Clean Cylinder

※ Specifications in this catalogue may be changed for product performance upgrade without notice, so that please separately inquire to manufacturer when purchasing the product.

Series CLEAN

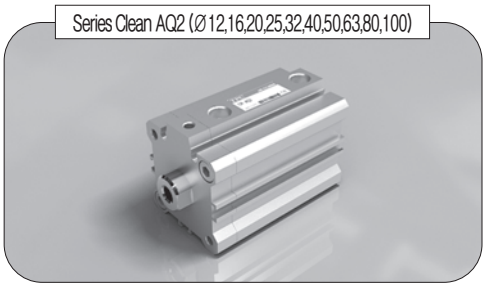
CR/CV Clean Cylinder

Bore Size : CR/CV-ARD Ø50, Ø63
CR/CV-AQ2 Ø12, Ø16, Ø20, Ø25, Ø32, Ø40, Ø50, Ø63, Ø80, Ø100
CR/CV-AX Ø20, Ø25, Ø32, Ø40
CR/CV-AGL Ø12, Ø16, Ø20, Ø25, Ø32, Ø40, Ø50, Ø63
CR/CV-NGQL Ø12, Ø16, Ø20, Ø25, Ø32, Ø40, Ø50, Ø63
CR/CV/SC-NLCD Ø8, Ø16, Ø20, Ø25, Ø32

- TPC CLEAN SERIES CARRIES OUT OSCILLATION TEST, SO THAT IT IS POSSIBLE TO USE CLEANLY IN CLASS 10~CLASS1000 ALONG OSCILLATION LEVEL OF EQUIPMENT.
- PARTICLES ARE NOT ALLOWED TO COME INTO CLEAN ROOM.
- BLOWING IS IMPLEMENTED (CLEAN BOOTH/CLASS 100) USING HIGHLY CLEANING AIR WITHIN CLEAN ENVIRONMENT AFTER THE TEST.
- 2 LAYERS OF STATIC ELECTRICITY PREVENTING VINYL ARE APPLIED FOR PACKING.

Series Clean AX (Ø20,25,32,40)

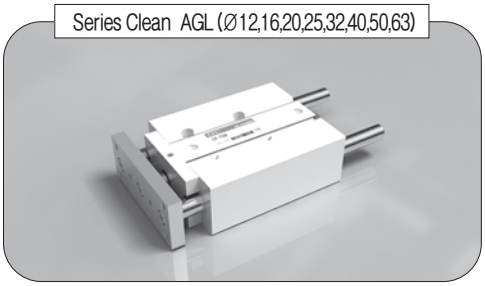
Series Clean AQ2 (Ø12,16,20,25,32,40,50,63,80,100)



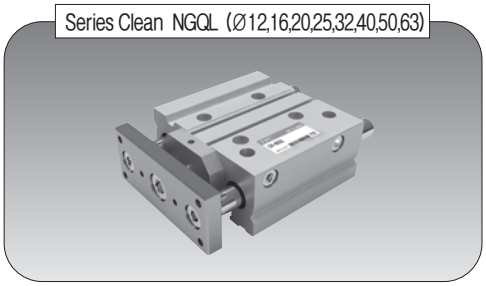
Series Clean NLCD (Ø8,16,20,25,32)

Series Clean ARD (Ø50,63)

Series Clean AGL (Ø12,16,20,25,32,40,50,63)



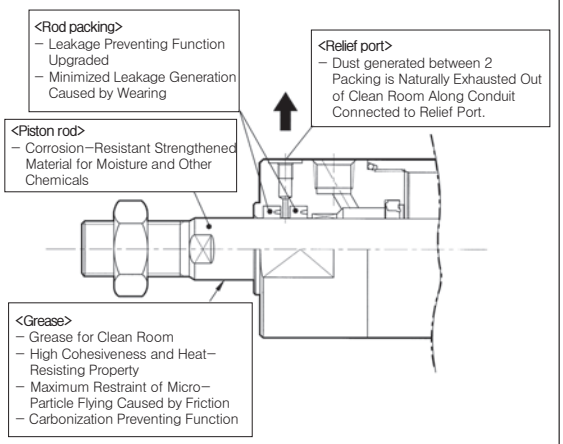
Series Clean NGQL (Ø12,16,20,25,32,40,50,63)



Introduction of Clean series

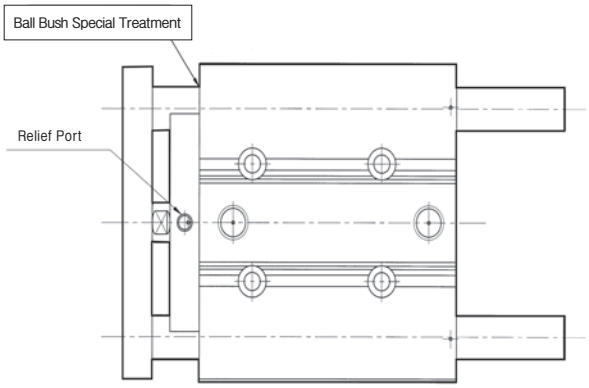
CR Type (Particle exhaust)

Double Packing Type for Clean Room



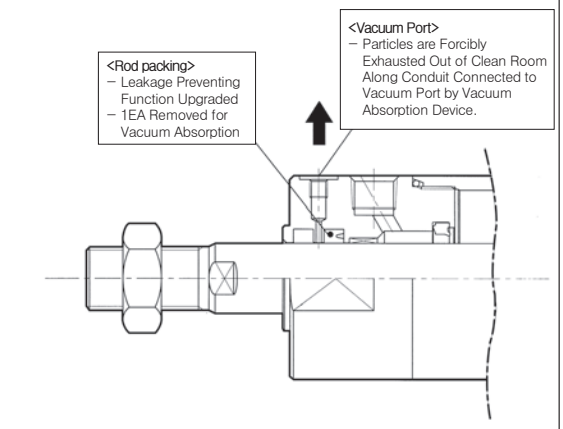
CR Type Guide Attached Cylinder (Preventing Generation of Particles)

Double Packing Type for Clean Room



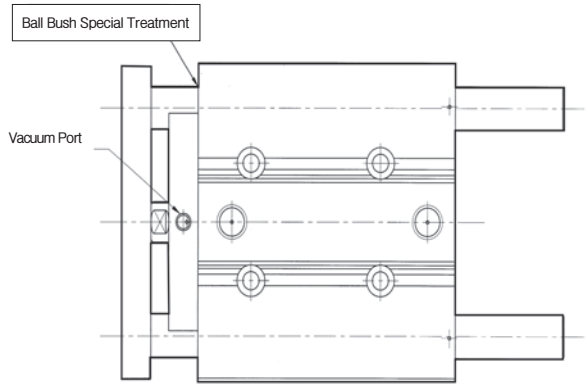
CV Type (Vacuum Suction Type)

Single Packing Type for Clean Room



CV Type Guide Attached Cylinder

Single Packing Type for Clean Room



Index	Grease	Cylinder Structure	Guide Part Bearing	Guide Part Material	Representative Series
CR Type	Fluorinated	Double Packing, Opened to the Air	–	–	ARD, AQ2, AX, NLCD
CV Type	Fluorinated	Single Packing Vacuum Absorption	–	–	
CR Type Guide Attached Cylinder	Fluorinated	Double Packing, Opened to the Air	Ball Bush Bearing	SUS440C+Surface Treatment	AGL, NGQL
CV Type Guide Attached Cylinder	Fluorinated	Single Packing Vacuum Absorption	Ball Bush Bearing	SUS440C+Surface Treatment	

Clean Room Types and Air Purification Degree Regulation

– Industrial Clean Room(ICR)

The places where high degree of air cleaning should be maintained, since indoor flying particles are attached to electric products, film, precision machinery factories, etc, which causes deterioration of product.

(Air cleaning degree: statistical allowance which has particle diameter of 0.5㎛ per 28.3ℓ air or less)

– Federal standard 209A~E(USA federal standard)

(In case of Japan, an index which is indicated by square for a number of particles over 0.1㎛ contained in $1m^3$ air is used for class indication)

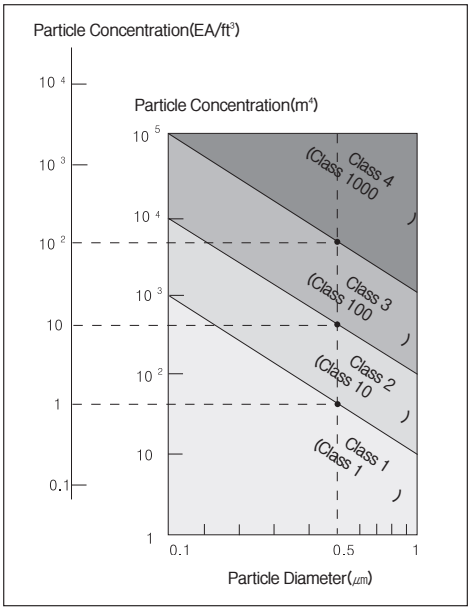
Class Name			Class limit									
			0.1㎛		0.2㎛		0.3㎛		0.5㎛		5㎛	
			Vol.unit		Vol.unit		Vol.unit		Vol.unit		Vol.unit	
SI	English	TPC Level	m^3	ft^3	m^3	ft^3	m^3	ft^3	m^3	ft^3	m^3	ft^3
M1			350	9.91	75.7	2.14	30.9	0.875	10	0.283	–	–
M1.5	1	Level 1	1240	35	265	7.5	106	3	35.3	1	–	–
M2		Level 1.5	3500	99.1	757	21.4	309	8.75	100	2.83	–	–
M2.5	10	Level 2	12400	350	2650	75	1060	30	353	10	–	–
M3		Level 2.5	35000	991	7570	214	3090	87.5	1000	28.3	–	–
M3.5	100	Level 3	–	–	26500	750	10600	300	3530	100	–	–
M4		Level 3.5	–	–	75700	2140	30900	875	10000	283	–	–
M4.5	1000	Level 4	–	–	–	–	–	–	35300	1000	247	7.0
M5		Level 4.5	–	–	–	–	–	–	100000	2830	618	17.5
M5.5	10000	Level 5	–	–	–	–	–	–	353000	10000	2470	70
M6		Level 5.5	–	–	–	–	–	–	1000000	28600	6180	175
M6.5	100000	Level 6	–	–	–	–	–	–	3530000	100000	24700	700

※ Clean class of semi clean product: Class 4 (lower than $500ft^3$/EA for 0.5㎛ for particle diameter)

Classification of Air Cleaning Degree in ISO 14644-1 (KS standard : KS M ISO 14644-1)

KS M ISO	Particle concentration limit indicated below is the concentration which particle size is equal or bigger than indicated particle size.					
Class Classification(N)	0.1㎛	0.2㎛	0.3㎛	0.5㎛	1㎛	5㎛
KS M ISO Class 1	10	2				
KS M ISO Class 2	100	24	10	4		
KS M ISO Class 3	1000	237	102	35	8	
KS M ISO Class 4	10000	2370	1020	352	83	29
KS M ISO Class 5	100000	23700	10200	3520	8320	293
KS M ISO Class 6	1000000	237000	102000	35200	8320	293
KS M ISO Class 7				352000	83200	2930
KS M ISO Class 8				3520000	832000	29300
KS M ISO Class 9				35200000	8320000	293000

Clean Class



Dust generation level of Pneumatic pressure equipment

	Name of Model	Standard Product	Series SC	Series CR	Series CV
Air Cylinder	ARD AX	Class 3	None	Class 2	Class 1
Flat Cylinder	AQ2				
Guide Attached Flat Cylinder	AGL	Class 4	None	Class 3	Class 2
Table Cylinder	NLCD		Class 4	Class 3.5	Class 3

• SC : Semi Clean Type(A name allowed only for table cylinder of our company)
• CR : Clean Relief Port Type • CV : Clean Vacuum Suction Type

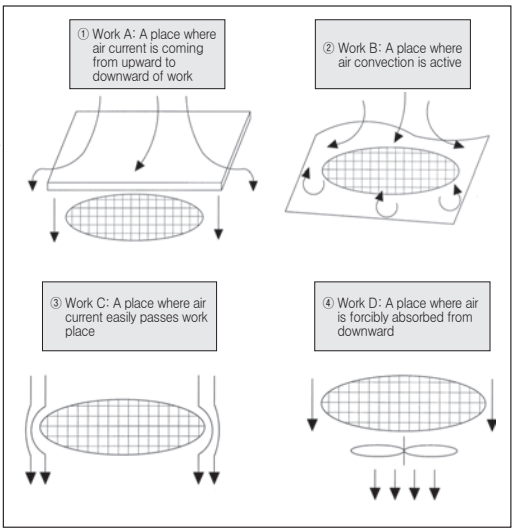
Equipment appointment sequence

Dust generation quantity determination is dependent to utilization location of pneumatic pressure equipment.

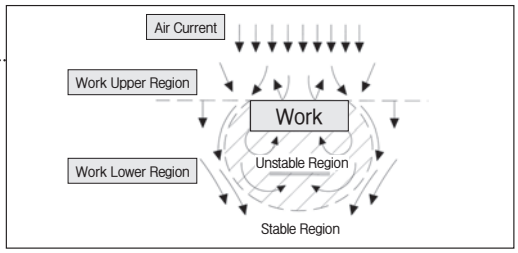
Cleaning degree class checking of clean room

Federal standard : Refer to Federal standard 209A–E

Checking air current condition of work (Refer to Fig. 1)



Appointment of pneumatic pressure equipment application location in accordance with particle concentration class around work : Refer to Fig. 2 and Table 1



Select pneumatic pressure equipment applied in Table 2

Particle concentration class around work place (0.5㎛ per ft³) (–) : Application unavailable

Work		A,B			C			D		
Location of utilized equipment		Work	Work Lower Region		Work	Work Lower Region		Work	Work Lower Region	
		Upper Region	Unstable Region	Stable Region	Upper Region	Unstable Region	Stable Region	Upper Region	Unstable Region	Stable Region
Cleaning degree	Class	Since dust is condensed and in floating condition, it is impossible to guarantee pertinent cleaning degree.			1	1	10	1	10	10
					1	10	100	1	10	100
		1	10	100	10	100	–	10	100	–

Particle concentration class around work place (0.5㎛ per ft³) (–) : Application unavailable

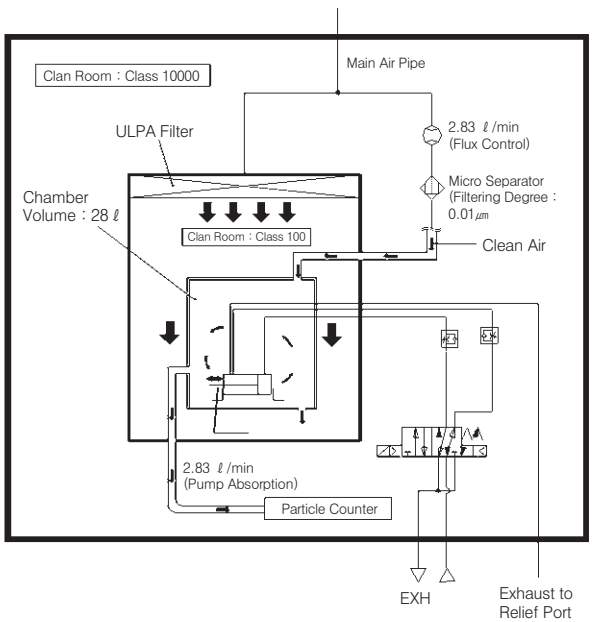
Name of Series	Conventional Product	Products for Clean Room	
		CR Type	CV Type
ARD	Class 100	Class10	Class1
AQ2	Class 100	Class10	Class1
AX	Class 100	Class10	Class1
AGL	–	Class10~100	Class1~10
NLCD	–	Class100~283	Class10~100

Introduction of Dust generation measuring method

Dust generation data of TPC clean series is measured by the method below.

[Applied measuring instrument]

① Name: Laser particle counter
② Particle counter absorption flux : 2.83 ℓ /min
③ Minimum measurement available particle diameter : 0.3㎛
④ Sampling time (Sampling air quantity) : 10min(28 ℓ)
⑤ Interval : 1000cycle



How to Measure

Mount a sample in dust generation tester chamber.

↓

After selecting a pipe suitable for sample port, and connect.

↓

Set operating frequency of sample.

↓

Set particle counter sampling condition.

↓

Supply necessary pressure for test.(5㎏f/㎠)

↓

After running 1000 cycle for sample, measure dust generation in stop condition for 10 minutes, and repeat this procedure for assigned times. (1 million times)

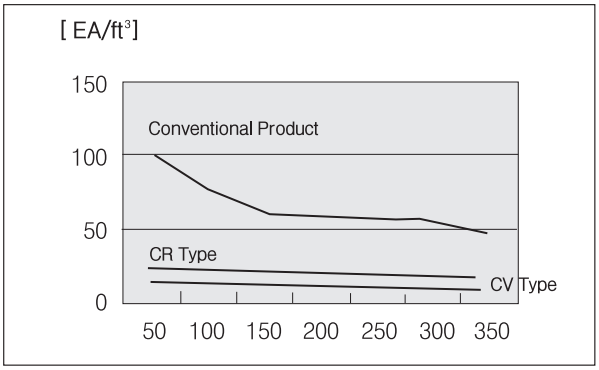
↓

Remove sample and pipe after completion of test.

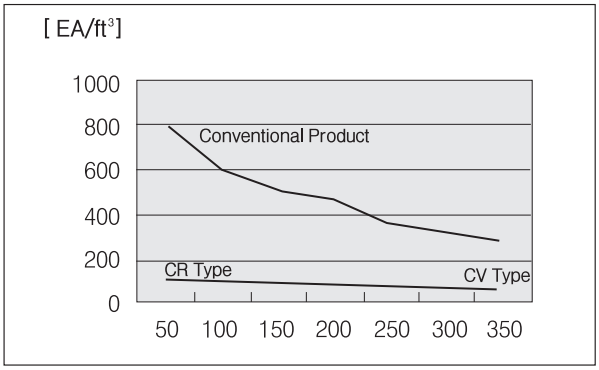
[Assessment method]

Particle concentration value which the number of particles in 14l air measured by laser particle counter for 5 minutes is transformed to a number of particles in 1ft3 is indicated. The class of dust generation is classified in consideration of credibility of 95% from mean particle concentration when operating in the method above.

AQ2 cylinder dust generation features



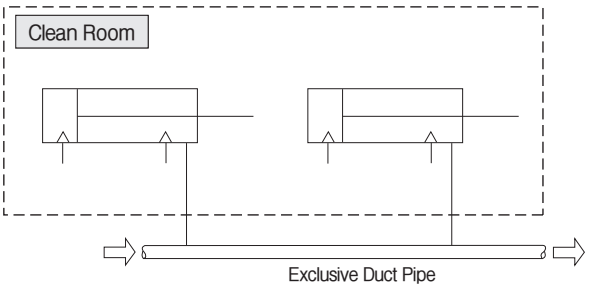
TGQL cylinder dust generation features



Relief port piping method

① CR Type (double packing air–open) case

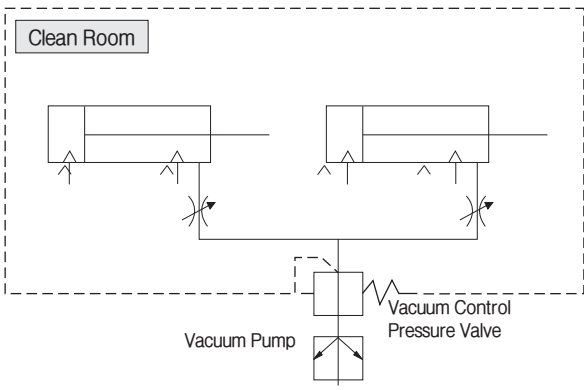
– Carry out piping at relief port with duct exclusive pipe installed beside clean room.



② CV Type (double packing air–open) case

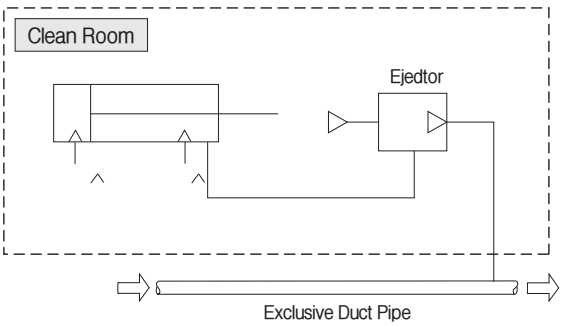
– Vacuum pump utilizing method

Applied when a number of air cylinders are connected or large vacuum exhaust flux equipment type is utilized



– Ejector applied method

Applied when a small number of air cylinders are connected or large vacuum exhaust flux equipment type is utilized



Intake flux for vacuum intake of CV Type (Single packing vacuum intake)

– Since optimum intake flux differs along the series and tube internal diameter sizes, please refer to the table below,
(Vacuum pressure around relief port is approximately –13kPa ~ –27kPa)

Name of Series	Bore Size (㎜)	Intake Flux (ℓ /min)
CV–ARD	50, 63	20
CV–AQ2	12, 16, 20, 25	5
	32, 40	5
	50, 63	10
	80, 100	15
CV–AX	20, 25, 32, 40	2
CV–AGL	12, 16, 20, 25	5
	32, 40	10
	50, 63	10
NLCD	8	1
	16	2
	20	3
	25	5
	32	7

Common Notices

Please cautiously read through prior to selection and utilization of our products, and refer to details for target equipment types for detailed notices along the series.

Warning

- Unpack clean series product packed by anti-static vinyl in clean room or clean circumstance.
- In case of bringing conventional pneumatic pressure equipment into clean room, conduct blowing at cylinder tube surface using highly cleaned air or washing with alcohol to fully remove foreign materials.
- Component replacement or disassembly processing in clean room should be carried out after exhausting compressed air out of clean room.
- Do not use vibrating attaching fittings in clean room such as clevis or trunnion which generates high temperature owing to friction.
- Do not use other grease except designated grease by manufacturer, which causes operation failure or vibration.
- Do not use fuel. If refueling fluorine series grease for turbine grease, it may not satisfy product specification.
- Maximum running speed of cylinder should not exceed 400mm/s to maintain dust generation class.

Warning

- Wash your hands if used fluorine series grease. No specific danger from grease, however, it may generate harmful gas at over 200oC.

Common Notices of Actuator

- Please cautiously read through prior to selection and utilization of our products, and refer to details for target equipment types for detailed notices along the series.

Notices for Design

Danger

- Fixing part or connecting part of cylinder should be firmly fastened.
  In case of a large number of utilization or operation in large vibration location, fasten with the best method.
- In case of possibility to be harmful for human body, install protection cover.
  In case cylinder or target driving substance may cause danger to human body, design the structure which is departed from human body.
- Deceleration circuit or shock absorber is possibly needed.
  If operating motion of target driving substance is fast or heavy, it is difficult to absorb the impact only by cushion. It is recommended to install shock absorber to absorb impact prior to operation of cushion to release the impact.
- In case the force is changed owing to twist at machine slide part, it may cause failure of cylinder operation.
  This may cause injury to human body or damage to machine, adjustment is needed to make smooth operation, and design not cause injury to human body.
- Design a circuit which prevents drop-out of target driving substance.
  In case of running a cylinder with direction control valve with exhaust center type or running after exhaust of residual pressure of circuit, target driving substance may comes out with high speed. It may cause injury to human body or damage to machine, so that safe circuit or system design is required.
- Consider the case of emergency stop.
  For the case emergency stop is made by human or machine is stopped by safety device owing to system failure, design an equipment not to cause human injury or damage to equipment by cylinder operation.
- Consider re-start after emergency stop.
  Design an equipment not to cause loss to human body or equipment from re-start. Moreover, if restoration of cylinder to initial operation location is needed, design safe manual control device.
- Consider possibility of circuit pressure degradation in case of power failure.
  In case cylinder is applied for clamp equipment, it may cause failure of operation since degradation of circuit pressure causes degradation of power. Therefore, safety device is needed not to cause injury to human body or damage to equipment. Pendent device or lift needs consideration to prevent a drop.
- Consider possibility of power source failure.
  Measures are needed not to cause injury to human body or damage to machine although power source for devices controlled by pneumatic pressure, hydraulic pressure or electricity is disconnected.

Notices for Selection

Danger

- Do not utilize the machine for the purposes below:
  Medical equipment related to maintain or manage human life and body. Machinery or equipment designed for transportation of human Machineries which require extreme safety.

Warning

- Check specification.
  Products described in this catalogue are designed for industrial compressed air system only. Pressure and temperature beside specified range may cause damage or operation failure. (Refer to specification)
  In case of using fluid beside compressed air, please contact a manufacturer.
- Vibration and impact
  Do not use cylinder to absorb vibration or impact of machinery. It may cause injury to human body or damage to machinery.
- For interim stop
  In case of interim stop of cylinder piston by direction control valve of 3-location close center type, stoppage at accurate location is difficult owing to compressibility of air. Moreover, valve and cylinder do not fully guarantee air leakage, so that it is not able to possibly maintain long term stoppage location. If long term stoppage is necessary, please contact a manufacturer.

Notice

- Please check specification.
  In case of using in condition or environment beyond indicated conditions in catalogue or manual, the purposes which special safety is required such as aviation facility, combustive device, leisure equipment, safety equipment, etc, full safety measure should be considered.

● Use equipment within maximum stroke range.
In case of using equipment beyond maximum stroke range, it breaks down piston rod. Please refer to standard stroke specification of each cylinder for applicable maximum stroke.

● Use within the range which piston does not crash to stroke end.
If gravitational resistance retained piston is crashed to stroke end cover, please use within the range which prevent break-down. Refer to cylinder type sequence for selection of unbreakable range.

● When cylinder is operated, attach speed controller to gradually increase the speed with releasing needle valve from stop status. If not, it may cause abrupt operation.

● Please install middle reinforcement for long stroke cylinder.
In case of long stroke cylinder, it may cause deflection, bending, vibration or damage to rod by external loading, so that middle reinforcement is required.

Notices for attachment

Danger

● Check if product is safely fixed all the times.
Drop of product or unstable operation may cause injury.

● Do not touch or approach when machine is operating.
Do not ever make any adjustment inside or attached equipment during operation. Sudden motion of running equipment may cause injury to human body.

Notices

● Do not apply overload to piston rod which exceeds torsion or bending strength.
It may cause degradation of lifespan, abnormal wearing or damage of tube.

● Make coincident of rod shaft center, load and moving direction.
If not, it may cause torsion to rod and tube, which eventually causes wearing or damage to tube inside, surface of bush or rode and packing system.

● In case of applying external guide, connect fore-end part and load not to cause torsion in any location.

● Be cautious not to cause crash between cylinder tube or piston rod and substance, which causes abrasion or scar.
Since tube internal diameter is made with high resolution allowance, it may cause failure with minute deformation. Moreover, flaw or abrasion on piston rod part may cause damage to packing system, which becomes a reason of air leakage.

● Do not use a machine before checking proper operation.
After attachment, repair or remodeling, check if it is correctly attached by proper function test and leakage test with applying pressurized air or electricity.

● Application of protection cover
Use protection cover not to allow direct contact of operating part and human body.

● Setting control device
Do not control equipment which possibly drops down in case of power failure. Set control not to make table or target material drop owing to emergency stop of machinery.

● Full understanding of manual
Attach and use a product after full understanding of manual. Moreover, it should be kept in always available location.

Notices during Cushion control

Notices

● Re-adjust cushion valve.
Cushion is already adjusted for delivery. However, re-adjustment along the magnitude of loading and operating speed is needed. If rotating clockwise direction, cushion becomes stronger since orifice hole becomes smaller. After adjustment, fully fasten with fixing nut.

● Do not use cushion valve with being all closed.
It may cause packing damage.

Notices related to Air source

Warnings

● Use clean air.
If compressed air has chemicals, composite oil containing organic solvents, salt, corrosive g, etc, it may cause damage of equipment or operation failure.

Notices

● Attach air filter.
Install air filter at upper side near direction control valve for removal of drain. Set filtering degree less than 5㎛.

● Install after cooler, air drier, drain catch, etc, for drain removal measure.
Compressed air excessively containing drain may cause operation failure of valve and other pneumatic pressure equipment. Install after cooler, air drier, drain catch, etc, for drain removal measure.

● Temperature of fluid applied or vicinity temperature should be set within specification.
In case of 5℃ or lower, freezing of moisture in circuit may cause damage or operation failure of packing. Special measure is necessary.

Notices related operation environment

Danger

● Do not use with dangerous materials such as combustive materials, and keep the distance
The product herein is possibly combusted or exploded.

Warning

● Do not use at the location where corrosion is expected.
Refer to each structure map for material property of cylinders.

● Do not use auto-switch in strong magnetic field.
Do not use sensor switch at where high current or strong magnetic field is reached, which may causes operation failure. Do not use magnetic material for bracket, which may cause operation failure owing to leakage of magnet.

Series CR(CV)–ARD

Clean Series Round Cylinder

Bore Size : Ø50, Ø63

- CYLINDER IN LOW PARTICLE GENERATION FOR CLEAN ROOM.
- PISTON ROD IS MADE IN THE MATERIAL QUALITY OF STAINLESS STEEL TO ENHANCE RESISTANCE AGAINST MOISTURE AND OTHER CHEMICALS.
- EXCLUSIVE GREASE USE, DUST GENERATION IS MINIMIZED WHEN CYLINDER IS ACTING.

