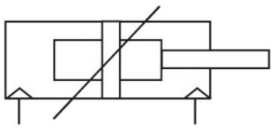
NGQ Air Cushion Series

Guide compact cylinder air cushion type / Bore size : Ø20, Ø32, Ø40, Ø50, Ø63

- Exclusive grease use, dust generation is minimized during operation
- High precision and rotation prevention
- Applications of various Auto switches
- Side port mounted by default
- Expanded the adjustable cushion range
- Minimized cushion bouncing with an ideal air passage design

Symbol



How to order

NGQ M 20 – 50 A ○ – ○ ○ – ○ ○ ○

1 2 3 4 5 6 7 8 9 10 11

1 NGQ=New guide compact cylinder

2 Bearing type
M : Slide bearing
L : Ball bushing

3 Bore size

Type bore size	20	25	32	40	50	63
Stroke(mm)	20	25	32	40	50	63

4 Cylinder stroke(mm)

Type	Bore size	Stroke(mm)
NGQM NGQL	Ø20, Ø25, Ø32, Ø40, Ø50, Ø63	25,50,75,100,125, 150,175,200,250

5 A : Air cushion type

6 Port type

Blank	Blank EU type	US type
Rc	G	NPT

7 Attachment specification
Blank : No side-attachment hole
H : Side-attachment hole

8 Option
Blank : Standard (For L type with bore size Ø12 ~Ø40, copper-free is the basic)
XC16 : Copper-free (Only available for L type)

9 Auto switch
Blank : None (Built-in magnet cylinder)
W4 : Reed switch
W2P : Magnetic field resistant switch
W8V : Micro reed switch (Vertical)
W8H : Micro reed switch (Horizontal)
W9V : Micro solid state switch (Vertical)
W9H : Micro solid state switch (Horizontal)
※ Refer to page 200 for additional information including AC200V.
※ W4, W2P S/W are applied to the ø32 ~ ø100

10 Lead wire length
Blank : 0.5m
L : 3m

11 Number of switches
Blank : 2 pcs
S : 1 pc

Specifications

Fluid		Pressed air
Operation		Double-acting
Proof pressure		1.5MPa(15kgf/cm²)
Operating pressure range	Max. operating pressure	1.0MPa(10.2kgf/cm²)
	Min. operating pressure	0.1MPa(1.0kgf/cm²)
Ambient & fluid temperature		-10℃ ~ +60℃(Anti-freezing)
Lubrication		Unnecessary (Non-lube)
Cushion		Air cushion on both ends
Piping		2 directions (Top-ported, Side-ported)
Mounting type		Top mounting, Bottom mounting, Side mounting (optional), T-slot mounting, Rear mounting
Auto switch		Micro auto switch (W8*, W9*), W4 Magnetic field resistant auto switch (W2P) 3 types available
Piston speed		50 ~ 500mm/s
Stroke length tolerance		$^{+1.5}_{0}$ mm

Standard Specification

Item		Specification	
Fluid		Compressed Air	
How to Operate		Double Acting	
Proof Pressure		1.5 Mpa (15kgf/㎠)	
Pressure Range Applied	Max. Pressure	1.0 Mpa (9.9kgf/㎠)	
	Min. Pressure	Ø20 ~ Ø 63	0.1 Mpa (1.0kgf/㎠)
Surrounding and Used Fluid Temperature		-10℃ ~ +60℃	
Lubrication		Non Lubrication	
Cushion		Both Side Air Cushion (Basic)	
Piping		2 Direction Piping (Top and Bottom)	
Cylinder Attachment Type		Through Type Attachment (Top and Bottom), Side Attachment (Option)	
		T-Slot Attachment, Back Attachment	
AUTO S/W		Ultra-tiny AUTO S/W (W8＊,W9＊), W4	
		Able to Attach 3 Sets of Strong Magnetic Field-Resistant AUTO S/W (W2P)	
Applied Piston Speed		50 ~ 500 mm/S	
Stroke Tolerance		$^{+1.5}_{0}$mm	

Theory Output Table

(Unit : kgf)

Bore Size (mm)	ROD Diameter (mm)	Operation Direction	Water Pressure Area (㎠)	Pressure Applied(kgf/㎠)								
				2	3	4	5	6	7	8	9	10
20	10	OUT	3.1	6.3	9.4	12.6	15.7	18.8	22	25.1	28.3	31.4
		IN	2.4	4.7	7.1	9.4	11.8	14.1	16.5	18.8	21.2	23.6
25	12	OUT	4.9	9.8	14.7	19.6	24.5	29.4	34.3	39.3	44.2	49.1
		IN	3.8	7.6	11.3	15.1	18.9	22.7	26.4	30.2	34	37.8
32	16	OUT	8	16.1	24.1	32.2	40.2	48.2	56.3	64.3	72.4	80.4
		IN	6	12.1	18.1	24.1	30.1	36.2	42.2	48.2	54.3	60.3
40	16	OUT	12.6	25.1	37.7	50.2	62.8	75.4	87.9	100.5	113	125.6
		IN	10.6	21.1	31.7	42.2	52.8	63.3	73.9	84.4	95	105.5
50	20	OUT	19.6	39.3	58.9	78.5	98.1	117.8	137.4	157	176.6	196.3
		IN	16.5	33	49.5	65.9	82.4	98.9	115.4	131.9	148.4	164.9
63	20	OUT	31.2	62.3	93.5	124.6	155.8	186.9	218.1	249.3	280.4	311.6
		IN	28	56	84.1	112.1	140.1	168.1	196.1	224.1	252.2	280.2

Note) Theory output(kgf) = Pressure (kgf/㎠) X Piston water pressure area (㎠) 1kgf ≒ 9.8 N, 1kgf/㎠≒0.098Mpa

Weight Table (product weight)

(Unit : kg)

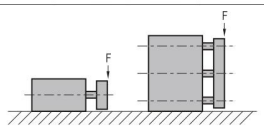
Bore Size	Type	Cylinder Stroke (mm)													
		10	20	25	30	40	50	75	100	125	150	175	200	250	300
Ø 20	M TYPE	—	0.7	—	0.8	0.8	0.9	1.2	1.4	1.6	1.8	2.0	2.2	2.7	3.1
Ø 25		—	1.0	—	1.1	1.2	1.3	1.7	1.9	2.2	2.5	2.8	3.0	3.6	4.1
Ø 32		—	—	1.7	—	—	2.2	2.5	2.8	3.2	3.6	4.0	4.3	5.3	6.0
Ø 40		—	—	1.8	—	—	2.5	2.8	3.3	3.8	4.2	4.8	5.2	6.4	6.9
Ø 50		—	—	3.1	—	—	3.8	4.5	5.2	5.8	6.5	7.3	7.9	8.8	9.4
Ø 63		—	—	3.7	—	—	4.8	5.4	6.2	6.8	7.6	8.4	9.1	10.1	10.8
Ø 20	L TYPE	—	0.7	—	0.8	0.9	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.5	2.9
Ø 25		—	1.0	—	1.1	1.3	1.3	1.6	1.8	2.1	2.3	2.6	2.8	3.3	3.7
Ø 32		—	—	1.5	—	—	2.0	2.3	2.6	2.9	3.3	3.6	3.9	4.6	5.2
Ø 40		—	—	1.7	—	—	2.2	2.7	3.1	3.5	3.9	4.4	4.8	5.6	6.0
Ø 50		—	—	2.8	—	—	3.5	4.2	4.8	5.4	6.0	6.7	7.3	7.8	10.2
Ø 63		—	—	3.5	—	—	4.5	5.1	5.8	6.5	7.1	7.8	8.5	9.2	9.8

Allowed Load

(Unit : N)

Bore Size	Type	Cylinder Stroke (mm)													
		10	20	25	30	40	50	75	100	125	150	175	200	250	300
Ø 20	M	—	52	—	44	43	38	67	58	51	45	40	36	28	19
	L	—	33	—	88	96	87	77	54	35	24	17	13	8	5
Ø 25	M	—	69	—	58	57	50	90	77	67	60	60	55	55	47
	L	—	49	—	39	102	92	91	77	79	70	52	40	25	17
Ø 32	M	—	—	146	—	—	160	143	122	115	102	117	107	92	80
	L	—	—	73	—	—	160	144	123	145	129	116	89	57	39
Ø 40	M	—	—	148	—	—	162	145	124	116	103	119	109	93	81
	L	—	—	73	—	—	160	144	123	144	129	116	89	56	38
Ø 50	M	—	—	238	—	—	236	221	192	179	160	176	161	138	121
	L	—	—	78	—	—	215	194	167	192	172	198	164	107	73
Ø 63	M	—	—	237	—	—	235	220	190	177	158	174	159	136	118
	L	—	—	74	—	—	215	194	165	191	171	198	160	102	69

1kgf ≒ 9.8 N, 1kgf/㎠≒0.098Mpa



Series NGQ

Standard Stroke

Classification	Cylinder Stroke (mm)													
	10	20	25	30	40	50	75	100	125	150	175	200	250	300
Ø 20	–	●	–	●	●	●	●	●	●	●	●	●	●	●
Ø 25	–	●	–	●	●	●	●	●	●	●	●	●	●	●
Ø 32	–	–	●	–	–	●	●	●	●	●	●	●	●	●
Ø 40	–	–	●	–	–	●	●	●	●	●	●	●	●	●
Ø 50	–	–	●	–	–	●	●	●	●	●	●	●	●	●
Ø 63	–	–	●	–	–	●	●	●	●	●	●	●	●	●

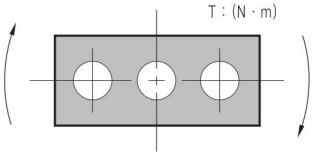
Note) In the case of middle stroke, able to manufacture it in 5 stroke units by mounting spacer (including '– ' mark part)

Allowed Rotation Torque (T)

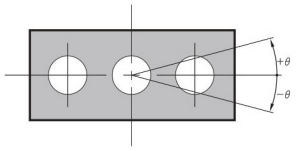
(Unit : N · m)

Bore Size	Type	Cylinder Stroke (mm)													
		10	20	25	30	40	50	75	100	125	150	175	200	250	300
Ø 20	M	—	1.4	—	1.2	1.2	1.1	1.9	1.6	1.4	1.3	1.1	1	0.8	0.5
	L	—	0.9	—	2.5	2.7	2.4	2.2	1.5	1	0.7	0.5	0.4	0.2	0.1
Ø 25	M	—	2.3	—	1.9	1.9	1.7	2.6	2.5	2.2	2	2	1.8	1.8	1.6
	L	—	1.6	—	1.3	3.4	3.1	3	2.6	2.6	2.3	1.7	1.3	0.8	0.5
Ø 32	M	—	—	5.9	—	—	6.4	5.7	4.9	4.6	4.1	4.7	4.3	3.7	3.2
	L	—	—	2.9	—	—	6.4	5.8	4.9	5.8	5.2	4.7	3.6	2.3	1.5
Ø 40	M	—	—	6.5	—	—	7.1	6.3	5.4	5.1	4.5	5.2	4.7	4	3.5
	L	—	—	3.2	—	—	6.9	6.3	5.3	6.3	5.6	5	3.9	2.5	1.7
Ø 50	M	—	—	13.1	—	—	13	12.2	10.5	9.8	8.8	9.7	8.9	7.6	6.6
	L	—	—	4.3	—	—	11.8	10.7	9.2	10.6	9.5	10.9	9	5.9	4
Ø 63	M	—	—	14.7	—	—	14.6	13.7	11.8	11	9.8	10.8	9.9	8.4	7.3
	L	—	—	4.6	—	—	13.3	12	10.3	11.9	10.6	12.3	9.9	6.3	4.3

1kgf ≒ 9.8 N, 1kgf/㎠≒0.098Mpa



Non-load: It is a theoretical rotational angle by guide rod and bearing's clearance in reverse movement



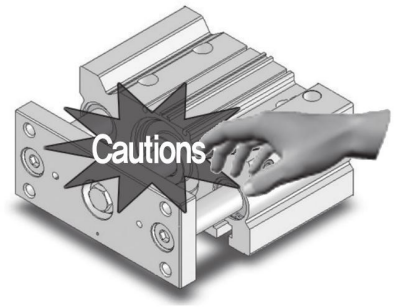
Maximum Rotation Angle

Bore Size	Maximum Rotation Angle(°)	
	NGQM	NGQL
Ø20, 25	±0.09 °	±0.06 °
Ø32, 40	±0.08 °	±0.06 °
Ø50, 63	±0.06 °	±0.05 °

Cautions

Please do not insert your hands or fingers between plate and body.

