CLUTCHES BRAKES

TANGYING DEDICATE IN THE HIGH QUALITY OVER 30 YEARS

AIR DISC BRAKES & CLUTCHES

SAFETY DISC SPRING BRAKES

AIR SHAFT BRAKES & CLUTCHES

STEKI
Industrial Automation

ABOUT US

Taiwan TANGYING is one of the first producers of clutches and brakes used in machinery industry. Through 30 years of development and accumulation of experience, it has become Taiwan 's most professional manufacturer of high-performance industrial motion control products. Always upholding the idea of high-quality, we provide a complete portfolio of products: pneumatic clutches/brakes, pneumatic hydraulic disc brakes, electromagnetic clutches/brakes, electromagnetic powder clutches/brakes, tension control system ,super durable safety chucks.

TANGYING dedicate in the high quality over 30 years Consummate service and technical support.

Boundless devotion to innovation

Technology is the core of TANGYING, because only our continual investment in the professional level research and development can create the innovative products leading the industry trend.

Quality first, never compromise

High quality is the most important thing for TANGYING. In every process, we constantly check the quality management and the details. What we do is to ensure that the customers will be able to enjoy cost-effective high quality solution.

Long-term cooperative relation

We believe that our partners can grow together with TANGYING at any stage. Maintaining good relationship with business partners is the most important key for us to achieve continual success in all aspects.

Perseverance

All the staff in TANGYING have a common goal. We learn and grow in the pressure situation, and all are brave enough to accept the challenge. We hope that through the unremitting efforts of our whole company, each individual can enjoy the convenience brought about by technological innovation.

We depend on an effective growth to achieve sustainable development, and take the balanced business association as a lever to achieve the integration effect of cross region and cross business areas, pursue the perfection and excellence. That is just the practice of the promises for making contributions to the society.

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AIR DISC BRAKE

FRICTION PLATE

CONTENTS

AIR SHAFT SERIES

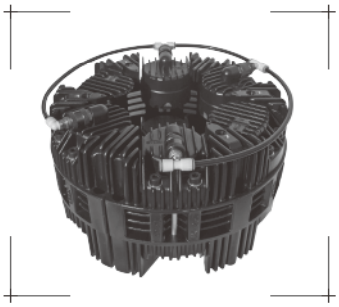
Features

1 Wide-range torque control

It adopts modular design, and installed sets of brake module are devised by real needs, in which torque control can reach larger limits.

2 Free of change

Installed sets of brake module can be changed freely even after installation.
Brake module can conduct flexible installation and control, and with changing movements, torque control range can be larger.



3 Well heat dissipation

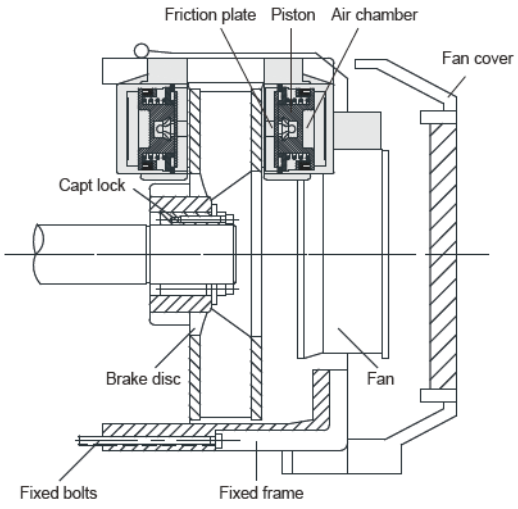
Whole ventilated structure ensures unblocked airflow.
Pulley-structure brake disc greatly dissipates the heat generated from itself.
It works better to add a cooling fan.

4 Simple installation and great response

It characterizes in high torque and high accuracy, which can be applied to all kinds of conditions, including tension control, urgent brake and position control.

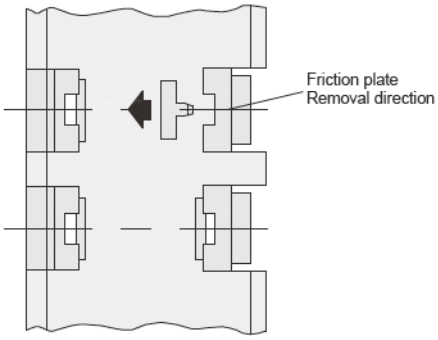
5 Quickness and convenience of changing non-asbestos friction plate.

Structure and Movement



If adds air pressure, pushes piston, it can squeeze brake disc from both sides of friction plate.
It has sensitive response to changes of air pressure, and has highly accuracy in controlling the torque.
The piston's sealed object is one kind of non-oil pouring.
Each top of brake module has manual air pressure valve, with pushing forward the opening, pushing afterward the closing. If needed torque changes greatly, movement of brake module can be changed.
The total thickness of friction plate is 10mm, and its maximum abrasion is 6mm. If it reaches maximum space, take down the two frameworks.

Please use the screwdriver to take out and replace the broken friction plate.
Fan cover is optional.

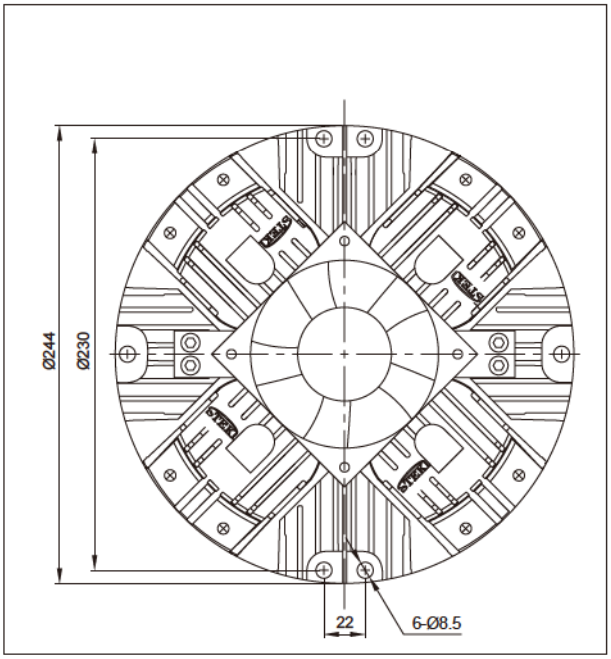


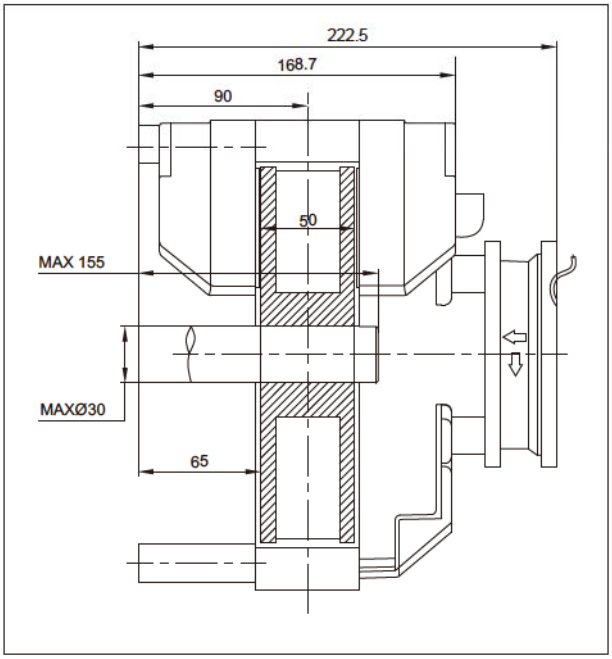
Model selection

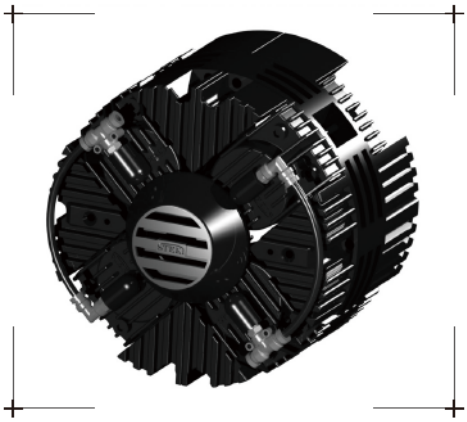
DBK F . 250 . 0 . 0 . / V . AC220 .H

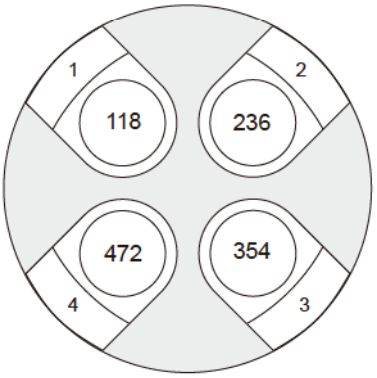
- Brake
- Clutch
- Φ Disc
- Quantity of modules
- Aperture
- Cooling fan
- Fan voltage
- Fan cover

DBK200



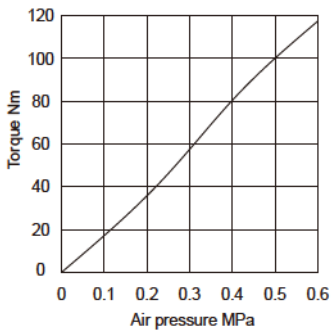






3 ▶ Number of cylinder
48 ▶ Torque of related module number

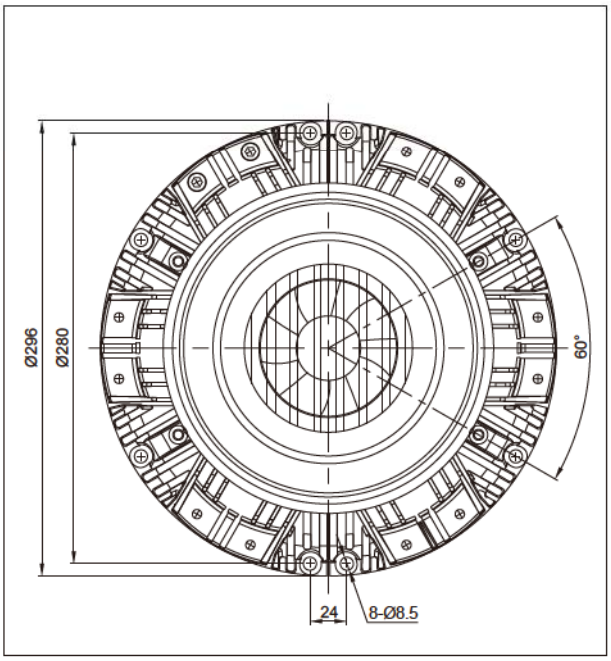
● Torque versus air pressure

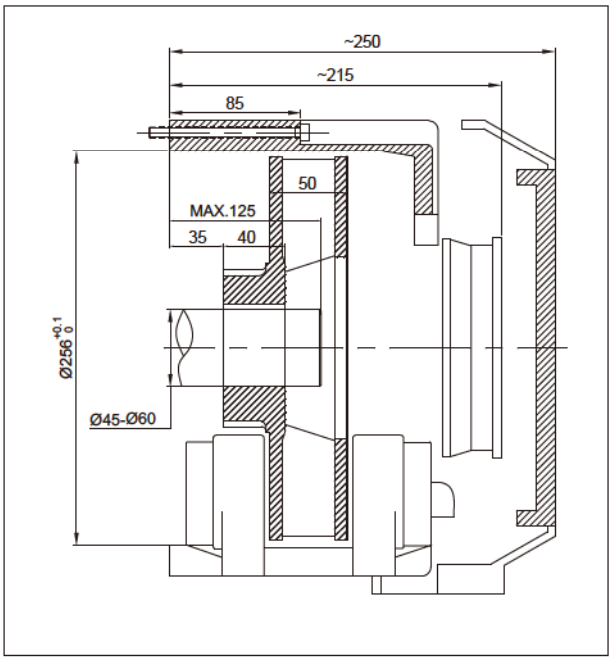


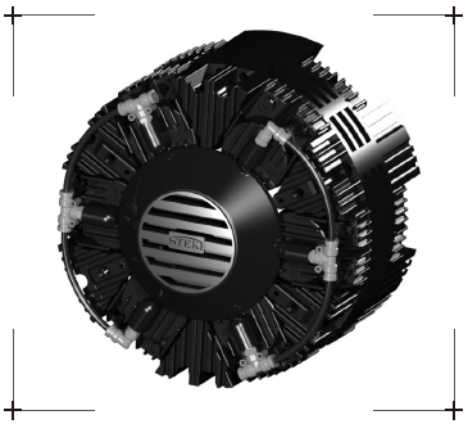
Specification

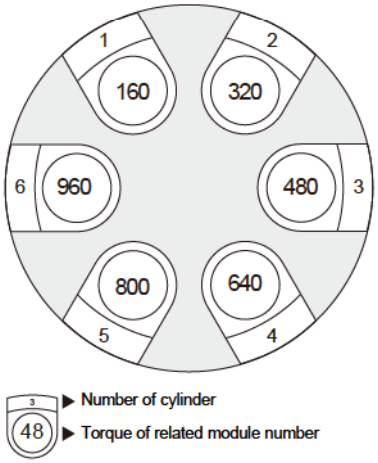
Model	DBK-200
Minimum torque of one pair of modules	1.2Nm
Pressure (min / max)	0.03/0.6MPa
Maximum speed	3000rpm
Total weight	18Kg
Inertia	0.02Kgm²
Fanless cooling power	0.7kw@100rpm
Cooling fan 24/110/220V	1.5kw@100rpm

DBK250

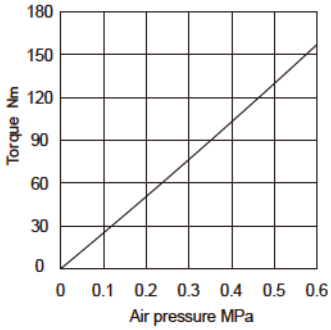








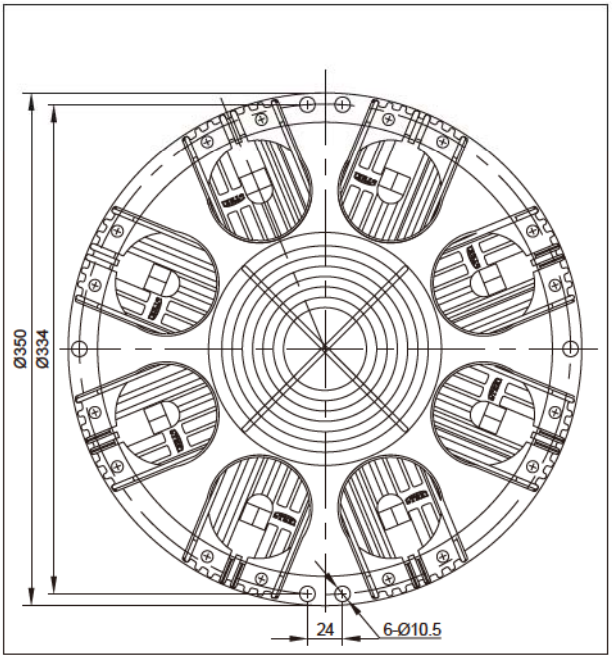
● Torque versus air pressure

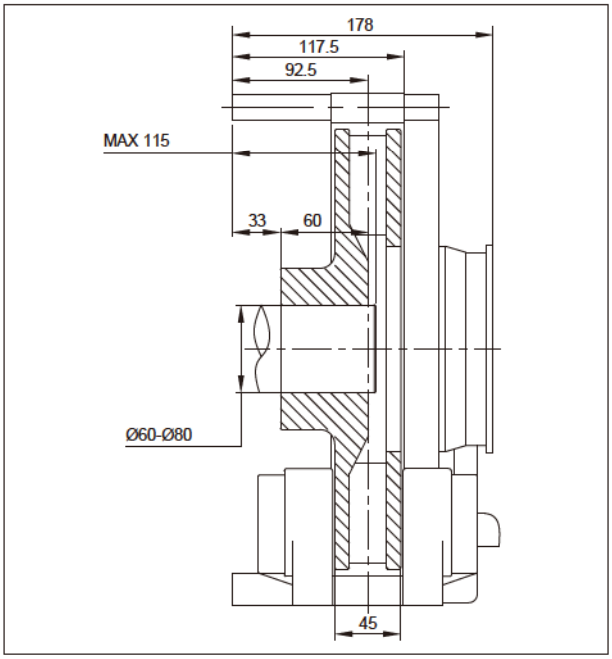


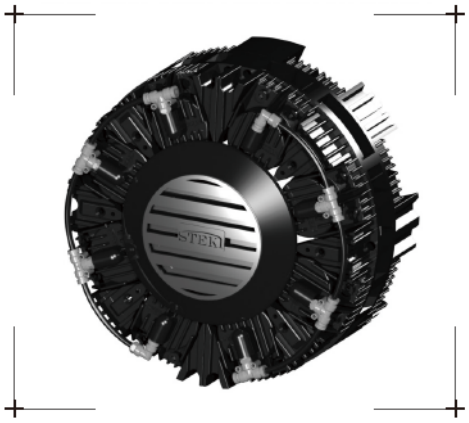
Specification

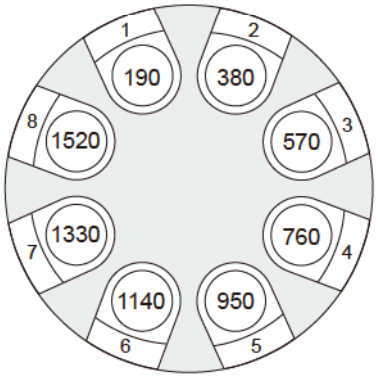
Model	DBK-250
Minimum torque of one pair of modules	1.5Nm
Pressure (min / max)	0.03/0.6MPa
Maximum speed	2500rpm
Total weight	20Kg
Inertia	0.04Kgm²
Fanless cooling power	1.3kw@100rpm
Cooling fan 24V	3.5kw@100rpm

DBK300



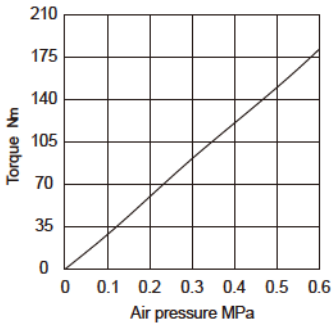






3 ▶ Number of cylinder
48 ▶ Torque of related module number

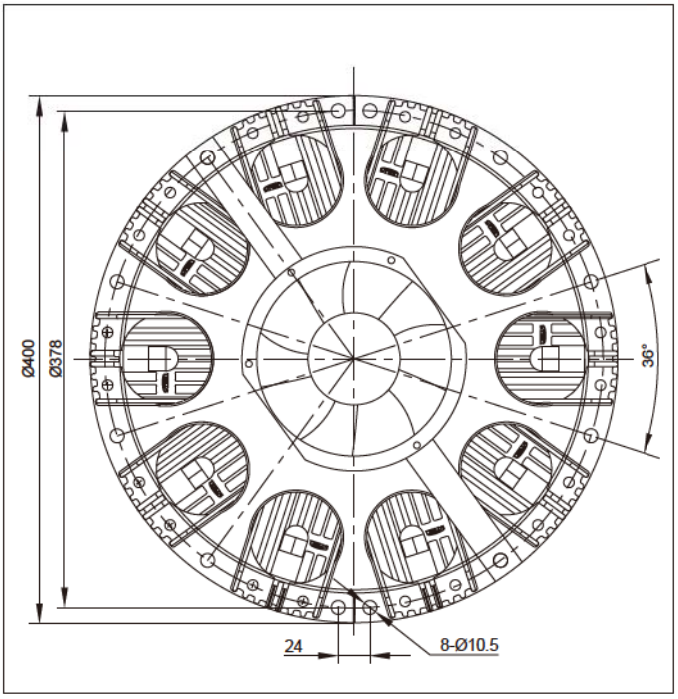
● Torque versus air pressure

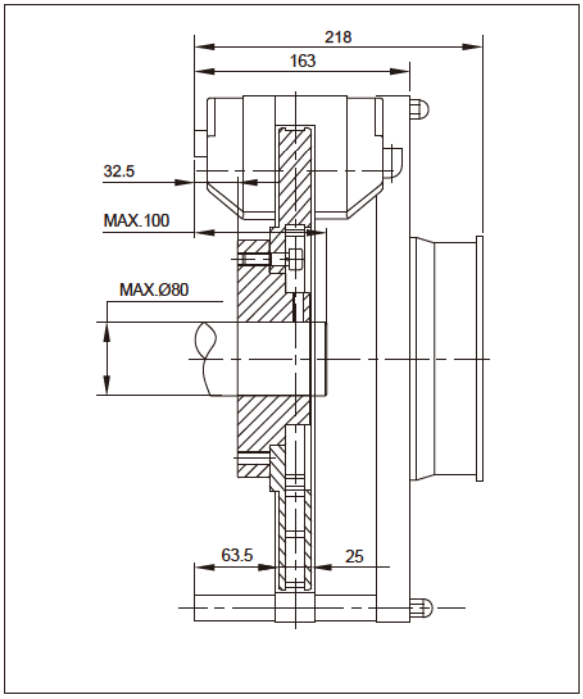


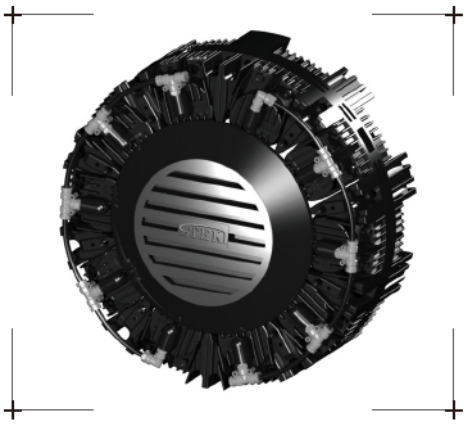
Specification

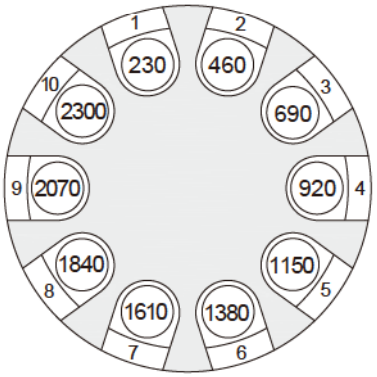
Model	DBK-300
Minimum torque of one pair of modules	1.6Nm
Pressure (min / max)	0.03/0.6MPa
Maximum speed	2000rpm
Total weight	26Kg
Inertia	0.09Kgm²
Fanless cooling power	1.8kw@100rpm
Cooling fan 24V	5kw@100rpm

DBK350

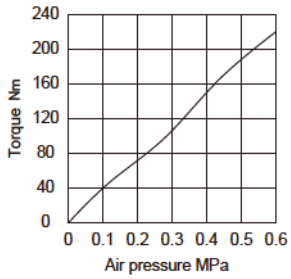








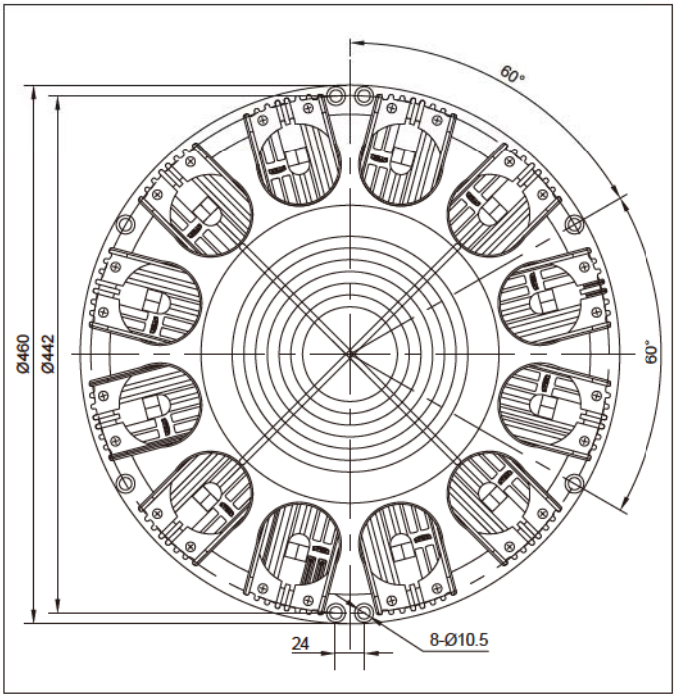
● Torque versus air pressure

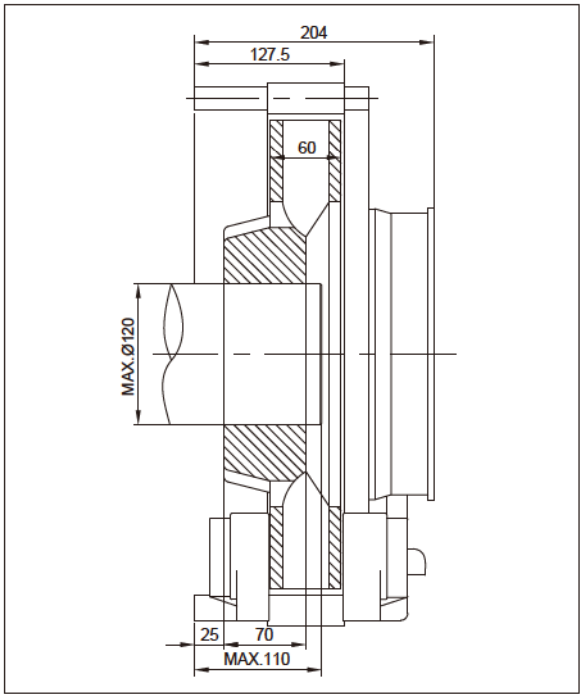


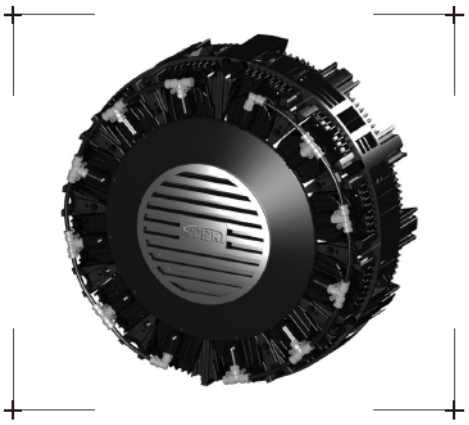
Specification

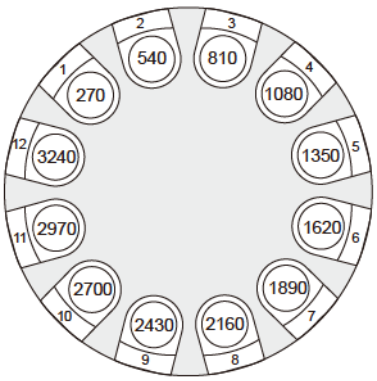
Model	DBK-350
Minimum torque of one pair of modules	2Nm
Pressure (min / max)	0.03/0.6MPa
Maximum speed	1700rpm
Total weight	38Kg
Inertia	0.13Kgm²
Fanless cooling power	2.1kw@100rpm
Cooling fan 24/110/220V	6.8kw@100rpm

DBK400





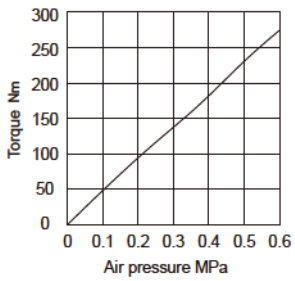




3 ▶ Number of cylinder

48 ▶ Torque of related module number

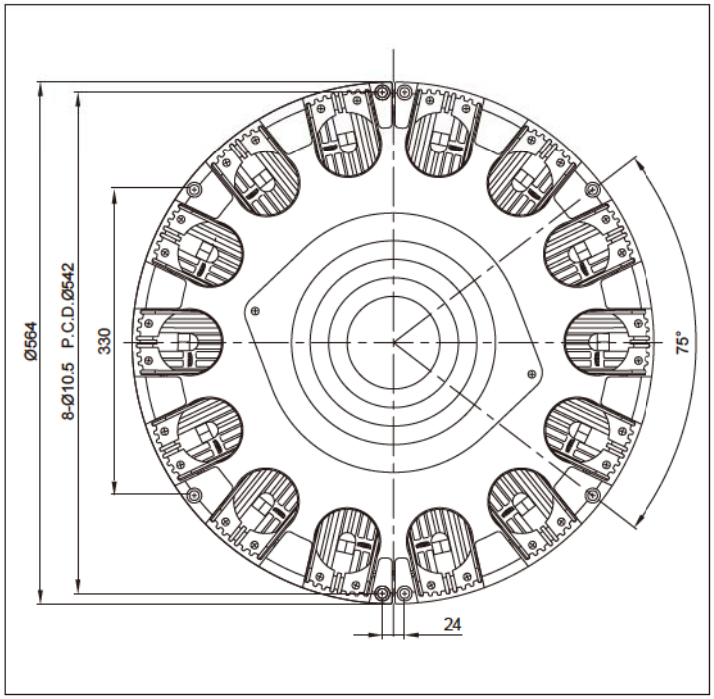
● Torque versus air pressure

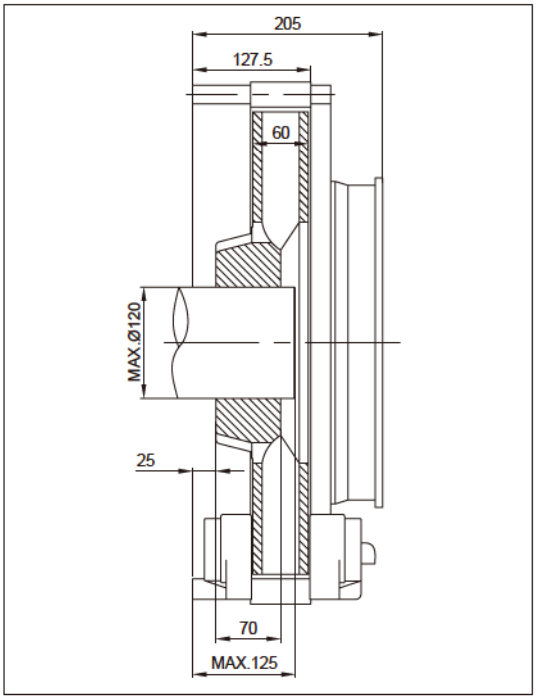


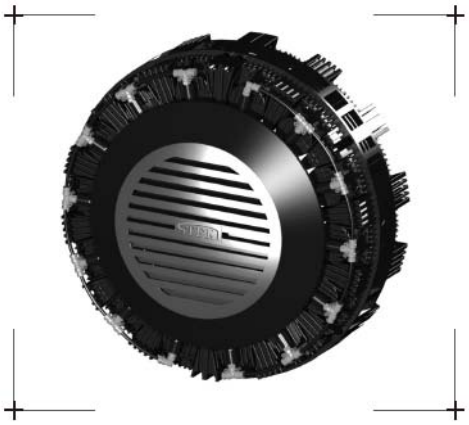
Specification

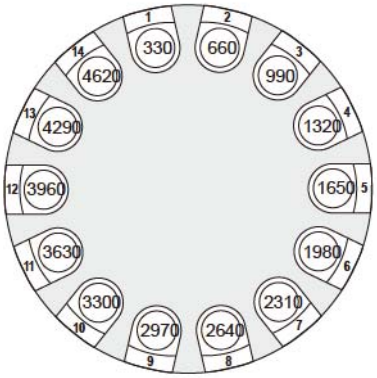
Model	DBK-400
Minimum torque of one pair of modules	2.5Nm
Pressure (min / max)	0.03/0.6MPa
Maximum speed	1500rpm
Total weight	40Kg
Inertia	0.23Kgm²
Fanless cooling power	2.8kw@100rpm
Cooling fan 24/110/220V	8.8kw@100rpm

DBK500





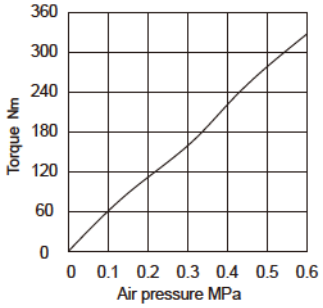




3 ▶ Number of cylinder

48 ▶ Torque of related module number

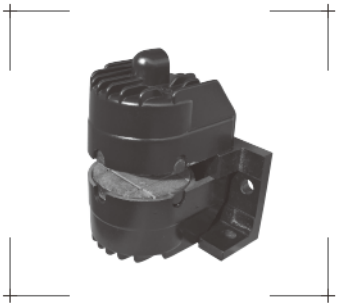
● Torque versus air pressure



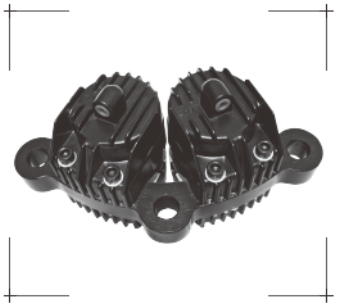
Specification

Model	DBK-500
Minimum torque of one pair of modules	3.3Nm
Pressure (min / max)	0.03/0.6MPa
Maximum speed	1200rpm
Total weight	55Kg
Inertia	0.66Kgm²
Fanless cooling power	3.5kw@100rpm
Cooling fan 24/110/220V	12.6kw@100rpm