How to Order

CR(CV) – **ARD** **B** **A** **50** – **150** – **W5** ○

1 2 3 4 5 6 7 8

1 Clean Series
CR : relief port type
CV : vacuum suction type

2 Round Cylinder
Magnet, bumper, non–lube types are standard

3 Mounting
B : basic type
※ For foot and flange type, please contact us.

4 Cushion(rubber cushion is provided.)
Blank : rubber cushion
A : air cushion

5 Bore Size
50 : 50㎜
63 : 63㎜

6 Stroke(㎜)
Stroke : 20~300
※ For long stroke, please contact us for confirmation.

7 Auto Switch
- Reed switch
- Band attached type(grommet)
: W5
※ The length of lead wire is 0.5m (standard).
For 3m, L is added to the end of part number.
ex) W5L

8 Number of Auto Switches
Blank : 2 pcs
S : 1 pc
N : N pcs

■ Cautions for CR(CV)-ARD Cylinder

This product is adapted in compliance with high purity. Make sure to carefully read the manual prior to selecting and using the product. Be sure to see the common cautions for clean room and actuator.

Precautions on Handling

Warning

① Operate the cushion valve in the fully closed or fully opened state should be avoided.
When it is used in the fully closed stale, the cushion seal may be damaged
When it is used in the fully opened state, the piston rod assembly or the cover may be damaged.

② Be sure to operate within the specified cylinder speed.
When doing so, damaging the cylinder and the seals may occur due to the failure.

Caution

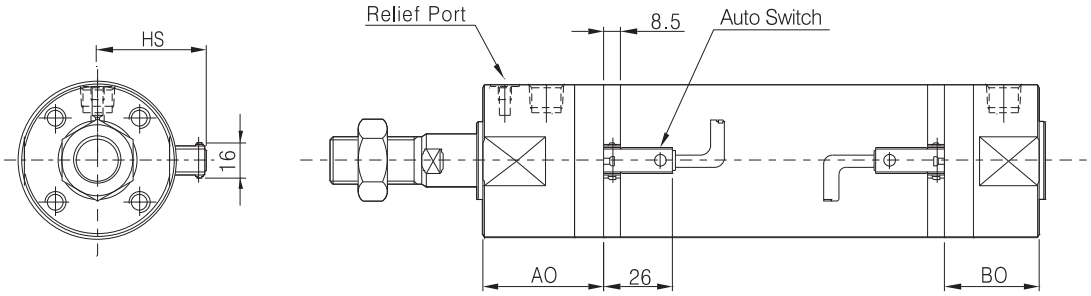
① The use of the air cylinder as an air-hydro cylinder should be avoided.
Otherwise, an oil leak may occur.

② Twisting the bellows avoid when installing.
In event that the cylinder is installed with its bellows twisted, the bellows could be damaged.
Auto switch setting dimension.
Auto switch mounting position.
Minimum auto switch mountable stroke. (mm)

Specifications

Bore Size	Ø50, Ø63
Model	Relief Port Type
	Vacuum Suction Type
Operation type	Double acting single rod(non-lubrication)
Port size	Rc(PT) 1/4
Fluid	Air
Proof pressure	1.5MPa(15.3kgf/㎠)
Max. operation pressure	1.0MPa(9.9kgf/㎠)
Min. operation pressure	0.05MPa(0.5kgf/㎠)
Ambient and fluid temperature · ℃(°F)	-10℃~70℃(anti freezing)
	Rubber/Air cushion
Cushion	KS class 2
Thread tolerance	~300 $^{+1.4}_{0}$ mm
Stroke tolerance	50~400mm/s

Auto Switch Setting Dimension



Auto Switch Mounting Position

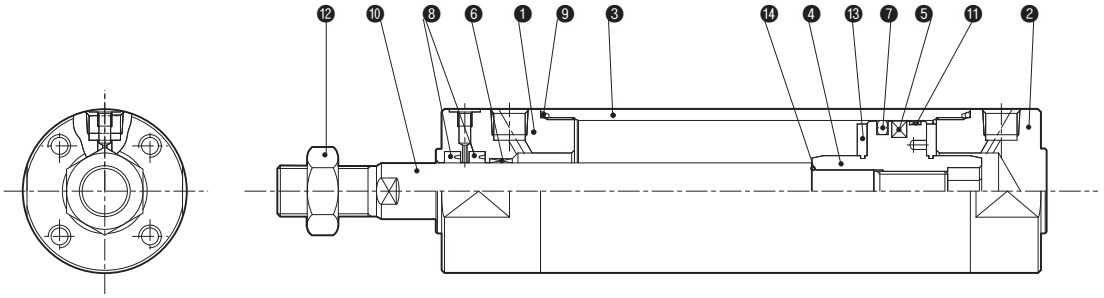
Bore Size(mm)	AO	BO	HS
Ø50	49.5	37.5	40.5
Ø63	51	38	47.5

Minimum Auto Switch Mountable Stroke(mm)

Type of Auto Switch	Number of Auto Switch		
	With 2pc		With 1pc
	Different side	Same side	
W5	15	50	10

Construction/Parts List

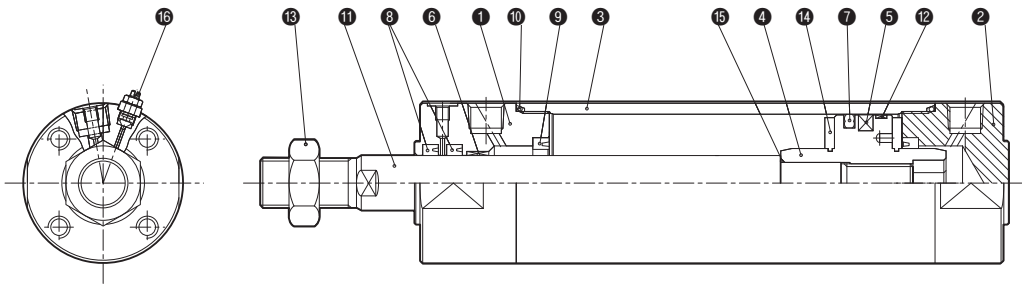
Rubber Cushion Type : Ø50, Ø63



No.	Description	Quantity	Material	Note
1	ROD COVER	1	Aluminum Alloy	White Aluminum
2	HEAD COVER	1	Aluminum Alloy	White Aluminum
3	CYLINDER TUBE	1	Aluminum Alloy	Hard Aluminum
4	PISTON	1	Aluminum Alloy	Chromate
5	MAGNET	1	NBR	
6	BUSH	1	Lead Bronze Casting	
7	PISTON PACKING	1	NBR+Ba-Ferrite	

No.	Description	Quantity	Material	Note
8	ROD PACKING	2 (1)	NBR	When CV Type, Left Side Exclusion
9	TUBE GASKET	2	NBR	
10	PISTON ROD	1	Stainless Steel	Hard Chrome Plated
11	WEAR RING	1	Resin	
12	ROD END NUT	1	Rolled Steel	
13	BUMPER	2	Urethane	
14	PISTON GASKET	1	NBR	

Air Cushion Type : Ø50, Ø63

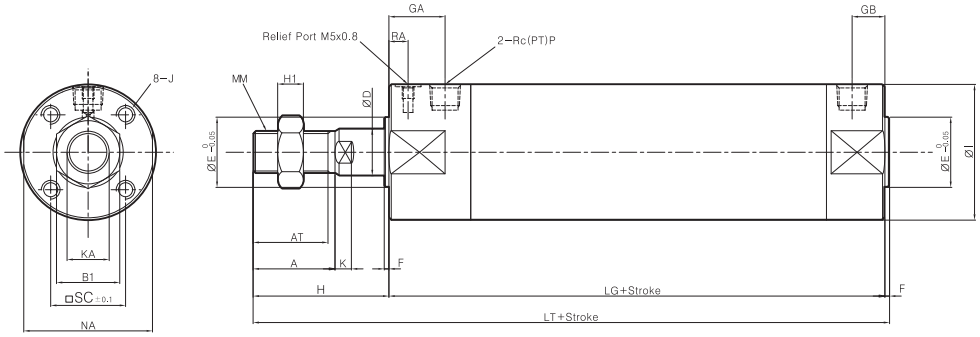


No.	Description	Quantity	Material	Note
1	ROD COVER	1	Aluminum Alloy	White Aluminum
2	HEAD COVER	1	Aluminum Alloy	White Aluminum
3	CYLINDER TUBE	1	Aluminum All0y	Hard Aluminum
4	PISTON	1	Aluminum All0y	Chromate
5	MAGNET	1	Ba Ferrite+NBR	
6	BUSH	1	Lead Bronze Casting	
7	PISTON PACKING	1	NBR	
8	ROD PACKING	2 (1)	NBR	When CV Type, Left Side Exclusion

No.	Description	Quantity	Material	Note
9	CUSHION PACKING	2	NBR	
10	TUBE GASKET	2	NBR	
11	PISTON ROD	1	Stainless Steel	Hard Chrome Plated
12	WEAR RING	1	Resin	
13	ROD END NUT	1	Rolled Steel	
14	BUMPER	2	Urethane	
15	PISTON GASKET	1	NBR	
16	CUSHION V/V ASS'Y	2		

Dimensions

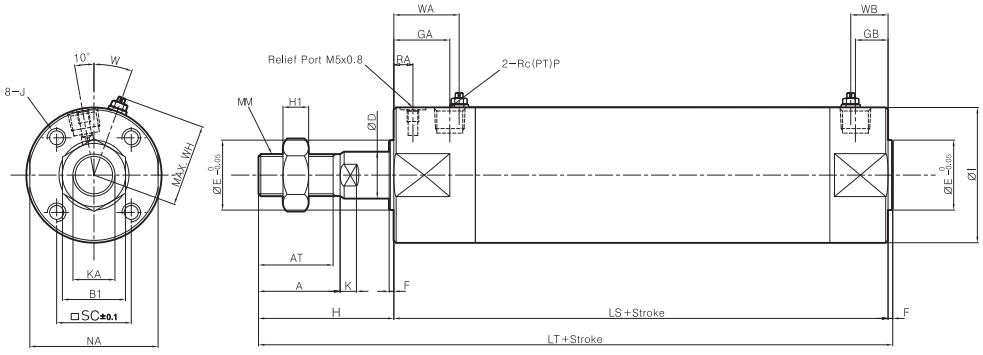
Rubber Cushion Type



(Unit : mm)

Bore Size	Stroke Range	A	AT	BI	□SC	D	E	F	GA	GB	H	H1	ØI	J	K	KA	MM	NA	P	RA	LG	LT
50	300	35	32	27	32	20	30	2	24	14	58	11	58	M8×1.25 DP 16	7	18	M18×1.5	55	1/4	8.2	112	172
63	300	35	32	27	38	20	32	2	24	14	58	11	72	M10×1.5 DP 16	7	18	M18×1.5	69	1/4	8.2	115	175

Air Cushion Type



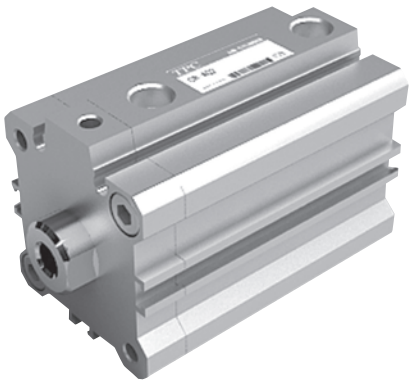
(Unit : mm)

Bore Size	Stroke Range	A	AT	B1	□SC	D	E	F	GA	GB	H	H1	ØI	J	K	KA	MM	NA	P	RA	LS	LT	W	WH	WA	WB
50	300	35	32	27	32	20	30	2	24	14	58	11	58	M8×1.25 DP 16	7	18	M18×1.5	55	1/4	8.2	112	172	20°	38.5	28	16
63	300	35	32	27	38	20	32	2	24	14	58	11	72	M10×1.5 DP 16	7	18	M18×1.5	69	1/4	8.2	115	175	20°	45.5	28	16

Series CR(CV)-AQ2/ADQ2

Clean Series Compact Cylinder(square tube)/Double Acting, Single Rod

Bore Size(mm) : Ø12, Ø16, Ø20, Ø25, Ø32, Ø40, Ø50, Ø63, Ø80, Ø100



- CYLINDER IN LOW PARTICLE GENERATION FOR CLEAN ROOM
- PISTON ROD IS MADE IN THE MATERIAL QUALITY OF STAINLESS STEEL TO ENHANCE RESISTANCE AGAINST MOISTURE AND OTHER CHEMICALS
- EXCLUSIVE GREASE USE, DUST GENERATION IS MINIMIZED WHEN CYLINDER IS ACTING
- SINCE THE TOTAL LENGTH IS COMPACT TYPE, IT SAVES THE INSTALLING SPACE. BEING USED FOR CLAMP OR CHUCK OF SMALL PARTS, IT FACILITATES COMPACT DESIGN OF VARIOUS TOOLS OR EXCLUSIVE EQUIPMENT

How to Order

CR(CV) — A D Q 2 B 20 — 30 D M — W4 ○

1 2 3 4 5 6 7 8 9

1 Clean Series
- CR : Relief port type
- CV : Vacuum suction type

2 Built-in Magnet
- Blank : Without Magnet
- D : Built-in Magnet

3 Mounting
- B : ϕ12, ϕ16, ϕ20, ϕ25 Penetrating hole, common tap at both ends(standard)
- ϕ32, ϕ40, ϕ50, ϕ63 Penetrating hole(standard)

4 Bore Size

12 : 12㎜	16 : 16㎜
20 : 20㎜	25 : 25㎜
32 : 32㎜	40 : 40㎜
50 : 50㎜	63 : 63㎜
80 : 80㎜	100 : 100㎜

5 Stroke(㎜)

Bore : Stroke
- 12, 16 : 5, 10, 15, 20, 25, 30
- 20, 25 : 5, 10, 15, 20, 25, 30, 35, 40, 45, 50
- 32, 40 : 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
- 50, 63 : 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

6 Action
- D : Double acting

7 Feature of Body
- Blank : Standard type (female screw at the end of rod)
- M : Male screw at the end of rod

8 Auto Switch
- Blank : None (cylinder with built-in magnet)
- W8,W9(H,V) :compact auto switch(ϕ4)
- H : Horizontal type, V : Vertical type
- ※ W8,W9 type is basic for square tube of ϕ12~ϕ25.
- ※ W4 type is basic for ϕ32~ϕ63.
- ※ For length of lead wire over 3m, L is added to the end of part numher.(W9HL)
- ※ For length of lead wire over 5m, please contact us.

9 Number of auto switches
- Blank : 2 pcs
- S : 1 pc
- N : N pcs

Cautions

＊ Production of middle stroke
By installing spacer in the cylinder of standard stroke, it is possible to produce middle stroke at every 3㎜.
Ex) For AQ2B20-37D, spacer with width of 13㎜ is installed in the cylinder of standard stroke AQ2B20-50D.

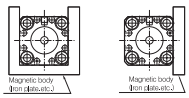
Cautions for AQ2 cylinder

This product is adapted in compliance with high purity. Please make sure to check the manual prior to selecting and using the product. Be sure to see the common cautions for clean room and actuator.

Mounting

Caution

1. In event that the cylinder is adapted in an application where a magnetic material is placed in close contact around the cylinder as shown in the diagram on the right (including cases in which even one of the side is in close contact) unstable condition may occur in the operation of auto switches. So, be sure to check out TPC for this type of application.



2. When installing and removing (ϕ 50 or more), it is preferred to use an appropriate pair of pliers(tool for Installing a C snap ring).
3. Be sure that exercise caution is needed when using an appropriate pair of pliers (tool for installing a C snap ring) because the snap ring may be detached fromthe tip of the pliers and flying away, which could injure humans or damage the peripheral equipment. After the snap ring is installed, make sure that it is placed securely in the ring groove before supplying air.

Precautions on handling

Caution

1. Be sure to check all loads must be applied to piston rod in axial direction only. It is needed to install cylinder with accurate alignment.
2. Loosen or detaching the hexagonal attaching bolt that fixes rod cover should be avoided. If no doing so, rod cover may spring out resulting in damaging human body or peripheral equipment.

Specifications

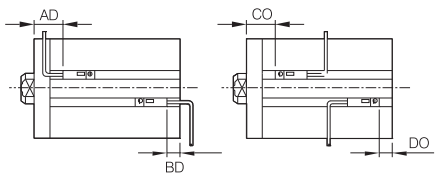
Bore size		ϕ12, ϕ16, ϕ20, ϕ25, ϕ32, ϕ40, ϕ50, ϕ63
Model		Relief port type,
		Vacuum suction type
Action		Double acting, single rod(non-lubrication)
Port size	ϕ12~ϕ25	M5×0.8
	ϕ32	Rc(PT) 1/8(※M5×0.8 : 5st only)
	ϕ40	Rc(PT)1/8
	ϕ50, ϕ63	Rc(PT)1/4
Fluid		Air
Proof pressure		1.5MPa(217psi)
Max. operation pressure		1.0MPa(140psi)
Min. operation pressure		0.05MPa(7psi)
Ambient and fluid temperature · ℃(°F)		−10℃~70℃(14~158°F)(anti freezing)
Cushion		None
Mounting		ϕ12~ϕ25 : Through hole, common tap at both ends
		ϕ32~ϕ100 : Through hole
Stroke tolerance		$^{+1.0}_{0}$mm
Piston speed		50~400mm/s

Minimum auto switch mountable stroke (mm)

No. of auto switch	Min. auto switch mountable stroke
With 1pc	5mm
With 2pcs	10mm

Auto switch setting position

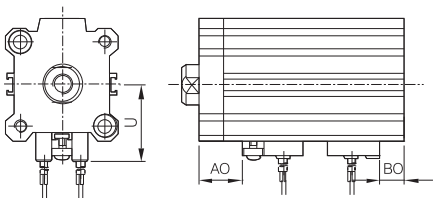
Ø12~25



(Unit : mm)

Bore Size	Sensing Position				Operation Range
	Rod Side		Head Side		
	AO	BO	CO	DO	
Ø12	17	7	13.5	3.5	8
Ø16	22	7.5	18.5	4	10
Ø20	21	9.5	17.5	6.5	9
Ø25	12.5	2.5	18	8	9.5

Ø32~100



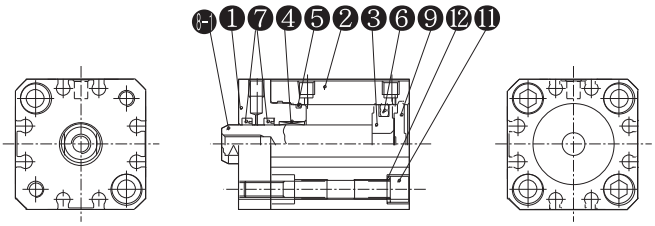
(Unit : mm)

Bore Size	AO	BO	U
Ø32	19.5	6.5	31.5
Ø40	23.5	9	35
Ø50	21.5	12	41
Ø63	24	15	47.5
Ø80	28	18.5	57.5
Ø100	31.5	24.5	67.5

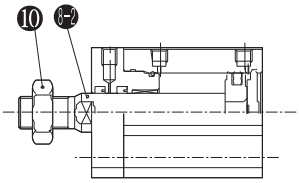
Construction/Parts List : Ø12~25

Standard Type : Ø12~25

Female screw at the end of rod type



Male screw at the end of rod type

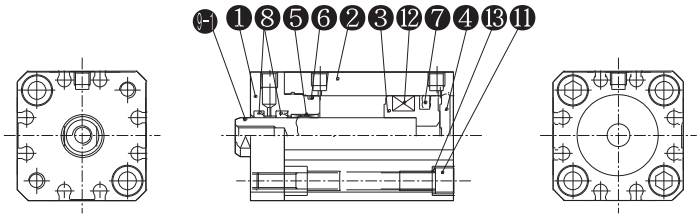


No.	Description	Quantity	Material	Note
1	Rod Cover	1	Aluminum Alloy	Hard White Aluminum
2	Cylinder Tube	1	Aluminum Alloy	
3	Piston	1	Aluminum Alloy	
4	Bush	1	Lead Bronze Casting	
5	Gasket	1	NBR	
6	Piston Packing	1	NBR	
7	Rod Packing	2 (1)	NBR	When CV type, left side exclusion

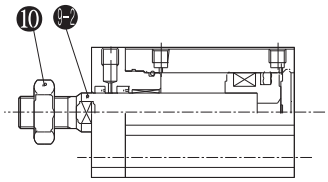
No.	Description	Quantity	Material	Note
8-1	Piston Rod	1	Stainless Steel	Hard chrome Plated, female screw type
8-2	Piston Rod	1	Stainless Steel	Hard chrome Plated, male screw type
9	End Plate	1	Aluminum Alloy	
10	Rod End Nut	1	Rolled Steel	Nickel Plated
11	Mounting Bolt	2	Carbon Tool Steel	Nickel Plated
12	Washer	2	Stainless Steel	Nickel Plated(plate washer)

With Auto Switch(Built-in Magnet) : Ø12~25

Female screw at the end of rod type



Male screw at the end of rod type

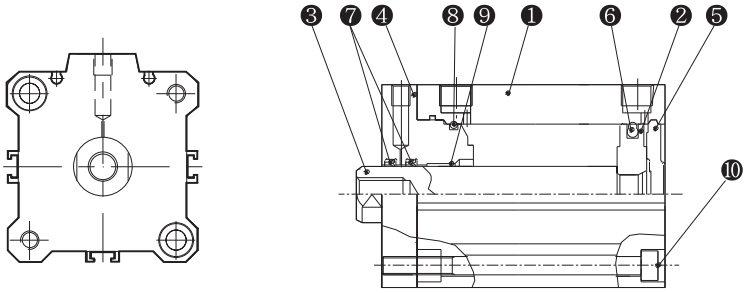


No.	Description	Quantity	Material	Note
1	Rod Cover	1	Aluminum Alloy	Hard White Aluminum
2	Cylinder Tube	1	Aluminum Alloy	
3	Piston	1	Aluminum Alloy	
4	End Plate	1	Aluminum Alloy	
5	Bush	1	Lead Bronze Casting	
6	Gasket	1	NBR	
7	Piston Packing	1	NBR	

No.	Description	Quantity	Material	Note
8	Rod Packing	2 (1)	NBR	When CV type, left side exclusion
9-1	Piston Rod	1	Stainless Steel	Hard chrome Plated, female screw type
9-2	Piston Rod	1	Stainless Steel	Hard chrome Plated, male screw type
10	Rod End Nut	1	Rolled Steel	Nickel Plated
11	Mounting Bolt	2	Carbon Tool Steel	Nickel Plated
12	Magnet	1	NBR+Ba Ferrite	
13	Washer	2	Stainless Steel	Nickel Plated(plate washer)

Construction/Parts List : Ø32, Ø40

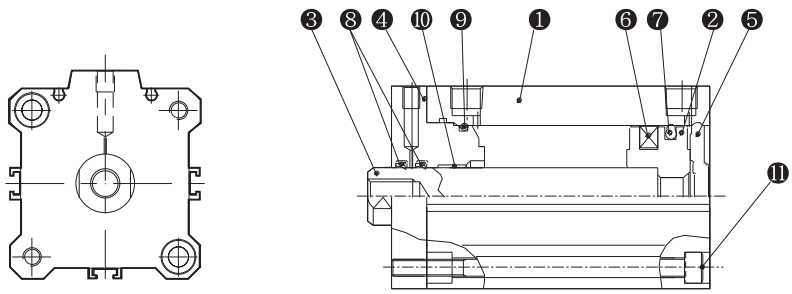
Standard Type : Ø32, Ø40



No.	Description	Quantity	Material	Note
1	Cylinder tube	1	Aluminum Alloy	Hard white aluminum
2	Piston	1	Aluminum Alloy	Chromate
3	Piston rod	1	Stainless Steel	Hard chrome Plated
4	Rod cover	1	Aluminum Alloy	Hard white aluminum
5	End plate	1	Aluminum Alloy	Hard white aluminum
6	Piston packing	1	NBR	

No.	Description	Quantity	Material	Note
7	Rod packing	(1~2)	NBR	When CV type, left side exclusion
8	Gasket	1	NBR	
9	Bush	1	Lead Bronze Casting	
10	Blanking plug	2	Alloy Steel	Nickel Plated
11	Spacer	(1)	Aluminum Alloy	55,60,65,70,80,85,90,95 Stroke Only

With Auto Switch(Built-in Magnet) : Ø32, Ø40

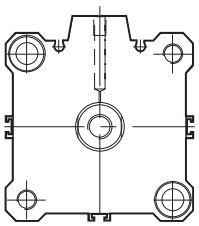


No.	Description	Quantity	Material	Note
1	Cylinder tube	1	Aluminum Alloy	Hard white aluminum
2	Piston	1	Aluminum Alloy	Chromate
3	Piston rod	1	Stainless Steel	Hard chrome Plated
4	Rod cover	1	Aluminum Alloy	Hard white aluminum
5	End plate	1	Aluminum Alloy	Hard white aluminum
6	Magnet ring	1	NBR+Ba Ferrite	

No.	Description	Quantity	Material	Note
7	Piston packing	1	NBR	
8	Rod packing	(1~2)	NBR	When CV type, left side exclusion
9	Gasket	1	NBR	
10	Bush	1	Lead Bronze Casting	
11	Blanking plug	2	Alloy Steel	Nickel Plated
12	Spacer	(1)	Aluminum Alloy	55,60,65,70,80,85,90,95 Stroke Only

Construction/Parts List : Ø50, Ø63, Ø80, Ø100

Standard Type : Ø50, Ø63, Ø80, Ø100



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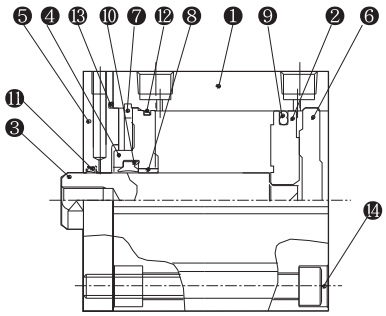
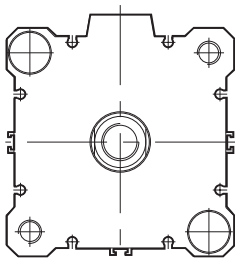


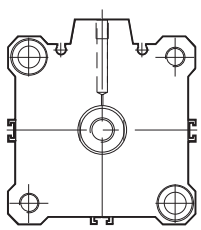


(Ø63, Ø80, Ø100)

No.	Description	Quantity	Material	Note
1	Cylinder tube	1	Aluminum Alloy	Hard White Aluminum
2	Piston	1	Aluminum Alloy	Chromate
3	Piston rod	1	Stainless Steel	Hard Chrome Plated
4	Rod cover	1	Aluminum Alloy	Hard White Aluminum
5	Cover	1	Aluminum Alloy	Hard White Aluminum
6	End plate	1	Aluminum Alloy	Hard White Aluminum
7	Snap ring	1	Carbon Tool Steel	
8	Bush	1	Lead Bronze Casting	

No.	Description	Quantity	Material	Note
9	Piston packing	1	NBR	
10	Rod packing	1	NBR	
11	Mini_y packing	(1)	NBR	
12	Gasket	1	NBR	
13	Gasket	1	NBR	
14	Blanking plug	2	Alloy Steel	Nickel Plated
15	Spacer	(1)	Aluminum alloy	55,60,65,70,80,85,90,95 Stroke Only

With Auto Switch(Built-in Magnet) : Ø50, Ø63, Ø80, Ø100



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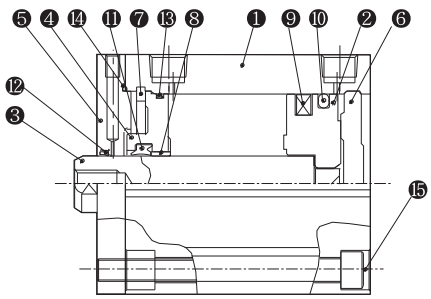
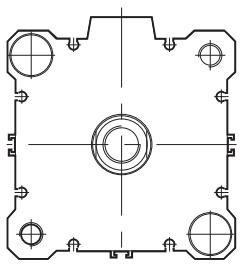


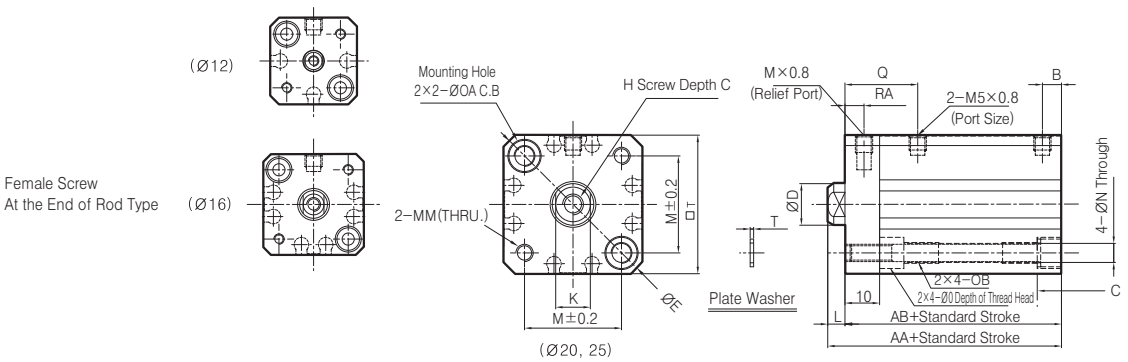


(Ø63, Ø80, Ø100)

No.	Description	Quantity	Material	Note
1	Cylinder tube	1	Aluminum Alloy	Hard White Aluminum
2	Piston	1	Aluminum Alloy	Chromate
3	Piston rod	1	Stainless Steel	Hard Chrome Plated
4	Rod cover	1	Aluminum Alloy	Hard White Aluminum
5	Cover	1	Aluminum Alloy	Hard White Aluminum
6	End plate	1	Aluminum Alloy	Hard White Aluminum
7	Snap ring	1	Carbon Tool Steel	
8	Bush	1	Lead Bronze Casting	

No.	Description	Quantity	Material	Note
9	Magnet ring	1	NBR+Ba Ferrite	
10	Piston packing	1	NBR	
11	Rod packing	1	NBR	
12	Mini_y packing	(1)	NBR	
13	Gasket	1	NBR	
14	Gasket	1	NBR	
15	Blanking plug	2	Alloy Steel	Nickel Plated
16	Spacer	(1)	Aluminum alloy	55,60,65,70,80,85,90,95 Stroke Only

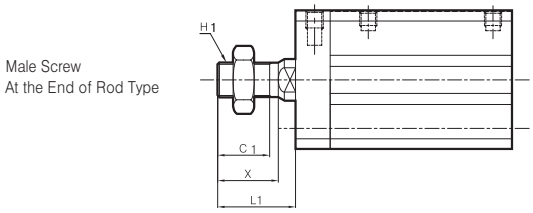
Standard Type(Through Hole, Common Tap At Both Ends)/CR-AQ2B12~25, CV-AQ2B12~25



In the case of male screw at the end of rod type

(Unit : mm)

Bore Size	Stroke Range	H1	C1	D	L1
12	5~30	M5×0.8	9	10.5	14
16	5~30	M6×1.0	10	12	15.5
20	5~50	M8×1.25	12	14	18.5
25	5~50	M10×1.25	15	17.5	22.5

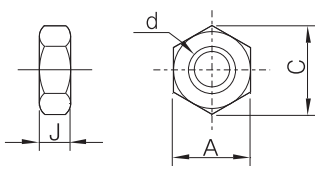


※ For the following bore / stroke sizes, through hole is thread over the entire length
Ø12-5 stroke, Ø20/25-5/10 stroke.

