0403-□-□ TNC0403-Q	TNC0603-□-□ TNC0603-Q	TNC1003-□-□ TNC1003-Q	TNC1603-□-□ TNC1603-Q
U mm		12	15	18	22
Plunger※3 Spring Force N	**L** :Low Spring Force	4.0～5.8	4.7～7.8	5.8～9.7	8.3～14.6
	H :High Spring Force	5.6～8.0	6.2～11.0	7.8～13.5	10.1～22.0
	Q :Hydraulic Advance Long Stroke Model	6.1～11.4	6.2～12.9	7.8～20.4	10.1～24.8
	EQ :Spring Advance Long Stroke Model				

Notes :

※2. Please prepare a stopper if necessary when using light and/or thin workpiece. Otherwise it might be pushed up by work support.

※3. The plunger spring force indicates the spring design value. It may vary depending on sliding resistance of the plunger and characteristic of the spring , etc. Please read it as a reference value of workpiece contact force.

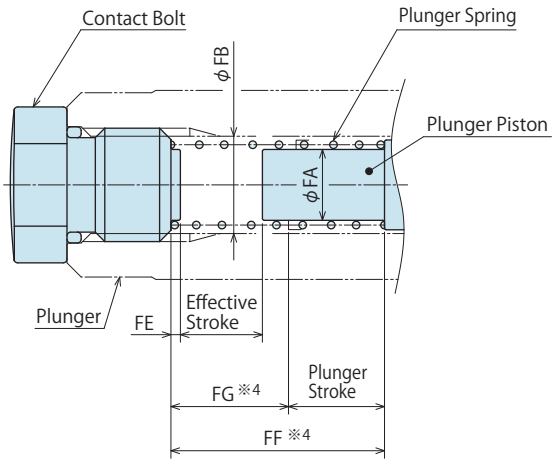
Notes

※1. When the plunger is descending, shut off the air supply. The plunger does not go back when air is supplied.

1. If the plunger ascends too fast, it may bounce back and locks itself resulting in a gap with the workpiece, and possible damage to the internal parts due to the impact. Set the plunger action time at 0.5-1.0 sec. to adjust the air supply with the flow control valve with check valve (meter-in), and make sure that there is no clearance with the workpiece for operation.
2. Air cannot be vented as the air supply pressure is too low because the cracking pressure at the dust seal lip is about 0.1MPa.

Plunger Spring Design Dimension

※Reference for designing a plunger spring by customer other than the included plunger spring.
※This drawing shows the released state.
※ There is no effective stroke range for the Option **E** and **EQ** .



(mm)

Corresponding Model No.	TNC0403-□ TNC0403-□M	TNC0603-□ TNC0603-□M	TNC1003-□ TNC1003-□M	TNC1603-□ TNC1603-□M
FA	5	6	6	7.5
FB	6.8	8.5	8.5	10.3
FE	1	1	1	1
FF※4	15.1	17.6	19.6	22.6
FG※4	8.6	9.6	9.6	10.6
Plunger Stroke	6.5	8	10	12
Effective Stroke	6.0	7.5	9.5	11.5

(mm)

Corresponding Model No.	TNC0403-□-E TNC0403-□M-E	TNC0603-□-E TNC0603-□M-E	TNC1003-□-E TNC1003-□M-E	TNC1603-□-E TNC1603-□M-E
FA	5	6	6	7.5
FB	6.8	8.5	8.5	10.3
FE	1	1	1	1
FF※4	15.1	17.6	19.6	22.6
FG※4	8.6	9.6	9.6	10.6
Plunger Stroke	6.5	8	10	12
Effective Stroke	6.0	7.5	9.5	11.5

(mm)

Corresponding Model No.	TNC0403-Q	TNC0603-Q	TNC1003-Q	TNC1603-Q
FA	5	6	6	7.5
FB	6.8	8.5	8.5	10.3
FE	1	1	1	1
FF※4	23.6	28.6	36.2	40.5
FG※4	10.6	12.6	16.2	16.5
Plunger Stroke	13	16	20	24
Effective Stroke	12.5	15.5	19.5	23.5

Note :
※4. When designing a spring, make sure that the spring set length is below FF dimension and the spring contact length is below FG dimension.

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
LG/LT
TLA-2
TLB-2
TLA-1
Link Clamp
LKA
LKC
LKW
LJ/LM
TMA-2
TMA-1
Work Support
LD
LC
TNC
TC
Air Sensing Lift Cylinder
LLW
Linear Cylinder / Compact Cylinder
LL
LLR
LLU
DP
DR
DS
DT
Block Cylinder
DBA/DBC
Centering Vise
FVA
FVD
FVC
Control Valve
BZL
BZT
BZX/JZG
BZS
Pallet Clamp
VS/VT
Expansion Locating Pin
VFL/VFM
VFJ/VFK
Pull Stud Clamp
FP
FQ
Customized Spring Cylinder
DWA/DWB

Hydraulic Work Support

Model TC

High Pressure (7 ~ 25MPa)

Single Action • Flange Model

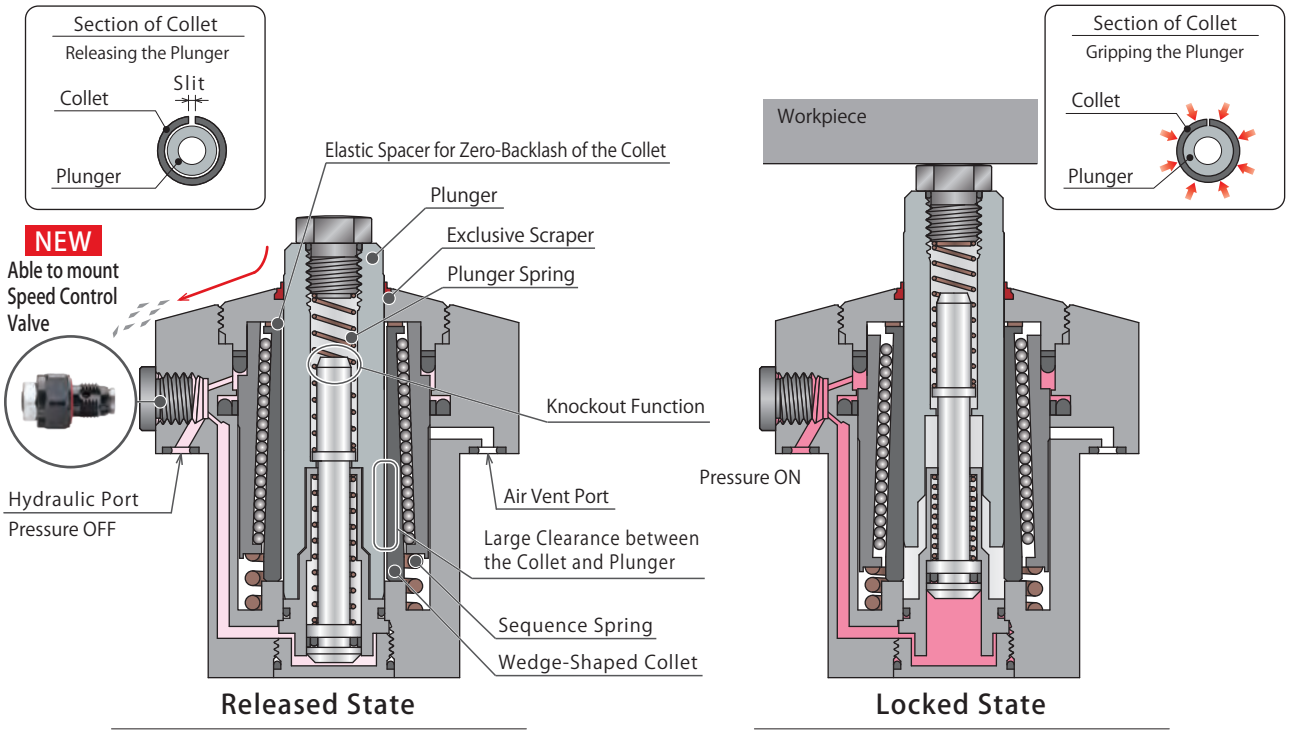
Powerful Support • Smooth Action

- Due to the design number change, environmental durability has been improved.
- Due to the design number change, BZT Speed Control Valve (accessory) has become available.
- New options added : Model TC-EQ / TC-M / TC-M-Q / TC-M-E / TC-M-EQ

Index

Hydraulic Advance Model (Standard) (TC)

Cross Section



Powerful Support and Smooth Action

KOSMEK was the first to develop the collet design in 1996. Compared with the traditional sleeve design, it ensures powerful gripping force via a wedge effect. In addition, a larger gap between collet and plunger is designed to prevent sticking and allow smoother action. The load applied to the workpiece is soft with only plunger spring force.

Concrete Workpiece Touch

As the collet gripping the plunger is always pressed downwards by “elastic spacer” , it helps prevent tilting when locked and the clearance with the workpiece.

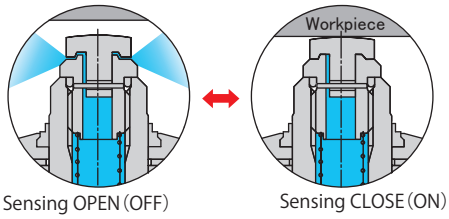
Certain Sequence Action

As it is equipped with a powerful sequencing spring, the action sequences as such;
Plunger goes up→ workpiece touches→ collet locks. This is carried out via one hydraulic circuit system.

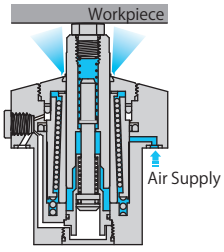
Superior Environmental Durability NEW

The work support can be used in various environments with the exclusive scraper to prevent the accumulation of dust such as cutting chips and the knockout function to release adherence after a long-time machine stop.

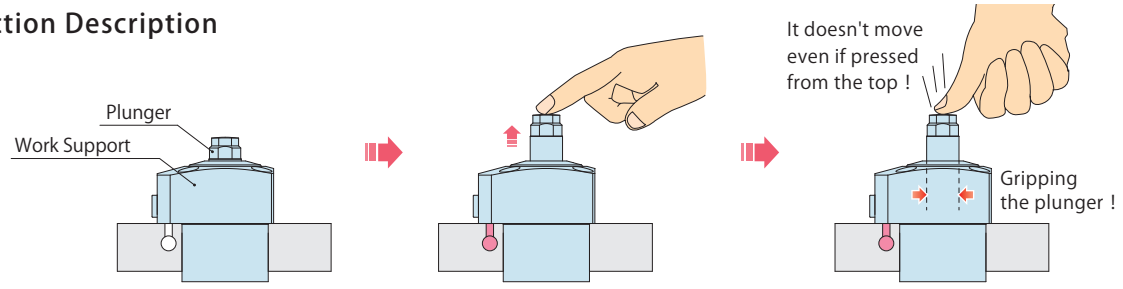
Air Sensing Option



Air Purging Possible



Action Description



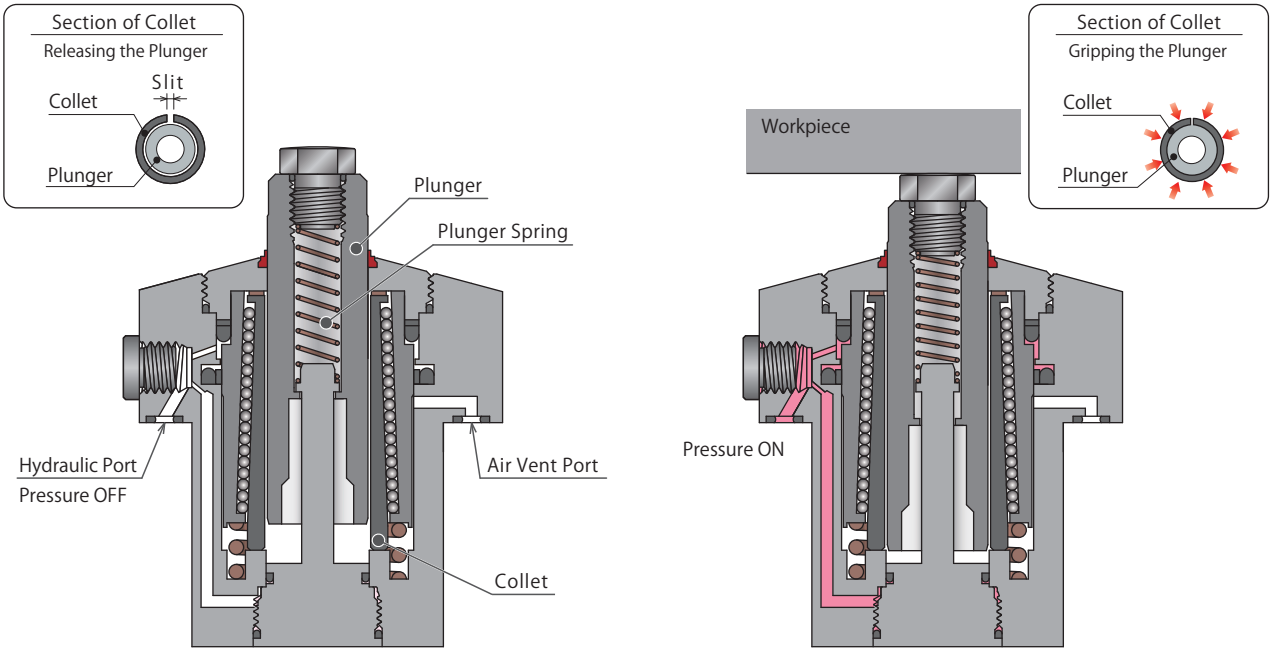
Hydraulic Pressure : OFF
The state of plunger down.

Hydraulic Pressure : ON
Plunger rises with hydraulic pressure and stops after touching workpiece.

Hydraulic Pressure : ON
Once it is in the stopped position where it touches the workpiece, the plunger doesn’t go down even if pressed from above.

Spring Advance Model (TC-E)

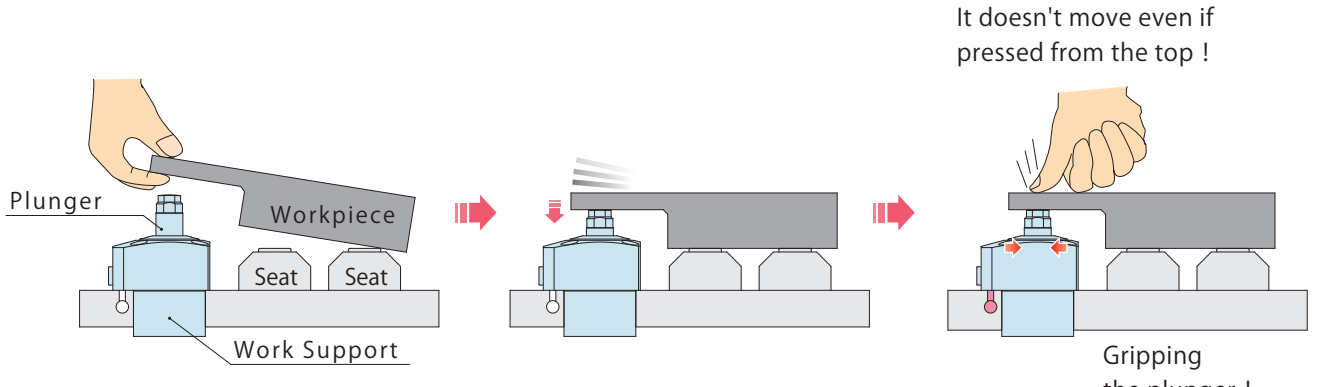
Cross Section



Released State

Locked State

Action Description



Hydraulic Pressure：OFF
The state of plunger down.

Hydraulic Pressure：OFF
The plunger descends according to the workpiece weight and stops in balance.

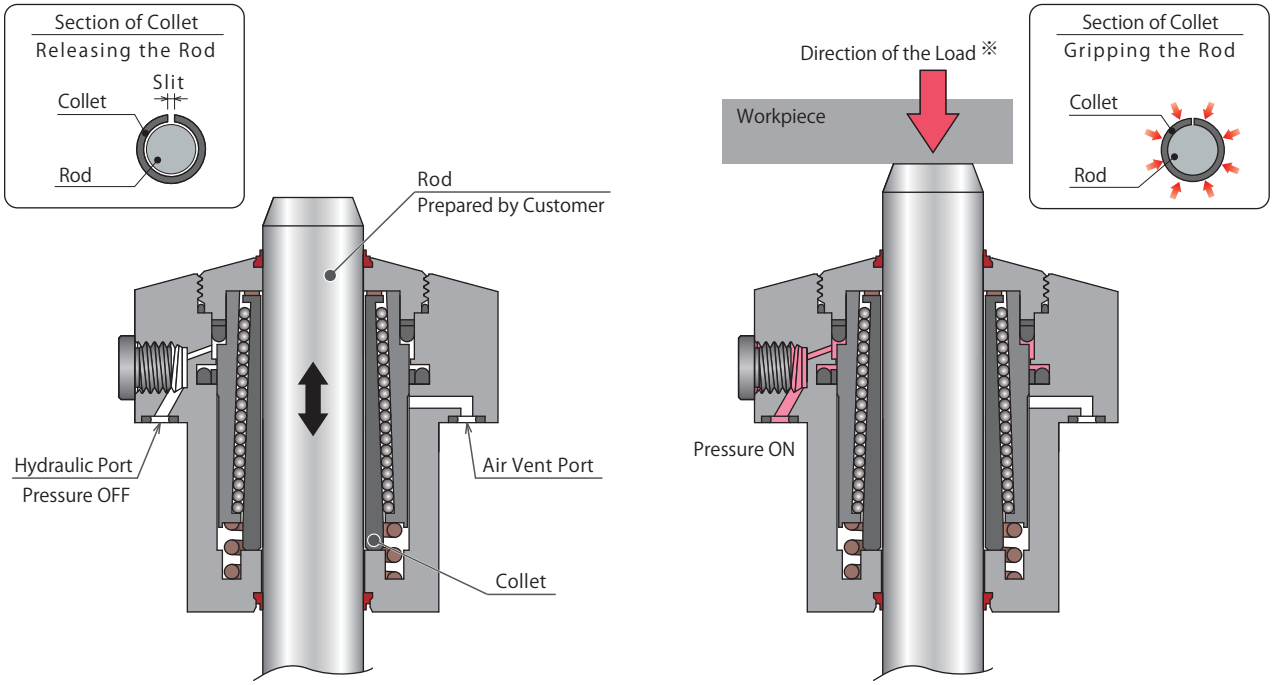
Hydraulic Pressure：ON
Once it is in the stopped position where it touches the workpiece, the plunger doesn't go down even if pressed from above.

- **Air Sensing Option**（TC-M / TC-M-E / TC-M-Q/ TC-M-EQ）

  Available to check action by connecting the air catch sensor at an vent port and then detecting differential pressure.
  Please refer to the air sensor page for further details.

Rodless Hollow Model (TC-D)

Cross Section

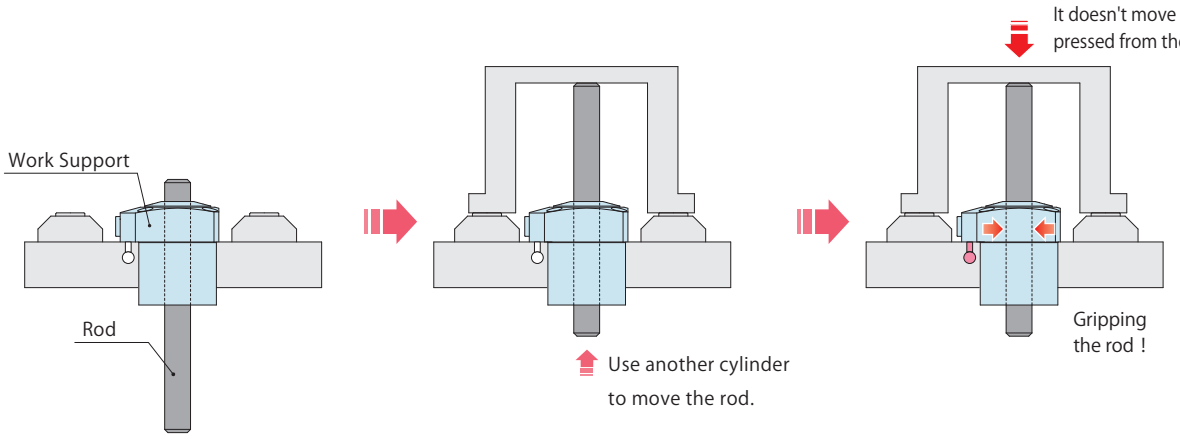


Released State

Locked State

※ The load acts towards the arrow direction as shown in the drawing.

