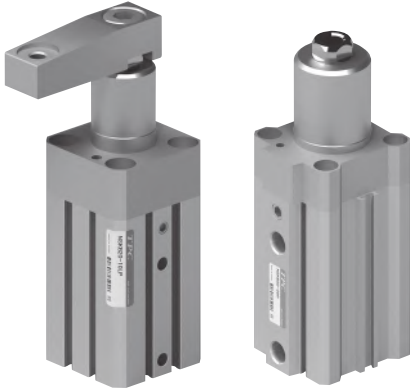


Series **NSK**

Swing Clamp Cylinder

Bore Size(mm) : $\varnothing 20$, $\varnothing 25$, $\varnothing 32$, $\varnothing 40$, $\varnothing 50$, $\varnothing 63$



- POSSIBLE TO INSTALL AUTO SWITCH IN A TUBE
- MAXIMUM OPERATING PRESSURE : 1MPa
- COMPACT SIZE
- BUILT-IN COIL SCRAPER ($\varnothing 40 \sim \varnothing 63$)

How to Order

N (D) SK B 20 - 20 R P - W8* S

1 2 3 4 5 6 7 8 9

1 Swing Clamp Cylinder

2 Magnet

Blank : None
D : Built in Magnet

3 Mount

B : Through hole/Both ends tapped common (Standard type)
G : Head side flange type

4 Bore Size **5** Stroke (mm)

20 : $\varnothing 20$ - 10 : 10mm, 20 : 20mm
25 : $\varnothing 25$ - 10 : 10mm, 20 : 20mm
32 : $\varnothing 32$ - 10 : 10mm, 20 : 20mm
40 : $\varnothing 40$ - 10 : 10mm, 20 : 20mm
50 : $\varnothing 50$ - 20 : 20mm, 50 : 50mm
63 : $\varnothing 63$ - 20 : 20mm, 50 : 50mm

6 Rotation Direction

R : Rotating in right hand direction
L : Rotating in left hand direction
* Rotary direction for unclamping (during backward)

7 Rotating Plate (ARM)

Blank : None
P : With rotation plate
* Rotating plate is delivered without assembly

8 Auto Switch

Blank : None (Magnetic equipped cylinder)
Contact point existing auto switch from below
W4 : W4(P) (Contact point existed)
W8H : Extremely small auto switch Horizontal (Vertical) type, 2 wire type
Contact point non existing auto switch from below
W9HV : Extremely small auto switch Horizontal (Vertical) type, 2 wire type
W9HVN : Extremely small auto switch horizontal (Vertical) type, 3 wire type
W2P(L) : Contact point non existing (Available for over $\varnothing 40$)

9 Number of Auto Switches

Blank : 2 pcs
S : 1 pc
N : N pcs

Series NSK

Specifications		Type (Tube Internal diameter)					
Index	Items	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
		Compressed Air					
Applied Fluid		Compressed Air					
Rod O.D		Ø12	Ø12	Ø16	Ø16	Ø20	Ø20
Cylinder Stroke (mm)	Rotate Section	9.5		15		19	
	Straight Section	10, 20		10, 20		20, 50	
	Total	19.5, 29.5		25, 35		39, 69	
	Tolerance	0~+1.4mm					
Rotation Angle & Tolerance		90±10 Degree					
Proof Pressure		15 Kgf/cm ²					
Maximum Operating Pressure		9.9 Kgf/cm ²					
Minimum Operating Pressure		1.0 Kgf/cm ²					
Operating Method		Double Acting (Standard Type)					
Piston Utilizing Speed		50~200mm/sec.					
Cushion Equipped	Rod Side	Rubber (Rod End)					
	Head Side	None					
Ambient and Fluid Temperature Applied		-5~60°C					
Lubrication		No Necessary (Non-Lube)					
Pipe Contacting Hole		M5X0.8		Rc(PT)1/8		Rc(PT)1/4	
Applied Auto Switch		W8*, W9*, W4*(Over Ø32), W2P (4Over Ø40)					
Attaching Method		Bolt Penetration of Rod & Head side Cylinder Tube or Tap Attached and Flange Attached					

