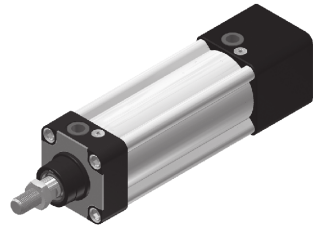


## Double acting cylinders

<b>BNB..N..RK</b>	
Double Acting - Single End Rod Type (Rod Cover Locking Type)	
<b>BNB..N..HK</b>	
Double Acting - Single End Rod Type (End Cap Locking Type)	
<b>BNB..M..RK</b>	
Double Acting - Single End Rod Type (Rod Cover Locking Type) (piston with magnet)	
<b>BNB..M..HK</b>	
Double Acting - Double End Rod Type (End Cap Locking Type) (piston with magnet)	



● This series (of two types and 6 specifications) can be applied to the retention of state in ends.

## Specification

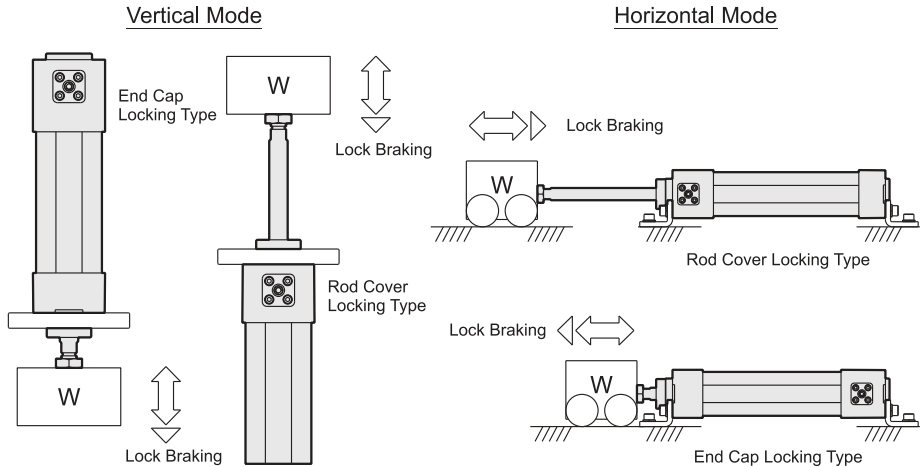
Bore sizes of cylinder (mm)	φ 32	φ 40	φ 50	φ 63	φ 80	φ 100
Standard stroke (mm)	25,50,75,100,125,150,175,200,250,300,350,400,450,500					
The range of stroke (mm)	Stroke till 1000mm by request					
Power fluid	Filtered air with or without lubrication					
Material of cylinder barrel	Aluminium extrusion, Anodised 20 microns					
The range of pressure (MPa)	0.3~1.03					
Min. working pressure (MPa)	0.3					
Holding force(Max.) N(kgf)	510(52)	860(88)	1275(130)	2060(210)	3335(340)	5100(520)
Backlash (mm)	±0.5mm					
The range of temperature (°C)	-10~ +60					

## How to order

<b>BNB</b>	<b>50</b>	<b>N</b>	<b>125</b>	<b>RK</b>	<b>FA - Y - LN01A</b>	<b>× 2</b>	
Type	Bore	Magnet	Stroke	Locking mode	Accessory	Sensor switch	Quantity
	32—φ 32mm 40—φ 40mm 50—φ 50mm 63—φ 63mm 80—φ 80mm 100—φ 100mm	M: With magnet N: No magnet	25—25mm 50—50mm 75—75mm 100—100mm 125—125mm 150—150mm 175—175mm 200—200mm 250—250mm 300—300mm 350—350mm 400—400mm 450—450mm 500—500mm	RK: Rod side locking type HK: End cap locking type	        	 LN01A: Suited for φ 32, φ 40 LN02A: Suited for φ 50, φ 63 LN03A: Suited for φ 80, φ 100	1: 1pc 2: 2pcs

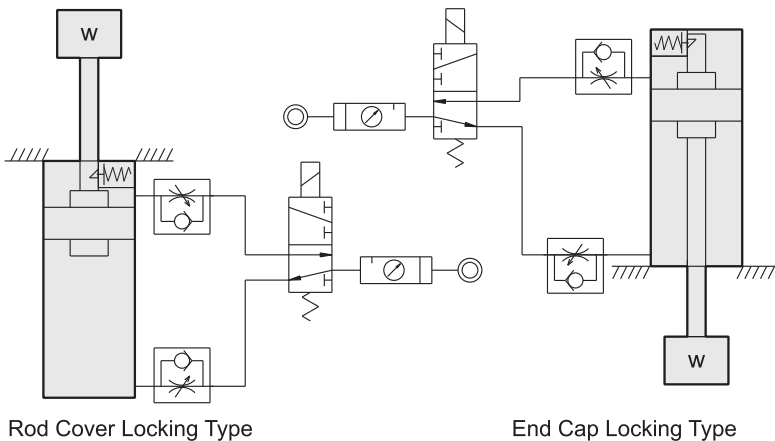
Note:  
1.Can choose NPN or PNP type (3-Wire type, 24VDC).  
2.Can choose plug-in cable.

## Features and application of places



## Points in usage

1. Do not use end locking cylinder with the 3-position solenoid valve to prevent the lock unit from malfunctioning.
2. When starting the piston, maintain the air pressure at the side that is not equipped with a lock unit (as shown in the diagram below) to prevent the lock unit from malfunctioning.
3. The loading of less than 70% of the retention force is suggested to prevent the lock unit being damaged.
4. Minimum working pressure for end locking cylinder is 0.3MPa. If operated under meter-in control, the lock unit may not disengage.
5. The lock unit will not start functioning until the piston in the cylinder reaches the end position.
6. The lock unit will fail to function when the cushion valve is almost or fully closed. (The piston in the cylinder would not reach the stroke end).
7. The lock engagement may function improperly because of slow air release if the pipe connected to the lock unit is too thin and long.