Action Description



Hydraulic Pressure：OFF
Work Support is not gripping the rod.
(Rod is prepared by customer.)

Hydraulic Pressure：OFF
Use another cylinder to move the rod until it touches the workpiece.

Hydraulic Pressure：ON
After gripping is completed, the rod does not go down even when load is applied from the top.

Model No. Indication

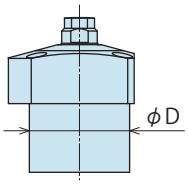
TC 040 3 - C L - □ - □

1 2 3 4 5 6

1 Body Size

040 : ϕD=40mm
048 : ϕD=48mm
055 : ϕD=55mm
065 : ϕD=65mm
075 : ϕD=75mm

※ Outer diameter (ϕD) of the cylinder.

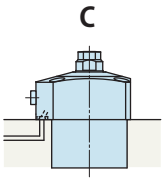


2 Design No.

3 : Revision Number

3 Piping Method

C : Gasket Option (With G Thread Plug)
S : Piping Option (Rc Thread Port) ※1



Gasket Option
With G Thread Plug

Piping Option
Rc Thread Port
No Gasket Port

4 Plunger Spring Force

L : Low Spring Force
H : High Spring Force
Blank : For 6 Option Q / D

5 Plunger Action Confirmation

Blank : None (Standard)
M : Air Sensing Option ※1※2

6 Options

Blank : Hydraulic Advance Model (Standard)
Q : Hydraulic Advance Long Stroke Model ※2
E : Spring Advance Model
EQ : Spring Advance Long Stroke Model
D : Rodless Hollow Model (Rod is prepared by customer.)

	1 Body Size (● = Available Option)				
5 Plunger Action Confirmation Symbol / 6 Option Symbol	ϕD=40 TC 0403	ϕD=48 TC 0483	ϕD=55 TC 0553	ϕD=65 TC 0653	ϕD=75 TC 0753
Blank	●	●	●	●	●
Q	●	●	●	●	●
E	●	●	●	●	●
EQ	●	●	●	●	●
D	●	●	●	●	●
M	●	●	●	●	●
M-Q	●	●	●	●	●
M-E	●	●	●	●	●
M-EQ	●	●	●	●	●

Notes :
※1. Please contact us for the combination of 3 **S** : Pinping Option and 5 **M** : Air Sensing Option.
※2. Please contact us for detailed specification and external dimensions for the combination of 5 **M** : Air Sensing Option and 6 **Q** : Long Stroke Model.

Specifications

Option 6 Blank / E

Model No.	TC0403-□□ TC0403-□□-E	TC0483-□□ TC0483-□□-E	TC0553-□□ TC0553-□□-E	TC0653-□□ TC0653-□□-E	TC0753-□□ TC0753-□□-E
Support Force at 25MPa kN	10	15.5	25	40	65
Support Force (Calculation Formula)※1 kN	0.47×P-1.63	0.72×P-2.52	1.16×P-4.07	1.86×P-6.51	3.02×P-10.58
Plunger Stroke mm	10	12	14	16	20
Effective Stroke 6 Blank	9.5	11.5	13.5	15.5	19.5
Cylinder Capacity 6 Blank	1.1	1.9	2.5	4.7	6.5
cm³ 6 E	0.3	0.6	0.9	1.5	2.5
Plunger※2 L:Low Spring Force	5.8～9.7	8.3～14.6	9.8～14.6	12.4～18.8	14.6～21.0
Spring Force N H:High Spring Force	7.9～13.6	10.1～21.9	15.8～22.0	18.7～31.9	21.4～34.2
Max. Operating Pressure MPa	25				
Min. Operating Pressure MPa	7				
Operating Temperature ℃	0～70				
Weight kg	0.7	1.1	1.6	2.7	4.3

Option 6 Q

Model No.	TC0403-□-Q	TC0483-□-Q	TC0553-□-Q	TC0653-□-Q	TC0753-□-Q
Support Force at 25MPa kN	10	15.5	25	40	65
Support Force (Calculation Formula)※1 kN	0.47×P-1.63	0.72×P-2.52	1.16×P-4.07	1.86×P-6.51	3.02×P-10.58
Plunger Stroke mm	20	24	28	32	40
Effective Stroke 6 Q	19.5	23.5	27.5	31.5	39.5
Cylinder Capacity cm³	1.9	3.3	4.0	7.9	10.5
Plunger Spring Force ※2 N	7.8～20.4	10.1～24.8	15.8～28.4	18.7～42.3	21.4～44.0
Max. Operating Pressure MPa	25				
Min. Operating Pressure MPa	7				
Operating Temperature ℃	0～70				
Weight kg	0.8	1.3	1.8	3.0	4.6

Option 6 D

Model No.	TC0403-□-D	TC0483-□-D	TC0553-□-D	TC0653-□-D	TC0753-□-D
Support Force at 25MPa kN	6.3	10	16	25	40
Support Force (Calculation Formula)※1 kN	0.29×P-1.03	0.47×P-1.63	0.74×P-2.60	1.16×P-4.07	1.86×P-6.51
Cylinder Capacity cm³	0.3	0.6	0.9	1.5	2.5
Max. Operating Pressure MPa	25				
Min. Operating Pressure MPa	7				
Operating Temperature ℃	0～70				
Weight kg	0.5	0.8	1.3	2.2	3.5

Notes : ※1. "P" in the formula for support force indicates the hydraulic pressure (MPa).
※2. The plunger spring force indicates the spring design value. It may vary depending on sliding resistance of the plunger and characteristic of the spring, etc. Please read it as a reference value of workpiece contact force.

Performance Curve (TC-□□ : Hydraulic Advance Model / TC-□□-E : Spring Advance Model)

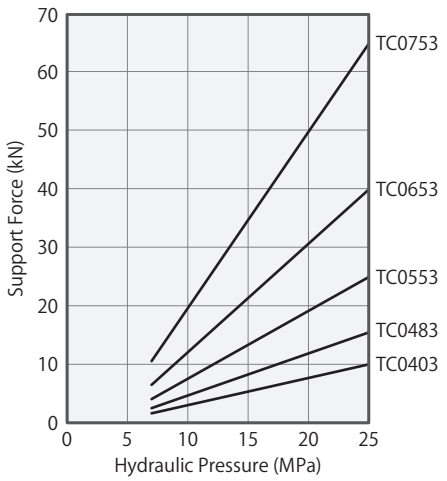
Applicable Model

TC 040 3 - C S L H - Blank E

6 Option : Blank / E

1 Body Size

Support Force Graph ※ This graph shows the support force under static load condition.

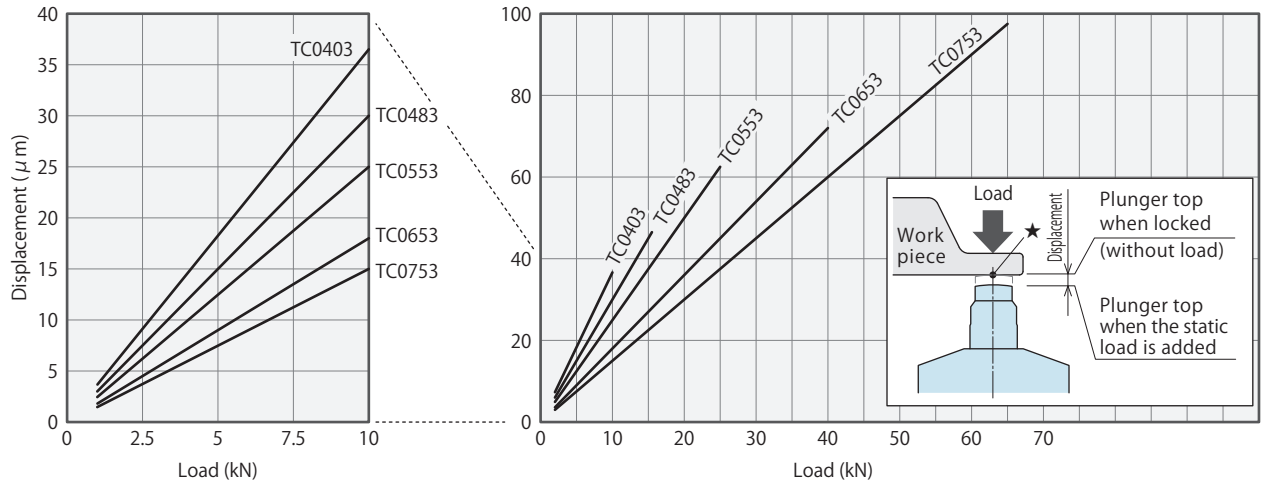


Model No.	Support Force (kN)				
	TC0403-□□	TC0483-□□	TC0553-□□	TC0653-□□	TC0753-□□
Hydraulic Pressure (MPa)	TC0403-□□-E	TC0483-□□-E	TC0553-□□-E	TC0653-□□-E	TC0753-□□-E
25	10.0	15.5	25.0	40.0	65.0
22.5	8.9	13.7	22.0	35.3	57.4
20	7.8	11.9	19.1	30.7	49.8
17.5	6.6	10.1	16.2	26.0	42.3
15	5.4	8.3	13.3	21.4	34.7
12.5	4.2	6.5	10.4	16.7	27.2
10	3.1	4.7	7.5	12.1	19.6
7.5	1.9	2.9	4.6	7.4	12.1
Support Force Formula※1 kN	0.47×P−1.63	0.72×P−2.52	1.16×P−4.07	1.86×P−6.51	3.02×P−10.58

Note : ※1. P : Operating Hydraulic Pressure (MPa)

Load / Displacement Graph

※ This graph shows the static load-displacement of a single work support at supply hydraulic pressure 25MPa.
(Not including the displacement of the workpiece side due to unevenness at ★ mark and surrounding clamps.)



Performance Curve (TC-□-Q : Hydraulic Advance Long Stroke Model)

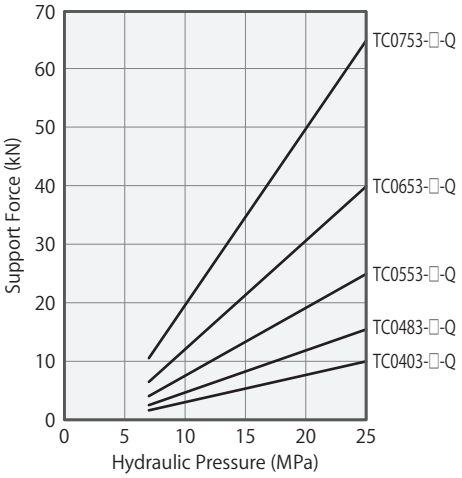
Applicable Model

TC 040 3 - C S - Q

6 Option : Q

1 Body Size

Support Force Graph ※ This graph shows the support force under static load condition.

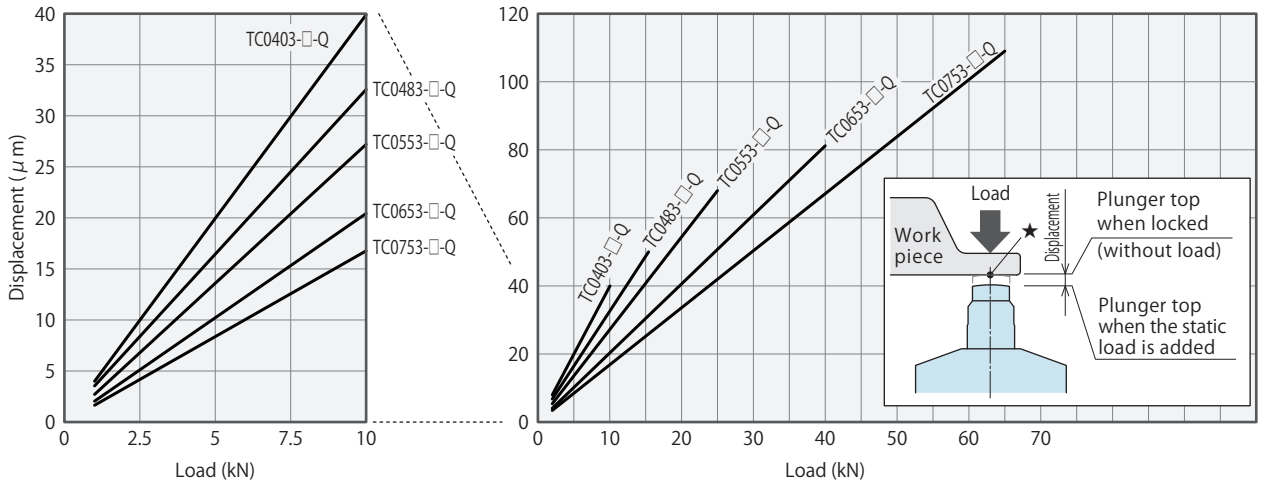


Model No. / Hydraulic Pressure (MPa)	Support Force (kN) TC0403-□-Q	TC0483-□-Q	TC0553-□-Q	TC0653-□-Q	TC0753-□-Q
25	10.0	15.5	25.0	40.0	65.0
22.5	8.9	13.7	22.0	35.3	57.4
20	7.8	11.9	19.1	30.7	49.8
17.5	6.6	10.1	16.2	26.0	42.3
15	5.4	8.3	13.3	21.4	34.7
12.5	4.2	6.5	10.4	16.7	27.2
10	3.1	4.7	7.5	12.1	19.6
7.5	1.9	2.9	4.6	7.4	12.1
Support Force Formula※1 kN	0.47×P−1.63	0.72×P−2.52	1.16×P−4.07	1.86×P−6.51	3.02×P−10.58

Note : ※1. P : Operating Hydraulic Pressure (MPa)

Load / Displacement Graph

※ This graph shows the static load-displacement of a single work support at supply hydraulic pressure 25MPa.
(Not including the displacement of the workpiece side due to unevenness at ★ mark and surrounding clamps.)



※ The Displacement of TC-□-Q : Long Stroke Model is lager than that of TC-□□ : Standard Model.

Performance Curve (TC-□-D : Rodless Hollow Model)

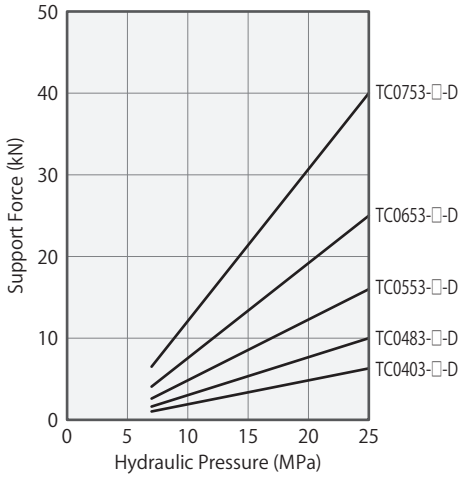
Applicable Model

TC 040 3 - C S - D

1 Body Size

6 Option : D

Support Force Graph ※ This graph shows the support force under static load condition.

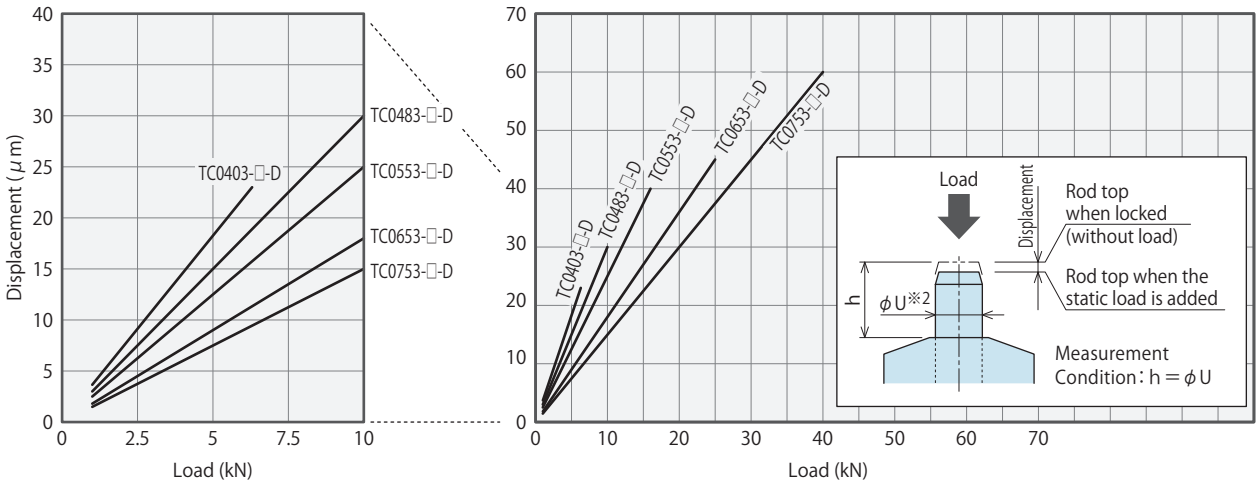


Model No. / Hydraulic Pressure (MPa)	Support Force (kN) TC0403-□-D	TC0483-□-D	TC0553-□-D	TC0653-□-D	TC0753-□-D
25	6.3	10.0	16.0	25.0	40.0
22.5	5.6	8.8	14.1	22.1	35.3
20	4.8	7.7	12.3	19.2	30.7
17.5	4.1	6.5	10.4	16.3	26.0
15	3.4	5.3	8.6	13.4	21.4
12.5	2.6	4.2	6.7	10.5	16.7
10	1.9	3.0	4.8	7.6	12.1
7.5	1.2	1.9	3.0	4.7	7.4
Support Force Formula ※1 kN	0.29×P−1.03	0.47×P−1.63	0.74×P−2.60	1.16×P−4.07	1.86×P−6.51

Note : ※1. P : Operating Hydraulic Pressure (MPa)

Load / Displacement Graph

※ This graph shows the static load-displacement of a single work support at supply hydraulic pressure 25MPa.
The displacement varies depending on the length of the rod used, so please use it as a reference value.



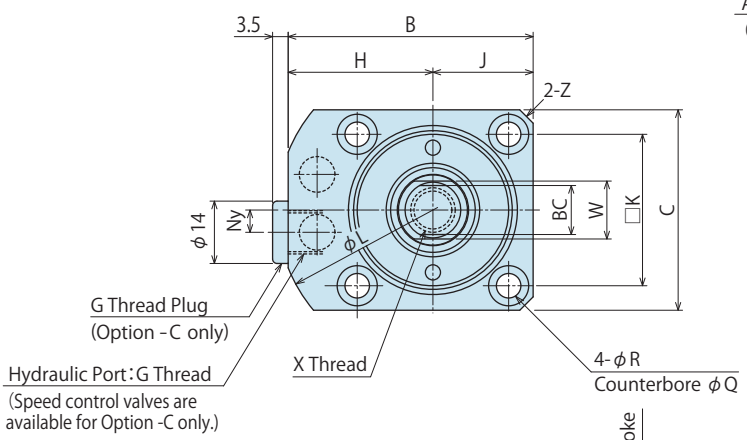
Note : ※2. For the dimension of ϕU, please refer to "External Dimensions and Machining Dimensions for Mounting" on P.814.