- ACP
- APM
- AS
- AX
- AM2
- AM
- AL
ALX
- AQ
ADQ
- AQ2
ADQ2
- AJ
AJM
- ABK
- ACK1
- NSK**
- AG
- NGQ
- AGX
GX
- NP
- ADR
- AMR
- NDM
- ARD
- NST
- AST
- ASTH
- NLCD
- NLCS

Theoretical Output Sheet		(Unit : kgf)											
Bore Size (mm)	ROD Diameter (mm)	Operation Direction	Water Pressure Area	Applied Pressure(kgf/cm ²)									
				2	3	4	5	6	7	8	9	10	
20	12	CLAMP	2	4	6	8	10	12	14	16	18	20	
		UNCLAMP	3	6	9	12	15	18	21	24	27	30	
25	12	CLAMP	3.7	7.4	11.1	14.8	18.5	22.2	25.9	29.6	33.3	37	
		UNCLAMP	4.9	9.8	14.7	19.6	24.5	29.4	34.3	39.2	44.1	49	
32	16	CLAMP	6	12	18	24	30	36	42	48	54	60	
		UNCLAMP	8	16	24	32	40	48	56	64	72	80	
40	16	CLAMP	10.5	21	31.5	42	52.5	63	73.5	84	94.5	105	
		UNCLAMP	12.5	25	37.5	50	62.5	75	87.5	100	112.5	125	
50	20	CLAMP	16.4	32.8	49.2	65.6	82	98.4	114.8	131.2	147.6	164	
		UNCLAMP	19.6	39.2	58.8	78.4	98	117.6	137.2	156.8	176.4	196	
63	20	CLAMP	28	56	84	112	140	168	196	224	252	280	
		UNCLAMP	31.1	62.2	93.3	124.4	155.5	186.6	217.7	248.8	279.9	311	

Note) Theoretical output = Pressure X Water pressure area

Weight Sheet (Unit : kg)

1. Cylinder

Stroke (mm)	Bore Size(mm)					
	20	25	32	40	50	63
10	0.26	0.32	0.5	0.55	—	—
20	0.29	0.35	0.54	0.6	1.1	1.44
50	—	—	—	—	1.3	1.7

2. Mountings

1) SWING PLATE

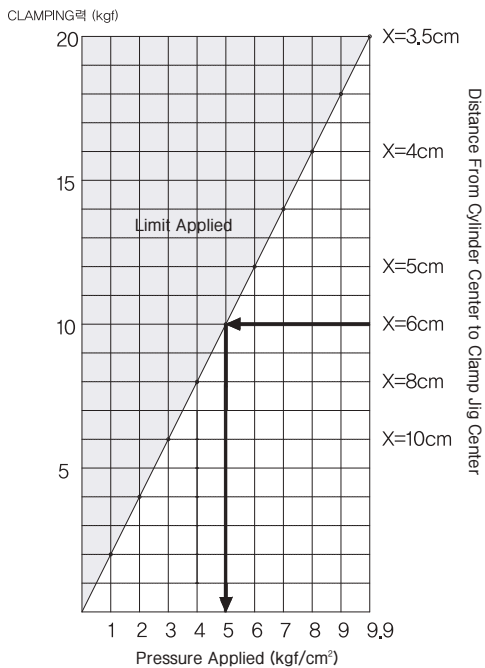
Item Number	Weight
NSK20-P	0.05
NSK32-P	0.14
NSK50-P	0.19