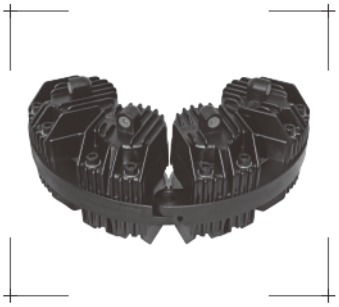
DBK



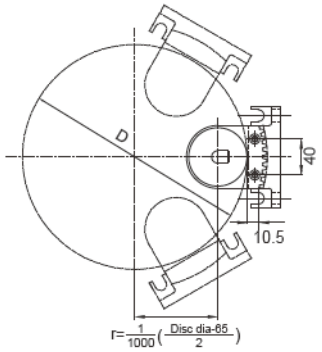
DBK-1O

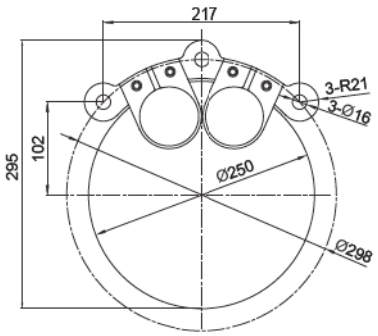


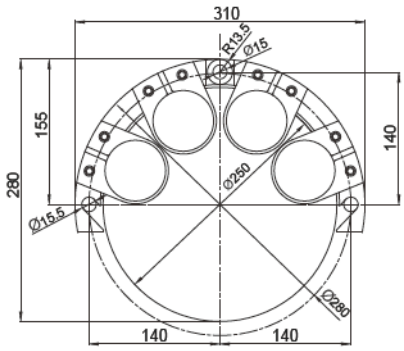
DBK-2O.2



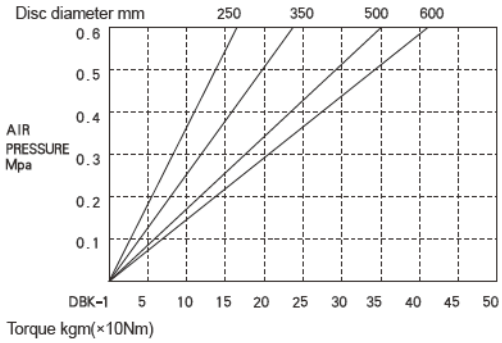
DBK-2O.4

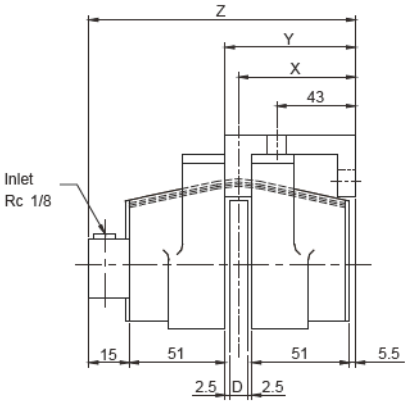


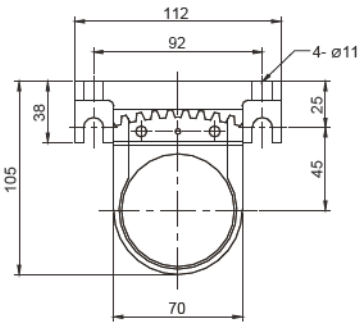




● Torque versus air pressure







● Single brake module torque calculation

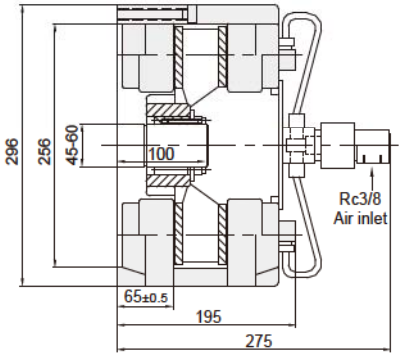
Braking force (0.6Mpa)	195kg
Effective radius of disc braking	$r=\frac{1}{1000}(\frac{DISC\ DIA-65}{2})$
Torque calculation formula(Braking force=kg)	T (kg·m) = kg × r

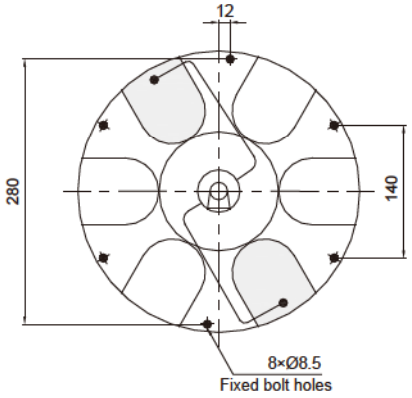
● Specification

Model	DBK—1O	DBK—2O.2	DBK—2O.4
Disc thickness(D)	10mm	20mm	20mm
Disc diameter	250mm ↑	250mm ↑	250mm ↑
Maximum pressure	0.6Mpa	0.6Mpa	0.6Mpa
Friction plate abrasion	6mm	6mm	6mm
Weight(approximately)	2kg	4kg	8kg
X	64mm	69mm	69mm
Y	71mm	76mm	76mm
Z	140mm	150mm	150mm

[Note] Different disc brake thickness and dia can be customized by requirements

DBKF

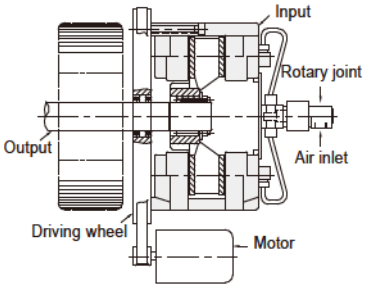




● Specification

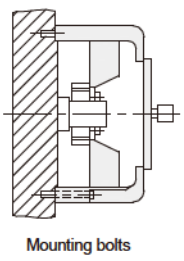
Single module torque kg/m(N/m) Air pressure	Min 0.02Mpa	Max0.6Mpa
DBKF250.2.0	0.15(1.5)	32(320)
DBKF250.4.0	0.15(1.5)	64(640)
DBKF250.6.0	0.15(1.5)	96(960)
Heat dissipation power kw		
Speed 100rpm	Speed 300rpm	Speed 600rpm	Speed 1000rpm
2	2.6	3.8	5.3

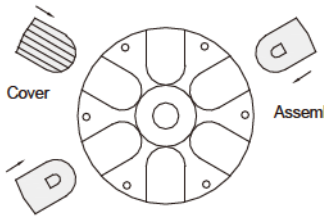
● DBKF Installation legend



Installation Steps

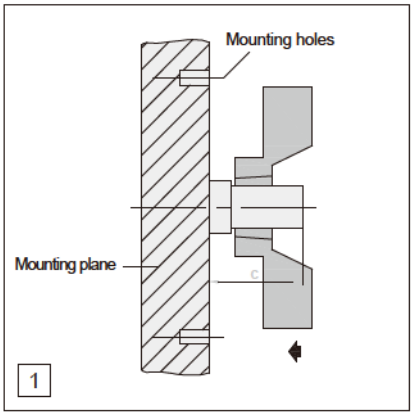
● DBKF Installation Steps

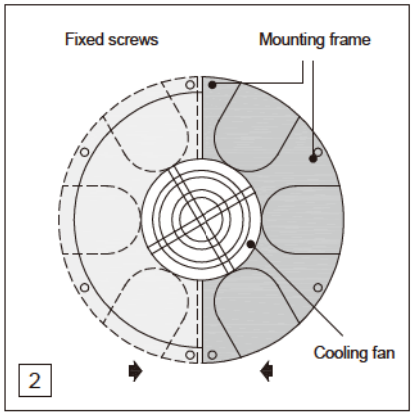


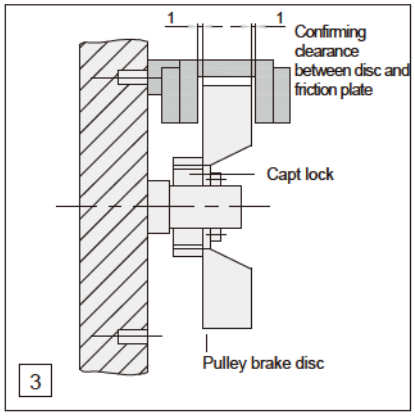


(1) Fix the pulley brake disc onto the shaft.
(2) Install two pieces of frame onto the machine table.
(3) Make sure to keep 1mm clearance between disc and friction plate.
(4) Connect fan power line and install fan cover (optional).

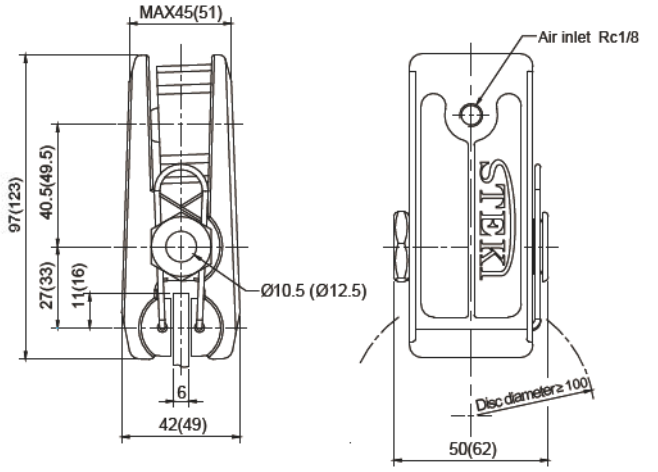
● DBK Installation Steps





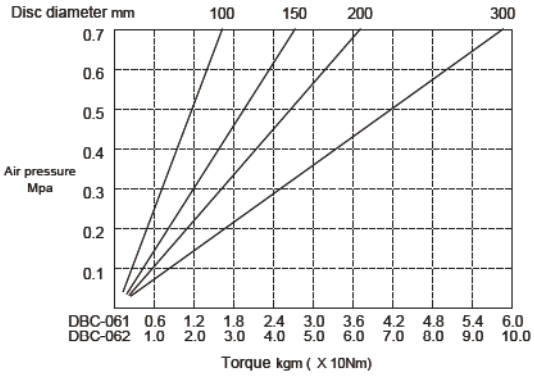


DBC-06



( ) Inside is the size of DBC-062

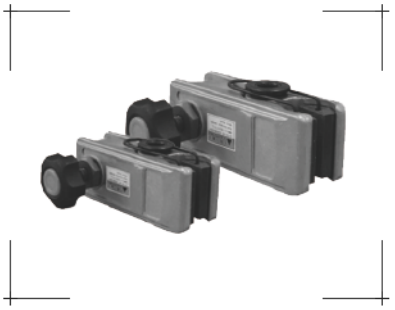
●Torque versus air pressure

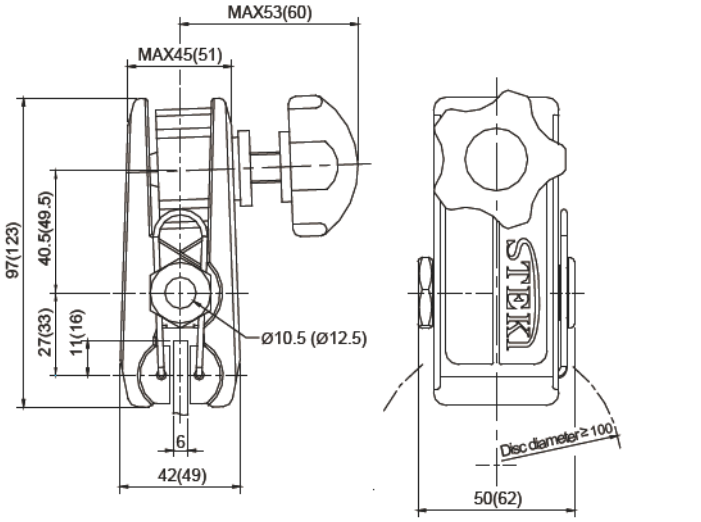


●Specification

Model	DBC-061	DBC-062
Disc thickness	6mm	6mm
Disc diameter	100mm↑	100mm↑
Maximum pressure	0.7Mpa	0.7Mpa
Compression ratio	1.5	1.5
Friction plate abrasion	2mm	2mm
Air cylinder area	7.1cm²	12.6cm²
Weight (approximately)	360g	670g

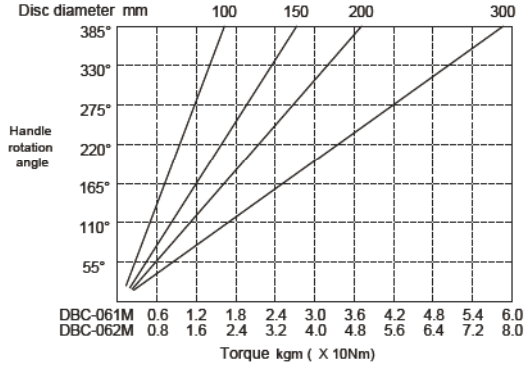
DBC-06M





( ) Inside is the size of DBC-062M

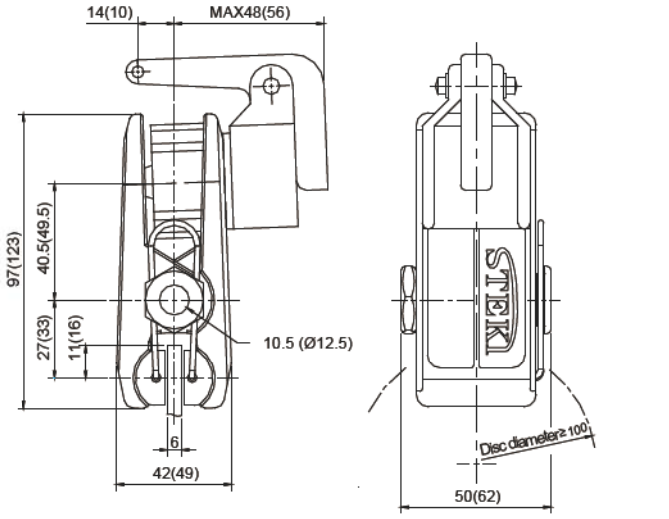
● Handle rotation angle versus torque



●Specification

Model	DBC-061M	DBC-062M
Disc thickness	6mm	6mm
Disc diameter	100mm↑	100mm↑
Maximum friction plate abrasion	2mm	2mm
Weight (approximately)	390g	750g

DBC-06H

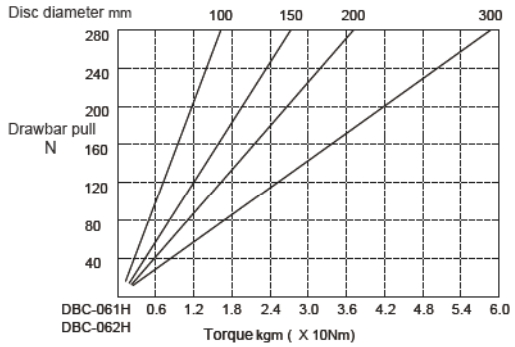


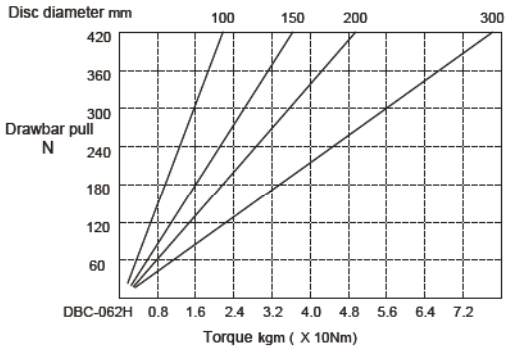
( ) Inside is the size of DBC-062H

●Specification

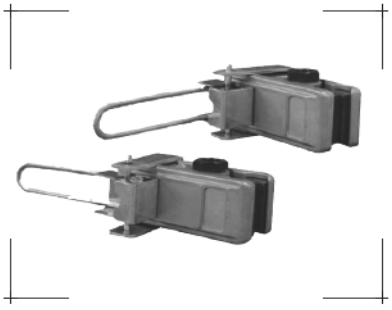
Model	DBC-061H	DBC-062H
Disc thickness	6mm	6mm
Disc diameter	100mm↑	100mm↑
Friction plate abrasion	2mm	2mm
Weight (approximately)	440g	800g

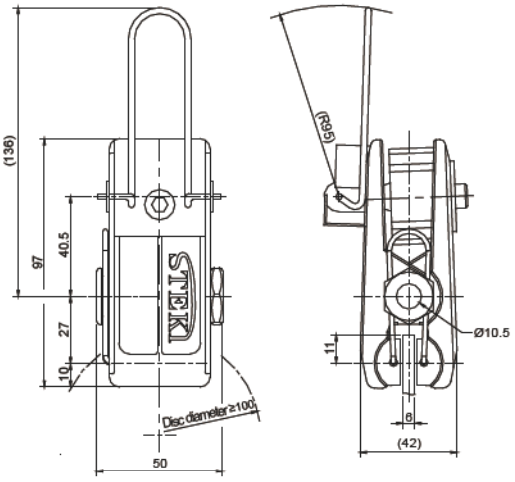
●Drawbar pull versus torque



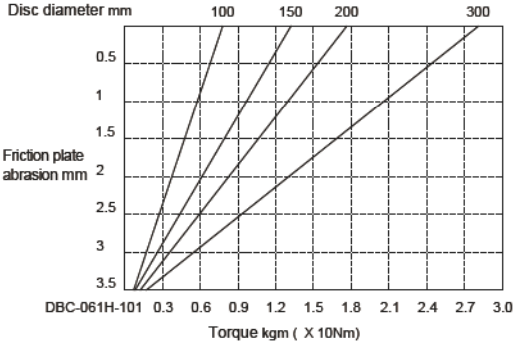


DBC-061H-101





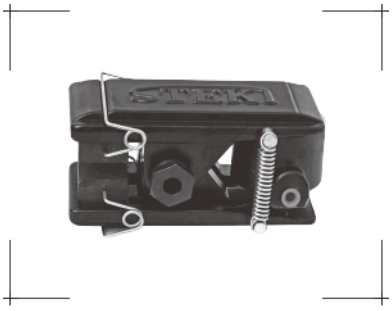
●Torque versus abrasion

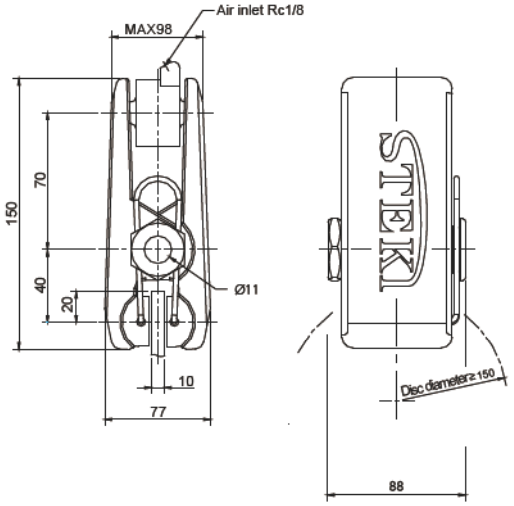


●Specification

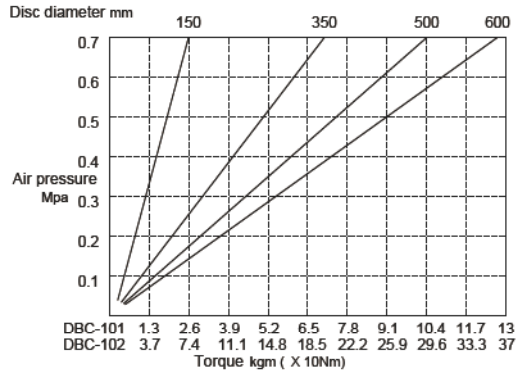
Model	DBC-061H-101
Disc thickness	6mm
Disc diameter	100mm↑
Friction plate abrasion	2mm
Weight (approximately)	440g

DBC-10





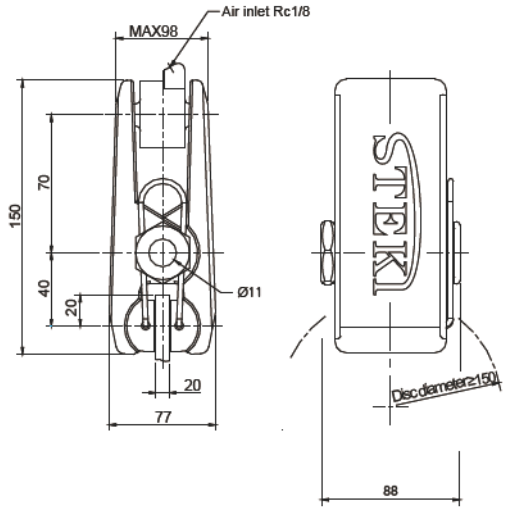
●Torque versus air pressure



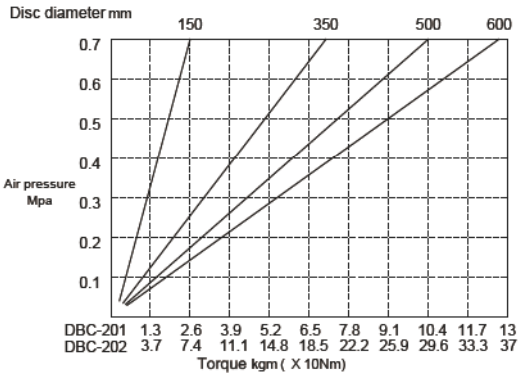
●Specification

Model	DBC-101	DBC-102
Disc thickness	10mm	10mm
Disc diameter	150mm↑	150mm↑
Maximum pressure	0.7Mpa	0.7Mpa
Compression ratio	1.75	1.75
Friction plate abrasion	5mm	5mm
Air cylinder area	7.1cm^2	19.6cm^2
Weight (approximately)	1.2kg	1.3kg

DBC-20



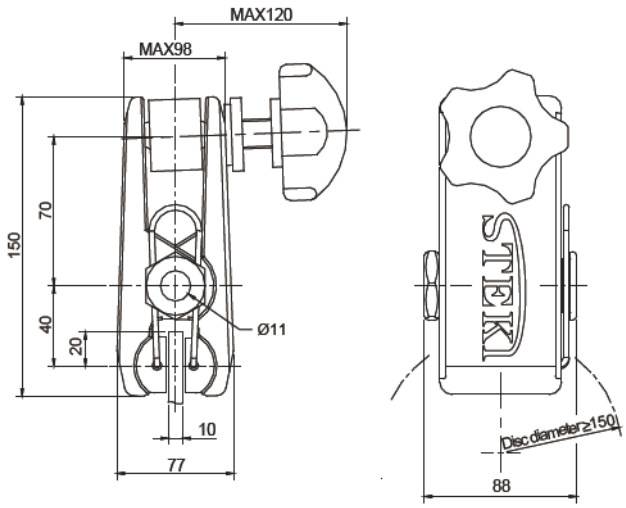
●Torque versus air pressure



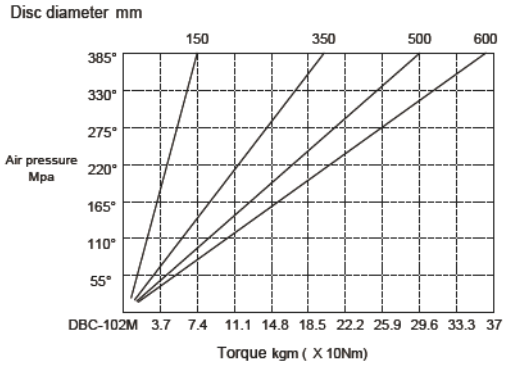
●Specification

Model	DBC-201	DBC-202
Disc thickness	20mm	20mm
Disc diameter	150mm↑	150mm↑
Maximum pressure	0.7Mpa	0.7Mpa
Compression ratio	1.75	1.75
Friction plate abrasion	5mm	5mm
Air cylinder area	7.1cm^2	19.6cm^2
Weight (approximately)	1.2kg	1.4kg

DBC-102M



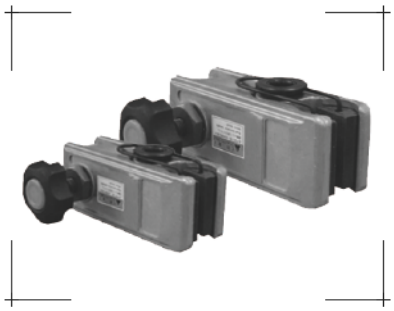
●Handle rotation angle versus torque

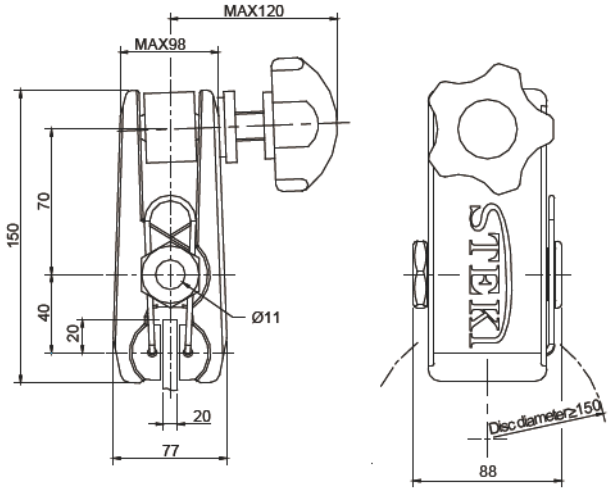


●Specification

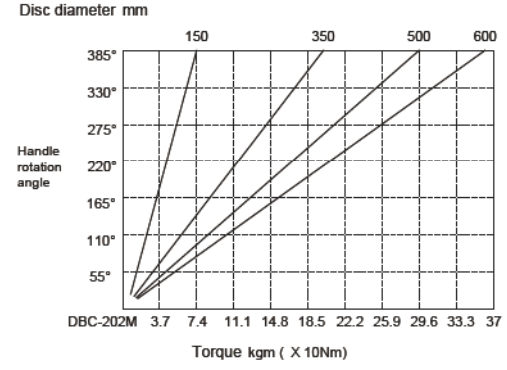
Model	DBC-102M
Disc thickness	10mm
Disc diameter	150mm↑
Maximum friction plate abrasion	5mm
Weight (approximately)	2.5kg

DBC-202M





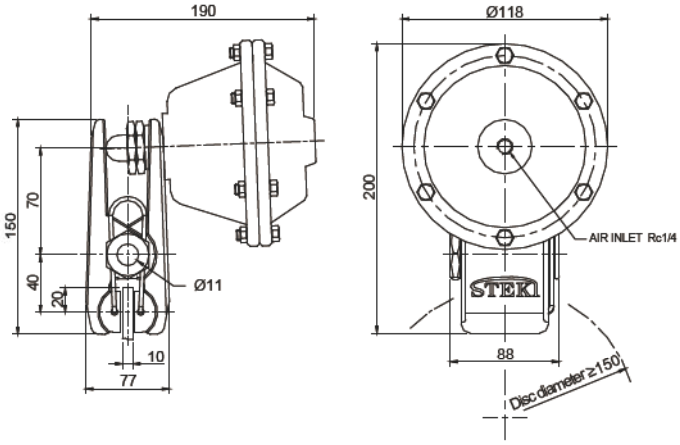
●Handle rotation angle versus torque



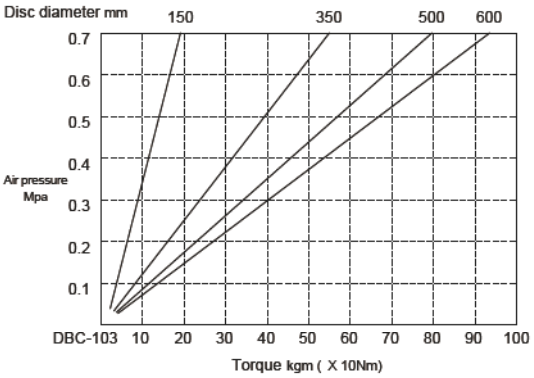
●Specification

Model	DBC-202M
Disc thickness	20mm
Disc diameter	150mm↑
Maximum friction plate abrasion	5mm
Weight (approximately)	2.5kg

DBC-103



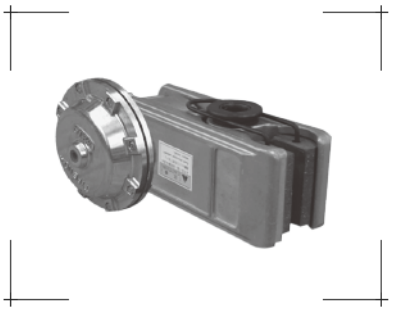
●Torque versus air pressure

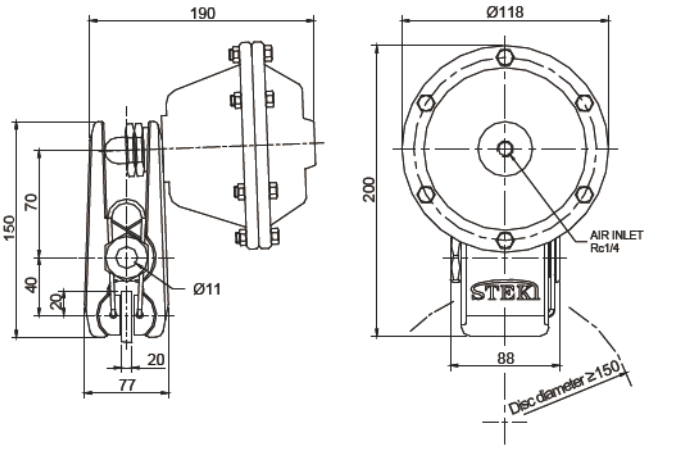


●Specification

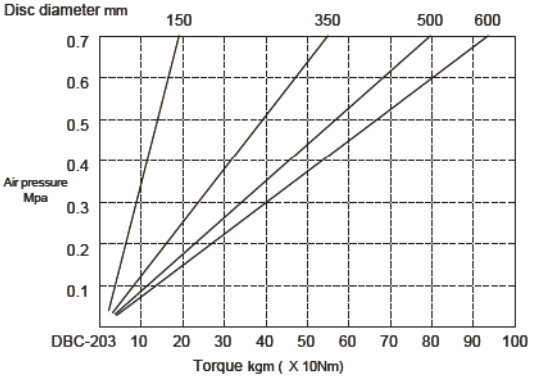
Model	DBC-103
Disc thickness	10mm
Disc diameter	150mm↑
Maximum pressure	0.7Mpa
Compression ratio	1.75
Friction plate abrasion	10mm
Air cylinder area	24cm²
Weight (approximately)	2kg

DBC-203





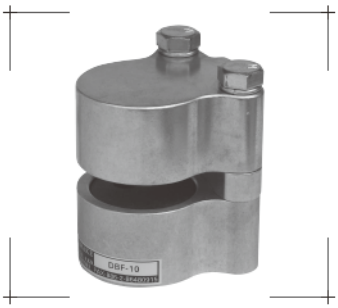
●Torque versus air pressure

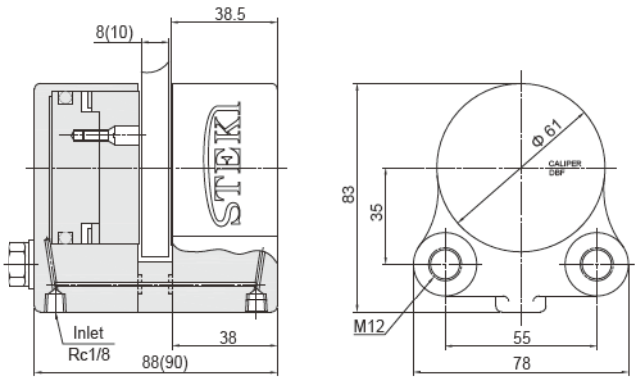


●Specification

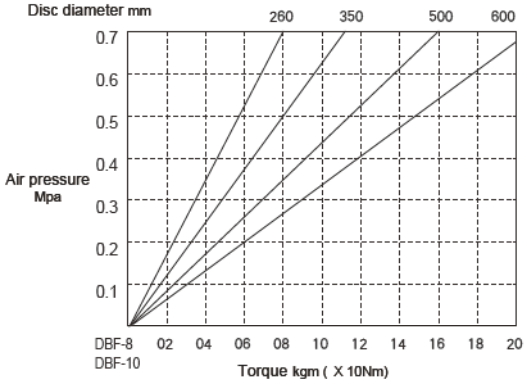
Model	DBC-203
Disc thickness	20mm
Disc diameter	150mm↑
Maximum pressure	0.7Mpa
Compression ratio	1.75
Friction plate abrasion	6mm
Air cylinder area	24cm²
Weight (approximately)	2kg