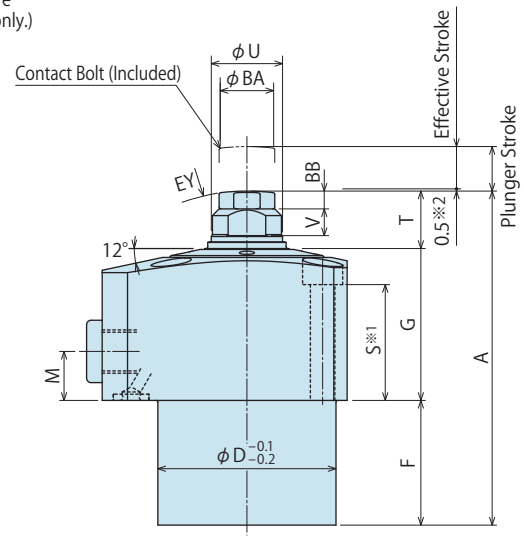
MEMO

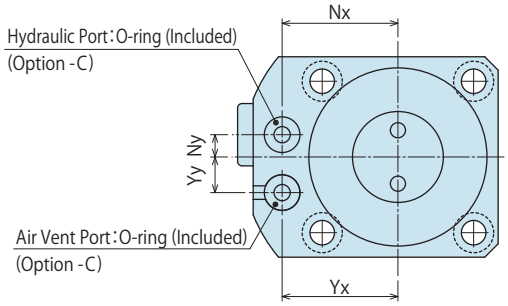
External Dimensions

C：Gasket Option (with G Thread Plug)

※ This drawing shows the released state of TC-C□ (before the plunger is lifted).





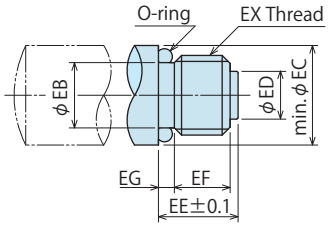


Notes：

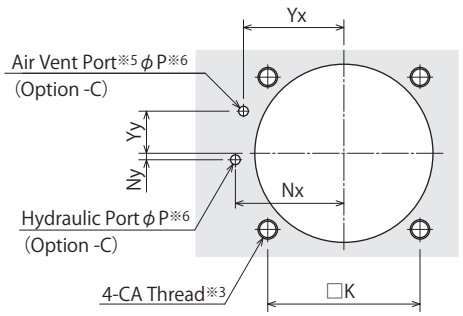
※1. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

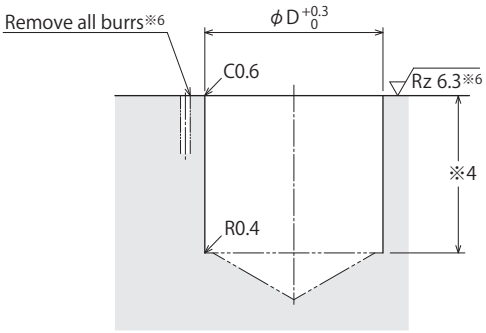
※2. When the work support touches a workpiece within short stroke range, up to 0.5mm from the plunger retract-end, the force which is larger than the plunger spring force will be applied to the workpiece. Please use the work support within the effective stroke range.

Contact Bolt Design Dimensions



Machining Dimensions of Mounting Area





Notes：

※3. CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.

※4. The depth of the body mounting hole ϕD should be decided according to the mounting height referring to dimension 'F'.

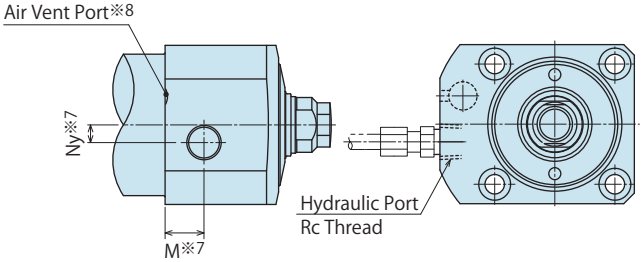
※5. Please keep clear condition at the air vent port, and prevent coolant and chips from entering the port. (Please refer to "Appropriate Measures for the Air Vent Port (P.819)".)

※6. The machining dimension is for -C：Gasket option.

Piping Method

S：Piping Option (Rc Thread)

※This drawing shows TC-S□.

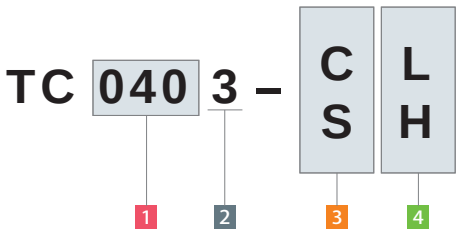


Notes：

※7. The dimensions are the same as C：Gasket Option.

※8. The air vent port must be open to the atmosphere. Select -C : Gasket Option if coolant or any contaminants enter from the air vent port.

Model No. Indication



(Format Example：TC0403-CL / TC0753-SH)

1 Body Size
2 Design No.
3 Piping Method
4 Plunger Spring Force
5 Plunger Action Confirmation : Blank
6 Option : Blank

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.		TC0403-□□	TC0483-□□	TC0553-□□	TC0653-□□	TC0753-□□
Plunger Stroke		10	12	14	16	20
Effective Stroke		9.5	11.5	13.5	15.5	19.5
A		75	85	101	126	149
B		55	62	70.5	81	91.5
C		45	51	60	70	80
D		40	48	55	65	75
F		28	34	49	69	82
G		34.1	34.1	34.1	34.6	43.1
H		32.5	36.5	40.5	46	51.5
J		22.5	25.5	30	35	40
K		34	40	47	55	63
L		70	75	83	94	106
M		11	11	11	11	11
Nx		26	30	33.5	39.5	45
Ny		5	0	0	0	0
P		3	3	3	5	5
Q		9	9	11	11	14
R		5.5	5.5	6.8	6.8	9
S		26	25	23	23	29
T		12.9	16.9	17.9	22.4	23.9
U		16	20	22	25	30
V		6	8	9	9	10.5
W		13	17	19	22	24
X (Nominal×Pitch×Depth)		M10×1.5×11	M12×1.75×13	M12×1.75×13	M16×2×20	M16×2×20
Yx		26	28	31	37	42.5
Yy		8	11	13	14	15
Z (Chamfer)		C3	C3	C3.5	C5	R53
BA		12.5	16.5	16.5	21.5	21.5
BB		4	6	6	9	9
BC		11	14	14	19	19
CA (Nominal×Pitch)		M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25
EY		SR50	SR80	SR80	SR125	SR125
Hydraulic Port	Option -C	G1/8	G1/8	G1/8	G1/8	G1/8
	Option -S	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/8
O-ring (Option -C)		OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P7-N	OR NBR-90 P7-N

Contact Bolt Design Dimensions

※Reference for designing a contact bolt (attachment) by customer other than the included contact bolt.

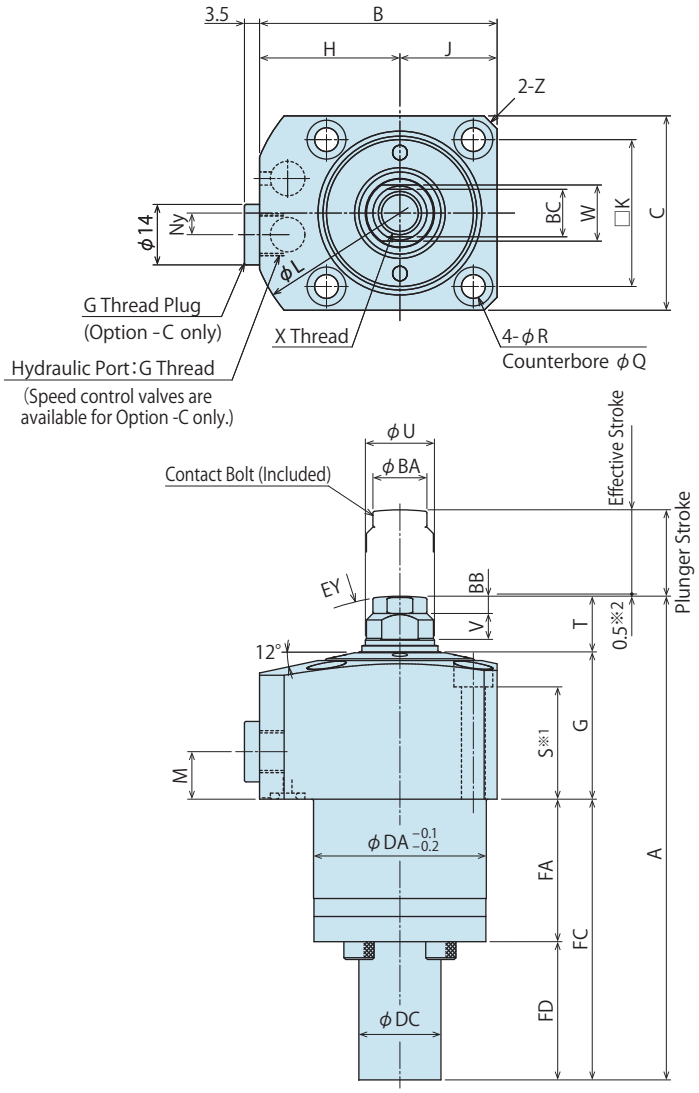
(mm)

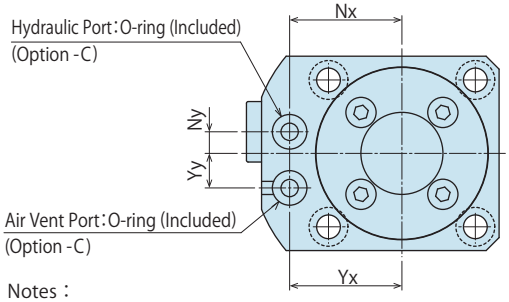
Corresponding Model No.	TC0403-□□	TC0483-□□	TC0553-□□	TC0653-□□	TC0753-□□
EB	8.2	10	10	13.5	13.5
EC	12.5	16.5	16.5	21.5	21.5
ED	6	7.5	7.5	10.5	10.5
EE	10	12	12	16	16
EF	7	8	8	11	11
EG	2	3	3	4	4
EX (Nominal×Pitch)	M10×1.5	M12×1.75	M12×1.75	M16×2	M16×2
O-ring	S8 (Made by NOK)	S10 (Made by NOK)	S10 (Made by NOK)	AS568-014 (70)	AS568-014 (70)

External Dimensions

C：Gasket Option (with G Thread Plug)

※ This drawing shows the released state of TC-C-Q (before the plunger is lifted).



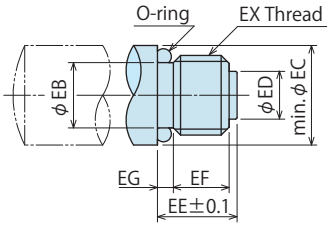


Notes：

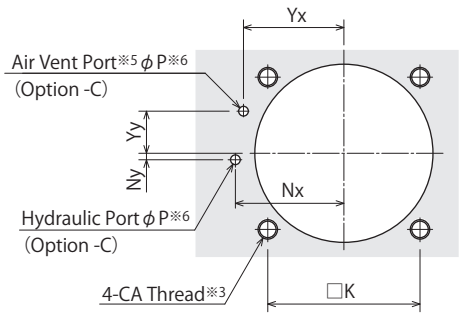
※1. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

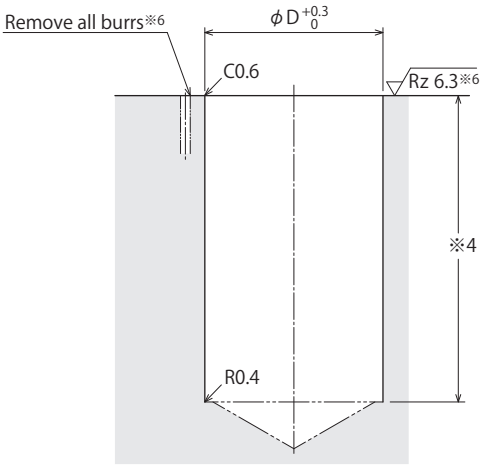
※2. When the work support touches a workpiece within short stroke range, up to 0.5mm from the plunger retract-end, the force which is larger than the plunger spring force will be applied to the workpiece. Please use the work support within the effective stroke range.

Contact Bolt Design Dimensions



Machining Dimensions of Mounting Area





Notes：

※3. CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.

※4. The depth of the body mounting hole φD should be decided according to the mounting height referring to dimension 'FC'.

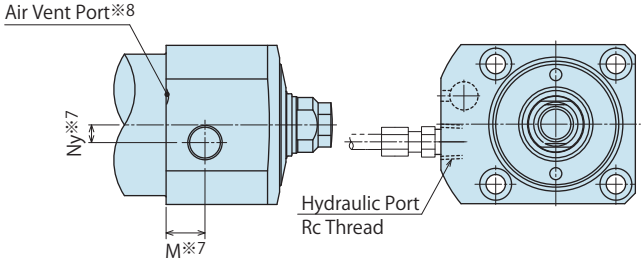
※5. Please keep clear condition at the air vent port, and prevent coolant and chips from entering the port. (Please refer to "Appropriate Measures for the Air Vent Port (P.819)".)

※6. The machining dimension is for -C：Gasket option.

Piping Method

S：Piping Option (Rc Thread)

※This drawing shows TC-S-Q.

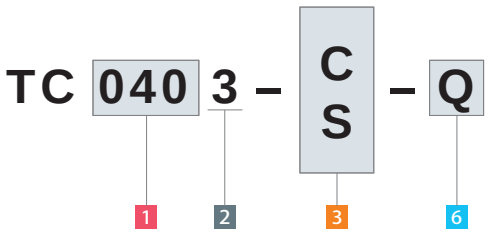


Notes：

※7. The dimensions are the same as C：Gasket Option.

※8. The air vent port must be open to the atmosphere. Select -C : Gasket Option if coolant or any contaminants enter from the air vent port.

Model No. Indication



(Format Example：TC0403-C-Q / TC0753-S-Q)

1 Body Size
2 Design No.
3 Piping Method
4 Plunger Spring Force : Blank
5 Plunger Action Confirmation : Blank
6 Option : Q

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	TC0403-□-Q	TC0483-□-Q	TC0553-□-Q	TC0653-□-Q	TC0753-□-Q
Plunger Stroke	20	24	28	32	40
Effective Stroke	19.5	23.5	27.5	31.5	39.5
A	112	131.5	149.5	178	212.5
B	55	62	70.5	81	92
C	45	51	60	70	80
DA	40	48	55	65	75
DC	19	23	23	30	30
FA	33	42.5	59	84	101
FC	65	80.5	97.5	121	145.5
FD	32	38	38.5	37	44.5
G	34.1	34.1	34.1	34.6	43.1
H	32.5	36.5	40.5	46	52
J	22.5	25.5	30	35	40
K	34	40	47	55	63
L	68	73	80	94	106
M	11	11	11	11	11
Nx	26	30	33.5	39.5	45
Ny	5	0	0	0	0
P	3	3	3	5	5
Q	9	9	11	11	14
R	5.5	5.5	6.8	6.8	9
S	26	25	23	23	29
T	12.9	16.9	17.9	22.4	23.9
U	16	20	22	25	30
V	6	8	9	9	10.5
W	13	17	19	22	24
X (Nominal×Pitch×Depth)	M10×1.5×11	M12×1.75×13	M12×1.75×13	M16×2×20	M16×2×20
Yx	26	28	31	37	42.5
Yy	8	11	13	14	15
Z (Chamfer)	C3	C3	C3.5	C5	R53
BA	12.5	16.5	16.5	21.5	21.5
BB	4	6	6	9	9
BC	11	14	14	19	19
CA (Nominal×Pitch)	M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25
EY	SR50	SR80	SR80	SR125	SR125
Hydraulic Port Option -C	G1/8	G1/8	G1/8	G1/8	G1/8
Hydraulic Port Option -S	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/8
O-ring (Option -C)	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P7-N	OR NBR-90 P7-N

Contact Bolt Design Dimensions

※Reference for designing a contact bolt (attachment) by customer other than the included contact bolt.

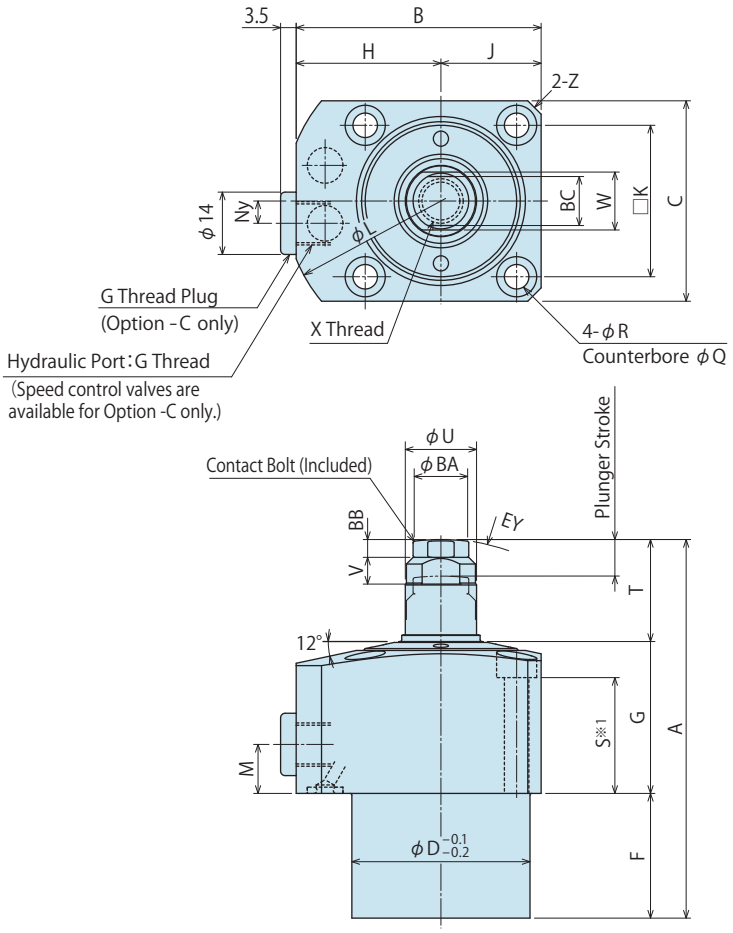
(mm)

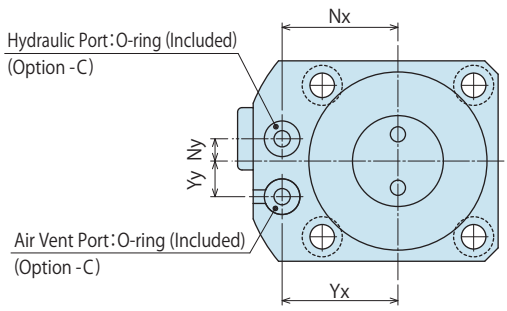
Corresponding Model No.	TC0403-□-Q	TC0483-□-Q	TC0553-□-Q	TC0653-□-Q	TC0753-□-Q
EB	8.2	10	10	13.5	13.5
EC	12.5	16.5	16.5	21.5	21.5
ED	6	7.5	7.5	10.5	10.5
EE	10	12	12	16	16
EF	7	8	8	11	11
EG	2	3	3	4	4
EX (Nominal×Pitch)	M10×1.5	M12×1.75	M12×1.75	M16×2	M16×2
O-ring	S8 (Made by NOK)	S10 (Made by NOK)	S10 (Made by NOK)	AS568-014 (70)	AS568-014 (70)

External Dimensions

C：Gasket Option (with G Thread Plug)

※ This drawing shows the released state of TC-C□-E (before the plunger is lifted).