2) FLANGE

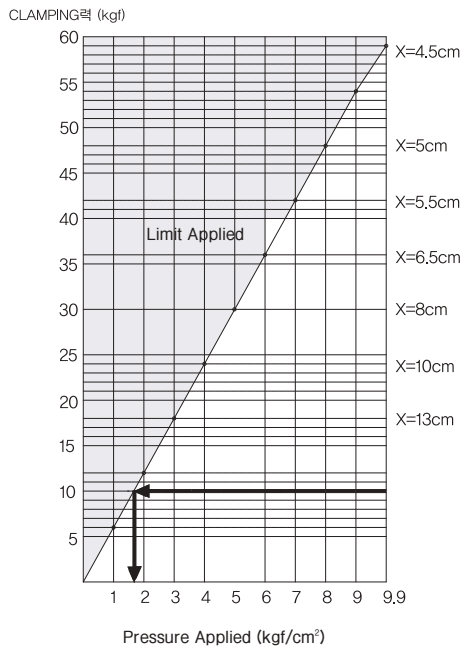
Item Number	Weight	Item Number	Weight
QF-020	0.14	QF-040	0.24
QF-025	0.17	QF-050	0.41
QF-032	0.19	QF-063	0.59

Series NSK

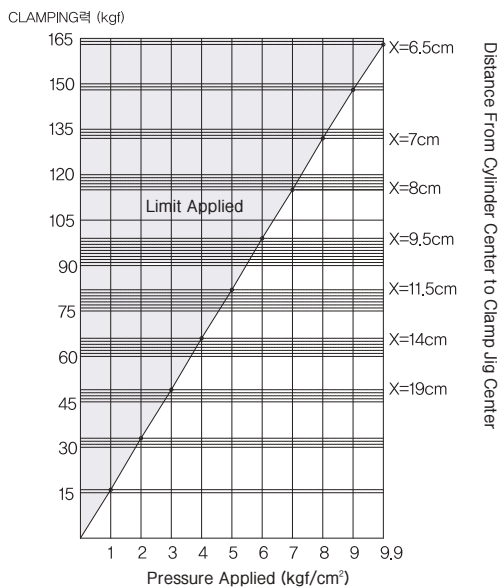
Bending Moment



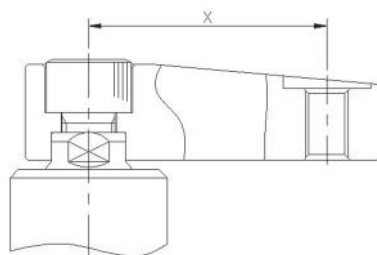
(Ø20, 25)



(Ø32, 40)



(Ø50, 63)



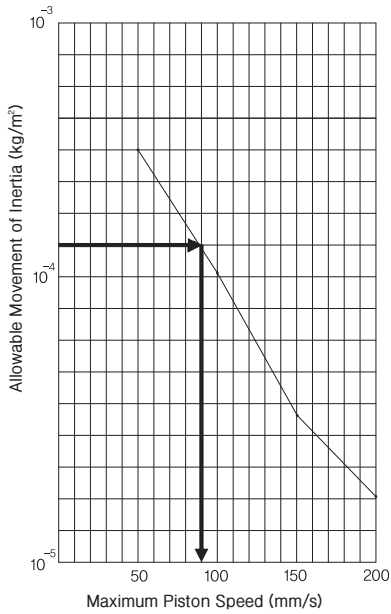
Graph Reading Method

In case designated clamp strength is 10kgf,

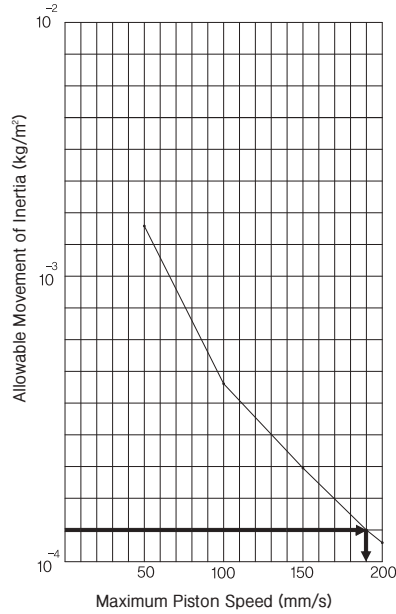
- ① Ø20, 25 type cases :
Possible to use with over 5kgf/cm² pressure applied and less than 6cm for maximum distance (x) from cylinder center to clamping installing jig center.
- ② Ø32, 40 type cases :
Possible to use with over 1.5kgf/cm² pressure applied and less than 13cm for maximum distance (x) from cylinder center to clamping installing jig center.