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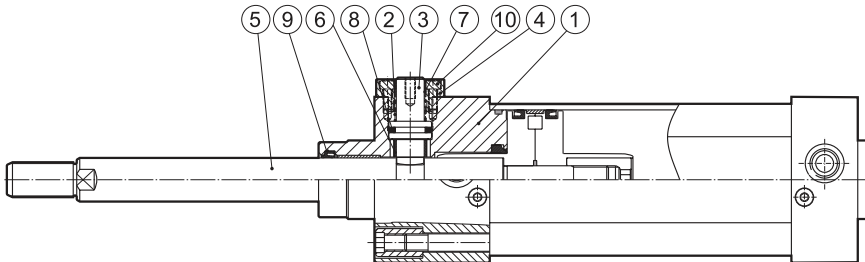
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● **BNB\_RK TYPE**

Bore φ 32~ φ 100

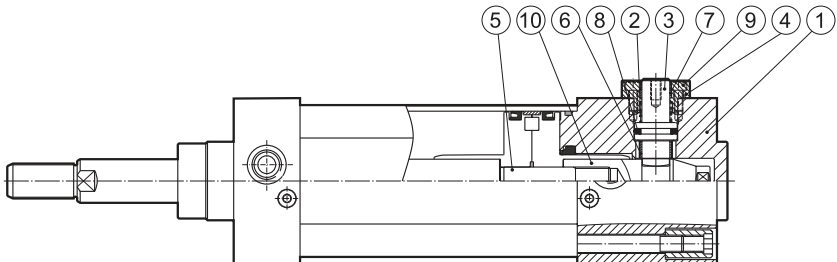


**Parts List**

No.	Part name	Quantity	No.	Part name	Quantity	Note
1	Rod cover	1	7	Oilless bearing	1	Except components and materials listed on the left, the others are all in "DNB...M..." specification. Repair kit includes DNBSK+⑧
2	Spring	1	8	Packing	1	
3	Stopper rod	1	9	Rod packing	1	
4	End cover	1	10	Tie bolt	4	
5	Piston rod	1	11			
6	Oilless bearing	1	12			

● **BNB\_HK TYPE**

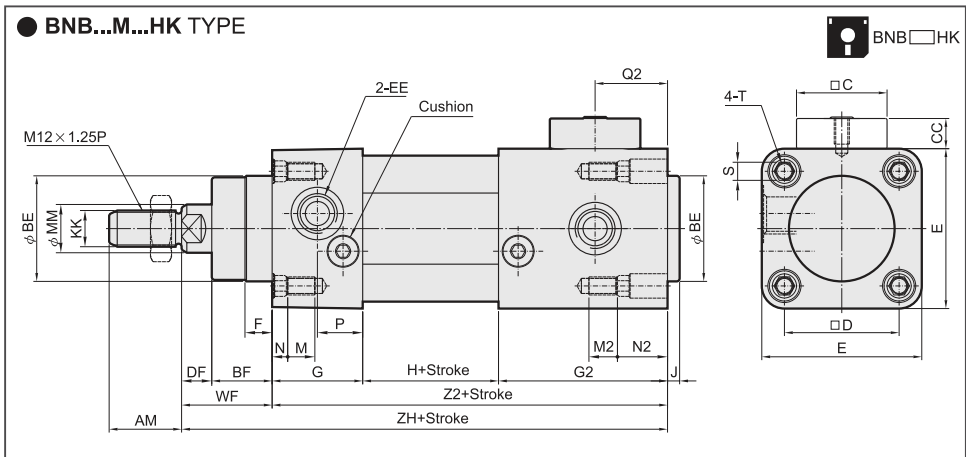
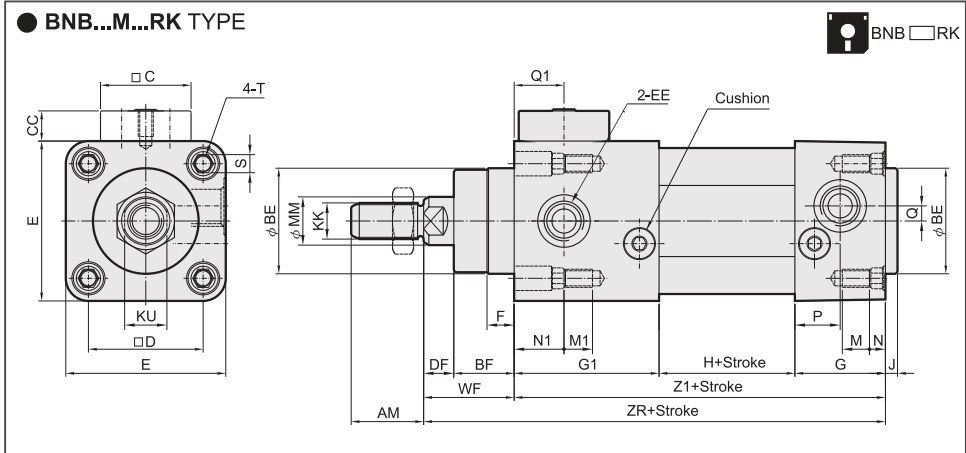
Bore φ 32~ φ 100



**Parts List**

No.	Part name	Quantity	No.	Part name	Quantity	Note
1	Head cover	1	7	Oilless bearing	1	Except components and materials listed on the left, the others are all in "DNB...M..." specification. Repair kit includes DNBSK+⑧
2	Spring	1	8	Packing	1	
3	Stopper rod	1	9	Tie bolt	4	
4	End cover	1	10	Piston nut	1	
5	Piston rod	1	11			
6	Oilless bearing	1	12			

## Dimensional features



## Dimensional features

Bore	AM	BE	BF	C	CC	D	DF	E	EE	F	G	G1	G2	H	J	KK	KU	M	M1	M2	MM	N
φ 32	22	30	16	21	10	32.5	10	47	G 1/8	7	26	40	47	42	4	M10×1.25	10	9	7	7	12	6
φ 40	24	35	20	30	10	38	10	53	G 1/4	9	30	48	56	45	5	M12×1.25	14	9	7	7	16	6
φ 50	32	40	25	34	10	46.5	12	65	G 1/4	11	30	52	71	46	5	M16×1.5	17	12	8.5	8.5	20	6
φ 63	32	45	25	34	10	56.5	12	75	G 3/8	4	32	52	70	57	4	M16×1.5	17	12	8.5	8.5	20	6
φ 80	40	45	33	39	10	72	13	95	G 3/8	15	38	66	80	52	6	M20×1.5	22	16	16	16	25	6
φ 100	40	55	35	39	10	89	16	115	G 1/2	15	40	70	80	58	6	M20×1.5	22	16	16	16	25	6