DBF





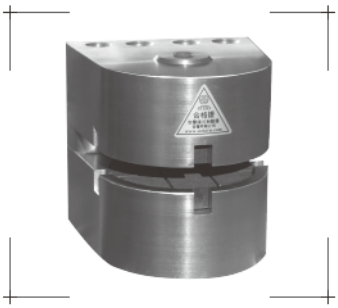
●Torque versus air pressure

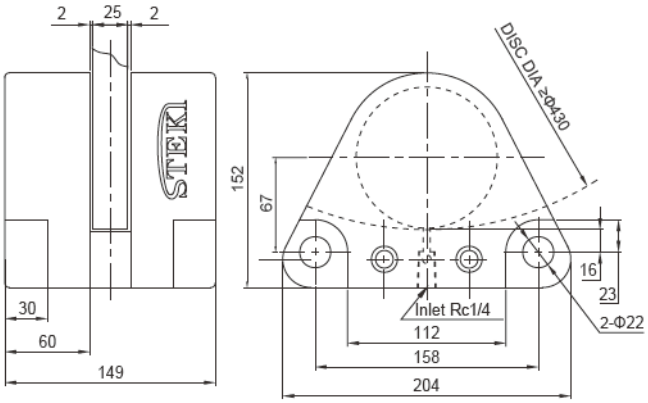


●Specification

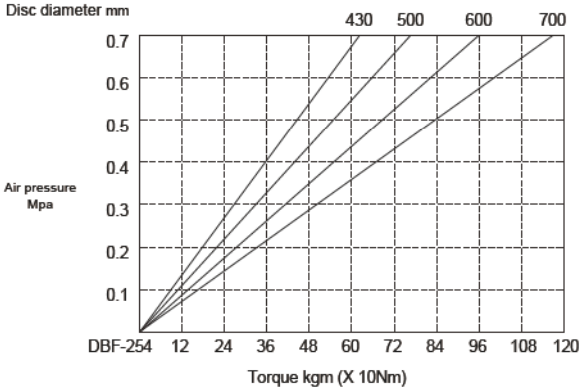
Model	DBF-8	DBF-10
Disc thickness	8mm	10mm
Disc diameter	220mm↑	220mm↑
Maximum pressure	0.7Mpa	0.7Mpa
Braking thrust(6kg/cm²)	77kg	77kg
Air cylinder area	19.63cm²	19.63cm²
Friction plate abrasion	7mm	7mm
Weight (approximately)	1kg	1.2kg

DBF-254





●Torque versus air pressure

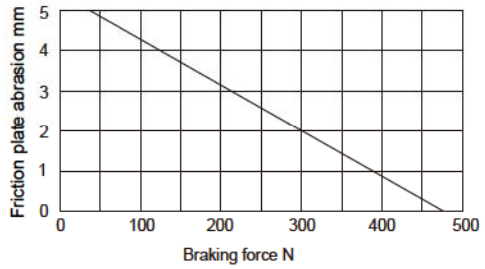


●Specification

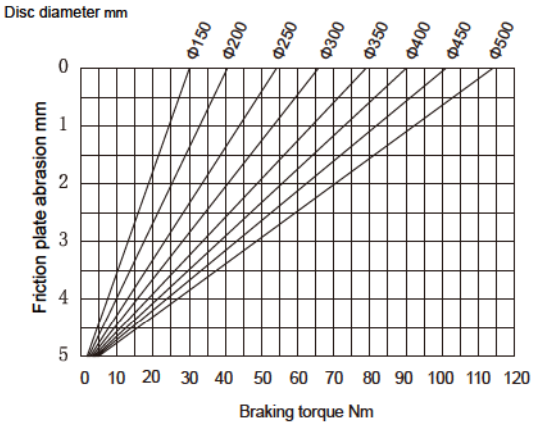
Model	DBF-254
Disc thickness	25mm
Disc dia	430mm↑
Maximum pressure	0.7Mpa
Braking thrust	410kg
Air cylinder area	78.5cm²
Friction plate abrasion	5mm
Weight (approximately)	6.5kg

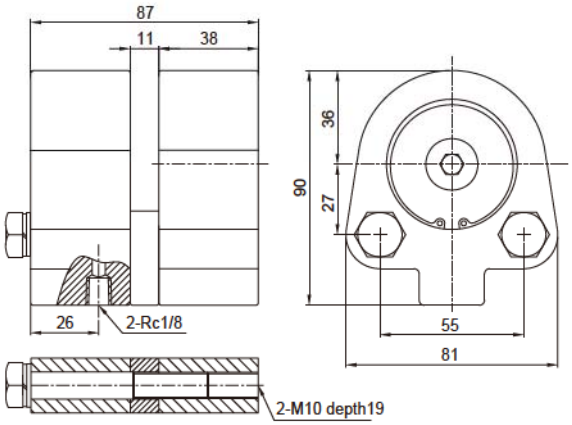
DBF-102F

● Braking force versus abrasion



● Torque versus abrasion



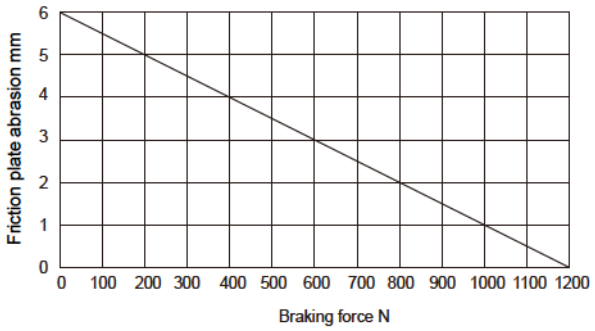


● Specification

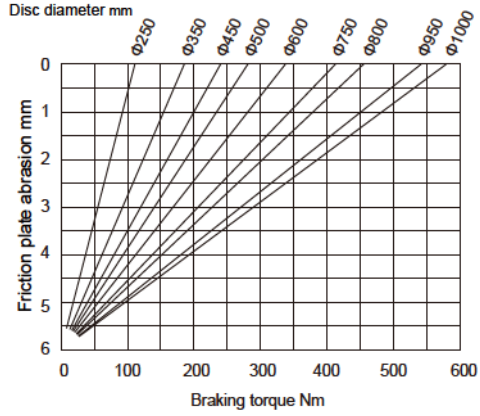
Model	DBF-102F
Disc thickness	10mm
Disc diameter	150mm↑
Minimum release pressure	0.4Mpa
Braking thrust (μ=0.35)	450N
Friction plate abrasion (Unilateral)	5mm

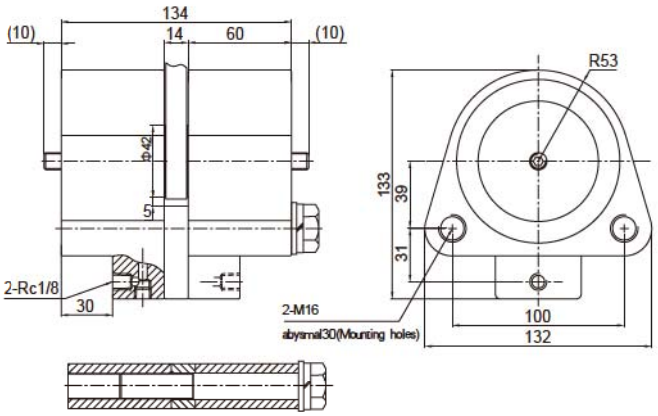
DBF-123F

● Braking force versus abrasion



● Torque versus abrasion





●Specification

Model	DBF-123F
Disc thickness	12mm
Minimum release pressure	0.4MPa
Common maximum pressure	1Mpa
Braking thrust (μ=0.33)	0.1--1KN
Friction plate abrasion (Unilateral)	6mm
Weight (approximately)	7.5kg

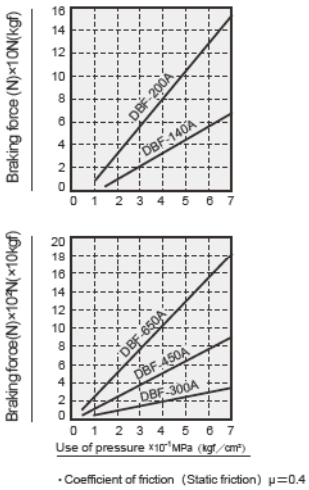
DBF-A

■ Free clearance ■ Large stroke

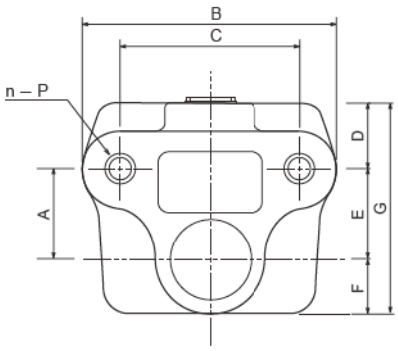
■ Compact and light weight ■ Available in singleside brake

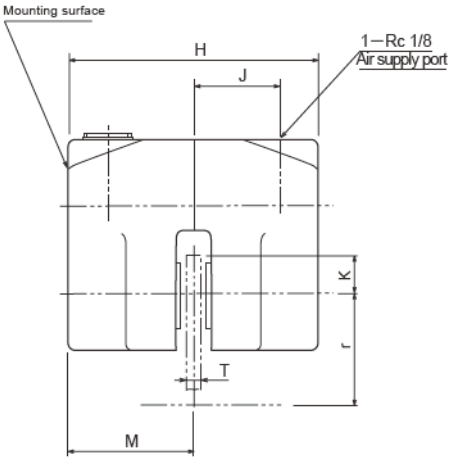
DBF-140A DBF-200A DBF-300A DBF-450A DBF-650A

● Characteristic curve



・Coefficient of friction (Static friction) μ=0.4





● Size Chart

Model	A	B	C	D	E	F	G	H	J	K	M	n-P	T	Friction plate model	Quality(kg)
DBF-140A	18	51	36	13	18	11	42	50	17	8	25	2-M6 ×16	3	DB-0480	0.2
DBF-200A	21	63	45	18	21	15	54	55	18.5	10	27.5	2-M8 ×15.5	6	DB-0481	0.35
DBF-300A	28	79	54	18	28	24	70	68	24	12	34	2-M10×19	6	DB-0482	0.69
DBF-450A	30	104	74	23	30	32	85	79	29.5	18	39.5	2-M14×21.5	10	DB-0483	1.3
DBF-650A	46	144	103	35	46	45	126	100	38.5	29	50	2-M16×26	10	DB-0484	3.3

● Specifications

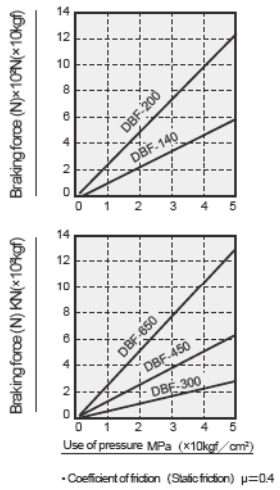
Model	DBF-140A	DBF-200A	DBF-300A	DBF-450A	DBF-650A
Disc diameter (mm)	φ50~∞	φ100~∞		φ150~∞	φ260~∞
Effective braking radius (m)	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-8)$	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-10)$	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-12)$	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-18)$	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-29)$
Friction plate model	DB-0480	DB-0481	DB-0482	DB-0483	DB-0484
Friction plate abrasion (mm)	2	2	2	2	2
Air cylinder diameter (mm)	φ14	φ20	φ30	φ45	φ65
Air cylinder area (cm²)	1.54	3.14	7.07	15.90	33.17
Use of pressure (MPa)	0.15~0.7	0.1~0.7		0.05~0.7	
Torque calculation (kN)	T(N · m)=N×r				

DBF-Y MODEL (Hydraulic oil) DBF-B (Brake fluid)

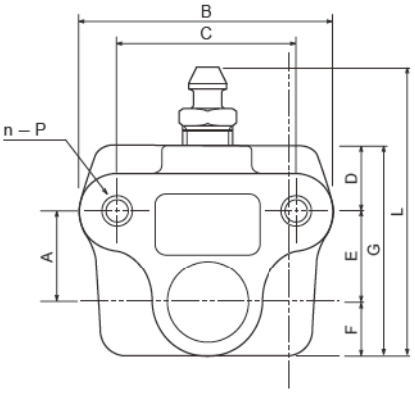
- Free clearance
- Large stroke
- Compact and light weight
- Available in singleside brake

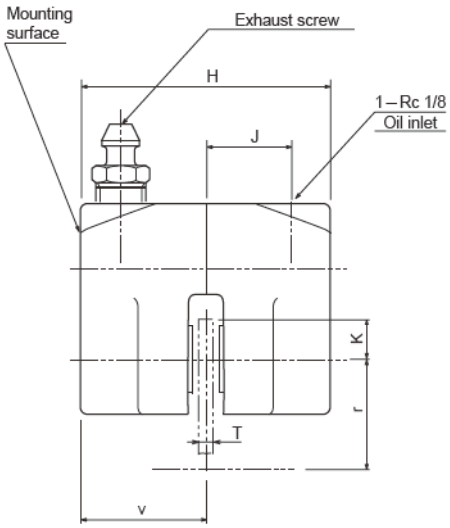
DBF-140 DBF-200 DBF-300 DBF-450 DBF-650

Characteristic curve



• Coefficient of friction (Static friction) μ=0.4





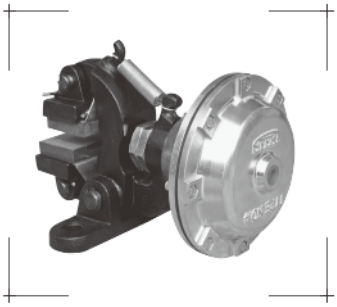
Size Chart

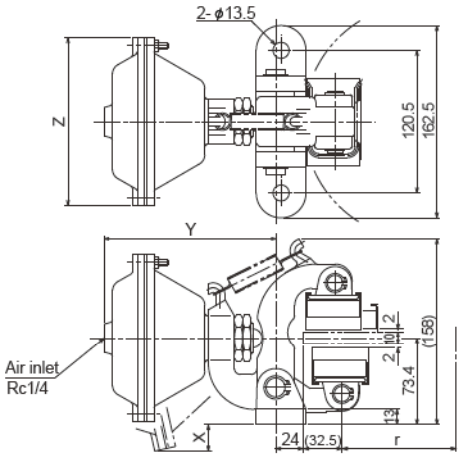
Model	A	B	C	D	E	F	G	H	J	K	L	M	n-P	T	Friction plate model	Weight(kg)
DBF-140	18	51	36	13	18	11	42	50	17	8	58	25	2-M6 ×16	3	DB-0480	0.2
DBF-200	21	63	45	18	21	15	54	55	18.5	10	70	27.5	2-M8 ×15.5	6	DB-0481	0.35
DBF-300	28	79	54	18	28	24	70	68	24	12	86	34	2-M10×19	6	DB-0482	0.69
DBF-450	30	104	74	23	30	32	85	79	29.5	18	101	39.5	2-M14×21.5	10	DB-0483	1.3
DBF-650	46	144	103	35	46	45	126	100	38.5	29	142	50	2-M16×26	10	DB-0484	3.3

Specification

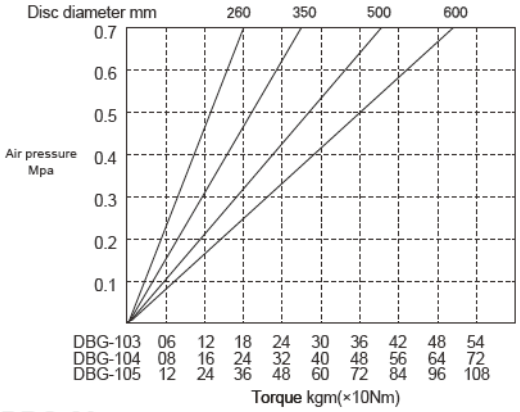
Model	DBF-140	DBF-200	DBF-300	DBF-450	DBF-650
Air cylinder diameter (mm)	φ14	φ20	φ30	φ45	φ65
Air cylinder area (cm²)	1.54	3.14	7.07	15.90	33.17
Disc diameter (mm)	φ50~∞	φ100~∞		φ150~∞	φ260~∞
Effective braking radius (m)	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-8)$	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-10)$	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-12)$	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-18)$	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-29)$
Friction plate model	DB-0480	DB-0481	DB-0482	DB-0483	DB-0484
Friction plate abrasion (mm)	2	2	2	2	2
Use of pressure (MPa)	0.15~5	0.1~5		0.05~5	
Brake oil	General mineral oil hydraulic oil & DOT3/DOT4Brake fluid (Optional)				
Necessary oil(cc)	0.2	0.4	0.9	2.9	6.0
Torque calculation (kN)	T(N · m)=N×r				

DBG-10





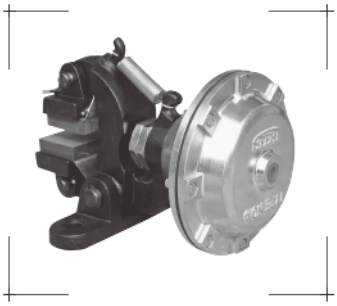
● Torque versus air pressure

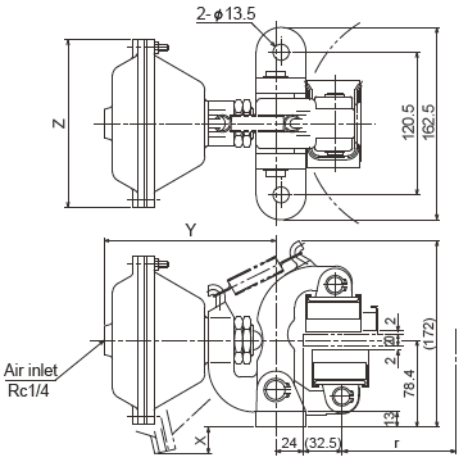


● Specification

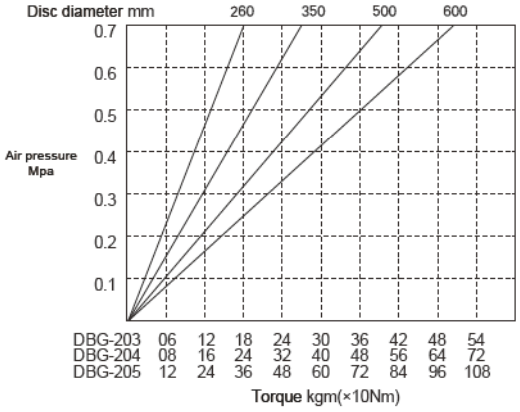
Model	DBG-1O3	DBG-1O4	DBG-1O5
Disc thickness	10mm	10mm	10mm
Disc diameter	200mm↑	200mm↑	200mm↑
Maximum pressure	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	0.74	0.74	0.74
Friction plate abrasion	7mm	7mm	7mm
Weight(approximately)	5kg	5.5kg	6kg
X	5mm	18mm	36mm
Y	145mm	145mm	160mm
ØZ	118mm	141mm	177mm

DBG-20





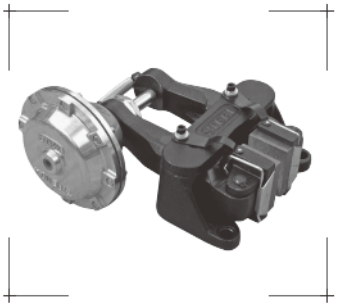
● Torque versus air pressure

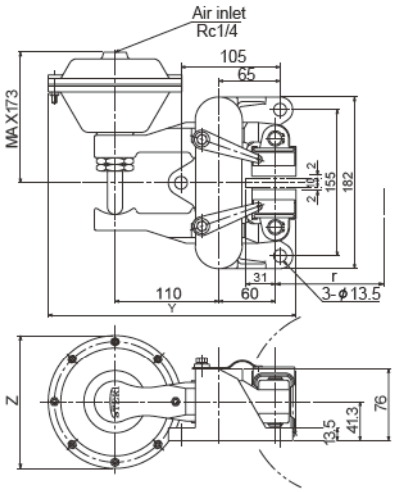


● Specification

Model	DBG-2O3	DBG-2O4	DBG-2O5
Disc thickness	20mm	20mm	20mm
Disc diameter	200mm↑	200mm↑	200mm↑
Maximum pressure	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	0.74	0.74	0.74
Friction plate abrasion	7mm	7mm	7mm
Weight(approximately)	5kg	5.5kg	6kg
X	0mm	13mm	31mm
Y	145mm	145mm	160mm
ØZ	118mm	141mm	177mm

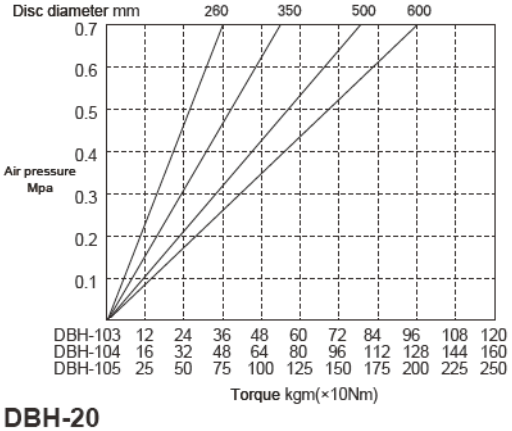
DBH-10





Note: Horizontal air disc brake is divided into two kinds: left side and right side.
Above picture is right side. Note of which side should be made when you order.

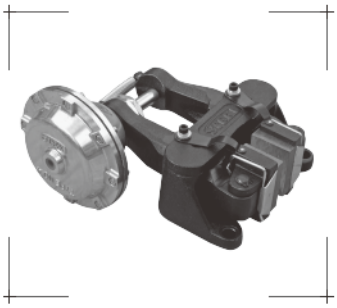
● Torque versus air pressure

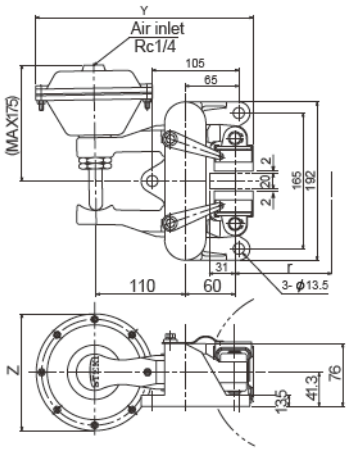


● **Specification**

Model	DBH-103	DBH-104	DBH-105
Disc thickness	10mm	10mm	10mm
Disc diameter	200mm↑	200mm↑	200mm↑
Maximum pressure	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	1.83	1.83	1.83
Friction plate abrasion	7mm	7mm	7mm
Weight(approximately)	8kg	8.5kg	9kg
Y	251mm	263mm	280mm
ØZ	118mm	141mm	177mm

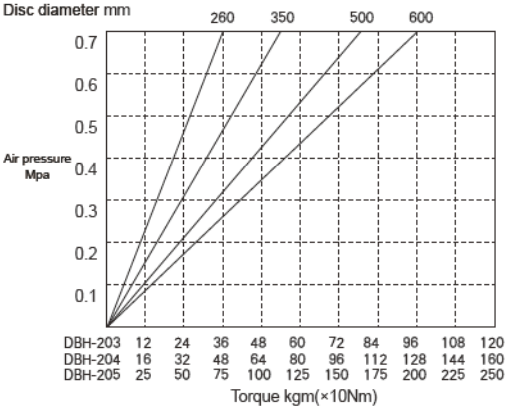
DBH-20





Note: Horizontal air disc brake is divided into two kinds: left side and right side.
Above picture is right side. Note of which side should be made when you order.

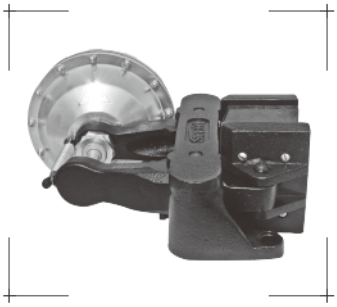
● Torque versus air pressure

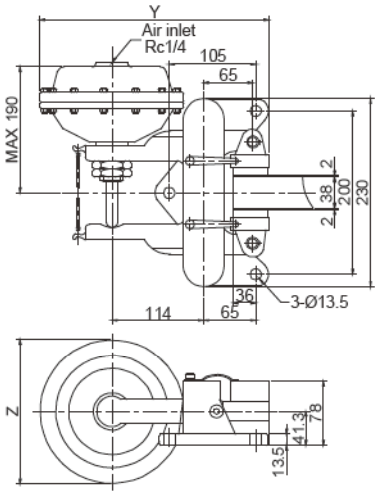


● Specification

Model	DBH-203	DBH-204	DBH-205
Disc thickness	20mm	20mm	20mm
Disc diameter	200mm ↑	200mm ↑	200mm ↑
Maximum pressure	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	1.83	1.83	1.83
Friction plate abrasion	7mm	7mm	7mm
Weight(approximately)	8.5kg	9kg	9.5kg
Y	251mm	263mm	280mm
ØZ	118mm	141mm	177mm

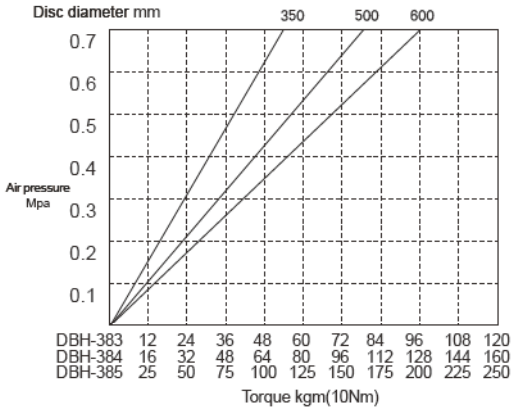
DBH-38





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

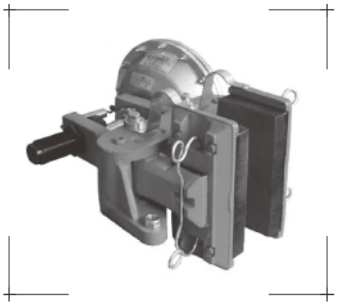
● Torque versus air pressure

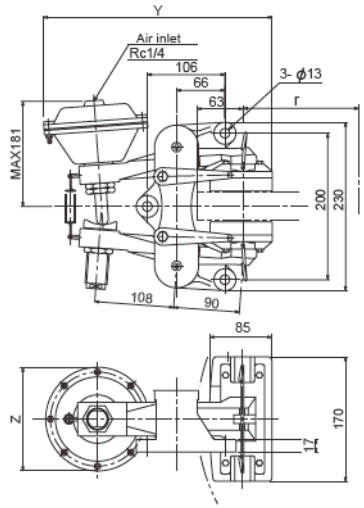


● Specification

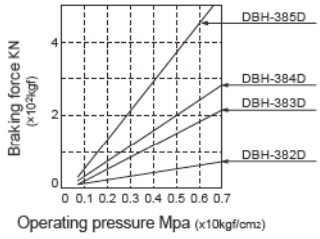
Model	DBH-383	DBH-384	DBH-385
Disc thickness	38mm	38mm	38mm
Disc diameter	350mm↑	350mm↑	350mm↑
Maximum pressure	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	1.83	1.83	1.83
Friction plate abrasion	7mm	7mm	7mm
Weight(approximately)	9kg	9.5kg	10kg
Y	276mm	288mm	305mm
ØZ	118mm	141mm	177mm

DBH-38 D





●Braking force versus operating pressure



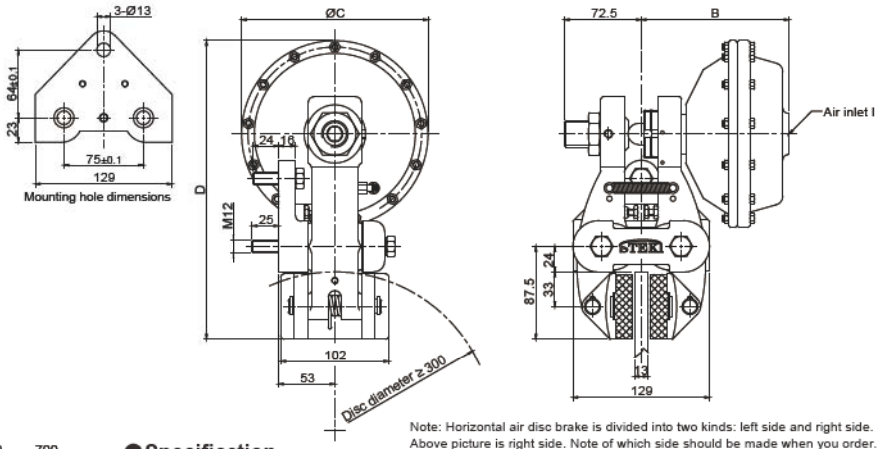
● Size Chart

Model	DBH-382D	DBH-383D	DBH-384D	DBH-385D
Size	2"	3"	4"	5"
Y	269	297	309	326
Z Ø	84	118	141.5	176.5

● Specification

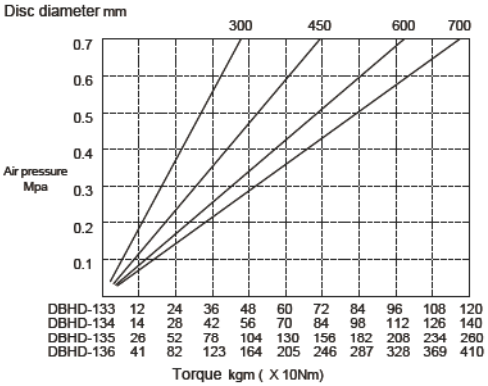
Model	DBH-38 D
Disc diameter	ϕ500~ ∞ mm
Disc thickness	38mm
Effective braking radius	$r=\frac{1}{1000}(\frac{DISC\ DIA}{2}-63)m$
Friction plate model	DB-0435-K※※※
Friction plate abrasion	15mm
Maximum pressure	0.7(7kgf/cm²)MPa
Weight	14kg
Torque calculation Braking force=kN	T (kN·m) = kN × r

DBHD-13



Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

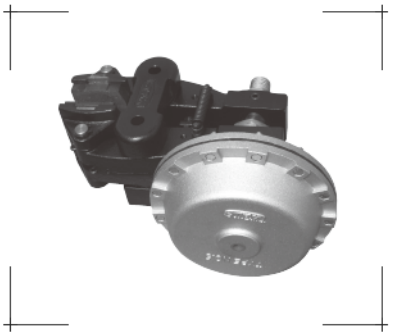
●Torque versus air pressure

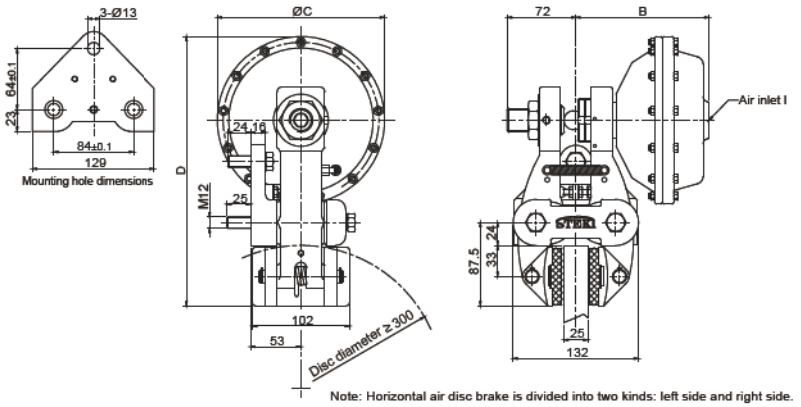


●Specification

Model	DBHD-133	DBHD-134	DBHD-135	DBHD-136
Disc thickness	13mm	13mm	13mm	13mm
Disc diameter	300mm↑	300mm↑	300mm↑	300mm↑
B	125.5mm	127.5mm	140mm	194.5mm
ØC	118mm	141mm	176mm	190mm
D	252.5mm	264mm	281.5mm	288.5mm
I	Rc1/4	Rc1/4	Rc1/4	Rc3/8
Maximum pressure	0.7Mpa	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	1.86	1.86	1.86	1.86
Friction plate abrasion	6mm	6mm	6mm	6mm
Cylinder capacity	0.1dm³	0.2dm³	0.4dm³	0.7dm³
Weight(approximately)	9.8kg	10.8kg	11.8kg	15.5kg