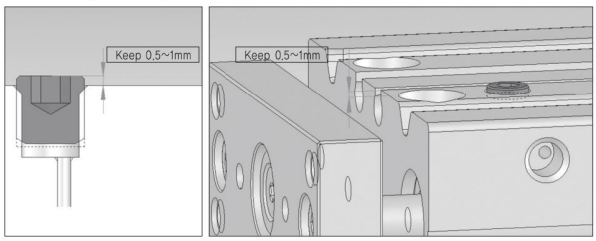
- Please be careful that your hands or fingers are not stuck between cylinder body and plate in air pressure.



In using side port

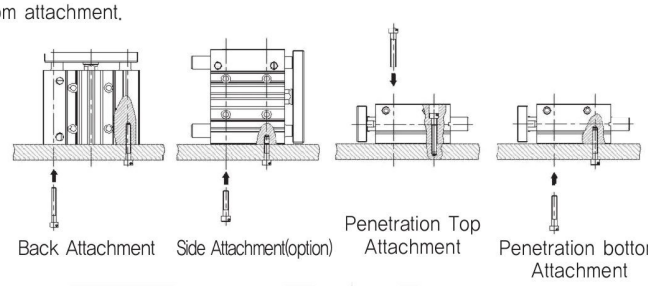
- When you use side port by attaching plug on top port hole, in the case of cylinder internal diameter of ø12,16, please assemble it in order to keep 0.5~1mm with top as below figure.

※Narrowed air orifice hole's diameter might cause cylinder operation problems.



Attachment

You can attach it by four methods such as back attachment, side attachment, penetration top attachment, and penetration bottom attachment.



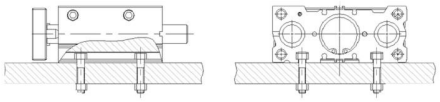


Table 1. T-SLOT Bolts

Bore Size	Applied Bolt	Bore Size	Applied Bolt
Ø20	M5	Ø63	M10
Ø25	M5	Ø80	M12
Ø32	M6	Ø100	M14

Note) Used bolt is based on hexagonal (rectangular) bolt.

① Caution in cylinder back attachment
In cylinder back attachment, please process entrance hole in order guide rod's end not to interfere attachment surface (bracket). But in back attachment, as for bolt depth, 1.5d is recommended (Refer to the Table 2. Back attachment area size and bolt size)

② In treating cylinder, please be careful of piston rod or guide rod's damage by impact or strange materials.
- Rod and cylinder damage may cause leakage and malfunction.

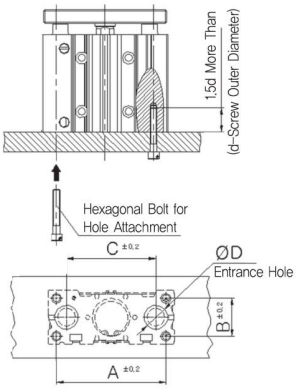
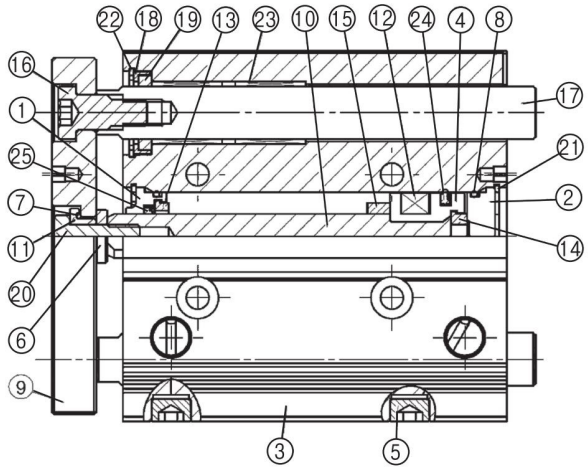


Table 2. Back Attachment Part's Size and Bolt Size

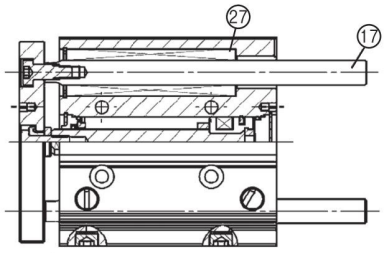
Bore Size	A (mm)	B (mm)	C (mm)	Ø D (mm)		Hexagonal wrench bolt for attachment
				NGQM	NGQL	
Ø20	72	24	56	14	12	M5 X 0.8
Ø25	82	30	66	18	15	M5 X 0.8
Ø32	98	34	80	22	18	M8 X 1.25
Ø40	106	40	87	22	18	M8 X 1.25
Ø50	130	46	110	27	22	M10 X 1.5
Ø63	142	58	124	27	22	M10 X 1.5

Structural Drawing/Part List, Packing List

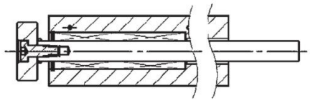
⊙ **NGQM** 20~25



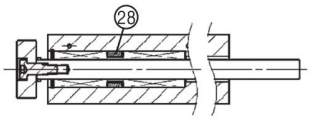
⊙ **NGQL** 20~25



* Ø20 : More than 20ST
* Ø25 : More than 30ST



* Ø20 : Between 20ST and 30ST



* Ø 20, 25 : More than 30ST

Part List

No.	Part Name	Material
1	ROD COVER	Aluminum Alloy
2	HEAD COVER	Aluminum Alloy
3	CYLINDER TUBE	Aluminum Alloy
4	PISTON	Aluminum Alloy
5	PORT PLUG	CarbonTool Steel
6	RETAINER WASHER	Stainless Steel
7	O-RING	NBR
8	GASKET	NBR
9	PLATE	Carbon Steel
10	PISTON ROD	Stainless Steel

No.	Part Name		Material
11	RETAINER		Carbon Steel
12	MAGNET		NBR
13	BUMPER-A		Urethane
14	BUMPER-B		Urethane
15	SPACER		Aluminum Alloy (Non-standard ST)
16	GUIDE ROD BOLT		CarbonTool Steel
17	GUIDE ROD	NGQM	Carbon Steel
		NGQL	High carbon chromium bearing steel
18	HOLDER		Carbon Steel

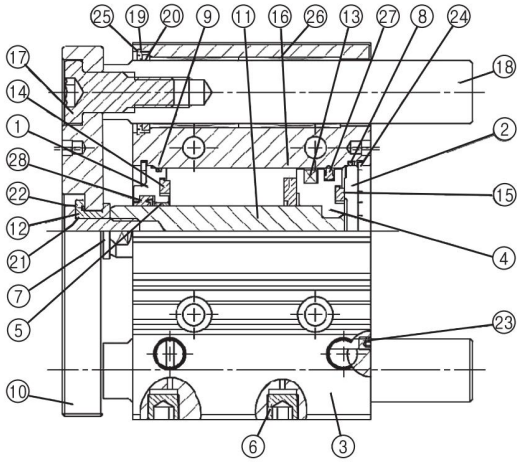
No.	Part Name	Material
19	FELT	Wool
20	PLATE ATTACHMENT BOLT	CarbonTool Steel
21	SNAP RING-A	CarbonTool Steel
22	SNAP RING-B	CarbonTool Steel
23	SLIDE BEARING	Copper Alloy
24	PISTON PACKING	NBR
25	ROD PACKING	NBR
26	SCRAPER	NBR
27	BALL BEARING	—
28	GUIDE SPACER	Aluminum Alloy

Packing List/Replacement Part

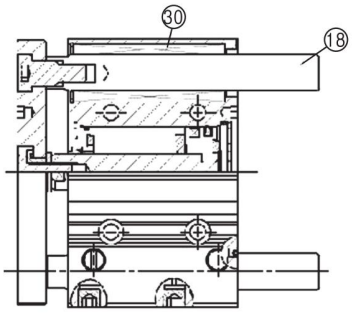
NO.	Part Name	Part Number	
		Ø20	Ø25
8	GASKET	C-18	C-23
24	PISTON PACKING	TPSA-20	TPSA-25
25	ROD PACKING	DYR-10SK-K	DYR-12
SEAL KIT		NGQ20-SK	NGQ25-SK

Structural Drawing/Part List, Packing List

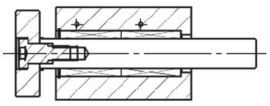
⊙ NGQM 32~63



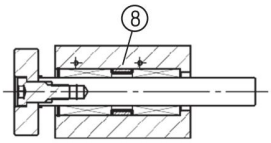
⊙ NGQL 32~63



*Less than 25ST



*Between 25ST and 50ST



*More than 50ST

Part List

No.	Part Name	Material
1	ROD COVER	Aluminum Alloy
2	HEAD COVER	Aluminum Alloy
3	CYLINDER TUBE	Aluminum Alloy
4	PISTON	Aluminum Alloy
5	BUSH	Copper Alloy (Ø32and 40 are Excluded)
6	PORT PLUG	CarbonTool Steel
7	RETAINER WASHER	Carbon Steel
8	HEAD COVER GASKET	NBR
9	GASKET	NBR
10	PLATE	Carbon Steel

No.	Part Name		Material
11	PISTON ROD		Carbon Steel
12	RETAINER		Carbon Steel
13	MAGNET		NBR
14	BUMPER-A		Urethane
15	BUMPER-B		Urethane
16	SPACER		Aluminum Alloy (Non-standard ST)
17	GUIDE ROD BOLT		CarbonTool Steel
18	GUIDE ROD	NGQM	Carbon Steel
		NGQL	High carbon chromum bearing steel
19	HOLDER		Carbon Steel

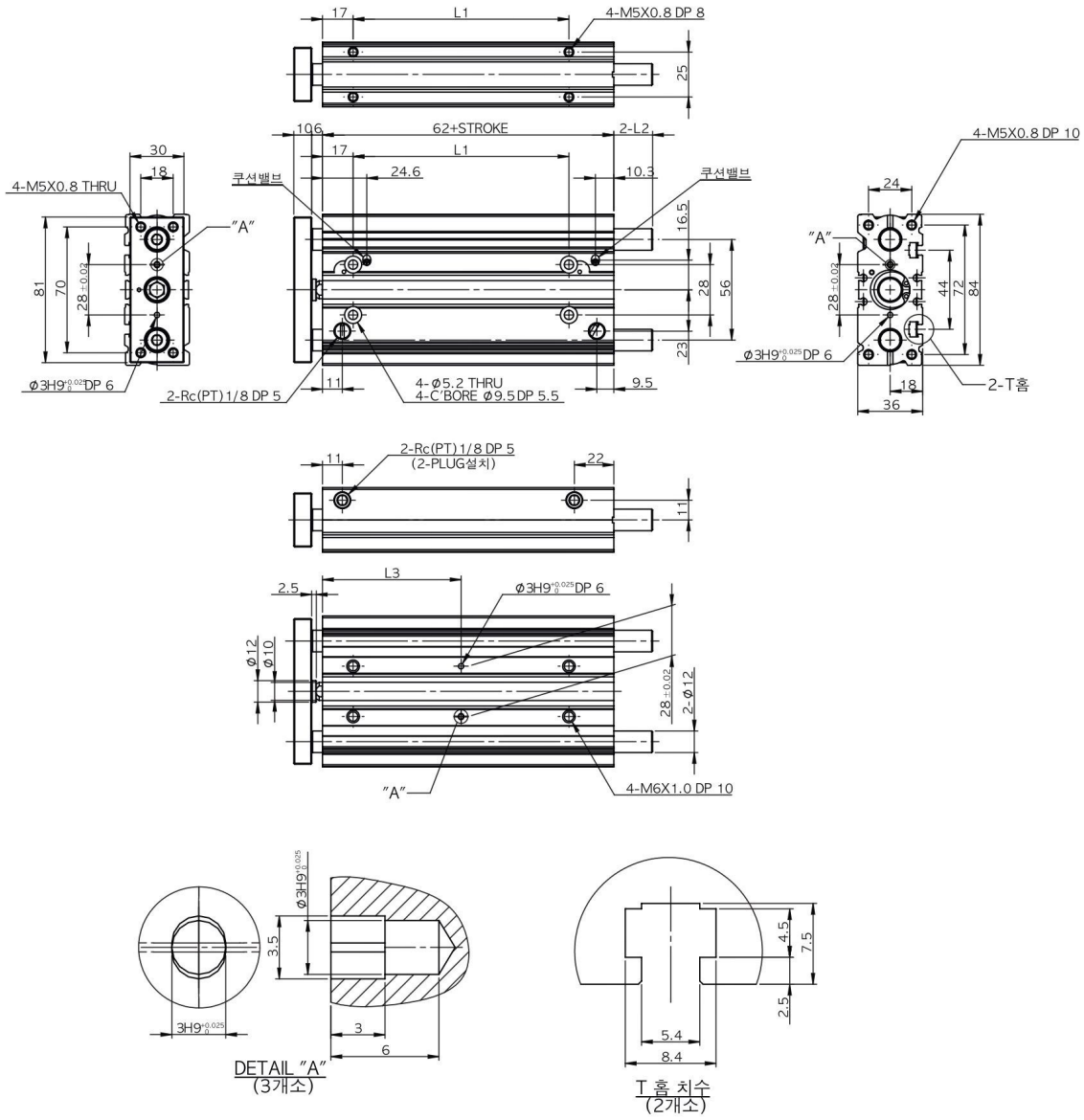
No.	Part Name	Material
20	FELT	Wool
21	PLATE ATTACHMENT BOLT	CarbonTool Steel
22	O-RING	NBR
23	ACEPHALIA BOLT	CarbonTool Steel
24	SNAP RING-A	CarbonTool Steel
25	SNAP RING-B	CarbonTool Steel
26	SLIDE BUSH	Copper Alloy
27	PISTON PACKING	NBR
28	ROD PACKING	NBR
30	BALL BEARING	—
31	GUIDE SPACER	Aluminum Alloy

Packing List/Replacement Part

NO.	Part Name	Part Number			
		Ø32	Ø40	Ø50	Ø63
8	HEAD COVER GASKET	TGQM032-18-1586	TGQM040-18-1587	TGQM050-18-1588	TGQM063-18-1589
9	GASKET	C-29	C-36	C-46	C-60
27	PISTON PACKING	TPSA-32	TPSA-40	TPSA-50	TPSA-63
28	ROD PACKING	DYR-16	PDU-16Z	PDU-20Z	PDU-20Z
SEAL KIT		NGQ32-SK	NGQ40-SK	NGQ50-SK	NGQ63-SK

※ As for Seal KIT, 8, 9, 27, and 28 replacement parts are comprised in one type.