Bore	N1	N2	P	Q	Q1	Q2	S	T	WF	Z1	Z2	ZR	ZH
φ 32	7	7	16	4.5	15.5	17.5	6	M6	26	108	115	134	141
φ 40	7	7	15	5	16.5	24	6	M6	30	123	131	153	161
φ 50	6.5	6.5	15	6	18	31.5	8	M8	37	128	147	165	184
φ 63	6.5	6.5	16	8	18	35.5	8	M8	37	141	159	178	196
φ 80	34	48	19	9	20.5	35	10	M10	46	156	170	202	216
φ 100	36	46	20	7	20.5	34	10	M10	51	168	178	219	229

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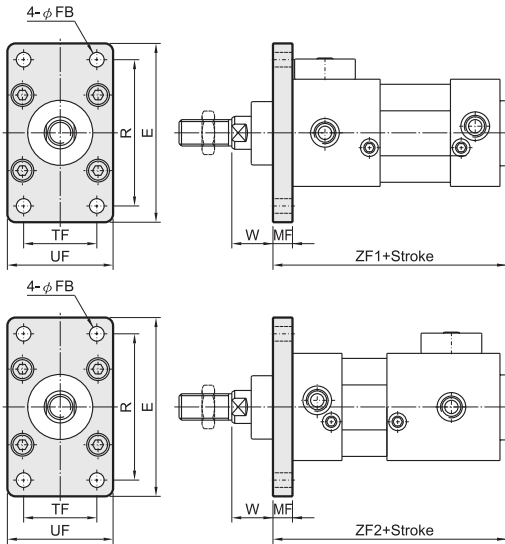
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## Accessories

### ● FA TYPE - Front Flange

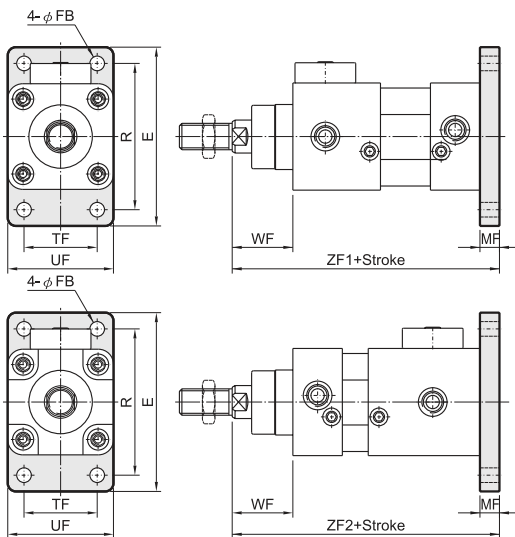


### Dimensional Table



Bore	E	FB	MF	R	TF	UF	W	ZF1	ZF2
φ 32	79	7	10	64	32	50	16	122	129
φ 40	90	9	10	72	36	55	20	138	146
φ 50	110	9	12	90	45	65	25	145	164
φ 63	120	9	12	100	50	75	25	157	175
φ 80	153	12	16	126	63	95	30	178	192
φ 100	178	14	16	150	75	115	35	190	200

### ● FB TYPE - Rear Flange



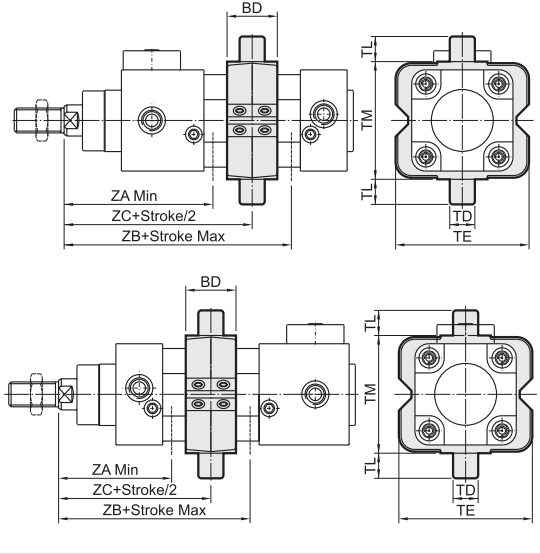
### Dimensional Table



Bore	E	FB	MF	R	TF	UF	WF	ZF1	ZF2
φ 32	79	7	10	64	32	50	26	144	151
φ 40	90	9	10	72	36	55	30	163	171
φ 50	110	9	12	90	45	65	37	177	196
φ 63	120	9	12	100	50	75	37	190	208
φ 80	153	12	16	126	63	95	46	218	232
φ 100	178	14	16	150	75	115	51	235	245

## Accessories

### ● TC TYPE - Intermediate Pivot



### Dimensional Table

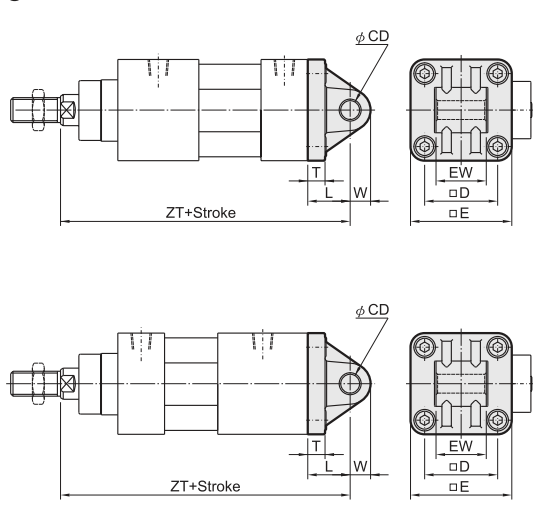


Bore	BD	TD	TE	TL	TM	ZA	ZB	ZC
φ 32	22	12	58	12	50	80	94	87
φ 40	28	16	70	16	63	95	106	100.5
φ 50	32	16	85	16	75	108	116	112
φ 63	35	20	100	20	90	110	125.5	117.5
φ 80	40	20	120	20	110	135	141	138
φ 100	45	25	145	25	132	147	153.5	150