Standard Type

(Unit : mm)

Bore Size	Stroke Range	AA	AB	L	N	D	H	C	RA	Q	B	MM	T	O	OA	OB	E	M	□T	K
12	5~30	30.5	27	3.5	3.5	6	M3×0.5	6	5.5	17.5	5	M3×0.5	0.5	6.5 Depth 4	6.5	M4×0.7 DP 7	32	15.5	25	5
16	5~30	32	28.5	3.5	3.5	8	M4×0.7	8	5.5	18	5.5	M3×0.5	0.5	6.5 Depth 4	6.5	M4×0.7 DP 7	38	20	29	6
20	5~30	34	29.5	4.5	5.5	10	M5×0.8	7	5.5	20.5	5.5	M5×0.8	1	9 Depth 7	9	M6×1.0 DP 10	47	25.5	36	8
25	5~30	37.5	32.5	5	5.5	12	M6×1.0	12	5.5	21	5.5	M5×0.8	1	9 Depth 7	9	M6×1.0 DP 10	52	28	40	10

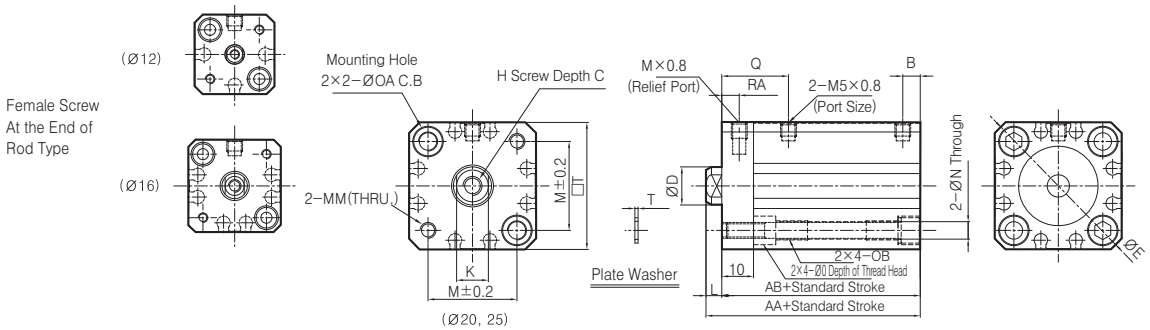


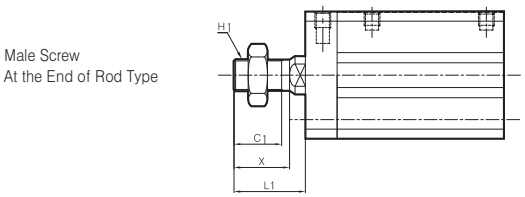
Mounting-nut at the end of rod

(Materials:Rolled steel/Nickel plating)

Model	Applicable Bore Size(㎜)	d	J	A	C
NTJ-015A	12	M5×0.8	4	8	9.2
NT-015A	16	M6×1.0	5	10	11.5
NT-02	20	M8×1.25	5	13	15.0
NT-03	25	M10×1.25	6	17	19.6
NT-04	32, 40	M14×1.5	8	22	25.4
NT-05	50, 63	M18×1.5	11	27	31.2
NT-08	80	M22×1.5	13	32	37.0
NT-10	100	M26×1.5	16	41	47.3

Standard Type(Through Hole, Common Tap At Both Ends)/CR-ADQ2B12~25, CV-ADQ2B12~25





In the case of male screw at the end of rod type

(Unit : mm)

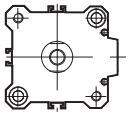
Bore Size	Stroke Range	H1	C1	D	L1
12	5~30	M5×0.8	9	10.5	14
16	5~30	M6×1.0	10	12	15.5
20	5~50	M8×1.25	12	14	18.5
25	5~50	M10×1.25	15	17.5	22.5

Standard Type

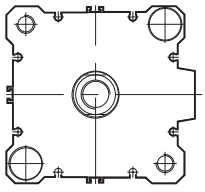
(Unit : mm)

Bore Size	Stroke Range	AA	AB	L	N	D	H	C	RA	Q	B	MM	T	O	OA	OB	E	M	□T	K
12	5~30	41.5	38	3.5	3.5	6	M3×0.5	6	5.5	21	6.5	M3×0.5	0.5	6.5 깊이 4	6.5	M4×0.7 DP 7	32	15.5	25	5
16	5~30	44	40.5	3.5	3.5	8	M4×0.7	8	5.5	21	5.5	M3×0.5	0.5	6.5 깊이 4	6.5	M4×0.7 DP 7	38	20	29	6
20	5~50	46	41.5	4.5	5.5	10	M5×0.8	7	5.5	20.5	5.5	M5×0.8	1	9 깊이 7	9	M6×1.0 DP 10	47	25.5	36	8
25	5~50	47.5	42.5	5	5.5	12	M6×1.0	12	5.5	21	5.5	M5×0.8	1	9 깊이 7	9	M6×1.0 DP 10	52	28	40	10

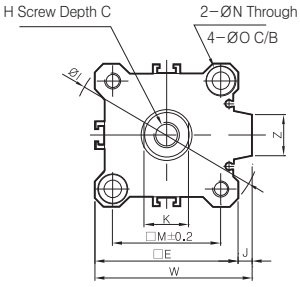
Standard Type(Through Hole)/CR-AQ2B32~100, CV-AQ2B32~100



(Ø32, Ø40)



(Ø63, Ø80, Ø100)



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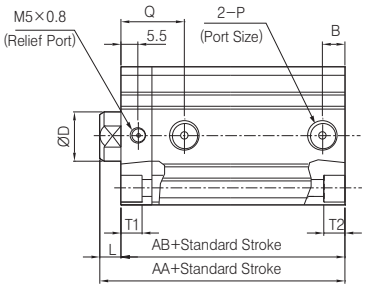
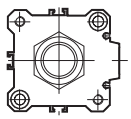


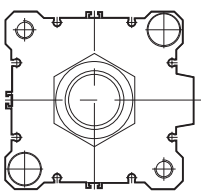
(Unit : mm)

Bore Size	Stroke Range	AA	AB	C	D	E	B	H	I	J	K	L	M	N	O	P	Q	T1	T2	W	Z
32	5	40	33	13	16	45	5.5	M8×1.25	60	4.5	14	7	34	5.5	9	M5×0.8	21.5	7	7	49.5	14
	10~50						7.5									Rc(PT)1/8	20.5				
	75,100	50	43																		
40	5~50	46.5	39.5	13	16	52	8	M8×1.25	69	5	14	7	40	5.5	9	Rc(PT)1/8	21	6	7	57	14
	75, 100	56.5	49.5																		
50	10~50	48.5	40.5	15	20	64	10.5	M10×1.5	87	7	17	8	50	6.6	11	Rc(PT)1/4	20.5	18	8	71	22
	75, 100	58.5	50.5																		
63	10~50	54	46	15	20	77	10.5	M10×1.5	103	7	17	8	60	9	14	Rc(PT)1/4	25	20.5	10.5	84	22
	75, 100	64	56																		
80	10~50	63.5	53.5	21	25	98	12.5	M16×2.0	132	6	22	10	77	11	17.5	Rc(PT)3/8	26	23.5	13.5	104	26
	75, 100	73.5	63.5																		
100	10~50	75	63	27	30	117	13	M20×2.5	156	6.5	27	12	94	11	17.5	Rc(PT)3/8	33	23.5	13.5	123.5	26
	75, 100	85	73																		

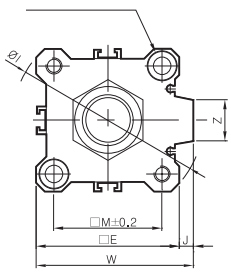
Male Screw At The End of Rod Type



(Ø32, Ø40)



(Ø63, Ø80, Ø100)



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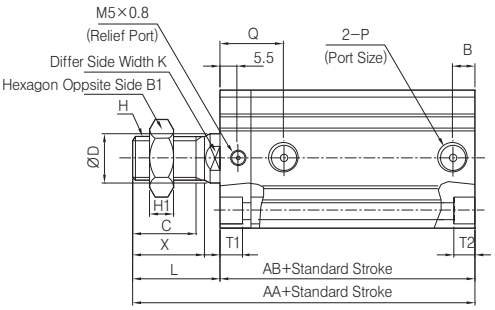
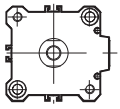


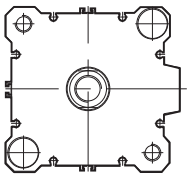
(Unit : mm)

Bore Size	Stroke Range	AA	AB	B1	C	D	E	B	H	H1	I	J	K	L	M	N	O	P	Q	T1	T2	W	X	Z
32	5	61.5	33	22	20.5	16	45	5.5	M14×1.5	8	60	4.5	14	28.5	34	5.5	9	M5×0.8	21.5	7	7	49.5	23.5	14
	10~50							7.5										Rc(PT)1/8	20.5					
	75,100	71.5	43																					
40	5~50	68	39.5	22	20.5	16	52	8	M14×1.5	8	69	5	14	28.5	40	5.5	9	Rc(PT)1/8	21	6	7	57	23.5	14
	75, 100	78	49.5																					
50	10~50	74	40.5	27	26	20	64	10.5	M18×1.5	11	87	7	17	33.5	50	6.6	11	Rc(PT)1/4	20.5	18	8	71	28.5	22
	75, 100	84	50.5																					
63	10~50	79.5	46	27	26	20	77	10.5	M18×1.5	11	103	7	17	33.5	60	9	14	Rc(PT)1/4	25	20.5	10.5	84	28.5	22
	75, 100	89.5	56																					
80	10~50	97	53.5	32	32.5	25	98	12.5	M22×1.5	13	132	6	22	43.5	77	11	17.5	Rc(PT)3/8	26	23.5	13.5	104	35.5	26
	75, 100	107	63.5																					
100	10~50	106.5	63	41	32.5	30	117	13	M26×1.5	16	156	6.5	27	43.5	94	11	17.5	Rc(PT)3/8	33	23.5	13.5	123.5	35.5	26
	75, 100	116.5	73																					

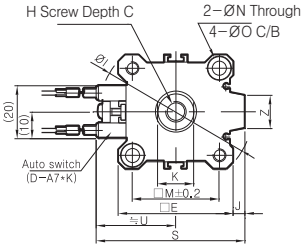
Standard Type(Through Hole)/CR-ADQ2B32~100, CV-ADQ2B32~100



(Ø32, Ø40)



(Ø63, Ø80, Ø100)



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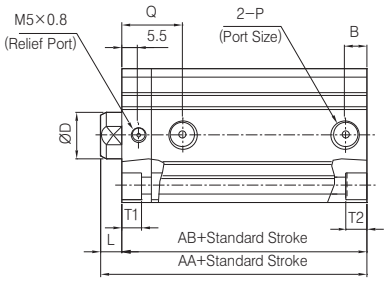
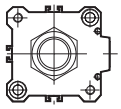


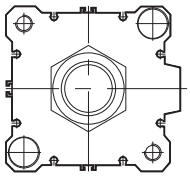
(Unit : mm)

Bore Size	Stroke Range	AA	AB	C	D	E	B	H	I	J	K	L	M	N	O	P	Q	T1	T2	S	U	Z
32	5~50 75, 100	50	43	13	16	45	7.5	M8×1.25	60	4.5	14	7	34	5.5	9	Rc(PT)1/8	20.5	7	7	58.5	31.5	14
40	5~50 75, 100	56.5	49.5	13	16	52	8	M8×1.25	69	5	14	7	40	5.5	9	Rc(PT)1/8	21	6	7	66	35	14
50	10~50 75, 100	58.5	50.5	15	20	64	10.5	M10×1.5	87	7	17	8	50	6.6	11	Rc(PT)1/4	20.5	18	8	80	41	22
63	10~50 75, 100	64	56	15	20	77	10.5	M10×1.5	103	7	17	8	60	9	14	Rc(PT)1/4	25	20.5	10.5	93	47.5	22
80	10~50 75, 100	73.5	63.5	21	25	98	12.5	M16×2.0	132	6	22	10	77	11	17.5	Rc(PT)3/8	26	23.5	13.5	112.5	57.5	26
100	10~50 75, 100	85	73	27	30	117	13	M20×2.5	156	6.5	27	12	94	11	17.5	Rc(PT)3/8	33	23.5	13.5	132.5	67.5	26

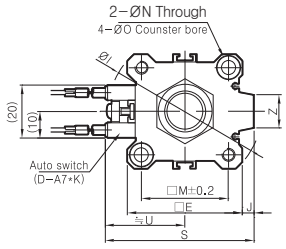
Male Screw At The End of Rod Type



(Ø32, Ø40)



(Ø63, Ø80, Ø100)



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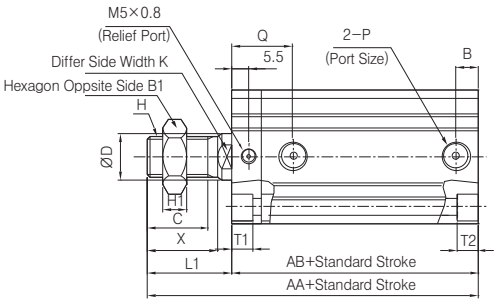
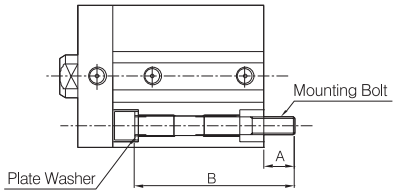


(Unit : mm)

Bore Size	Stroke Range	AA	AB	B1	C	D	E	B	H	H1	I	J	K	L	M	N	O	P	Q	T1	T2
32	5~50 75, 100	71.5	43	22	20.5	16	45	7.5	M14×1.5	8	60	4.5	14	28.5	34	5.5	9	Rc(PT)1/8	20.5	7	7
40	5~50 75, 100	78	49.5	22	20.5	16	52	8	M14×1.5	8	69	5	14	28.5	40	5.5	9	Rc(PT)1/8	21	6	7
50	10~50 75, 100	84	50.5	27	26	20	64	10.5	M18×1.5	11	87	7	17	33.5	50	6.6	11	Rc(PT)1/4	20.5	18	8
63	10~50 75, 100	89.5	56	27	26	20	77	10.5	M18×1.5	11	103	7	17	33.5	60	9	14	Rc(PT)1/4	25	20.5	10.5
80	10~50 75, 100	107	63.5	32	32.5	25	98	12.5	M22×1.5	13	132	6	22	43.5	77	11	17.5	Rc(PT)3/8	26	23.5	13.5
100	10~50 75, 100	116.5	73	41	32.5	30	117	13	M26×1.5	16	156	6.5	27	43.5	94	11	17.5	Rc(PT)3/8	33	23.5	13.5

Bore Size	Stroke Range	S	U	X	Z
32	5~50 75, 100	58.5	31.5	23.5	14
40	5~50 75, 100	66	35	23.5	14
50	10~50 75, 100	80	41	28.5	22
63	10~50 75, 100	93	47.5	28.5	22
80	10~50 75, 100	112.5	57.5	35.5	26
100	10~50 75, 100	132.5	67.5	35.5	26

AQ2 Standard Type Mounting Bolt : Ø12, Ø16, Ø20, Ø25



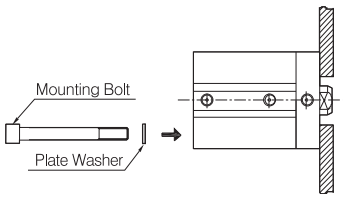
① Use the appropriate plate washer for mounting

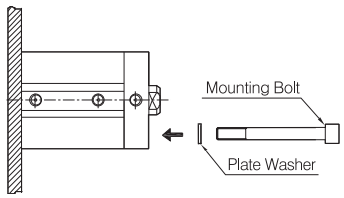
② How to order : Specify the required bolts.

Ex) Bolt M3×0.5×35L 2EA

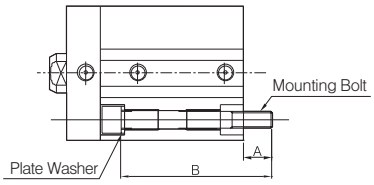
Mounting at Rod Side / Non-Auto Switch					
Model			A	B	Mounting Bolt
CR-(CV-)	AQ2B12	-5D	6.5	35	M3×0.5×35L
		-10D		40	M3×0.5×40L
		-15D		45	M3×0.5×45L
		-20D		50	M3×0.5×50L
		-25D		55	M3×0.5×55L
		-30D		60	M3×0.5×60L
CR-(CV-)	AQ2B16	-5D	5	35	M3×0.5×35L
		-10D		40	M3×0.5×40L
		-15D		45	M3×0.5×45L
		-20D		50	M3×0.5×50L
		-25D		55	M3×0.5×55L
		-30D		60	M3×0.5×60L
CR-(CV-)	AQ2B20	-5D	6.7	35	M5×0.8×35L
		-10D		40	M5×0.8×40L
		-15D		45	M5×0.8×45L
		-20D		50	M5×0.8×50L
		-25D		55	M5×0.8×55L
		-30D		60	M5×0.8×60L
		-35D		65	M5×0.8×65L
		-40D		70	M5×0.8×70L
		-45D		75	M5×0.8×75L
		-50D		80	M5×0.8×80L
CR-(CV-)	AQ2B25	-5D	8.7	40	M5×0.8×40L
		-10D		45	M5×0.8×45L
		-15D		50	M5×0.8×50L
		-20D		55	M5×0.8×55L
		-25D		60	M5×0.8×60L
		-30D		65	M5×0.8×65L
		-35D		70	M5×0.8×70L
		-40D		75	M5×0.8×75L
		-45D		80	M5×0.8×80L
		-50D		85	M5×0.8×85L

Mounting at Head Side / Non-Auto Switch					
Model			A	B	Mounting Bolt
CR-(CV-)	AQ2B12	-5D	6.5	25	M3×0.5×25L
		-10D		30	M3×0.5×30L
		-15D		35	M3×0.5×35L
		-20D		40	M3×0.5×40L
		-25D		45	M3×0.5×45L
		-30D		50	M3×0.5×50L
CR-(CV-)	AQ2B16	-5D	5	25	M3×0.5×25L
		-10D		30	M3×0.5×30L
		-15D		35	M3×0.5×35L
		-20D		40	M3×0.5×40L
		-25D		45	M3×0.5×45L
		-30D		50	M3×0.5×50L
CR-(CV-)	AQ2B20	-5D	6.7	25	M5×0.8×25L
		-10D		30	M5×0.8×30L
		-15D		35	M5×0.8×35L
		-20D		40	M5×0.8×40L
		-25D		45	M5×0.8×45L
		-30D		50	M5×0.8×50L
		-35D		55	M5×0.8×55L
		-40D		60	M5×0.8×60L
		-45D		65	M5×0.8×65L
		-50D		70	M5×0.8×70L
CR-(CV-)	AQ2B25	-5D	8.7	30	M5×0.8×30L
		-10D		35	M5×0.8×35L
		-15D		40	M5×0.8×40L
		-20D		45	M5×0.8×45L
		-25D		50	M5×0.8×50L
		-30D		55	M5×0.8×55L
		-35D		60	M5×0.8×60L
		-40D		65	M5×0.8×65L
		-45D		70	M5×0.8×70L
		-50D		75	M5×0.8×75L





AQ2 Auto Switch Attaching Bolt : Ø12, Ø16, Ø20, Ø25



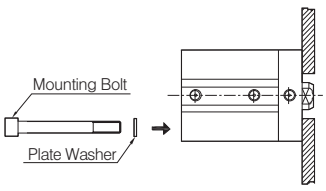
① Use the appropriate plate washer for mounting

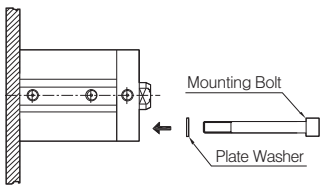
② How to order : Specify the required bolts.

Ex) Bolt M3×0.5×35L 2EA

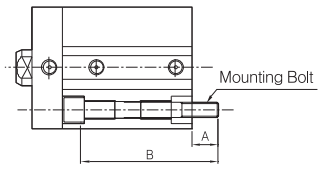
Mounting At Rod Side					
Model			A	B	Mounting Bolt
CR-(CV-)	ADQ2B12	-5D	5.5	45	M3×0.5×45L
		-10D		50	M3×0.5×50L
		-15D		55	M3×0.5×55L
		-20D		60	M3×0.5×60L
		-25D		65	M3×0.5×65L
		-30D		70	M3×0.5×70L
CR-(CV-)	ADQ2B16	-5D	8	50	M3×0.5×50L
		-10D		55	M3×0.5×55L
		-15D		60	M3×0.5×60L
		-20D		65	M3×0.5×65L
		-25D		70	M3×0.5×70L
		-30D		75	M3×0.5×75L
CR-(CV-)	ADQ2B20	-5D	9.7	50	M5×0.8×50L
		-10D		55	M5×0.8×55L
		-15D		60	M5×0.8×60L
		-20D		65	M5×0.8×65L
		-25D		70	M5×0.8×70L
		-30D		75	M5×0.8×75L
		-35D		80	M5×0.8×80L
		-40D		85	M5×0.8×85L
		-45D		90	M5×0.8×90L
		-50D		95	M5×0.8×95L
CR-(CV-)	ADQ2B25	-5D	8.7	50	M5×0.8×50L
		-10D		55	M5×0.8×55L
		-15D		60	M5×0.8×60L
		-20D		65	M5×0.8×65L
		-25D		70	M5×0.8×70L
		-30D		75	M5×0.8×75L
		-35D		80	M5×0.8×80L
		-40D		85	M5×0.8×85L
		-45D		90	M5×0.8×90L
		-50D		95	M5×0.8×95L

Mounting At Head Side					
Model			A	B	Mounting Bolt
CR-(CV-)	ADQ2B12	-5D	5.5	35	M3×0.5×35L
		-10D		40	M3×0.5×40L
		-15D		45	M3×0.5×45L
		-20D		50	M3×0.5×50L
		-25D		55	M3×0.5×55L
		-30D		60	M3×0.5×60L
CR-(CV-)	ADQ2B16	-5D	8	40	M3×0.5×40L
		-10D		45	M3×0.5×45L
		-15D		50	M3×0.5×50L
		-20D		55	M3×0.5×55L
		-25D		60	M3×0.5×60L
		-30D		65	M3×0.5×65L
CR-(CV-)	ADQ2B20	-5D	9.7	40	M5×0.8×40L
		-10D		45	M5×0.8×45L
		-15D		50	M5×0.8×50L
		-20D		55	M5×0.8×55L
		-25D		60	M5×0.8×60L
		-30D		65	M5×0.8×65L
		-35D		70	M5×0.8×70L
		-40D		75	M5×0.8×75L
		-45D		80	M5×0.8×80L
		-50D		85	M5×0.8×85L
CR-(CV-)	ADQ2B25	-5D	8.7	40	M5×0.8×40L
		-10D		45	M5×0.8×45L
		-15D		50	M5×0.8×50L
		-20D		55	M5×0.8×55L
		-25D		60	M5×0.8×60L
		-30D		65	M5×0.8×65L
		-35D		70	M5×0.8×70L
		-40D		75	M5×0.8×75L
		-45D		80	M5×0.8×80L
		-50D		85	M5×0.8×85L





AQ2 Standard Type Mounting Bolt : Ø32, Ø40, Ø50, Ø63



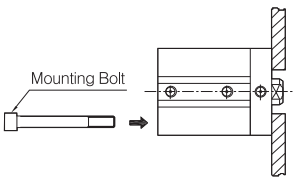
① Mounting : Through hole standard.

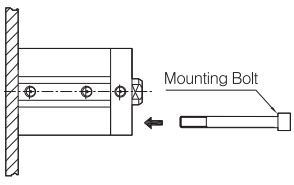
② How to order : Specify the required bolts.

Ex) Bolt M5×0.8×40L 2EA

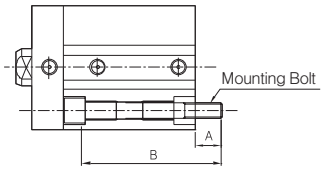
Mounting at Rod Size / Non-Auto Switch					
Model			A	B	Mounting Bolt
CR-(CV-)	AQ2B32	-5D	9	40	M5×0.8×40L
		-10D		45	M5×0.8×45L
		-15D		50	M5×0.8×50L
		-20D		55	M5×0.8×55L
		-25D		60	M5×0.8×60L
		-30D		65	M5×0.8×65L
		-35D		70	M5×0.8×70L
		-40D		75	M5×0.8×75L
		-45D		80	M5×0.8×80L
		-50D		85	M5×0.8×85L
		-75D		120	M5×0.8×120L
		-100D		145	M5×0.8×145L
CR-(CV-)	AQ2B40	-5D	7.5	45	M5×0.8×45L
		-10D		50	M5×0.8×50L
		-15D		55	M5×0.8×55L
		-20D		60	M5×0.8×60L
		-25D		65	M5×0.8×65L
		-30D		70	M5×0.8×70L
		-35D		75	M5×0.8×75L
		-40D		80	M5×0.8×80L
		-45D		85	M5×0.8×85L
		-50D		90	M5×0.8×90L
		-75D		125	M5×0.8×125L
		-100D		150	M5×0.8×150L
CR-(CV-)	AQ2B50	-10D	12.5	55	M6×1.0×55L
		-15D		60	M6×1.0×60L
		-20D		65	M6×1.0×65L
		-25D		70	M6×1.0×70L
		-30D		75	M6×1.0×75L
		-35D		80	M6×1.0×80L
		-40D		85	M6×1.0×85L
		-45D		90	M6×1.0×90L
		-50D		95	M6×1.0×95L
		-75D		130	M6×1.0×130L
		-100D		155	M6×1.0×155L
CR-(CV-)	AQ2B63	-10D	14.5	60	M8×1.25×60L
		-15D		65	M8×1.25×65L
		-20D		70	M8×1.25×70L
		-25D		75	M8×1.25×75L
		-30D		80	M8×1.25×80L
		-35D		85	M8×1.25×85L
		-40D		90	M8×1.25×90L
		-45D		95	M8×1.25×95L
		-50D		100	M8×1.25×100L
		-75D		135	M8×1.25×135L
		-100D		160	M8×1.25×160L

Mounting at Head Side / Non-Auto Switch					
Model			A	B	Mounting Bolt
CR-(CV-)	AQ2B32	-5D	9	40	M5×0.8×40L
		-10D		45	M5×0.8×45L
		-15D		50	M5×0.8×50L
		-20D		55	M5×0.8×55L
		-25D		60	M5×0.8×60L
		-30D		65	M5×0.8×65L
		-35D		70	M5×0.8×70L
		-40D		75	M5×0.8×75L
		-45D		80	M5×0.8×80L
		-50D		85	M5×0.8×85L
		-75D		120	M5×0.8×120L
		-100D		145	M5×0.8×145L
CR-(CV-)	AQ2B40	-5D	11.5	50	M5×0.8×50L
		-10D		55	M5×0.8×55L
		-15D		60	M5×0.8×60L
		-20D		65	M5×0.8×65L
		-25D		70	M5×0.8×70L
		-30D		75	M5×0.8×75L
		-35D		80	M5×0.8×80L
		-40D		85	M5×0.8×85L
		-45D		90	M5×0.8×90L
		-50D		95	M5×0.8×95L
		-75D		130	M5×0.8×130L
		-100D		155	M5×0.8×155L
CR-(CV-)	AQ2B50	-10D	12.5	45	M6×1.0×45L
		-15D		50	M6×1.0×50L
		-20D		55	M6×1.0×55L
		-25D		60	M6×1.0×60L
		-30D		65	M6×1.0×65L
		-35D		70	M6×1.0×70L
		-40D		75	M6×1.0×75L
		-45D		80	M6×1.0×80L
		-50D		85	M6×1.0×85L
		-75D		120	M6×1.0×120L
		-100D		145	M6×1.0×145L
CR-(CV-)	AQ2B63	-10D	14.5	50	M8×1.25×50L
		-15D		55	M8×1.25×55L
		-20D		60	M8×1.25×60L
		-25D		65	M8×1.25×65L
		-30D		70	M8×1.25×70L
		-35D		75	M8×1.25×75L
		-40D		80	M8×1.25×80L
		-45D		85	M8×1.25×85L
		-50D		90	M8×1.25×90L
		-75D		125	M8×1.25×125L
		-100D		150	M8×1.25×150L





AQ2 Auto Swith Attaching Bolt : Ø32, Ø40, Ø50, Ø63



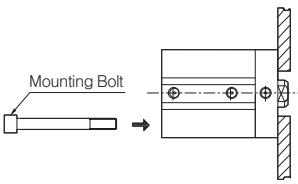
① Mounting : Through hole standard.