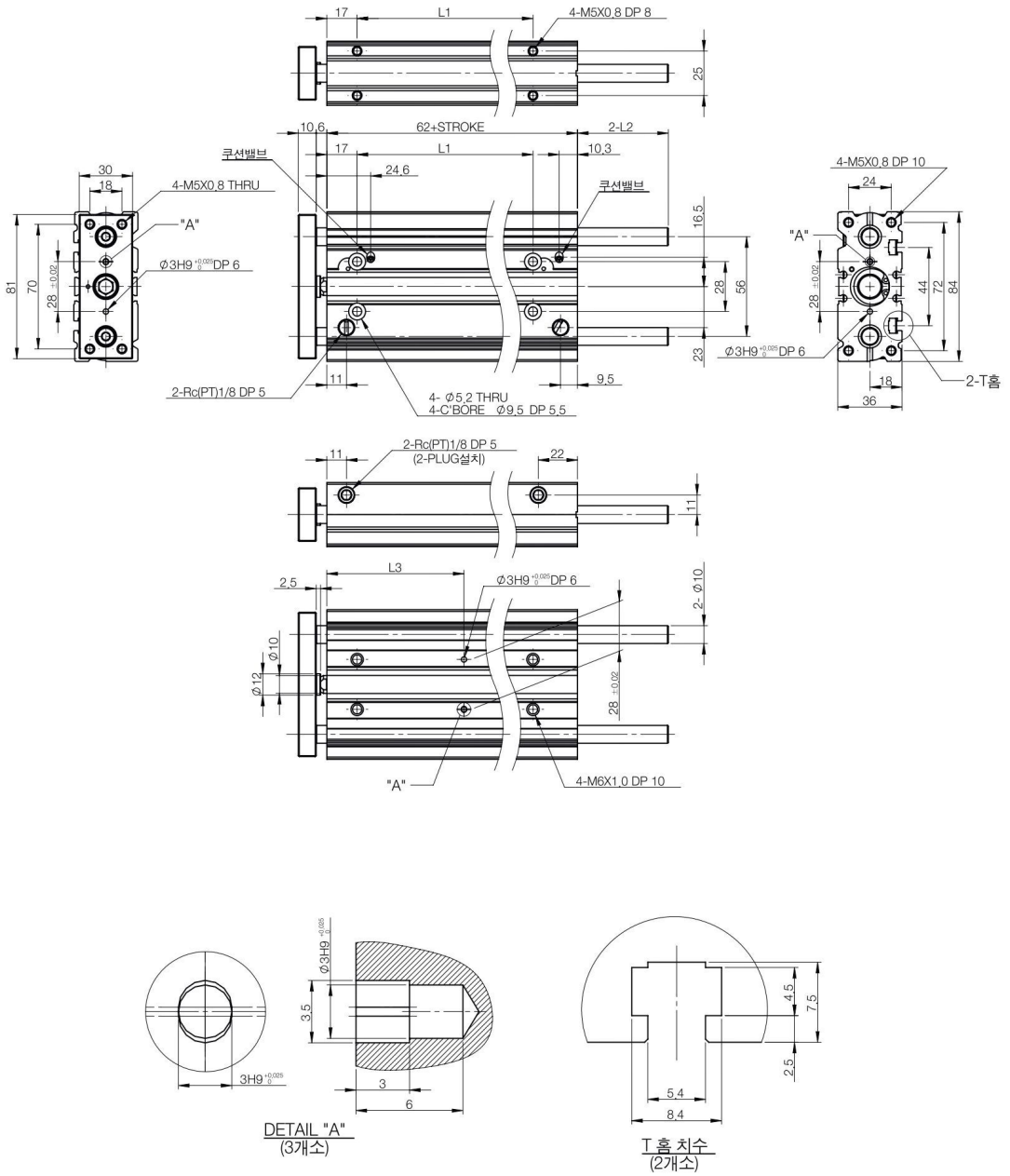
Drawing/NGQM Ø20 Air cushion Type



NGQM Dimensions (Ø20)

STROKE	25	50	75	100	125	150	175	200	250
L1	44	44	44	120	120	120	120	200	200
L2	0	0	21.5	21.5	21.5	21.5	21.5	21.5	22
L3	39	39	39	77	77	77	77	117	117

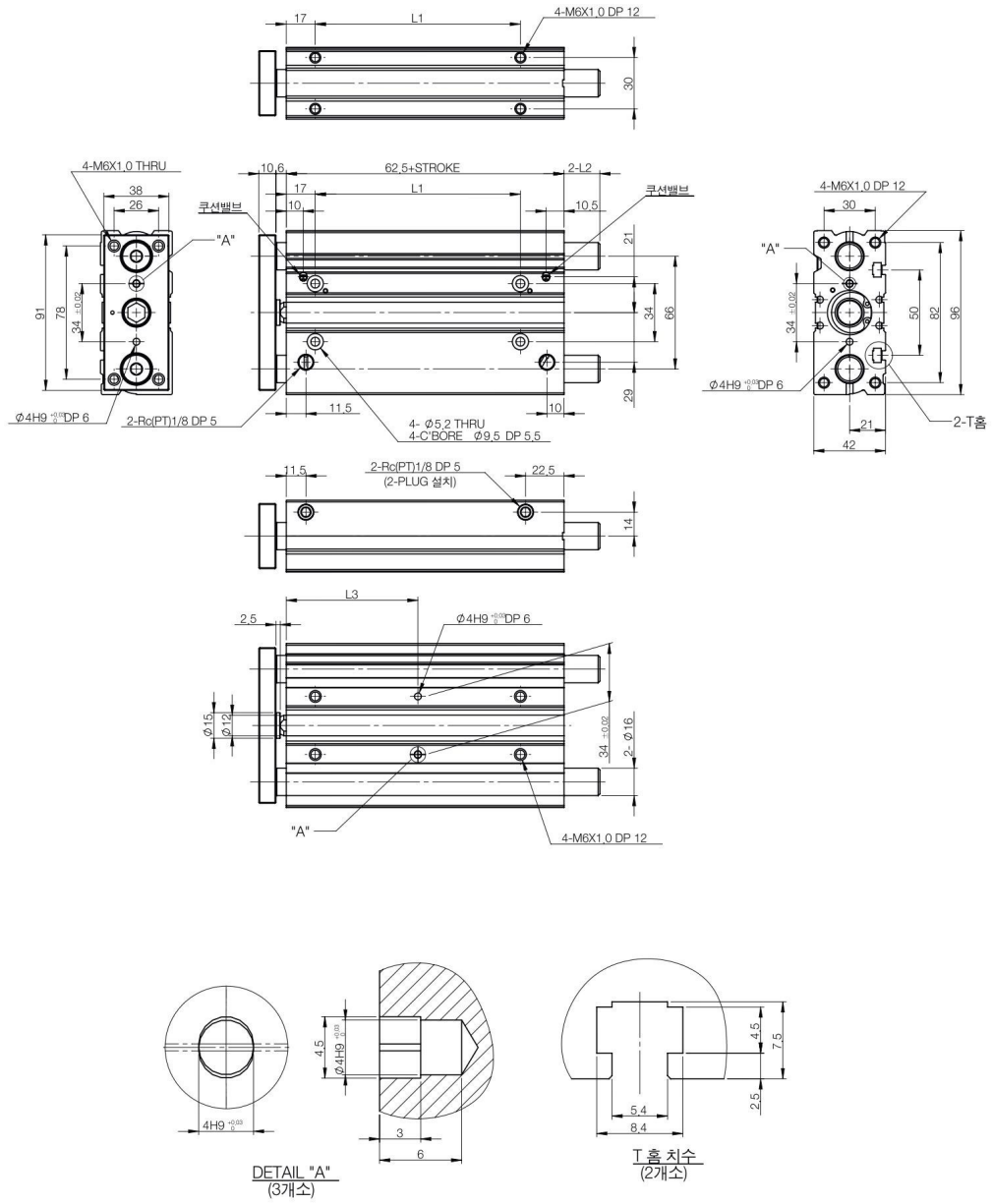
Drawing/NGQL Ø20 Air cushion Type



NGQL Dimensions(Ø20)

STROKE	25	50	75	100	125	150	175	200	250
L1	44	44	44	120	120	120	120	200	200
L2	11	16	16	26	26	36	36	36	51
L3	39	39	39	77	77	77	77	117	117

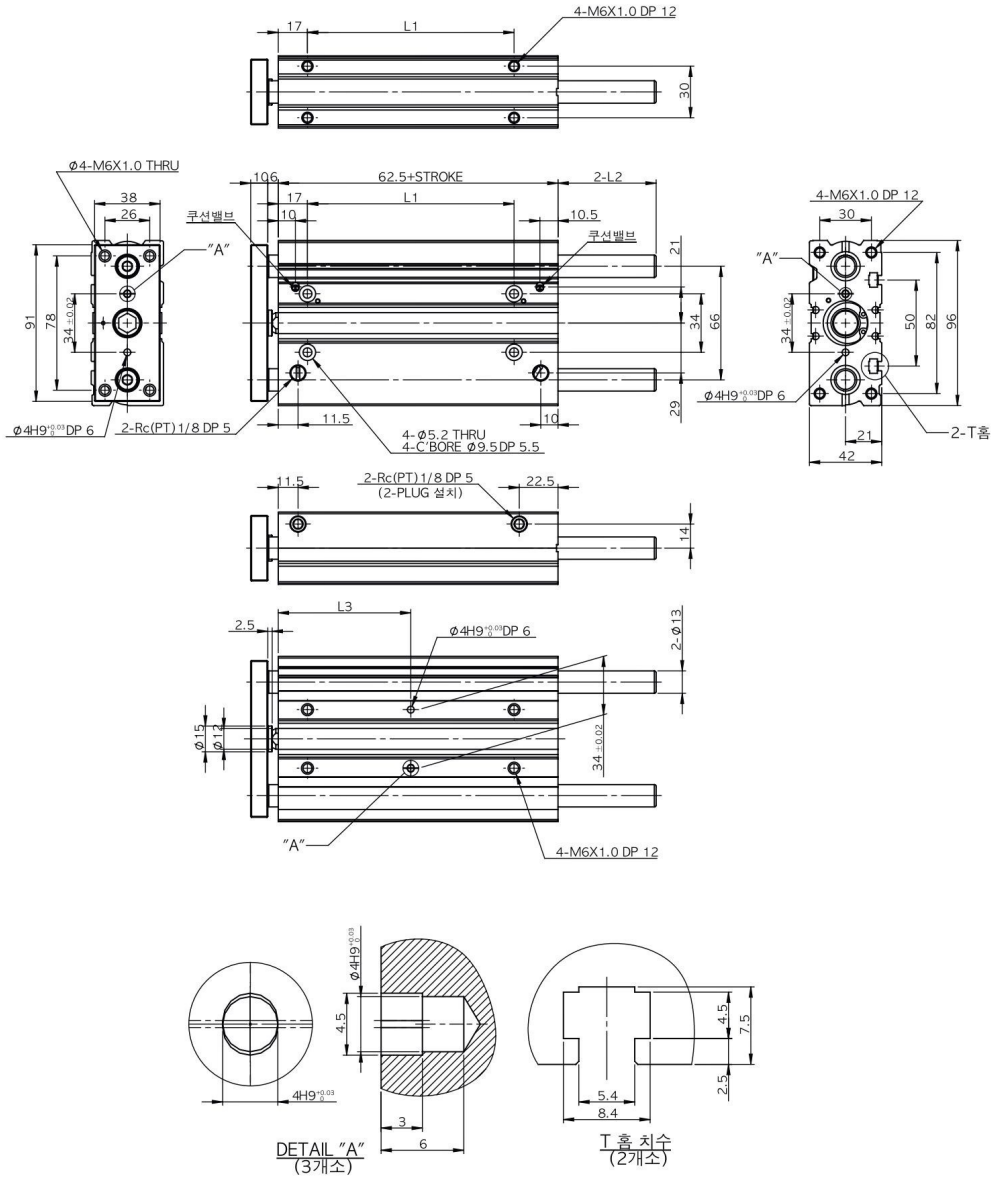
Drawing/NGQM Ø25 Air cushion Type



NGQM Dimensions(Ø25)