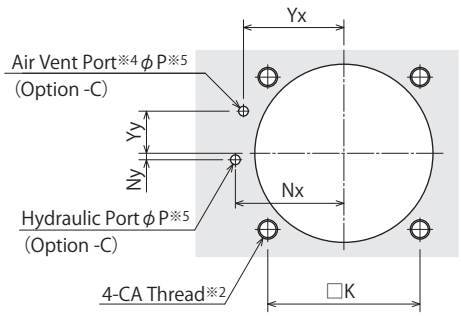


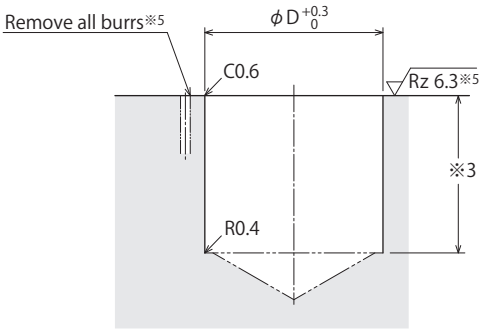


Notes：

※1. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

Machining Dimensions of Mounting Area





Notes：

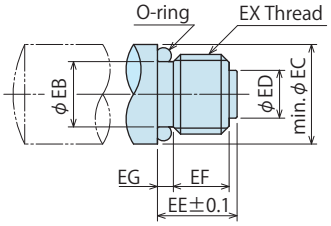
※2. CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.

※3. The depth of the body mounting hole φD should be decided according to the mounting height referring to dimension 'F'.

※4. Please keep clear condition at the air vent port, and prevent coolant and chips from entering the port. (Please refer to "Appropriate Measures for the Air Vent Port (P.819)".)

※5. The machining dimension is for -C：Gasket option.

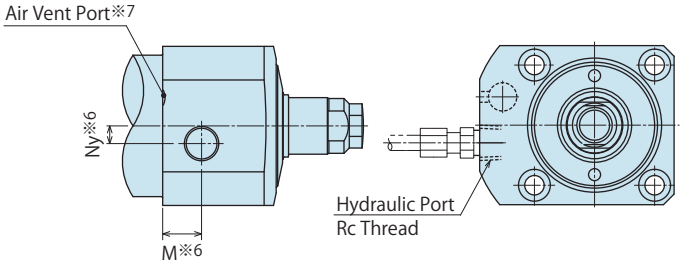
Contact Bolt Design Dimensions



Piping Method

S：Piping Option (Rc Thread)

※This drawing shows TC-S□-E.

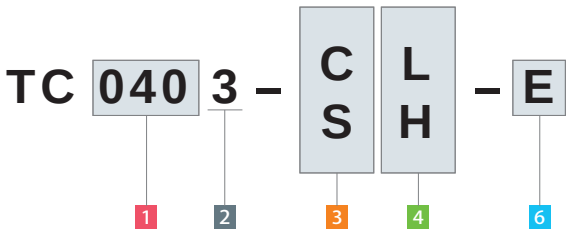


Notes：

※6. The dimensions are the same as C：Gasket Option.

※7. The air vent port must be open to the atmosphere. Select -C : Gasket Option if coolant or any contaminants enter from the air vent port.

Model No. Indication



(Format Example：TC0403-CL-E / TC0753-SH-E)

1 Body Size
2 Design No.
3 Piping Method
4 Plunger Spring Force
5 Plunger Action Confirmation : Blank
6 Option : E

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	TC0403-□□-E	TC0483-□□-E	TC0553-□□-E	TC0653-□□-E	TC0753-□□-E
Plunger Stroke	10	12	14	16	20
A	85	97	115	142	169
B	55	62	70.5	81	91.5
C	45	51	60	70	80
D	40	48	55	65	75
F	28	34	49	69	82
G	34.1	34.1	34.1	34.6	43.1
H	32.5	36.5	40.5	46	51.5
J	22.5	25.5	30	35	40
K	34	40	47	55	63
L	70	75	83	94	106
M	11	11	11	11	11
Nx	26	30	33.5	39.5	45
Ny	5	0	0	0	0
P	3	3	3	5	5
Q	9	9	11	11	14
R	5.5	5.5	6.8	6.8	9
S	26	25	23	23	29
T	22.9	28.9	31.9	38.4	43.9
U	16	20	22	25	30
V	6	8	9	9	10.5
W	13	17	19	22	24
X (Nominal×Pitch×Depth)	M10×1.5×11	M12×1.75×13	M12×1.75×13	M16×2×20	M16×2×20
Yx	26	28	31	37	42.5
Yy	8	11	13	14	15
Z (Chamfer)	C3	C3	C3.5	C5	R53
BA	12.5	16.5	16.5	21.5	21.5
BB	4	6	6	9	9
BC	11	14	14	19	19
CA (Nominal×Pitch)	M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25
EY	SR50	SR80	SR80	SR125	SR125
Hydraulic Port Option -C	G1/8	G1/8	G1/8	G1/8	G1/8
Hydraulic Port Option -S	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/8
O-ring (Option -C)	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P7-N	OR NBR-90 P7-N

Contact Bolt Design Dimensions

※Reference for designing a contact bolt (attachment) by customer other than the included contact bolt.

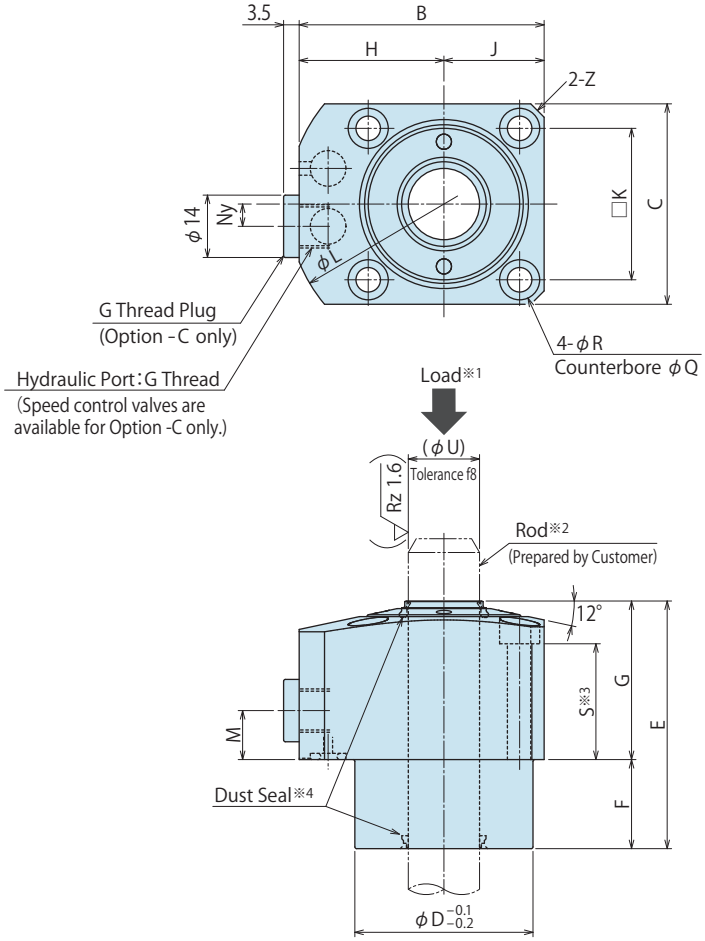
(mm)

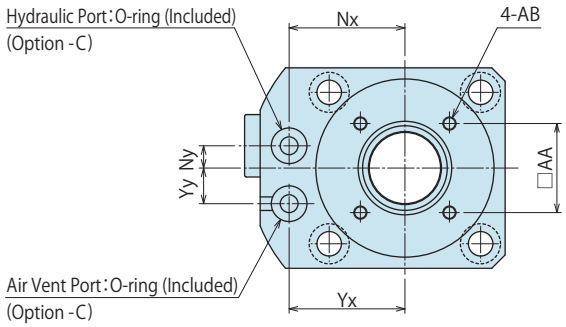
Corresponding Model No.	TC0403-□□-E	TC0483-□□-E	TC0553-□□-E	TC0653-□□-E	TC0753-□□-E
EB	8.2	10	10	13.5	13.5
EC	12.5	16.5	16.5	21.5	21.5
ED	6	7.5	7.5	10.5	10.5
EE	10	12	12	16	16
EF	7	8	8	11	11
EG	2	3	3	4	4
EX (Nominal×Pitch)	M10×1.5	M12×1.75	M12×1.75	M16×2	M16×2
O-ring	S8 (Made by NOK)	S10 (Made by NOK)	S10 (Made by NOK)	AS568-014 (70)	AS568-014 (70)

External Dimensions

C：Gasket Option (with G Thread Plug)

※ This drawing shows the released state of TC-C-D (before the plunger is lifted).





Notes：

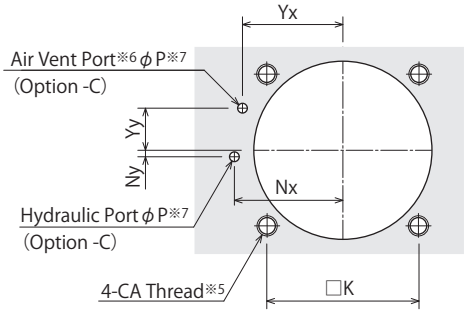
※ 1. The load acts towards the arrow direction (⬇) as shown in the drawing. If used in a reversed position, the internal parts are likely to be damaged.

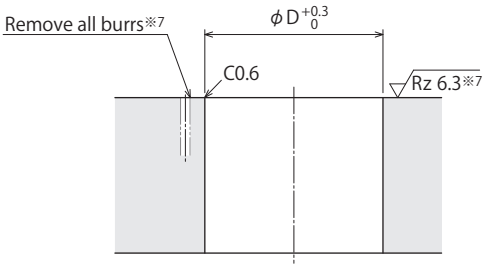
※ 2. The surface hardness of the rod (prepared by the customer) should be above HRC60. (The hard Chromic plated metal is acceptable.)

※ 3. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

※ 4. Deburr the rod end, and pay attention not to damage the dust seal when the rod is inserted into the body (upper and lower parts).

Machining Dimensions of Mounting Area





Notes：

※ 5. CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.

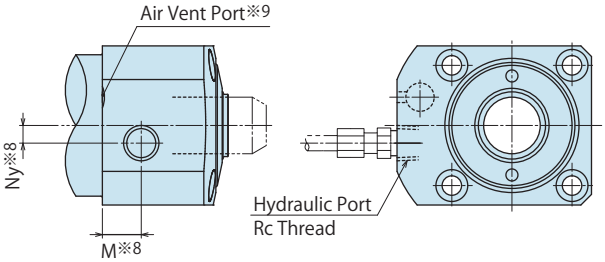
※ 6. Please keep clear condition at the air vent port, and prevent coolant and chips from entering the port. (Please refer to "Appropriate Measures for the Air Vent Port (P.819)".)

※ 7. The machining dimension is for -C：Gasket option.

Piping Method

S：Piping Option (Rc Thread)

※This drawing shows TC-S-D.

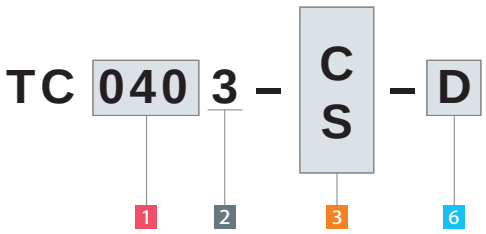


Notes：

※ 8. The dimensions are the same as C：Gasket Option.

※ 9. The air vent port must be open to the atmosphere. Select -C : Gasket Option if coolant or any contaminants enter from the air vent port.

Model No. Indication



(Format Example : TC0403-C-D / TC0753-S-D)

1 Body Size
2 Design No.
3 Piping Method
4 Plunger Spring Force : Blank
5 Plunger Action Confirmation : Blank
6 Option : D

External Dimensions and Machining Dimensions for Mounting

(mm)

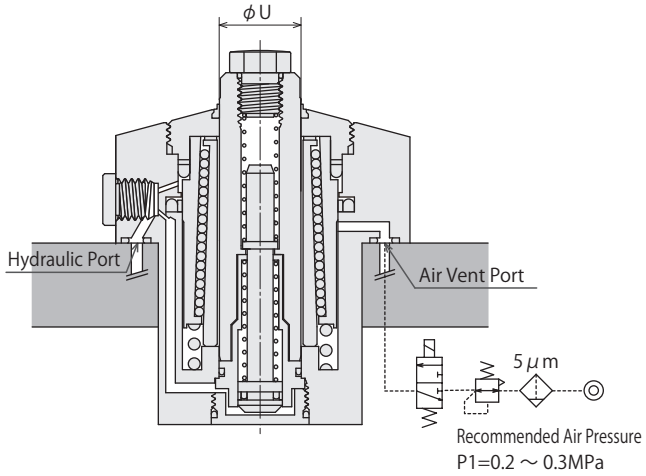
Model No.		TC0403-□-D	TC0483-□-D	TC0553-□-D	TC0653-□-D	TC0753-□-D
B		55	62	70.5	81	91.5
C		45	51	60	70	80
D		40	48	55	65	75
E		55.6	62.6	79.6	100.1	127.6
F		20	27	44	63	82
G		35.6	35.6	35.6	37.1	45.6
H		32.5	36.5	40.5	46	51.5
J		22.5	25.5	30	35	40
K		34	40	47	55	63
L		70	75	83	94	106
M		11	11	11	11	11
Nx		26	30	33.5	39.5	45
Ny		5	0	0	0	0
P		3	3	3	5	5
Q		9	9	11	11	14
R		5.5	5.5	6.8	6.8	9
S		26	25	23	23	29
U		$16^{-0.016}_{-0.043}$	$20^{-0.020}_{-0.053}$	$22^{-0.020}_{-0.053}$	$25^{-0.020}_{-0.053}$	$30^{-0.020}_{-0.053}$
Yx		26	28	31	37	42.5
Yy		8	11	13	14	15
Z (Chamfer)		C3	C3	C3.5	C5	R53
AA		20	25.5	28	34	40
AB(Nominal×Pitch×Depth)		M3×0.5×5	M5×0.8×6.5	M5×0.8×6.5	M5×0.8×8	M5×0.8×8
CA (Nominal×Pitch)		M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25
Hydraulic Port	Option -C	G1/8	G1/8	G1/8	G1/8	G1/8
	Option -S	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/8
O-ring (Option -C)		OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P7-N	OR NBR-90 P7-N

Air Purge Function

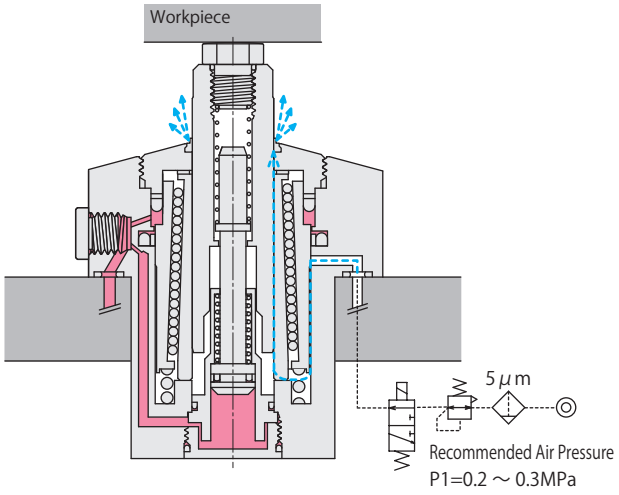
The special dust seal that features low friction and high sealing capabilities is used in TC .
However, when using TC in worse condition, air purge function is available by providing the circuit to the air vent port like the drawing below.

Structure Drawing

TC Plunger Descending and at Releasing State (Air Supply OFF) ※1



TC Plunger Ascending and at Locking State (Air Supply ON) ※1



Workpiece Contact Force Formula when Using Air Purge Function ※2

Workpiece Contact Force (N) = Plunger Spring Force (N) + Supply Air Pressure (MPa) × U^2 (mm) × π ／ 4

Model No.		TC0403-□□ TC0403-□□-E TC0403-□-Q	TC0483-□□ TC0483-□□-E TC0483-□-Q	TC0553-□□ TC0553-□□-E TC0553-□-Q	TC0653-□□ TC0653-□□-E TC0653-□-Q	TC0753-□□ TC0753-□□-E TC0753-□-Q
U	mm	16	20	22	25	30
Plunger ※3 Spring Force N	**L** : Low Spring Force	5.8～9.7	8.3～14.6	9.8～14.6	12.4～18.8	14.6～21.0
	H : High Spring Force	7.8～13.6	10.1～21.9	15.8～22.0	18.7～31.9	21.4～34.2
	Q : Long Stroke Model	7.8～20.4	10.1～24.8	15.8～28.4	18.7～42.3	21.4～44.0

Notes :

※2. Please prepare a stopper if necessary when using light and/or thin workpiece. Otherwise it might be pushed up by the work support.

※3. The plunger spring force indicates the spring design value. It may vary depending on sliding resistance of the plunger and characteristic of the spring , etc. Please read it as a reference value of workpiece contact force.

1. Except D：Rodless Hollow Option

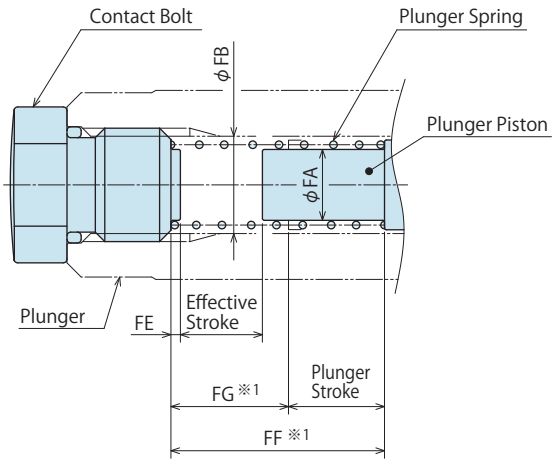
Notes

※1. When the plunger is descending, shut off the air supply. The plunger does not go back when air is supplied.

1. If the plunger ascends too fast, it may bounce back and locks itself resulting in a gap with the workpiece, and possible damage to the internal parts due to the impact. Set the plunger action time at 0.5-1.0 sec. to adjust the air supply with the flow control valve with check valve (meter-in), and make sure that there is no clearance with the workpiece for operation.
2. Air cannot be vented as the air supply pressure is too low because the cracking pressure at the dust seal lip is about 0.1MPa.

Plunger Spring Design Dimension

※ Reference in case springs (except an attached plunger spring) are designed by a customer.
※ This drawing shows the released state.
※ There is no effective stroke range for the Option **E** and **EQ** .



Model No. **TC** 040 **3** - C S / L H Blank - **Blank E Q**

6 Option

(mm)

Corresponding Model No.	TC0403-□□ TC0403-□□-E	TC0483-□□ TC0483-□□-E	TC0553-□□ TC0553-□□-E	TC0653-□□ TC0653-□□-E	TC0753-□□ TC0753-□□-E
FA	6	7.5	7.5	10.5	10.5
FB	8.5	10.3	10.3	14	14
FE	1	1	1	1	1
FF※1	19.6	22.6	34.6	34.3	46.3
FG※1	9.6	10.6	20.6	18.3	26.3
Plunger Stroke	10	12	14	16	20
Effective Stroke	9.5	11.5	13.5	15.5	19.5

(mm)

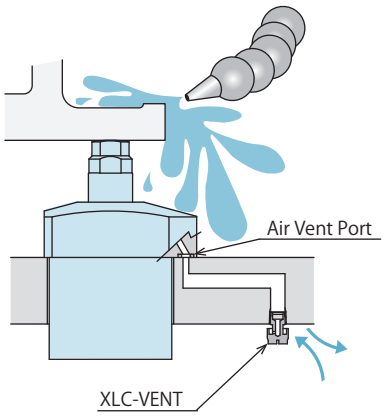
Corresponding Model No.	TC0403-□-Q TC0403-□-EQ	TC0483-□-Q TC0483-□-EQ	TC0553-□-Q TC0553-□-EQ	TC0653-□-Q TC0653-□-EQ	TC0753-□-Q TC0753-□-EQ
FA	6	7.5	7.5	10.5	10.5
FB	8.5	10.3	10.3	14	14
FE	1	1	1	1	1
FF※1	36.2	40.5	49.5	53.5	66.9
FG※1	16.2	16.5	21.5	21.5	26.9
Plunger Stroke	20	24	28	32	40
Effective Stroke	19.5	23.5	27.5	31.5	39.5

Note :
※1. When designing a spring, make sure that the spring set length is below FF dimension and the spring contact length is below FG dimension.