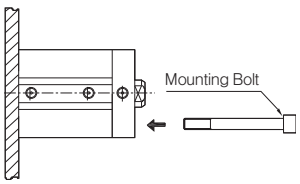
② How to order : Specify the required bolts.

Ex) Bolt M5×0.8×40L 2EA

Mounting At Rod Side					
	Bore Size	Storke	A	B	Mounting Bolt
CR-(CV-)	AQ2B32	-5D	9	50	M5×0.8×50L
		-10D		55	M5×0.8×55L
		-15D		60	M5×0.8×60L
		-20D		65	M5×0.8×65L
		-25D		70	M5×0.8×70L
		-30D		75	M5×0.8×75L
		-35D		80	M5×0.8×80L
		-40D		85	M5×0.8×85L
		-45D		90	M5×0.8×90L
		-50D		95	M5×0.8×95L
		-75D		120	M5×0.8×120L
		-100D		145	M5×0.8×145L
CR-(CV-)	AQ2B40	-5D	7.5	55	M5×0.8×55L
		-10D		60	M5×0.8×60L
		-15D		65	M5×0.8×65L
		-20D		70	M5×0.8×70L
		-25D		75	M5×0.8×75L
		-30D		80	M5×0.8×80L
		-35D		85	M5×0.8×85L
		-40D		90	M5×0.8×90L
		-45D		95	M5×0.8×95L
		-50D		100	M5×0.8×100L
		-75D		125	M5×0.8×125L
		-100D		150	M5×0.8×150L
CR-(CV-)	AQ2B50	-10D	12.5	65	M6×1.0×65L
		-15D		70	M6×1.0×70L
		-20D		75	M6×1.0×75L
		-25D		80	M6×1.0×80L
		-30D		85	M6×1.0×85L
		-35D		90	M6×1.0×90L
		-40D		95	M6×1.0×95L
		-45D		100	M6×1.0×100L
		-50D		105	M6×1.0×105L
		-75D		130	M6×1.0×130L
		-100D		155	M6×1.0×155L
CR-(CV-)	AQ2B63	-10D	14.5	70	M8×1.25×70L
		-15D		75	M8×1.25×75L
		-20D		80	M8×1.25×80L
		-25D		85	M8×1.25×85L
		-30D		90	M8×1.25×90L
		-35D		95	M8×1.25×95L
		-40D		100	M8×1.25×100L
		-45D		105	M8×1.25×105L
		-50D		110	M8×1.25×110L
		-75D		135	M8×1.25×135L
		-100D		160	M8×1.25×160L

Mounting At Head Side					
	Bore Size	Storke	A	B	Mounting Bolt
CR-(CV-)	AQ2B32	-5D	9	50	M5×0.8×50L
		-10D		55	M5×0.8×55L
		-15D		60	M5×0.8×60L
		-20D		65	M5×0.8×65L
		-25D		70	M5×0.8×70L
		-30D		75	M5×0.8×75L
		-35D		80	M5×0.8×80L
		-40D		85	M5×0.8×85L
		-45D		90	M5×0.8×90L
		-50D		95	M5×0.8×95L
		-75D		120	M5×0.8×120L
		-100D		145	M5×0.8×145L
CR-(CV-)	AQ2B40	-5D	11.5	60	M5×0.8×60L
		-10D		65	M5×0.8×65L
		-15D		70	M5×0.8×70L
		-20D		75	M5×0.8×75L
		-25D		80	M5×0.8×80L
		-30D		85	M5×0.8×85L
		-35D		90	M5×0.8×90L
		-40D		95	M5×0.8×95L
		-45D		100	M5×0.8×100L
		-50D		105	M5×0.8×105L
		-75D		130	M5×0.8×130L
		-100D	16.5	160	M5×0.8×160L
CR-(CV-)	AQ2B50	-10D	12.5	55	M6×1.0×55L
		-15D		60	M6×1.0×60L
		-20D		65	M6×1.0×65L
		-25D		70	M6×1.0×70L
		-30D		75	M6×1.0×75L
		-35D		80	M6×1.0×80L
		-40D		85	M6×1.0×85L
		-45D		90	M6×1.0×90L
		-50D		95	M6×1.0×95L
		-75D		120	M6×1.0×120L
		-100D		145	M6×1.0×145L
CR-(CV-)	AQ2B63	-10D	14.5	60	M8×1.25×60L
		-15D		65	M8×1.25×65L
		-20D		70	M8×1.25×70L
		-25D		75	M8×1.25×75L
		-30D		80	M8×1.25×80L
		-35D		85	M8×1.25×85L
		-40D		90	M8×1.25×90L
		-45D		95	M8×1.25×95L
		-50D		100	M8×1.25×100L
		-75D		125	M8×1.25×125L
		-100D		150	M8×1.25×150L





Series CR(CV)-AX

Clean Series Small Cylinder/Double Acting, Single Rod

Bore Size : Ø20, Ø25, Ø32, Ø40

- CYLINDER IN LOW PARTICLE GENERATION FOR CLEAN ROOM
- PISTON ROD IS MADE IN THE MATERIAL QUALITY OF STAINLESS STEEL TO ENHANCE RESISTANCE AGAINST MOISTURE AND OTHER CHEMICALS.
- EXCLUSIVE GREASE USE, DUST GENERATION IS MINIMIZED WHEN CYLINDER IS ACTING.
- COMPACT APPEARANCE AND LIGHTWEIGHT, EASY INSTALLATION.

How to Order

CR(CV) [1] – AX [2] B [3] 20 [4] – 125 [5] A [6] – ◯ [7] – W5 [8] ◯ [9]

[1] Clean Series
- CR : Relief Port Type
- CV : Vacuum Suction Type

[2] Air Cylinder(Double Acting, Single Rod)
- Basic type : Built-in magnet

[3] Mounting
- B : Basic type
- L : Foot type in the axial direction
- F : Type of flange at the rod side
- G : Type of flange at the head side
- BZ : Basic type of boss-cut
- FZ : Flange type boss-cut

[4] Bore Size
- 20 : 20㎜
- 25 : 25㎜
- 32 : 32㎜
- 40 : 40㎜

[5] Stroke(mm)
- 20 : 25,50,75,100,125,150,175,200,250,300
- 25 : 25,50,75,100,125,150,175,200,250,300
- 32 : 25,50,75,100,125,150,175,200,250,300
- 40 : 25,50,75,100,125,150,175,200,250,300

[6] Cushion
- Blank : Rubber cushion type
- A : Air cushion type
- ※ For boss-cut, only rubber cushion type is available.

[7] Series
- Blank : Standard type
- XC16 : Copper-free

[8] Auto Switch
- Blank : None (Cylinder with built-in magnet)
- Reed switch
- Band attached type(grommet)
- W5
- ※ The standard length of lead wire is 0.5m
- ※ For length lead wire over 3m, L is added to the end of part number. (EX) W5L
- ※ For length lead wire over 5m, please contact us.

[9] Number of Auto Switches
- Blank : 2 pcs
- S : 1 pc
- N : N pcs

Bracket/Parts Number

Bore size(mm)	20	25	32	40
Foot in the axial direction	TCM-L020B	TCM-L032B		TCM-L040B
Flange	TCM-F020B	TCM-F032B		TCM-F040B

※ Foot must be ordered in 2 units for 1 cylinder.

Band to Attach Auto Switch/Parts Number

Type of auto switch	Bore size(mm)			
	20	25	32	40
W5	TBM2-020	TBM2-025	TBM2-032	TBM2-040

■ Cautions for CR(CV)TCM2 Cylinder

This product is adapted in compliance with high purity. Make sure to read the manual prior to selecting and using the produce. Be sure to see the common cautions for clean room and actuator.

Precautions on Handling

Warning

① Rotating the cover is avoided.
When the cylinder is installed or a pipefitting is screwed into the poll, if the cover is loosened, the coupling portion of the cover could break.

② When attaching air cushion, do not use it until cushion valve is completely closed. Otherwise, Damaging cushion packing may occur. Use(-) screwdriver fitting to the hole so as to adjust cushion valve.

③ When attaching air cushion, it is preferred not to open cushion valve in excess. In event that cushion valve is used in the state of complete opening (more than 3 turns from complete closure), it may get same to cylinder without cushion and subject to excessive shock. With this phenomenon, damaging piston or cover may result. Be sure that if product is used while supplying compressed air without chocking the above matter, cushion valve may spring out from cover.

④ Since the snap ring may fly out, please be careful.
In event that the rod seal is replaced, be sure to carefully remove the snap ring, because the snap ring could fly out.

⑤ Touching the cylinder during operation should be avoided. If the cylinder is operating at a high frequency, it is needed to be check that the cylinder tube surface could become very hot creating the risk of burns.

Specifications

Bore size		Ø20, Ø25, Ø32, Ø40
Model		Relief Port Type
		Vacuum Suction Type
Operation Type		Double acting, single rod(non-lubrication)
Port Size	Ø20, 25, 32	Rc(PT) 1/8
	Ø40	Rc(PT) 1/4
Fluid		Air
Proof Pressure		1.5MPa(15kgf/㎠)
Max. Operation Pressure		1.0MPa(9.9kgf/㎠)
Min. Operation Pressure		0.05MPa(0.5kgf/㎠)
Ambient and Fluid Temperature · ℃(°F)		-10℃~70℃(anti freezing)
Cushion		Rubber, air cushion
Stroke Tolerance		Move $^{+1.4}_{0}$ mm
Piston Speed		50~750mm/s

Mounting type and parts list

Parts list / Mounting type	Standard type	
	Attaching nut	Rod end nut
Basic type	1EA	1EA
Axial direction foot type	2EA	1EA
Rod side flange type	1EA	1EA
head side flange type	1EA	1EA
Boss-cut basic type	1EA	1EA
Boss-cut flange type	1EA	1EA

Compared to the Total Length of Cylinder

(Unit : mm)

Bore Size	Ø20	Ø25	Ø32	Ø40
Downsize Length	13	13	13	16

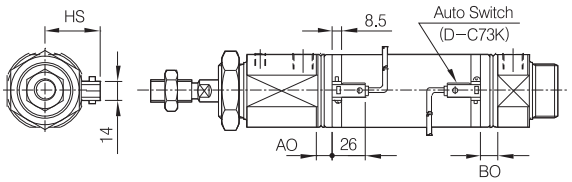
※ Boss-cut type
Boss for the head cover bracket is eliminated and the total length of the cylinder is shortened.

Minimum Auto Switch Mountable Stroke

(Unit : mm)

Auto Switch Type	No of Auto Switch				With 1 pcs.
	With 2 pcs.		With n pcs.		
W5	Different surface	Same surface	Different surface	Same surface	
	15	50	$15+45\frac{(n-2)}{2}$ (n=2,4,6,8,..)	50+45(n-2)	10

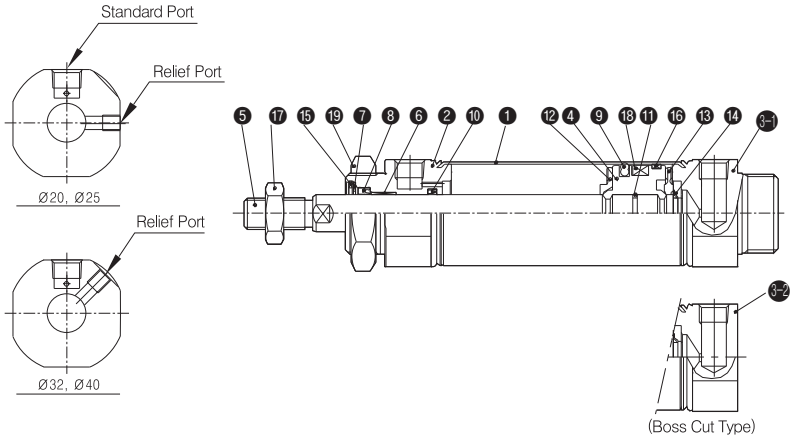
Auto Switch Set Position



Bore Size	D-C73K		
	AO	BO	HS
20	7	6	22.5
25	7	6	25
32	8	7	28.5
40	13	12	32.5

Construction / Parts List

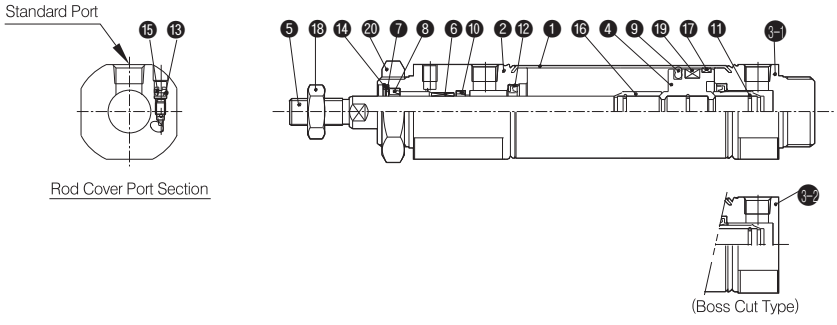
Rubber Cushion Type



No.	Description	Quantity	Material	Note
1	Cylinder tube	1	Stainless Steel	Hard White Aluminum
2	Rod cover	1	Aluminum Alloy	Hard White Aluminum
3-1	Head cover-A	1	Aluminum Alloy	Hard White Aluminum
3-2	Head cover-B	1	Aluminum Alloy	Hard White Aluminum
4	Piston	1	Aluminum Alloy	Chromate
5	Piston rod	1	Hard Chrome Plated	
6	Bush	1	Sintered Metal	
7	Packing nose	1	Nickel Plated	
8	Rod packing	1	NBR	
9	Piston packing	1	NBR	

No.	Description	Quantity	Material	Note
10	Mini-y packing	1	NBR	
11	Piston gasket	1	NBR	
12	Damper-A	1	Urethane	Rod Side Attaching
13	Damper-B	1	Urethane	Head Side Attaching
14	Stopper	1	Carbon Tool Steel	
15	Snap ring A	1	Carbon Tool Steel	Nickel Plated
16	Wear ring	1	Resin	
17	Rod end nut	1	Carbon Steel	Nickel Plated
18	Magnet ring	1	Magnet	
19	Mounting Nut	1	Nickel Plated	

Air Cushion Type

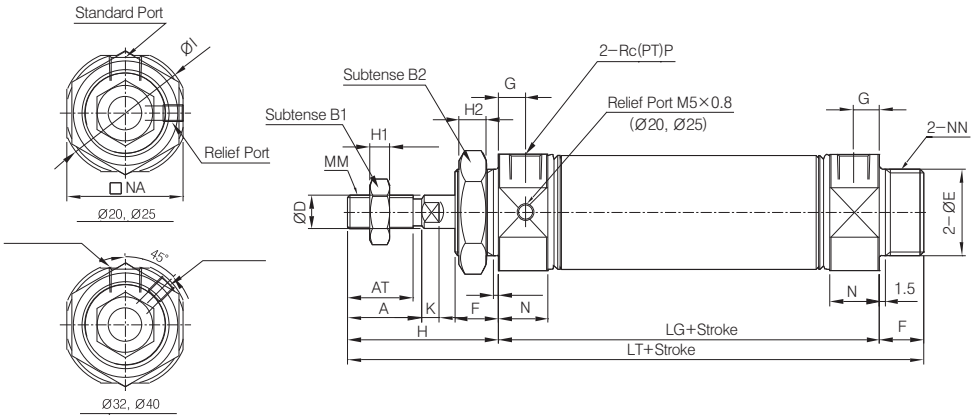


No.	Description	Quantity	Material	Note
1	Cylinder tube	1	Stainless Steel	Hard White Aluminum
2	Rod cover	1	Aluminum Alloy	Hard White Aluminum
3-1	Head cover-A	1	Aluminum Alloy	Hard White Aluminum
3-2	Head cover-B	1	Aluminum Alloy	Hard White Aluminum
4	Piston	1	Aluminum Alloy	Hard Chrome Plaed
5	Piston rod	1	Hard Chrome Plated	
6	Bush	1	Sintered Metal	
7	Packing nose	1	Nickel Plated	
8	Rod packing	1	NBR	
9	Piston packing	1	NBR	
10	Mini-y packing	1	NBR	

No.	Description	Quantity	Material	Note
11	Piston gasket	3	NBR	
12	Cushion packing	2	NBR	
13	Cushion valve O-ring	2	NBR	
14	Snap ring A	1	Carbon Tool Steel	Nickel Plated
15	Cushion valve	2	Free Cutting Steel	Nickel Plated
16	Cushion ring	2	Carbon Steel	Nickel Plated
17	wear ring	1	Resin	
18	Rod end nut	1	Carbon Steel	Nickel Plated
19	Magnet ring	1	NBR+Ba Ferrite	
20	Mounting nut	1	Nickel Plated	

Basic Type (B)

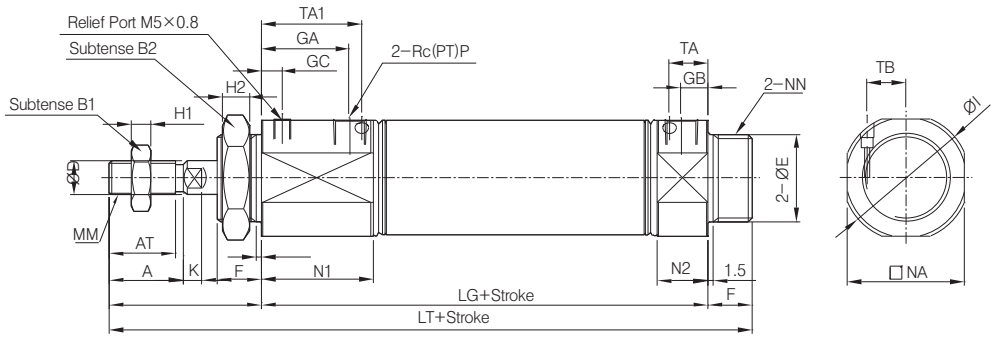
Rubber Cushion Type



(Unit : mm)

Bore Size	Standard Storke	A	AT	B1	B2	D	E	F	G	H	H1	H2	ØI	K	MM	N	NA	NN	P	LG	LT
20	25, 50	18	15.5	13	26	8	20 $^{0}_{-0.033}$	13	8	41	5	8	27	5	M8×1.25	15	24	M20×1.5	1/8	62	116
25	75,100 125,150	22	19.5	17	32	10	26 $^{0}_{-0.033}$	13	8	45	6	8	33	5.5	M10×1.25	15	30	M26×1.5	1/8	62	120
32	175,200	22	19.5	17	32	12	26 $^{0}_{-0.033}$	13	8	45	6	8	37.5	5.5	M10×1.25	15	34.5	M26×1.5	1/8	64	122
40	250,300	24	21	22	41	14	32 $^{0}_{-0.033}$	16	11	50	8	10	46.5	7	M14×1.5	21.5	42.5	M32×2	1/4	88	154

Air Cushion Type

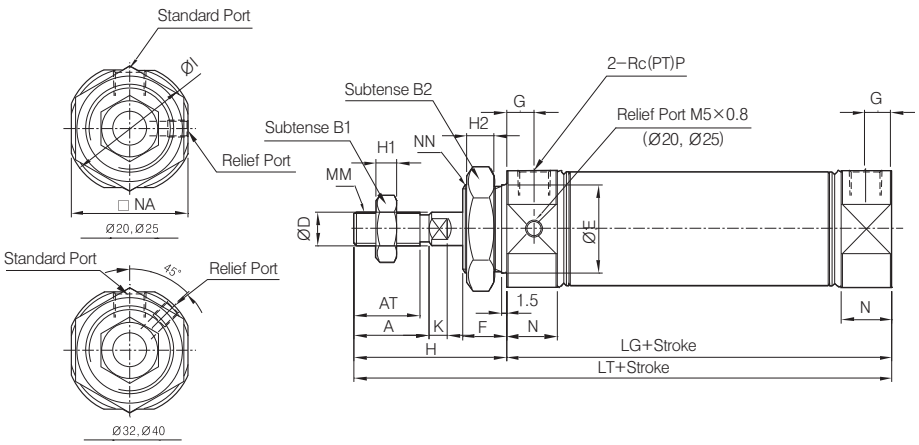


(Unit : mm)

Bore Size	Standard Storke	A	AT	B1	B2	D	E	F	GA	GB	GC	H	H1	H2	ØI	K	MM	N1	N2	NA	NN
20	25, 50	18	15.5	13	26	8	20 $^{0}_{-0.033}$	13	26	8	6	41	5	8	27	5	M8×1.25	33	15	24	M20×1.5
25	75,100 125,150	22	19.5	17	32	10	26 $^{0}_{-0.033}$	13	26	8	6	45	6	8	33	5.5	M10×1.25	33	15	30	M26×1.5
32	175,200	22	19.5	17	32	12	26 $^{0}_{-0.033}$	13	26	8	6	45	6	8	37.5	5.5	M10×1.25	33	15	34.5	M26×1.5
40	250,300	24	21	22	41	14	32 $^{0}_{-0.033}$	16	31	11	6	50	8	10	46.5	7	M14×1.5	41.5	21.5	42.5	M32×2

Bore Size	Standard Storke	P	LG	WA1	WA	WB	LT
20	25, 50	1/8	80	29.5	11.5	8.5	134
25	75,100 125,150	1/8	80	29.5	11.5	10	138
32	175,200	1/8	82	29.5	11.5	11.5	140
40	250,300	1/4	108	34.5	14.5	15	174

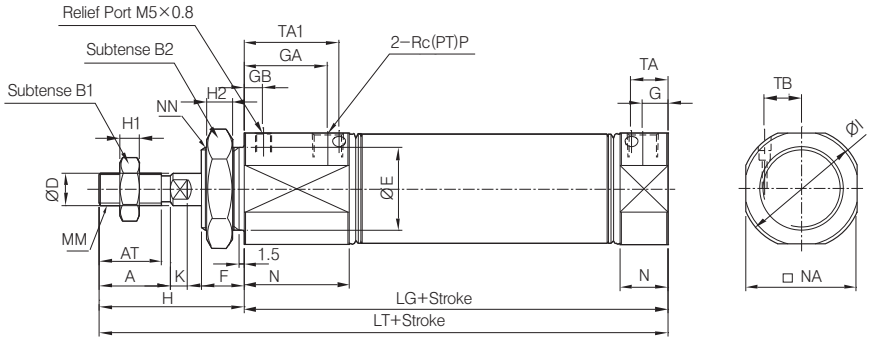
Rubber Cushion Boss-Cut Type/CR-AXBZ, CV-AXBZ



(Unit : mm)

Bore Size	Standard Storke	A	AT	K	D	N	F	E	B1	B2	MM	H1	H2	G	P	NN	ØI	NA	H	LG	LT
20	25, 50	18	15.5	5	8	15	13	20 $^{0}_{-0.033}$	13	26	M8×1.25	5	8	8	1/8	M20×1.5	27	24	41	62	103
25	75,100	22	19.5	5.5	10	15	13	26 $^{0}_{-0.033}$	17	32	M10×1.25	6	8	8	1/8	M26×1.5	33	30	45	62	107
32	125,150	22	19.5	5.5	12	15	13	26 $^{0}_{-0.033}$	17	32	M10×1.25	6	8	8	1/8	M26×1.5	37.5	34.5	45	64	109
40	175,200	24	21	7	14	21.5	16	32 $^{0}_{-0.033}$	22	41	M14×1.5	8	10	11	1/4	M32×2	46.5	42.5	50	88	138
	250,300																				

Air Cushion Boss-Cut Type/CR-AXBZ, CV-AXBZ

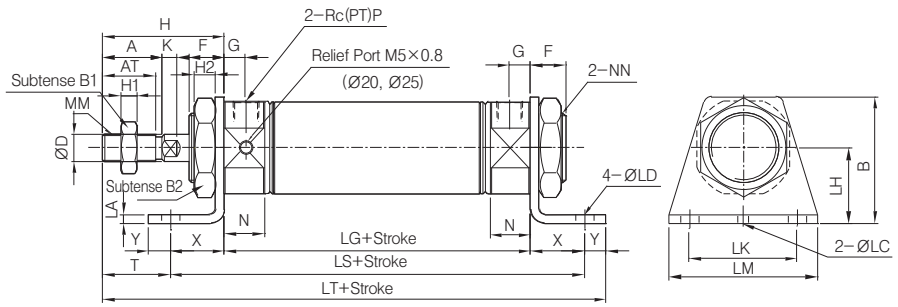


(Unit : mm)

Bore Size	Standard Storke	A	AT	K	F	N1	N	D	E	B1	B2	MM	H1	H2	G	GA	GB	P	NN	ØI	NA
20	25, 50	18	15.5	5	13	33	15	8	20 $^{0}_{-0.033}$	13	26	M8×1.25	5	8	8	26	6	1/8	M20×1.5	27	24
25	75,100	22	19.5	5.5	13	33	15	10	26 $^{0}_{-0.033}$	17	32	M10×1.25	6	8	8	26	6	1/8	M26×1.5	33	30
32	125,150	22	19.5	5.5	13	33	15	12	26 $^{0}_{-0.033}$	17	32	M10×1.25	6	8	8	26	6	1/8	M26×1.5	37.5	34.5
40	175,200	24	21	7	16	41.5	21.5	14	32 $^{0}_{-0.033}$	22	41	M14×1.5	8	10	11	31	6	1/4	M32×2	46.5	42.5
	250,300																				

Bore Size	Standard Storke	H	LG	WA1	WA	WB	LT
20	25, 50	41	80	29.5	11.5	8.5	121
25	75,100	45	80	29.5	11.5	10	125
32	125,150	45	82	29.5	11.5	11.5	127
40	175,200	50	108	34.5	14.5	15	158
	250,300						

Rubber Cushion Axial Direction Foot Mounting Type/CR-AXL, CV-AXL

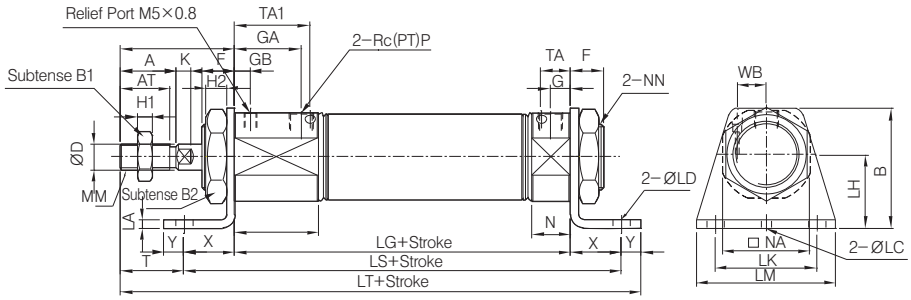


(Unit : mm)

Bore Size	Standard Storke	A	AT	K	F	N	D	B1	B2	MM	H1	H2	G	P	NN	LC	LH	LK	LM	B	H
20	25, 50	18	15.5	5	13	15	8	13	26	M8×1.25	5	8	8	1/8	M20×1.5	4	25	40	55	40	41
25	75,100	22	19.5	5.5	13	15	10	17	32	M10×1.25	6	8	8	1/8	M26×1.5	4	28	40	55	47	45
32	125,150	22	19.5	5.5	13	15	12	17	32	M10×1.25	6	8	8	1/8	M26×1.5	4	28	40	55	47	45
40	175,200	24	21	7	16	21.5	14	22	41	M14×1.5	8	10	11	1/4	M32×2	4	30	55	75	54	50
	250,300																				

Bore Size	Standard Storke	S	LG	LA	Y	X	T	LS	LT
20	25, 50	62	3.2	6.8	8	20	21	102	131
25	75,100	62	3.2	6.8	8	20	25	102	135
32	125,150	64	3.2	6.8	8	20	25	104	137
40	175,200	88	3.2	7.0	10	23	27	134	171
	250,300								

Air Cushion Axial Direction Foot Mounting Type/CR-AXL, CV-AXL

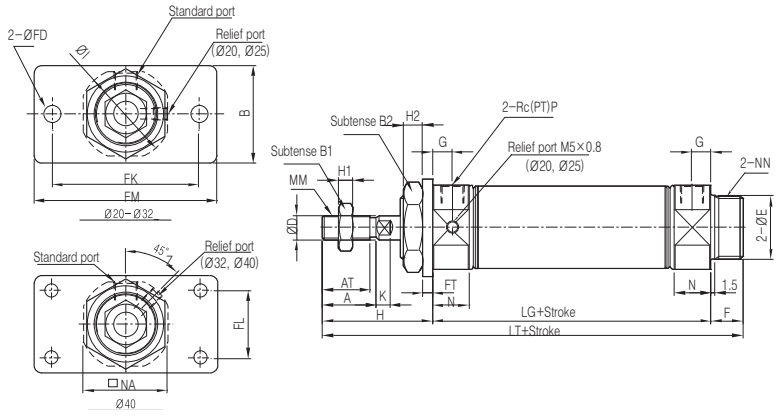


(Unit : mm)

Bore Size	Standard Storke	A	AT	K	F	N1	N	D	B1	B2	MM	H1	H2	GB	GA	G	P	NN	LC	NA	LH
20	25, 50	18	15.5	5	13	33	15	8	13	26	M8×1.25	5	8	6	26	8	1/8	M20×1.5	4	24	25
25	75,100	22	19.5	5.5	13	33	15	10	17	32	M10×1.25	6	8	6	26	8	1/8	M26×1.5	4	30	28
32	125,150	22	19.5	5.5	13	33	15	12	17	32	M10×1.25	6	8	6	26	8	1/8	M26×1.5	4	34.5	28
40	175,200	24	21	7	16	41.5	21.5	14	22	41	M14×1.5	8	10	6	31	11	1/4	M32×2	4	42.5	30
	250,300																				