Series NSK

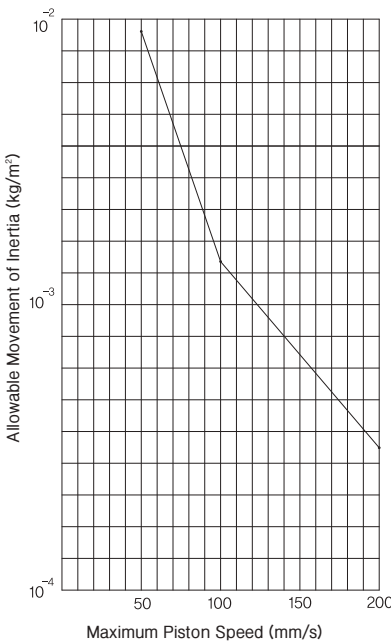
Allowable Moment of Inertia



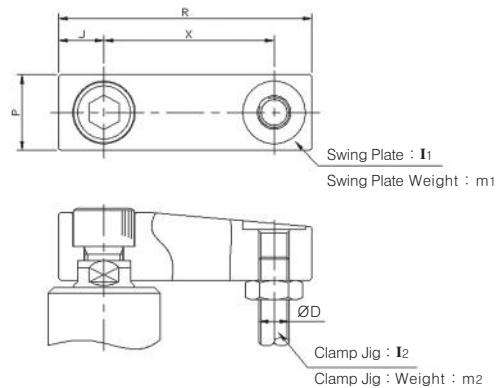
(Ø20, 25)



(Ø32, 40)



(Ø50, 63)



$$I_1 : m_1 \cdot \frac{R^2 + P^2}{12} + m_1 \cdot \left[\frac{R}{2} - J \right]^2$$

$$I_2 : m_2 \cdot \frac{D^2}{8} + m_2 \cdot X^2$$

SWING PLATE : I_1 + CLAMP JIG : $I_2 = I$ (TOTAL Moment of Inertia)

Graph Reading Method

In case total moment of inertia is calculated to $2 \times 10^{-4} \text{ kg} \cdot \text{m}^2$, maximum cylinder speed is,

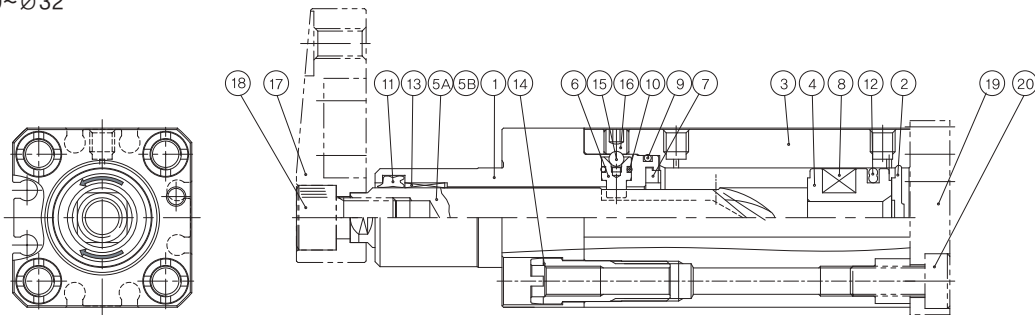
- ① Less than 90mm/s for NSK*20 and 25 type,
- ② Less than 190mm/s for NSK*32 and 40 type,
- ③ Available to use within all range regardless of maximum piston speed (200m/s) for NSK*50 and 63 types.