STROKE	25	50	75	100	125	150	175	200	250
L1	44	44	44	120	120	120	120	200	200
L2	0	0	21	21	21	21	31	31	46.5
L3	39	39	39	77	77	77	77	117	117

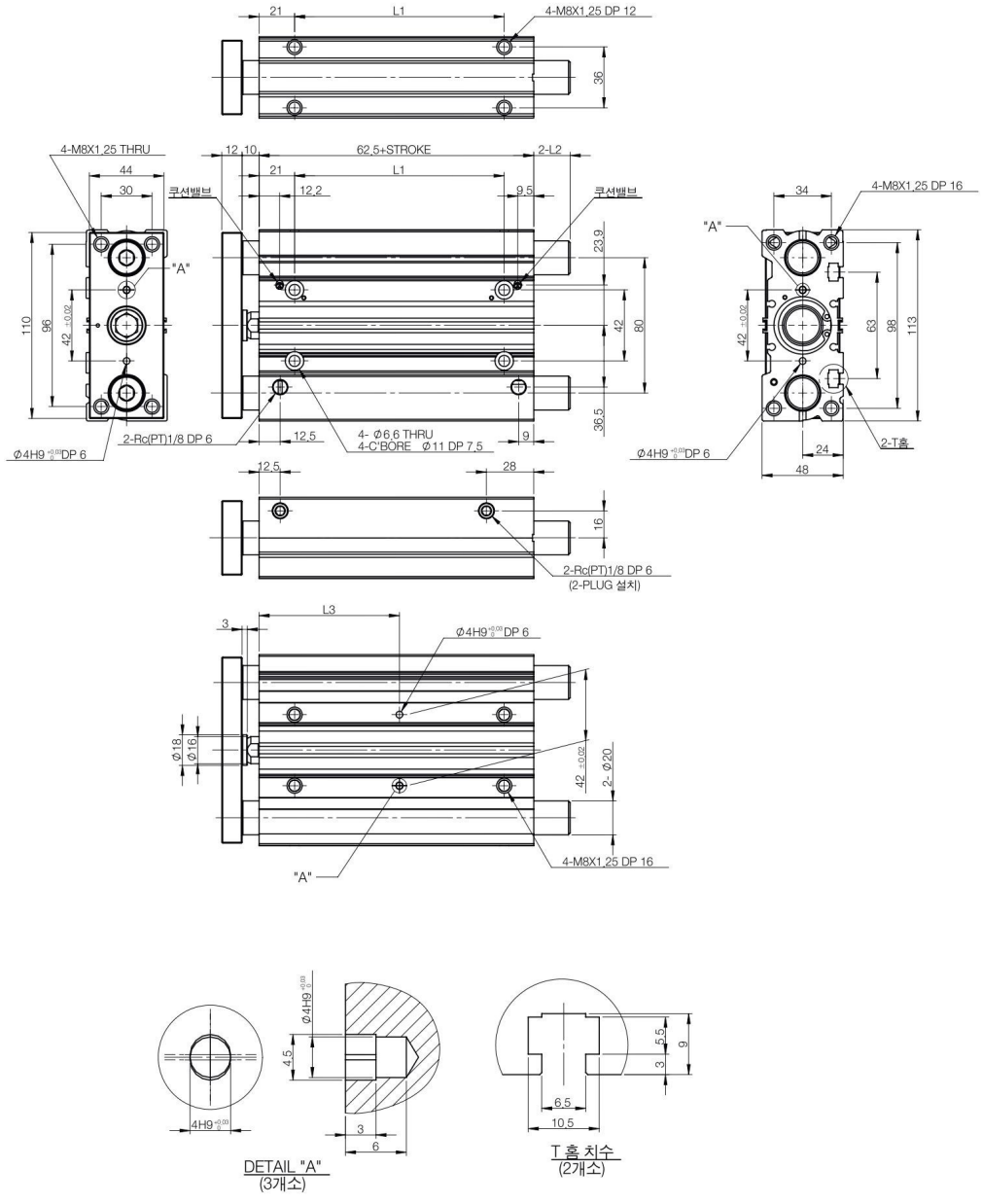
Drawing/NGQL Ø25 Air cushion Type



NGQL Dimensions(Ø25)

STROKE	25	50	75	100	125	150	175	200	250
L1	44	44	44	120	120	120	120	200	200
L2	12	22	22	32	32	47	47	47	62
L3	39	39	39	77	77	77	77	117	117

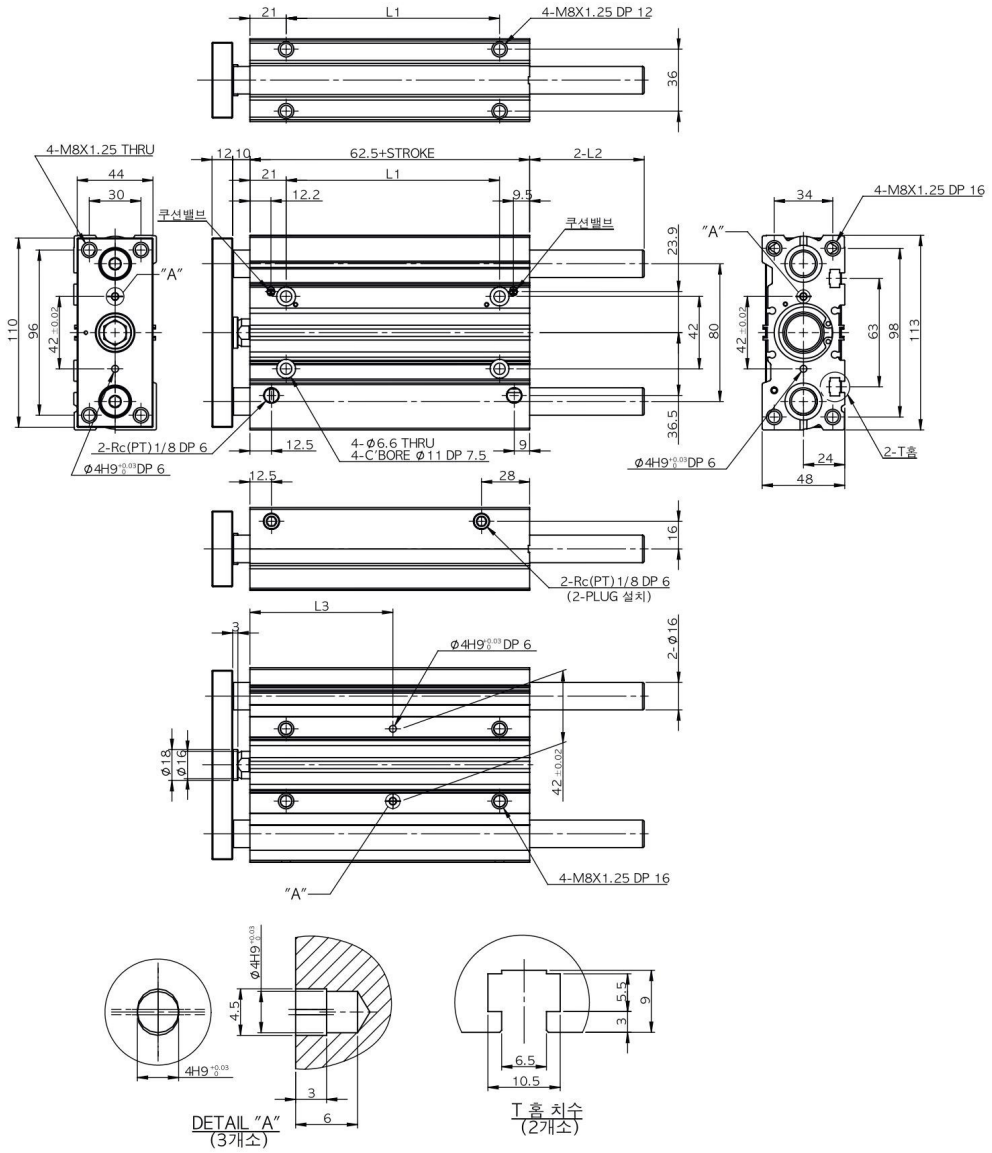
Drawing/NGQM Ø32 Air cushion Type



NGQM Dimensions(Ø32)

STROKE	25	50	75	100	125	150	175	200	250
L1	48	48	48	124	124	124	124	200	200
L2	0	16.5	21.5	21.5	26.5	26.5	46.5	46.5	46.5
L3	45	45	45	83	83	83	83	121	121

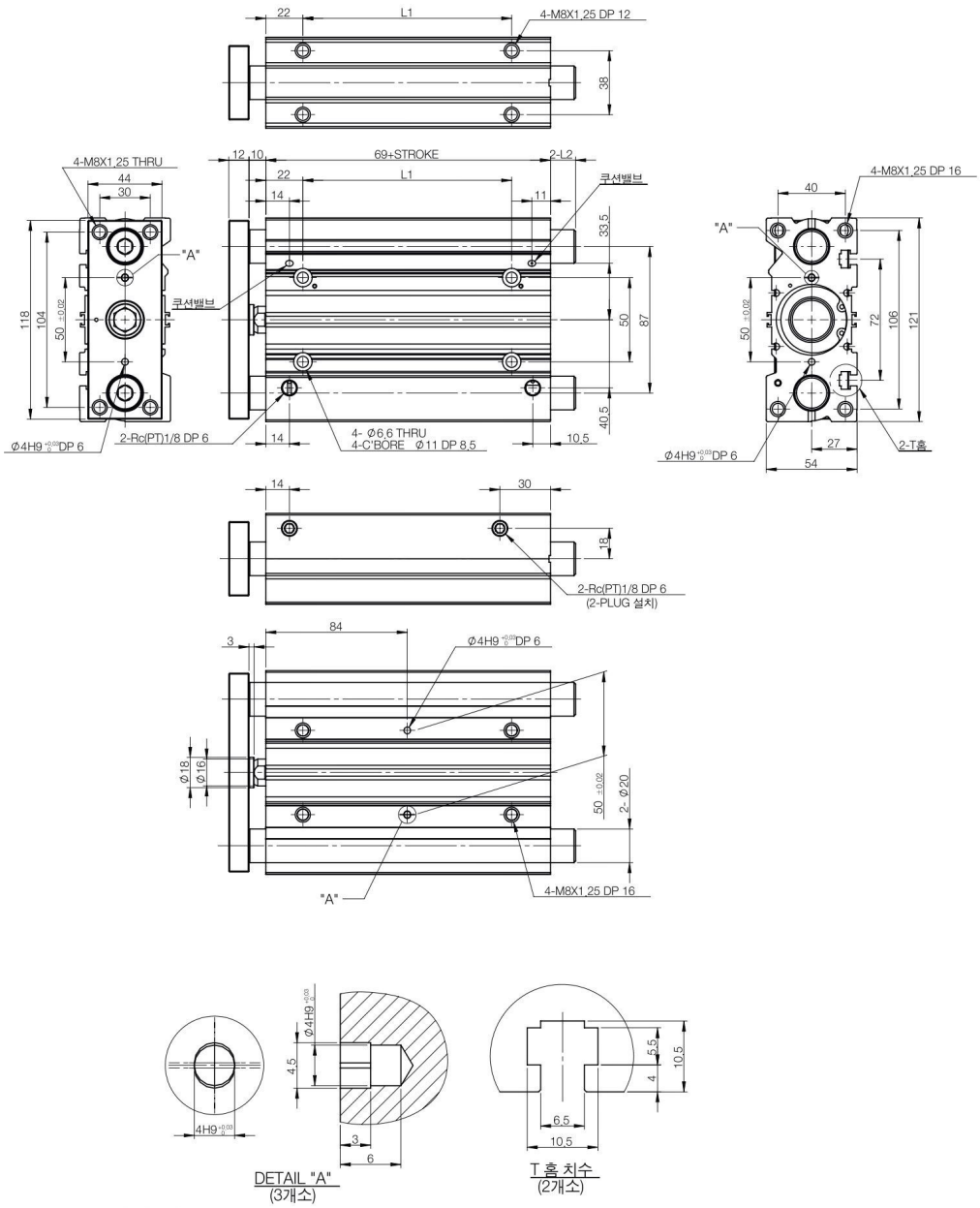
Drawing/NGQL Ø32 Air cushion Type



NGQL Dimensions(Ø32)