Bore Size	Standard Storke	LK	LM	B	H	LG	LA	LD	Y	X	WA1	WB	WA	T	LS	LT
20	25, 50	40	55	40	41	80	3.2	6.8	8	20	29.5	8.5	11.5	21	120	149
25	75,100	40	55	47	45	80	3.2	6.8	8	20	29.5	10	11.5	25	120	153
32	125,150	40	55	47	45	82	3.2	6.8	8	20	29.5	11.5	11.5	25	122	155
40	175,200	55	75	54	50	108	3.2	7.0	10	23	34.5	15	14.5	27	154	191
	250,300															

Rubber Cushion Rod Side Flange Mounting Type/CR-AXF, CV-AXF

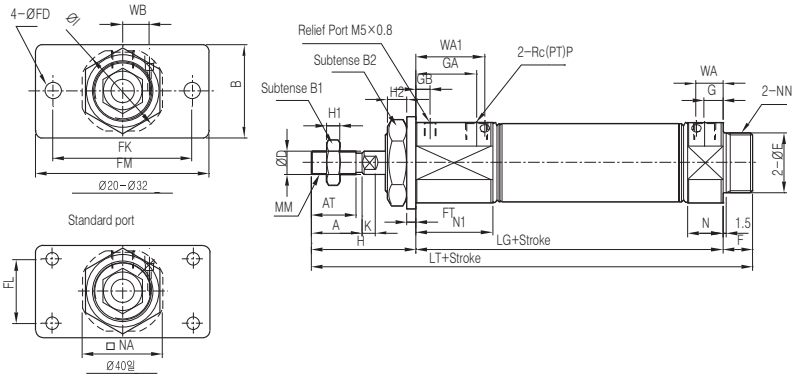


(Unit : mm)

Bore Size	Standard Storke	A	AT	K	F	FT	N	D	E	G	B1	B2	MM	H1	H2	G	P	NN	ØI	FD	NA	FL
20	25, 50	18	15.5	5	13	4	15	8	$20^{\ 0}_{-0.033}$	8	13	26	M8×1.25	5	8	8	1/8	M20×1.5	27	7	24	–
25	75,100 125,150	22	19.5	5.5	13	4	15	10	$26^{\ 0}_{-0.033}$	8	17	32	M10×1.25	6	8	8	1/8	M26×1.5	33	7	30	–
32	175,200	22	19.5	5.5	13	4	15	12	$26^{\ 0}_{-0.033}$	8	17	32	M10×1.25	6	8	8	1/8	M26×1.5	37.5	7	34.5	–
40	250,300	24	21	7	16	5	21.5	14	$32^{\ 0}_{-0.033}$	11	22	41	M14×1.5	8	10	11	1/4	M32×2	46.5	7	42.5	36

Bore Size	Standard Storke	FK	FM	B	H	LG	LT
20	25, 50	60	75	34	41	62	116
25	75,100 125,150	60	75	40	45	62	120
32	175,200	60	75	40	45	64	122
40	250,300	66	82	52	50	88	154

Air Cushion Rod Side Flange Mounting Type/CR-AXF, CV-AXF

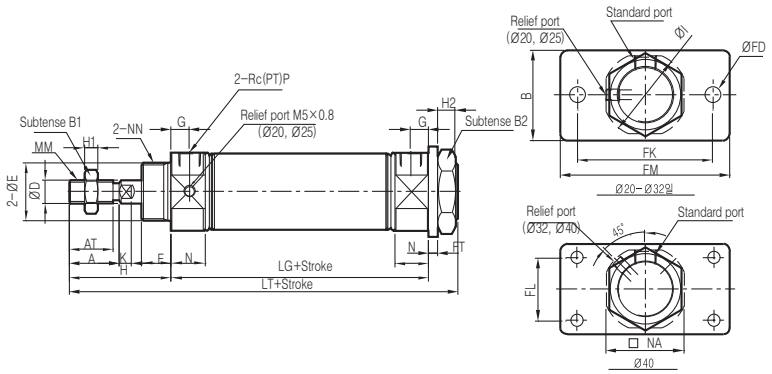


(Unit : mm)

Bore Size	Standard Storke	A	AT	K	F	FT	N1	N	D	E	B1	B2	MM	H1	H2	GB	GA	G	P	NN
20	25, 50	18	15.5	5	13	4	33	15	8	$20^{\ 0}_{-0.033}$	13	26	M8×1.25	5	8	6	26	8	1/8	M20×1.5
25	75,100 125,150	22	19.5	5.5	13	4	33	15	10	$26^{\ 0}_{-0.033}$	17	32	M10×1.25	6	8	6	26	8	1/8	M26×1.5
32	175,200	22	19.5	5.5	13	4	33	15	12	$26^{\ 0}_{-0.033}$	17	32	M10×1.25	6	8	6	26	8	1/8	M26×1.5
40	250,300	24	21	7	16	5	41.5	21.5	14	$32^{\ 0}_{-0.033}$	22	41	M14×1.5	8	10	6	31	11	1/4	M32×2

Bore Size	Standard Storke	ØI	FD	NA	FL	FK	FM	B	H	LG	WA1	WA	WB	LT
20	25, 50	27	7	24	–	60	75	34	41	80	29.5	11.5	8.5	134
25	75,100 125,150	33	7	30	–	60	75	40	45	80	29.5	11.5	10	138
32	175,200	37.5	7	34.5	–	60	75	40	45	82	29.5	11.5	11.5	140
40	250,300	46.5	7	42.5	36	66	82	52	50	108	34.5	14.5	15	174

Rubber Cushion Head Side Flange Mounting Type/CR-AXG, CV-AXG

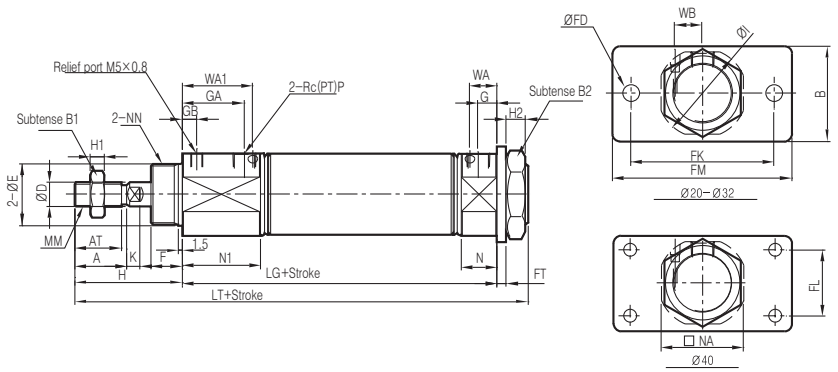


(Unit : mm)

Bore Size	Standard Storke	A	AT	C	F	FT	N	D	E	B1	B2	MM	H1	H2	G	P	NN	I	FD	NA	FL
20	25, 50	18	15.5	5	13	4	15	8	$20^{\ 0}_{-0.033}$	13	26	M8×1.25	5	8	8	1/8	M20×1.5	27	7	24	–
25	75,100	22	19.5	5.5	13	4	15	10	$26^{\ 0}_{-0.033}$	17	32	M10×1.25	6	8	8	1/8	M26×1.5	33	7	30	–
32	125,150	22	19.5	5.5	13	4	15	12	$26^{\ 0}_{-0.033}$	17	32	M10×1.25	6	8	8	1/8	M26×1.5	37.5	7	34.5	–
40	175,200 250,300	24	21	7	16	5	21.5	14	$32^{\ 0}_{-0.033}$	22	41	M14×1.5	8	10	11	1/4	M32×2	46.5	7	42.5	36

Bore Size	Standard Storke	FK	FM	B	H	LG	LT
20	25, 50	60	75	34	41	62	116
25	75,100	60	75	40	45	62	120
32	125,150 175,200	60	75	40	45	64	122
40	250,300	66	82	52	50	88	154

Air Cushion Head Side Flange Mounting Type/CR-AXG, CV-AXG



(Unit : mm)

Bore Size	Standard Storke	A	AT	K	F	FT	N1	N	D	E	B1	B2	MM	H1	H2	GB	GA	G	P	NN
20	25, 50	18	15.5	5	13	4	33	15	8	$20^{\ 0}_{-0.033}$	13	26	M8×1.25	5	8	6	26	8	1/8	M20×1.5
25	75,100	22	19.5	5.5	13	4	33	15	10	$26^{\ 0}_{-0.033}$	17	32	M10×1.25	6	8	6	26	8	1/8	M26×1.5
32	125,150 175,200	22	19.5	5.5	13	4	33	15	12	$26^{\ 0}_{-0.033}$	17	32	M10×1.25	6	8	6	26	8	1/8	M26×1.5
40	250,300	24	21	7	16	5	41.5	21.5	14	$32^{\ 0}_{-0.033}$	22	41	M14×1.5	8	10	6	31	11	1/4	M32×2

Bore Size	Standard Storke	ØI	FD	NA	FL	FK	FM	B	H	LG	WA1	WA	WB	LT
20	25, 50	27	7	24	–	60	75	34	41	80	29.5	11.5	8.5	134
25	75,100	33	7	30	–	60	75	40	45	80	29.5	11.5	10	138
32	125,150 175,200	37.5	7	34.5	–	60	75	40	45	82	29.5	11.5	11.5	140
40	250,300	46.5	7	42.5	36	66	82	52	50	108	34.5	14.5	15	174

Series CR(CV)-AXW

Clean Series Air Cylinder/Double Acting, Double Rod

Bore Size : Ø20, Ø25, Ø32, Ø40

- CYLINDER IN LOW PARTICLE GENERATION FOR CLEAN ROOM
- PISTON ROD IS MADE IN THE MATERIAL QUALITY OF STAINLESS STEEL TO ENHANCE RESISTANCE AGAINST MOISTURE AND OTHER CHEMICALS.
- EXCLUSIVE GREASE USE, DUST GENERATION IS MINIMIZED WHEN CYLINDER IS ACTING.
- COMPACT APPEARANCE AND LIGHTWEIGHT, EASY INSTALLATION.

How to Order

CR(CV) [1] — AXW [2] B [3] 20 [4] — 125 [5] — ○ [6] — W5 [7] ○ [8]

[1] Clean Series
- CR : Relief Port Type
- CV : Vacuum Suction Type

[2] Air Cylinder(double acting, single rod)
- Basic type : Built-in magnet

[3] Mounting
- B : Basic type
- L : Foot type in the axial direction
- F : Type of flange at the rod side

[4] Bore Size
- 20 : 20㎜
- 25 : 25㎜
- 32 : 32㎜
- 40 : 40㎜

[5] Stroke(mm)
- 20 : 25,50,75,100,125,150,175,200,250,300
- 25 : 25,50,75,100,125,150,175,200,250,300
- 32 : 25,50,75,100,125,150,175,200,250,300
- 40 : 25,50,75,100,125,150,175,200,250,300

[6] Series
- Blank : Standard Type
- XC16 : Anti Freezing

[7] Auto switch
- Blank : None (cylinder with built-in magnet)
- Reed switch
- Band attached type(grommet)
- W5
- ※ The standard length of lead wire is 0.5m
- ※ For length lead wire over 3m, L is added to the end of part number. (EX) W5L
- ※ For length lead wire over 5m, please contact us.

[8] Number of Auto Switches
- Blank : 2 pcs
- S : 1 pc
- N : N pcs

Bracket/Parts Number

Bore size	20	25	32	40
Foot in the axial direction	TCM-L020B	TCM-L032B		TCM-L040B
Flange	TCM-F020B	TCM-F032B		TCM-F040B

※ Foot must be ordered in 2 units for 1 cylinder.

Band to Attach Auto Switch/Parts Number

Type of Auto Switch	Bore size(㎜)			
	20	25	32	40
W5	TBM2-020	TBM2-025	TBM2-032	TBM2-040

■ Cautions for CR(CV)AXCylinder

This product is adapted in compliance with high purity. Make sure to carefully read the manual prior to selecting and using the produce. It is needed to see the common cautions for clean room and actuator.

Precautions on Handling

Warning

1. Do not rotate the cover.
   While the cylinder or screwing a pipefitting into the poll is being installed, if the cover is loosened, the coupling portion of the cover could break.
2. If air cushion is attached, using it is avoided until cushion valve is completely closed. Otherwise, damaging cushion packing results. Use(-) screwdriver fitting to the hole so as the adjust cushion valve.
3. When air cushion is attached, opening cushion valve in excess should be avoided. When it is needed to use cushion valve in the state of complete opening(more than 3 turns from complete closure), it gets same to cylinder without cushion and subject to excessive shock. With this phenomenon, damaging piston or cover results. If product is used while supplying compressed air without chocking the above matter, cushion valve may spring out from cover.
4. Be careful with the snap ring that could fly out.
   In order to replace the rod seal, it is needed to be careful with the removal of the snap ring because the snap ring could fly out.
5. Touching the cylinder during operation should be avoided. When the cylinder is operating at a high frequency, it is needed to be aware that the cylinder tube surface could become very hot creating the risk of burns.

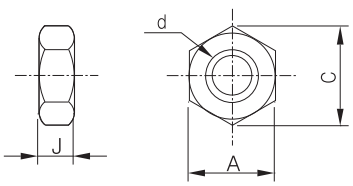
Specifications

Bore size		Ø20, Ø25, Ø32, Ø40
Model		Relief Port Type
		Vacuum Suction Type
Action		Double acting, single rod(non-lubrication)
Port Size	Ø20, 25, 32	Rc(PT) 1/8
	Ø40	Rc(PT) 1/4
Fluid		Air
Proof Pressure		1.5MPa(15.3kgf/㎠)
Max. Operation Pressure		1.0MPa(9.9kgf/㎠)
Min. Operation Pressure		0.05MPa(0.5kgf/㎠)
Ambient and Fluid Temperature · ℃(°F)		-10℃~70℃(anti freezing)
Cushion		Rubber, Air Cushion
Stroke Tolerance		$^{+1.4}_{0}$ mm
Piston Speed		50~400mm/s

Mounting Type and Parts List

Parts List / Mounting Type	Standard Type	
	Attaching Nut	Red End Nut
Basic Type	1EA	2EA
Axial Direction Foot Type	2EA	2EA
Flange Type	1EA	2EA

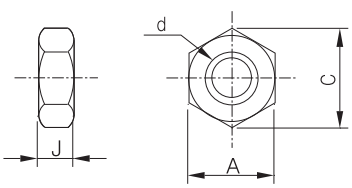
Rod End Nut



(Unit : mm)

No.	Bore Size(㎜)	A	C	D	d	J
TNT-02	20	13	15.5	12.5	M8×1.25	5
TNT-03	25, 32	17	19.6	16.5	M10×1.25	6
TNT-04	40	22	25.4	21.0	M14×1.5	8

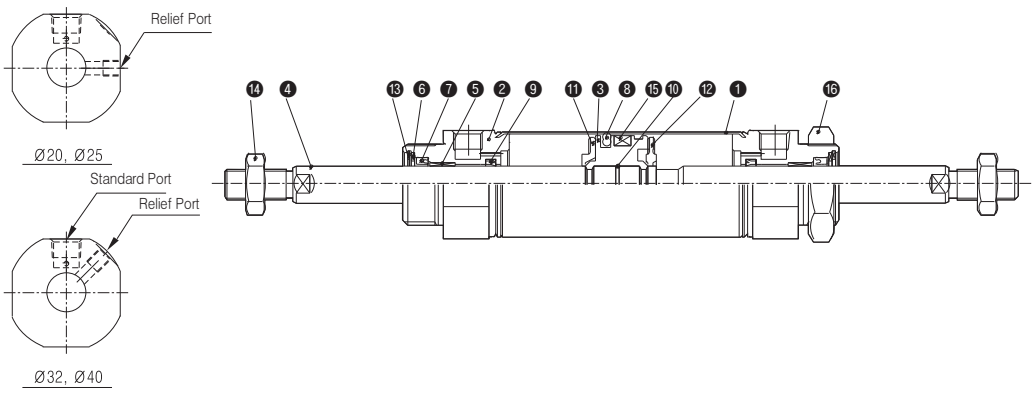
Attaching Nut



(Unit : mm)

No.	Bore Size(㎜)	A	C	D	d	J
TSN-020B	20	26	30	25.5	M20×1.5	8
TSN-032B	25, 32	32	37	31.5	M26×1.5	8
TSN-040B	40	41	47.3	40.5	M32×2.0	10

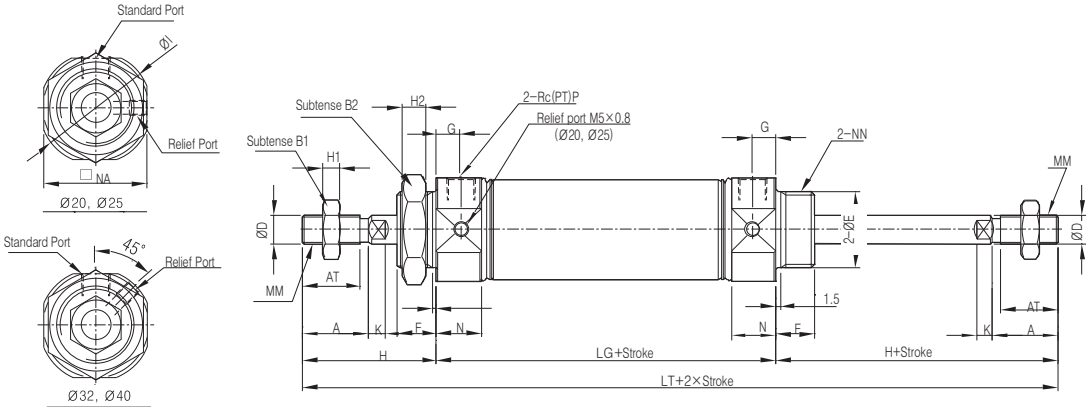
Construction/Parts List



No.	Description	Quantity	Material	Note
1	Cylinder tube	1	Stainless Steel	
2	Rod cover	2	Aluminum Alloy	Hard White Aluminum
3	Piston	1	Aluminum Alloy	Chromate
4	Piston rod	1	Stainless Steel	Hard Chrome Plated
5	Bush	2	Sintered Alloy	
6	Packing nose	2	Rolled Steel	Nickel Plated
7	Rod packing	2	NBR	
8	Piston packing	1	NBR	

No.	Description	Quantity	Material	Note
9	Mini_y packing	2	NBR	
10	Piston gasket	1	NBR	
11	Damper-A	1	Urethane	Rod Side Attaching
12	Damper-B	1	Urethane	Head Side Attaching
13	Snap ring A	2	Carbon Tool Steel	Nickel Plated
14	Rod end nut	2	Carbon Steel	Nickel Plated
15	Magnet ring	1	NBR+Ba Ferrite	
16	Mounting nut	1	Carbon Steel	

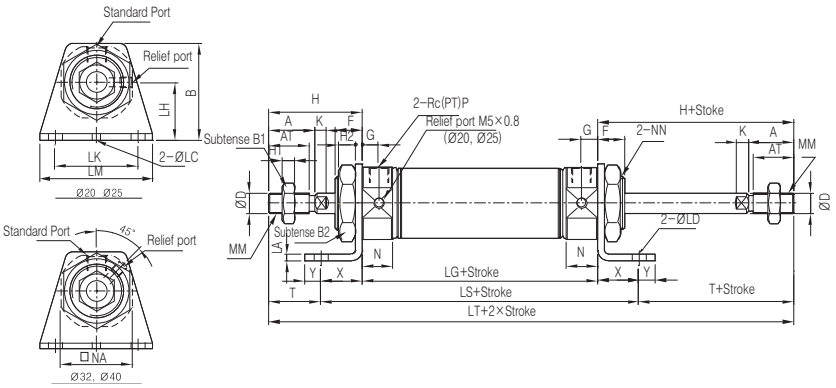
Basic Type/CR-AXWB, CV-AXWB



(Unit : mm)

Bore Size	Standard Storke	A	AT	B1	B2	D	E	F	G	H	H1	H2	ØI	K	MM	N	NA	NN	P	LG	LT
20	25, 50	18	15.5	13	26	8	$20^{0}_{-0.033}$	13	8	41	5	8	27	5	M8×1.25	15	24	M20×1.5	1/8	62	144
25	75,100	22	19.5	17	32	10	$26^{0}_{-0.033}$	13	8	45	6	8	33	5.5	M10×1.25	15	30	M26×1.5	1/8	62	152
32	125,150 175,200	22	19.5	17	32	12	$26^{0}_{-0.033}$	13	8	45	6	8	37.5	5.5	M10×1.25	15	34.5	M26×1.5	1/8	64	154
40	250,300	24	21	22	41	14	$32^{0}_{-0.033}$	16	11	50	8	10	46.5	7	M14×1.5	21.5	42.5	M32×2	1/4	88	188

Rubber Cushion Axial Direction Foot Mounting Type/CR-AXWL, CV-AXWL

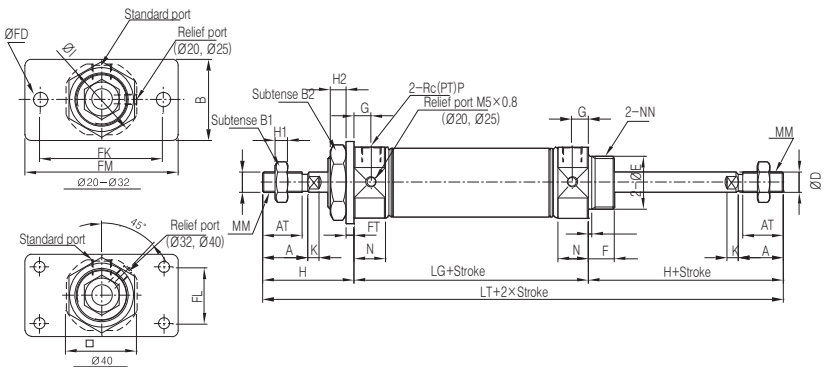


(Unit : mm)

Bore Size	Standard Storke	A	AT	K	F	N	D	B1	B2	MM	H1	H2	G	P	NN	LC	NA	LH	LK	LM	B
20	25, 50	18	15.5	5	13	15	8	13	26	M8×1.25	5	8	8	1/8	M20×1.5	4	24	25	40	55	40
25	75,100	22	19.5	5.5	13	15	10	17	32	M10×1.25	6	8	8	1/8	M26×1.5	4	30	28	40	55	47
32	125,150	22	19.5	5.5	13	15	12	17	32	M10×1.25	6	8	8	1/8	M26×1.5	4	34.5	28	40	55	47
40	175,200	24	21	7	16	21.5	14	22	41	M14×1.5	8	10	11	1/4	M32×2	4	42.5	30	55	75	54
	250,300																				

Bore Size	Standard Storke	H	LG	LA	LD	Y	X	T	LS	LT
20	25, 50	41	62	3.2	6.8	8	20	21	102	144
25	75,100	45	62	3.2	6.8	8	20	25	102	152
32	125,150	45	64	3.2	6.8	8	20	25	104	154
40	175,200	50	88	3.2	7.0	10	23	27	134	188
	250,300									

Flange Mounting Type/CR-AXWF, CV-AXWF



(Unit : mm)

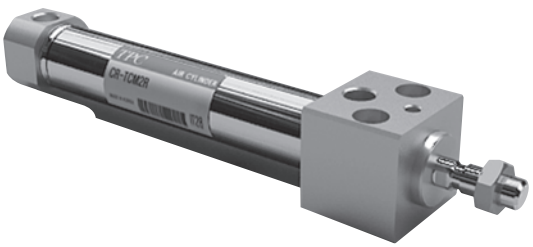
Bore Size	Standard Storke	A	AT	C	F	FT	N	D	E	B1	B2	MM	H1	H2	G	P	NN	ØI	FD	NA	FL
20	25, 50	18	15.5	5	13	4	15	8	$20\ ^{0}_{-0.033}$	13	26	M8×1.25	5	8	8	1/8	M20×1.5	27	7	24	–
25	75,100	22	19.5	5.5	13	4	15	10	$26\ ^{0}_{-0.033}$	17	32	M10×1.25	6	8	8	1/8	M26×1.5	33	7	30	–
32	125,150	22	19.5	5.5	13	4	15	12	$26\ ^{0}_{-0.033}$	17	32	M10×1.25	6	8	8	1/8	M26×1.5	37.5	7	34.5	–
40	175,200	24	21	7	16	5	21.5	14	$32\ ^{0}_{-0.033}$	22	41	M14×1.5	8	10	11	1/4	M32×2	46.5	7	42.5	36
	250,300																				

Bore Size	Standard Storke	FK	FM	B	H	LG	LT
20	25, 50	60	75	34	41	62	144
25	75,100	60	75	40	45	62	152
32	125,150	60	75	40	45	64	154
40	175,200	66	82	52	50	88	188
	250,300						

Series CR(CV)-AXR

Clean Series Small Cylinder/Direct Mount Cylinder

Bore Size : Ø20, Ø25, Ø32, Ø40



- CYLINDER IN LOW PARTICLE GENERATION FOR CLEAN ROOM
- PISTON ROD IS MADE IN THE MATERIAL QUALITY OF STAINLESS STEEL TO ENHANCE RESISTANCE AGAINST MOISTURE AND OTHER CHEMICALS.
- EXCLUSIVE GREASE USE, DUST GENERATION IS MINIMIZED WHEN CYLINDER IS ACTING.

How to Order

CR(CV) — AXR A 20 — 125 — ◯ — W5 ◯

1 2 3 4 5 6 7 8

1 Clean Series
CR : Relief Port Type
CV : Vacuum Suction Type

2 Small Cylinder(Direct Mount)
Basic type : Built-in magnet

3 Mounting
A : Bottom side mounting
B : Front side mounting

4 Bore Size
20 : 20㎜ 25 : 25㎜
32 : 32㎜ 40 : 40㎜

5 Stroke(mm)
20 : 25,50,75,100,125,150,175,200,250,300
25 : 25,50,75,100,125,150,175,200,250,300
32 : 25,50,75,100,125,150,175,200,250,300
40 : 25,50,75,100,125,150,175,200,250,300

6 Series
Blank : Standard Type
XC16 : Copper-free

7 Auto switch
Blank : None
(cylinder with built-in magnet)
Reed switch
- Band attached type(grommet)
- W5
※ The standard length of lead wire is 0.5m
※ For length lead wire over 3m, L is added to the end of part number. (EX) W5L
※ For length lead wire over 5m, please contact us.

8 Number of Auto Switches
Blank : 2 pcs
S : 1 pc
N : N pcs

Band to Attach Auto Switch/Parts Number

Type of auto switch	Bore Size(㎜)			
	20	25	32	40
W5	TBM2-020	TBM2-025	TBM2-032	TBM2-040

■ Cautions for CR(CV)AX Cylinder

This product is usable in compliance with high purity. Be sure to read the manual before selecting and using the product. Refer to the common cautions for clean room and actuator.

Precautions on handling

Warning

- Touching the cylinder during operation should be avoided when the cylinder is operating at a high frequency, it is needed to be aware that the cylinder tube surface could become very hot, creating the risk of burns.

Feature

1. Space saving configuration.
   Without using brackets, because it is a directly mounted style, its overall length is shorter, and its installation pitch can be made smaller. Therefore, the space needed for installation has been significantly reduced.
2. Installation accuracy and strength improved.
3. Two styles of installation.
   There are two styles of installation, and the styles can be selected according to the purpose; thus the front mounting style and the bottom mounting style.