Accessory (Corresponding Model No. LC / TC-C : Gasket Option)

Appropriate Measures for Air Vent Ports

The work support, although only slightly, breathes like a single-acting cylinder.
Consider the environment and avoid cutting fluid, coolant or any contaminants.
If using it without an air vent port, it may not function properly.



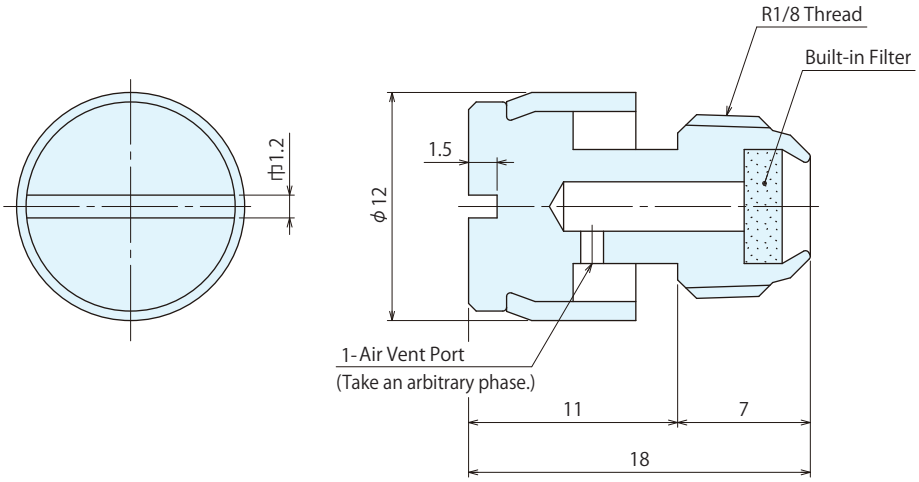
Model No . Indication

XLC-VENT

Specifications

Model No.		XLC-VENT
Filtration Precision of Filter	μm	40
Tightening Torque	N•m	2

Internal Structure



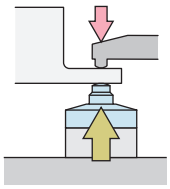
※ For installation, use a screw driver and tighten it with the tightening torque shown above.

MEMO

Cautions

Notes for Design

1) Check Specifications
- Please use each product according to the specifications.
- When using a work support opposite to the clamp, set the support force at more than 1.5 times the clamping force.

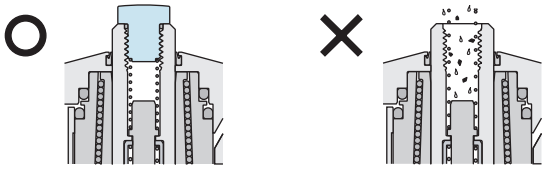


Support Force ≧ Clamping Force × 1.5

2) Notes for Circuit Design
- Please read "Notes on Hydraulic Cylinder Speed Control Unit" for proper hydraulic circuit design. Improper circuit design may lead to malfunctions and damages. (Refer to P.1356)

3) Install a temporary stopper for a workpiece if necessary.
- When multiple work supports are used for a light workpiece, the plunger spring force may be higher than the workpiece weight, causing the workpiece to be pushed up.

4) An attachment is required for the plunger.
- Make sure that an attachment is installed to the plunger. Otherwise, the plunger does not advance since the plunger spring is free to move.
- Make sure to set the O-ring to the attachment. Otherwise, cutting fluid or other contaminants will get in easily, causing malfunction.

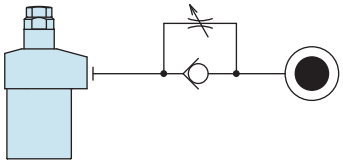


5) Protect the plunger surface when using on a welding fixture.
- If spatter attaches to the sliding surface it may lead to a sliding failure and an insufficient support function.

6) Do not expose the plunger directly to high-pressure coolant.
- It will cause intrusion of the coolant and damage to the internal components.

7) For Using on a Lathe, High-Speed Tilting Table, and etc.
- When using in a cycle where the centrifugal force is acting, the work support should be in a locked state. Please contact us for further information.

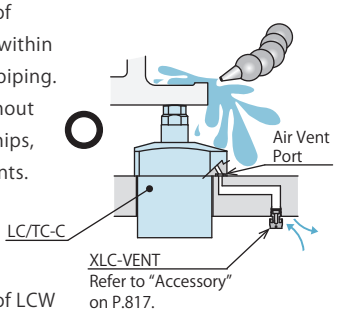
8) Adjust the plunger operation time with flow rate.
- A rough guideline for the full stroke is between 0.5 and 1 second.
- As with single-action cylinders, use a flow regulating valve with a check valve (meter-in) in consideration of the decreasing speed at release.
- If the action speed is too fast, the plunger may bounce back and locks itself resulting in a gap with the workpiece.
- Use a flow regulating valve with check valve that has 0.1 MPa or less of cracking pressure. If the cracking pressure is too high the plunger will not move at the time of release.



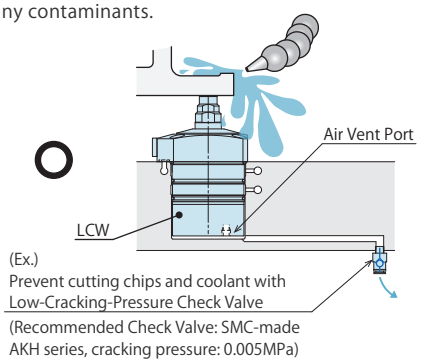
9) Appropriate Measures for the Air Vent Port
- The work support, although only slightly, breathes like a single-acting cylinder. Consider the environment and avoid cutting fluid, coolant or any contaminants.
- If using it without an air vent port, it will not function properly.

【Example】

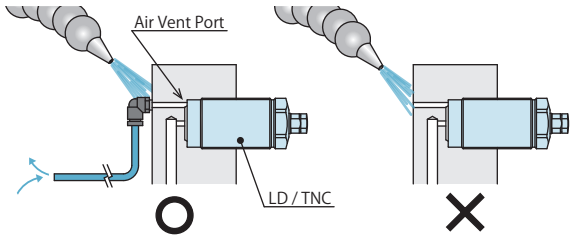
① Prepare the air vent port of LC / TC-C : Gasket Option within the fixture with manifold piping. Make sure it breathes without the influence of cutting chips, coolant or any contaminants.



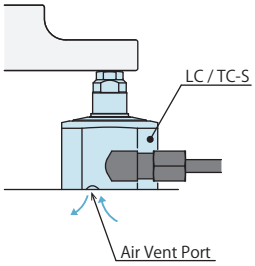
② Prepare the air vent port of LCW within the fixture with manifold piping. Make sure it breathes without the influence of cutting chips, coolant or any contaminants.



③ Prepare the air vent port of LD/TNC with the external piping. Make sure it breathes without the influence of cutting chips, coolant or any contaminants.

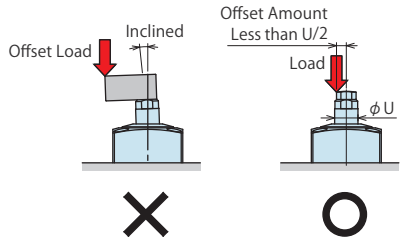


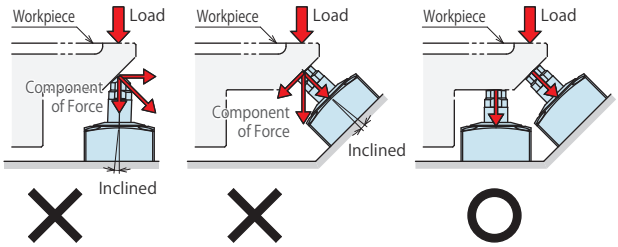
④ The air vent port of LC/TC-S : Piping Option must be open to the atmosphere. Select -C : Gasket Option if coolant or any contaminants enter from the air vent port.



10) Make sure that offset load and component of force do not affect the product.

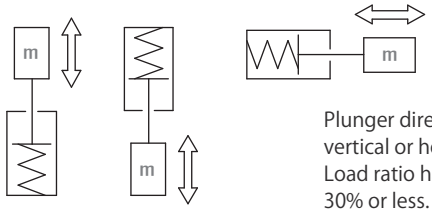
- If using the product as illustrated below, the displacement against load will be increased. Also large load will damage the internal parts.





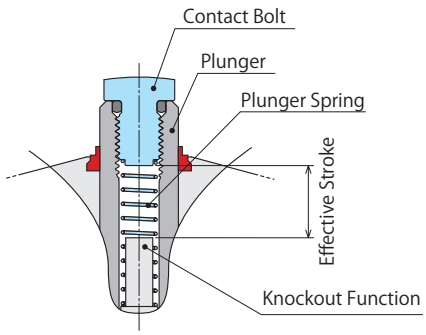
11) The Weight of an Attachment

- When designing an attachment, make sure the attachment weight is 30% or less of the plunger spring force.



Plunger direction either vertical or horizontal : Load ratio has to be 30% or less.

- Ex.) In case of LC0403-L with the plunger spring force 4.7-7.8N.
  The maximum weight of the contact bolt = 4.7×0.3/9.807=0.14kg
  Since it may vary depending on sliding resistance of the plunger and characteristic of the spring, it is recommended to design the contact bolt as light as possible.
- The dimensions of the mounting thread area need to be processed according to the design dimensions for contact bolts as shown on the respective product pages.
  The knockout function is used together to release fixation of plunger spring and adherence after machine stop for a long time. Using an attachment with different thread part dimension leads to inappropriate spring force and effective stroke, causing damage and malfunctions.



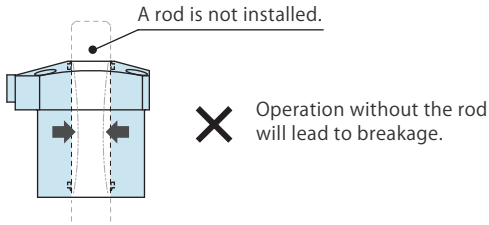
12) For Replacing Sensor Pads of LCW

- Please design a sensor pad according to Sensor Pad Design Dimensions on P.XX. (Contact us for replacing contact bolts.)

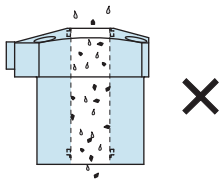
  Sensor response may decrease if the sensor pad is longer than maximum length shown in the sensor pad design dimensions.

13) Notes on **D** : Rodless Hollow Model

- Do not supply hydraulic pressure without a rod installed.
  The collet will be deformed leading to release failure.



- Make sure the rod is always inserted during the operation.
  At the rodless state, contaminants and cutting chips enter into the product leading to malfunctions.



※ Please refer to P.1355 for common cautions.
・Installation Notes ・Hydraulic Fluid List ・Notes on Hydraulic Cylinder Speed Control Circuit
・Notes on Handling ・Maintenance/Inspection ・Warranty

Cautions

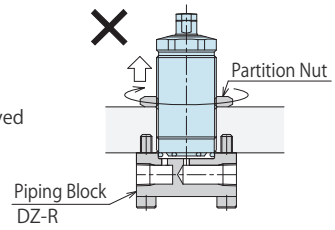
Notes for Design

12) Notes on Mounting Method of LD/TNC (Threaded Model)

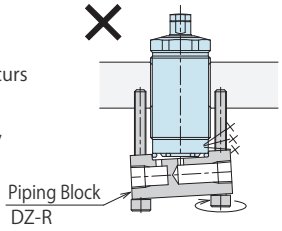
● When mounting LD/TNC, make sure the base is horizontal to the bearing surface, and the load is received at the base. With the following installations, the load cannot be received at the base, leading to increase of displacement amount and damage on the product.

【Examples of Improper Use】

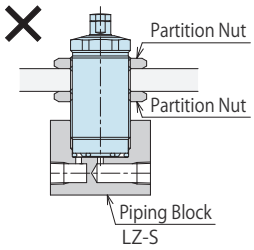
① Work support is lifted up by tightening the partition nut, and the load cannot be received on the bearing surface.



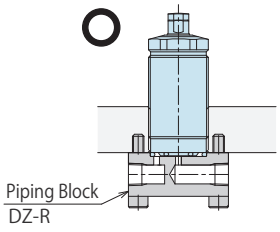
② Bearing surface contact part is not horizontal, a clearance occurs and it cannot receive the load. Moreover, there is a possibility of damaging equipment by tightening bolts.



③ Since the piping block to receive the load is floated, it cannot receive the load.



【Example of Proper Use】



Installation Notes

1) Check the Usable Fluid

- Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.1355).

2) Installation of the Product

- When mounting LC/LCW/TC (Flanged Model), use hexagonal socket bolts as multiple bolt holes for mounting (with tensile strength of 12.9) and tighten them with the torque shown in the table below.

Model No.		Thread Size	Tightening Torque (N·m)
LC	LC0263	M3×0.5	1.3
	LC0303	M4×0.7	3.2
	LC0363	M4×0.7	3.2
	LC0403	M5×0.8	6.3
	LC0483	M5×0.8	6.3
	LC0553	M6×1	10
	LC0653	M6×1	10
	LC0753	M8×1.25	25
	LC0903	M10×1.5	50
LCW	LCW0363-C□	M4×0.7	3.2
	LCW0403-C□	M5×0.8	6.3
	LCW0483-C□	M5×0.8	6.3
	LCW0553-C□	M6×1	10
	LCW0653-C□	M6×1	10
TC	TC0403	M5×0.8	6.3
	TC0483	M5×0.8	6.3
	TC0553	M6×1	10
	TC0653	M6×1	10
	TC0753	M8×1.25	25

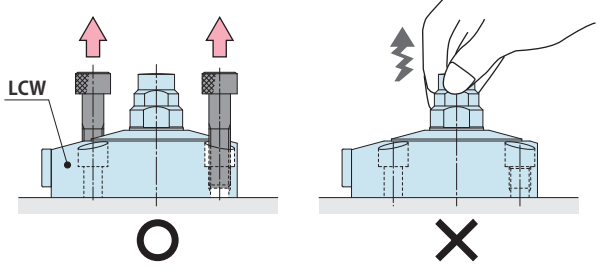
- For LD/TNC (Threaded Model), be careful not to damage the O-ring for sealing the base. Tighten them with the torque shown in the table below.

Model No.		Thread Size	Tightening Torque (N·m)
LD	LD0163	M16×1.0	8
	LD0223	M22×1.5	16
	LD0263	M26×1.5	31.5
	LD0303	M30×1.5	50
	LD0363	M36×1.5	63
	LD0453	M45×1.5	80
TNC	TNC0403	M26×1.5	31.5
	TNC0603	M30×1.5	50
	TNC1003	M36×1.5	63
	TNC1603	M45×1.5	80

- Apply an adequate amount of grease to the O-ring.
- If it is mounted under dry state, the O-ring may have twisting or be defective.
- If it is tightened with higher torque, it may lead to malfunction.

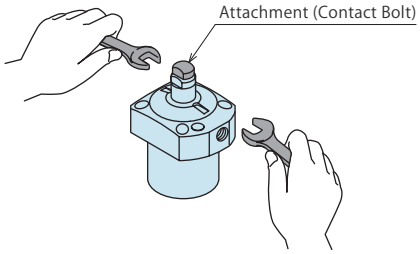
3) Removal of LCW

- When removing the product for maintenance or other reasons, insert bolts to the two mounting bolt holes and pull them out straight. If the plunger part is pulled out, the internal parts will be damaged.



3) Replacement of Attachment

- Be careful not to lose the plunger spring.
- In a state that supplying pressure to the work support is released, stop the plunger with a spanner at its front end and tighten it with the tightening torque as shown in the following table.



Model No.		Head Thread Size	Tightening Torque (N·m)
LC	LC0263	M4×0.7	1.6
	LC0303	M6×1	5
	LC0363	M8×1.25	10
	LC0403	M10×1.5	16
	LC0483	M10×1.5	16
	LC0553	M12×1.75	40
	LC0653	M12×1.75	40
	LC0753	M16×2	80
	LC0903	M16×2	80
LCW	LCW0363-C□	M8×1.25	10
	LCW0403-C□	M10×1.5	16
	LCW0483-C□	M10×1.5	16
	LCW0553-C□	M12×1.75	40
	LCW0653-C□	M12×1.75	40
TC	TC0403	M10×1.5	16
	TC0483	M12×1.75	40
	TC0553	M12×1.75	40
	TC0653	M16×2	80
	TC0753	M16×2	80
LD	LD0163	M3×0.5	0.6
	LD0223	M4×0.7	1.6
	LD0263	M6×1	5
	LD0303	M8×1.25	10
	LD0363	M10×1.5	16
	LD0453	M10×1.5	16
TNC	TNC0403	M8×1.25	10
	TNC0603	M10×1.5	16
	TNC1003	M10×1.5	16
	TNC1603	M12×1.75	40

※ Please refer to P.1355 for common cautions. • Installation Notes • Hydraulic Fluid List • Notes on Hydraulic Cylinder Speed Control Circuit • Notes on Handling • Maintenance/Inspection • Warranty

Cautions

Installation Notes (For Hydraulic Series)

1) Check the Usable Fluid

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

2) Procedure before Piping

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

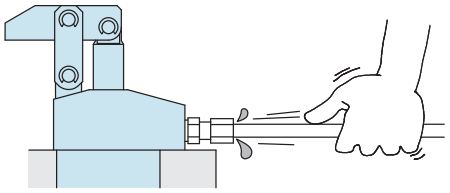
3) Applying Sealing Tape

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

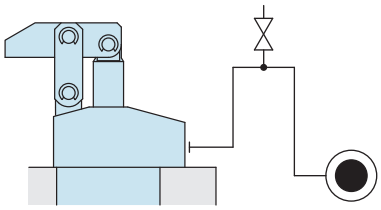
4) Air Bleeding of the Hydraulic Circuit

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

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



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



5) Checking Looseness and Retightening

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

Hydraulic Fluid List

ISO Viscosity Grade ISO-VG-32

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

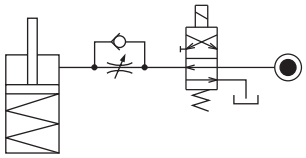
Note : Please contact manufacturers when customers require products in the list above.

Notes on Hydraulic Cylinder Speed Control Unit

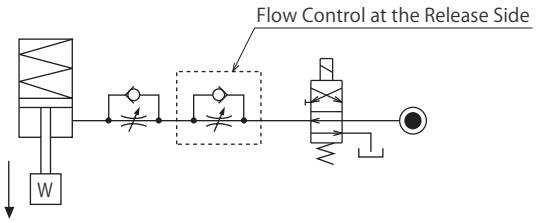
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

Flow Control Circuit for Single Acting Cylinder

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



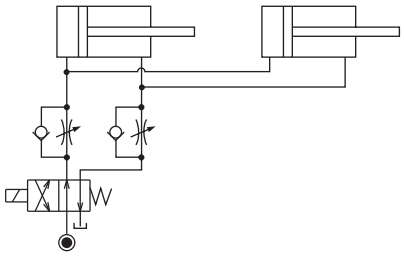
Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow. (Please add flow control to release flow if the lever weight is put on at the time of release action when using swing clamps.)