- ACP
- APM
- AS
- AX
- AM2
- AM
- AL
- ALX
- AQ
- ADQ
- AQ2
- ADQ2
- AJ
- AJM
- ABK
- ACK1
- NSK**
- AG
- NGQ
- AGX
- GX
- NP
- ADR
- AMR
- NDM
- ARD
- NST
- AST
- ASTH
- NLCD
- NLCS

Series NSK

Structural Drawing/Component List

Ø20~Ø32

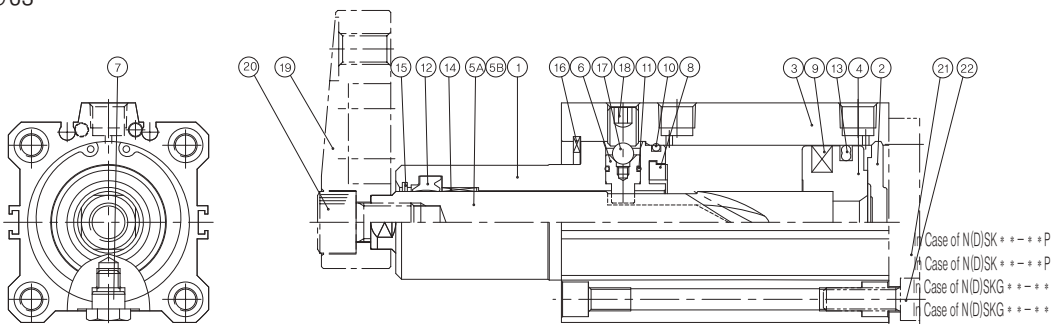


Component Name

NO	Component Name	Material	Remark
1	Rod Cover	Aluminum Alloy	
2	End Plate	Aluminum Alloy	
3	Cylinder Tube	Aluminum Alloy	
4	Piston	Aluminum Alloy	
5	Piston Rod	High Carbon Chrome Bearing Steel	
6	Guide Pin	High Carbon Chrome Bearing Steel	
7	Bumper	Urethane	
8	Magnet	NBR+Bagerrite	
9	Tube Gasket	NBR	
10	Guide Pin Gasket	NBR	

NO	Component Name	Material	Remark
11	Rod Packing	NBR	
12	Piston Packing	NBR	
13	Guide Bush	Cooper Alloy	
14	Socket Bolt	Carbon Steel	
15	Steel Ball	High Carbon Chrome Bearing Steel	
16	Set Screw	Chrome Molybdenum Steel	
17	Swing Plate	Rolled Steel Material	In Case of N/D/SK * - - - - P
18	6 Hexagonal Hole Bolt	Chrome Molybdenum Steel	In Case of N/D/SK * - - - - P
19	Flange	Rolled Steel Material	In Case of N/D/SKG * - - - -
20	6 Hexagonal Hole Bolt	Chrome Molybdenum Steel	In Case of N/D/SKG * - - - -

Ø40~Ø63



Component Name

NO	Component Name	Material	Remark
1	Rod Cover	Aluminum Alloy	
2	End Plate	Aluminum Alloy	
3	Cylinder Tube	Aluminum Alloy	
4	Piston-A	Aluminum Alloy	
5	Piston Rod	High Carbon Chrome Bearing Steel	
6	Guide Pin	Bearing Steel	
7	Guide Bolt	Rolled Steel Material	
8	Bumper	Urethane	
9	Magnet	NBR+Baferrite	
10	Tube Gasket	NBR	
11	Guide Pin Gasket	NBR	