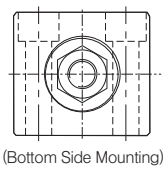
Specifications

Bore size		Ø20, Ø25, Ø32, Ø40
Model		Relief Port Type
		Vacuum Suction Type
Action		Double Acting, Single Rod(non-lubrication)
Port Size	Ø20, 25, 32	Rc(PT) 1/8
	Ø40	Rc(PT) 1/4
Fluid		Air
Proof Pressure		1.5MPa(15.3kgf/㎠)
Max. Operation Pressure		1.0MPa(9.9kgf/㎠)
Min. Operation Pressure		0.05MPa(0.5kgf/㎠)
Ambient and Fluid Temperature · ℃(°F)		−10℃~70℃(anti freezing)
Cushion		Rubber cushion basic
Stroke Tolerance		$^{+1.4}_{0}$ mm
Piston Speed		50~400mm/s
Mounting		Bottom side, front side mounting type

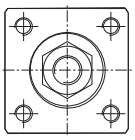
Mounting type and ports list

Ports List / Mounting Type	Standard type
	Red End Nut
Bottom Side Mounting Type	1EA
Front Side Mounting Type	1EA

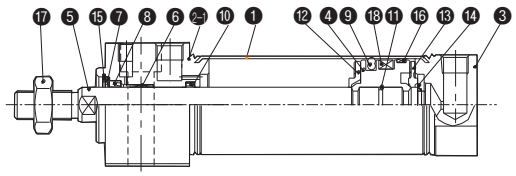
Construction / Parts List

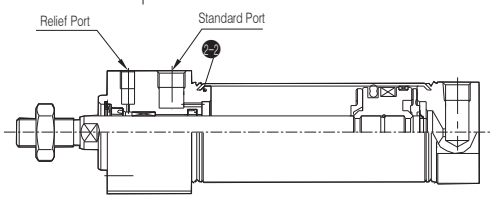


(Bottom Side Mounting)



(Front Side Mounting)

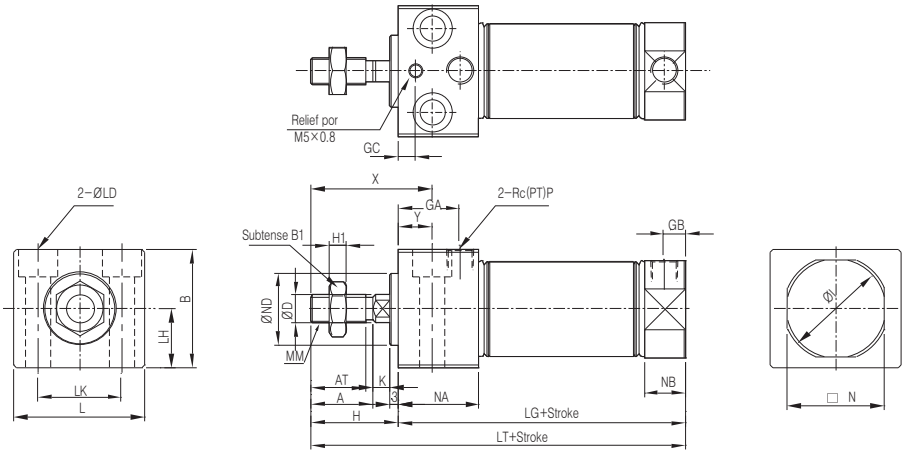




No.	Description	Quantity	Material	Note
1	Cylinder tube	1	Stainless Steel	
2-1	Rod cover-A	1	Aluminum alloy	Hard white aluminum
2-2	Rod cover-B	1	Aluminum alloy	Hard white aluminum
3	Head cover-B	1	Aluminum alloy	Hard white aluminum
4	Piston	1	Aluminum alloy	Chromate
5	Piston rod	1	Stainless Steel	Hard chrome Plated
6	Bush	1	Sintered alloy	
7	Packing nose	1	Rolled steel	Nickel Plated
8	Rod packing	1	NBR	
9	Piston packing	1	NBR	

No.	Description	Quantity	Material	Note
10	Mini_y packing	1	NBR	
11	Piston gasket	1	NBR	
12	Damper-A	1	Urethane	Rod side atlaching
13	Damper-B	1	Urethane	Head side atlaching
14	Stopper	1	Carbon Tool Steel	
15	Snap ring A	1	Carbon Tool Steel	Nickel Plated
16	Wear ring	1	Resin	
17	Rod end nut	1	Carbon steel	Nickel Plated
18	Magnet ring	1	NBR+Ba Ferrite	

Bottom Side Mounting Type/CR-AXRA, CV-AXRA

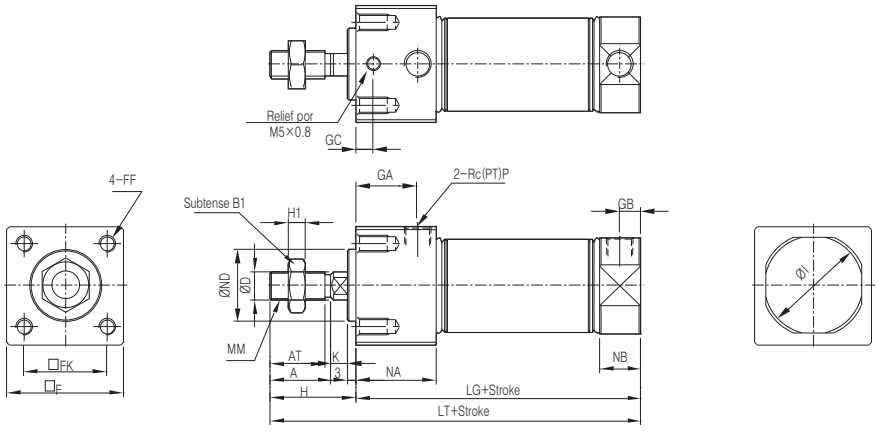


(Unit : mm)

Bore Size	Standard Storke	A	AT	B	B1	D	GA	GB	GC	H	H1	ØI	K	L	LD	LH	LK	MM	N
20	25, 50	18	15.5	30.3	13	8	22	8	6	27	5	27	5	33.5	Ø5.5, C/BØ9.5 Depth 6.5	15	21	M8×1.25	24
25	75,100	22	19.5	36.3	17	10	22	8	6	31	6	33	5.5	39	Ø6.6, C/BØ11 Depth 7.5	18	25	M10×1.25	30
32	125,150	22	19.5	42.3	17	12	22	8	7	31	6	37.5	5.5	47	Ø9, C/BØ14 Depth 10	21	30	M10×1.25	34.5
40	175,200	24	21	52.3	22	14	27	11	9	34	8	46.5	7	58.5	Ø11, C/BØ17.5 Depth 12.5	26	38	M14×1.5	42.5
	250,300																		

Bore Size	Standard Storke	NA	NB	ND	P	LG	X	Y	LT
20	25, 50	29	15	$20\ ^{0}_{-0.033}$	1/8	76	39	12	103
25	75,100	29	15	$26\ ^{0}_{-0.033}$	1/8	76	43	12	107
32	125,150	29	15	$26\ ^{0}_{-0.033}$	1/8	78	43	12	109
40	175,200	37.5	21.5	$32\ ^{0}_{-0.033}$	1/4	104	49	15	138
	250,300								

Front Side Mounting Type/CR-AXRB, CV-AXRB



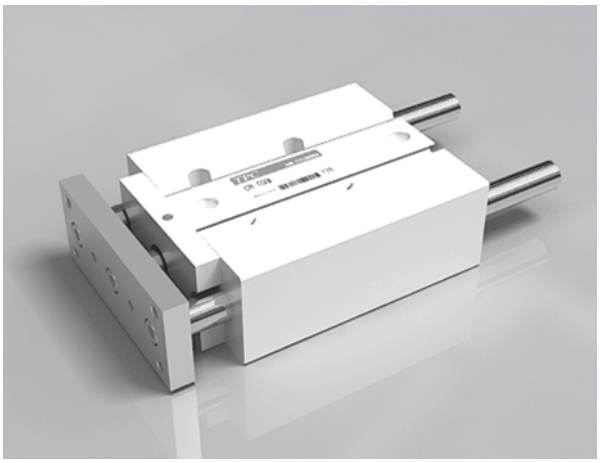
(Unit : mm)

Bore Size	Standard Storke	A	AT	F	FF	FK	B1	D	GA	GB	GC	H	H1	ØI	K	MM	N	NA	NB	ND	P	LG	LT
20	25, 50	18	15.5	30.4	M5×0.8, Depth 9	22	13	8	22	8	6	27	5	27	5	M8×1.25	24	29	15	$20\ ^{0}_{-0.033}$	1/8	76	103
25	75,100	22	19.5	36.4	M6×1, Depth 11	26	17	10	22	8	6	31	6	33	5.5	M10×1.25	30	29	15	$26\ ^{0}_{-0.033}$	1/8	76	107
32	125,150	22	19.5	42.4	M6×1, Depth 11	30	17	12	22	8	7	31	6	37.5	5.5	M10×1.25	34.5	29	15	$26\ ^{0}_{-0.033}$	1/8	78	109
40	175,200	24	21	52.4	M8×1.25, Depth 14	36	22	14	27	11	9	34	8	46.5	7	M14×1.5	42.5	37.5	21.5	$32\ ^{0}_{-0.033}$	1/4	104	138
	250,300																						

Series CR(CV)-AGL

Clean Series Compact Guide Cylinder

Bore Size : Ø12, Ø16, Ø20, Ø25, Ø32, Ø40, Ø50, Ø63



- CYLINDER IN LOW PARTICLE GENERATION FOR CLEAN ROOM
- PISTON ROD IS MADE IN THE MATERIAL QUALITY OF STAINLESS STEEL TO ENHANCE RESISTANCE AGAINST MOISTURE AND OTHER CHEMICALS.
- EXCLUSIVE GREASE USE, DUST GENERATION IS MINIMIZED WHEN CYLINDER IS ACTING.
- GUIDE ONE-BODY TYPE THAT REALIZES COLD HORIZONTAL LOAD, HIGH PRECISION AND PREVENTION OF ROTATION

How to Order

CR(CV) — AG L 20 — 75 — W4 ○

1 2 3 4 5 6 7

1 Clean Series
CR : Relief Port Type
CV : Vacuum Suction Type

2 Compact Cylinder with Guide
Magnet, Bumper, No lubrication
Are Standard Type

3 Bearing
L : Ball bush bearing

4 Bore Size
12 : 12㎜ 16 : 16㎜
20 : 20㎜ 25 : 25㎜
32 : 32㎜ 40 : 40㎜
50 : 50㎜ 63 : 63㎜

5 Stroke(mm)
12 : 10, 20, 30, 40, 50, 75, 100
16 : 10, 20, 30, 40, 50, 75, 100
20 : 20, 30, 40, 50, 75, 100
25 : 20, 30, 40, 50, 75, 100
32 : 25, 50, 75, 100, 125, 150
40 : 25, 50, 75, 100, 125, 150
50 : 25, 50, 75, 100, 125, 150
63 : 25, 50, 75, 100, 125, 150

6 Auto Switch
Blank : None
(cylinder with built-in magnet)
Reed Switch
- W4(W4, 2 or 3 lines DC 24V, AC110V)
- W13(2 lines, DC 24V, AC110V)

Reed Switch
- W1H(3 lines, DC 24V)

※ The standard length of lead wire is 0.5m
For length lead wire over 3m, L is added to the end of part number.
ex) W13M, W1HL
(Ø12~25 : W13 and W1H are applied)
(Ø32~63 : W4 is applied)

7 Number of Auto Switches
Blank : 2 pcs
S : 1 pc
N : N pcs

Cautions

* Production of middle stroke
By installing spacer in the cylinder of standard stroke, it is possible to produce middle stroke at every 5㎜.
Ex) For AGL20~25, spacer with width of 5㎜ is installed in the cylinder of standard stroke AGL20~30.

■ Caution of AGL CR(CV)

This product may be adapted in compliance with high purity. It is needed to make sure to check the manual prior to selecting and using the product. It is needed to see the common cautions for clean room and actuator.

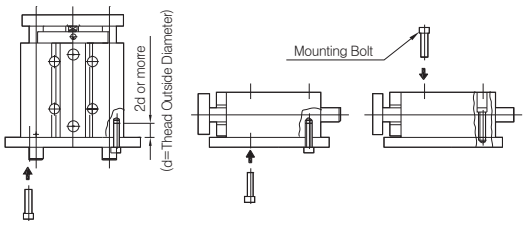
Mounting

Warning

Placing your hands or fingers between the plate and the body should be avoided.
Be sure to prevent your hands or fingers from setting caught in the gap between the cylinder body and the plate when air is applied.

Caution

1. Scratch or gouging the sliding portion of the piston rod and the guide rod should be avoided.
   Otherwise, this will cause the seals to become damaged, leading to air leaks.
2. Being mounted on the bottom of the cylinder, the guide rod protrudes from the bottom at the retraction stroke end. Drill holes for the hexagon socket bolts used for mounting purposes, and relief holes for the guide rods. Also, for an application in which impacts such as those of a stopper are applied, be sure to checkthat the screw-in depth for the mounting bolts is more than 2d.



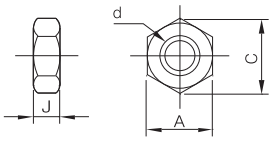
Bottom Mounting Side Mounting Upper Mounting

Specifications

Bore size		Ø12, Ø16, Ø20, Ø25, Ø32, Ø40, Ø50, Ø63
Model		Relief Port Type
		Vacuum Suction Type
Action		Double acting, single rod(non-lubrication)
Port Size	Ø12,Ø16	M5×0.8
	Ø20,Ø25,Ø32,Ø40,	Rc(PT) 1/8
	Ø50,Ø63	Rc(PT) 1/4
Fluid		Air
Proof Pressure		1.5MPa(15.3kgf/㎠)
Max. Operation Pressure		1.0MPa(9.9kgf/㎠)
Min. Operation Pressure	Ø12,Ø16	0.12MPa(1.2kgf/㎠)
	Ø20~Ø63	0.1MPa(1kgf/㎠)
Ambient and Fluid Temperature · ℃(°F)		-10℃~60℃(anti freezing)
Cushion		Rubber Cushion Type Basic
Stroke Tolerance		$^{+1.5}_{0}$mm
Piston Speed		50~400mm/s

Bore size(㎜)	Non-Rotation Accuracy
12	±0.10°
16	
20	±0.09°
25	
32	±0.08°
40	
50	±0.06°
63	

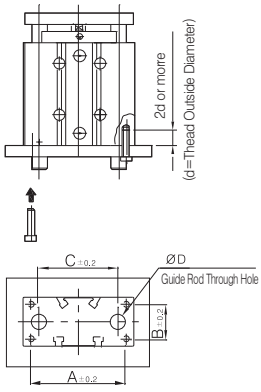
Hexagon Nut (Material:Rolled steel / Nickel plated)



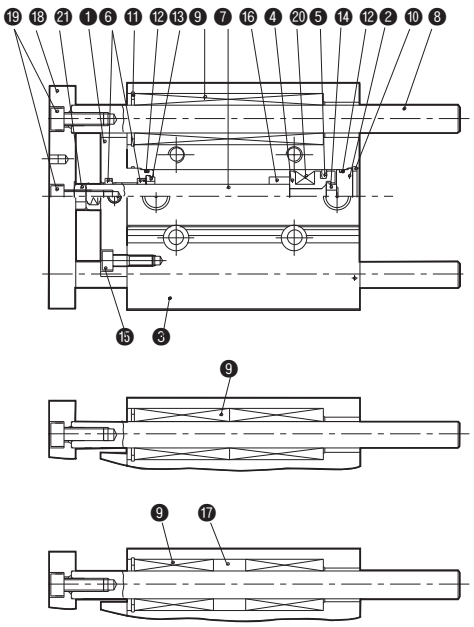
No.	Bore Size(㎜)	d	J	A	C
TC1P006-13B(Nickel)	12	M3×0.5	2.4	5.5	6.4
TC1P010-13B(Nickel)	16	M4×7.0	3.2	7	8.1
NTJ-015A(Nickel)	20	M5×8.0	4	8	9.2
NT-015A(Nickel)	25	M6×1.0	5	10	11.5
NT-02(Nickel)	32, 40	M8×1.25	5	13	15
M10×1.5(Nickel)	50, 63	M10×1.5	6	17	19.6

(Unit :㎜)

Bore Size	A	B	C	D	Hex.cap screw for mounting
12	50	18	46	8	M4×0.7
16	56	22	50	10	M5×0.8
20	72	24	58	12	M5×0.8
25	82	30	68	15	M6×1.0
32	80	38	80	18	M8×1.25
40	90	38	90	18	M8×1.25
50	100	44	100	22	M10×1.5
63	110	44	110	22	M10×1.5

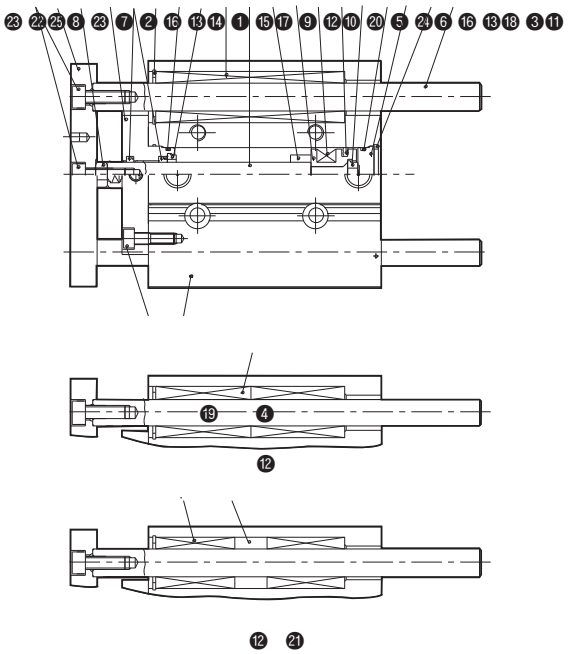


Construction/Parts List : CR-AGL 12~40/CV-AGL 12~40



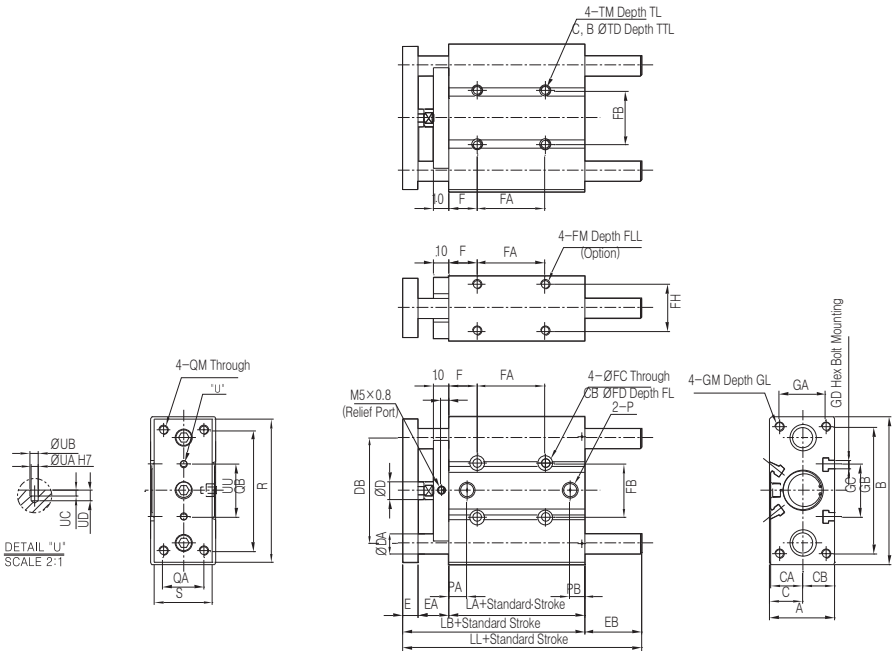
No	Description	Quantity	Material	Note
1	Rod cover	1	Aluminum Alloy	White aluminum
2	Head cover	1	Aluminum Alloy	White aluminum
3	Cylinder tube	1	Aluminum Alloy	
4	Piston	1	Aluminum Alloy	
5	Piston packing	1	NBR	
6	Rod packing	2 (1)	NBR	(When CV type, left side exclusion)
7	Piston rod	1	Stainless Steel	Hard chrome Plated
8	Guide rod-L	2	Bearing Steel	Hard chrome Plated
9	Ball bearing(Note1)	2 (4)	Bearing Steel	
10	Snap ring-A	1	Carbon Tool Steel	Nickel Plated
11	Snap ring-B	2	Carbon Tool Steel	Nickel Plated
12	Gasket	2	NBR	
13	Bumper "A"	1	Urethane	Rod Cover Mounting
14	Bumper "B"	1	Urethane	Piston Mounting
15	Mounting bolt	2	Stainless Steel	
16	Spacer(Note2)	(1)	Aluminum Alloy	
17	Guide spacer-L(Note3)	(2)	Aluminum Slloy	
18	Plate-L	1	Carbon Steel	Nickel Plated
19	Plate mounting bolt	3	Stainless Steel	
20	Magnet	1	Neodium	
21	Hex. nut	1	Carbon Steel	Nickel Plated

Construction/Parts List : CR-AGL 50, 63/CV-AGL 50, 63



No	Description	Quantity	Material	Note
1	Rod cover	1	Aluminum Alloy	White aluminum
2	Rod cover	1	Aluminum Alloy	White aluminum
3	Head cover	1	Aluminum Alloy	White aluminum
4	Cylinder tube	1	Aluminum Alloy	
5	Piston	1	Aluminum Alloy	
6	Piston packing	1	NBR	
7	Rod packing	1	NBR	
8	Rod packing	(1)	NBR	(When CV type, left side exclusion)
9	Bush	1	Lead branze	
10	Piston rod	1	Stainless Steel	Hard chrome Plated
11	Guide rod-L	2	Bearing steel	Hard chrome Plated
12	Ball bearing	2 (4)	Bearing steel	
13	Snap ring-A	2	Carbon Tool Steel	
14	Snap ring-B(Note1)	2	Carbon Tool Steel	
15	Gasket	1	NBR	
16	Head cover gasket	2	NBR	
17	Bumper "A"	1	Urethane	Rod Cover Mounting
18	Bumper "B"	1	Urethane	Piston Mounting
19	Mounting bolt	2	Stainless Steel	
20	Spacer(Note1)	(1)	Aluminum Alloy	
21	Guide spacer-L(Note1)	(2)	Aluminum Alloy	
22	Plate-L	1	Carbon Steel	Nickel Plated
23	Plate mounting bolt	3	Stainless Steel	
24	Magnet	1	ϕ12~ϕ16: Neodium ϕ20~ϕ63:NBR+Ba Ferrite	
25	Hex. nut	1	Carbon Steel	Nickel Plated

CR-AGL 12~25, CV-AGL 12~25



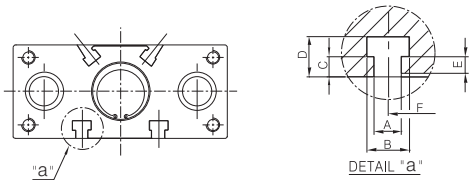
(Unit : mm)

Bore Size	A	B	C	CA	CB	D	DA	DB	E	EA	EB					F	FA		FB	FC	FD	FL	FH	FM	FLL	GA	GB	GC	GD
											10st	20st	30st	40,50st	51st or More		30st or Below	30st or More											
12	26	60	13	12.5	13	6	6	46	8	16	2.2	12.2	12.2	22.2	27.2	7	20	40	25	4.3	8	13.5	18	M5×0.8	12	18	50	23	M3
16	30	67	15	14.5	15	8	8	50	8	18	2.2	18.2	18.2	28.2	33.2	7	24	44	27	4.3	8	12.5	22	M5×0.8	12	22	56	24	M3
20	36	85	18	17.5	18	10	10	58	10	19	–	9	27	37	42	18	24	44	31	5.5	9.5	13.5	24	M5×0.8	13	24	72	28	M5
25	42	95	21	20.5	21	12	13	68	10	20	–	13.5	13.5	38.5	48.5	18	24	44	35	5.5	9.5	14.5	30	M6×1.0	15	30	82	34	M5

Bore Size	GM	GL	LA	LB	LL					P	PA	PB	QA	QB	QM	R	S	TM	TL	TD	TLL	UU	UA	UB	UC	UD
					10st	20st	30st	40,50st	51st or More																	
12	M4×0.7	10	29	53	55.2	65.2	65.2	75.2	80.2	M5×0.8 DP4.5	11	8.5	14	48	M4×0.7	58	22	M5×0.8	Through	6	4.3	23	3	3.5	3	6
16	M5×0.8	12	33	59	61.2	77.2	77.2	87.2	92.2	M5×0.8 DP4.5	11	8	16	54	M5×0.8	65	25	M5×0.8	10	6	4.3	24	3	3.5	3	6
20	M5×0.8	13	37	66	–	75	93	103	108	Rc(PT)1/8 DP6	10.5	9	18	70	M5×0.8	83	30	M6×1.0	12	7	8	28	3	3.5	3	6
25	M6×1.0	15	37.5	67.5	–	81	81	106	116	Rc(PT)1/8 DP6	11.5	9.5	26	78	M6×1.0	93	38	M6×1.0	12	7	8	34	4	4.5	3	6

Grooves

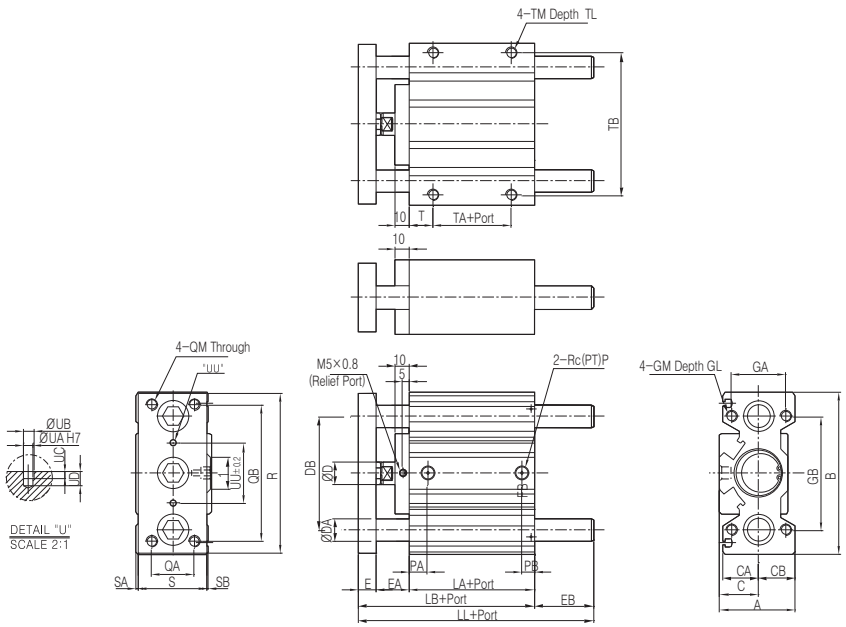
– Use grooves part "a" in the figure below of the cylinder body for firmly fixing in the following case.



(Unit : mm)

Model	A	B	C	D	E	F	Bolt
TGQL12	3.5	6	2	4.3	1.5	23	M3
TGQL16	3.7	6.2	2	4.6	1.5	24	M3
TGQL20	6	8.5	3.5	7.8	3	28	M5
TGQL25	6	8.7	3.5	8.1	3	34	M5

CR-AGL 32~63, CV-AGL 32~63



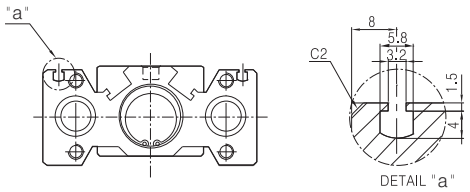
(Unit : mm)

Bore Size	A	B	C	CA	CB	D	DA	DB	E	EA	EB						T	TA	TB	GA	GB	GM	GL	LA	LB	I
											25st	50st	75st	100st	125st	150st										
32	53	114	27	25	26	16	16	80	12	25	5.4	42.4	47.4	47.4	67.4	67.4	16	5	100	38	80	M8×1.25	20	37.5	74.5	22
40	57	124	31	25	26	16	16	90	12	25	–	35.9	40.9	40.9	60.9	60.9	17	10	110	38	90	M8×1.25	20	44	81	22
50	69	140	39	29	30	20	20	100	16	28	3.9	45.9	50.9	50.9	70.9	70.9	17	10	124	44	100	M10×1.5	25	44	88	22
63	82	150	45.5	29	36.5	20	20	110	16	28	–	40.9	45.9	45.9	65.9	65.9	19	10	132	44	110	M10×1.5	25	49	93	31

Bore Size	LL						P	PA	PB	QA	QB	QM	R	S	SA	SB	TM	TL	UU	UA	UB	UC	UD
	25st	50st	75st	100st	125st	150st																	
32	79.9	116.9	121.9	121.9	141.9	141.9	1/8	12.5	9	30	96	M8×1.25	112	48	2	1	M8×1.25	11	42	4	4.5	3	6
40	–	116.9	121.9	121.9	141.9	141.9	1/8	14	10.5	30	106	M8×1.25	122	48	2	1	M8×1.25	11	50	4	4.5	3	6
50	91.9	133.9	138.9	138.9	158.9	158.9	1/4	14	11	40	120	M10×1.5	138	56	2	1	M10×1.5	12.5	56	5	6	4	8
63	–	133.9	138.9	138.9	158.9	158.9	1/4	16.5	13.5	50	130	M10×1.5	148	69	2	0	M10×1.5	15	66	5	6	4	8

Grooves

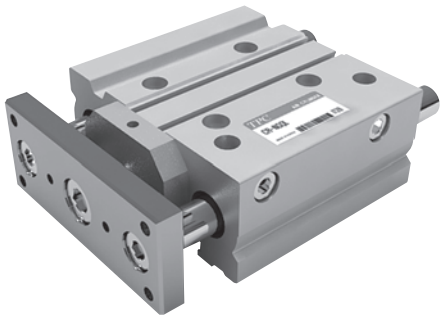
– Use grooves part “a” in the figure below of the cylinder body for firmly fixing.



Series CR(CV)-NGQL

Clean Series Compact Guide Cylinder

Bore Size : Ø12, Ø16, Ø20, Ø25, Ø32, Ø40, Ø50, Ø63



- A LOW PARTICLE CYLINDER FOR CLEAN ROOM
- STAINLESS PISTON ROD IS APPLIED IN ORDER TO STRENGTH ENDURANCE AGAINST WATER OTHER CHEMICALS
- A SPECIAL GREASE MINIMIZES THE AMOUNT OF PARTICLE RELEASED AS THE CYLINDER IS OPERATED

How to Order

CR(CV) — NGQ L 20 — 75 ○ ○ — ○ — W4 □ □

1 2 3 4 5 6 7 8 9 10 11

1 Clean Series
CR : Relief Port Type
CV : Vacuum Suction Type

2 Compact Cylinder with Guide
Magnet, Bumper, No Lubrication

3 Bearing
L : Ball bush bearing

4 Bore Size
12 : 12㎜ 16 : 16㎜
20 : 20㎜ 25 : 25㎜
32 : 32㎜ 40 : 40㎜
50 : 50㎜ 63 : 63㎜

5 Stroke(mm)

Bore	Stroke(mm)
Ø12, Ø16	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200
Ø20, Ø25	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300
Ø32, Ø40 Ø50, Ø63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300

Note) For intermediate stroke, spacer can be used.