### Dimensional Table

Bore	BD	TD	TE	TL	TM	ZA	ZB	ZC
φ 32	22	12	58	12	50	73	73	73
φ 40	28	16	70	16	63	77	88	82.5
φ 50	32	16	85	16	75	86	94	90
φ 63	35	20	100	20	90	89.5	105.5	97.5
φ 80	40	20	120	20	110	107	113	110
φ 100	45	25	145	25	132	116.5	123.5	120

### ● CA TYPE - Male Pivot



### Dimensional Table



Bore	CD	D	E	EW	L	T	W	ZT
φ 32	10	32.5	47	26	22	10	10.5	156
φ 40	12	38	53	28	25	10	13	178
φ 50	12	46.5	65	32	27	11	13	192
φ 63	16	56.5	75	40	32	11	17	210
φ 80	16	72	95	50	36	15	17	238
φ 100	20	89	115	60	41	15	21	260

### Dimensional Table

Bore	CD	D	E	EW	L	T	W	ZT
φ 32	10	32.5	47	26	22	10	10.5	163
φ 40	12	38	53	28	25	10	13	186
φ 50	12	46.5	65	32	27	11	13	211
φ 63	16	56.5	75	40	32	11	17	228
φ 80	16	72	95	50	36	15	17	252
φ 100	20	89	115	60	41	15	21	270

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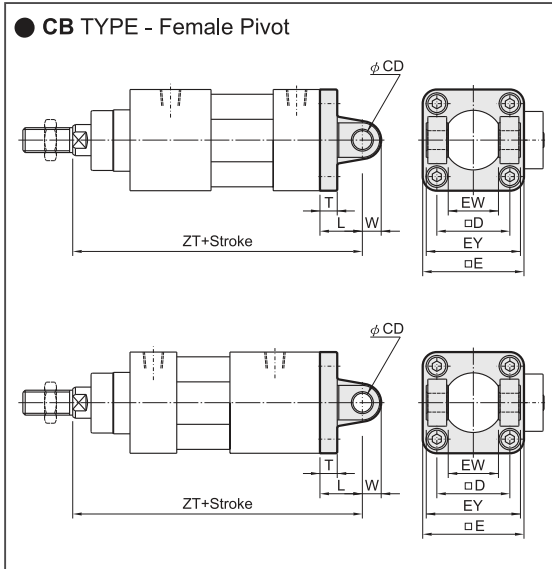
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## Accessories

### ● CB TYPE - Female Pivot



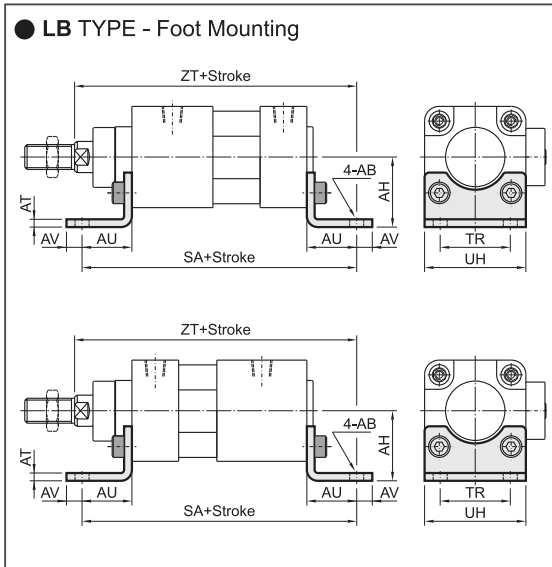
#### Dimensional Table

Bore	CD	D	E	EW	EY	L	T	W	ZT
φ 32	10	32.5	47	26	45	22	10	10.5	156
φ 40	12	38	53	28	52	25	10	11	178
φ 50	12	46.5	65	32	60	27	11	12	192
φ 63	16	56.5	75	40	70	32	11	15	210
φ 80	16	72	95	50	90	36	15	17	238
φ 100	20	89	115	60	110	41	15	21	260

#### Dimensional Table

Bore	CD	D	E	EW	EY	L	T	W	ZT
φ 32	10	32.5	47	26	45	22	10	10.5	163
φ 40	12	38	53	28	52	25	10	11	186
φ 50	12	46.5	65	32	60	27	11	12	211
φ 63	16	56.5	75	40	70	32	11	15	228
φ 80	16	72	95	50	90	36	15	17	252
φ 100	20	89	115	60	110	41	15	21	270

### ● LB TYPE - Foot Mounting



#### Dimensional Table

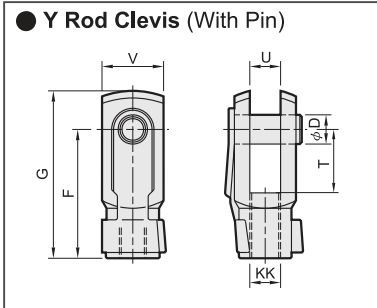
Bore	AB	AH	AT	AU	AV	SA	TR	UH	ZT
φ 32	7	32	5	24	8	156	32	47	158
φ 40	9	36	5	28	10	179	36	53	181
φ 50	9	45	5	32	10	192	45	65	197
φ 63	9	50	5	32	10	205	50	75	210
φ 80	12	63	6	41	13	238	63	95	243
φ 100	14	71	6	41	15	250	75	115	260

#### Dimensional Table

Bore	AB	AH	AT	AU	AV	SA	TR	UH	ZT
φ 32	7	32	5	24	8	163	32	47	165
φ 40	9	36	5	28	10	187	36	53	189
φ 50	9	45	5	32	10	211	45	65	216
φ 63	9	50	5	32	10	223	50	75	228
φ 80	12	63	6	41	13	252	63	95	257
φ 100	14	71	6	41	15	260	75	115	270

## Accessories

### ● Y Rod Clevis (With Pin)



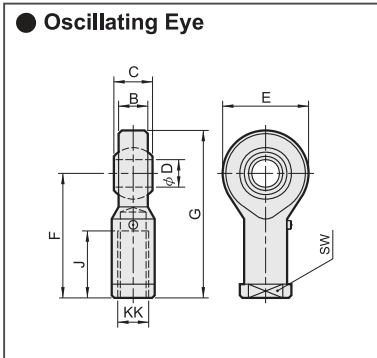
### Dimensional Table

Type	Bore	D	F	G	KK	T	U	V
Y-M10×1.25	φ 32	10	40	52	M10×1.25	20	10	20
Y-M12×1.25	φ 40	12	48	62	M12×1.25	24	12	24
Y-M16×1.5	φ 50, φ 63	16	64	83	M16×1.5	32	16	32
Y-M20×1.5	φ 80, φ 100	20	80	105	M20×1.5	40	20	40