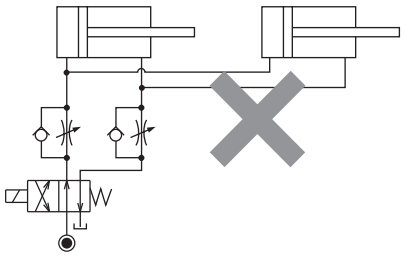
Flow Control Circuit for Double Acting Cylinder

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

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

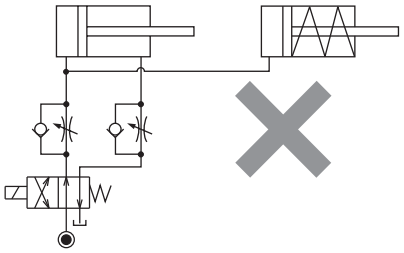


【Meter-in Circuit】(LKE/TMA/TLA must be controlled with meter-in.)



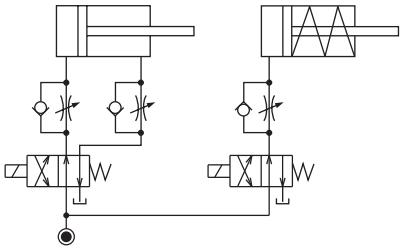
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

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

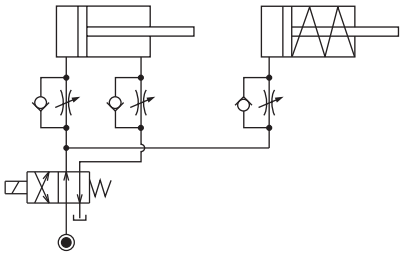


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

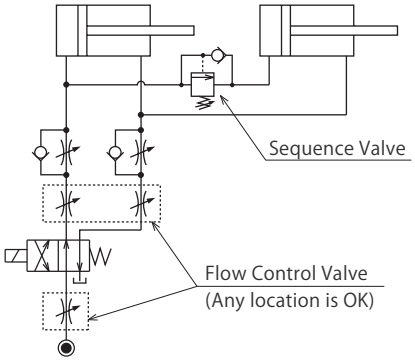
○ Separate the control circuit.



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



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



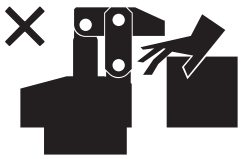
Cautions

Notes on Handling

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

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

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

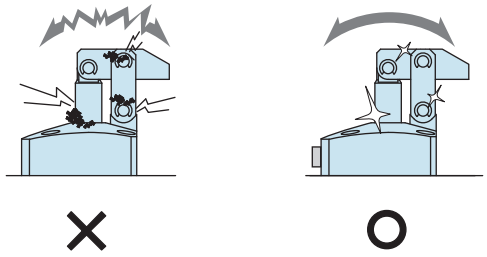


4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

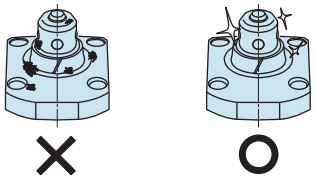
Maintenance and Inspection

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

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



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



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

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

6) Make sure the hydraulic fluid has not deteriorated.

7) Make sure there is a smooth action without an irregular noise.
- Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.

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

9) Please contact us for overhaul and repair.

Warranty

1) Warranty Period

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

2) Warranty Scope

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

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

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

Control Valve

Model BZL
Model BZT
Model BZX
Model JZG
Model BZS

Directly-Attached Speed Control Valve, Air Bleed Valve, G-Thread Plug and Sequence Valve

● Directly Attached to Clamps

Control Valves :
Speed control valve, air bleed valve, G-thread plug and sequence valve attached directly into Kosmek hydraulic clamp G-thread piping option.

Speed Control Valve

Speed Control Valve

Model BZL
Model BZT

Air Bleed Valve

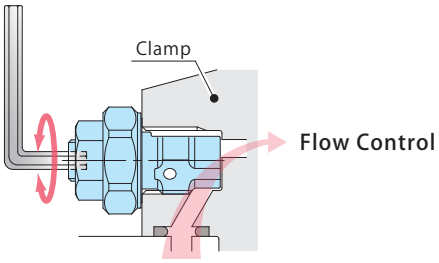
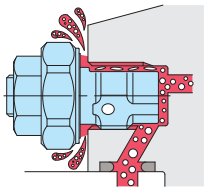
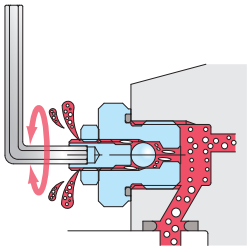
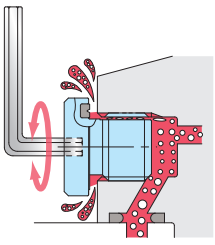
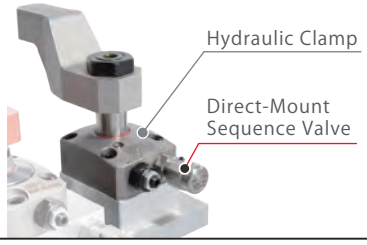
Model BZX

G Thread Plug

Model JZG

Direct-Mount Sequence Valve

Model BZS

	Operating Pressure Range	Action Description
Speed Control Valve (For Low Pressure) Model **BZL** → P.949 	7MPa or less	Adjust the flow rate with a wrench. Able to adjust the clamping speed individually. 
Speed Control Valve (For High Pressure) Model **BZT** → P.953	35MPa or less	Air bleeding in the circuit is possible by loosening the speed control valve. 
Air Bleed Valve Model **BZX** → P.955 	35MPa or less	Air bleeding in the circuit is possible by wrench. 
G Thread Plug Model **JZG** → P.957 	35MPa or less	Air bleeding in the circuit is possible by loosening the G thread plug. 
Direct-Mount Sequence Valve Model **BZS** → P.959 	7MPa or less	Sequence Valve directly attaches to KOSMEK hydraulic clamp's G-thread piping option. Controls the operating sequence of each actuator. 

Model No. Indication (Speed Control Valve for High Pressure)

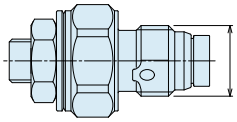
BZT 0 10 1 - A

1 2 3

1 G Thread Size

10 : Thread Part G1/8A Thread

20 : Thread Part G1/4A Thread



2 Design No.

1 : Revision Number

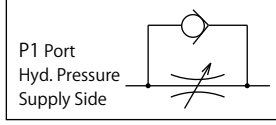
3 Control Method

A : Meter-in

※ Meter-out option is not available for BZT.

A

Circuit Symbol : Meter-in



Specifications

Model No.		BZT0101-A	BZT0201-A
Max. Operating Pressure	MPa	35	
Min. Operating Pressure	MPa	10	
Control Method		Meter-in	
G Thread Size		G1/8A	G1/4A
Cracking Pressure	MPa	0.04	
Max. Passage Area	mm^2	2.6	5.0
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32	
Operating Temperature	℃	0 ~ 70	
Tightening Torque for Main Body	N·m	10	25
Weight	g	12	26

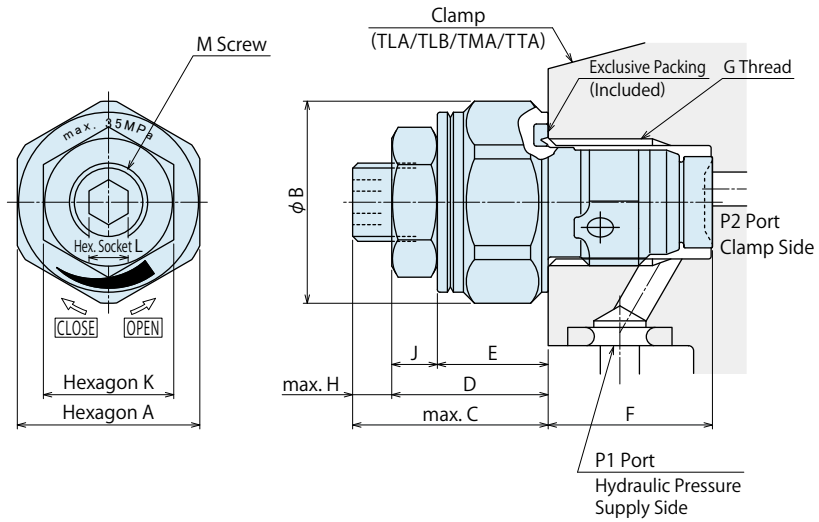
Notes : 1. It must be mounted with recommended torque. Because of the structure of the metal seal, if mounting torque is insufficient, the flow control valve may not be able to adjust the flow rate.
2. Do not attach a used BZT to other clamps. Flow control will not be made because the bottom depth difference of G thread makes metal seal insufficient.

Applicable Products

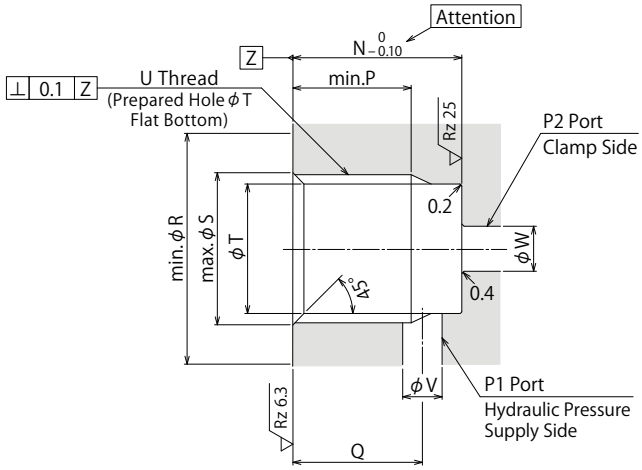
Model	TLA-2 (Double Action) Swing Clamp	TLB-2 (Double Action) Swing Clamp	TLA-1 (Single Action) Swing Clamp	TMA-2 (Double Action) Link Clamp	TMA-1 (Single Action) Link Clamp	TTA (Double Action) Linear Cylinder	TC (Single Action) Work Support
BZT0101-A	TLA0801-2C□-□	TLB0801-2C□-□	TLA0802-1C□	TMA0250-2C□	TMA0250-1C□	TTA0360-C□-□	TC0553-C□
	TLA1001-2C□-□	TLB1001-2C□-□	TLA1002-1C□	TMA0400-2C□	TMA0400-1C□	TTA0400-C□-□	TC0653-C□
	TLA1601-2C□-□	TLB1601-2C□-□	TLA1602-1C□	TMA0600-2C□	TMA0600-1C□	TTA0480-C□-□	TC0753-C□
				TMA1000-2C□	TMA1000-1C□	TTA0550-C□-□	
BZT0201-A	TLA2001-2C□-□	TLB2001-2C□-□	TLA2002-1C□	TMA1600-2C□	TMA1600-1C□	TTA0650-C□-□	
	TLA2501-2C□-□	TLB2501-2C□-□	TLA2502-1C□	TMA2500-2C□	TMA2500-1C□		
	TLA4001-2C□-□	TLB4001-2C□-□	TLA4002-1C□	TMA3200-2C□	TMA3200-1C□		

Notes : 1. It is not recommended to use BZT for TC040□ / TC048□ / TL□040□ / TL□060□ since they have small cylinder capacity and it is difficult to adjust the speed.
2. In case of controlling TMA, TLA, TTA, both lock side and release side should be meter-in circuit. If meter-out circuit is used, abnormal high pressure is created, which causes oil leakage and damage.

External Dimensions



Machining Dimensions of Mounting Area



(mm)

Model No.	BZT0101-A	BZT0201-A
A	14	18
B	15.5	20
C	15	16
D	12	13
E	8.5	9.5
F	(12.6)	(16.1)
G	G1/8	G1/4
H	3	3
J	3.5	3.5
K	10	10
L	3	3
M (Nominal×Pitch)	M6×0.75	M6×0.75
N	12.5	16
P	8.5	11
Q	9.5	12
R	16	20.5
S	10	13.5
T	8.7	11.5
U	G1/8	G1/4
V	2.5 ~ 3.5	3.5 ~ 4.5
W	2.5 ~ 5	3.5 ~ 7

Notes :

1. Since the $\sqrt{Rz\ 6.3}$ area is sealing part, be careful not to damage it.
2. Since the $\sqrt{Rz\ 12.5}$ area is the metal sealing part of BZL, be careful not to damage it. (Especially when deburring)
3. No cutting chips or burr should be at the tolerance part of machining hole.
4. As shown in the drawing, P1 port is used as the hydraulic supply side and P2 port as the clamp side.

Notes

1. Please read "Notes on Hydraulic Cylinder Speed Control Unit" for proper hydraulic circuit design.
   Improper circuit design may lead to malfunctions and damages. (Refer to P.1356)
2. It is dangerous to release the air under high pressure. It must be done under lower pressure.
   (For reference : the minimum operating range of the product within the circuit.)
3. When the cylinder capacity is small, the speed of flow may not be controlled properly. (Recommended Cylinder Capacity : 3cm³ or more)

Model No. Indication (Air Bleed Valve)

BZX0 1 0

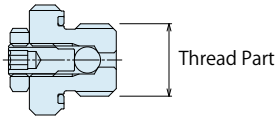
1 2

1 G Thread Size

1 : Thread Part G1/8A Thread

2 : Thread Part G1/4A Thread

3 : Thread Part G3/8A Thread



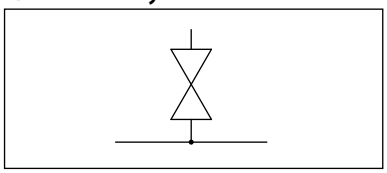
2 Design No.

0 : Revision Number

Specifications

Model No.		BZX010	BZX020	BZX030
Max. Operating Pressure	MPa	35		
Withstanding Pressure	MPa	42		
G Thread Size		G1/8A	G1/4A	G3/8A
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32		
Operating Temperature	℃	0 ~ 70		
Tightening Torque for Main Body	N·m	10	25	35
Weight	g	12	23	36

Circuit Symbol



Notes : 1. Do not over-loosen the plug during air venting.
(Do not loosen further than 2 turns from the fully closed position.)
2. Air bleeding under high pressure is dangerous. It must be done under lower pressure.
(For reference : the minimum operation pressure range of the product within the circuit)
3. Refer to the machining dimensions of BZL mounting area when installing BZX into a hydraulic circuit.

Applicable Products

Model No.	DBA (Double Action) Block Cylinder	DBC (Double Action) Block Cylinder	FVA (Double Action) Centering Vise	FVC (Double Action) Centering Vise	FVD (Double Action) Centering Vise	LC (Single Action) Work Support	LCW (Single Action) Work Support	TC (Single Action) Work Support
BZX010	DBA0250-C□ DBA0320-C□	DBC0250-C□ DBC0320-C□	FVA0401 FVA0631 FVA1001	FVC0630	FVD1600 FVD2500	LC0263-C□-□ LC0303-C□□-□ LC0363-C□□-□ LC0403-C□□-□ LC0483-C□□-□ LC0553-C□□-□ LC0653-C□□-□	LCW0363-C□ LCW0403-C□ LCW0483-C□ LCW0553-C□ LCW0653-C□	TC0403-C□-□-□ TC0483-C□-□-□ TC0553-C□-□-□ TC0653-C□-□-□ TC0753-C□-□-□
BZX020	DBA0400-C□ DBA0500-C□	DBC0400-C□ DBC0500-C□		FVC1000 FVC1600	FVD4000	LC0753-C□□-□ LC0903-C□□-□		

Applicable Products

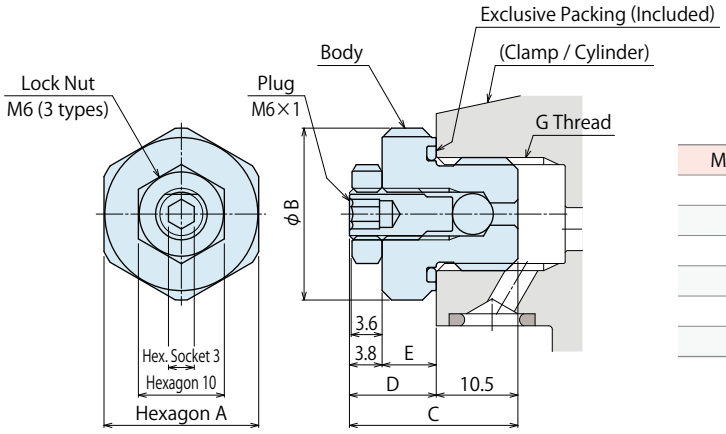
Model No.	LHA (Double Action) Swing Clamp	LHC (Double Action) Swing Clamp	LHD (Double Action) Swing Clamp	LHE (Double Action) High-Power Swing Clamp	LHS (Double Action) Swing Clamp	LHV (Double Action) Swing Clamp	LHW (Double Action) Swing Clamp	LT (Single Action) Swing Clamp	LG (Single Action) Swing Clamp
BZX010	LHA0360-C□□-□ LHA0400-C□□-□ LHA0480-C□□-□ LHA0550-C□□-□	LHC0360-C□□-□ LHC0400-C□□-□ LHC0480-C□□-□ LHC0550-C□□-□	LHD0400-C□-□ LHD0480-C□-□ LHD0550-C□-□	LHE0300-C□ LHE0360-C□ LHE0400-C□ LHE0480-C□ LHE0550-C□	LHS0360-C□□-□ LHS0400-C□□-□ LHS0480-C□□-□ LHS0550-C□□-□	LHV0400-C□E-□ LHV0480-C□E-□ LHV0550-C□E-□	LHW0401-C□□-□ LHW0481-C□□-□ LHW0551-C□□-□	LT0301-C□-□ LT0361-C□-□ LT0401-C□-□ LT0481-C□-□ LT0551-C□-□	LG0301-C□-□ LG0361-C□-□ LG0401-C□-□ LG0481-C□-□ LG0551-C□-□
BZX020	LHA0650-C□□-□ LHA0750-C□□-□	LHC0650-C□□-□			LHS0650-C□□-□ LHS0750-C□□-□	LHV0650-C□E-□ LHV0750-C□E-□	LHW0651-C□□-□ LHW0751-C□□-□	LT0651-C□-□ LT0751-C□-□	LG0651-C□-□ LG0751-C□-□
BZX030	LHA0900-C□□-□ LHA1050-C□□-□				LHS0900-C□□-□ LHS1050-C□□-□				LG0901-C□-□ LG1051-C□-□

Model No.	LGV (Single Action) Swing Clamp
BZX010	LGV0400-C□□ LGV0480-C□□ LGV0550-C□□
BZX020	LGV0650-C□□ LGV0750-C□□
BZX030	

Model No.	LKA (Double Action) Link Clamp	LKC (Double Action) Link Clamp	LKE (Double Action) High-Power Link Clamp	LKK (Double Action) Universal Clamp	LKV (Double Action) Link Clamp	LKW (Double Action) Link Clamp	LM (Single Action) Link Clamp	LJ (Single Action) Link Clamp	LJV (Single Action) Link Clamp
BZX010	LKA0360-C□□-□ LKA0400-C□□-□ LKA0480-C□□-□ LKA0550-C□□-□	LKC0400-C□-□ LKC0480-C□-□ LKC0550-C□-□	LKE0300-C□ LKE0360-C□ LKE0400-C□ LKE0480-C□ LKE0550-C□	LKK0360-C-□ LKK0400-C-□ LKK0480-C-□ LKK0550-C-□	LKV0400-C□E-□ LKV0480-C□E-□ LKV0550-C□E-□	LKW0401-C□□-□ LKW0481-C□□-□ LKW0551-C□□-□	LM0300-C□ LM0360-C□ LM0400-C□ LM0480-C□ LM0550-C□	LJ0302-C□ LJ0362-C□ LJ0402-C□ LJ0482-C□ LJ0552-C□	LJV0400-C□□ LJV0480-C□□ LJV0550-C□□
BZX020	LKA0650-C□□-□ LKA0750-C□□-□	LKC0650-C□-□		LKK0650-C-□	LKV0650-C□E-□ LKV0750-C□E-□	LKW0651-C□□-□ LKW0751-C□□-□	LM0650-C□ LM0750-C□	LJ0652-C□ LJ0752-C□	LJV0650-C□□ LJV0750-C□□
BZX030	LKA0900-C□□-□ LKA1050-C□□-□							LJ0902-C□ LJ1052-C□	

Model No.	LFW (Double Action) Link Clamp	LFA (Double Action) Link Clamp	LSA (Double Action) Side Clamp	LSE (Double Action) High-Power Side Clamp	LL (Double Action) Linear Cylinder	LLR (Double Action) Linear Cylinder	LLV (Double Action) Lift Cylinder	LLW (Double Action) Lift Cylinder	TTA (Double Action) Linear Cylinder
BZX010	LFW0480-C□J LFW0550-C□J	LFA0480-C□□ LFA0550-C□□	LSA0360-C-□	LSE0360-C-□	LL0360-C□□-□ LL0400-C□□-□ LL0480-C□□-□ LL0550-C□□-□	LLR0360-C□□-□-□ LLR0400-C□□-□-□ LLR0480-C□□-□-□ LLR0550-C□□-□-□	LLV0360-C□E-□ LLV0400-C□E-□ LLV0480-C□E-□	LLW0361-C□□-□ LLW0401-C□□-□ LLW0481-C□□-□	TTA0360-C□-□ TTA0400-C□-□ TTA0480-C□-□ TTA0550-C□-□
BZX020	LFW0650-C□J LFW0750-C□J	LFA0650-C□□ LFA0750-C□□			LL0650-C□□-□ LL0750-C□□-□	LLR0650-C□□-□-□ LLR0750-C□□-□-□			TTA0650-C□-□
BZX030					LL0900-C□□-□ LL1050-C□□-□	LLR0900-C□□-□-□ LLR1050-C□□-□-□			

External Dimensions



(mm)

Model No.	BZX010	BZX020	BZX030
A	14	18	22
B	15.5	20	24
C	19.8	20.6	20.6
D	9.3	10.1	10.1
E	5.5	6.3	6.3
G	G1/8	G1/4	G3/8

Model No. Indication (G Thread Plug with Air Bleeding Function) PAT.