Note) Manufacturing middle stroke.
It is able to make a middle stroke cylinder by equipping a spqcer to a standard stroke cylinder.
Ex)In case of NGQL 20-25, a 5mm spacer is equipped inside of NGQL 20-30

6 Port Size

Bore	Blank		U Type
Ø12, Ø16	M5×0.8		UNF
Bore	Blank	G Type	U Type
Ø20~100	RC	G	NPT

※ Contact us if you need European or American port type.

7 Mounting
Blank : No side mounting hole
H : Side mounting hole

8 Series
Blank : Basic
XC16 : Cooper free
(Only L Type is availuble)

9 Auto Switch
Blank : None
(Built-in Magnetic)
W4 : Reed switch
W2P : Mabnetism resistant switch
(φ32~φ100)
W8V : Reed switch(Vertical type)
W8H : Reed switch(Horizontal type)
W9V : Solid state switch(Vertical type)
W9H : Solid state switch(Horizontal type)

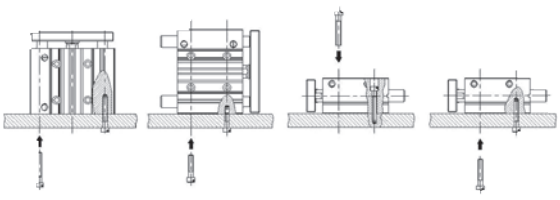
10 Length of Lead Wire
Blank : 0.5m
L : 3m

11 Number of Auto Switches
Blank : 2 pcs
S : 1 pc
N : N pcs

Caution

Manufacturing middle stroke.
It is able to make a middle stroke cylinder by equipping a spqcer to a standard stroke cylinder.
Ex)In case of NGQL 20-25, a 5mm spacer is equipped inside of NGQL 20-30

Mounting



Bottom Mounting | Side Mounting | Upper thru Mounting | Bottom thru Mounting

T-SLOT Mounting

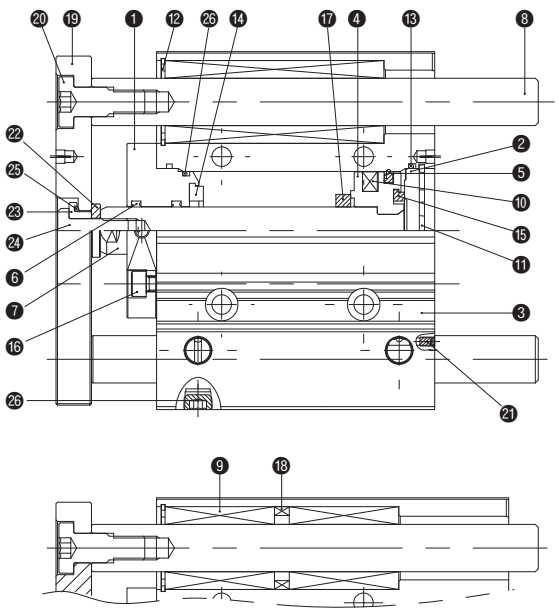
Caution

1. Scratch or gouging the sliding portion of the piston rod and the guide rod should be avoided.
   Otherwise, this will cause the seals to become damaged, leading to air leaks.
2. Being mounted on the bottom of the cylinder, the guide rod protrudes from the bottom at the retraction stroke end. Drill holes for the hexagon socket bolts used for mounting purposes, and relief holes for the guide rods. Also, for an application in which impacts such as those of a stopper are applied, be sure to checkthat the screw-in depth for the mounting bolts is 1.5d.

Specifications

Fluid		Air	
Action		Double Acting	
Proof Pressure		1.5MPa(15kgf/㎠)	
Proof Pressure	Max. Operation Pressure	1.0MPa(9.9kgf/㎠)	
	Min. Operation Pressure	Ø12, Ø16	0.12MPa(1.2kgf/㎠)
		Ø20~Ø63	0.1MPa(1.0kgf/㎠)
Ambient and fluid temperature		-10℃~+60℃	
Lube		Non Lube	
Cushion		Both Side Rubber Cushion	
Tube		2 Direction Tube	
Mounting		Bottom, Side, Upper thru, Bottom thru	
		T-Slot Mounting, Bottom Mounting	
AUTO S/W		Micro AUTO S/W(W8+, W9+), W4	
		Magnetic Resistance AUTO S/W(W2P)	
Piston Speed		50~500mm/s	
Stroke Tolerance		$^{+1.5}_{0}$ mm	

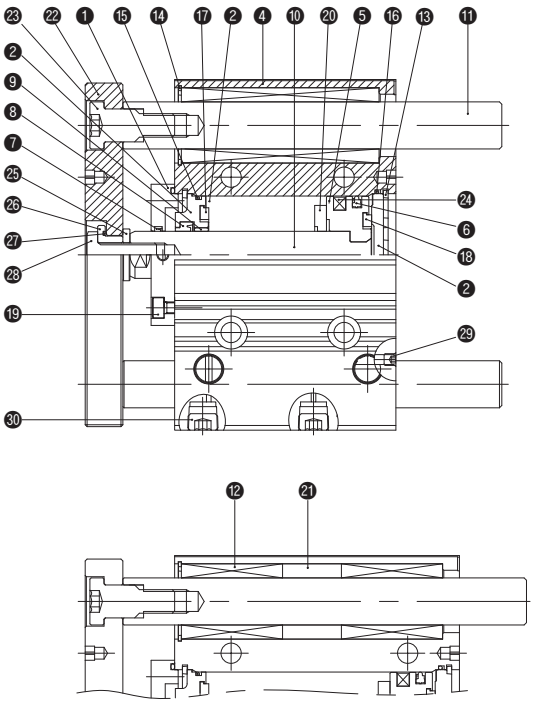
Structure, Part List : CR-NGQL 12~40/CV-NGQL 12~40



No	Description	Quantity	Material	Note
1	Rod Cover	1	Aluminum Alloy	
2	Head Cover	1	Aluminum Alloy	
3	Cylinder Tube	1	Aluminum Alloy	
4	Piston	1	Aluminum Alloy	
5	Piston Packing	1	NBR	
6	Rod Racking	1(2)	NBR(CR-Type)	
7	Piston Rod	1	Stainless Steel	
8	Guide Rod	1	Bearing Steel	
9	Ball Bearing	2(4)	Bearing Steel	
10	Magnet Ring	1	Rubber+Ferrite	
11	Snap Ring-A	1	Carbon Steel	
12	Snap Ring-B	1	Carbon Steel	
13	Head Cover Gasket	1	NBR	
14	Bumper-A	1	Polyurethane	
15	Bumper-B	1	Polyurethane	
16	Mounting Bolt	2	Stainless Steel	
17	Spacer	1	Aluminum Alloy	
18	Guide Spacer-L	1	Aluminum Alloy	
19	Plate	1	Carbon Steel	
20	Guide Rod Bolt	2	Carbon Steel	
21	Set Screw	1	Carbon Steel	
22	Retainer Washer	1	Carbon Steel	
23	Retainer	1	Carbon Steel	
24	Plate Mounting Bolt	1	Carbon Steel	
25	Gasket	1	NBR	
26	Port Plug	2	Carbon Steel	

● Ball bearing, Guide spacer-L are added if a length of cylinder stroke is longer than certain length.
● A spacer is added in case of manufacturing 5mm middle stroke cylinder.

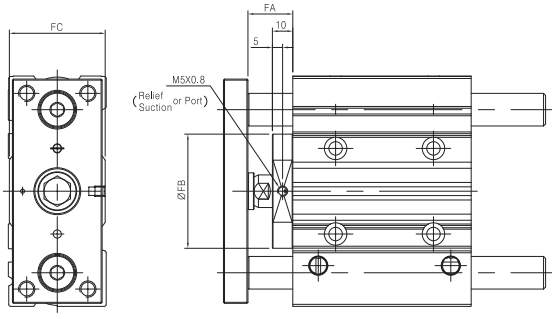
Structure, Part List : CR-NGQL 50~63/ CV-NGQL 50~63



No	Description	Quantity	Material	Note
1	Rod Cover-A	1	Aluminum Alloy	
2	Rod Cover-B	1	Aluminum Alloy	
3	Head Cover	1	Aluminum Alloy	
4	Piston	1	Aluminum Alloy	
5	Cylinder Tube	1	Aluminum Alloy	
6	Piston Packing	1	NBR	
7	Rod Packing-A	(1)	NBR(CR-Type)	
8	Rod Packing-B	1	NBR	
9	Bush	1	Brass	
10	Piston Rod	1	Stainless Steel	
11	Guide Rod	1	Bearing Steel	
12	Ball Bearing	1	Bearing Steel	
13	Snap Ring-A	1	Carbon Steel	
14	Snap Ring-B	1	Carbon Steel	
15	Gasket	1	NBR	
16	Head Cover Gasket	1	NBR	
17	Bumper-A	1	Polyurethane	
18	Bumper-B	1	Polyurethane	
19	Mounting Bolt	1	Stainless Steel	
20	Spacer	2	Aluminum Alloy	
21	Guide spacer-L	3	Aluminum Alloy	
22	Plate	1	Carbon Steel	
23	Guide Rod Bolt	2	Carbon Steel	
24	Magnet Ring	1	Sr FERRITE+NBR	
25	Retainer Washer	1	Carbon Steel	
26	Retainer	1	Carbon Steel	
27	Gasket	1	NBR	
28	Plate Mounting Bolt	1	Carbon Steel	
29	Set Screw	1	Carbon Steel	
30	Port Plug	2	Carbon Steel	

- Ball bearing, Guide spacer-L are added if a length of cylinder stroke is longer than certain length.
- A spacer is added in case of manufacturing 5mm middle stroke cylinder.

CR-NGQL 12~63, CV-NGQL 12~63



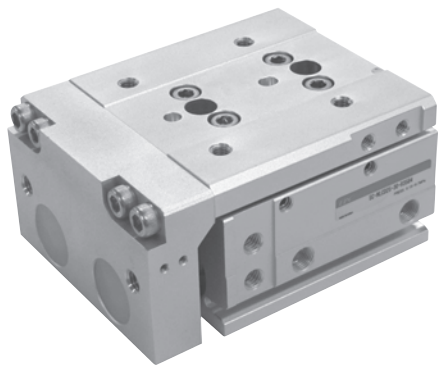
Bore Size(mm)	FA	FB	FC
12	18	29.5	25
16	18	34.5	29
20	19	44	35
25	19	49.5	40
32	22	55	47
40	22	59	53
50	23	60	60
63	23	71	71

Note) The other options same as standard option.
※ NGQL Ø12~Ø63

Series CR(CV,SC)-NLCD

Clean Series Table

Bore Size(mm) : Ø8, Ø16, Ø20, Ø25, Ø32



- CYLINDER IN LOW PARTICLE GENERATION FOR CLEAN ROOM.
- PISTION ROD IS MADE IN THE MATERIAL QUALITY OF STAINLESS STEEL TO ENHANCE RESISTANCE AGAINST MOISTURE AND OTHER CHEMICALS.
- EXCLUSIVE GREASE USE. DUST GENERATION IS MINIMIZED WHEN CYLINDER IS ACTING.

How to Order

CR(CV,SC) — NLCD 25 — 50 RF15R W8H S

1 2 3 4 5 6

1 Clean Series
- CR : Relief Port Type
- CV : Vacuum Suction Type
- SC : Semi-Clean Type

2 New Linear Cylinder Double Rod
(Built-in Magnet)

3 Bore Size(Ø㎜)-Stroke(㎜)
- 8 : 10,20,30,40,50,75
- 16 : 10,20,30,40,50,75,100,125
- 20 : 10,20,30,40,50,75,100,125,150
- 25 : 10,20,30,40,50,75,100,125,150
- 32 : 30,75,100

※ Ø32:Semi Clean Type only

4 Adjuster Option
- RF : Front Side
- RB : Rear Side
- R : RF+RB Adjusting Bolt
- Blank : Left Side
- R : Right Side

※ Adjustable Range : 5mm(Basic)
※ NLCD32 : unable shock-absober

5 Auto Switch
- Blank : None
- W8H : Reed Switch(Horizontal Type)
- W8V : Reed Switch(Vertical Type)
- W9H : Solid State Switch(Horizontal Type)
- W9V : Solid State Switch(Vertical Type)
- W9HN : Solid State Switch(3 Wire, NPN)
- W9HP : Solid State Switch(3 Wire, PNP)

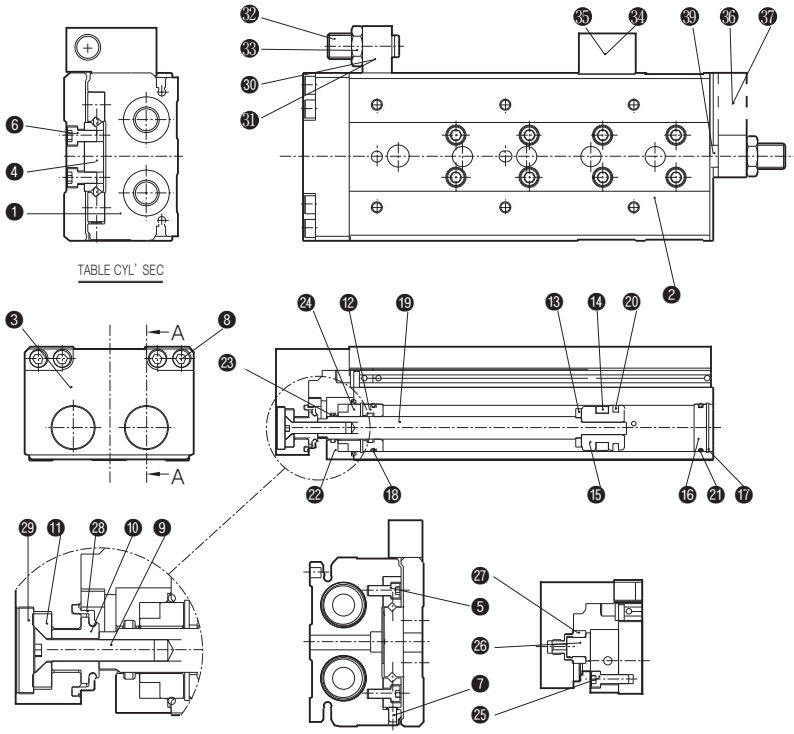
※ Standard auto switch lead wire length is 1m. 3m leads abailable on all mondels by adding a "L" suffix to the part number.
(ex : W8HL, W9VL)

6 Number of Auto Switches
- Blank : 2 pcs
- S : 1 pc
- N : N pcs

Specifications

Bore size	8, 16, 20, 25, 32
Type	Relief port Type Vacuum suction Type Semi-Clean Type
Operation	Double Acting
Port Size	Rc(PT) 1/4
Operating Pressure	0.15~0.7Mpa (1.5~7.1kgf/㎠)
Proof Pressure	1.05Mpa (10.7kgf/㎠)
Ambient and Fluid Temperature	-10~60℃
Piston Speed	50~500㎜/s
Lubrication	Non-Lub
Auto Switch (Option)	Reed Switch :DC(24V)/AC(110V) Solid State Switch :DC(24V)
Strock Tolerance	0~ +1mm
OPTION(STROKE ADJUST)	Rubber Damper (Front/Back/Both Side)

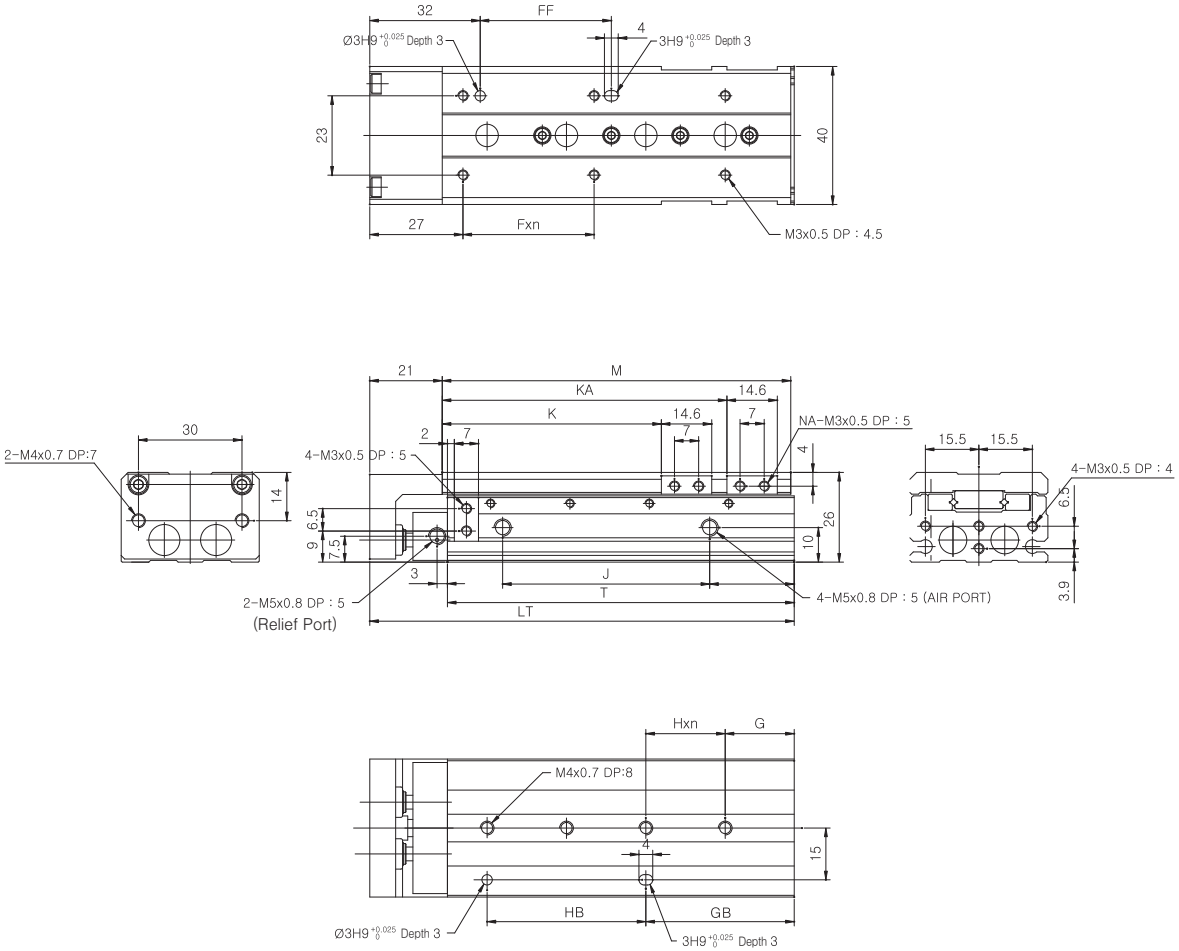
CR/CV-Type



No	Descripton	Material	Note
❶	Body	Alluminum Alloy	
❷	Table	Alluminum Alloy	
❸	Plate	Alluminum Alloy	
❹	Rail Ass'y	Bearing Steel	
❺	Blanking Plug	Stainless Steel	
❻	Blanking Plug	Stainless Steel	
❼	Set Screw	Stainless Steel	
❽	Blanking Plug	Stainless Steel	
❾	(+)Fush Bolt	Stainless Steel	
❿	Retainer A	Stainless Steel	
⓫	Retainer B	Stainless Steel	
⓬	Rod Cover	Alluminum Alloy	
⓭	Bumper	Polyurethane	
⓮	Magnet	NBR+Ba Ferrite	
⓯	Piston	Alluminum Alloy	
⓰	Head Cover	Alluminum Alloy	
⓱	O-ring	Spring Steel	
⓲	Rod packing	NBR	
⓳	Piston Rod	Stainless Steel	
⓴	Pistion Packing	NBR	

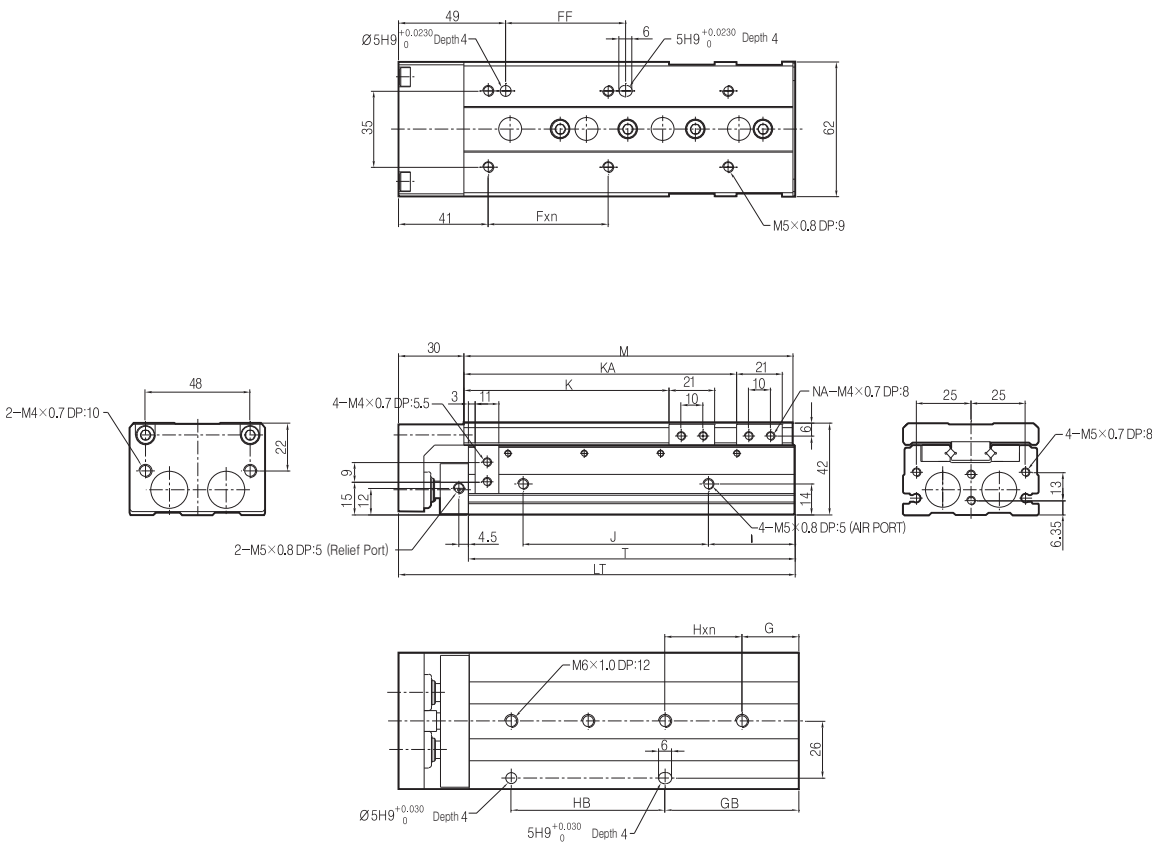
No	Descripton	Material	Note
㉑	Gasket(O-Ring)	NBR	
㉒	Clean Cover	Alluminum Alloy	
㉓	Rod Packing	NBR	
㉔	Bush	Stainless Steel	
㉕	Blanking Plug	Stainless Steel	
㉖	Plate Bumper	Polyurethane	
㉗	Holder	Stainless Steel	
㉘	Dust Cover	Silicon	
㉙	Dust Plate	Silicon	
㉚	Bumper Plate1	Alluminum Alloy	
㉛	Blanking Plug	Alloy Steel	Option
㉜	Bumper Holer	Alloy Steel	Option
㉝	Nut	Alloy Steel	Option
㉞	Bumper Plate2	Alluminum Alloy	Option
㉟	Blanking Plug	Alloy Steel	Option
㊱	Bumper Plate3	Alluminum Alloy	Option
㊲	Blanking Plug	Alloy Steel	Option
㊳	Plug	Chrome Steel	
㊴	Plate Bumper	Polyurethane	Option

CR(CV)-NLCD∅8



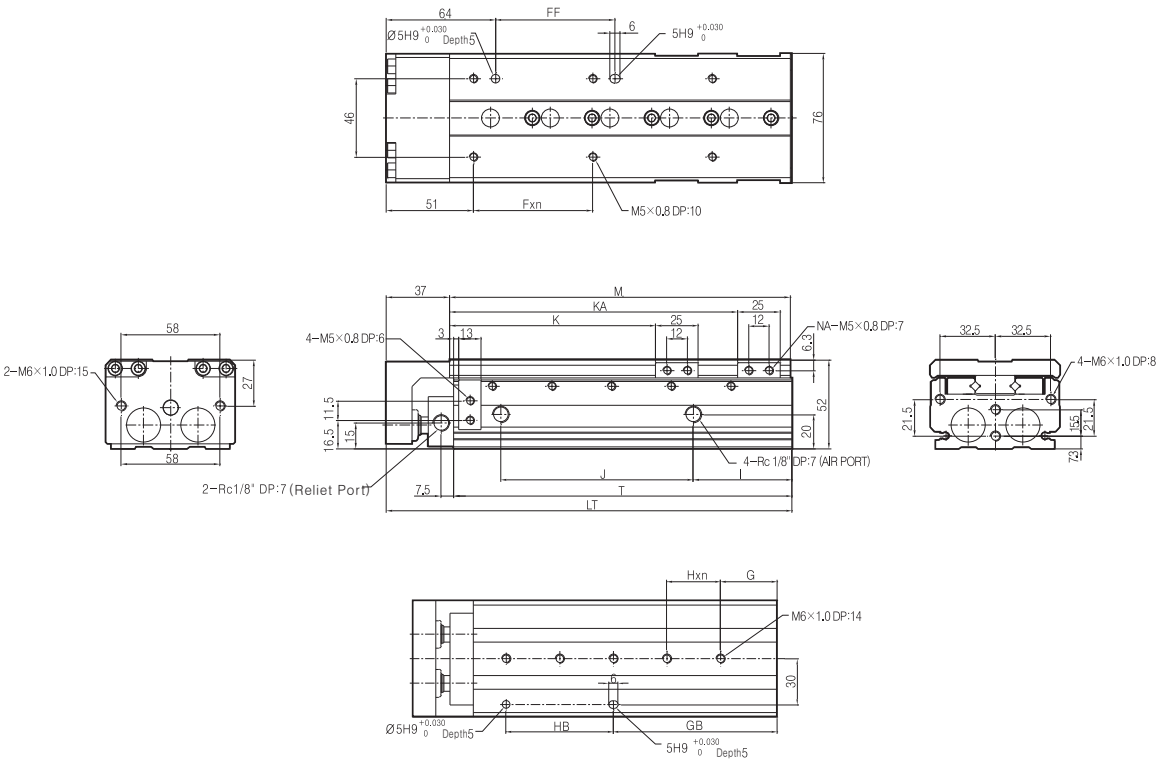
Model	F×n	FF	G	H×n	GB	HB	I	J	K	KA	NA	M	T	LT
CR(CV)-NLCD8-10	25×1	25	9	28×1	17	20	13	19.5	23.5	–	4	49	48.5	71
CR(CV)-NLCD8-20	25×1	25	12	30×1	12	30	8.5	29	33.5	–	4	54	53.5	76
CR(CV)-NLCD8-30	40×1	40	13	20×2	33	20	9.5	39	43.5	–	4	65	64.5	87
CR(CV)-NLCD8-40	50×1	50	15	28×2	43	28	10.5	56	53.5	–	4	83	82.5	105
CR(CV)-NLCD8-50	38×2	38	20	28×3	43	46	24.5	60	63.5	82.5	8	101	100.5	123
CR(CV)-NLCD8-75	50×2	50	27	28×4	83	56	38.5	96	88.5	132.5	8	151	150.5	173

CR(CV)-NLCDØ16



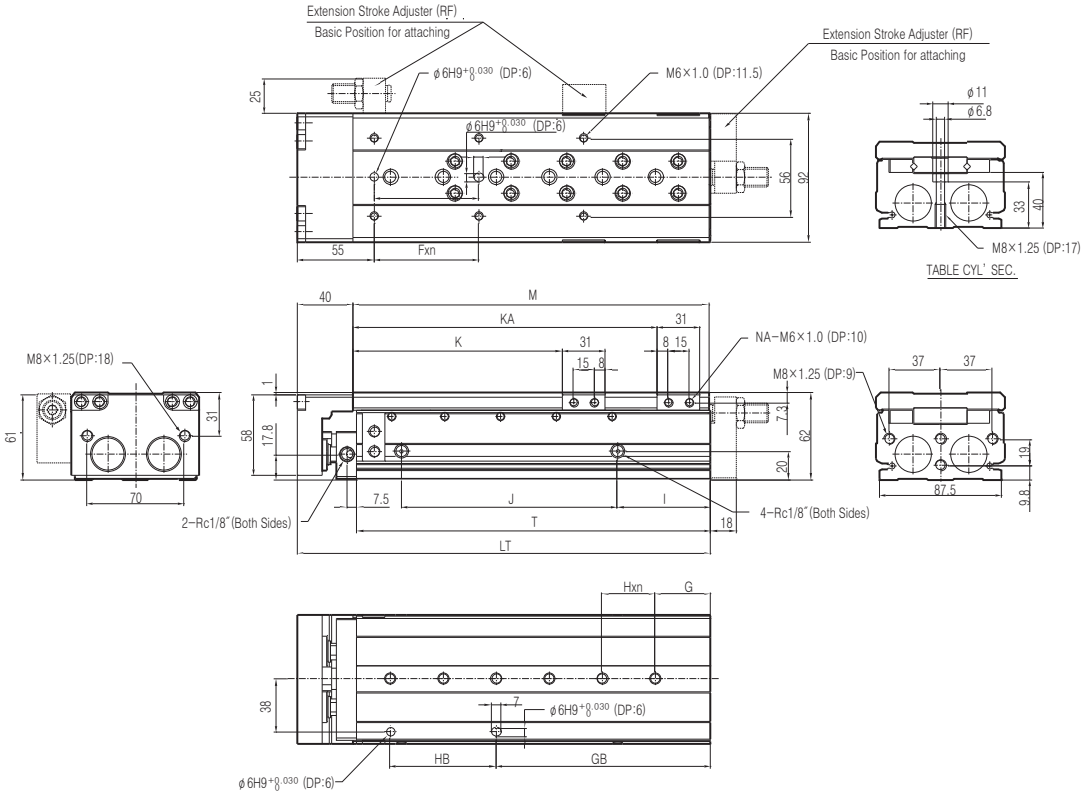
Model	F×n	FF	G	H×n	GB	HB	I	J	K	KA	NA	M	T	LT
CR(CV)-NLCD16-10	35×1	35	16	40×1	16	40	10	40	29	–	4	76	75	107
CR(CV)-NLCD16-20	35×1	35	16	40×1	16	40	10	40	39	–	4	76	75	107
CR(CV)-NLCD16-30	35×1	35	16	40×1	16	40	10	40	49	–	4	76	75	107
CR(CV)-NLCD16-40	40×1	40	16	50×1	16	50	10	50	59	–	4	86	85	117
CR(CV)-NLCD16-50	30×2	30	21	30×2	51	30	15	60	69	–	4	101	100	132
CR(CV)-NLCD16-75	55×2	55	26	35×3	61	70	40	85	94	125	8	151	150	182
CR(CV)-NLCD16-100	65×2	65	39	35×4	109	70	55	118	119	173	8	199	198	230
CR(CV)-NLCD16-125	70×3	70	19	35×6	159	70	68	155	144	223	8	248	248	280