Type	Filename
Y-M10×1.25	YM10125
Y-M12×1.25	YM12125
Y-M16×1.5	YM16150
Y-M20×1.5	YM20150

### ● Oscillating Eye



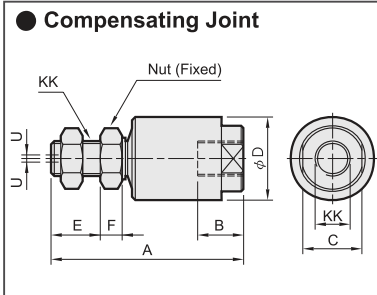
### Dimensional Table

Type	Bore	B	C	D	E	F	G	J	KK	SW
G-M10×1.25	φ 32	10.5	14	10	28	43	57	20	M10×1.25	17
G-M12×1.25	φ 40	12	16	12	30	50	65	24	M12×1.25	19
G-M16×1.5	φ 50, φ 63	15	21	16	38	64	83	33	M16×1.5	22
G-M20×1.5	φ 80, φ 100	18	25	20	46	77	100	40	M20×1.5	30



Type	Filename
G-M10×1.25	GM10125
G-M12×1.25	GM12125
G-M16×1.5	GM16150
G-M20×1.5	GM20150

### ● Compensating Joint



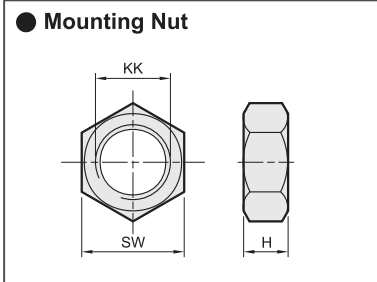
### Dimensional Table

Type	Bore	A	B	C	D	E	F	KK	U
K-M10×1.25	φ 32	54	13	24	25.5	14.5	6	M10×1.25	1
K-M12×1.25	φ 40	70	17	29	31	19	7	M12×1.25	1.15
K-M16×1.5	φ 50, φ 63	88	21	27	38	29	8	M16×1.5	1.65
K-M20×1.5	φ 80, φ 100	105	25	32	50	27.5	16	M20×1.5	2.15



Type	Filename
K-M10×1.25	KM10125
K-M12×1.25	KM12125
K-M16×1.5	KM16150
K-M20×1.5	KM20150

### ● Mounting Nut



### Dimensional Table

Type	Bore	H	KK	SW
N-M10×1.25	φ 32	6	M10×1.25	17
N-M12×1.25	φ 40	7	M12×1.25	19
N-M16×1.5	φ 50, φ 63	8	M16×1.5	24
N-M20×1.5	φ 80, φ 100	8	M20×1.5	27



Type	Filename
N-M10×1.25	NM10125
N-M12×1.25	NM12125
N-M16×1.5	NM16150
N-M20×1.5	NM20150

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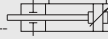
CH



## Double acting cylinders

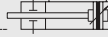
### BNK

Double Acting - Single End Rod Type



### BNK..M

Double Acting - Single End Rod Type (piston with magnet)



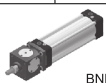
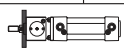

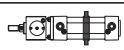


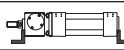
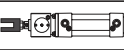
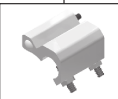
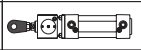
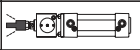
- This series (of 6 specifications) can be applied to the retention of state in stroke range.
- Two-way brake with sensors that can be applied to the retention of a given position.
- Piston rod is made of high-strength wearproof bearing steel.

## Specification

Bore sizes of cylinder (mm)		φ 32	φ 40	φ 50	φ 63	φ 80	φ 100
Standard stroke (mm)		25,50,75,100,125,150,175,200,250,300,350,400,450,500					
The range of stroke (mm)		Stroke till 1000mm by request					
Power fluid		Filtered air with or without lubrication					
Material of cylinder barrel		Aluminium extrusion, Anodised 20 microns					
The range of pressure (MPa)		0.4~0.65					
Min. working pressure (MPa)		0.4	0.4	0.35	0.35	0.3	0.3
Locking model		Secure locking of piston rod in any position					
Lock retention forces N(kgf) (maximum design static load-horizontal installation site)		510(52)	860(88)	1275(130)	2060(210)	3300(336)	4620(471)
Lock braking precision (mm)	V(mm/sec)	(Horizontal axis)Operate with a load ratio of 70% or less, (Vertical axis)Operate with a load ratio of 35% or less					
	50(mm/sec)	± 0.7	± 0.8	± 0.9	± 0.8	± 0.8	± 1
	100(mm/sec)	± 1	± 1	± 1	± 1	± 1.2	± 1.4
	200(mm/sec)	± 1.3	± 1.6	± 1.4	± 1.8	± 2.1	± 2.4
Allowable energy (max) J(N · m) ( $J < E_k = \frac{1}{2}mv^2$ )		0.84	1.41	2.2	3.31	4.98	7.57
The range of temperature (°C)		-10~ +60					