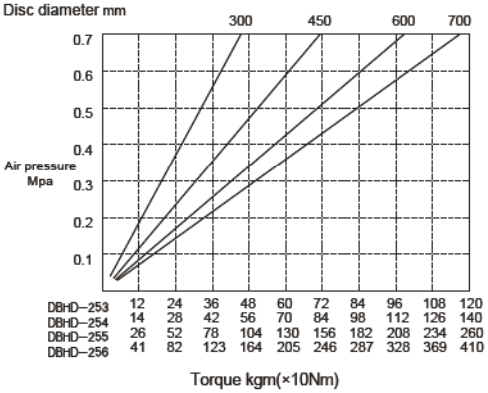
DBHD-25





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

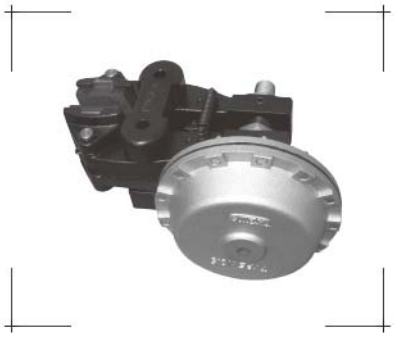
●Torque versus air pressure

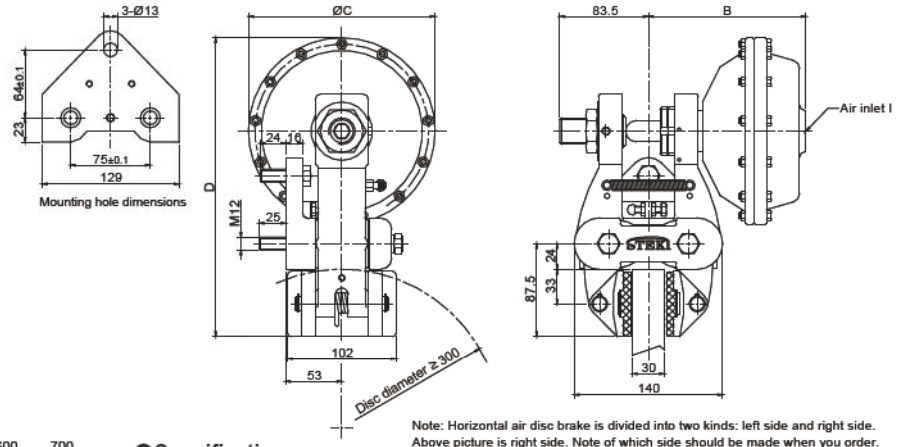


●Specification

Model	DBHD-253	DBHD-254	DBHD-255	DBHD-256
Disc thickness	25mm	25mm	25mm	25mm
Disc diameter	300mm↑	300mm↑	300mm↑	300mm↑
B	125.5mm	127.5mm	140mm	194.5mm
ØC	118mm	141mm	176mm	190mm
D	254mm	265.5mm	283mm	290mm
I	Rc1/4	Rc1/4	Rc1/4	Rc3/8
Maximum pressure	0.7Mpa	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	1.89	1.89	1.89	1.89
Friction plate abrasion	6mm	6mm	6mm	6mm
Cylinder capacity	0.1dm³	0.2dm³	0.4dm³	0.7dm³
Weight(approximately)	9.8kg	10.8kg	11.8kg	15.5kg

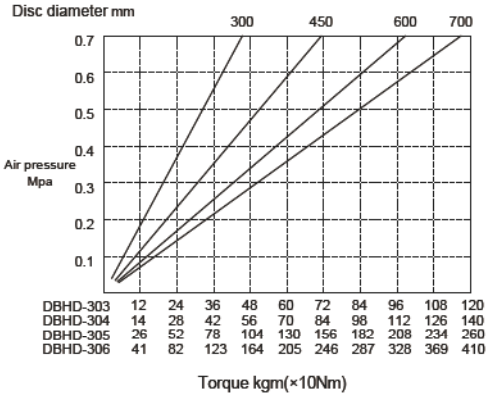
DBHD-30





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

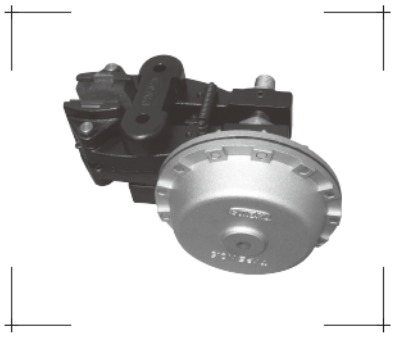
●Torque versus air pressure

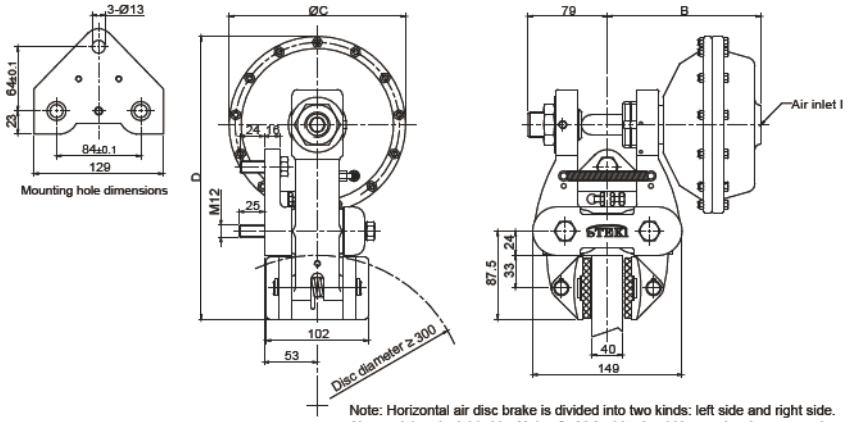


●Specification

Model	DBHD-303	DBHD-304	DBHD-305	DBHD-306
Disc thickness	30mm	30mm	30mm	30mm
Disc diameter	300mm↑	300mm↑	300mm↑	300mm↑
B	134mm	136mm	148.5mm	203mm
ØC	118mm	141mm	176mm	190mm
D	252.5mm	264mm	281.5mm	288.5mm
I	Rc1/4	Rc3/8	Rc1/4	Rc3/8
Maximum pressure	0.7Mpa	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	1.86	1.86	1.86	1.86
Friction plate abrasion	6mm	6mm	6mm	6mm
Inlet casing capacity	0.1dm³	0.2dm³	0.4dm³	0.7dm³
Weight(approximately)	9.8kg	10.8kg	11.8kg	15.5kg

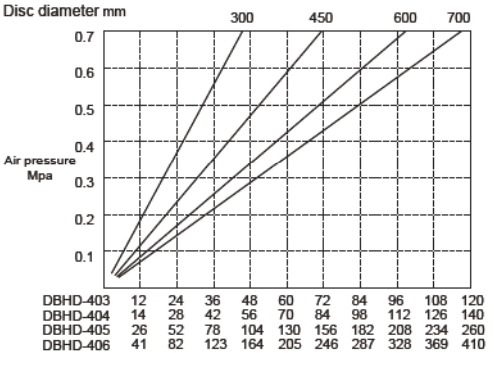
DBHD-40





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

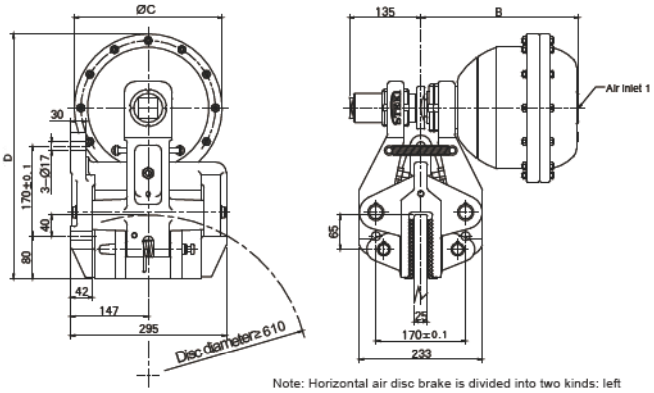
●Torque versus air pressure



●Specification

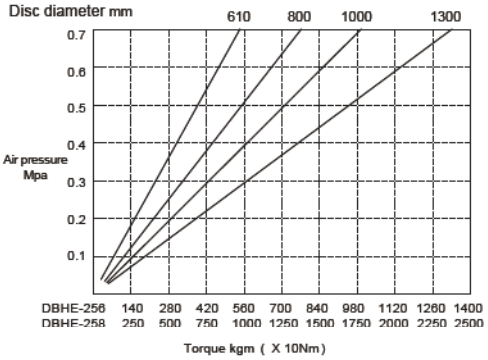
Model	DBHD-403	DBHD-404	DBHD-405	DBHD-406
Disc thickness	40mm	40mm	40mm	40mm
Disc diameter	300mm↑	300mm↑	300mm↑	300mm↑
B	138.5mm	140.5mm	153mm	207.5mm
ØC	118mm	141mm	176mm	190mm
D	252.5mm	264mm	281.5mm	288.5mm
I	Rc1/4	Rc1/4	Rc1/4	Rc3/8
Maximum pressure	0.7Mpa	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	1.86	1.86	1.86	1.86
Friction plate abrasion	6mm	6mm	6mm	6mm
Cylinder capacity	0.1dm³	0.2dm³	0.4dm³	0.7dm³
Weight(approximately)	9.8kg	10.8kg	11.8kg	15.5kg

DBHE-25



Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

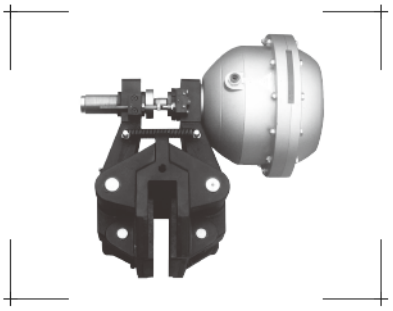
●Torque versus air pressure

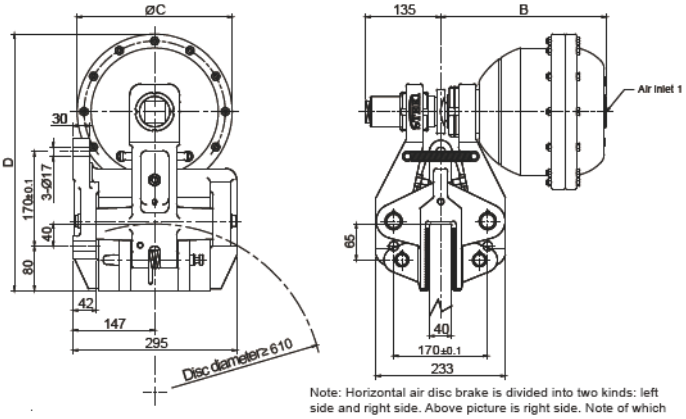


●Specification

Model	DBHE-256	DBHE-258
Disc thickness	25mm	25mm
Disc diameter	610mm↑	610mm↑
B	220mm	299mm
ØC	190mm	280mm
D	417.5mm	462.5mm
I	Rc3/8	Rc1/2
Maximum pressure	0.7Mpa	0.7Mpa
Compression ratio	2.82	2.82
Friction plate abrasion	6mm	6mm
Cylinder capacity	0.7dm^3	3dm^3
Weight(approximately)	57kg	63kg

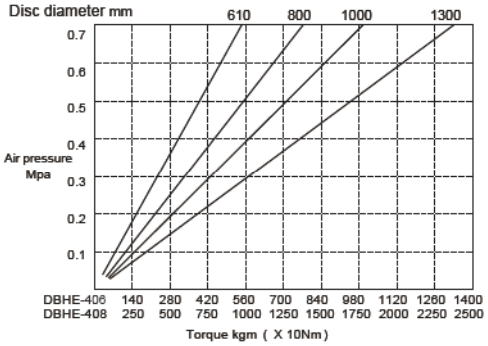
DBHE-40





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

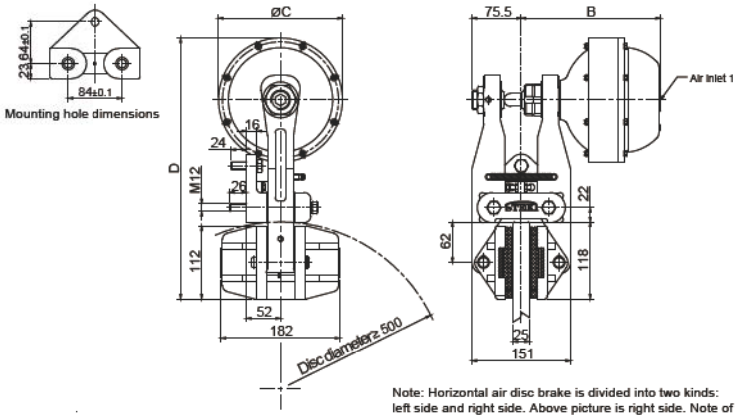
●Torque versus air pressure



●Specification

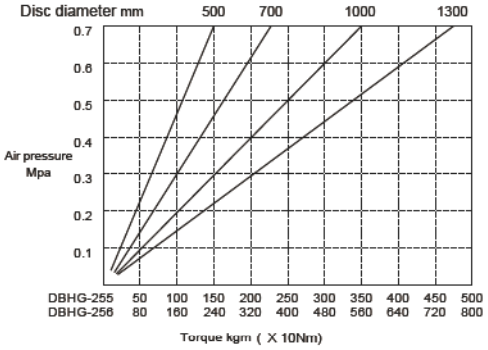
Model	DBHE-406	DBHE-408
Disc thickness	40mm	40mm
Disc diameter	610mm↑	610mm↑
B	220mm	299mm
ØC	190mm	280mm
D	417.5mm	462.5mm
I	Rc3/8	Rc1/2
Maximum pressure	0.7Mpa	0.7Mpa
Compression ratio	2.82	2.82
Friction plate abrasion	6mm	6mm
Cylinder capacity	0.7dm^3	3dm^3
Weight(approximately)	57kg	63kg

DBHG-25



Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

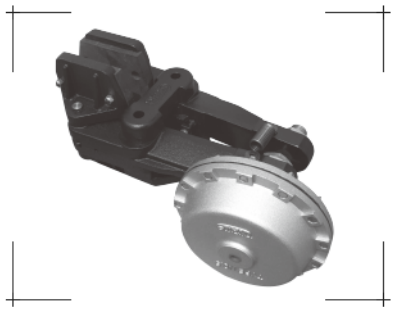
●Torque versus air pressure

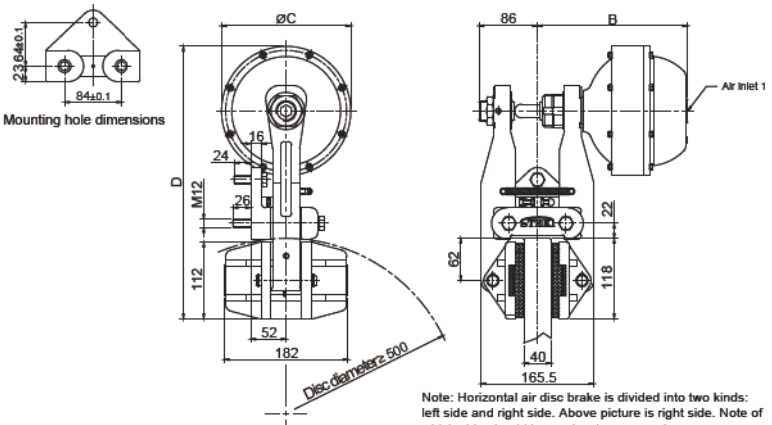


●Specification

Model	DBHG-255	DBHG-256
Disc thickness	25mm	25mm
Disc diameter	500mm↑	500mm↑
B	159mm	213mm
ØC	176mm	190mm
D	393mm	400mm
I	Rc1/4	Rc3/8
Maximum pressure	0.7Mpa	0.7Mpa
Compression ratio	1.96	1.96
Friction plate abrasion	5mm	5mm
Cylinder capacity	0.4dm^3	0.7dm^3
Weight(approximately)	17.7kg	20.5kg

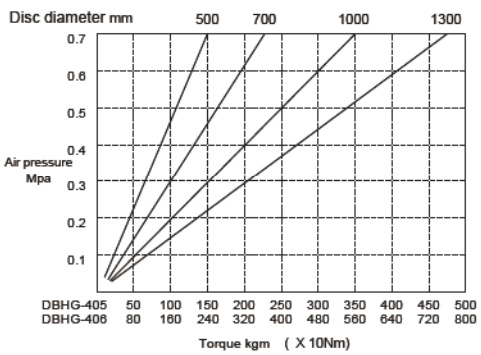
DBHG-40





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

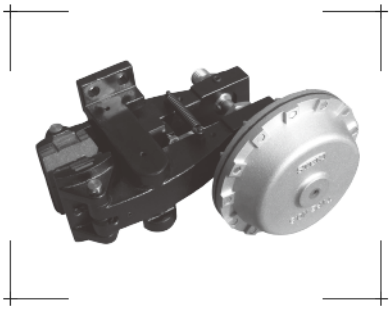
●Torque versus air pressure

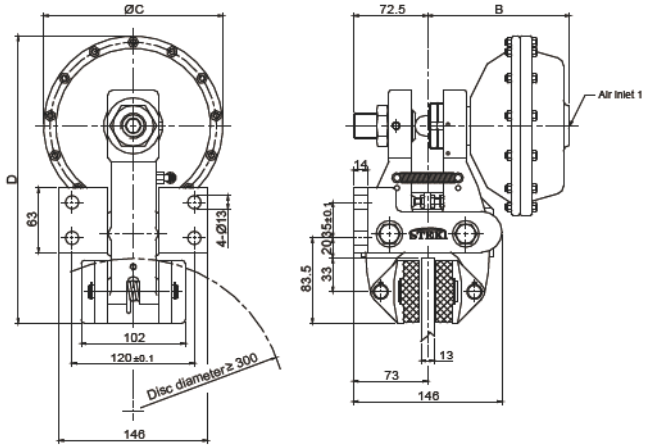


●Torque versues pressure

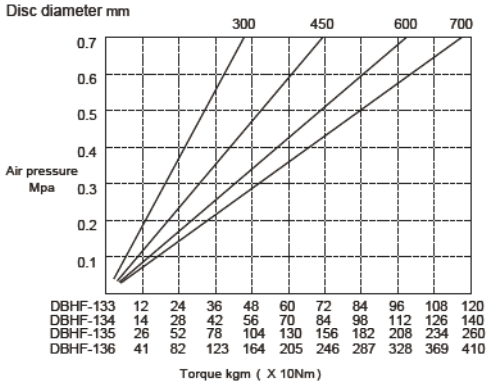
Model	DBHG-405	DBHG-406
Disc thickness	40mm	40mm
Disc diameter	500mm↑	500mm↑
B	165mm	221mm
ØC	176mm	190mm
D	393mm	400mm
I	Rc1/4	Rc3/8
Maximum pressure	0.7Mpa	0.7Mpa
Compression ratio	1.96	1.96
Friction plate abrasion	5mm	5mm
Cylinder capacity	0.4dm^3	0.7dm^3
Weight(approximately)	17.7kg	20.5kg

DBHF-13





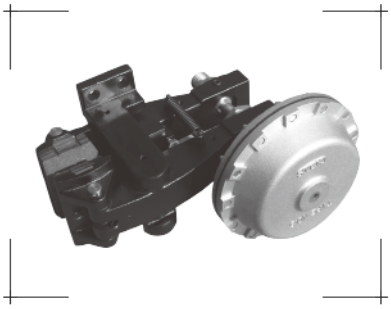
●Torque versus air pressure

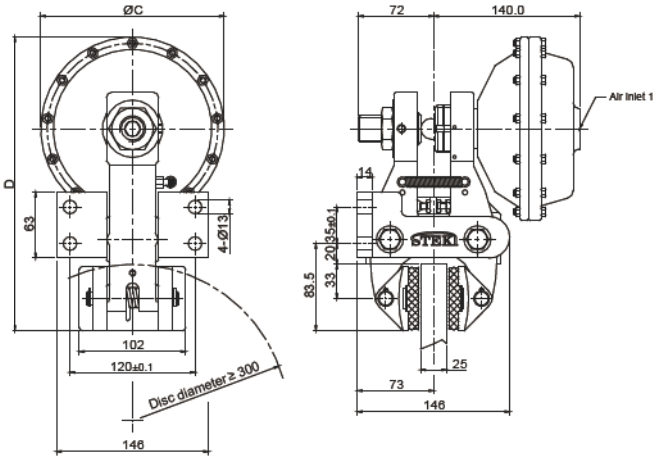


●Specification

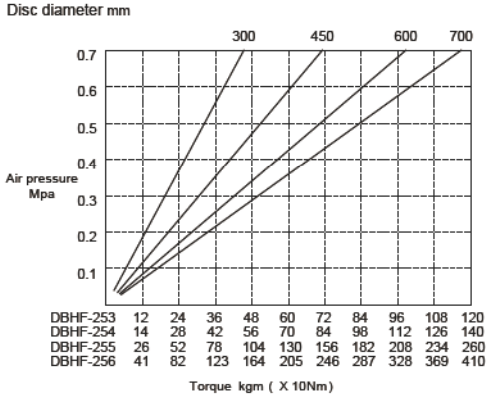
Model	DBHF-133	DBHF-134	DBHF-135	DBHF-136
Disc thickness	13mm	13mm	13mm	13mm
Disc diameter	300mm↑	300mm↑	300mm↑	300mm↑
B	125mm	127mm	139.5mm	194mm
ØC	118mm	141mm	176mm	190mm
D	252.5mm	264mm	281.5mm	288.5mm
I	Rc1/4	Rc1/4	Rc1/4	Rc3/8
Maximum pressure	0.7Mpa	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	1.86	1.86	1.86	1.86
Friction plate abrasion	6mm	6mm	6mm	6mm
Cylinder capacity	0.1dm³	0.2dm³	0.4dm³	0.7dm³
Weight(approximately)	9.5kg	10.3kg	11.5kg	14.3kg

DBHF-25





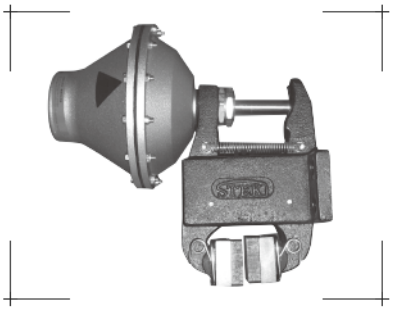
●Torque versus air pressure

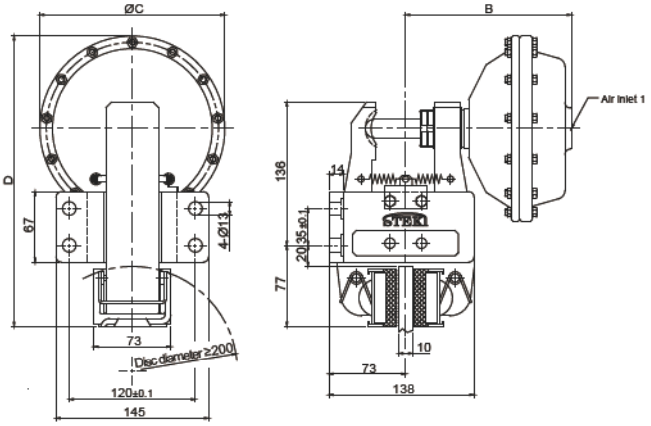


●Specification

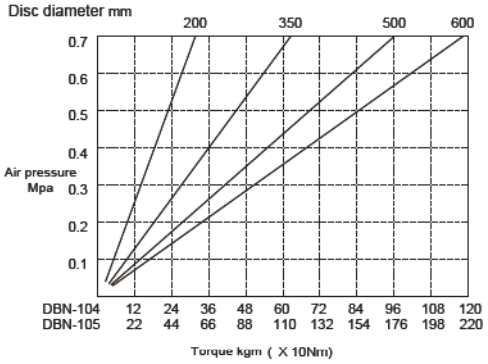
Model	DBHF-253	DBHF-254	DBHF-255	DBHF-256
Disc thickness	25mm	25mm	25mm	25mm
Disc diameter	300mm↑	300mm↑	300mm↑	300mm↑
B	125.5mm	127mm	140mm	194.5mm
ØC	118mm	141mm	176mm	190mm
D	252.5mm	264mm	281.5mm	288.5mm
I	Rc1/4	Rc1/4	Rc1/4	Rc3/8
Maximum pressure	0.7Mpa	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	1.86	1.86	1.86	1.86
Friction plate abrasion	6mm	6mm	6mm	6mm
Cylinder capacity	0.1dm³	0.2dm³	0.4dm³	0.7dm³
Weight(approximately)	9.5kg	10.3kg	11.5kg	14.3kg

DBN-10





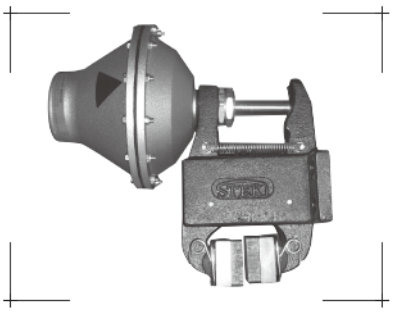
●Torque versus air pressure

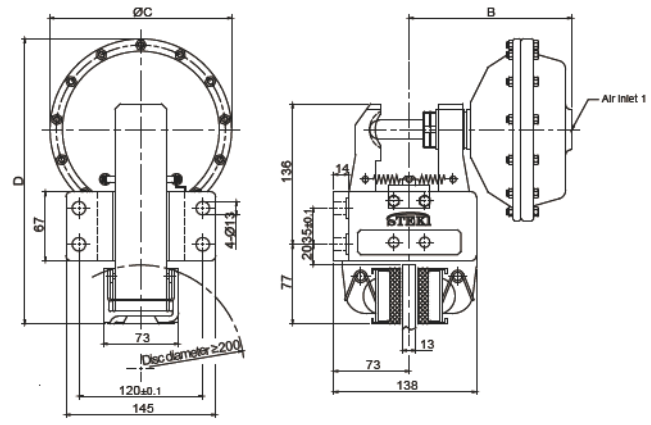


●Specification

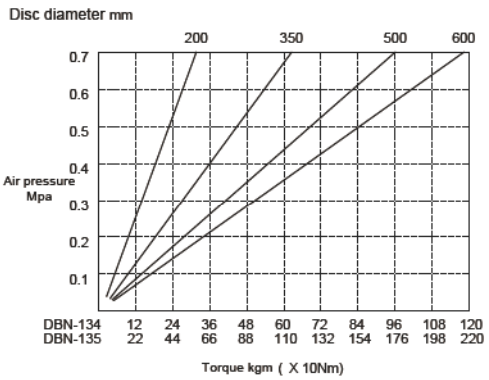
Model	DBN-104	DBN-105
Disc thickness	10mm	10mm
Disc diameter	200mm↑	200mm↑
B	145mm	157.5mm
ØC	141mm	176mm
D	258.5mm	276mm
I	Rc1/4	Rc1/4
Maximum pressure	0.7Mpa	0.7Mpa
Compression ratio	1.86	1.86
Friction plate abrasion	7mm	7mm
Cylinder capacity	0.2dm³	0.4dm³
Weight(approximately)	10kg	11.4kg

DBN-13





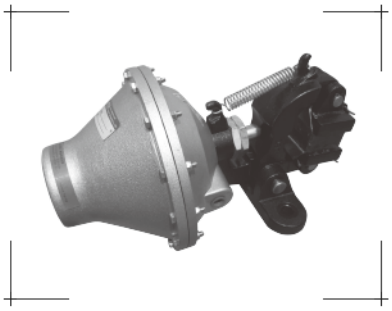
●Torque versus air pressure

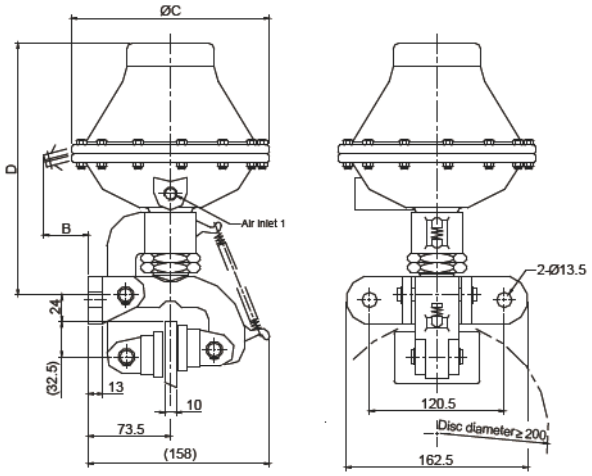


●Specification

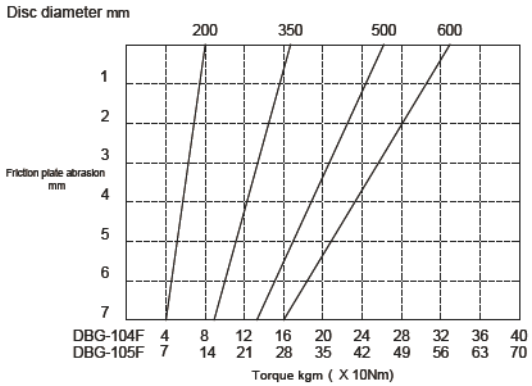
Model	DBN-134	DBN-135
Disc thickness	13mm	13mm
Disc diameter	200mm↑	200mm↑
B	145mm	157.5mm
ØC	141mm	176mm
D	258.5mm	276mm
I	Rc1/4	Rc1/4
Maximum pressure	0.7Mpa	0.7Mpa
Compression ratio	1.86	1.86
Friction plate abrasion	7mm	7mm
Cylinder capacity	0.2dm³	0.4dm³
Weight(approximately)	10kg	11.4kg

DBG-10F Spring brake Air pressure release





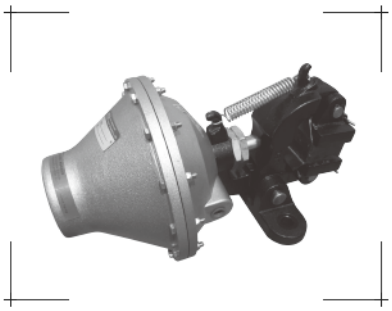
●Torque versus abrasion

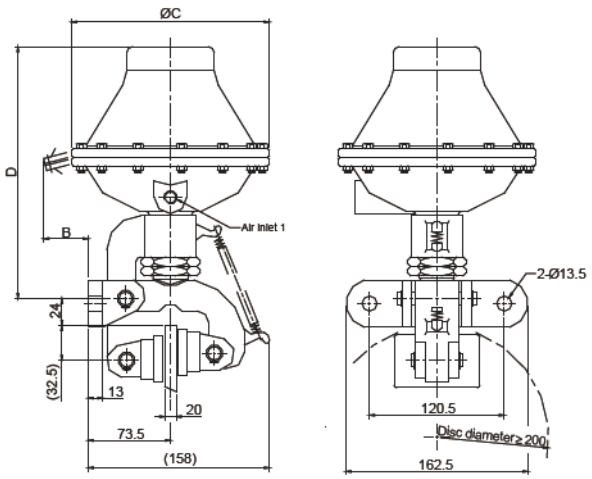


●Specification

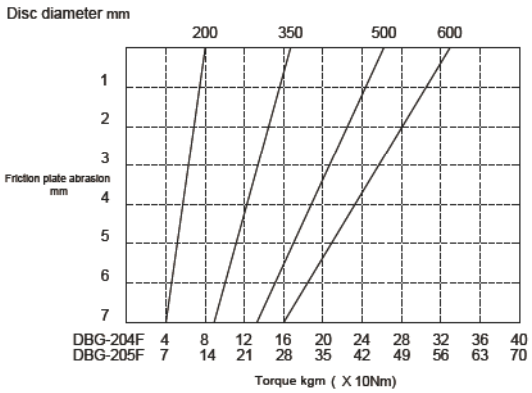
Model	DBG-104F	DBG-105F
Disc thickness	10mm	10mm
Disc diameter	200mm↑	200mm↑
B	18mm	36mm
ØC	141mm	176mm
D	197.5mm	225mm
I	Rc1/4	Rc1/4
Braking thrust kg(N)	120(1200)	220(2200)
Minimum release pressure	0.5Mpa	0.5Mpa
Friction plate abrasion	7mm	7mm
Weight(approximately)	6kg	6.5kg

DBG-20F Spring brake Air pressure release





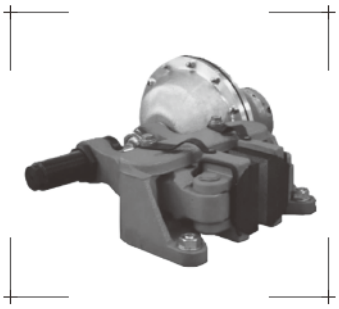
●Torque versus abrasion

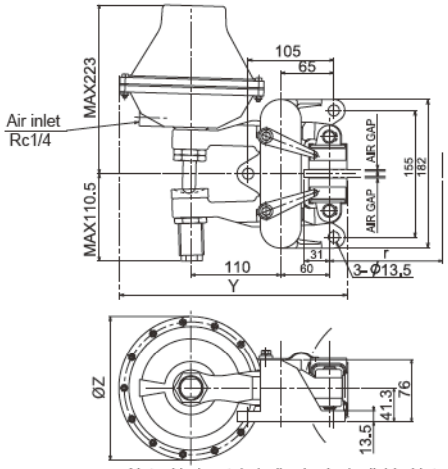


●Specification

Model	DBG-204F	DBG-205F
Disc thickness	20mm	20mm
Disc diameter	200mm↑	200mm↑
B	13mm	31mm
ØC	141mm	176mm
D	197.5mm	225mm
I	Rc1/4	Rc1/4
Braking thrust kg(N)	120(1200)	220(2200)
Minimum release pressure	0.5Mpa	0.5Mpa
Friction plate abrasion	7mm	7mm
Weight(approximately)	6kg	6.5kg

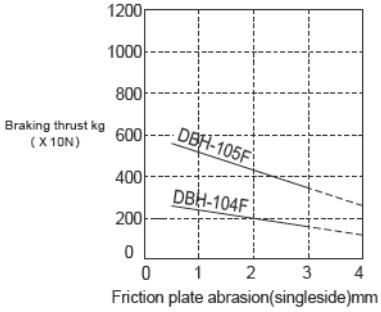
DBH-10F Spring brake Air pressure release