STROKE	25	50	75	100	125	150	175	200	250
L1	48	48	48	124	124	124	124	200	200
L2	16.5	21.5	21.5	41.5	41.5	66.5	66.5	66.5	66.5
L3	45	45	45	83	83	83	83	121	121

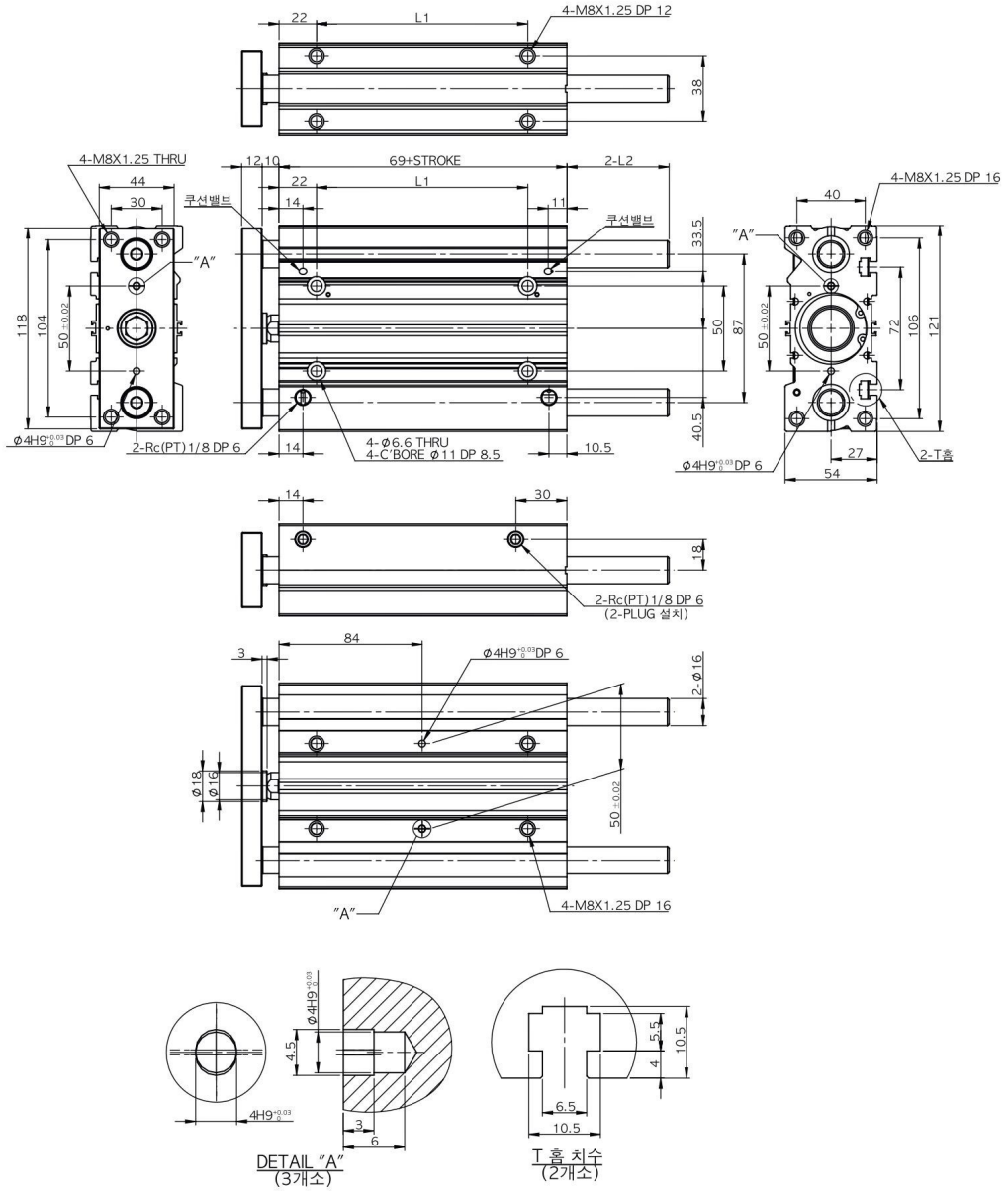
Drawing/NGQM Ø40 Air cushion Type



NGQM Dimensions(Ø40)

STROKE	25	50	75	100	125	150	175	200	250
L1	48	48	48	124	124	124	124	200	200
L2	0	10	15	15	20	20	40	40	40
L3	46	46	46	84	84	84	84	122	122

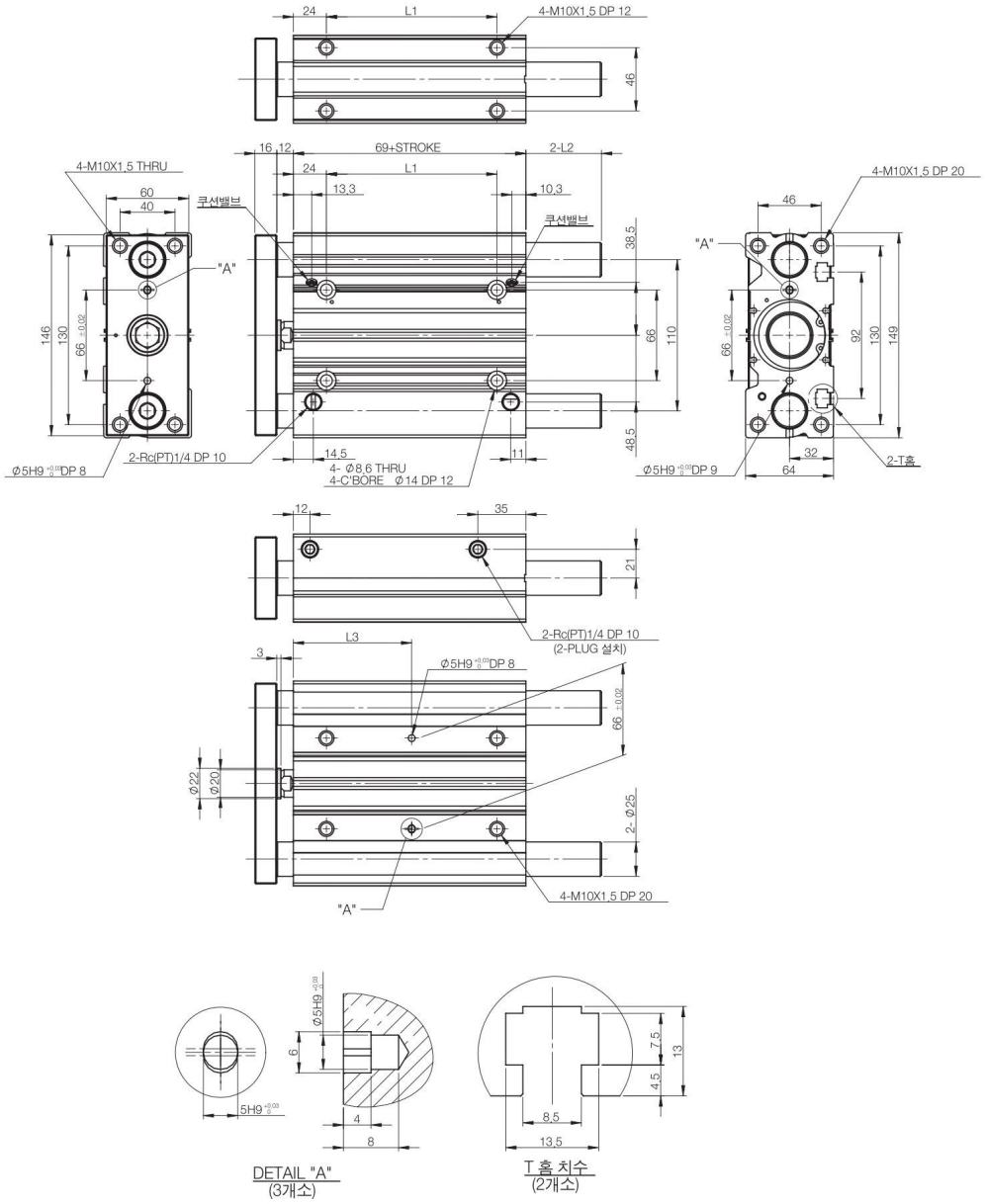
Drawing./NGQL Ø40 Air cushion Type



NGQL Dimensions(Ø40)

STROKE	25	50	75	100	125	150	175	200	250
L1	48	48	48	124	124	124	124	200	200
L2	10	15	15	35	35	60	60	60	60
L3	46	46	46	84	84	84	84	122	122

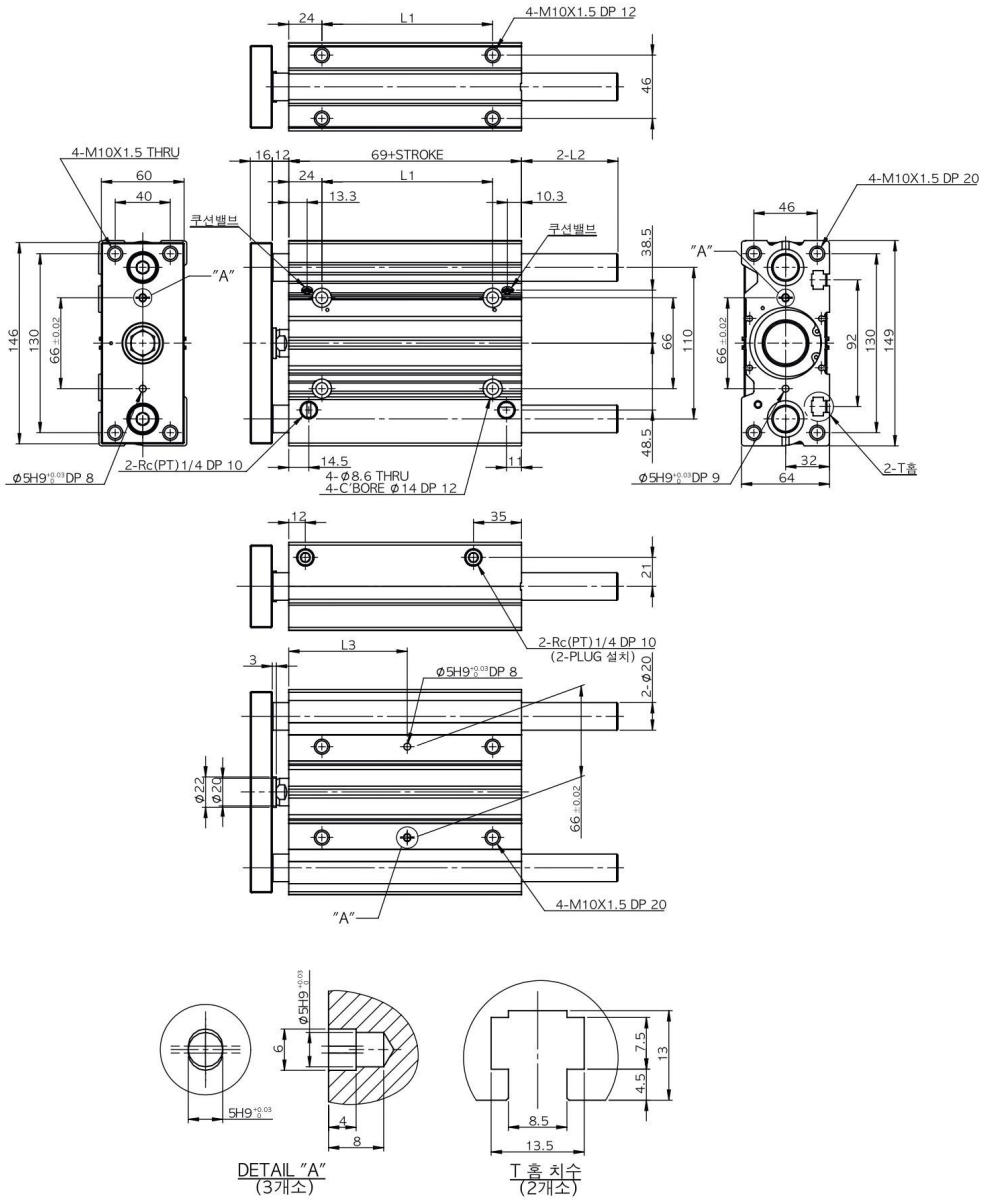
Drawing/NGQM Ø50 Air cushion Type



NGQM Dimensions(Ø50)