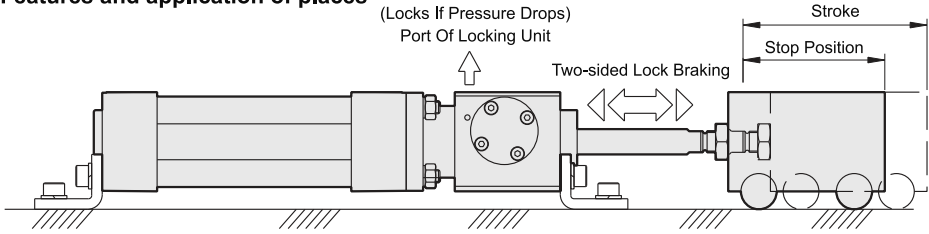
## How to order

**BNK 50 N 125 FA - Y - LN01A × 2**

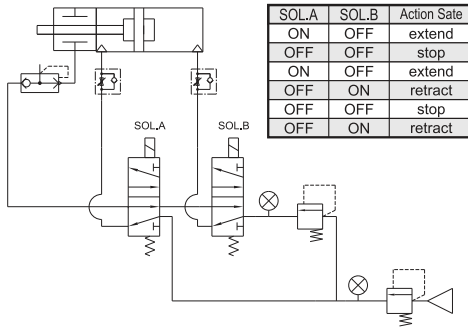
Type	Bore	Magnet	Stroke	Accessory	Sensor switch	Quantity
	32—φ 32mm 40—φ 40mm 50—φ 50mm 63—φ 63mm 80—φ 80mm 100—φ 100mm	M: With magnet N: No magnet	25—25mm 50—50mm 75—75mm 100—100mm 125—125mm 150—150mm 175—175mm 200—200mm 250—250mm 300—300mm 350—350mm 400—400mm 450—450mm 500—500mm	 FA  FB  TC  CA  CB  LB  Y	 LN01A: S suited for φ 32, φ 40 LN02A: S suited for φ 50, φ 63 LN03A: S suited for φ 80, φ 100  Note: 1. Can choose NPN or PNP type (3-Wire type, 24VDC). 2. Can choose plug-in cable.	1: 1pc 2: 2pcs
				 G  K		

## Features and application of places

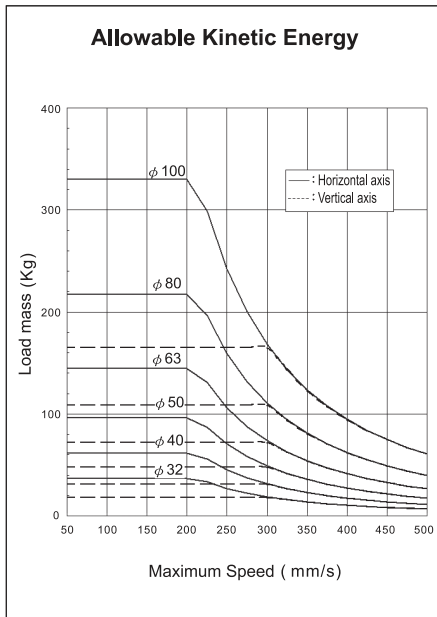
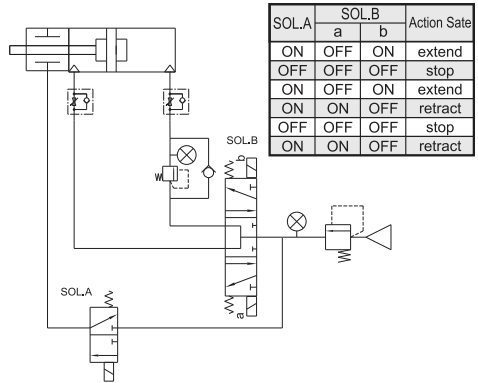
(Locks If Pressure Drops)  
Port Of Locking Unit



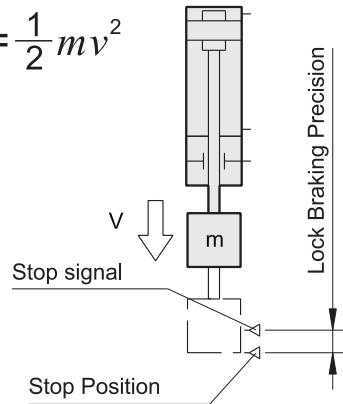
EXAMPLE 1



EXAMPLE 2



$$E_k = \frac{1}{2} m v^2$$



EK: Kinetic Energy (J)

V: Velocity (m/s)

m: Load mass (Kg)

DA

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DQ

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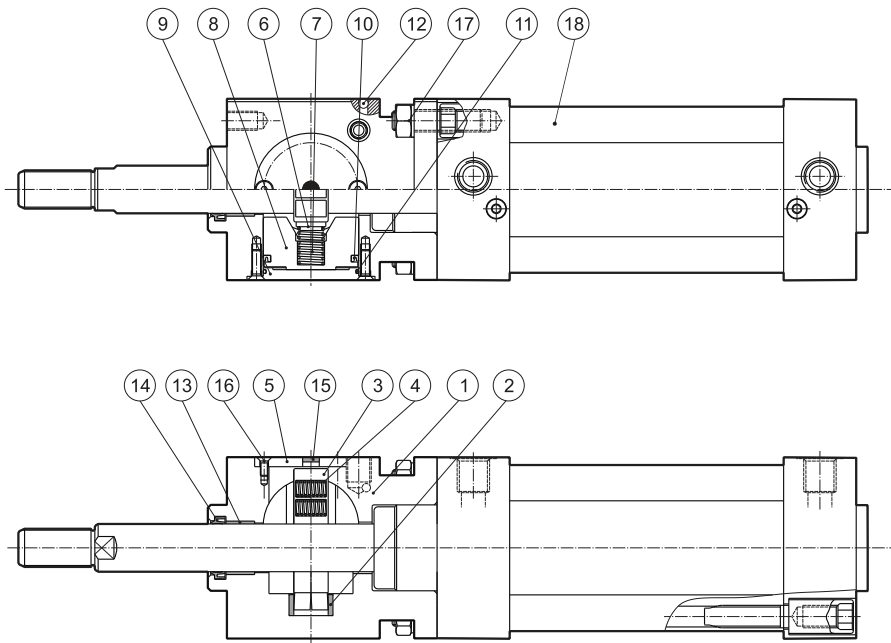
CH

## How to order the seal kit

BNKSK

Bore	Seal kit
32	BNKSK32 - Including No.10,11,14
40	BNKSK40 - Including No.10,11,14
50	BNKSK50 - Including No.10,11,14
63	BNKSK63 - Including No.10,11,14
80	BNKSK80 - Including No.10,11,14
100	BNKSK100 - Including No.10,11,14