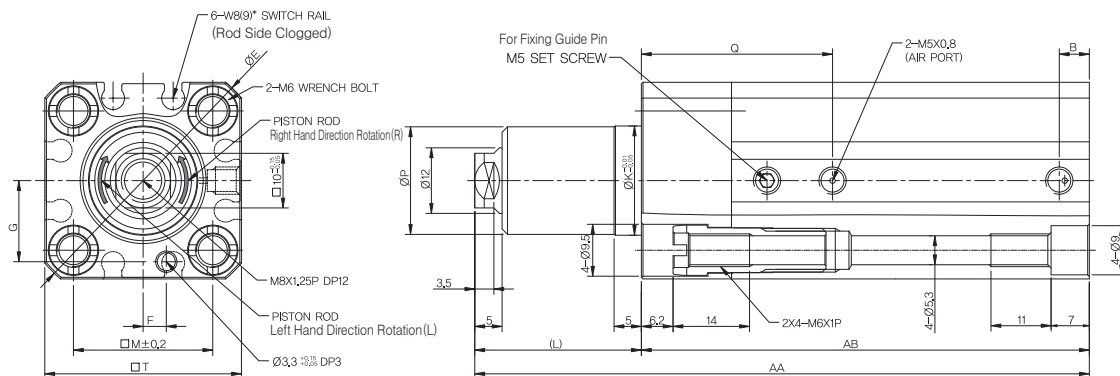
NO	Component Name	Material	Remark
12	Rod Packing	NBR	
13	Piston Packing	NBR	
14	Guide Bush	Cooper Alloy	
15	Metal Screper	Cooper Alloy	
16	Snap Ring	Carbon Steel	
17	Steel Ball	High Carbon Chrome Bearing Steel	
18	Set Screw	Chrome Molybdenum Steel	
19	Swing Plate	Rolled Steel Material	In Case of N/D/SK * - - - - P
20	6 Hexagonal Hole Bolt	Chrome Molybdenum Steel	In Case of N/D/SK * - - - - P
21	Flange	Rolled Steel Material	In Case of N/D/SKG * - - - -
22	6 Hexagonal Hole Bolt	Chrome Molybdenum Steel	In Case of N/D/SKG * - - - -

Series NSK

External Shape Dimension Drawing

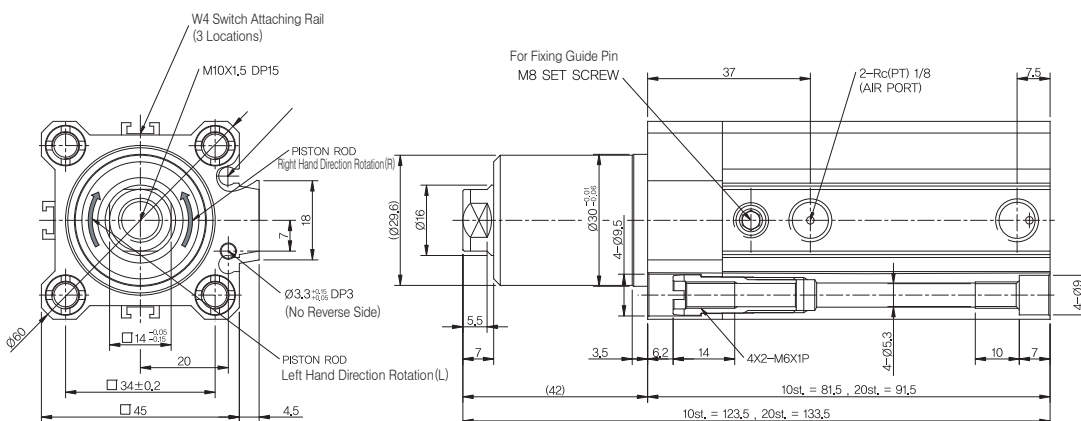
(Unit :mm)

Ø20~Ø25



Type	AA		AB		L	T	M	E	K	F	G	Q	B	P
	10st.	20st.	10st.	20st.										
Ø20	102.5	112.5	72	82	30.5	36	25.5	47	20	4.2	14.8	35	5.5	19.7
Ø25	103.5	113.5	73	83	30.5	40	28	52	23	5.7	17	32	5.6	22.5