CR(CV)-NLCD∅20



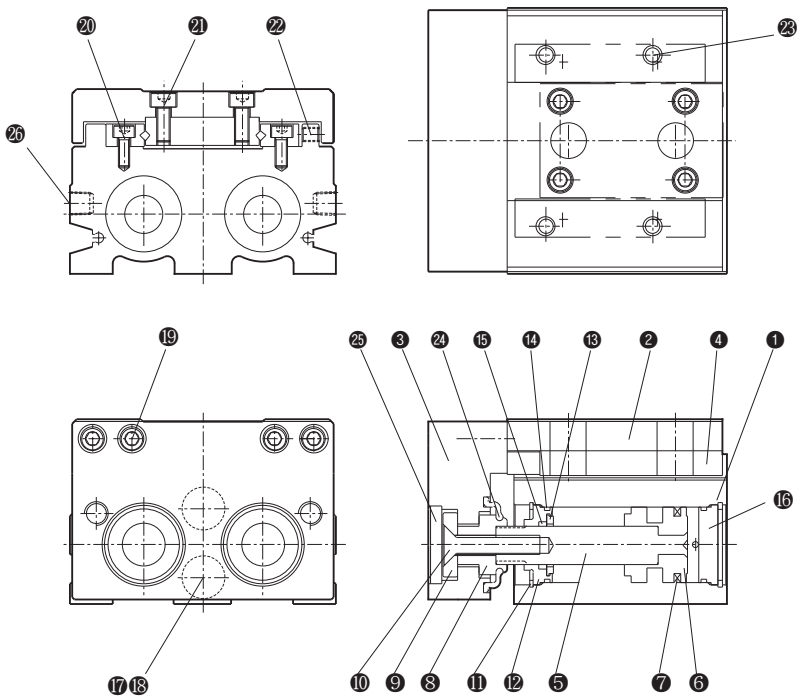
Model	F×n	FF	G	H×n	GB	HB	I	J	K	KA	NA	M	T	LT
CR(CV)-NLCD20-10	50×1	50	15	45×1	25	35	10	44	31	–	4	83	81.5	121
CR(CV)-NLCD20-20	50×1	50	15	45×1	25	35	10	44	41	–	4	83	81.5	121
CR(CV)-NLCD20-30	50×1	50	15	45×1	25	35	10	44	51	–	4	83	81.5	121
CR(CV)-NLCD20-40	60×1	60	15	55×1	35	35	10	54	61	–	4	93	91.5	131
CR(CV)-NLCD20-50	35×2	35	15	35×2	50	35	10	69	71	–	4	108	106.5	146
CR(CV)-NLCD20-75	60×2	60	19	35×3	54	70	10	108	96	–	4	147	145.5	185
CR(CV)-NLCD20-100	70×2	70	37	35×4	107	70	58	113	121	169	8	200	198.5	238
CR(CV)-NLCD20-125	70×3	70	41	35×5	155	76	70	155	146	223	8	254	252.5	292
CR(CV)-NLCD20-150	80×3	80	19	35×6	195	88	87	190	171	275	8	306	304.5	344

CR(CV)-NLCD 25



Model	Fxn	FF	G	Hxn	GB	HB	I	J	K	KA	NA	M	T	LT
CR(CV)-NLCD 25-10	50×1	40	22	45×1	22	45	12	47	35	-	4	92	90.5	133.5
CR(CV)-NLCD 25-20	50×1	40	22	45×1	22	45	12	47	45	-	4	92	90.5	133.5
CR(CV)-NLCD 25-30	50×1	40	22	45×1	22	45	12	47	55	-	4	92	90.5	133.5
CR(CV)-NLCD 25-40	60×1	50	22	55×1	22	55	12	57	65	-	4	102	100.5	143.5
CR(CV)-NLCD 25-50	35×2	35	20	35×2	55	35	12	70	75	-	4	115	113.5	156.5
CR(CV)-NLCD 25-75	60×2	60	26	35×3	61	70	33	90	100	-	4	156	154.5	197.5
CR(CV)-NLCD 25-100	70×2	70	32	35×4	102	70	50	114	125	162	8	197	195.5	238.5
CR(CV)-NLCD 25-125	75×2	75	40	38×5	154	76	67	155	150	218	8	255	253.5	296.5
CR(CV)-NLCD 25-150	80×3	80	30	40×6	190	80	82	180	175	258	8	295	293.5	336.5

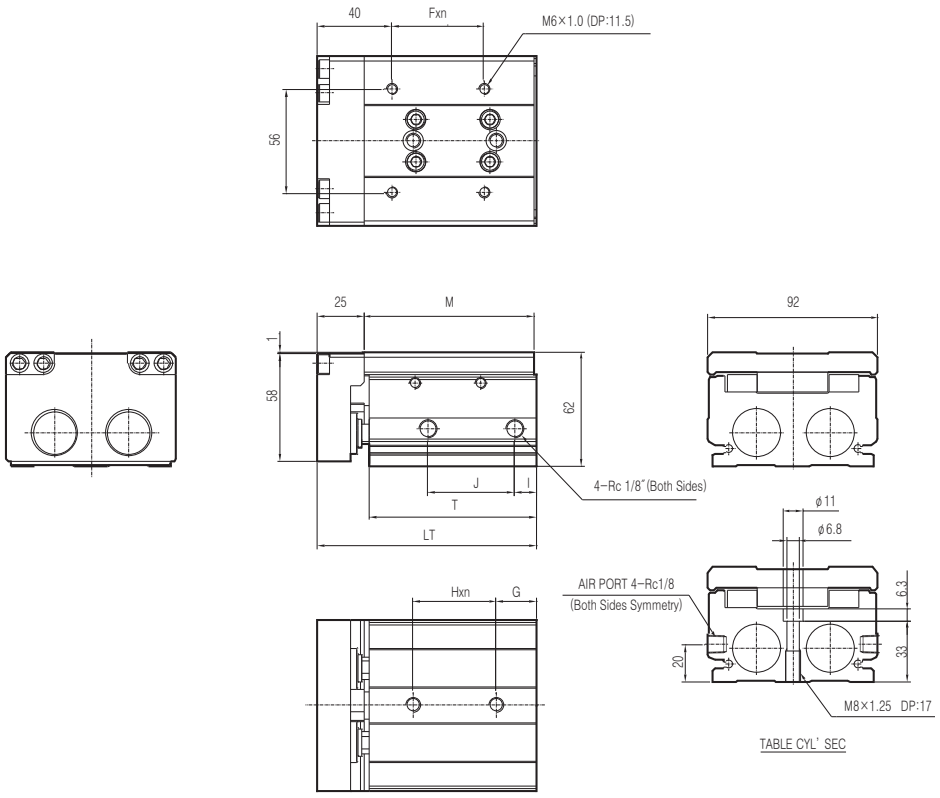
SEMI-CLEAN Type



NO	Description	Material	Note
❶	Body	Alluminum	
❷	Table	Alluminum	
❸	Plate	Alluminum	
❹	Rail Ass'y	Bearing Steel	
❺	Piston Rod	Stanless	
❻	Piston	Alluminum	
❼	Piston Packing	NBR	
❽	Retainer A	Stanless	
❾	Retainer B	Stanless	
❿	(+)Flush Bolt	Stanless	
⓫	O-Ring	Spring Steel	
⓬	Rod Cover	Alluminum	
⓭	Rubber Cushion	Urethane	

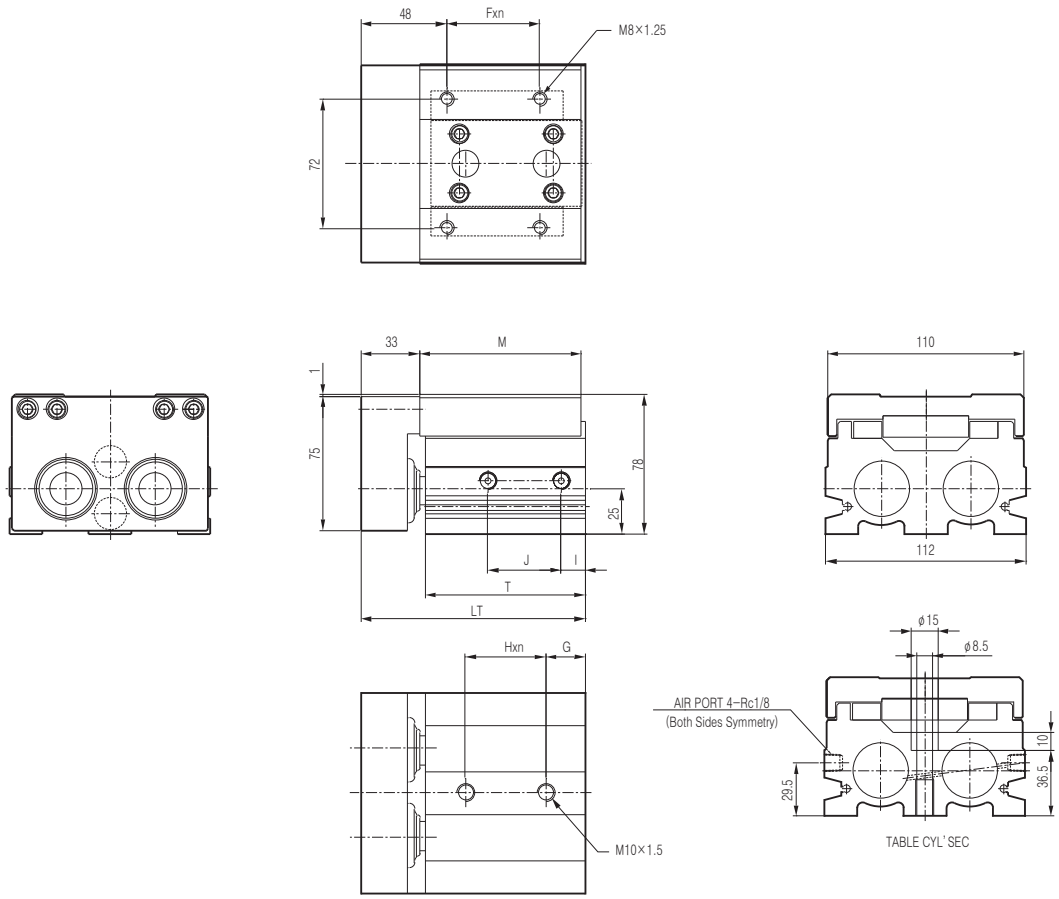
NO	Description	Material	Note
⓮	Tube Gasket	NBR	
⓯	Rod Packing	NBR	
⓰	Head Cover	Alluminum	
⓱	Holder	Stanless	
⓲	Plate Bumper	Urethane	
⓳	Hexagon Socket Head Cap Bolt	Stanless	
⓴	Hexagon Socket Head Cap Bolt	Stanless	
㉑	Hexagon Socket Head Cap Bolt	Stanless	
㉒	Set Screw	Stanless	
㉓	Heli-Sert	Stanless	
㉔	Dusst Cover	Silicon	
㉕	Dust Plate	Silicon	
㉖	Plug	Chrome Steel	

SC-NLCD 25



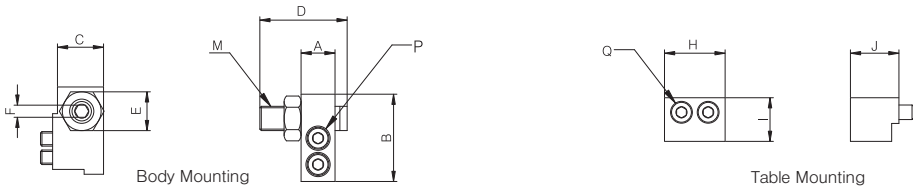
Model	Fxn	G	Hxn	I	J	M	T	LT
SC-NLCD 25-10	50×1	22	45×1	12	47	92	90.5	118.5
SC-NLCD 25-20	50×1	22	45×1	12	47	92	90.5	118.5
SC-NLCD 25-30	50×1	22	45×1	12	47	92	90.5	118.5
SC-NLCD 25-40	60×1	22	55×1	12	57	102	100.5	128.5
SC-NLCD 25-50	35×2	20	35×2	12	70	115	113.5	141.5
SC-NLCD 25-75	60×2	26	35×3	33	90	156	154.5	182.5
SC-NLCD 25-100	70×2	32	35×4	50	114	197	195.5	223.5
SC-NLCD 25-125	75×2	40	38×5	67	155	255	253.5	281.5
SC-NLCD 25-150	80×3	30	40×6	82	180	295	293.5	321.5

SC-NLCD 32



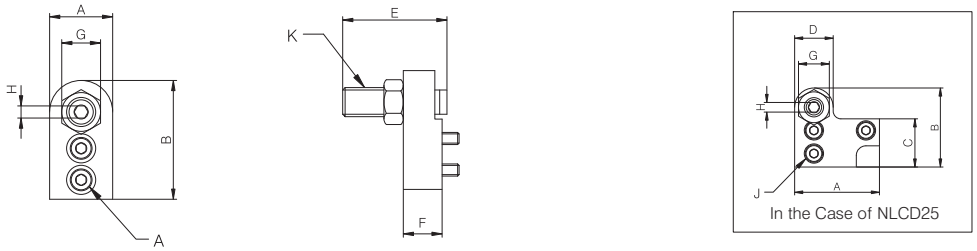
Model	Fxn	G	Hxn	I	J	M	T	LT
SC-NLCD 32-30	52×1	22	45×1	13.5	41	90.5	89.5	125.5
SC-NLCD 32-75	72×2	33	38×3	53	106	176	175	211
SC-NLCD 32-100	64×2	42	50×3	73	131	221	220	256

Stroke Adjuster at Extension End(RF)



Application Size	Model No	Stroke Adjusting Range(mm)	Body Mounting								Table Mounting			
			A	B	C	D	E	F	M	P	H	I	J	Q
NLCD08	NLCD08-RF	5	7	20	14	16.5	10	3	M6×1.0	M3×15L	14.6	7.5	10	M3×12L
	NLCD08-RF15	15				26.5								
	NLCD08-RF25	25				36.5								
NLCD16	NLCD16-RF	5	11	31	20	24.5	14	5	M10×1.0	M4×20L	21	13.5	15	M4×15L
	NLCD16-RF15	15				34.5								
	NLCD16-RF25	25				44.5								
NLCD20	NLCD20-RF	5	13	40.5	25	27.5	17	6	M12×1.25	M5×25L	25	16	20	M5×20L
	NLCD20-RF15	15				37.5								
	NLCD20-RF25	25				47.5								
NLCD25	NLCD25-RF	5	16	49.5	26.5	32.5	19	6	M14×1.5	M8×25L	33	18.5	22	M6×25L
	NLCD25-RF15	15				42.5								
	NLCD25-RF25	25				52.5								

Stroke Adjuster Range(RB)



Application Size	Model No	Stroke Adjusting Range(mm)	Body Mounting									
			A	B	C	D	E	F	G	H	J	K
NLCD08	NLCD08-RB	5	13	24.5	–	–	16.5	8	10	3	M3×8L	M6×1.0
	NLCD08-RB15	15					26.5					
	NLCD08-RB25	25					36.5					
NLCD16	NLCD16-RB	5	17	38	–	–	24.5	12	14	5	M4×15L	M10×1.0
	NLCD16-RB15	15					34.5					
	NLCD16-RB25	25					44.5					
NLCD20	NLCD20-RB	5	20	48	–	–	27.5	15	17	6	M6×15L	M12×1.25
	NLCD20-RB15	15					37.5					
	NLCD20-RB25	25					47.5					
NLCD25	NLCD25-RB	5	57	58	39	23	32.5	18	19	6	M8×15L	M14×1.5
	NLCD25-RB15	15					42.5					
	NLCD25-RB25	25					52.5					

How to Order

NLCD ✱✱ — ✱✱ ✱✱

1 2 3

1 Bore Size
08-Ø8, 16-Ø16
20-Ø20, 25-Ø25

2 Stroke Adjuster
RF : Extension Stroke Adjuster
RB : Retraction Stroke Adjuster

3 Adjustable Range
No Symbol : 5mm Standard
15 : 15mm
25 : 25mm

How to Select

1. The first] Use condition confirmation

Calculation

- Model used
- Cushion Style
- Work mounting position
- Mounting position
- Average velocity Va (mm/s)
- Allowable load W (kg)
- Over hang Ln (m) : Fig. 1

From product until work gravity center distance

Selecting example

- Cylinder : NLCD25-30
- Cushion : Rubber Cushion
- Work : Table mounting
- Mounting : Horizontal mounting
- Average velocity : Va=300[mm/s]
- Load mass : W=0.5[kg]
- Qverhang : 0.035

2. Second] Kinetic energy

- Calculate kinetic energy : E(J)
  $E = 0.5 \times W \times (V/1000)^2$
  $Ez = \gamma \times Emax$ Table 3
  Coefficient of velocity γ : Table 1
  Kinetic energy(E) ≤ Max. allowable kinetic energy
- Kinetic energy of work does not exceed allowable kinetic energy

$E = 0.5 \times 0.5 \times (300 / 1000)^2 = 0.0225$
$Ez = 0.6 \times 0.25 = 0.15$
$E = 0.0225 \leq Ez = 0.15$ Possible to use by

Kinetic energy(Ea) : Table 2
Max. allowable kinetic energy(Emax) : Table 3

3. Third] Load factor of Load mass

1) Load factor calculation of load mass
 (1) Calculate allowable load mass Wa(kg)
  $Wa = \gamma \times Wmax$: Table 3
 (2) Calculate Load mass load factor
  $X_1 = \gamma \times W / Wa$

2) Load factor of kinetic moment
 (1) Calculate kinetic moment Me(N.m)
  $Me = 1/3 \times Ie \times 9.8 \times Ln$
  Shock mass $Ie = \delta \times W \times V$
  δ: Dumper coeficient
  - With urethance bumper(Standard) = 0.04
  - With Shock absorber = 0.01

 (2) Calculate allowable kinetic moment Mea(N.m)
  $Wm = \gamma \times Mmax$: Table 4

 (3) Calculate load factor $\alpha 2$ of kinetic moment
  $X_2 = Me / Vm$
Coefficient of velocity γ : Table 1

$Me = 1/3 \times 6 \times 9.8 \times 0.035 = 0.686$
$Ie = 0.04 \times 0.5 \times 300 = 6.$ Ln = 0.035

$Wm = 0.6 \times 27.54 = 16.524$

$X_2 = 0.686 / 16.524 = 0.041$
$\gamma = 0.6$

4. Fourth] Sum of load factor

When sum of load factor does not execcd 1. it is possible to use.
$\Sigma x n = X_1 + X_2 \leq 1 = 0.08 + 0.041 = 0.121 \leq 1$ And it is possible to use.

Fig.1 Overhang : Ln(mm) - Correction Value for Moment Center An(mm)

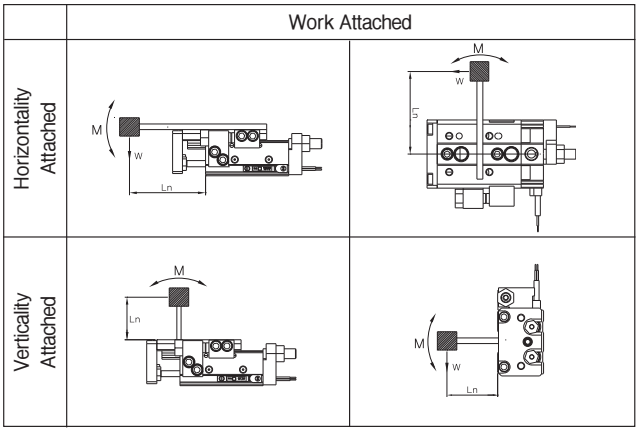


Table 1 Coefficient of Velocity : η

Average Speed [mm/s]	Applicable Coefficient Valve
50 ~ 200	1.0
Over 200	0.6

Table 2 Max. Allowable Kinetic Energy : Emax

Model	Allowable Kinetic Energy	
	Rubber Cushion	Shock absorber
NLCD6	0.02	0.04
NLCD8	0.038	0.076
NLCD12	0.075	0.15
NLCD16	0.125	0.25
NLCD20	0.175	0.35
NLCD25	0.25	0.5
NLCD32	0.325	0.65

Table 3 Max. Allowable Static Load : Emax & Wmax(kg)

Model	Allowable Static Load
NLCD6	0.8
NLCD8	1.5
NLCD12	3
NLCD16	5
NLCD20	7
NLCD25	10
NLCD32	13

Table 4 Max. allowable Moment : Mmax (Nm)

Model	Stroke (mm)								
	10	20	30	40	50	75	100	125	150
NLCD 6	0.63	0.9	1.08	1.08	1.08				
NLCD 8	1.8	1.8	2.52	3.24	3.78	3.78			
NLCD12	3.78	3.78	3.78	5.22	6.3	9	9		
NLCD16	10.17	10.17	10.17	10.17	14.31	22.5	30.7	30.7	
NLCD20	17.46	17.46	17.46	17.46	24.48	31.5	45.45	45.45	45.45
NLCD25	27.54	27.54	27.54	27.54	38.52	49.6	60.57	60.57	60.57
NLCD32			32.13			55.8	66.6		

Symbol

Symbol	Definition	Symbol	Definition	Symbol	Definition	Symbol	Definition
An (n = 1~6)	Correction Value of Movement Center Distance (mm)	Ma (Map, May, Mar)	Allowable Static Movement (Pitch,Yaw,Roll) (N.m)	W	Static Load (kg)	ν	Allowable Movement Coeficient
E	Kinetic Energy (J)	Me (Mep, Mey)	Kinetic Movement (Pitch,Yaw) (N.m)	Wa	Allowable Static Load (kg)	δ	Damper Coeficient
Ea	Allowable Kinetic Energy (J)	Mea (Meap, Meay)	Allowable Kinetic Movement (Pitch,Yaw) (N.m)	Me	Load Equivalent to Dolision (kg)	K	Work Mounting Coeficient
Emax	Max. Allowable Kinetic Energy (J)	Mmax (Mpmax, Mymax, Mrmax)	Max. Allowable Kinetic Movement (Pitch,Yaw,Roll) (N.m)	Wmax	Max. Allowable Static Load(kg)		
Ln (n = 1 ~ 3)	Over hang(mm)	V	Collision Speed (mm/s)	α	Load Rate		
M(Mp,My, Mr)	Static Movement (Pitch,Yaw,Roll) (N.m)	Va	Average Speed (mm/s)	β	Allowable Movement Coeficient		

Series NLCD Precautions

Selection

Caution

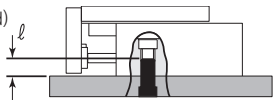
- Do not apply a load over the operating limit range.

Mounting

Caution

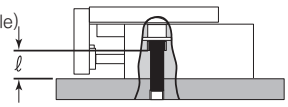
- **Do not scratch and dent mounting side of body, table and end plate.**
  The damage will result in a decrease in parallelism, vibration of guide and an increase in moving part resistance.
- **Avoid contact with the air slide table during operation.**
  Adjuster option creates additional pinch points which can cause injury to operator when table is moving. Preventative measures, e.g. installation of a cover, should be taken to avoid such accidents.
- **When mounting an air slide table, use appropriate length of screws and do not exceed the maximum tightening torque.**
  If tightening the screw beyond the designated value, it may malfunction. If tightening it insufficient, it may result in position sliding or falling off of air slide table.

1. Lateral mounting (Body tapped)



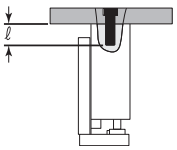
Model	Bolt	Max. Torque N.m(kg.cm)	Max. screw-in depth(ℓ mm)
NLCD06	M4×0.7	2.1[21.4]	9
NLCD08	M4×0.7	2.1[21.4]	8
NLCD12	M5×0.8	4.4[44.9]	10
NLCD16	M6×1	7.4[75.5]	12
NLCD20	M6×1	7.4[75.5]	14
NLCD25	M8×1.25	18[180]	17
NLCD32	M10×1.5	40[408]	20

2. Lateral mounting (Through hole)



Model	Bolt	Max. Torque N.m(kg.cm)	Max. screw-in depth(ℓ mm)
NLCD06	M3×0.5	1.2[12.2]	9
NLCD08	M3×0.5	1.2[12.2]	11
NLCD12	M4×0.7	2.8[28.6]	15
NLCD16	M5×0.8	5.7[58.1]	17.5
NLCD20	M5×0.8	5.7[58.1]	26
NLCD25	M6×1	10[100]	33
NLCD32	M8×1.25	18[180]	36.5

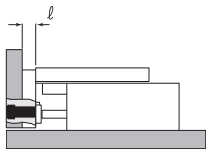
3. Axial mounting (Body tapped)



Model	Bolt	Max. Torque N.m(kg.cm)	Max. screw-in depth(ℓ mm)
NLCD06	M2.5×0.45	0.5[5.1]	3
NLCD08	M3×0.5	0.9[9.2]	4
NLCD12	M4×0.7	2.1[21.4]	6
NLCD16	M5×0.7	2.1[21.4]	8
NLCD20	M6×1	7.4[75.5]	8
NLCD25	M8×1.25	18[180]	9
NLCD32	M8×1.25	18[180]	10

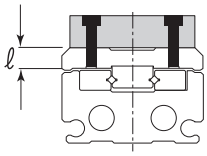
Mounting

1. Front face mounting



Model	Bolt	Max. Torque N.m(kg.cm)	Max. screw-in depth(ℓ mm)
NLCD06	M3×0.5	0.9[9.2]	5
NLCD08	M4×0.7	2.1[21.4]	6
NLCD12	M5×0.8	4.4[44.9]	8
NLCD16	M6×1	7.4[75.5]	10
NLCD20	M6×1	7.4[75.5]	13
NLCD25	M8×1.25	18[180]	15
NLCD32	M10×1.5	40[408]	20

2. Top face mounting



Model	Bolt	Max. Torque N.m(kg.cm)	Max. screw-in depth(ℓ mm)
NLCD06	M3×0.5	0.9[9.2]	5
NLCD08	M3×0.5	0.9[9.2]	5.5
NLCD12	M4×0.7	2.1[21.4]	7
NLCD16	M5×0.8	4.4[44.9]	9
NLCD20	M5×0.8	4.4[44.9]	9.5
NLCD25	M6×1	7.4[75.5]	11.5
NLCD32	M8×1.25	18[180]	14

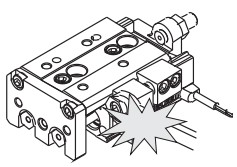
Damper Option Mounting

Model	Tightening Torque N.m(kg.cm)
NLCD06	3.0 (30.6)
NLCD08	5.0 (51.0)
NLCD12	12.5 (128)
NLCD16	25.0 (255)
NLCD20	43.0 (439)
NLCD25	69.0 (704)
NLCD32	–

Precautions for Adjuster Damper Option

Caution

- **When stroke adjuster is adjusted, do not hit the table with the wrench.**
  This can cause excessive play.



Low Speed Cylinder

● A cylinder with special specification which smoothly operates without stick slip under the condition lower than minimum operating speed of standard product

How to Order

Standard Product Order Specification — XLS

1 2

1 Type
: Applied cylinder number
Ex) AQ2B32−50D−XLS

2 XLS
: Low speed cylinder
Applied piston speed : 5~50mm/sec
※ Other dimensions and specification are identical to standard product

Applied Cylinder Series

Index	Applied Tube Diameter
ACP	Ø6~Ø16
NLCD(S)	Ø6~Ø32
ADR	Ø10~Ø25
NDM	Ø10~Ø25
AS	Ø20~Ø40
AM	Ø20~Ø40
AGX	Ø20~Ø40
ARD	Ø20~Ø63
AQ2	Ø12~Ø125
AQ	Ø12~Ø25
TGQ, NGQ	Ø12~Ø100
AM2	Ø40~Ø100
AM	Ø40~Ø100
AL/ALX	Ø125~Ø200

Note1) Contact a manufacturer for application of cylinder beside the lists above.
Note2) Air cushion is not necessary for low speed operation, so that make an order without cushion for AM, AM2, AL/ALX (2) and ARD cylinders.
Ex) AM50−150N−XLS
ARDB40−150−XLS

Notices

● Operation beyond specified operation piston speed degrades cylinder durability.
● Since special lubricant is used, refueling may consume lubricant, which possibly causes degradation of performance.