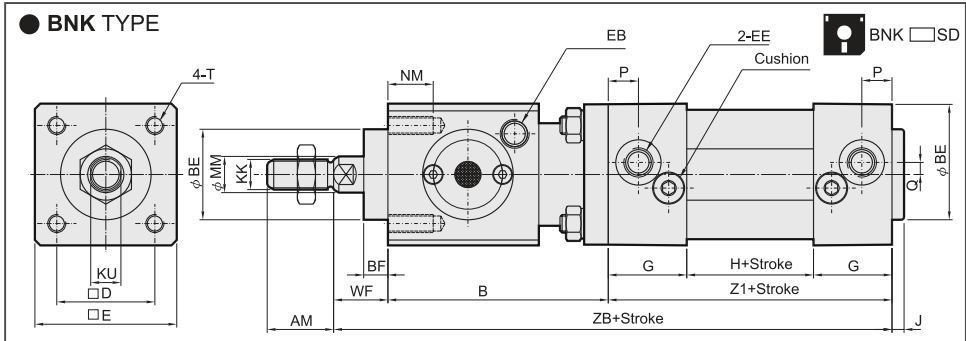
● Bore φ 32, φ 40, φ 50, φ 63, φ 80, φ 100



## Parts List

No.	Part name	Quantity	No.	Part name	Quantity	No.	Part name	Quantity
1	Body	1	7	Spring	2	13	Oilless bearing	1
2	Slide bush	1	8	Piston	2	14	Rod packing	1
3	Locking unit	2	9	End cover	2	15	Silencer	1
4	Spring	5	10	Piston packing	2	16	Tie bolt	10
5	Dust cover	1	11	O-ring	2	17	Tie bolt	4
6	Spring holder	2	12	Steel ball	1	18	Air Cylinder	1

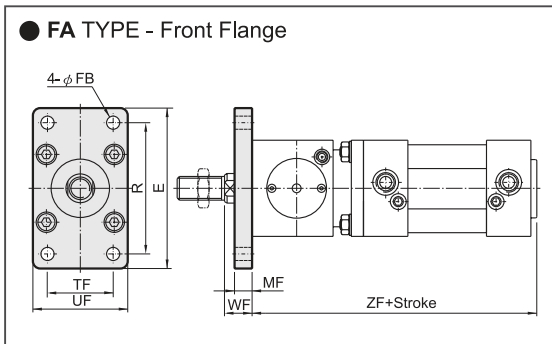
## Dimensional features



## Dimensional Table

Bore	AM	B	BE	D	E	EE	EB	G	H	J	KK	KU	MM	NM	P	Q	T	WF	Z1	ZB	
φ 32	22	73	30	8	32.5	47	G 1/8	G 1/8	26	42	4	M10×1.25	10	12	12	10	4.5	M6	18	94	185
φ 40	24	76	35	8	38	53	G 1/4	G 1/8	30	45	5	M12×1.25	14	16	12	15	5	M6	18	105	199
φ 50	32	90	40	8	46.5	65	G 1/4	G 1/8	30	46	5	M16×1.5	17	20	14	15	6	M8	20	106	216
φ 63	32	92	45	10	56.5	75	G 3/8	G 1/8	32	57	4	M16×1.5	17	20	14	16	8	M8	22	121	235
φ 80	40	110	45	10	72	95	G 3/8	G 1/4	38	52	6	M20×1.5	22	25	16	19	9	M10	24	128	262
φ 100	40	130	55	10	89	115	G 1/2	G 1/4	40	58	6	M20×1.5	22	25	16	20	7	M10	26	138	294

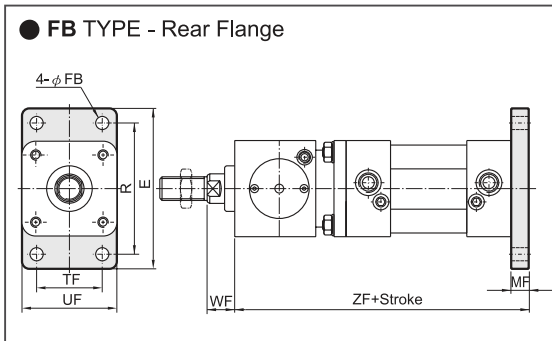
## Accessories



## Dimensional Table

**● DN □ FA**

Bore	E	FB	MF	R	TF	UF	WF	ZF
φ 32	79	7	10	64	32	50	18	171
φ 40	90	9	10	72	36	55	18	186
φ 50	110	9	12	90	45	65	20	201
φ 63	120	9	12	100	50	75	22	217
φ 80	153	12	16	126	63	95	24	244
φ 100	178	14	16	150	75	115	26	274



## Dimensional Table

**● DN □ FB**

Bore	E	FB	MF	R	TF	UF	WF	ZF
φ 32	79	7	10	64	32	50	18	195
φ 40	90	9	10	72	36	55	18	209
φ 50	110	9	12	90	45	65	20	228
φ 63	120	9	12	100	50	75	22	247
φ 80	153	12	16	126	63	95	24	278
φ 100	178	14	16	150	75	115	26	310

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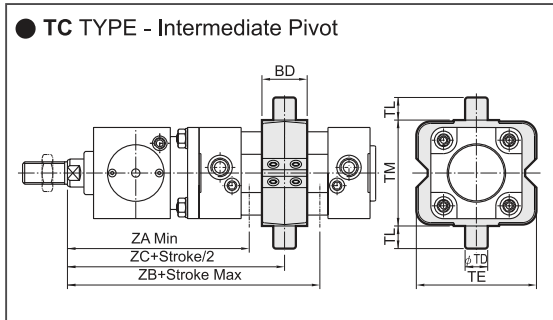
RT

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### Accessories

#### ● TC TYPE - Intermediate Pivot

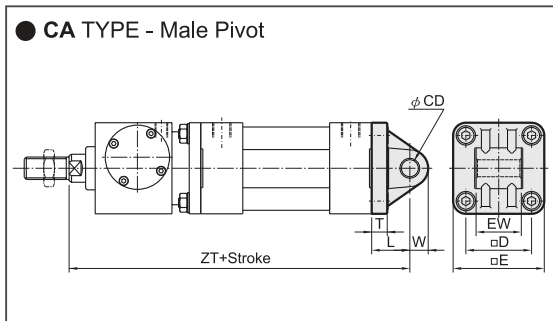


DN □ TC

#### Dimensional Table

Bore	BD	TD	TE	TL	TM	ZA	ZB	ZC
φ 32	22	12	58	12	50	131	145	138
φ 40	28	16	70	16	63	141	152	146.5
φ 50	32	16	85	16	75	159	167	163
φ 63	35	20	100	20	90	166.5	182.5	174.5
φ 80	40	20	120	20	110	195	201	198
φ 100	45	25	145	25	132	221.5	228.5	225