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

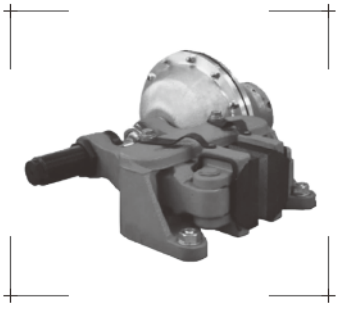
●Braking thrust versus abrasion

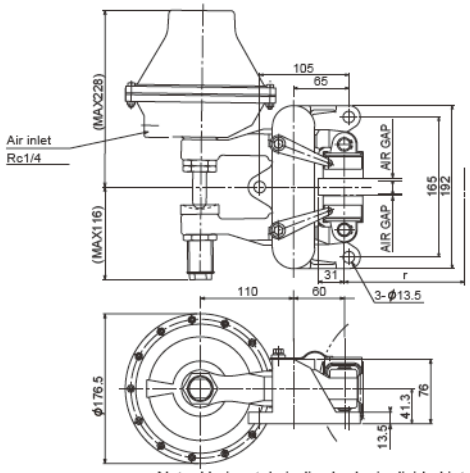


●Specification

Model	DBH-104F	DBH-105F
Disc thickness	10-12.7mm	10-12.7mm
Disc diameter	200mm↑	200mm↑
Braking thrust kg(N)	300(3000)	550(5500)
Minimum release pressure	0.5Mpa	0.5Mpa
Friction plate abrasion	7mm	7mm
Weight(approximately)	9kg	9.5kg
Y	263mm	280mm
ØZ	141mm	177mm
Effective braking radius of disc		$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-31)$
Torque calculation formula(Braking thrust=kg)		T (kg·m) = kg × r

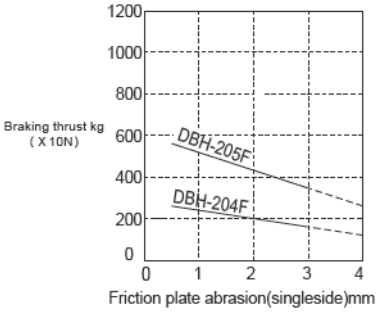
DBH-20F Spring brake Air pressure release





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

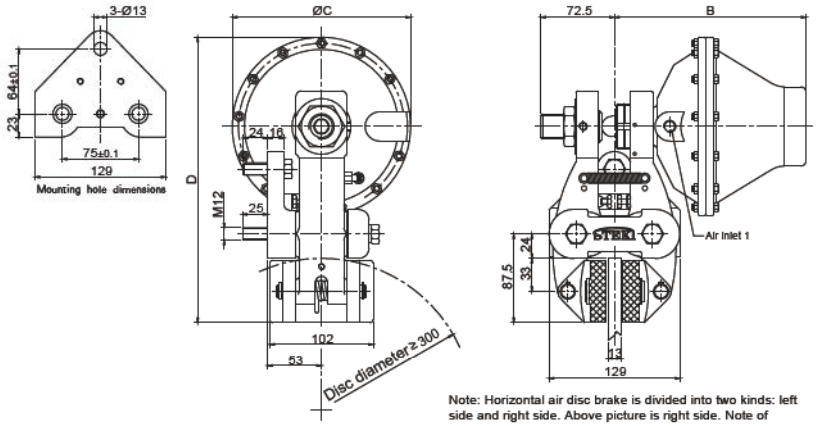
●Braking thrust versus abrasion



●Specification

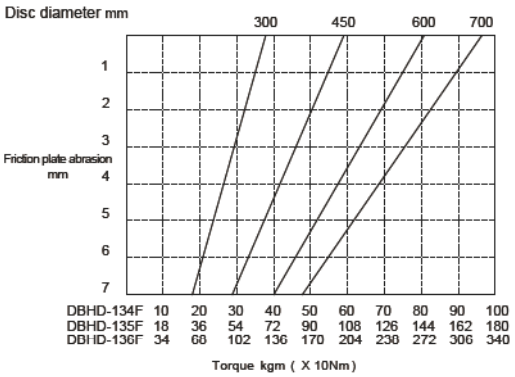
Model	DBH-204F	DBH-205F
Disc thickness(D)	20mm	20mm
Disc diameter	300mm↑	300mm↑
Braking thrust kg(N)	300(3000)	550(5500)
Minimum release pressure	0.5Mpa	0.5Mpa
Friction plate abrasion	7mm	7mm
Weight(approximately)	9.5kg	10kg
Y	263mm	280mm
ØZ	141mm	177mm
Effective braking radius of disc		$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-31)$
Torque calculation formula(Braking thrust=kg)		T (kg·m) = kg × r

DBHD-13F Spring brake Air pressure release



Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

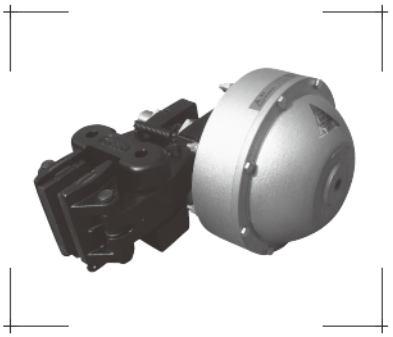
●Torque versus abrasion

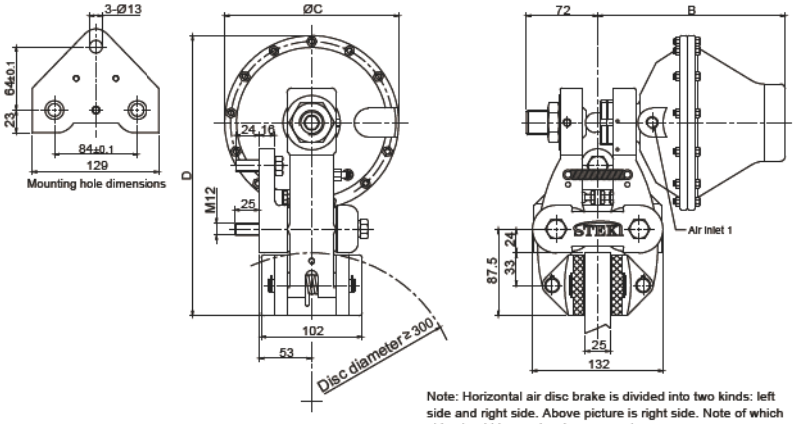


●**Specification**

Model	DBHD-134F	DBHD-135F	DBHD-136F
Disc thickness	13mm	13mm	13mm
Disc diameter	300mm↑	300mm↑	300mm↑
B	161.5mm	189mm	194mm
ØC	141mm	176mm	190mm
D	264mm	281.5mm	288.5mm
I	Rc1/4	Rc1/4	Rc1/4
Braking thrust kg(N)	300(3000)	550(5500)	1040(10400)
Minimum release pressure	0.5Mpa	0.5Mpa	0.5Mpa
Friction plate abrasion	6mm	6mm	6mm
Weight(approximately)	10.8kg	11.8kg	15.5kg

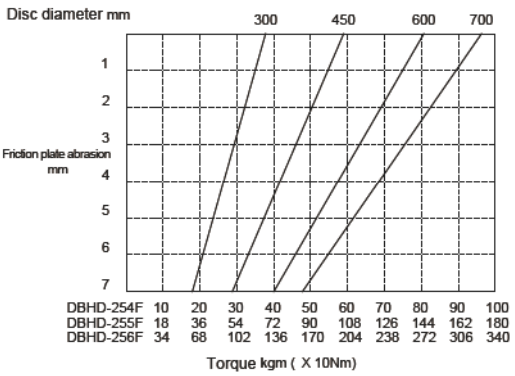
DBHD-25F Spring brake Air pressure release





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

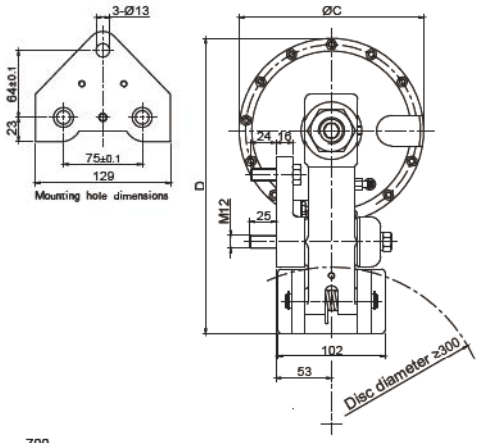
●Torque versus abrasion

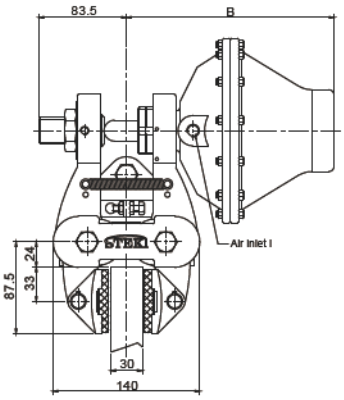


●**Specification**

Model	DBHD-254F	DBHD-255F	DBHD-256F
Disc thickness	25mm	25mm	25mm
Disc diameter	300mm↑	300mm↑	300mm↑
B	162mm	189.5mm	194.5mm
ØC	141mm	176mm	190mm
D	265.5mm	283mm	290mm
I	Rc1/4	Rc1/4	Rc3/8
Braking thrust kg(N)	300(3000)	550(5500)	1040(10400)
Minimum release pressure	0.5Mpa	0.5Mpa	0.5Mpa
Friction plate abrasion	6mm	6mm	6mm
Weight(approximately)	10.8kg	11.8kg	15.5kg

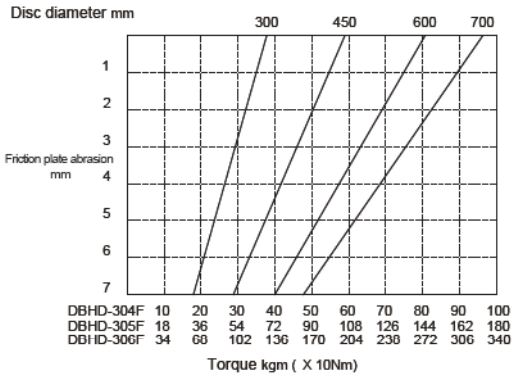
DBHD-30F Spring brake Air pressure release





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

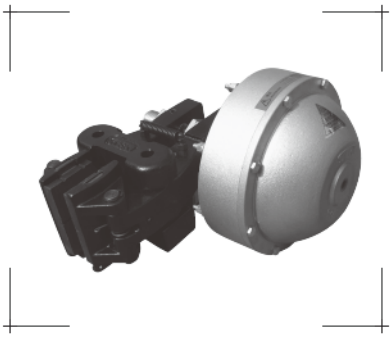
●Torque versus abrasion

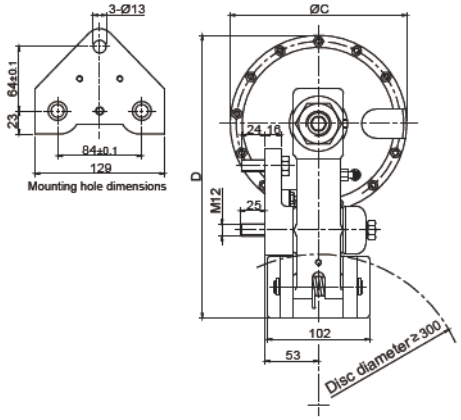


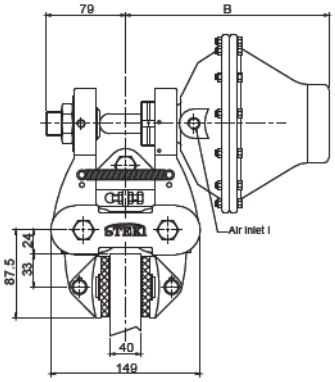
●**Specification**

Model	DBHD-304F	DBHD-305F	DBHD-306F
Disc thickness	30mm	30mm	30mm
Disc diameter	300mm↑	300mm↑	300mm↑
B	170mm	198mm	203mm
ØC	141mm	176mm	190mm
D	264mm	281.5mm	288.5mm
I	Rc1/4	Rc1/4	Rc1/4
Braking thrustkg(N)	300(3000)	550(5500)	1040(10400)
Minimum release pressure	0.5Mpa	0.5Mpa	0.5Mpa
Friction plate abrasion	6mm	6mm	6mm
Weight(approximately)	10.8kg	11.8kg	15.5kg

DBHD-40F Spring brake Air pressure release

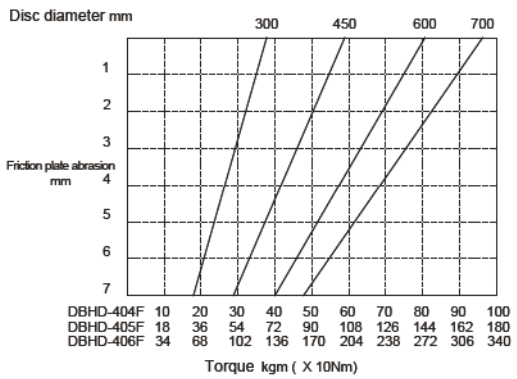






Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

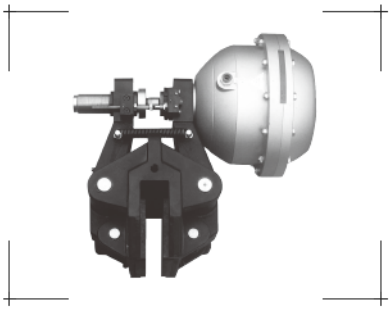
●Spring brake Air pressure release

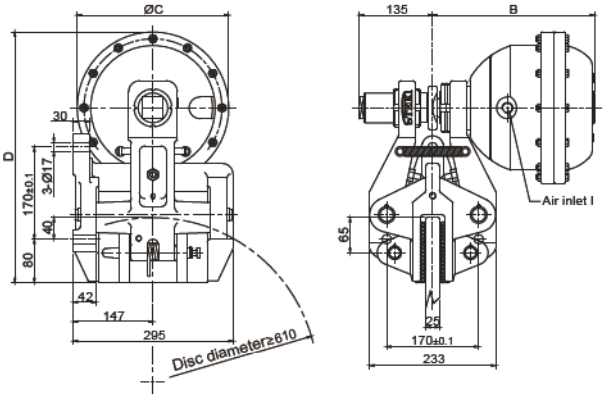


●**Specification**

Model	DBHD-404F	DBHD-405F	DBHD-406F
Disc thickness	40mm	40mm	40mm
Disc diameter	300mm↑	300mm↑	300mm↑
B	175mm	202.5mm	207.5mm
ØC	141mm	176mm	190mm
D	264mm	281.5mm	288.5mm
I	Rc1/4	Rc1/4	Rc3/8
Braking thrustkg(N)	300(3000)	550(5500)	1040(10400)
Minimum release pressure	0.5Mpa	0.5Mpa	0.5Mpa
Friction plate abrasion	6mm	6mm	6mm
Weight(approximately)	10.8kg	11.8kg	15.5kg

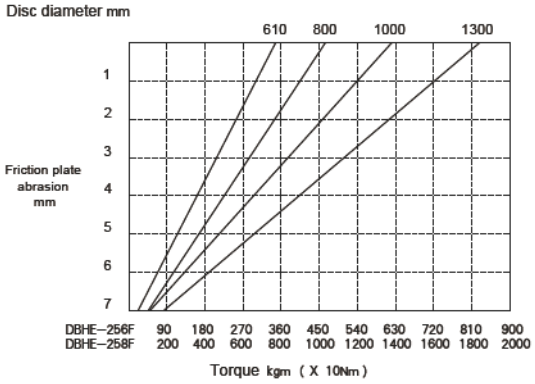
DBHE-25F Spring brake Air pressure release





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

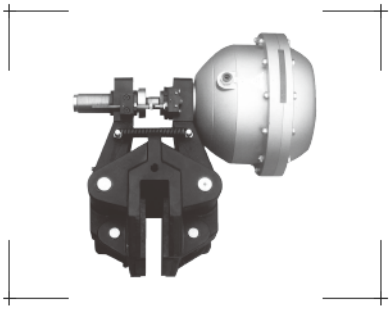
●Torque versus abrasion

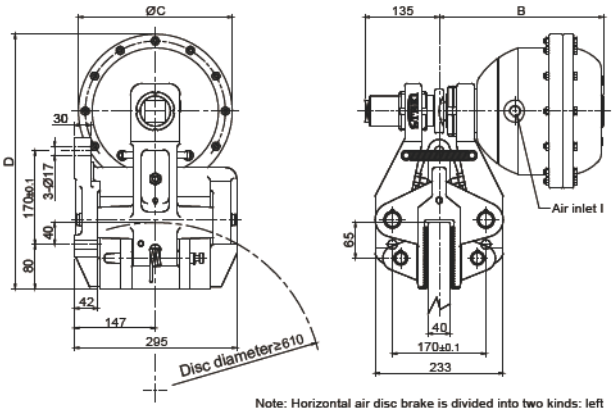


●Specification

Model	DBHE-256F	DBHE-258F
Disc thickness	25mm	25mm
Disc diameter	610mm↑	610mm↑
B	220mm	299mm
ØC	190mm	280mm
D	417.5mm	462.5mm
I	Rc3/8	Rc1/2
Braking thrust kg(N)	1415(14150)	3200(32000)
Minimum release pressure	0.5Mpa	0.5Mpa
Friction plate abrasion	6mm	6mm
Weight(approximately)	61kg	70kg

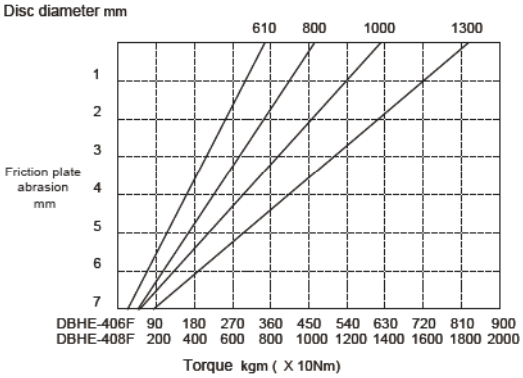
DBHE-40F Spring brake Air pressure release





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

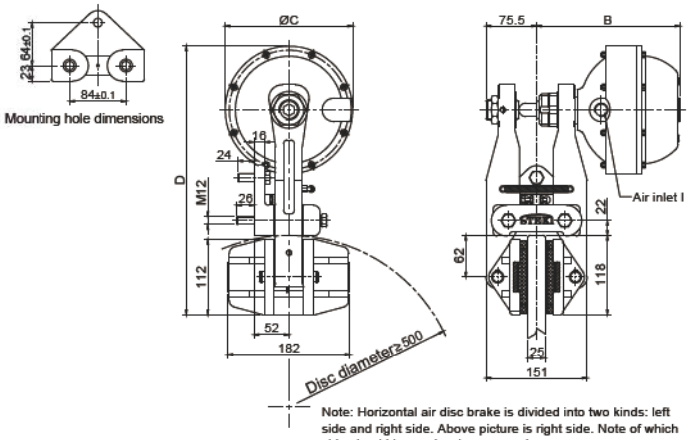
●Torque versus abrasion



●Specification

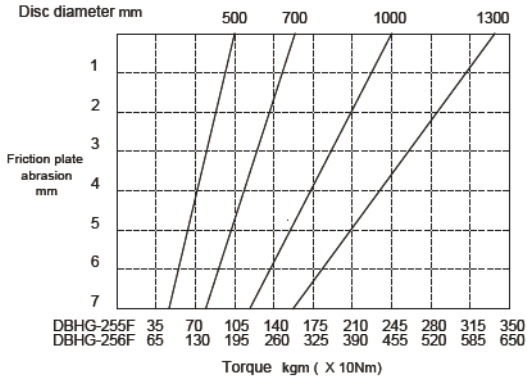
Model	DBHE-406F	DBHE-408F
Disc thickness	40mm	40mm
Disc diameter	610mm↑	610mm↑
B	220mm	299mm
ØC	190mm	280mm
D	417.5mm	462.5mm
I	Rc3/8	Rc1/2
Braking thrust kg(N)	1415(14150)	3200(32000)
Minimum release pressure	0.5Mpa	0.5Mpa
Friction plate abrasion	6mm	6mm
Weight(approximately)	61kg	70kg

DBHG-25F Spring brake Air pressure release



Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

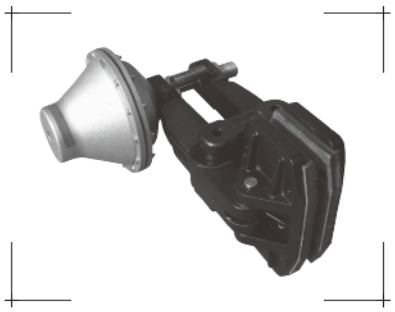
●Torque versus abrasion

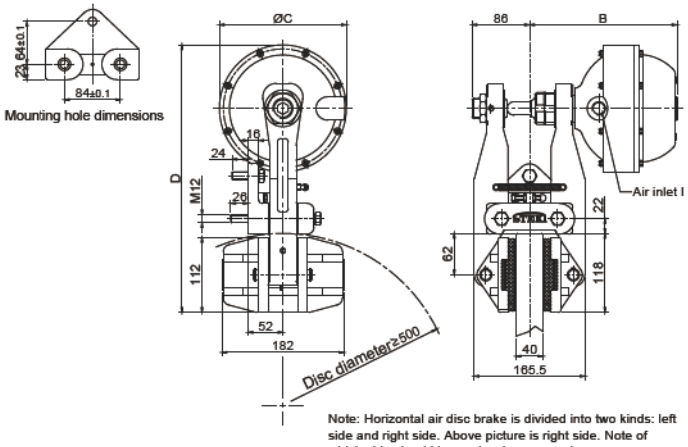


●Specification

Model	DBHG-255F	DBHG-256F
Disc thickness	25mm	25mm
Disc diameter	500mm↑	500mm↑
B	209mm	213mm
ØC	176mm	190mm
D	393mm	400mm
I	Rc1/4	Rc3/8
Braking thrust kg(N)	550(5500)	1040(10400)
Minimum release pressure	0.5Mpa	0.5Mpa
Friction plate abrasion	5mm	5mm
Weight(approximately)	18.2kg	21.3kg

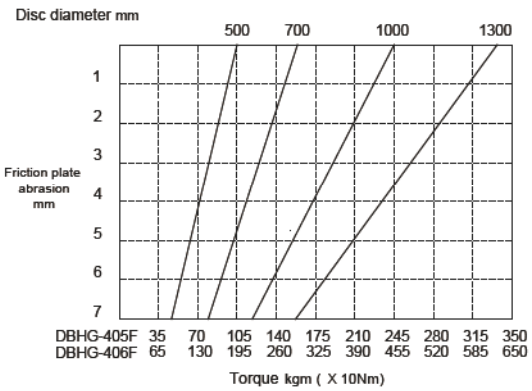
DBHG-40F Spring brake Air pressure release





Note: Horizontal air disc brake is divided into two kinds: left side and right side. Above picture is right side. Note of which side should be made when you order.

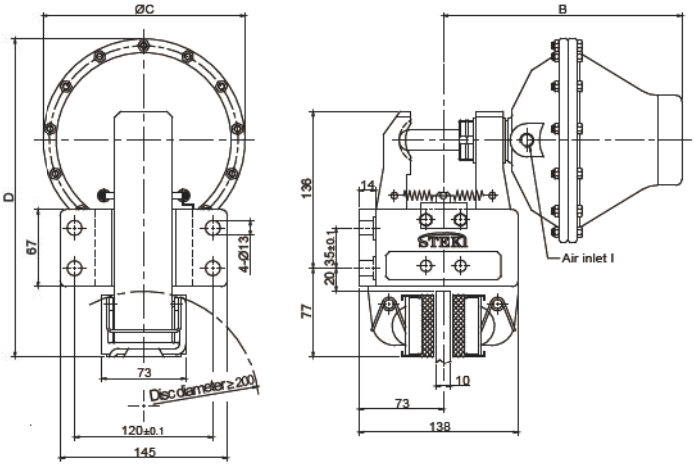
●Torque versus abrasion



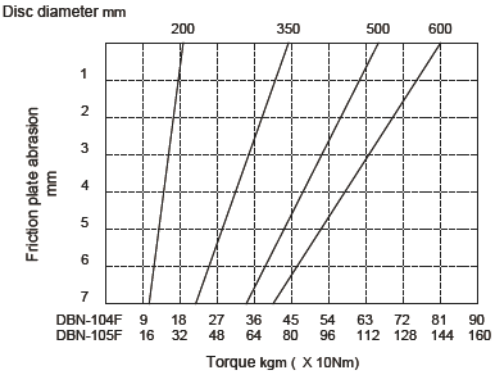
●Specification

Model	DBHG-405F	DBHG-406F
Disc thickness	40mm	40mm
Disc diameter	500mm↑	500mm↑
B	216mm	221mm
ØC	176mm	190mm
D	393mm	400mm
I	Rc1/4	Rc3/8
Braking thrust kg(N)	550(5500)	1040(10400)
Minimum release pressure	0.5Mpa	0.5Mpa
Friction plate abrasion	5mm	5mm
Weight(approximately)	18.2kg	21.3kg

DBN-10F Spring brake Air pressure release



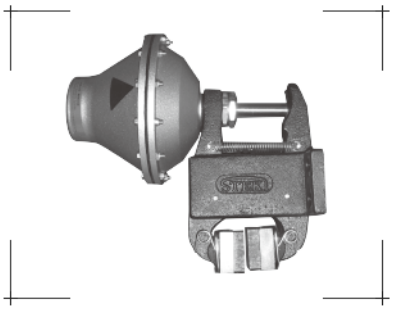
●Torque versus abrasion

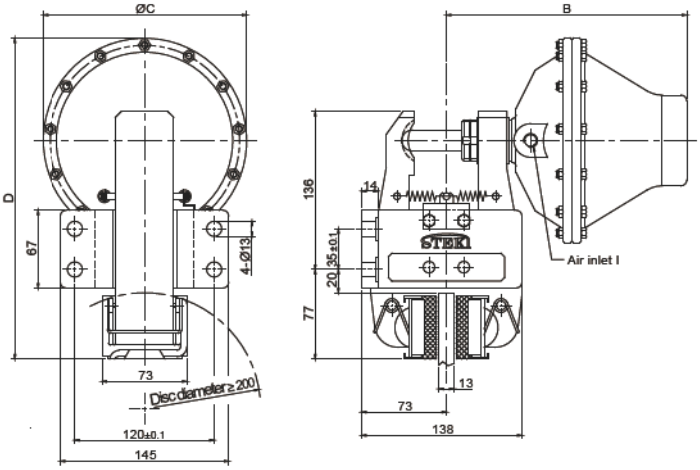


●**Specification**

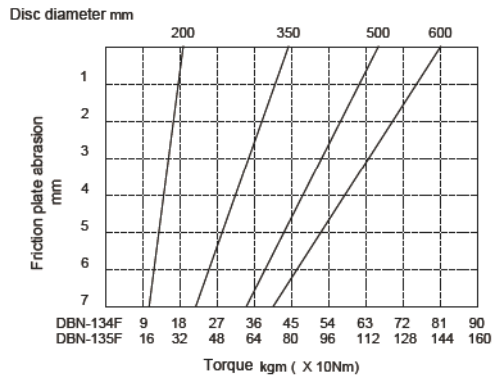
Model	DBN-104F	DBN-105F
Disc thickness	10mm	10mm
Disc diameter	200mm↑	200mm↑
B	179.5mm	207mm
ØC	141mm	176mm
D	258.5mm	276mm
I	Rc1/4	Rc1/4
Braking thrust kg(N)	300(3000)	550(5500)
Minimum release pressure	0.5Mpa	0.5Mpa
Friction plate abrasion	7mm	7mm
Weight(approximately)	10.5kg	11.9kg

DBN-13F Spring brake Air pressure release





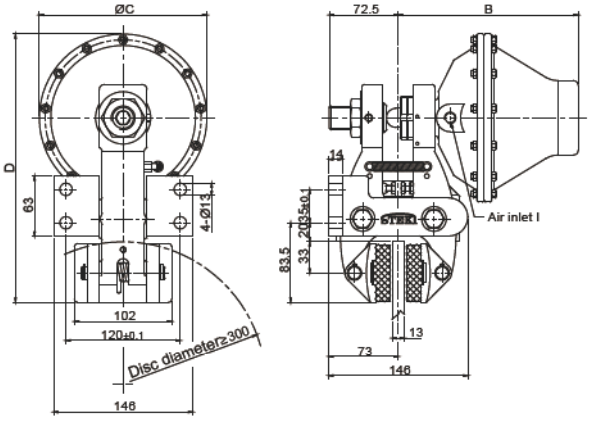
●Torque versus abrasion



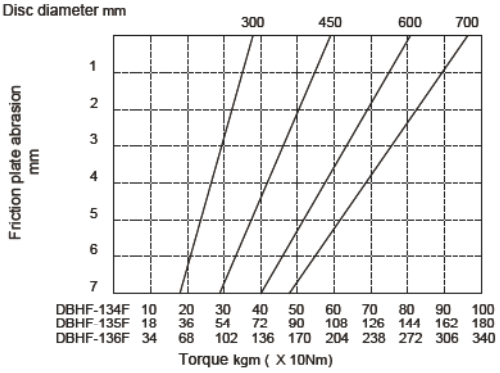
●**Specification**

Model	DBN-134F	DBN -135F
Disc thickness	13mm	13mm
Disc diameter	200mm↑	200mm↑
B	179.5mm	207mm
ØC	141mm	176mm
D	258.5mm	276mm
I	Rc1/4	Rc1/4
Braking thrust kg(N)	300(3000)	550(5500)
Minimum release pressure	0.5Mpa	0.5Mpa
Friction plate abrasion	7mm	7mm
Weight(approximately)	10.5kg	11.9kg

DBHF-13F Spring brake Air pressure release



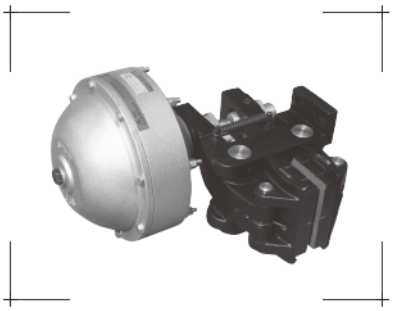
●Torque versus abrasion

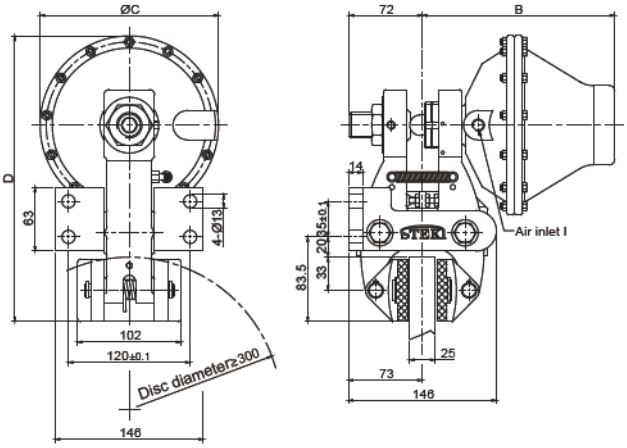


●Specification

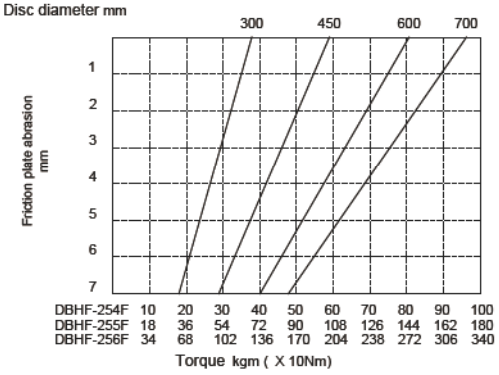
Model	DBHF-134F	DBHF-135F	DBHF-136F
Disc thickness	13mm	13mm	13mm
Disc diameter	300mm↑	300mm↑	300mm↑
B	161.5mm	189mm	194mm
ØC	141mm	176mm	190mm
D	264mm	281.5mm	288.5mm
I	Rc1/4	Rc1/4	Rc3/8
Braking thrust kg(N)	300(3000)	550(5500)	1040(10400)
Minimum release pressure	0.5Mpa	0.5Mpa	0.5Mpa
Friction plate abrasion	6mm	6mm	6mm
Weight(approximately)	12kg	13kg	15.1kg

DBHF-25F Spring brake Air pressure release





●Torque versus abrasion



●Specification

Model	DBHF-254F	DBHF-255F	DBHF-256F
Disc thickness	25mm	25mm	25mm
Disc diameter	300mm↑	300mm↑	300mm↑
B	162mm	189.5mm	194.5mm
ØC	141mm	176mm	190mm
D	264mm	281.5mm	288.5mm
I	Rc1/4	Rc1/4	Rc3/8
Braking thrust kg(N)	300(3000)	550(5500)	1040(10400)
Minimum release pressure	0.5Mpa	0.5Mpa	0.5Mpa
Friction plate abrasion	6mm	6mm	6mm
Weight(approximately)	12kg	13kg	15.1kg