STROKE	25	50	75	100	125	150	175	200	250
L1	48	48	48	124	124	124	124	200	200
L2	0	15	25	25	30	30	50	50	50
L3	48	48	48	86	86	86	86	124	124

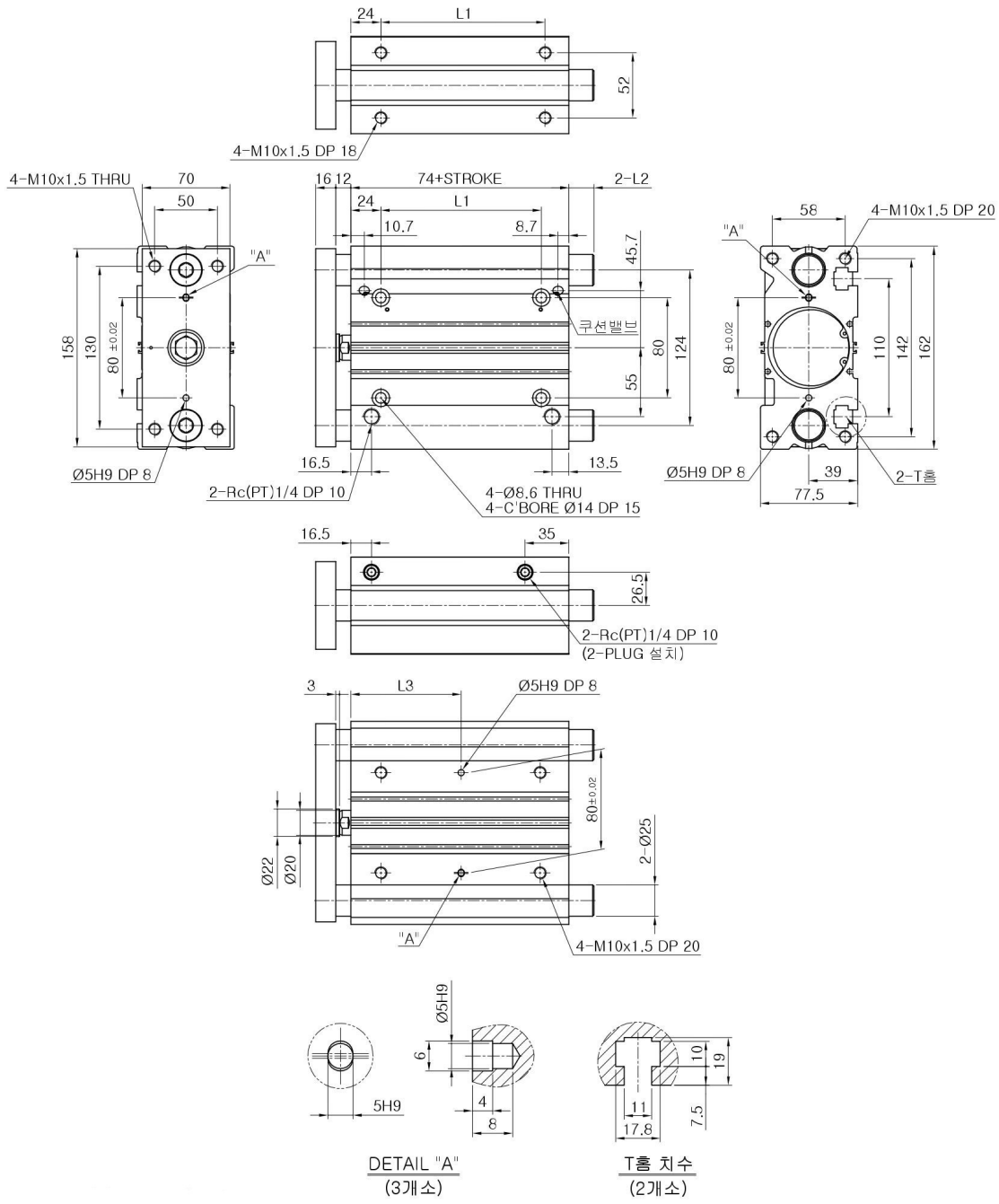
Drawing/NGQL Ø50 Air cushion Type



NGQL Dimensions(Ø50)

STROKE	25	50	75	100	125	150	175	200	250
L1	48	48	48	124	124	124	124	200	200
L2	20	25	25	45	45	70	70	70	70
L3	48	48	48	86	86	86	86	124	124

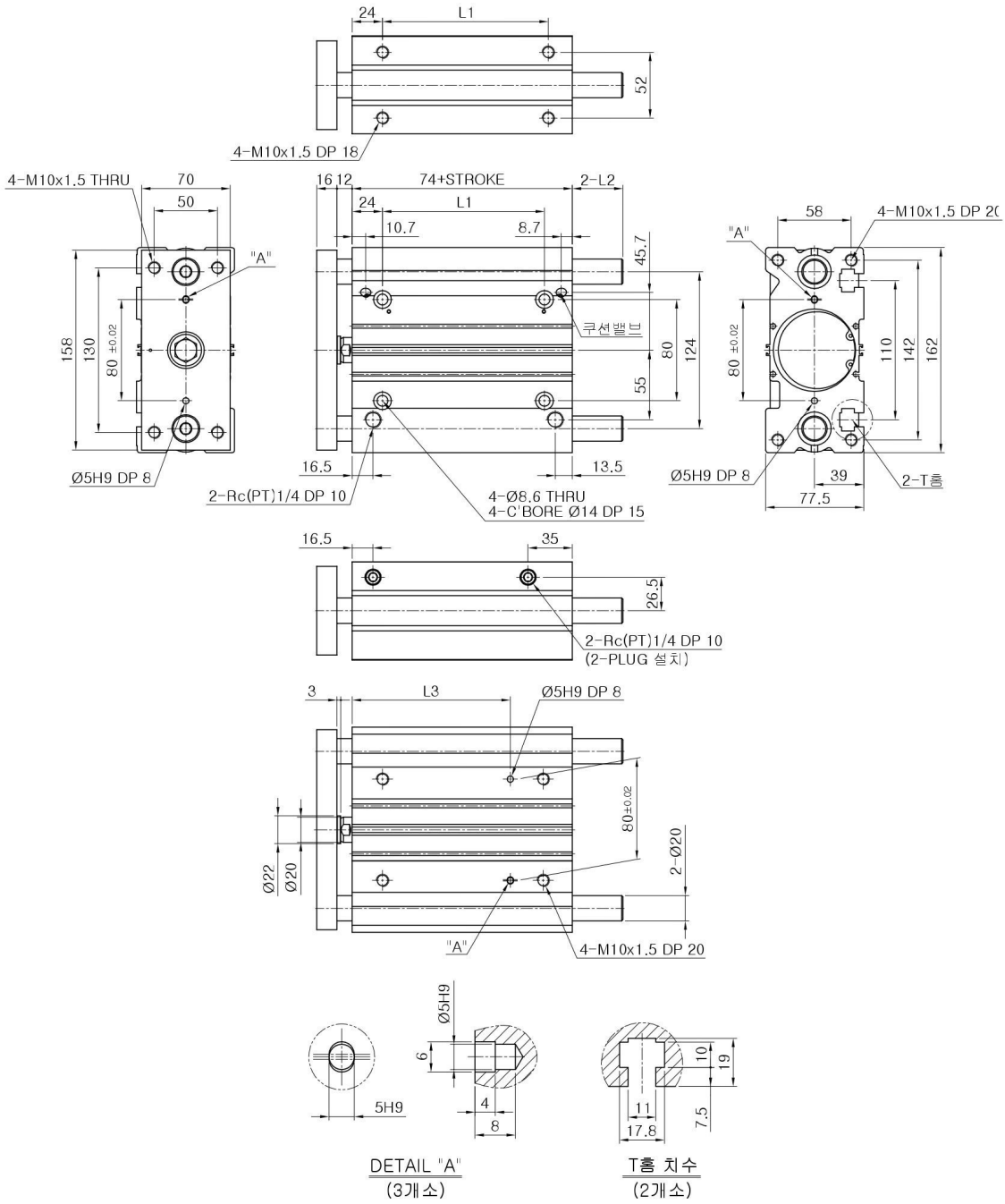
Drawing/NGQM Ø63 Air cushion Type



NGQM Dimensions(Ø63)

STROKE	25	50	75	100	125	150	175	200	250
L1	52	52	52	128	128	128	128	200	200
L2	0	10	20	20	25	25	45	45	45
L3	50	50	50	88	88	88	88	124	124

Drawing/NGQL Ø63 Air cushion Type

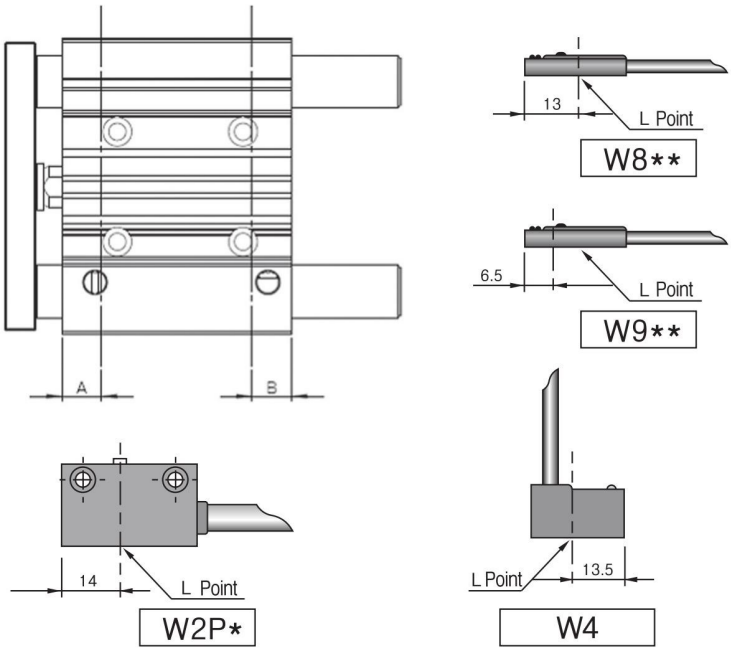


NGQL Dimensions(Ø63)

STROKE	25	50	75	100	125	150	175	200	250
L1	52	52	52	128	128	128	128	200	200
L2	15	20	20	40	40	65	65	65	65
L3	50	50	50	88	88	88	88	124	124

NGQ Air cushion Series

Auto Switch's Proper Attachment Position (Under Condition that Forward and Backward Full Stroke is Used)



(Unit : mm)

Bore Size	A Point Position	B Point Position
Ø20	35.5+Spacer length	26.5
Ø25	35+Spacer length	27.5
Ø32	35+Spacer length	27.5
Ø40	44+Spacer length	26
Ø50	44+Spacer length	26
Ø63	44.5+Spacer length	29

(Unit : mm)

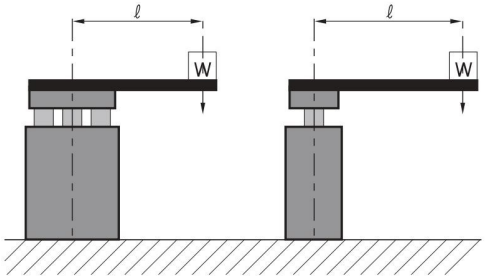
Switch Type	L Point Position (Detection Oosition)	Remarks
W8**	13	Able to use all the NGQ
W9**	6.5	
W4	13.5	Able to use internal diameter between Ø32 and Ø100
W2P*	14	

★ In attaching switch, please use it after matching cylinder's A point or B point with the switch's L point.

〈Cautions〉

In attaching two auto switches, Min. stroke should be operated more than 10 stroke. But in attaching W2P* switch, it can be operated more than 15 stroke.