JZG0 1 0

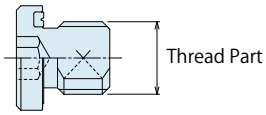
1 2

1 G Thread Size

1 : Thread Part G1/8A Thread

2 : Thread Part G1/4A Thread

3 : Thread Part G3/8A Thread



2 Design No.

0 : Revision Number

Specifications

Model No.		JZG010	JZG020	JZG030
Max. Operating Pressure	MPa	35		
Withstanding Pressure	MPa	42		
G Thread Size		G1/8A	G1/4A	G3/8A
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32		
Operating Temperature	℃	0 ~ 70		
Tightening Torque for Main Body N·m	Female Thread Side Material : Steel	10	25	35
	Female Thread Side Material : Aluminum (For LT/LM※1)	8	20	28
Weight	g	7	15	23

Notes : 1. Air bleeding under high pressure is dangerous. It must be done under lower pressure.
(For reference : the minimum operation pressure range of the product within the circuit)
2. Refer to the machining dimensions of BZL mounting area when installing JZG into a hydraulic circuit.
※1. Body material of LT/LM is aluminum alloy, so install it with the tightening torque for aluminum.

Applicable Products

Model No.	LHA (Double Action) Swing Clamp	LHC (Double Action) Swing Clamp	LHD (Double Action) Swing Clamp	LHE (Double Action) High-Power Swing Clamp	LHS (Double Action) Swing Clamp	LHV (Double Action) Swing Clamp	LHW (Double Action) Swing Clamp	LT (Single Action) Swing Clamp	LG (Single Action) Swing Clamp
JZG010	LHA0360-C□□-□ LHA0400-C□□-□ LHA0480-C□□-□ LHA0550-C□□-□	LHC0360-C□□-□ LHC0400-C□□-□ LHC0480-C□□-□ LHC0550-C□□-□	LHD0400-C□-□ LHD0480-C□-□ LHD0550-C□-□	LHE0300-C□ LHE0360-C□ LHE0400-C□ LHE0480-C□ LHE0550-C□	LHS0360-C□□-□ LHS0400-C□□-□ LHS0480-C□□-□ LHS0550-C□□-□	LHV0400-C□E-□ LHV0480-C□E-□ LHV0550-C□E-□	LHW0401-C□□-□ LHW0481-C□□-□ LHW0551-C□□-□	LT0301-C□-□ LT0361-C□-□ LT0401-C□-□ LT0481-C□-□ LT0551-C□-□	LG0301-C□-□ LG0361-C□-□ LG0401-C□-□ LG0481-C□-□ LG0551-C□-□
JZG020	LHA0650-C□□-□ LHA0750-C□□-□	LHC0650-C□□-□			LHS0650-C□□-□ LHS0750-C□□-□	LHV0650-C□E-□ LHV0750-C□E-□	LHW0651-C□□-□ LHW0751-C□□-□	LT0651-C□-□ LT0751-C□-□	LG0651-C□-□ LG0751-C□-□
JZG030	LHA0900-C□□-□ LHA1050-C□□-□				LHS0900-C□□-□ LHS1050-C□□-□				LG0901-C□-□ LG1051-C□-□

Model No.	LGV (Single Action) Swing Clamp	DBA (Double Action) Block Cylinder	DBC (Double Action) Block Cylinder	FVA (Double Action) Centering Vise	FVC (Double Action) Centering Vise	FVD (Double Action) Centering Vise	LC (Single Action) Work Support	LCW (Single Action) Work Support	TC (Single Action) Work Support
JZG010	LGV0400-C□□ LGV0480-C□□ LGV0550-C□□	DBA0250-C□ DBA0320-C□	DBC0250-C□ DBC0320-C□	FVA0401 FVA0631 FVA1001	FVC0630	FVD1600 FVD2500	LC0263-C□-□ LC0303-C□□-□ LC0363-C□□-□ LC0403-C□□-□ LC0483-C□□-□ LC0553-C□□-□ LC0653-C□□-□	LCW0363-C□ LCW0403-C□ LCW0483-C□ LCW0553-C□ LCW0653-C□	TC0403-C□-□-□ TC0483-C□-□-□ TC0553-C□-□-□ TC0653-C□-□-□ TC0753-C□-□-□
JZG020	LGV0650-C□□ LGV0750-C□□	DBA0400-C□ DBA0500-C□	DBC0400-C□ DBC0500-C□		FVC1000 FVC1600	FVD4000	LC0753-C□□-□ LC0903-C□□-□		

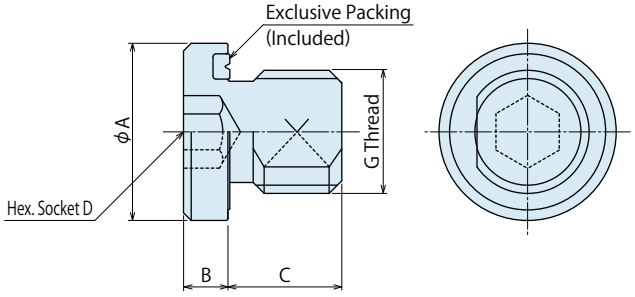
Applicable Products

Model No.	LKA (Double Action) Link Clamp	LKC (Double Action) Link Clamp	LKE (Double Action) High-Power Link Clamp	LKK (Double Action) Universal Clamp	LKV (Double Action) Link Clamp	LKW (Double Action) Link Clamp	LM (Single Action) Link Clamp	LJ (Single Action) Link Clamp	LJV (Single Action) Link Clamp
JZG010	LKA0360-C□□-□ LKA0400-C□□-□ LKA0480-C□□-□ LKA0550-C□□-□	LKC0400-C□-□ LKC0480-C□-□ LKC0550-C□-□	LKE0300-C□ LKE0360-C□ LKE0400-C□ LKE0480-C□ LKE0550-C□	LKK0360-C-□ LKK0400-C-□ LKK0480-C-□ LKK0550-C-□	LKV0400-C□E-□ LKV0480-C□E-□ LKV0550-C□E-□	LKW0401-C□□-□ LKW0481-C□□-□ LKW0551-C□□-□	LM0300-C□ LM0360-C□ LM0400-C□ LM0480-C□ LM0550-C□	LJ0302-C□ LJ0362-C□ LJ0402-C□ LJ0482-C□ LJ0552-C□	LJV0400-C□□ LJV0480-C□□ LJV0550-C□□
JZG020	LKA0650-C□□-□ LKA0750-C□□-□	LKC0650-C□-□		LKK0650-C-□	LKV0650-C□E-□ LKV0750-C□E-□	LKW0651-C□□-□ LKW0751-C□□-□	LM0650-C□ LM0750-C□	LJ0652-C□ LJ0752-C□	LJV0650-C□□ LJV0750-C□□
JZG030	LKA0900-C□□-□ LKA1050-C□□-□							LJ0902-C□ LJ1052-C□	

Model No.	TLA-1 (Single Action) Swing Clamp	TLA-2 (Double Action) Swing Clamp	TLB-2 (Double Action) Swing Clamp	TLV-2 (Double Action) Swing Clamp	TMA-1 (Double Action) Link Clamp	TMA-2 (Double Action) Link Clamp	TMV-2 (Double Action) Link Clamp
JZG010	TLA0402-1C□ TLA0602-1C□ TLA0802-1C□ TLA1002-1C□ TLA1602-1C□	TLA0401-2C□-□ TLA0601-2C□-□ TLA0801-2C□-□ TLA1001-2C□-□ TLA1601-2C□-□	TLB0401-2C□-□ TLB0601-2C□-□ TLB0801-2C□-□ TLB1001-2C□-□ TLB1601-2C□-□	TLV0800-2C□□ TLV1000-2C□□ TLV1600-2C□□	TMA0250-1C□ TMA0400-1C□ TMA0600-1C□ TMA1000-1C□	TMA0250-2C□ TMA0400-2C□ TMA0600-2C□ TMA1000-2C□	TMV0400-2C□□ TMV0600-2C□□ TMV1000-2C□□
JZG020	TLA2002-1C□ TLA2502-1C□ TLA4002-1C□	TLA2001-2C□-□ TLA2501-2C□-□ TLA4001-2C□-□	TLB2001-2C□-□ TLB2501-2C□-□ TLB4001-2C□-□	TLV2000-2C□□	TMA1600-1C□ TMA2500-1C□ TMA3200-1C□	TMA1600-2C□ TMA2500-2C□ TMA3200-2C□	TMV1600-2C□□

Model No.	LFA (Double Action) Link Clamp	LFW (Double Action) Link Clamp	LSA (Double Action) Side Clamp	LSE (Double Action) High-Power Side Clamp	LL (Double Action) Linear Cylinder	LLR (Double Action) Linear Cylinder	LLV (Double Action) Lift Cylinder	LLW (Double Action) Lift Cylinder	TTA (Double Action) Linear Cylinder
JZG010	LFA0480-C□□ LFA0550-C□□	LFW0480-C□J LFW0550-C□J	LSA0360-C-□	LSE0360-C-□	LL0360-C□□-□ LL0400-C□□-□ LL0480-C□□-□ LL0550-C□□-□	LLR0360-C□□-□-□ LLR0400-C□□-□-□ LLR0480-C□□-□-□ LLR0550-C□□-□-□	LLV0360-C□E-□ LLV0400-C□E-□ LLV0480-C□E-□	LLW0361-C□□-□ LLW0401-C□□-□ LLW0481-C□□-□	TTA0360-C□-□ TTA0400-C□-□ TTA0480-C□-□ TTA0550-C□-□
JZG020	LFA0650-C□□ LFA0750-C□□	LFW0650-C□J LFW0750-C□J			LL0650-C□□-□ LL0750-C□□-□	LLR0650-C□□-□-□ LLR0750-C□□-□-□			TTA0650-C□-□
JZG030					LL0900-C□□-□ LL1050-C□□-□	LLR0900-C□□-□-□ LLR1050-C□□-□-□			

External Dimensions



(mm)

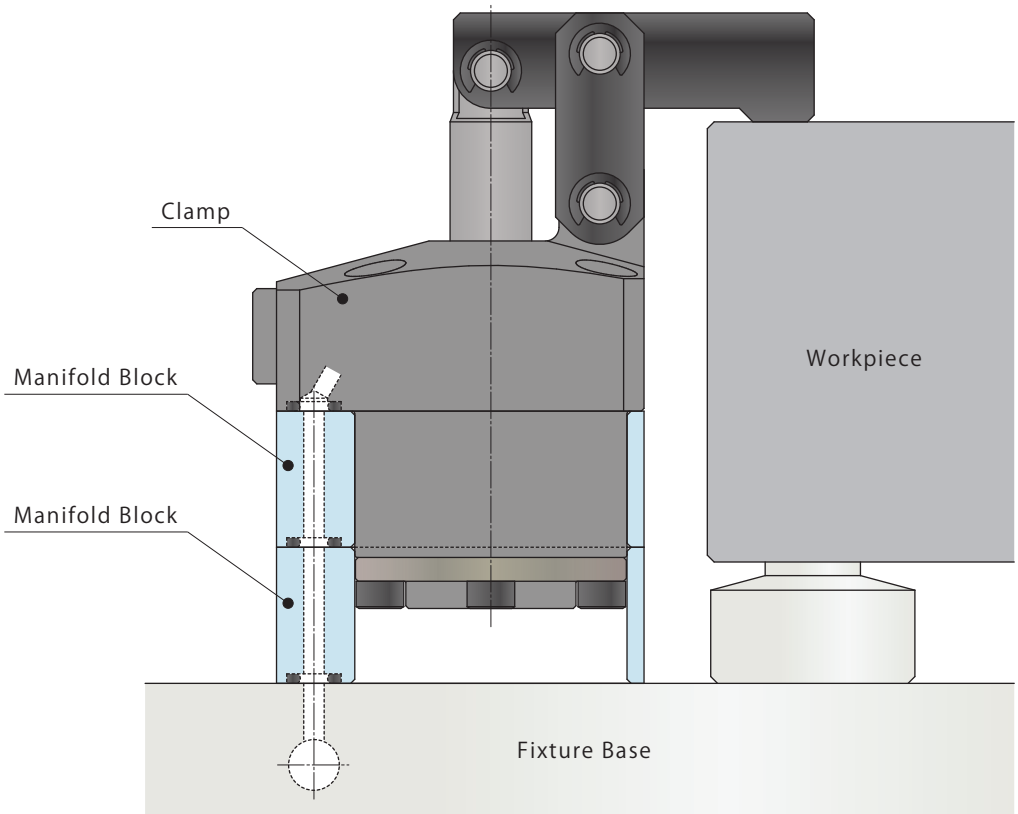
Model No.	JZG010	JZG020	JZG030
A	14	18	22
B	3.5	4.5	4.5
C	8	9	10
D	5	6	8
G	G1/8A	G1/4A	G3/8A

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.

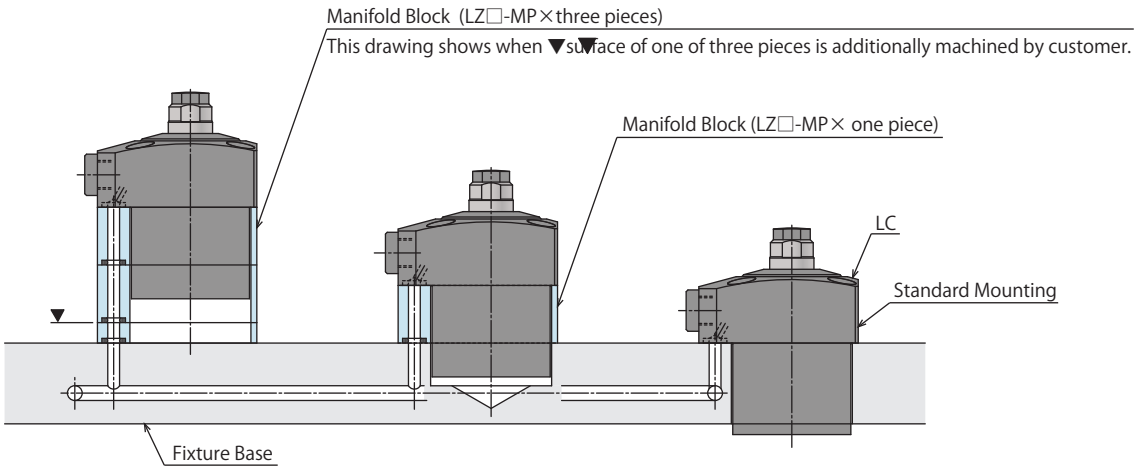


Applicable Model

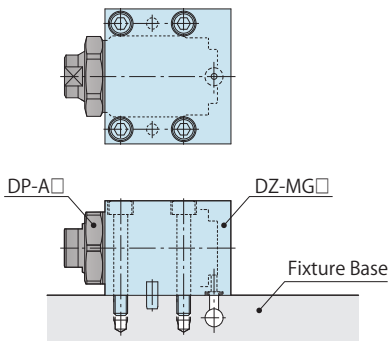
Manifold Block Model No.	Corresponding Item Model No.
Model WHZ-MD	Model WCA, Model WHA, Model WCE, Model WHE
Model LZY-MD	Model LKA, Model LKE, Model LHC, Model LHS, Model LKC, Model LHA, Model LHE, Model LL
Model LZ-MS	Model LJ, Model LG, Model LM, Model LT
Model LZ-MP	Model LC, Model TC
Model TMZ-1MB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

Application Examples

Work Support (LC) Application Example



Push Cylinder (DP) Application Example

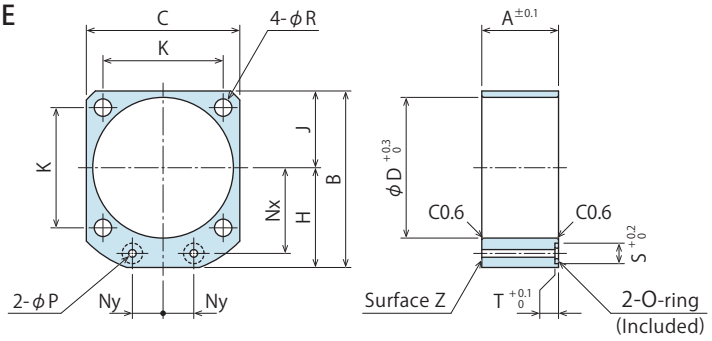


Manifold Block for WCA/WCE/WHA/WHE

Model No. Indication

WHZ 048 0 – MD

- 048: Size (Refer to following table)
- 0: Design No. (Revision Number)



(mm)

Model No.	WHZ0450-MD	WHZ0600-MD	WHZ0320-MD	WHZ0400-MD	WHZ0500-MD	WHZ0630-MD
Corresponding Model No.	WCE0452 WHE0450	WCE0602 WHE0600	WCA0321 WCE1002 WHA0320 WHE1000	WCA0401 WCE1602 WHA0400 WHE1600	WCA0501 WCE2502 WHA0500 WHE2500	WCA0631 WCE4002 WHA0630 WHE4000
A	20	23	25	27	31	35
B	49	54	60	67	77	88.5
C	40	45	50	58	68	81
D	36	40	46	54	64	77
H	29	31.5	35	38	43	48
J	20	22.5	25	29	34	40.5
K	31.4	34	39	45	53	65
Nx	23.5	26	28	31	36	41
Ny	8	9	10	13	15	20
P	3	3	5	5	5	5
R	4.5	5.5	5.5	5.5	6.5	6.5
S	8	8	10	10	10	10
T	1.4	1.4	1.4	1.4	1.4	1.4
O-ring	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
Weight kg	0.1	0.1	0.1	0.1	0.2	0.2

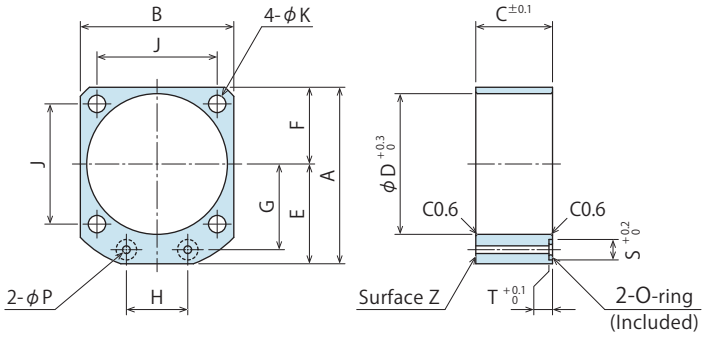
Notes : 1. Material : A2017BE-T4 Surface Finishing : Zircon Finishing (Zirconium Chemical Conversion Treatment)
2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension A as a reference.
3. For other block thickness (dim. A), machine the surface Z or design a block referring to the drawing and apply surface treatment if necessary.