BST MODEL AIR OIL TRANSFORM BOOSTER

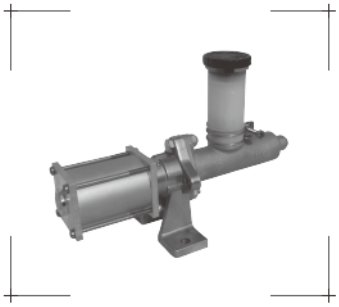
STEKI Industrial Automation

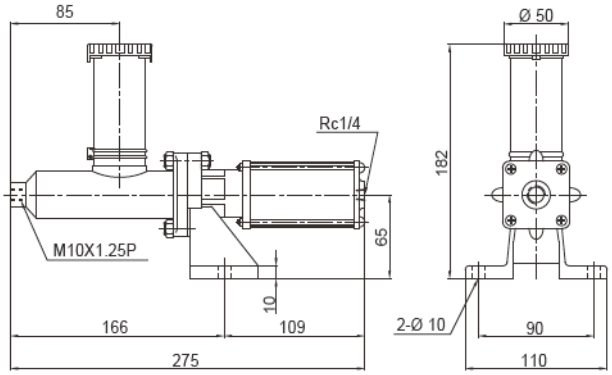
Specification

Model	BST2	BST3	BST4
Air cylinder	2″	3″	4″
Maximum air pressure	0.7Mpa	0.7Mpa	0.7Mpa
Compression ratio	3	6	14
Maximum oil pressure Mpa	2.1	4.2	9.8
Oil mass c.c	9	12	12
Weight(approximately) kg	1.6	2	2.5

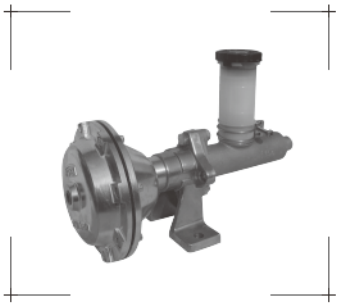
[Note] Use braking oil of DOT3 or above DOT4

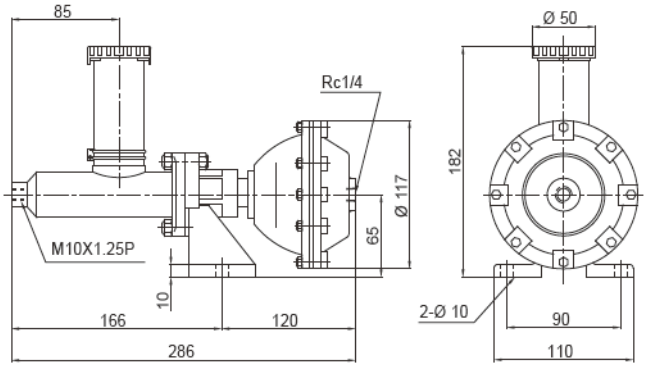
BST2



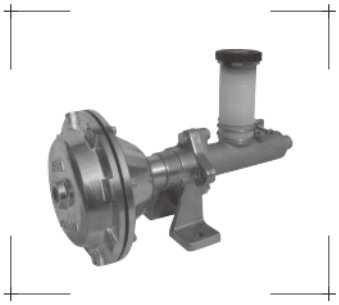


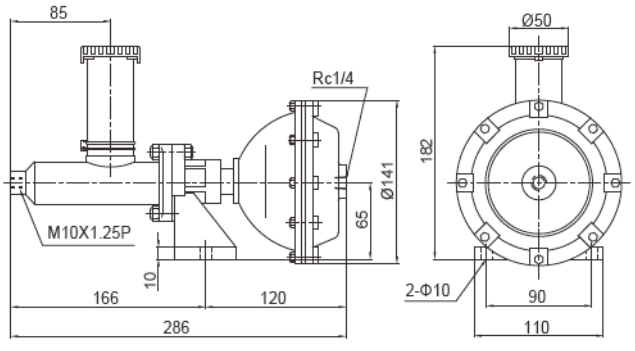
BST3





BST4



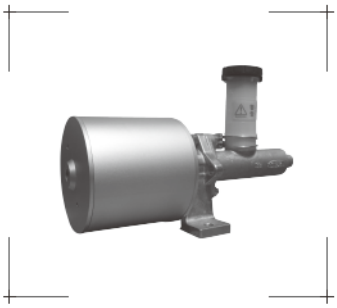


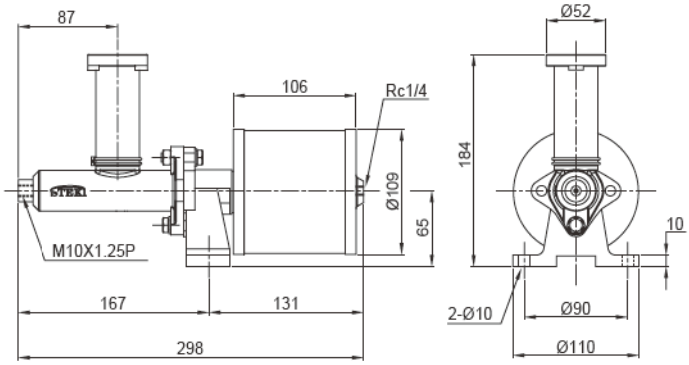
BST MODEL AIR OIL TRANSFORM BOOSTER

BST4S

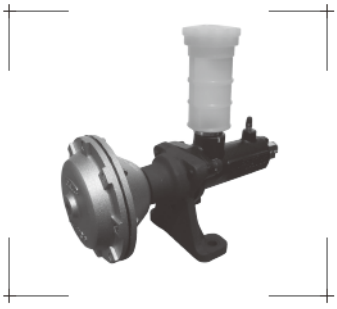
Model	BST4S
Air cylinder	4″
Working Pressure Mpa	0.7Mpa
Compression ratio	14
Maximum oil pressure Mpa	9.8
Oil mass c.c	12
Weight(approximately) kg	3.5

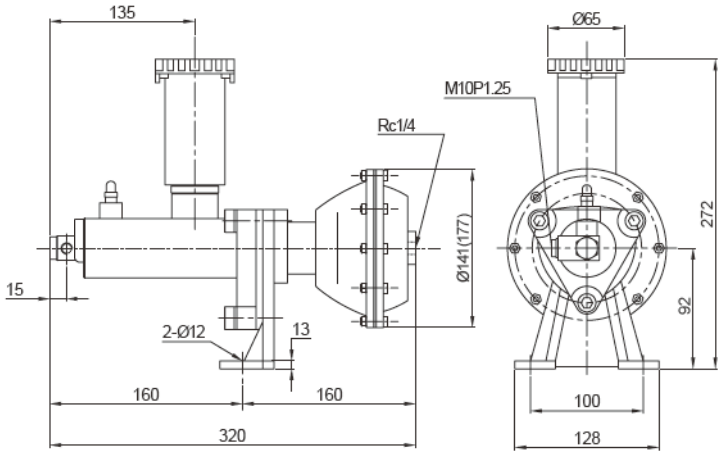
[Note] Use braking oil of DOT3 or above DOT4



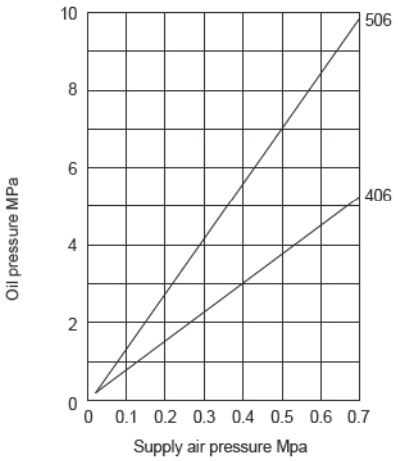


BST406 BST506





● Supply air pressure versus oil pressure

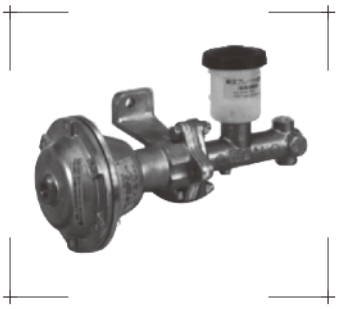


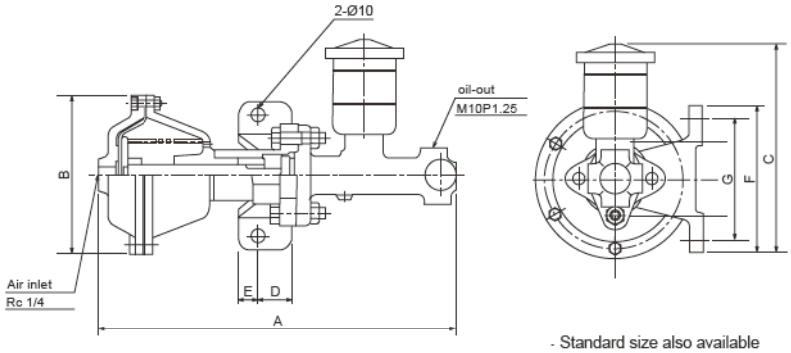
Model	BST406	BST506
Inlet casing	4″	5″
Maximum air pressure Mpa	0.7	0.7
Compression ratio	7.5	14
Maximum oil pressure Mpa	5.3	9.8
Oil mass c.c	19.4cc	19.4cc
Weight(approximately) kg	4	4.5

[Note] Use braking oil of DOT3 or above DOT4

EMPTY OIL TRANSFORM BOOSTER

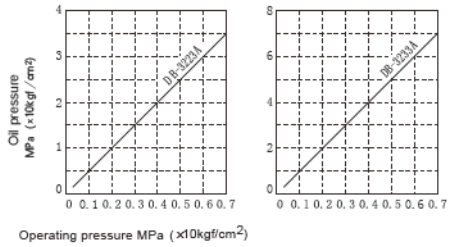
DB-3223A • 3233A





- Standard size also available

● Oil pressure versus air pressure



●**Specification**

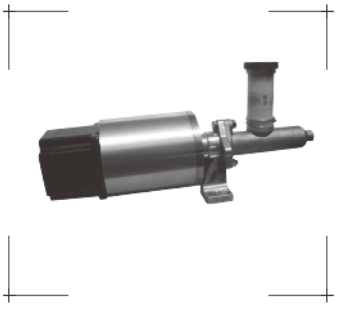
Model	A	B	C	D	E	F	G	Oil mass c.c
DB-3223A	262	84	166	30	15	110	90	5
DB-3233A	269	118	166	30	15	110	90	5

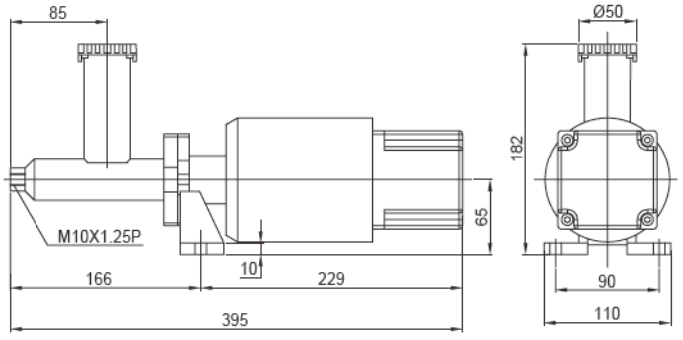
[Note] Use braking oil of DOT3 or above DOT4

Stepper motor booster

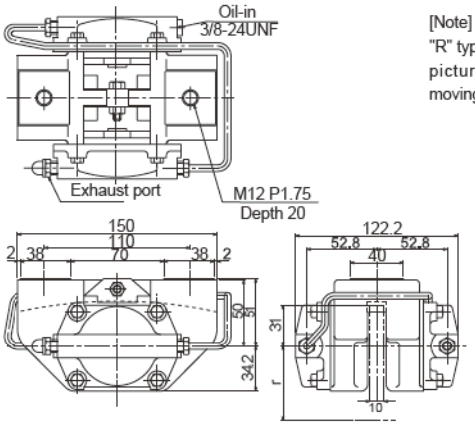
BST304

Motor model	86BYG Linear stepper motor
Motor maximum thrust N	2000
Maximum oil Mpa	3.9
Oil mass c.c	12
Weight(approximately) kg	6



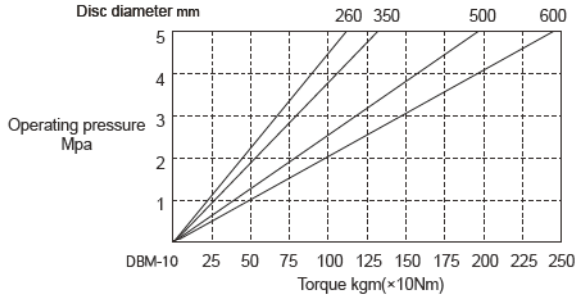


DBM-10 02



[Note]
"R" type, moving from right. This picture is "R" type. "L" type, moving from left.

● Oil pressure versus torque

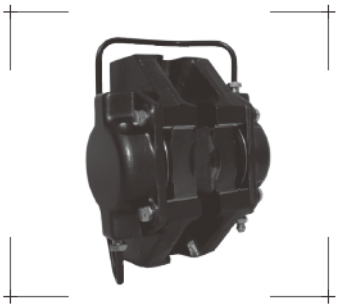


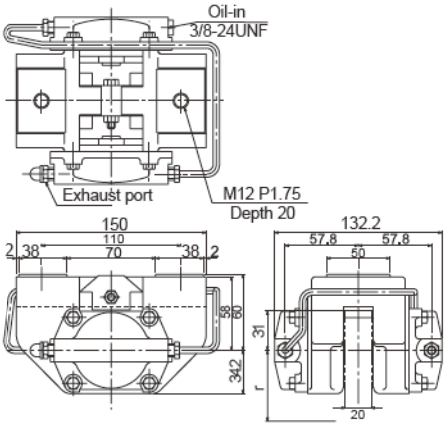
● Specification

Model	DBM-10
Oil cylinder type	2 1/8
Oil cylinder area	22.88cm²
Amount of oil required	2.5c.c
Disc thickness	10mm
Disc diameter	200mm↑
Maximum pressure	**5Mpa**
Friction plate abrasion	7mm
Weight(approximately)	4.5kg

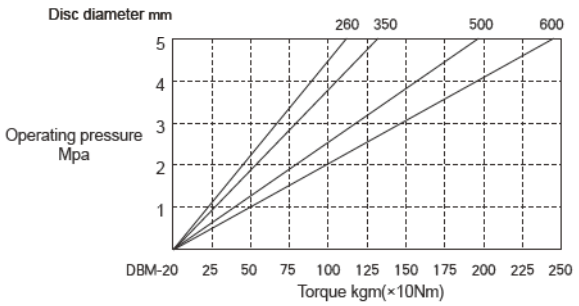
[Note] Use of oil: can choose general mineral-kind hydraulic oil-Y type & DOT3/DOT4 brake fluid-B type.

DBM-20 02





● Oil pressure versus torque

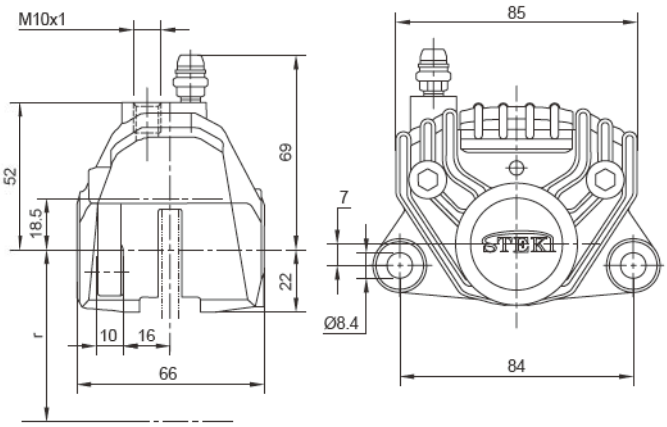


● Specification

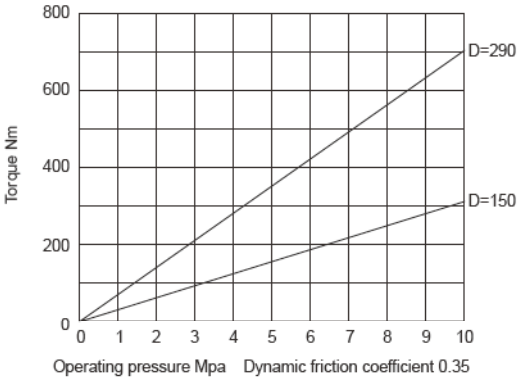
Model	DBM-20
Oil cylinder type	2 1/8
Oil cylinder area	22.88cm²
Amount of oil required	2.5c.c
Disc thickness	20mm
Disc diameter	200mm↑
Maximum pressure	**5Mpa**
Friction plate abrasion	7mm
Weight(approximately)	5.5kg

[Note] This brake takes braking oil as the main source of movement. Can cooperate with air oil transform booster, taking air pressure as movement.

DBM-06 01



● Operating pressure versus torque

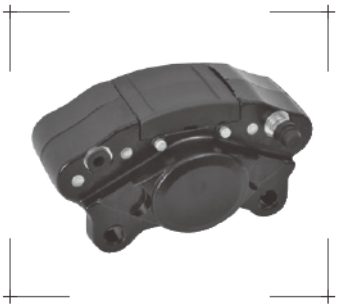


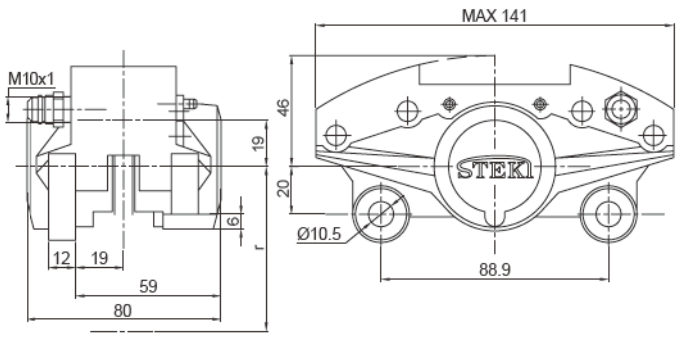
● Specification

Model	DBM-0601
Oil cylinder area	8.02cm²
Disc diameter	Ø150-290mm
Disc thickness	5.6-7.0mm
Braking effective radius	r=1/1000(DISC DIA/2-18.5)m
Maximum pressure	10MPa
Weight(approximately)	0.53kg
Torque calculation Braking force=KN	T(KN)=KN x r

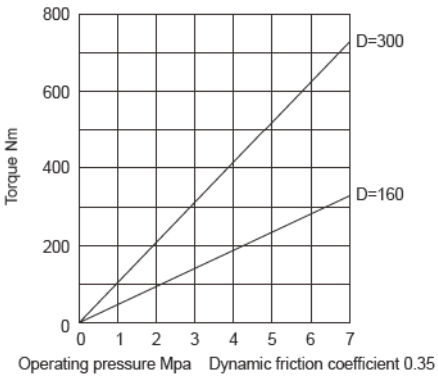
[Note] Use of oil: can choose general mineral-kind hydraulic oil-Y type&DOT3/DOT4 brake fluid-B type.

DBM-07 02





● Operating pressure versus torque

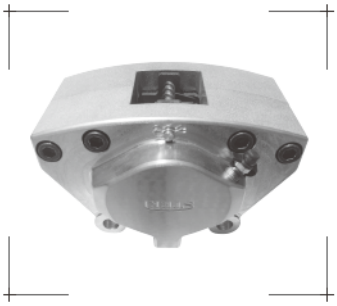


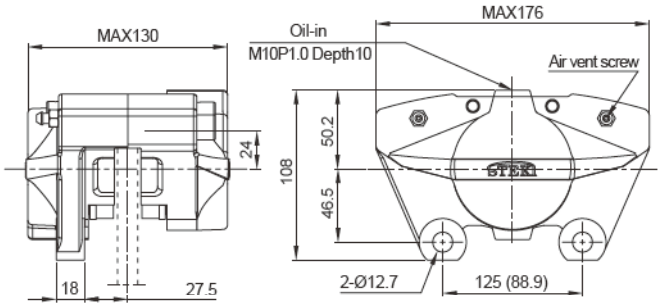
● Specification

Model	DBM-0702
Oil cylinder area	11.33cm²
Disc diameter	Ø160-300mm
Disc thickness	7-5.8mm
Braking effective radius	r=1/1000(DISC DIA/2-19)m
Maximum pressure	7MPa
Weight(approximately)	0.96kg
Torque calculation Braking force= KN	T(KN)=KN x r

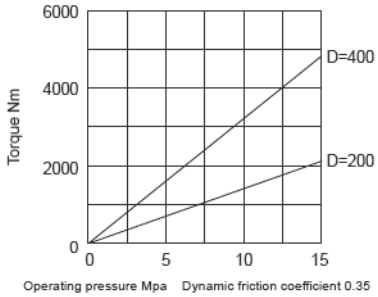
[Note] Use of oil: can choose general mineral-kind hydraulic oil-Y type&DOT3/DOT4 brake fluid-B type.

DBM-13 02





● Operating pressure versus torque

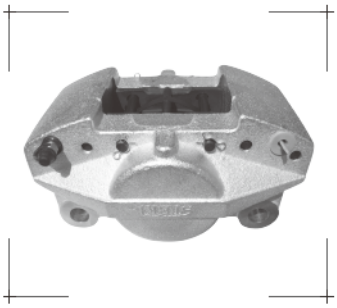


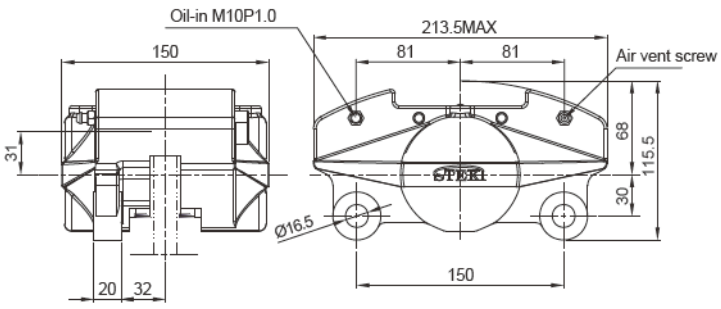
● Specification

Model	DBM-1302
Oil cylinder area	26.4cm²
Disc diameter	Ø200-400mm
Disc thickness	11-13mm
Braking effective radius	r=1/1000(DISC DIA/2-24)m
Maximum pressure	15MPa
Torque calculation Braking force= KN	T(KN)=KN x r

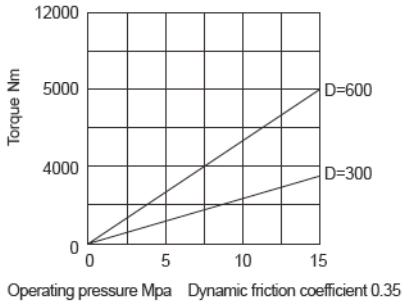
[Note] Use of oil: can choose general mineral-kind hydraulic oil-Y type&DOT3/DOT4 brake fluid-B type.

DBM-16 03





● Operating pressure versus torque

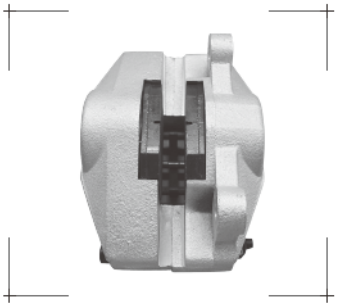


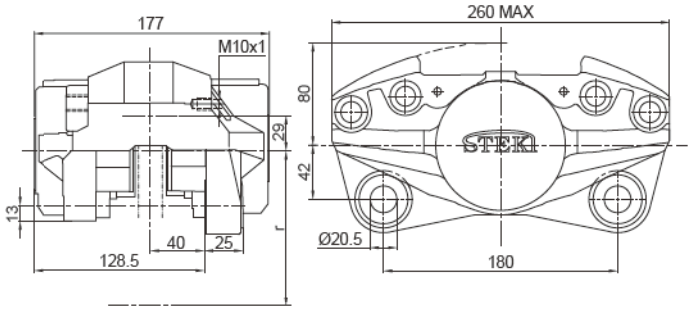
● Specification

Model	DBM-1603
Oil cylinder area	28.2cm²
Disc diameter	Ø300-600mm
Disc thickness	14.5-16mm
Braking effective radius	r=1/1000(DISC DIA/2-31)m
Maximum pressure	15MPa
Torque calculation Braking force = KN	T(KN)=KN x r

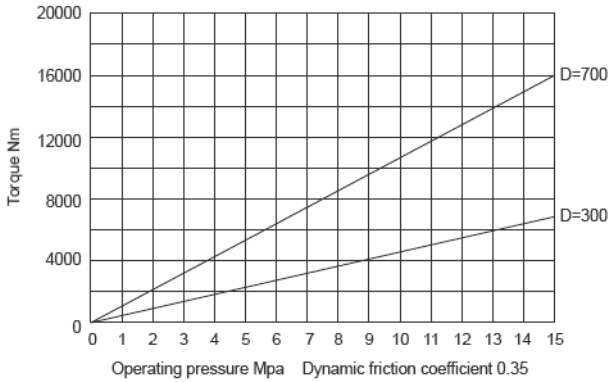
[Note] Use of oil: can choose general mineral-kind hydraulic oil-Y type&DOT3/DOT4 brake fluid-B type.

DBM-30 03 Oil disc brake





● Operating pressure versus torque

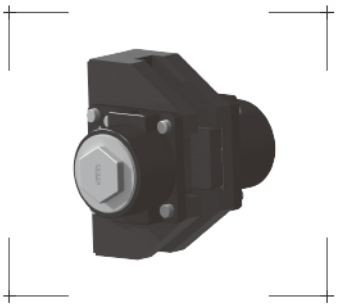


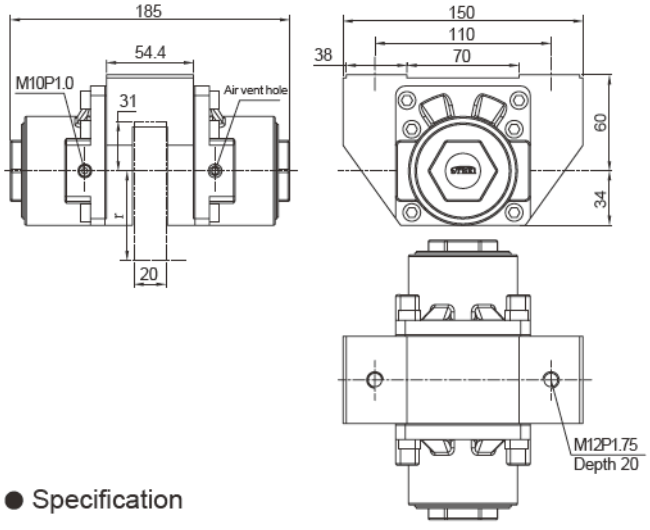
● Specification

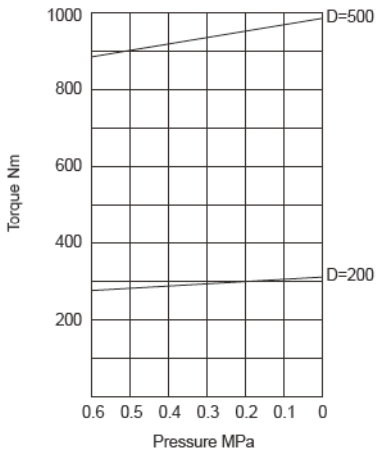
Model	DBM-3003
Oil cylinder area	44.15cm²
Disc diameter	Ø300-700mm
Disc thickness	20-22mm
Braking effective radius	r=1/1000(DISC DIA/2-29)m
Maximum pressure	15MPa
Weight(approximately)	15.6kg
Torque calculation Braking force = KN	T(KN)=KN x r

[Note] Use of oil: can choose general mineral-kind hydraulic oil-Y type&DOT3/DOT4 brake fluid-B type.

DBM-20 02F safety disc brake spring braking and oil pressure releasing





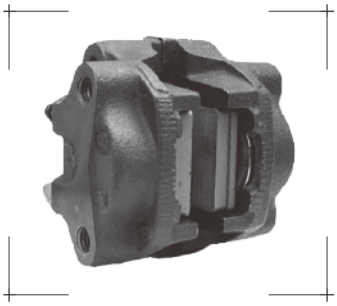


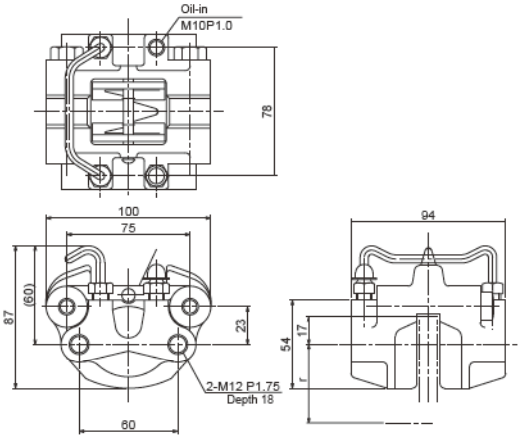
● Specification

Model	DBM-2002F
Disc diameter	Ø200-∞mm
Disc thickness	20mm
Braking effective radius	r=1/1000(DISC DIA/2-31)m
Maximum pressure	5MPa
Maximum abrasion	7mm
Maximum braking force	4.5KN
Torque calculation Braking force = KN	T(KN)=KN x r

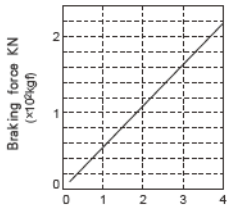
[Note] Use of oil: can choose general mineral-kind hydraulic oil-Y type&DOT3/DOT4 brake fluid-B type.

DBM-10 01





● Operating thrust versus air pressure

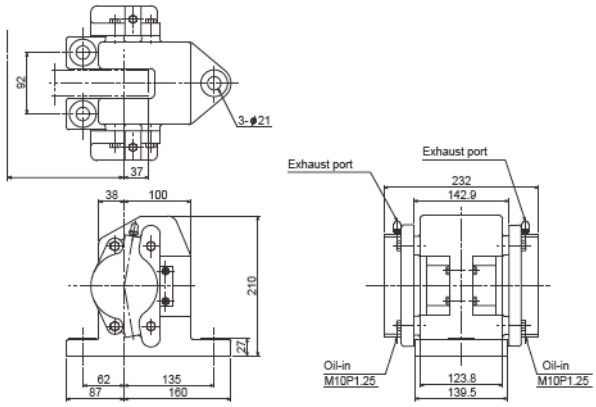


● Specification

Model	DBM-10 01
Oil cylinder area(cm²)	9.05
Disc diameter	ϕ150~300mm
Disc thickness	10.4mm
Braking effective radius	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-17)m$
Friction plate model	DB-0405-K※※※
Friction plate abrasion	5mm
Maximum oil pressure	4 (40kgf/cm²)MPa
Amount of oil required	0.5cc
Weight	2kg
Torque calculation Braking force = KN	T (kN·m) = kN × r

[Note] Use of oil: can choose general mineral-kind hydraulic oil-Y type&DOT3/DOT4 brake fluid-B type.

DBM-38 04

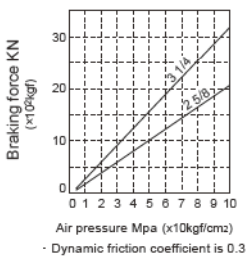


● Specification

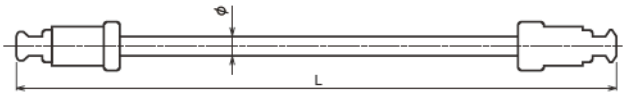
Model	DBM-38 04	
Oil cylinder type	2 5/8	3 1/4
Oil cylinder area(cm²)	34.89	53.49
Friction plate abrasion(mm)	ϕ380 ~ ∞	
Disc thickness(mm)	38	
Braking effective radius(m)	$r=\frac{1}{1000}(\frac{\text{DISC DIA}}{2}-37)$	
PAD Model	DB-0401-K※※※	
Friction plate wear(mm)	18	
Maximum pressure(Mpa)	10(100kgf/cm²)	
Amount of oil required	7	10
Weight (kg)	24	
Torque calculation	T (kN·m) = kN × r	

[Note] Use of oil: can choose general mineral-kind hydraulic oil-Y type&DOT3/DOT4 brake fluid-B type.