In Vertical Attachment - NGQM / Slide Bearing



※ Using Condition

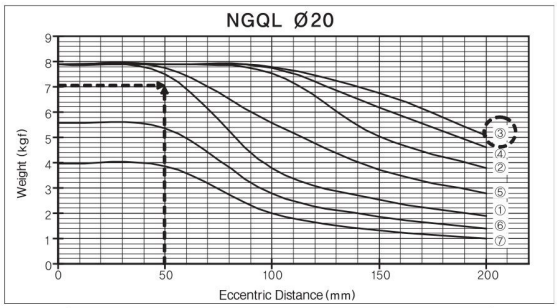
Pressure Applied P = 5 ~ 7 kgf/㎠
Cylinder Speed V ≒ 250mm/s (50 ~ 300 mm/s)
Eccentric Distance = ℓ (mm)
Applied Weight = W (kgf)

Note 1) Used pressure of 5 ~ 7 kgf/㎠ is recommended.
Note 2) When cylinder speed exceeds 30mm/s

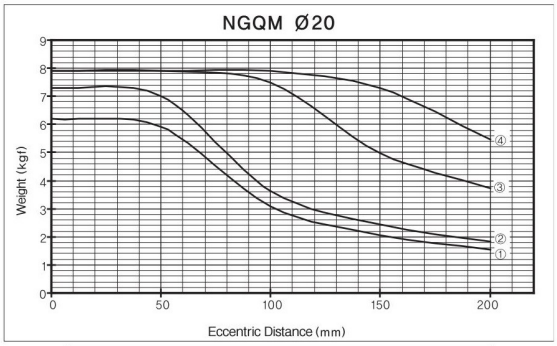
〈Selected Example〉
1. How to Attach : Vertical Attachment
2. Applied Bearing : Ball Bearing
3. Max. Cylinder Speed: 20mm/s
4. Applied Load : 7kgf
5. Applied Stroke : 50 Stroke
6. Eccentric Distance : 50mm

※Selection
1. Select ball bearing among vertical attached graphs.
2. Select a graph to endure load more than 7kgf
   → NGQL Ø20 ~ Ø100
3. Select a graph matched with 50 stroke and eccentric distance of 50mm and then, select device below the graph's line
   → Select NGQL Ø20 and apply eccentric distance of 50mm.
4. Selected device is NGQL Ø20-50ST

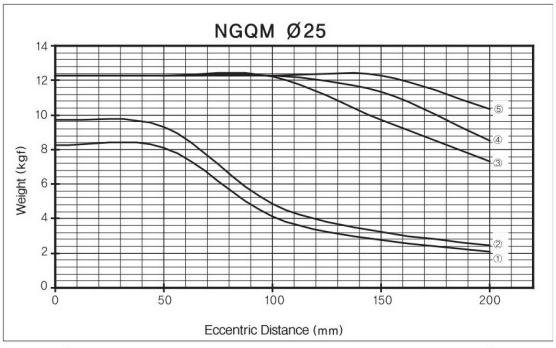
Table 3. Applied Load Ratio



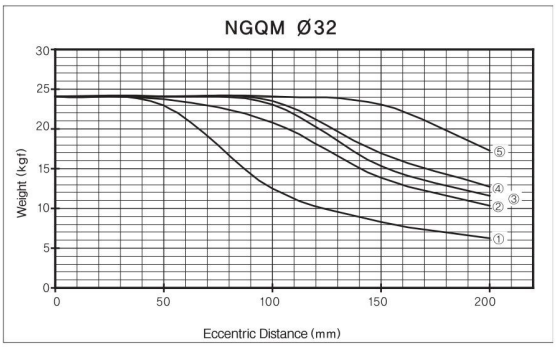
① Less than 20ST
② Between 30ST and 50ST
③ Between 30ST and 50ST
④ Between 50ST and 100ST
⑤ Between 100ST and 150ST
⑥ Between 150ST and 200ST
⑦ Between 200ST and 300ST



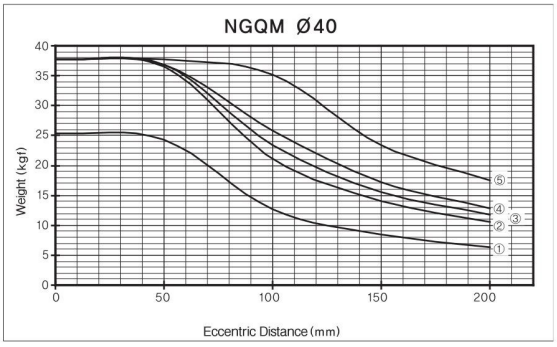
① Less than 30ST
② Between 30ST and 50ST
③ Between 50ST and 200ST
④ Between 200ST and 300ST



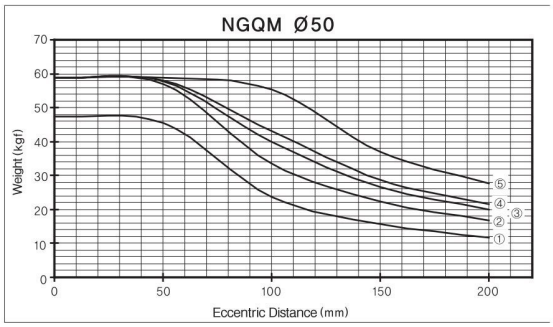
① Less than 30ST
② Between 30ST and 50ST
③ Between 50ST and 150ST
④ Between 150ST and 200ST
⑤ Between 200ST and 300ST



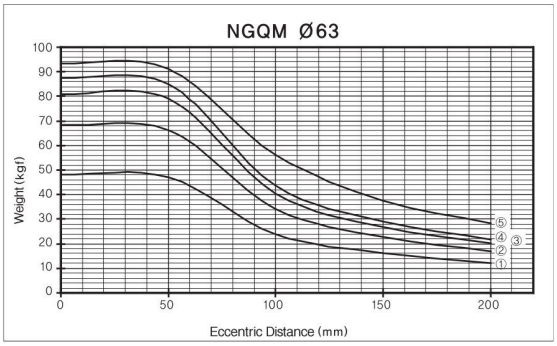
① Less than 25ST ② Between 25ST and 50ST
③ Between 50ST and 100ST ④ Between 100ST and 150ST
⑤ Between 150ST and 200ST



① Less than 25ST ② Between 25ST and 50ST
③ Between 50ST and 100ST ④ Between 100ST and 150ST
⑤ Between 150ST and 200ST

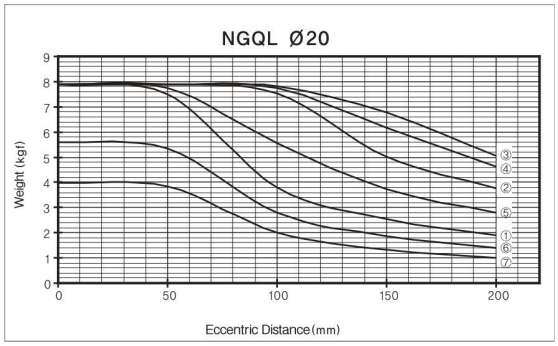


① Less than 25ST ② Between 25ST and 50ST
③ Between 50ST and 100ST ④ Between 100ST and 150ST
⑤ Between 150ST and 200ST

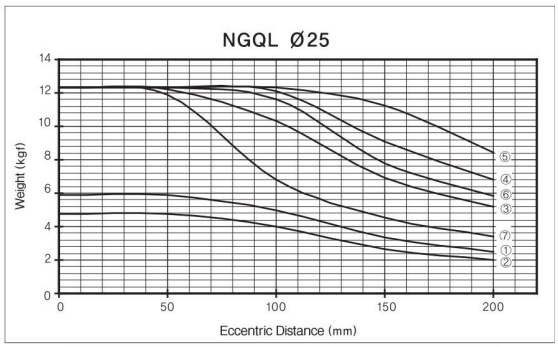


① Less than 25ST ② Between 25ST and 50ST
③ Between 50ST and 100ST ④ Between 100ST and 150ST
⑤ Between 150ST and 200ST

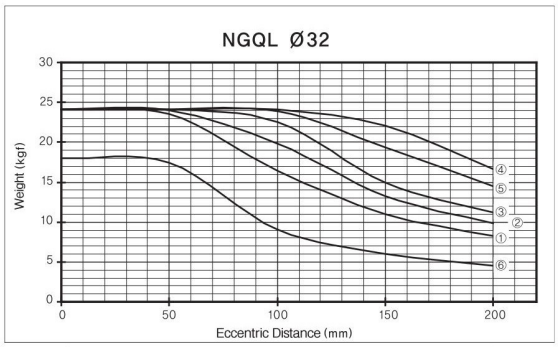
In Vertical Attachment - NGQL / Ball Bearing



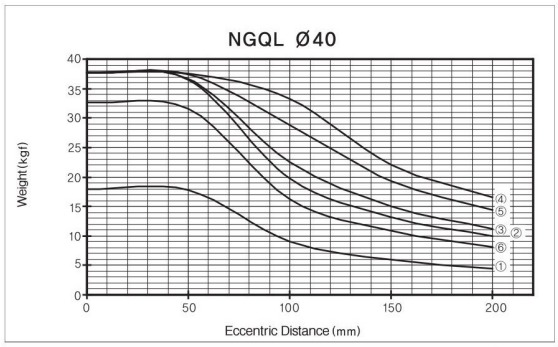
① Less than 20ST ② Between 20ST and 50ST
③ Between 30ST and 50ST ④ Between 50ST and 100ST
⑤ Between 100ST and 150ST ⑥ Between 150ST and 200ST
⑦ Between 200ST and 300ST



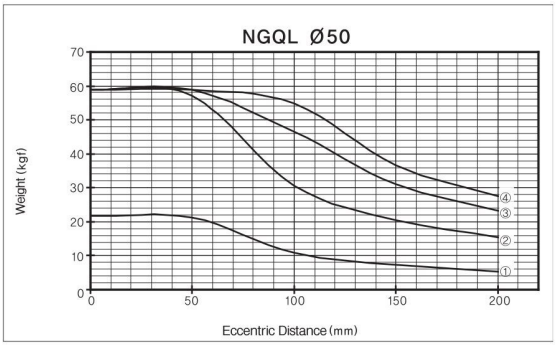
① Less than 20ST ② Between 20ST and 50ST
③ Between 30ST and 50ST ④ Between 50ST and 100ST
⑤ Between 100ST and 150ST ⑥ Between 150ST and 200ST
⑦ Between 200ST and 300ST



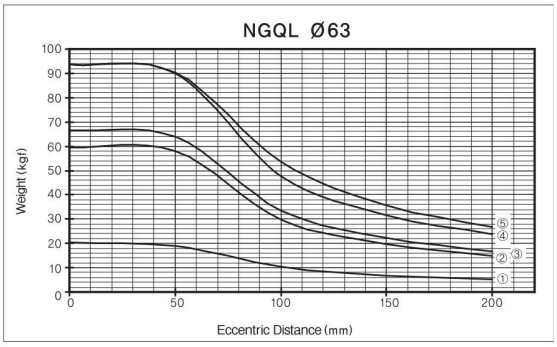
① Less than 25ST ② Between 25ST and 50ST
③ Between 50ST and 100ST ④ Between 100ST and 150ST
⑤ Between 150ST and 200ST ⑥ Between 200ST and 300ST



① Less than 25ST ② Between 25ST and 50ST
③ Between 50ST and 100ST ④ Between 100ST and 150ST
⑤ Between 150ST and 200ST ⑥ Between 200ST and 300ST

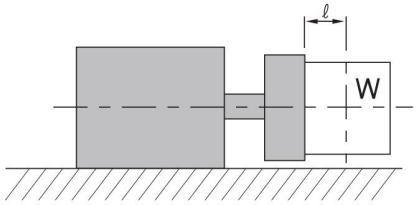


① Less than 25ST ② Between 25ST and 100ST, Between 200ST and 300ST
③ Between 100ST and 150ST ④ Between 150ST and 200ST



① Less than 20ST ② Between 25ST and 50ST, Between 200ST and 300ST
③ Between 50ST and 100ST ④ Between 100ST and 150ST
⑤ Between 150ST and 100ST

In Horizontal Attachment - NGQM / Slide Bearing



※ Using Condition

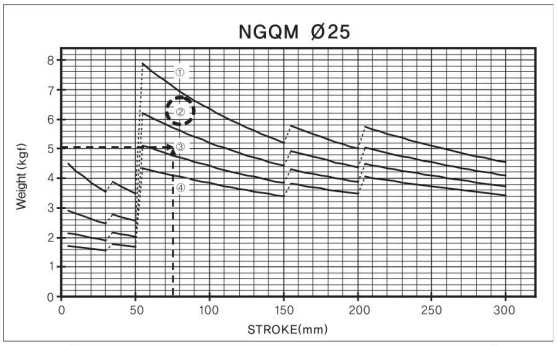
Pressure Applied P = 5 ~ 7 kgf/㎠
Cylinder Speed V ≒ 250mm/s (50 ~ 300 mm/s)
Eccentric Distance = ℓ (mm)
Applied Weight = W (kgf)