Ø32



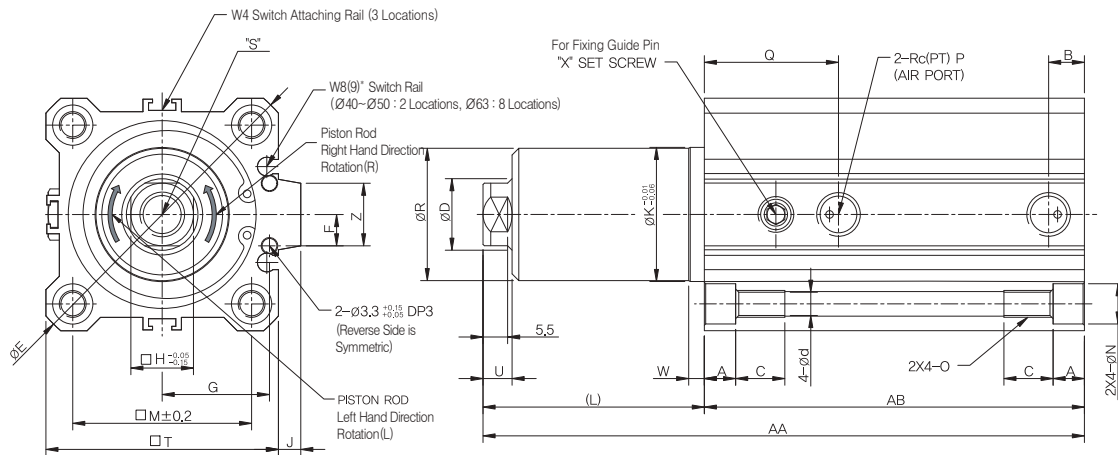
- ACP
- APM
- AS
- AX
- AM2
- AM
- AL
ALX
- AQ
ADQ
- AQ2
ADQ2
- AJ
AJM
- ABK
- ACK1
- NSK**
- AG
- NGQ
- AGX
GX
- NP
- ADR
- AMR
- NDM
- ARD
- NST
- AST
- ASTH
- NLCD
- NLCS

Series NSK

External Shape Dimension Drawing

(Unit :mm)

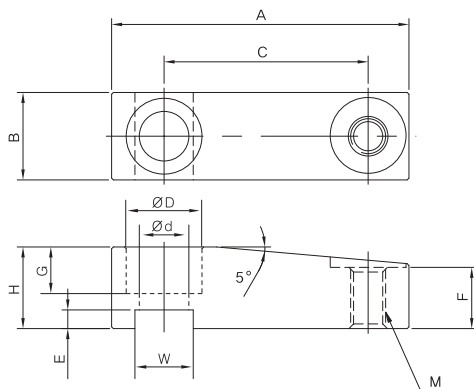
Ø40~Ø63



Type	AA			AB			L	T	M	E	K	F	G	Q	B	R	J	H	N
	10st.	20st.	50st.	10st.	20st.	50st.													
Ø40	124.5	134.5	-	75	85	-	49.5	52	40	69	30	7	24	30	8	29.6	5	14	9
Ø50	-	152	212	-	96.5	126.5	-	64	50	87	37	8	30	34	10.5	35.5	7	17	11
Ø63	-	155	215	-	100	130	-	77	60	103	48	9	35	35	10.5	47.4	7	17	14

Type	A	C	d	D	Z	P	O	X	U	W	S
Ø40	7	11	5.3	16	14	1/8	M6×1.0	M8	6.5	3.5	M10×1.5 DP:15
Ø50	8	14	6.6	20	22	1/4	M8×1.25	M8	7.5	4	M12×1.75 DP:16
Ø63	10.5	18	8.5	20	22	1/4	M10×1.5	M10	7.5	4.5	M12×1.75 DP:16

SWING PLATE



※ Surface Treatment : Nickel Chrome Plated

Item Number	Type	A	B	C	Ød	ØD	E	F	G	H	M	W
KP-20	Ø20, Ø25	51	15	35	Ø8.5	Ø13.5	3.2	10.5	8	14	M6×1 THRU	10
KP-32	Ø32, Ø40	67	20	45	Ø10.5	Ø16.5	5.2	13.5	9	18	M8×1.25 THRU	14
KP-50	Ø50, Ø63	89	22	65	Ø12.5	Ø19	5.2	15.5	11	22	M10×1.5 THRU	17