● Operating thrust versus air pressure



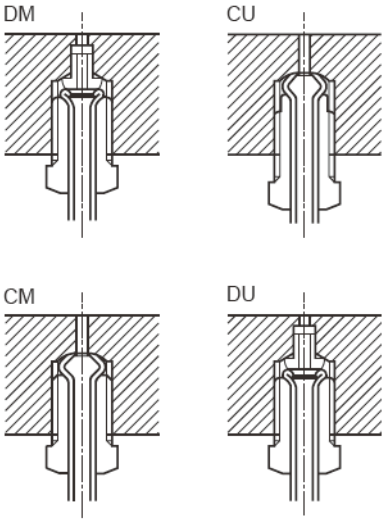
Oil pipe



OD:ϕ4.76

Endurance pressure:15MPa

● Pipe end



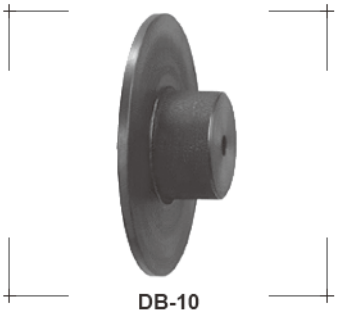
Explanation	DM	CU	CM	DU
Pipe end	Horn mouth	Convex mouth	Convex mouth	Horn mouth
Nut (color)	M10 P1.25 (Yellow)	3/8-24UNF (White)	M10 P1.0 (Black)	3/8-24UNF (White)
Pipe size(mm)/ pressure	4.76 ϕ 0.7t / 15MPa			
Hydraulic disc brake	DBM-3804	DBM-1002 DBM-2002	DBM-1001	–
Air hydraulic booster	BST-2~BST-4	–	–	–

● Standard pipe

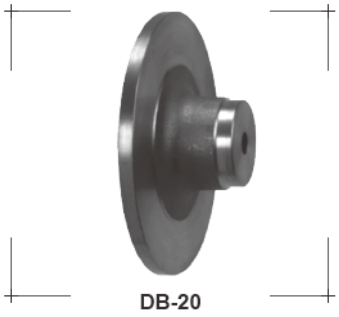
UNIT(m)

Model	L / BOTH ENDS SHAPE	0.5	0.7	1	1.5	2	2.5	3	4
DB-0104	DM-CM	○	○	○	○	○	○	○	○
DB-0105	DM-CU	○	○	○	○	○	○	○	○
DB-0106	DM-DM	○	○	○	○	○	○	○	○
DB-0107	CU-CU	○	○	○	○	○	○	○	○
DB-0115	CU-CM	○	○	○	○	○	○	○	○
DB-0124	DU-DM	○	○	○	○	○	○	○	○
DB-0125	CU-DU	○	○	○	○	○	○	○	○

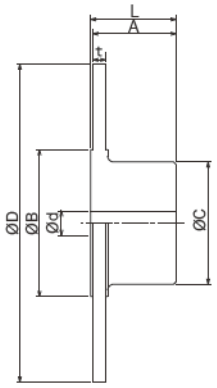
Braking disc



DB-10



DB-20



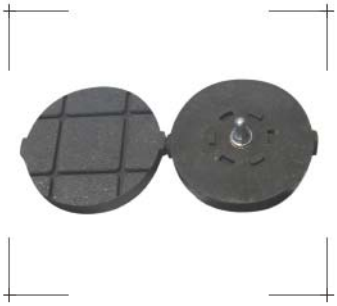
● Specification

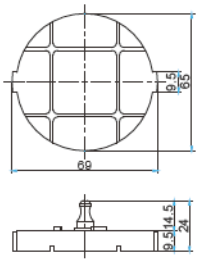
Model	DB-1026	DB-1035	DB-2035	DB-2050
Maximum speed(rpm)	2200	1650	1650	1150
Moment of Inertia(kg/m²)	0.03	0.14	0.21	0.9
Weight(approximately) (kg)	7.5	16	23	47

Size	D	t	B	c	$d_{(MIN)}$	$d_{(MAX)}$	A	L
DB-1026	260	10	120	100	20	60	68	70
DB-1035	350	10	210	100	30	60	100	110
DB-2035	350	20	210	115	30	70	110	120
DB-2050	500	20	360	150	35	90	130	140

[Note] The size of braking disc within the allowable range can be customized according to requirements.

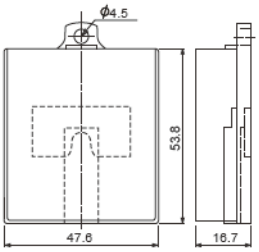
DB-0466-K※※※





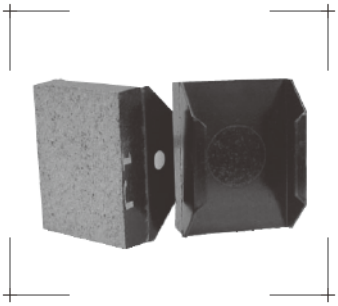
Applicable models:
DBK Series

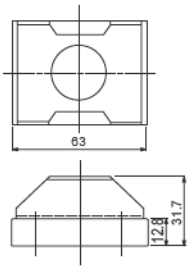
DB-0400-K※※※



Applicable models:
DBM Series

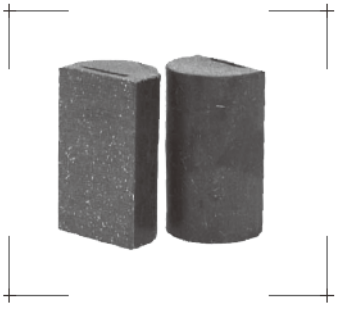
DB-0433-K※※※

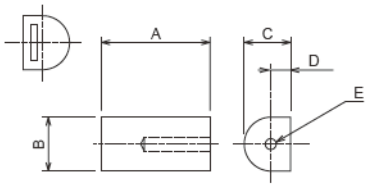




Applicable models:
DBG Series
DBH Series

DB-0429-K※※※

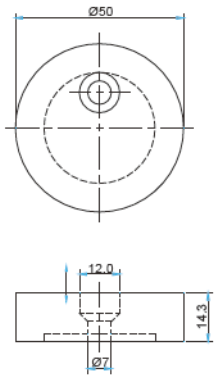




Model	A	B	C	D	E
DB-0428	30	15	12.7	5.2	ϕ3.5
DB-0429	40	23	17	5.5	ϕ4
DB-0430	50	30	22	12	ϕ6
DB-0431	50	30	17	7	ϕ6

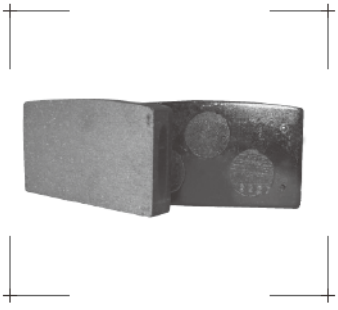
Applicable models: DBC Series

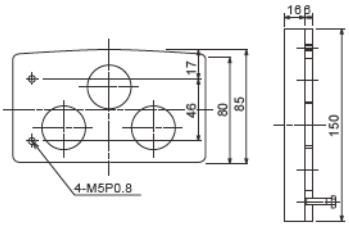
DB-0421-K※※※



Applicable models:
DBF Series

DB-0435-K※※※





Applicable models:
DBH385D Series

Features

1 Frequency using, better durability, high stability

Disc surface is exposed mostly to round air, with heat dissipated more easily. The temperature on disc surface goes up not so high after braking and it also has great stability due to few oil mass required and compressed air with high sensitivity.

2 Adjustable torque limiter

It can adjust through air pressure, used as brake by certain tensile force.

3 Adjustable torque range

The range between 0.04~0.6Mpa for air pressure can be easily adjusted.

4 No adjustment in using and simple maintain

It is inevitable to have friction abrasion, however, air cylinder or oil cylinder has its own compensation self-acting, with no need to change friction clearance.

5 Water tolerance, dust prevention and high temperature resistance

Braking force calculation formula

1 Air disc braking force calculation

Air disc brake has an organic structure which can increase braking force, and its multiple should be calculated internally, so brake torque is:

$$T=2\mu APr\beta$$

T : Braking torque (kgm)
A : Air cylinder weighted area (cm^2)
r : Effective braking radius of disc (m)
μ : Coefficient of friction (0.3)
P : Air pressure acting force (kg/cm^2)

$$\beta : \text{Compression ratio} = \frac{\text{The distance between power-output point and supporting point of inlet casing}}{\text{The distance between friction force acting center and supporting point}}$$

2 Oil disc braking force calculation

Known from oil disc brake structure, oil cylinder produces power working on friction plate to brake, so brake torque is:

$$T=2\mu APr$$

T : Braking torque (kgm)
A : Oil cylinder weighted area (cm^2)
r : Effective braking radius of disc (m)
μ : Coefficient of friction (0.3)
P : Oil pressure force (kg/cm^2)

Braking stop time calculation

Braking stop time has connection with rotational inertia of the braking subject, can be calculated as:

$$T_B=\frac{\pi nI}{30TN}=\frac{\pi nI}{60\mu APrN}=\frac{\pi nGN^2}{120TgN}$$

$$GD^2=4.g.I$$

t_B : Stop time (sec)
I : Rotational inertia $\frac{GD^2}{4g}$ ($kg.m.sec^2$)
n : Brake axle turnover number (rpm)
N : Number of brakes that are used simultaneously
g : 9.8 (m/sec^2)

Energy produced by braking

When energy produced by braking is very large in some occasions, the temperature which might goes up must be considered.

a、When conduct linear motion braking

$$E=\frac{wv^2}{2g}\times f$$

E : Energy produced (kgm/min)
W : Weight (kg)
V : Speed (m/sec)
f : Braking frequency (Return/min)

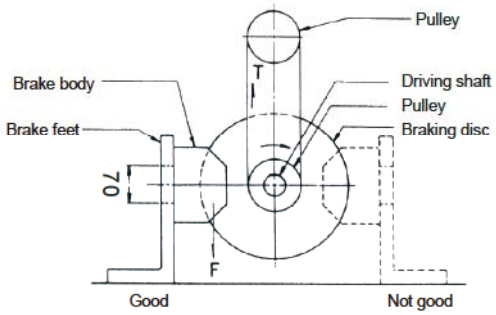
b、When conduct solid of revolution braking

$$E=\frac{\pi nI}{6}\times t_B\times f$$

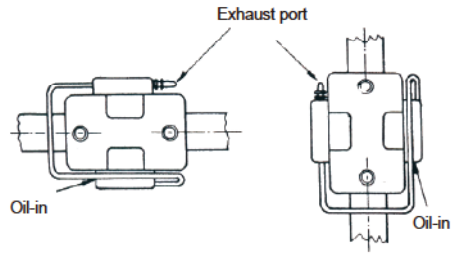
c、When conduct tension control constantly

$$E=2\pi nT$$

1、Notice the position to mount a brake, trying to keep shaft balance between braking force and driving force.



2.Exhaust port of the brake should be on top of the brake body, in order to exhaust air.

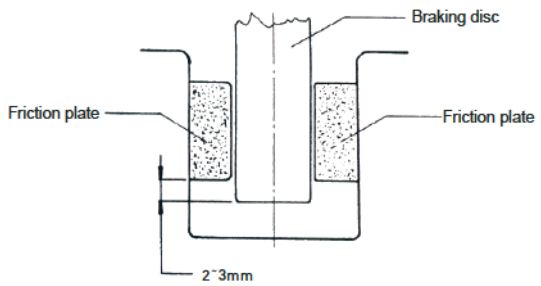


3.The position of booster or oil pressure source should be on top of the brake, and more closer, much better.

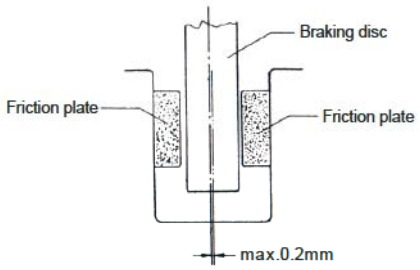
4.Clearance about 70mm*70mm should be set on fixed end of the brake, better to replace the friction plate inside.

5.Avoid to design a sealed one, which make clear airflow and more effective heat dissipation for braking disc.

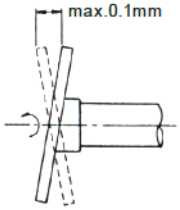
6.The friction plate should touch the braking disc completely.



7. Braking disc should be in center between braking chucks,and deviation needs to be less than 0.2mm.



8.The amplitude of the braking disc should be under 0.1mm.



Use Precautions

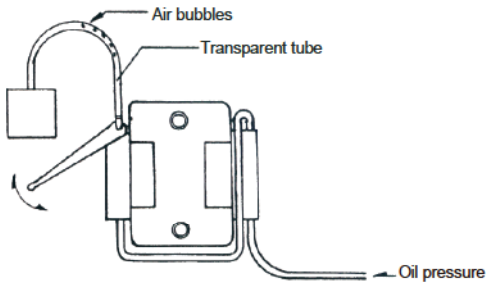
1.This product should use braking oil of DOT3 or above DOT4, and any other mineral oil or solvent are not permitted.

2.Before braking, air should be cleared thoroughly from brake body.

A.First loosen the bolt on exhaust port and put on a transparent tube.

B.Oil should start with a small pressure (try to avoid braking oil inflowing rapidly into oil cylinder)to make full of oil cylinder, and flow into transparent tube until no bubble produced inside the pipe.

C.Then fasten the bolt on exhaust port, and take away the transparent tube.



3.Braking fluid should be full at all time, without mixing with other mineral oil and should be replaced regularly.

4.Braking fluid can dissolve general oil paint. Scrub clearly the surface of oil paint as soon as stained with braking fluid.

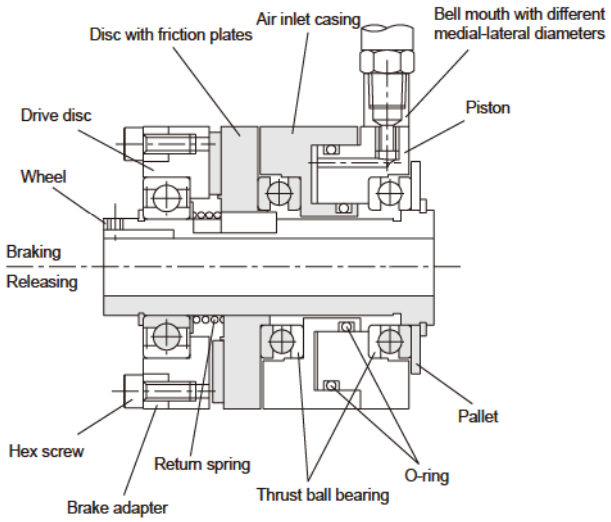
5.When friction plate abrasion reaches less than depth of 10mm, it should be replaced immediately in order not to influence the braking effect.

Features

1.Small, lightweight, wide adjustable range of torque
It can adjust torque in wide range according to air pressure adjustment.
2.Reliability
It won't produce electric spark.
3.Mostly suitable to quite frequent sliding movement
It can be used in high frequency, high load, and sliding movement.
4.Stop peacefully and simply
It can stop without hinder according to air pressure adjustment.
5.Long life, easily maintain
It can be used longer due to good heat dissipation and thick friction plate.

Structure | Action

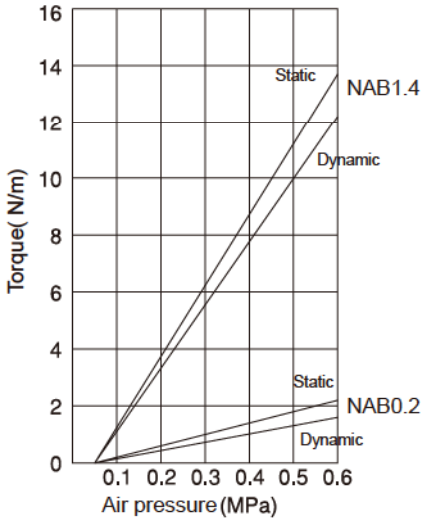
NAB(micro-type) structure drawing



NAB model brake relies on air pressure to brake,return spring to release. Disc with friction plates moves towards shaft according to air pressure and touches driving disc.

The key of maintaining torque is to insert torque peg into slot of brake adapter, and thereby fix it.

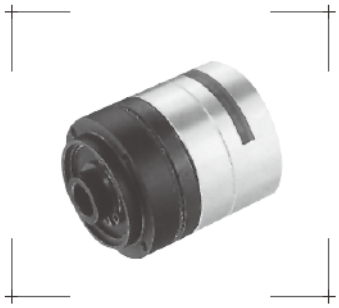
Torque versus air pressure

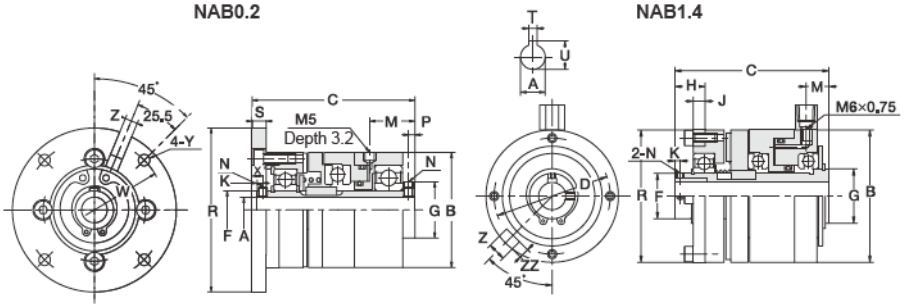


Allowable braking effort Pa

Model	Allowable braking effort Pa(W) (N=When 1800r/min)
NAB0.2	44
NAB1.4	96

NAB0.2·NAB1.4





Model	Static friction torque kgm(Nm)	Main dimensions (mm)											
	When 0.6Mpa	A(H7)	B	C	D	F	G	H	J	K	M	N	P
NAB0.2	0.22(2.2)	10	45	64	—	15	22	—	—	2.4	18	M4	2.4
NAB1.4	1.37(13.7)	15	73	85	64	25	30	17	6.5	3	12	M4	—

Model	Main dimensions (mm)										Weight (approximately) (kg)
	R	S	W	X	Y	Z	ZZ		U	Key slot	
NAB0.2	64	6	55	4.4	4.5	5	—	—	—	—	0.49
NAB1.4	73	—	—	—	—	10	6	5	17.3	5x5x16	1.4

Technical Data

Model	Volume of air chamber (cm^3)		Allowable friction plate abrasion (cm^3)	Rotation speed limit Nb(r/min)	Moment of inertia J ($kg.m^2$)
	Minimum Vn	Maximum Vo			
NAB0.2	0.819	1.704	1.418	3600	2.248×10^{-5}
NAB1.4	3.294	10.33	8.546	3600	2.863×10^{-4}

[Note] Vn: Volume of air chamber for new friction plate occasion. Vo:Volume of air chamber before changing friction plate occasion.

Response Time

Unit: ms

Air pressure (MPa)	Model	3-way electromagnetic change-over valve						4-way electromagnetic change-over valve					
		t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^{0}	t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^{0}
0.3	**NAB0.2**	10	27	42	23	43	60	12	5	8	16	2	3
	NAB1.4	28	58	99	18	48	66	16	16	26	13	7	11
0.4	**NAB0.2**	8	29	44	27	52	70	11	5	7	16	2	3
	NAB1.4	24	63	104	21	56	80	14	15	23	14	8	13
0.5	**NAB0.2**	7	31	46	30	63	83	9	4	6	17	3	4
	NAB1.4	21	68	109	23	68	94	13	14	21	14	10	14

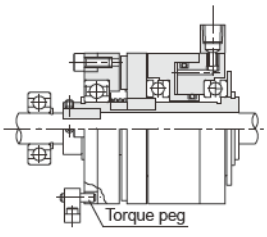
[Note] The data made under the premise: all use standard electromagnetic change-over valve,air pressure pipe(length of 200*1/4diameter),install1/8NPT medal joint, and use rapid exhaust port.

Operation precautions

1.NAB0.2 model is to combine brake adapter BAD0.2 and NAC0.2. While NAB1.4 model is to combine BAD1.4 and NAC1.4.

2. Do not hit the brake excessively when install it onto shaft.

Installation Examples



NAB MODEL (STANDARD TYPE) AIR SHAFT BRAKE

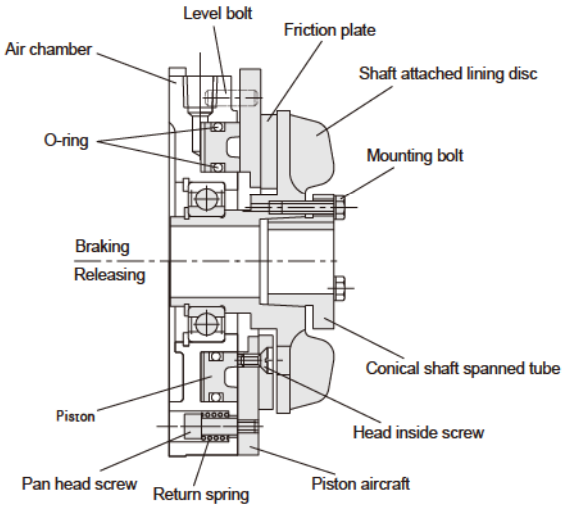
STEKI Industrial Automation

Features

1.Stop peacefully and simply
It can stop without hinder according to air pressure adjustment.
2.Mostly suitable to quite frequent sliding movement
It can be used in high frequency, high load, and sliding movement.
3.Wide adjustable range of torque
It can adjust torque in wide range according to air pressure adjustment.
4.Long life for friction plate and easy to replace
It gets longer life due to thickness of friction plate. And when replace,it works without changing anything of the mechanical equipment.

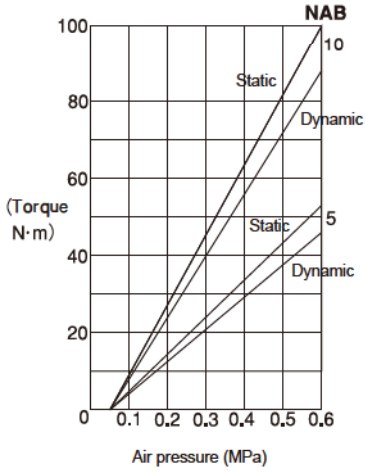
Structure • Action

NAB model structure drawing

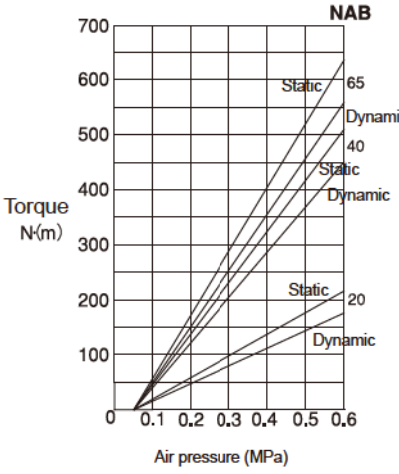


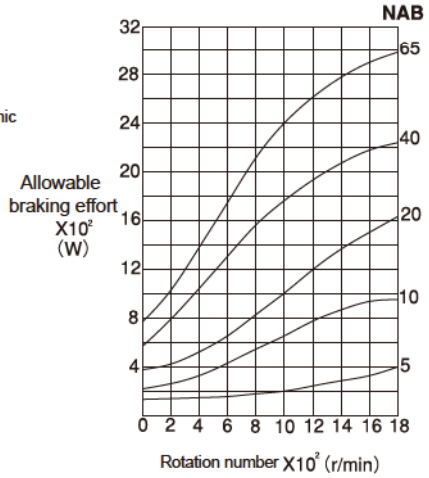
NAB model brake installs conical shaft spanned tube with wedge onto shaft, owning structure that friction plate can work without changing anything of the mechanical equipment.
It reduces heat generated from friction by cooling plate mounted on disc with hub.
Friction plate is two-cut style,using screwdriver to take out the head inside screw through the hole of disc with hub, in order to replace friction plate.

Torque versus air pressure



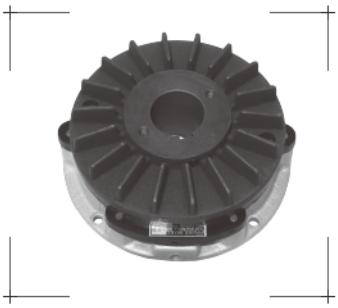
Allowable braking effort Pa

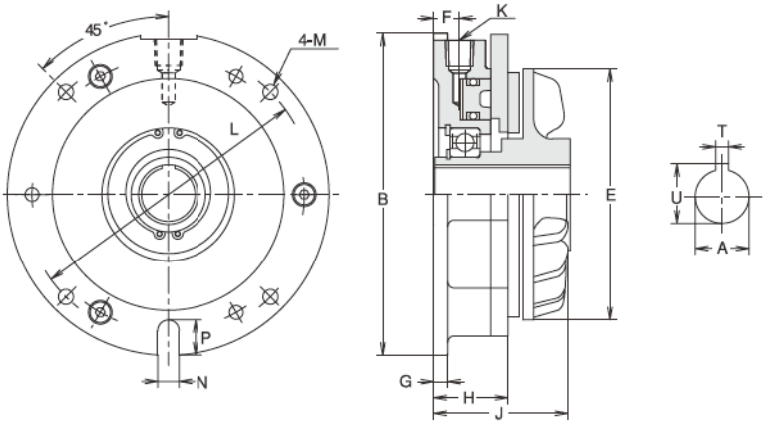




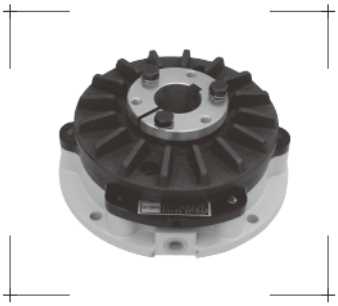
Main dimensions table

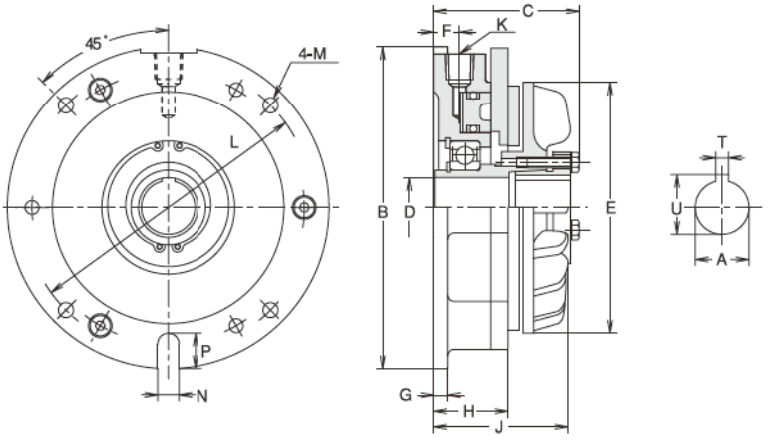
NAB-□S





NAB-□T





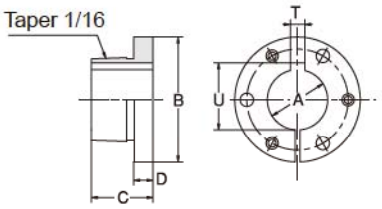
Model	Static friction torque kg/m(N/m)	Main dimensions (mm)											
	When 0.6Mpa	A	B	C	D	E	F	G	H	J	K	L	M
NAB5	5.3(53)	25	150	68.5	27.8	117	12	6.5	34.5	64	Rc1/4	135	7
NAB10	10(100)	35	182	79.5	38	155	12	10	44	77	Rc1/4	165	9
NAB20	21.6(216)	50	228	96	57	204	11	10	47	87	Rc1/4	210	9
NAB40	51(510)	75	302	120	83	256	18	13	58.5	114	Rc1/4	278	14
NAB65	63.6(636)	75	350	134	83	280	20	18	70	141	Rc1/4	320	18

Model	Main dimensions (mm)					Weight (approximately) (kg)
	N	P	T	U	Key slot	
NAB5	10	16.5	6	27.8	6x6x25	3.5
NAB10	16	17	10	38.3	10x8x30	6.6
NAB20	20	20	12	53.3	12x8x45	12
NAB40	22	22	18	79.4	18x11x65	25
NAB65	25	30	18	79.4	18x11x65	36

[Note] If using with tension control,M5air inlet must link with air pressure, forcing to cool the air in order to add moving power,life span.

Main dimensions of conical shaft spanned tube

Conical shaft spanned tube model	Main dimensions(mm)						Brake Nominal Model
	A	B	C	D	T	U	
TB25-10D ※	10	52	25.5	8	—	—	NAB5+TB25-10D
TB25-20	20				5	22.3	NAB5+TB25-20
TB25	25				6	27.8	NAB5
TB35-10D ※	10	68	32	10	—	—	NAB10+TB35-10D
TB35-25	25				6	27.8	NAB10+TB35-25
TB35	35				10	38.3	NAB10
TB50-20D ※	20	98	48	13	—	—	NAB20+TB50-20D
TB50-35	35				10	38.3	NAB20+TB50-35
TB50	50				12	53.3	NAB20
TB75-20D ※	20	149	66	19	—	—	NAB40+TB75-20D NAB65+TB75-20D
TB75-50	50				12	53.3	NAB40+TB75-50 NAB65+TB75-50
TB75	75				18	79.4	NAB40 NAB65



[Note] Marked conical shaft spanned tube is kind a punching-processed product of having bottom hole with thread. Once having inside diameter or key slot especially, please process this conical shaft spanned tube(with D attached to the end) to make a cut required.

Technical Data

Model	Volume of air chamber (cm^3)		Allowable friction plate abrasion Vf(cm^3)	Rotation speed limit Nb(r/min)	Moment of inertia J (kg · m^2)
	Minimum Vn	Maximum Vo			
NAB5	10.31	23.31	14.74	3600	$9.69x10^{-4}$
NAB10	16.78	34.55	25.12	2800	$4.59x10^{-3}$
NAB20	17.03	54.20	58.05	2200	$1.694x10^{-2}$
NAB40	28.50	141.9	146.6	1800	$4.74x10^{-2}$
NAB65	34.54	193.9	299.8	1600	$1.076x10^{-1}$

[Note] Vn: Volume of air chamber for new friction plate occasion Vo: Volume of air chamber before changing friction plate occasion

Response Time

Unit: ms

Air pressure (Mpa)	Model	3-way electromagnetic change-over valve						4-way electromagnetic change-over valve					
		t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^{0}	t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^{0}
0.3	**NAB5**	56	92	160	16	50	70	21	33	55	12	15	26
	NAB10	74	110	193	16	50	75	26	45	74	12	21	36
	NAB20	113	143	260	14	51	77	28	73	118	12	34	60
	NAB40	205	210	390	17	53	80	34	126	225	11	65	120
	NAB65	209	226	415	13	54	80	36	136	239	11	72	133
0.4	**NAB5**	48	100	168	18	62	85	19	32	51	13	18	29
	NAB10	64	118	203	17	62	85	23	42	68	12	26	41
	NAB20	97	153	273	16	62	90	25	69	110	12	42	68
	NAB40	175	225	410	20	65	95	30	118	205	11	80	136
	NAB65	176	244	435	14	66	95	32	128	218	11	86	153
0.5	**NAB5**	42	108	178	21	74	100	17	30	46	13	22	33
	NAB10	55	128	213	20	74	100	20	40	62	12	31	47
	NAB20	83	165	288	18	76	108	22	65	100	12	50	76
	NAB40	150	247	430	22	80	115	26	112	185	11	95	152
	NAB65	154	262	455	17	79	111	29	118	198	11	104	170

[Note] The data made under the premise: all use standard electromagnetic change-over valve,air pressure pipe(length of 200*1/4 diameter), install1/8NPT medal joint, and use rapid exhaust port.

Operation precautions

1. Mounted onto shaft

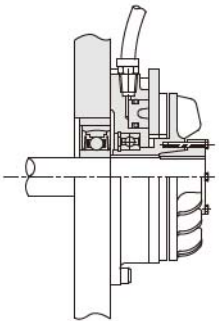
NAB model brake installs conical shaft spanned tube onto shaft in following order.
(1) Embed the key into shaft inside, and get brake body through shaft.
(2) Find the key, and install conical shaft spanned tube into where the key is embedded.
(3) Align the cut-out of conical shaft spanned tube to the bolt hole of shaft spanned disc and use three screws to fasten them. When fasten, pay attention to see the dial indicator, and the level deviation of fitting surface of pistol. Try to reduce the deviation to its minimum level and fasten interlacedly,equally.(Fasten torque recommended is as the following picture.)

Model	Conical shaft spanned tube mounted screw diameter	Fastened torque of bolt installation recommended(N.m)
NAB5	M5	2.5
NAB10	M6	4.3
NAB20	M8	8.2
NAB40	M12	20
NAB65	M12	29

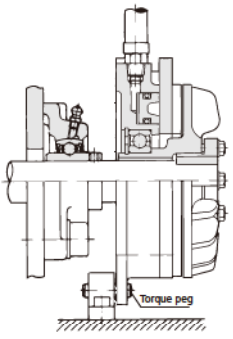
2. Installation onto machine table

Supported by brake torque, fix flange portion by 4 screw bolts, put torque bolt into cut-in of brake body to prevent turning.
The squareness between cover and shaft to install flange must be controlled under 0.05mm.
(Note) When use 4 screw bolts to fix, in order not to produce load to brake axis, install the conical shaft spanned tube onto shaft before making sure that there is no clearance between machine table.