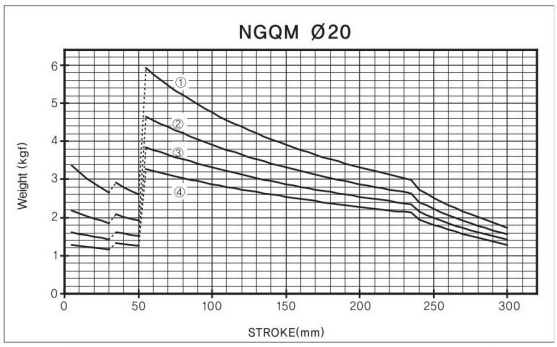
Note 1) Used pressure of 5 ~ 7 kgf/㎠ is recommended.
Note 2) When cylinder speed exceeds 30mm/s

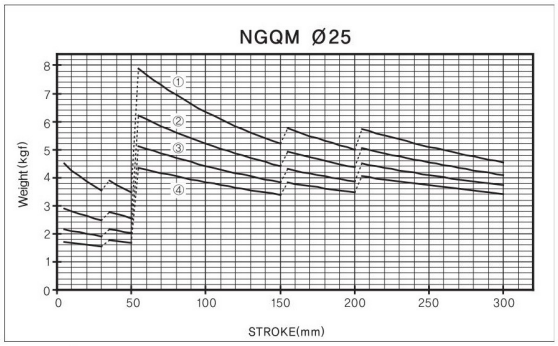
〈Selected Example〉
1. How to Attach : Horizontal Attachment
2. Applied Bearing : Ball Bearing
3. Max. Cylinder Speed : 250 mm/s
4. Applied Load : 5 kgf
5. Applied Stroke : 75 Stroke
6. Eccentric Distance : 100 mm

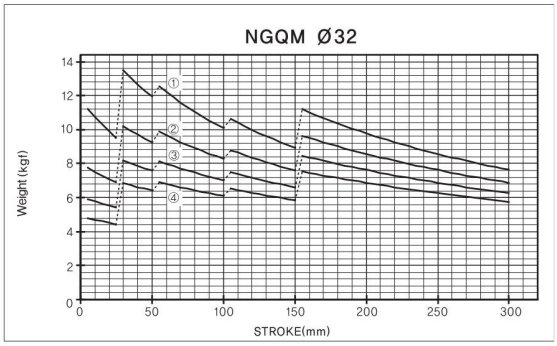
※Selection
1. Select Slide bearing among vertical attached graphs.
2. Select a graph to endure load more than 5kgf
   → NGQM Ø20 ~ Ø100
3. Select a graph matched with 75 stroke and eccentric distance of 100mm and then, select device below the graph's line
   → Select NGQM Ø25 ② and apply 75 stroke.
4. Selected device is NGQL Ø25-75ST

Table 3. Applied Load Ratio

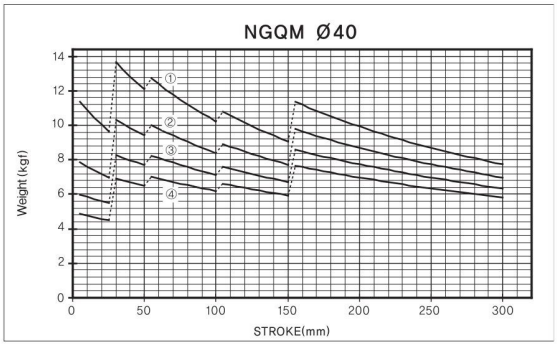




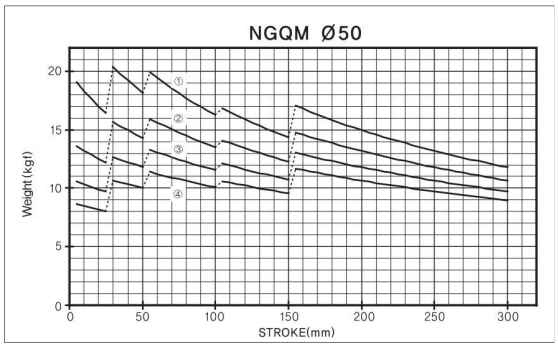




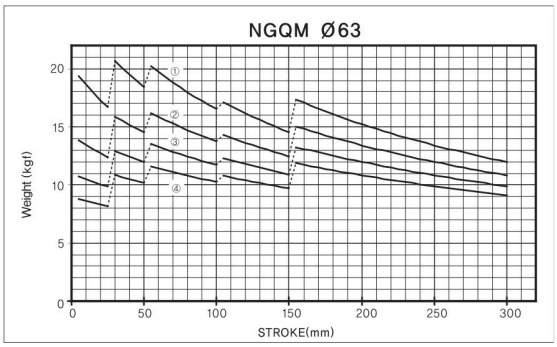
① Eccentric Distance(ℓ) : 50mm ② Eccentric Distance(ℓ) : 100mm
③ Eccentric Distance(ℓ) : 150mm ④ Eccentric Distance(ℓ) : 200mm



① Eccentric Distance(ℓ) : 50mm ② Eccentric Distance(ℓ) : 100mm
③ Eccentric Distance(ℓ) : 150mm ④ Eccentric Distance(ℓ) : 200mm

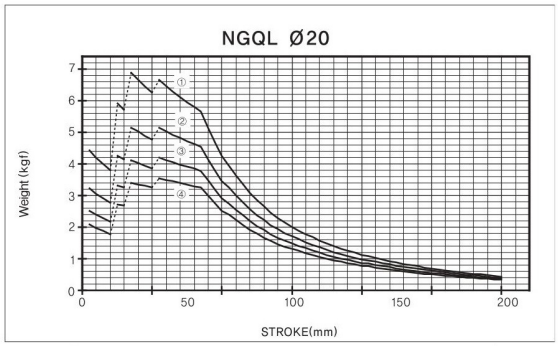


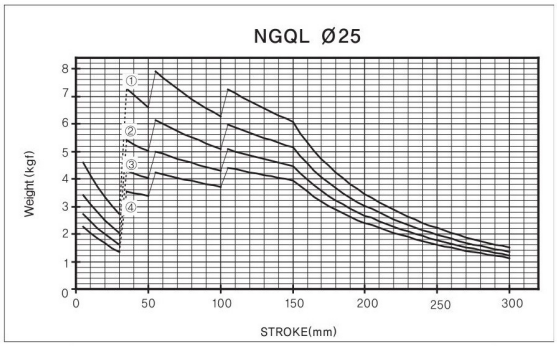
① Eccentric Distance(ℓ) : 50mm ② Eccentric Distance(ℓ) : 100mm
③ Eccentric Distance(ℓ) : 150mm ④ Eccentric Distance(ℓ) : 200mm

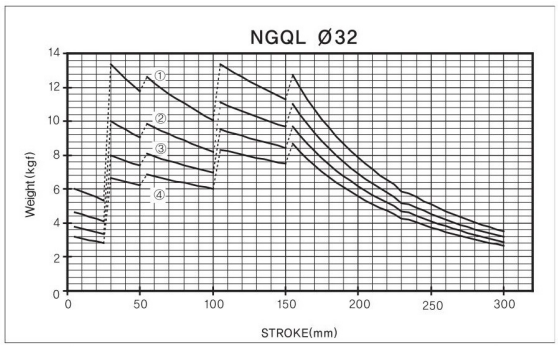


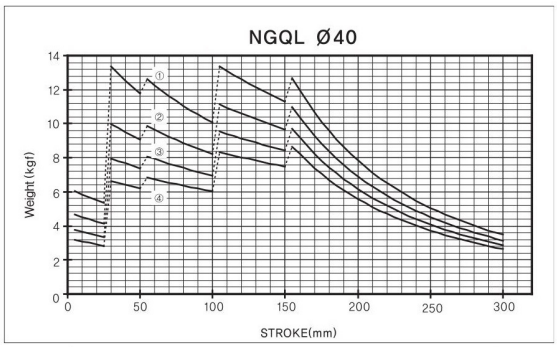
① Eccentric Distance(ℓ) : 50mm ② Eccentric Distance(ℓ) : 100mm
③ Eccentric Distance(ℓ) : 150mm ④ Eccentric Distance(ℓ) : 200mm

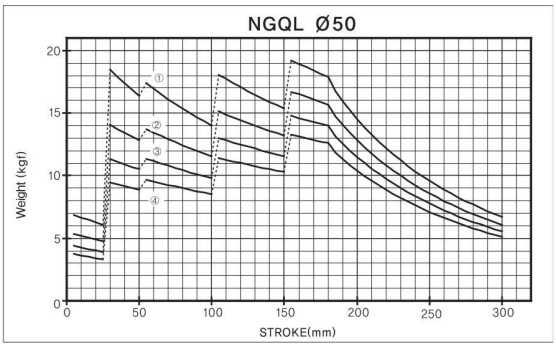
In Horizontal Attachment - NGQL / Ball Bearing



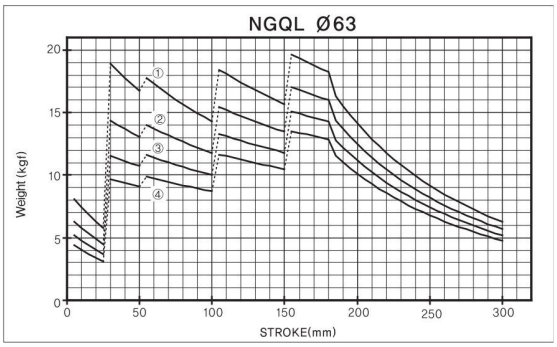








① Eccentric Distance(ℓ) : 50mm ② Eccentric Distance(ℓ) : 100mm
③ Eccentric Distance(ℓ) : 150mm ④ Eccentric Distance(ℓ) : 200mm



① Eccentric Distance(ℓ) : 50mm ② Eccentric Distance(ℓ) : 100mm
③ Eccentric Distance(ℓ) : 150mm ④ Eccentric Distance(ℓ) : 200mm

Applied Load Ratio

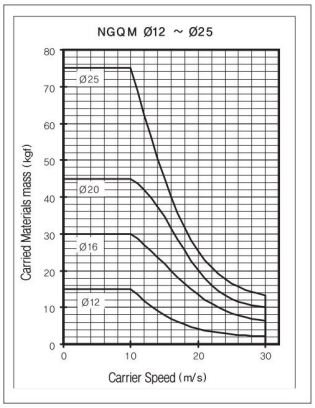
Table 3. Applied Load Ratio When Cylinder Speed is Faster Than 300mm/s

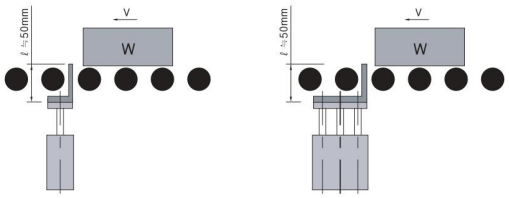
Bore Size	Applied Load Ratio			
	Vertical Attachment		Horizontal Attachment	
	NGQM	NGQL	NGQM	NGQL
Ø20	Lower than 20%	Lower than 25%	Lower than 25%	Lower than 50%
Ø25	Lower than 25%	Lower than 25%	Lower than 30%	Lower than 60%
Ø32	Lower than 20%	Lower than 25%	Lower than 30%	Lower than 50%
Ø40	Lower than 25%	Lower than 30%	Lower than 60%	Lower than 80%
Ø50	Lower than 30%	Lower than 30%	-	-
Ø63	Lower than 35%	Lower than 35%	-	-

※Recommend that the previous table's selected load is applied to the above table's ratio.

Load Range When it is Used for Stopper

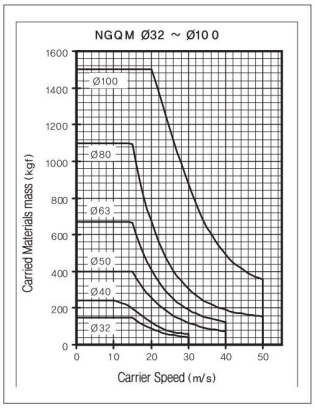
Bore Size Ø12~Ø25 / NGQM12~25(Slide Bearing)

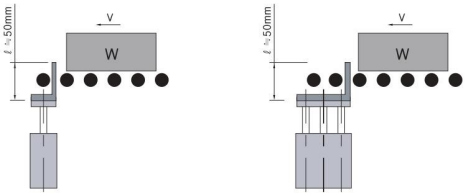




※ When L size is longer, please select right equipment having enough tube internal diameter.
Note 1) When it is used as stopper, please select 30 stroke and lower.
Note 2) NGQL (ball bearing) can be used as stopper.

Bore Size Ø32~Ø100 / NGQM32~100(Slide Bearing)





※ When L size is longer, please select right equipment having enough tube internal diameter.
Note 1) When it is used as stopper, please select 50 stroke and lower.
Note 2) NGQL (ball bearing) can be used as stopper.