Manifold Block for LKA/LKC/LKE/LHA/LHC/LHE/LHS/LL

Model No. Indication

LZY 048 0 – MD

- 048: Size (Refer to following table)
- 0: Design No. (Revision Number)



(mm)

Model No.	LZY0360-MD	LZY0400-MD	LZY0480-MD	LZY0550-MD	LZY0650-MD	LZY0750-MD	LZY0900-MD	LZY1050-MD
Corresponding Model No.	LKA0360 / LKE0360 LHA0360 / LHC0360 LHE0360 / LHS0360 LL0360	LKA0400 / LKC0400 LKE0400 / LHA0400 LHC0400 / LHE0400 LHS0400 / LL0400	LKA0480 / LKC0480 LKE0480 / LHA0480 LHC0480 / LHE0480 LHS0480 / LL0480	LKA0550 / LKC0550 LKE0550 / LHA0550 LHC0550 / LHE0550 LHS0550 / LL0550	LKA0650 / LKC0650 LHA0650 / LHC0650 LHS0650 LL0650	LKA0750 LHA0750 LHS0750 LL0750	LKA0900 LHA0900 LHS0900 LL0900	LKA1050 LHA1050 LHS1050 LL1050
A	49	54	61	69	81	92	107	122
B	40	45	51	60	70	80	95	110
C	20	20	27	30	32	37	45	50
D	36	40	48	55	65	75	90	105
E	29	31.5	35.5	39	46	52	59.5	67
F	20	22.5	25.5	30	35	40	47.5	55
G	23.5	26	30	33.5	39.5	45	52.5	60
H	16	18	22	24	30	32	37	45
J	31.4	34	40	47	55	63	75	88
K	4.5	5.5	5.5	6.8	6.8	9	11	14
P	3	3	3	3	5	5	5	5
S	8	8	8	8	10	10	10	10
T	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
O-ring	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
Weight kg	0.2	0.2	0.3	0.4	0.5	0.8	1.2	1.7

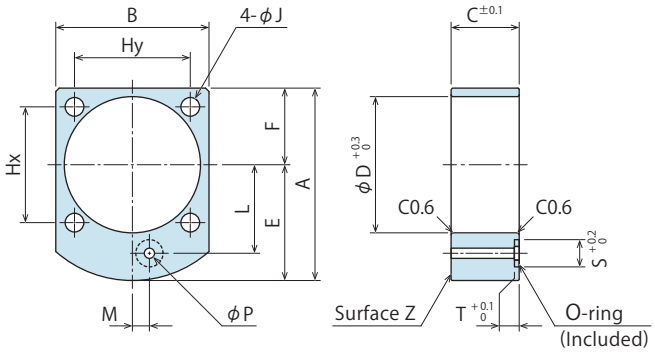
Notes : 1. Material : S45C Surface Finishing : Alkaline Blackening
2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension C as a reference.
3. For other block thickness (dim. C), machine the surface Z or design a block referring to the drawing and apply surface treatment if necessary.

Manifold Block for LJ/LM/LG/LT

Model No. Indication

LZ 048 0 – MS

- 048: Size (Refer to following table)
- 0: Design No. (Revision Number)
- MS



(mm)

Model No.	LZ0300-MS	LZ0360-MS	LZ0400-MS	LZ0480-MS	LZ0550-MS	LZ0650-MS	LZ0750-MS	LZ0900-MS	LZ1050-MS
Corresponding Model No.	LG0301 / LT0301 LJ0302 / LM0300	LG036□ / LT036□ LJ0362 / LM0360	LG040□ / LT040□ LJ0402 / LM0400	LG048□ / LT048□ LJ0482 / LM0480	LG055□ / LT055□ LJ0552 / LM0550	LG065□ / LT065□ LJ0652 / LM0650	LG075□ / LT075□ LJ0752 / LM0750	LG090□ LJ0902	LG105□ LJ1052
A	48	51.5	56.5	62	70	82	93	107	122
B	34	40	45	51	60	70	80	95	110
C	18	20	20	27	30	32	37	45	50
D	30	36	40	48	55	65	75	90	105
E	28.5	31.5	34	36.5	40	47	53	59.5	67
F	19.5	20	22.5	25.5	30	35	40	47.5	55
Hx	30	31.4	34	40	47	55	63	75	88
Hy	23	31.4	34	40	47	55	63	75	88
J	4.5	4.5	5.5	5.5	6.8	6.8	9	11	14
L	20.5	23.5	26	30	33.5	39.5	45	52.5	60
M	3	5	5	0	0	0	0	0	0
P	3	3	3	3	3	5	5	5	5
S	8	8	8	8	8	10	10	10	10
T	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
O-ring	1BP5	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
Weight kg	0.1	0.2	0.2	0.3	0.4	0.5	0.8	1.2	1.7

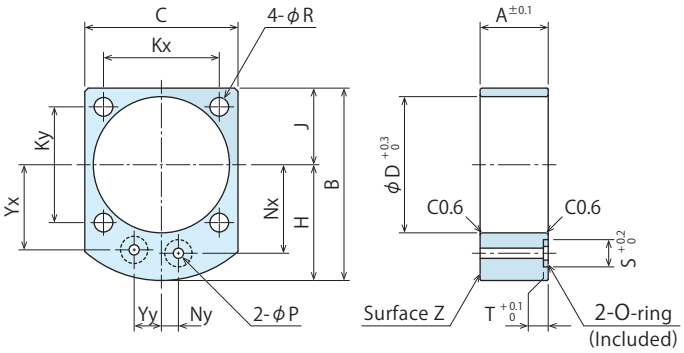
Notes : 1. Material : S45C Surface Finishing : Alkaline Blackening
2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension C as a reference.
3. For other block thickness (dim. C), machine the surface Z or design a block referring to the drawing and apply surface treatment if necessary.

Manifold Block for LC/TC

Model No. Indication

LZ 048 0 – MP

- 048: Size (Refer to following table)
- 0: Design No. (Revision Number)
- MP



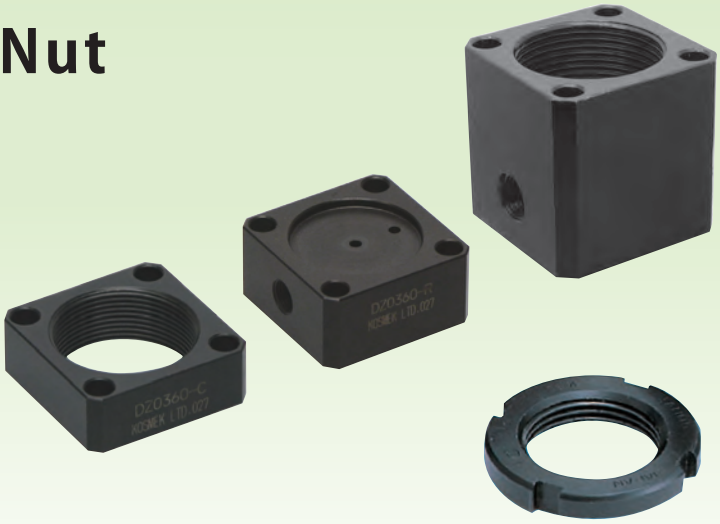
(mm)

Model No.	LZ0260-MP	LZ0300-MP	LZ0360-MP	LZ0400-MP	LZ0480-MP	LZ0550-MP	LZ0650-MP	LZ0750-MP	LZ0900-MP
Corresponding Model No.	LC0263	LC0303	LC0363	LC0403 / TC0403	LC0483 / TC0483	LC0553 / TC0553	LC0653 / TC0653	LC0753 / TC0753	LC0903
A	18	18	20	20	27	30	32	37	45
B	43	48	51.5	56.5	62	70	82	93	107
C	29	34	40	45	51	60	70	80	95
D	26	30	36	40	48	55	65	75	90
H	26.5	28.5	31.5	34	36.5	40	47	53	59.5
J	16.5	19.5	20	22.5	25.5	30	35	40	47.5
Kx	25	30	31.4	34	40	47	55	63	75
Ky	21	23	31.4	34	40	47	55	63	75
Nx	18.5	20.5	23.5	26	30	33.5	39.5	45	52.5
Ny	3	3	5	5	0	0	0	0	0
R	3.4	4.5	4.5	5.5	5.5	6.8	6.8	9	11
Yx	18.5	20.5	23.5	26	28	31	37	42.5	50
Yy	7	7	8	8	11	13	14	15	15
P	3	3	3	3	3	3	5	5	5
S	8	8	8	8	8	8	10	10	10
T	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
O-ring	1BP5	1BP5	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7
Weight kg	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.8	1.2

Notes : 1. Material : S45C Surface Finishing : Alkaline Blackening
2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension A as a reference.
3. For other block thickness (dim. A), machine the surface Z or design a block referring to the drawing and apply surface treatment if necessary.

Manifold Block / Nut

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

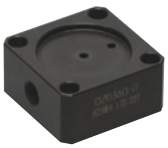


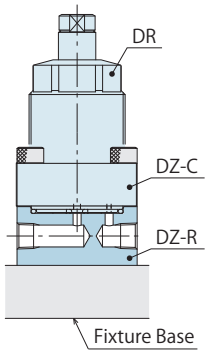
Applicable Model/Application Examples

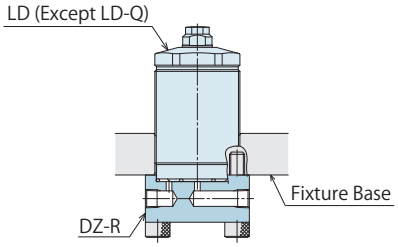
Model DZ-R

Manifold Block for DR/LD/WNC

Corresponding Model：DR / LD / WNC



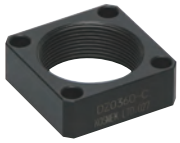


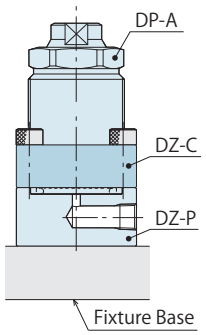


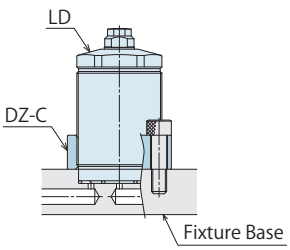
Model DZ-C

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

Corresponding Model：DP / DR / DS / DT / LD / WNC



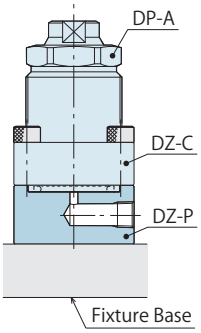


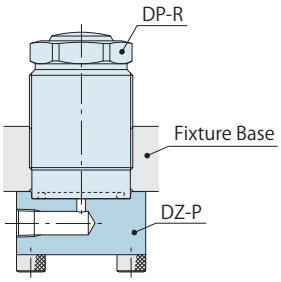


Applicable Model/Application Examples

Model DZ-P
Manifold Block for DP

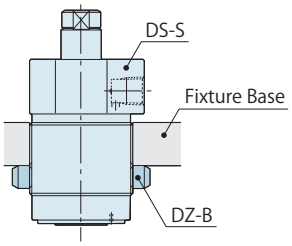
Corresponding Model : DP

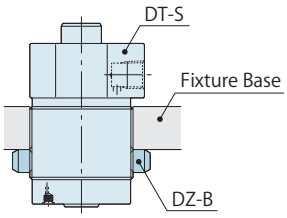




Model DZ-B
Bulkhead Nut for DP/DR/DS/DT

Corresponding Model : DP / DR / DS / DT



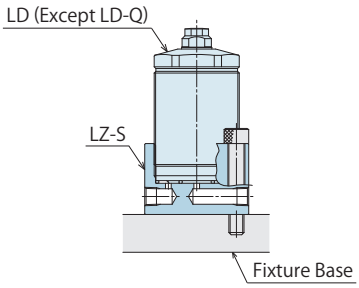


Model LZ-S
Manifold Block for LD/WNC

Corresponding Model : LD / WNC

Model TNZ-S
Manifold Block for TNC

Corresponding Model : TNC



Model LZ-SQ
Manifold Block for LD-Q

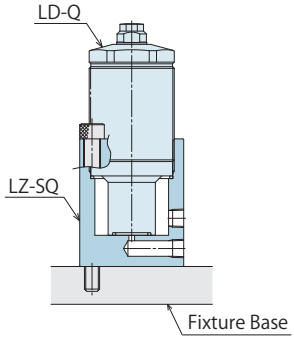
Corresponding Model : LD-Q

Model WNZ-SQ
Manifold Block for WNC-Q

Corresponding Model : WNC-Q

Model TNZ-SQ
Manifold Block for TNC-Q

Corresponding Model : TNC-Q

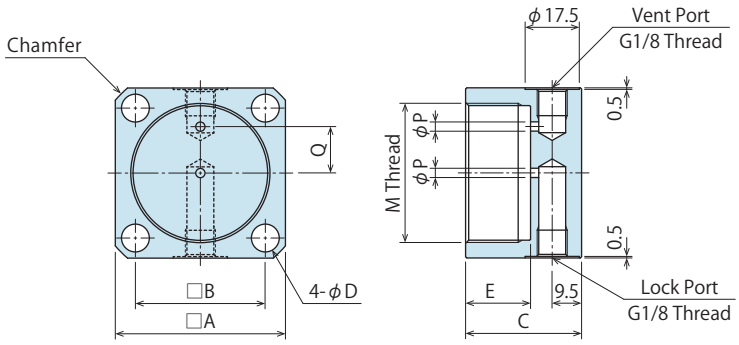


Manifold Block for TNC

Model No. Indication

TNZ 060 0 – S

- 060: Size (Refer to following table)
- 0: Design No. (Revision Number)



(mm)

Model No.	TNZ0400-S	TNZ0600-S	TNZ1000-S	TNZ1600-S
Corresponding Model No.	TNC0403 (Except -Q)※3	TNC0603 (Except -Q)※3	TNC1003 (Except -Q)※3	TNC160 (Except -Q)※3
A	35	38	45	55
B	26	29	35	42
C	32.5	33.5	34.5	37.5
D	5.5	5.5	6.8	9
E	16	17	18	21
M (Nominal×Pitch)	M26×1.5	M30×1.5	M36×1.5	M45×1.5
P	2.5	3	3	3
Q	9.5	11	13	15
Chamfer	C3	C3	C3	C4
Weight kg	0.20	0.23	0.34	0.52

Notes : 1. Material : S45C Surface Finishing : Alkaline Blackening

2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension C as a reference.

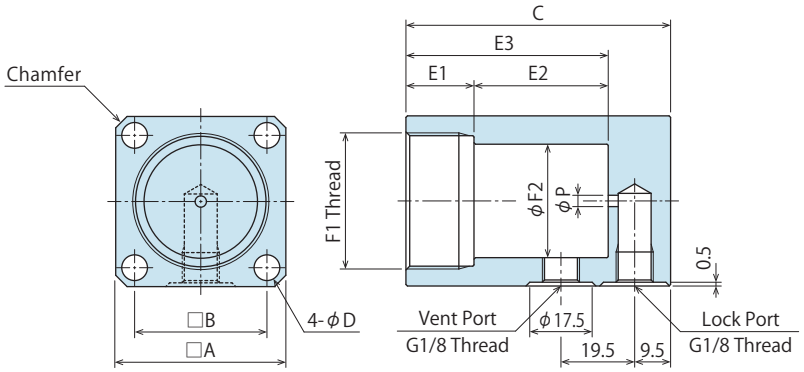
※3. It is not applicable for TNC-Q : Work Support Hydraulic Advance Long Stroke Option. (Please select from TNZ-SQ.)

Manifold Block for TNC-Q

Model No. Indication

TNZ 060 0 – SQ

- 060: Size (Refer to following table)
- 0: Design No. (Revision Number)



(mm)

Model No.	TNZ0400-SQ	TNZ0600-SQ	TNZ1000-SQ	TNZ1600-SQ
Corresponding Model No.	TNC0403-Q	TNC0603-Q	TNC1003-Q	TNC1603-Q
A	35	38	45	55
B	26	29	35	42
C	56	63.5	70	86.5
D	5.5	5.5	6.8	9
E1	16	17	18	21
E2	23.5	30	35.5	49
E3	39.5	47	53.5	70
F1 (Nominal×Pitch)	M26×1.5	M30×1.5	M36×1.5	M45×1.5
F2	20	24	30	39
P	2.5	3	3	3
Chamfer	C3	C3	C3	C4
Weight kg	0.36	0.46	0.68	1.16

Notes : 1. Material : S45C Surface Finishing : Alkaline Blackening

2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension C as a reference.

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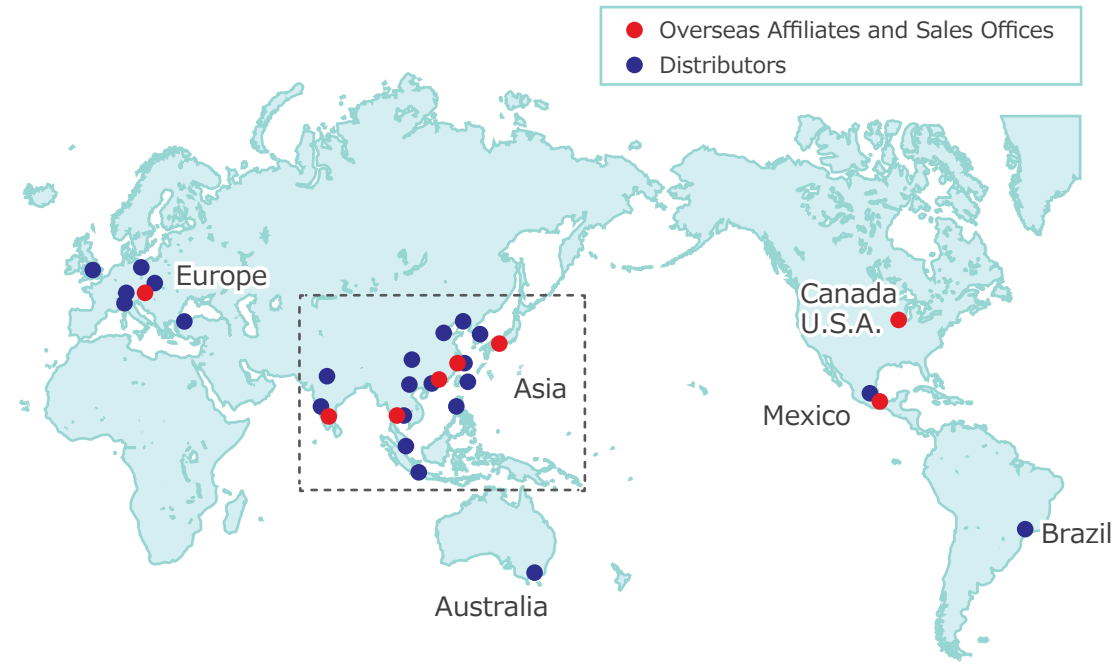

Asia Detailed Map

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