#### ● CA TYPE - Male Pivot

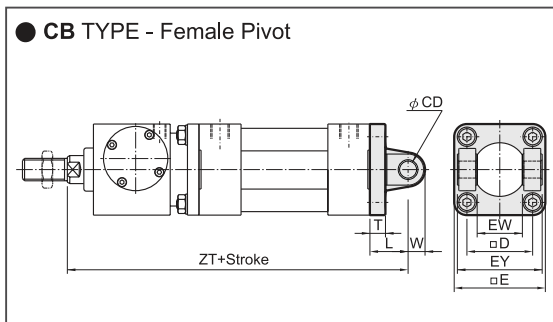


DN □ CA

#### Dimensional Table

Bore	CD	D	E	EW	L	T	W	ZT
φ 32	10	32.5	47	26	22	10	10.5	207
φ 40	12	38	53	28	25	10	13	224
φ 50	12	46.5	65	32	27	11	13	243
φ 63	16	56.5	75	40	32	11	17	267
φ 80	16	72	95	50	36	15	17	298
φ 100	20	89	115	60	41	15	21	335

#### ● CB TYPE - Female Pivot

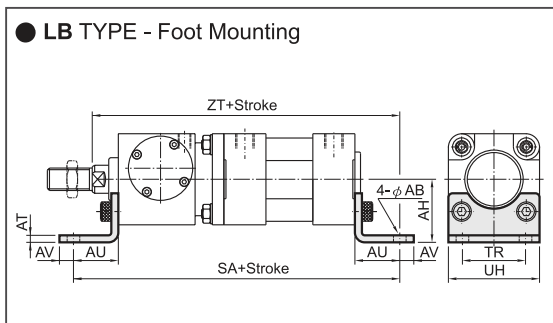


DN □ CB

#### Dimensional Table

Bore	CD	D	E	EW	EY	L	T	W	ZT
φ 32	10	32.5	47	26	45	22	10	10.5	207
φ 40	12	38	53	28	52	25	10	13	224
φ 50	12	46.5	65	32	60	27	11	13	243
φ 63	16	56.5	75	40	70	32	11	17	267
φ 80	16	72	95	50	90	36	15	17	298
φ 100	20	89	115	60	110	41	15	21	335

#### ● LB TYPE - Foot Mounting



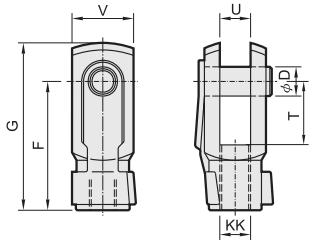
DN □ LB

#### Dimensional Table

Bore	AB	AH	AT	AU	AV	SA	TR	UH	ZT
φ 32	7	32	5	24	8	215	32	47	209
φ 40	9	36	5	28	10	237	36	53	227
φ 50	9	45	5	32	10	260	45	65	248
φ 63	9	50	5	32	10	277	50	75	267
φ 80	12	63	6	41	13	320	63	95	303
φ 100	14	71	6	41	15	350	75	115	335

### Accessories

#### ● Y Rod Clevis (With Pin)



#### Dimensional Table

Type	Bore	D	F	G	KK	T	U	V
Y-M10×1.25	φ 32	10	40	52	M10×1.25	20	10	20
Y-M12×1.25	φ 40	12	48	62	M12×1.25	24	12	24
Y-M16×1.5	φ 50, φ 63	16	64	83	M16×1.5	32	16	32
Y-M20×1.5	φ 80, φ 100	20	80	105	M20×1.5	40	20	40



Type	Filename
Y-M10×1.25	YM10125
Y-M12×1.25	YM12125
Y-M16×1.5	YM16150
Y-M20×1.5	YM20150

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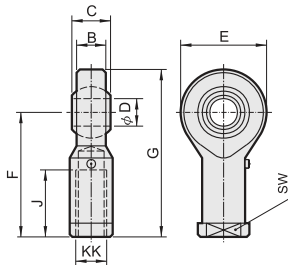
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#### ● Oscillating Eye



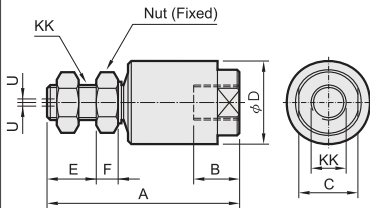
#### Dimensional Table

Type	Bore	B	C	D	E	F	G	J	KK	SW
G-M10×1.25	φ 32	10.5	14	10	28	43	57	20	M10×1.25	17
G-M12×1.25	φ 40	12	16	12	30	50	65	24	M12×1.25	19
G-M16×1.5	φ 50, φ 63	15	21	16	38	64	83	33	M16×1.5	22
G-M20×1.5	φ 80, φ 100	18	25	20	46	77	100	40	M20×1.5	30



Type	Filename
G-M10×1.25	GM10125
G-M12×1.25	GM12125
G-M16×1.5	GM16150
G-M20×1.5	GM20150

#### ● Compensating Joint



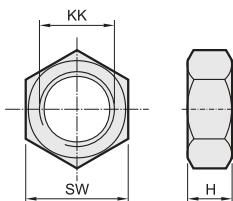
#### Dimensional Table

Type	Bore	A	B	C	D	E	F	KK	U
K-M10×1.25	φ 32	54	13	24	25.5	14.5	6	M10×1.25	1
K-M12×1.25	φ 40	70	17	29	31	19	7	M12×1.25	1.15
K-M16×1.5	φ 50, φ 63	88	21	27	38	29	8	M16×1.5	1.65
K-M20×1.5	φ 80, φ 100	105	25	32	50	27.5	16	M20×1.5	2.15



Type	Filename
K-M10×1.25	KM10125
K-M12×1.25	KM12125
K-M16×1.5	KM16150
K-M20×1.5	KM20150

#### ● Mounting Nut



#### Dimensional Table

Type	Bore	H	KK	SW
N-M10×1.25	φ 32	6	M10×1.25	17
N-M12×1.25	φ 40	7	M12×1.25	19
N-M16×1.5	φ 50, φ 63	8	M16×1.5	24
N-M20×1.5	φ 80, φ 100	8	M20×1.5	27



Type	Filename
N-M10×1.25	NM10125
N-M12×1.25	NM12125
N-M16×1.5	NM16150
N-M20×1.5	NM20150