Installation Examples



NAB model brake installed on machine table

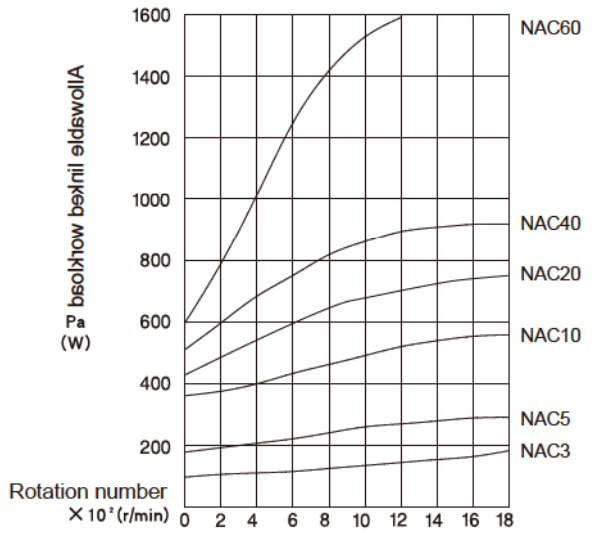


NAB model brake using torque peg to brake

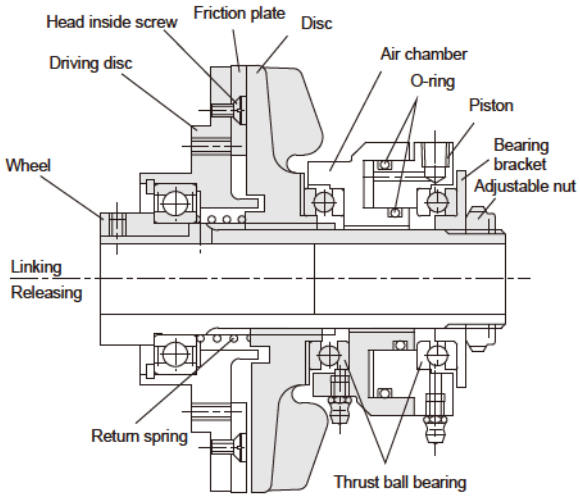
Features

1. Small, lightweight, wide adjustable range of torque
   It can adjust torque in wide range according to air pressure adjustment.
2. Reliability
   It won't produce electric spark.
3. Mostly suitable to quite frequent sliding movement
   It can be used in high frequency, high load, and sliding movement.
4. Stop peacefully and simply
   It can stop without hinder according to air pressure adjustment.
5. Long life, easily maintain
   It can be used longer due to good heat dissipation and thick friction plate.

Allowable linked workload



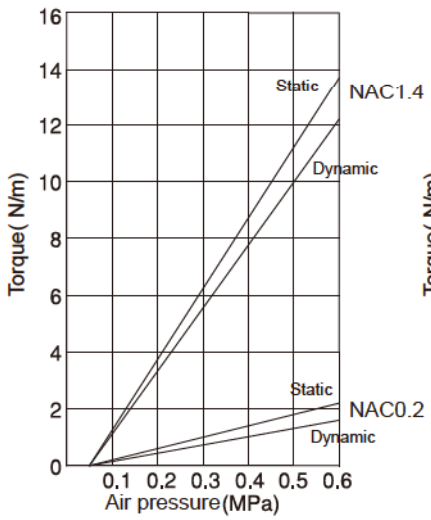
NAC structure drawing

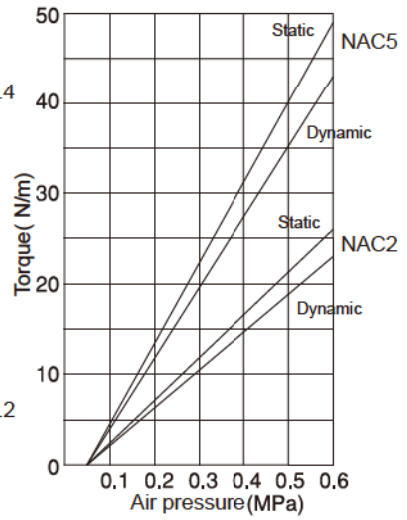


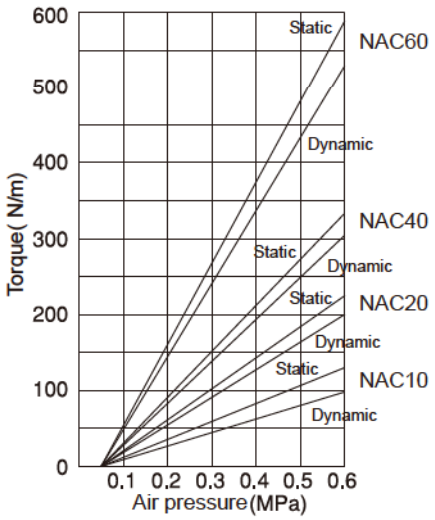
Structure | Action

NAC model air shaft clutch is linked by air pressure, released by return spring. The disc moves towards shaft under air pressure to touch friction plate. Disc and friction plate are installed onto wheel, becoming all-in-one structure. Friction plate can be unfastened by adjusting screw nut, with easy replacement.

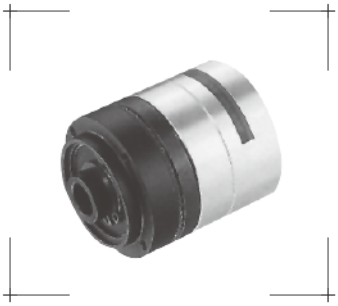
Torque versus air pressure



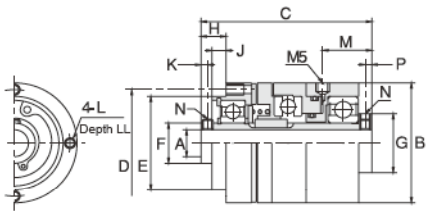




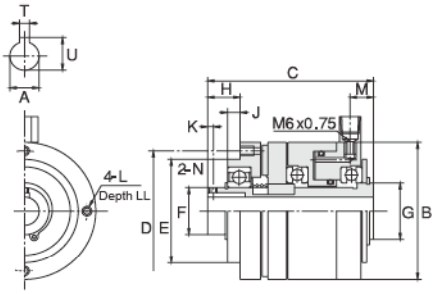
NAC0.2 | NAC1.4



NAC0.2



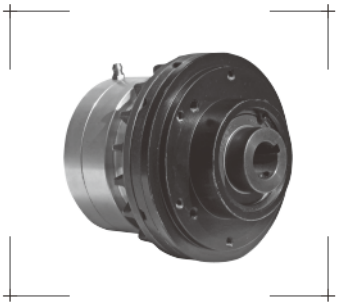
NAC1.4

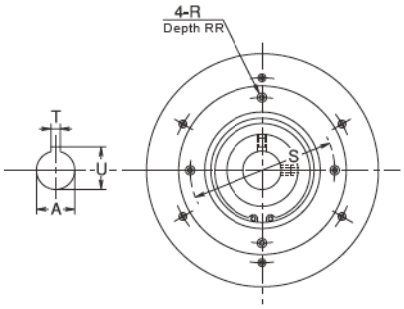


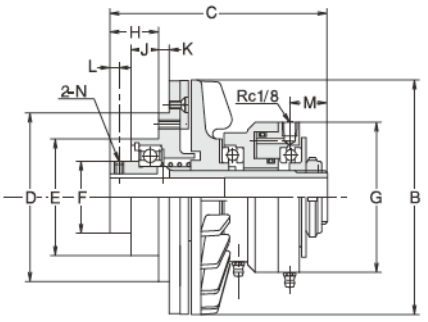
Model	Static friction torque kgm(Nm)	Main dimensions (mm)											
	When 0.6Mpa	A(H7)	B	C	D	E(h7)	F	G	H	J	K	L	LL
NAC0.2	0.22(2.2)	10	45	62	40	35	15	22	9	5	2.4	M4	6.5
NAC1.4	1.37(13.7)	15	73	85	64	55	25	30	17	6.5	3	M5	7

Model	Main dimensions (mm)						Key (approximately) (kg)	Allowable linked workload(w) When 1800r/min
	M	N	P	T	U	Key slot		
NAC0.2	18	M4	2.4	—	—	—	0.36	44
NAC1.4	12	M4	—	5	17.3	5x5x16	1.3	96

NAC2 | NAC5 | NAC10 | NAC20



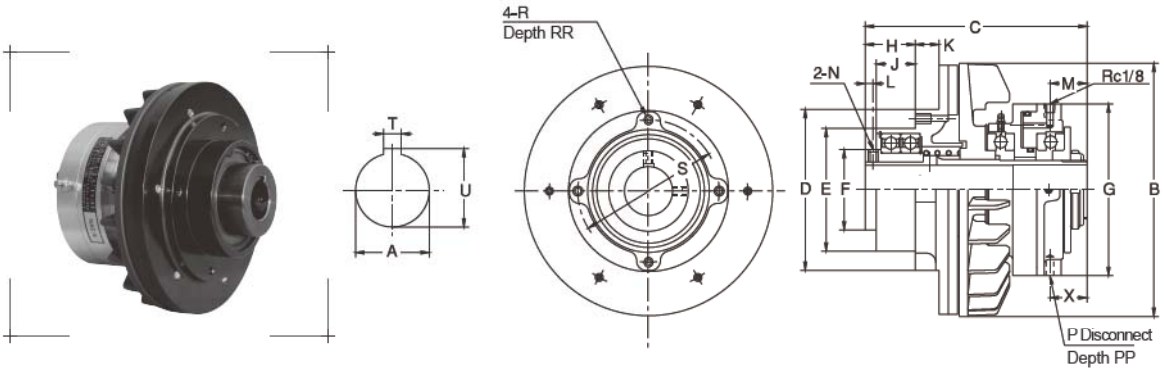




Model	Static friction torque kgm(Nm)	Main dimensions (mm)											
	When 0.6Mpa	A(H7)	B	C	D	E(h7)	F	G	H	J	K	L	M
NAC2	2.6(26)	20	115	120	90	65	35	90	24.5	17	5	5.5	18
NAC5	5(50)	25	153	142	110	76	47	98	32	18	7	6	24
NAC10	10(100)	35	205	185	140	105	67	136	38	22	17	9	30 5
NAC20	20(200)	40	244	196	150	110	70	160	46	32	20	9	25

Model	Main dimensions (mm)							Weight (approximately) (kg)
	N	R	RR	S	T	U	Key	
NAC2	M6x0.75	M6	11	80	5	22.3	5x5x25	2.9
NAC5	M6x0.75	M6	14	95	6	27.8	6x6x30	5
NAC10	M10x1.25	M8	16	125	10	38.3	10x8x40	11.8
NAC20	M10x1.25	M10	16	130	12	44	12x8x60	17.8

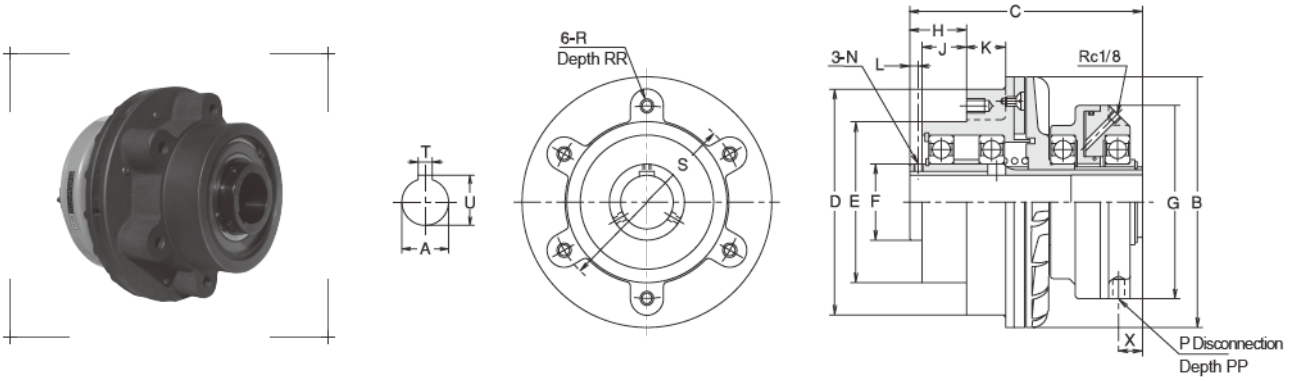
NAC40



Model	Static friction torque(N·m)	Main dimensions (mm)											
	When 0.6Mpa	A(H7)	B	C	D	E(h7)	F	G	H	J	K	L	M
NAC40	330	50	258	226	164	125	82	175	51	40	24	8	38

Model	Main dimensions (mm)										Weight (approximately) (kg)
	N	P	PP	R	RR	S	T	U	X	Key	
NAC40	M10x1.25	8	19	M10	16	145	12	53.3	38	12x8x60	21.8

NAC60



Model	Static friction torque kgm(Nm)	Main dimensions (mm)											
	When 0.6Mpa	A(H7)	B	C	D	E(h7)	F	G	H	J	K	L	N
NAC60	58.8(588)	60	280	260	252	180	85	216	63	50	44	9.5	M10x1.25

Model	Main dimensions (mm)									Weight (approximately) (kg)
	P	PP	R	RR	S	X	T	U	Key	
NAC60	13	22	M16	20	215	28	18	64.4	18x11x95	50

Technical Data

Model	Volume of air chamber (cm^3)		Allowable friction plate abrasion Vf(cm^3)	Rotation speed limit Nc (r/min)	Moment of inertia J ($kg \cdot m^2$)	
	Minimum Vn	Maximum Vo			J_1	J_2
NAC0.2	0.819	1.704	1.418	3600	2.341×10^{-5}	2.248×10^{-5}
NAC1.4	3.294	10.33	8.546	3600	2.499×10^{-4}	2.863×10^{-4}
NAC2	4.359	11.39	15.15	1800	1.37×10^{-3}	1.4×10^{-3}
NAC5	5.359	14.01	25.58	1800	4.14×10^{-3}	4.61×10^{-3}
NAC10	10.56	32.78	58.85	1800	1.673×10^{-2}	1.851×10^{-2}
NAC20	15.38	59.52	103.62	1700	4.21×10^{-2}	5.28×10^{-2}
NAC40	20.42	86.01	148.2	1700	4.21×10^{-2}	5.28×10^{-2}
NAC60	35.27	161.5	223.5	1200	1.279×10^{-1}	7.985×10^{-2}

[Note] Vn: Volume of air chamber for new friction plate occasion

Vo: Volume of air chamber before changing friction plate occasionfriction plates where the volume of the air chamber

J1: Moment of inertia of the part that rotates with V-belt pulley

J2: Moment of inertia of the part that rotates with shaft

Response Time

Unit : ms

Air pressure (MPa)	Model	3-way electromagnetic change-over valve						4-way electromagnetic change-over valve					
		t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^{0}	t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^{0}
0.3	**NAC0.2**	10	27	42	23	43	60	12	5	8	16	2	3
	NAC1.4	28	58	99	18	48	66	16	16	26	13	7	11
	NAC2	34	67	112	17	48	66	18	21	31	13	9	14
	NAC5	40	76	128	17	50	70	18	23	39	13	11	18
	NAC10	70	108	190	15	50	72	23	42	72	12	20	35
	NAC20	95	130	230	14	52	78	25	65	100	11	31	50
	NAC40	125	153	280	14	52	78	29	77	133	11	38	67
	NAC60	205	210	390	13	52	80	34	123	223	11	63	117
0.4	**NAC0.2**	8	29	44	27	52	70	11	5	7	16	2	3
	NAC1.4	24	63	104	21	56	80	14	15	23	14	8	13
	NAC2	29	74	118	19	58	78	16	19	29	14	11	16
	NAC5	35	83	135	19	60	83	16	22	36	14	13	20
	NAC10	60	116	200	17	62	85	20	40	66	12	24	39
	NAC20	90	135	235	16	62	87	25	65	99	11	31	52
	NAC40	105	165	295	16	62	90	26	73	123	11	46	77
	NAC60	175	230	410	15	63	95	30	116	206	11	76	130
0.5	**NAC0.2**	7	31	46	30	63	83	9	4	6	17	3	4
	NAC1.4	21	68	109	23	68	94	13	14	21	14	10	14
	NAC2	24	76	124	23	70	92	14	18	26	14	13	17
	NAC5	30	90	142	22	72	93	14	21	32	14	15	22
	NAC10	52	126	210	20	74	100	18	38	60	12	29	44
	NAC20	70	150	250	18	76	103	20	55	90	12	45	65
	NAC40	90	177	310	18	76	107	22	69	111	11	56	87
	NAC60	147	246	430	16	78	115	27	108	187	11	90	150

[Note] The data made under the premise: all use standard electromagnetic change-over valve,air pressure pipe(length of 200*1/4diameter),install1/8NPT medal joint, and use rapid exhaust port.

Operation precautions

1. Precautions to install clutch

When to install clutch onto shaft or when to install V-pulley/ chain wheel onto rotating disc, please don't hit clutch excessively. Make sure there is clearance during 0.5~0.8mm between disc and friction plate.

2. Convected rotation

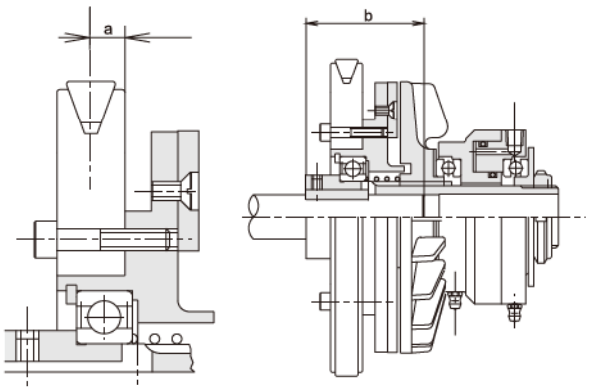
Air inlet casing and piston part can be induced to convected rotation by bearing. Using air pressure pipe (oil pressure rubber hose)with joint can prevent it happening. NAC40/60 can insert spring bolt into bolt hole of piston to prevent convected rotation.

3. Bearing lubrication

The supply period of lubricating grease of thrust ball bearing of NCA model clutch is between 1-6 months according to using occasions. Because the other bearings are sealed, there is no need to supply.

4. The installation sizes of hydraulic control equipment part of clutch and its minimum length of shaft.

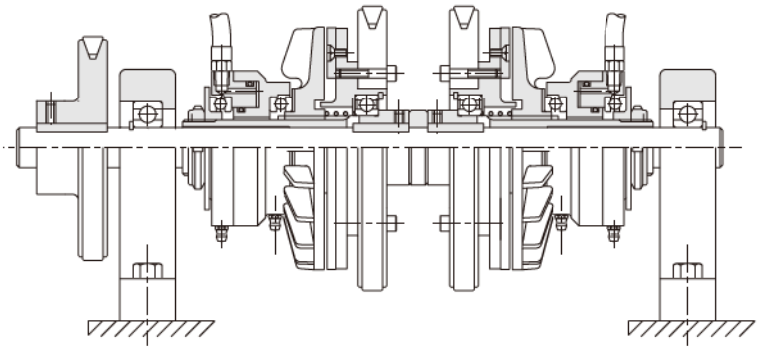
Try to install the center part of V-pulley.ect according to chart one received from end surface of hydraulic control equipment part.
When install clutch onto shaft end, the minimum length of shaft which is inserted into inner surface of hub is as below chart.



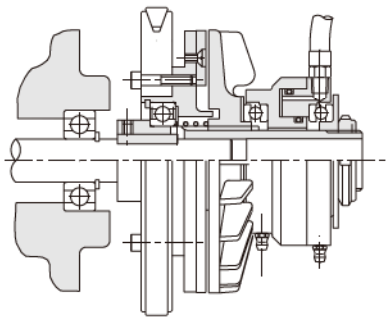
Unit:mm

Model	Allowable range a	Minimum shaft length b
NAC0.2	0～2.5	25
NAC1.4	0～5.5	38
NAC2	5～10	50
NAC5	5.5～10.5	65
NAC10	7～12	95
NAC20	0～15	100
NAC40	0～19	110
NAC60	0～32.5	128

Installation Examples



NAC model clutch installed onto the middle shaft between two machines (rotating pros and cons)



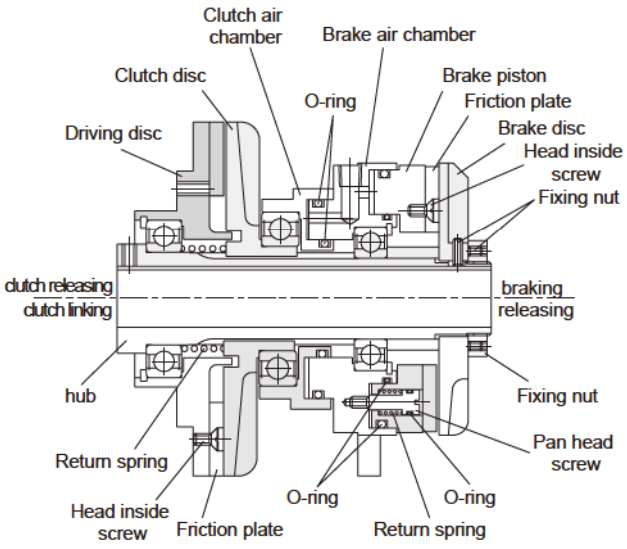
NAC model clutch assembled onto shaft end

Specialty

1. Most suitbale to install onto middle shaft
   Clutch and brake are all-in-one structure, so it is the most suitable one to install onto middle shaft.
2. Excellent heat dissipation
   There is cooling plate accomplied with disc of clutch and brake, with excellent heat dissipation. Even if used excessively, it is fine with it.
3. Simple installation
   It is simple to install, assemble pipe, and work so that it can reduce cost effectively.
4. Solid structure
   It is designed by traditional Air-Champ, so that it has a long life.

Structure·Action

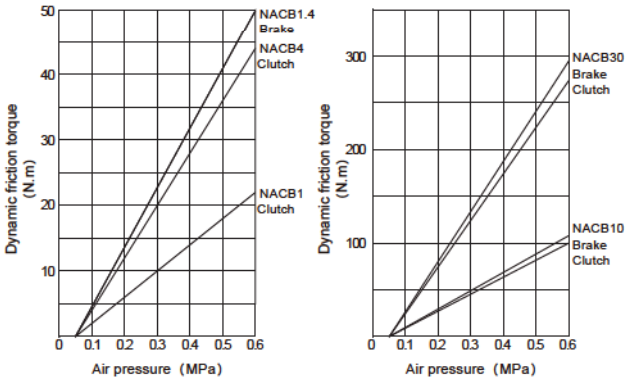
NACB structure drawing



Both of clutch and brake work separately by air pressure, after lettng out the air, releasing by return spring. Input by driving disc, output by shaft. Use flange and torque clamping rod to prevent brake air inlet casing track slipping.
If air is full of air chamber, clutch works as moving disc forward to shaft by air pressure to touch friction plate completely, and brake works as piston with friction plate touching to braking disc.

Accessory
·2 keys
·2 air pressure customized pipes with joint
R1/8×R1/8×200

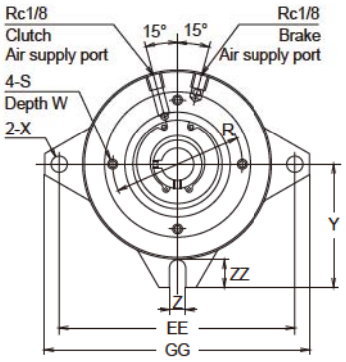
Dynamic friction torque versus air pressure

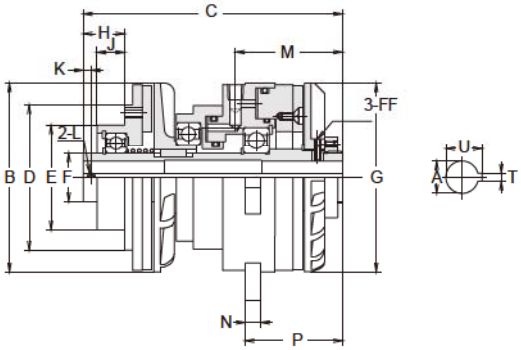


Allowable linking·Braking workload Pa

Model	Allowable linking·Braking workload Pa(W) (When N=1800r/min)	
	Clutch	Brakes
NACB1	180	380
NACB4	290	380
NACB10	550	960
NACB30	920	1640

NACB1

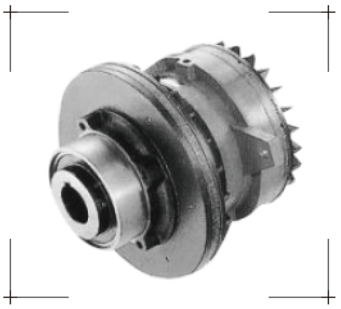


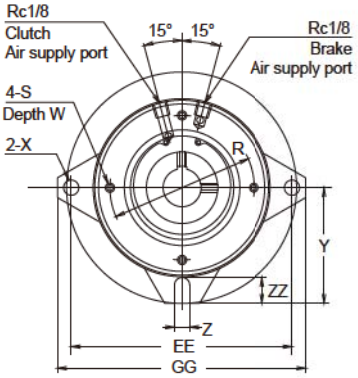


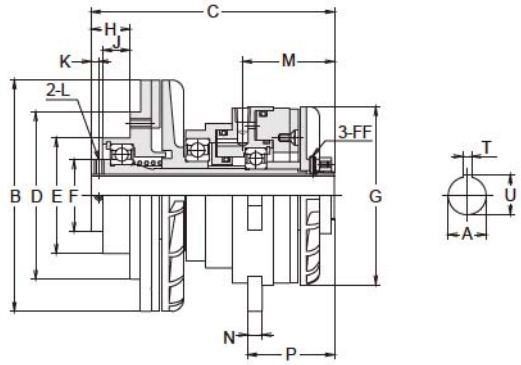
Model	Dynamic friction torque(N.m) When 0.6Mpa		Main dimensions (mm)												
	Clutch	Brake	A(H7)	B	C	D	E(h7)	F	G	H	J	K	L	M	N
NACB1	22	50	20	115	160	90	65	30	117	25.5	17	5	M5	65.8	9.5

Model	Main dimensions (mm)														Weight (kg)
	P	R	S	W	X	Y	Z	ZZ	EE	GG	FF	T	U	Key	
NACB1	60	80	M6	11	10	76	10	17	146	164	M4	5	22.3	5x5x25	6.4

NACB4,10



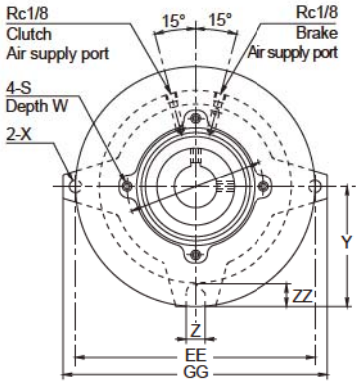


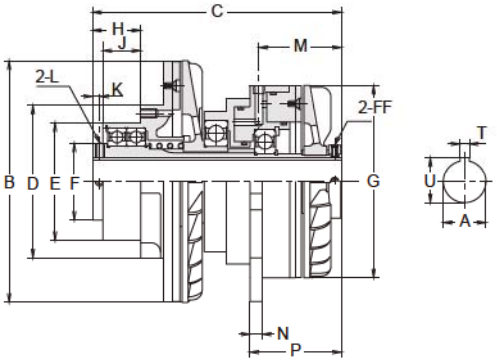


Model	Dynamic friction torque(N.m) When 0.6Mpa		Main dimensions (mm)												
	Clutch	Brakes	A(H7)	B	C	D	E(h7)	F	G	H	J	K	L	M	N
NACB4	44	50	25	152	160	110	76	47	117	25.5	18	5.2	M6x0.75	60	9.5(11)
NACB10	100	108	35	205	200	140	105	67	152	29	22	5.6	M6x0.75	70	13

Model	Main dimensions (mm)														Weight (kg)
	P	R	S	W	X	Y	Z	ZZ	EE	GG	FF	T	U	Key	
NACB4	57(59.5)	95	M6	14	10(11)	76	10	17	146(145)	164	M4	6	26.5	6x5x35	7.4
NACB10	75	125	M8	16	10	103	16	25	188	208	M6	10	38.3	10x8x40	16

NACB30





Model	Dynamic friction torque (N.m) When 0.6Mpa		Main dimensions (mm)												
	Clutch	Brake	A(H7)	B	C	D	E(h7)	F	G	H	J	K	L	M	N
NACB30	295	274	45	258	263	162	125	82	204	51	40	8	M10x125	92	13

Model	Main dimensions (mm)														Weight (kg)
	P	R	S	W	X	Y	Z	ZZ	EE	GG	FF	T	U	Key	
NACB30	96.5	145	M10	16	13	127	20	24	254	280	M6	10	48.3	10x8x50	43

Technical Data

Model	Volume of air chamber (cm^3)				Allowable friction plate abrasion Vf(cm^3)		Rotation speed Limit NcNb(r/min)	Moment of inertia J ($kg.m^2$)
	Minimum Vn		Maximum Vo					
	Clutch	Brake	Clutch	Brake	Clutch	Brake		
NACB1	4.327	10.46	11.44	23.45	15.15	15.15	1800	$2.282x10^{-3}$
NACB4	5.360	10.31	14.16	23.31	25.58	15.15	1800	$5.56x10^{-3}$
NACB10	10.38	12.64	32.58	39.24	58.85	25.58	1800	$2.262x10^{-2}$
NACB30	20.78	16.60	86.36	90.69	142.2	58.85	1800	$6.788x10^{-2}$

[Note] Vn: Volume of air chamber for new friction plate occasion; Vo:Volume of air chamber before changing friction plate necessarily occasion.

Response Time

Unit : ms

Air pressure (MPa)	Model	3-way electromagnetic change-over valve						4-way electromagnetic change-over valve					
		t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^{0}	t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^{0}
0.3	**NACB1**	34 56	67 92	112 160	17 16	48 50	66 70	18 21	21 33	31 55	13 12	9 15	4 26
	NACB4	40 56	76 92	128 160	17 16	50 50	70 70	18 21	23 33	39 55	13 12	11 15	18 26
	NACB10	70 87	108 122	190 212	15 15	50 51	72 75	23 26	42 52	72 87	12 12	20 24	35 43
	NACB30	125 148	153 170	280 307	14 14	52 52	78 78	29 31	77 88	133 150	11 11	38 43	67 79
0.4	**NACB1**	29 48	74 100	118 168	19 18	58 62	78 85	16 19	19 32	29 51	14 13	11 18	16 29
	NACB4	35 48	83 100	135 168	19 18	60 62	83 85	16 19	22 32	36 51	14 13	13 18	20 29
	NACB10	60 72	116 128	200 225	17 18	62 62	85 90	20 21	40 47	66 78	12 12	24 29	39 48
	NACB30	105 120	165 183	295 320	16 16	62 64	90 95	26 26	73 81	123 135	11 11	46 52	77 88
0.5	**NACB1**	24 42	76 108	124 178	23 21	70 74	92 100	14 17	18 30	26 46	14 13	13 22	17 33
	NACB4	30 42	90 108	142 178	22 21	72 74	93 100	14 17	21 30	32 46	14 13	15 22	22 33
	NACB10	52 64	126 142	210 232	20 20	73 73	100 104	18 20	38 44	60 70	13 13	29 35	44 55
	NACB30	90 109	177 198	310 337	18 18	75 76	107 108	22 24	69 75	111 120	12 12	56 63	87 101

[Note] The first half of response time is for clutch, the second for brake. The data made under premise:air pressure pipe(length of 200*1/4diameter), install1/8NPT medal joint, and use rapid exhaust port.

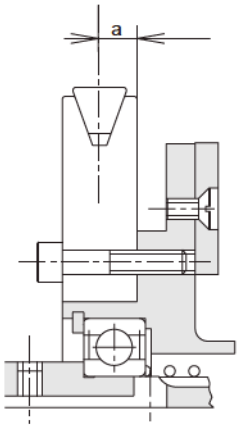
Operation precautions

1.Precautions to install clutch

When to install clutch onto shaft or when to install V-belt pulley/ chain wheel onto rotating disc, please don't hit clutch excessively. Make sure there is clearance during 0.5~0.8mm between disc and friction plate.

2. Installation dimensions to control device part

The center of V-belt pulley is to install from the end of control device part to allowable range as shown in below chart.



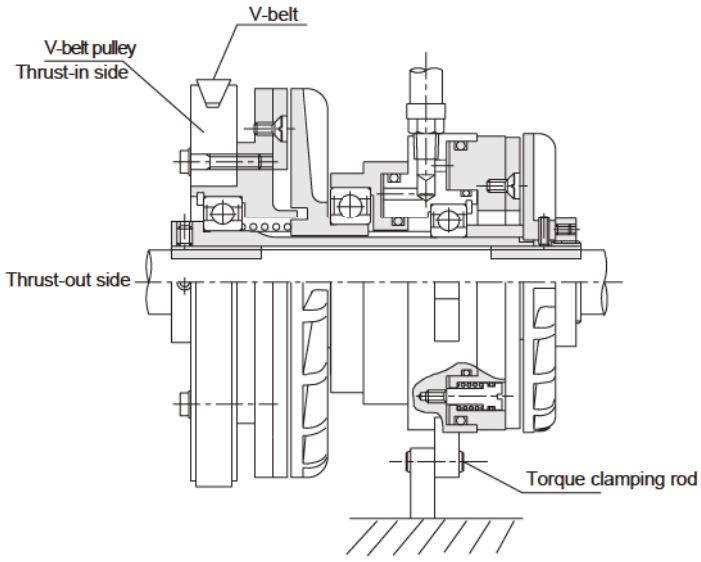
Unit:mm

Model	Allowable range a
NACB1	5~10
NACB4	5.5~10.5
NACB10	7~12
NACB30	0~19

3. To install NACB model onto machine

Maintaining torque is to insert clamping rod into supporting hole (two parts) attached to brake air chamber and gap part of brake body.
Brake air chamber moves forward a little onto shaft in the running, so extra length about 2-4mm needs to be kept for clamping rod.

Installation Example



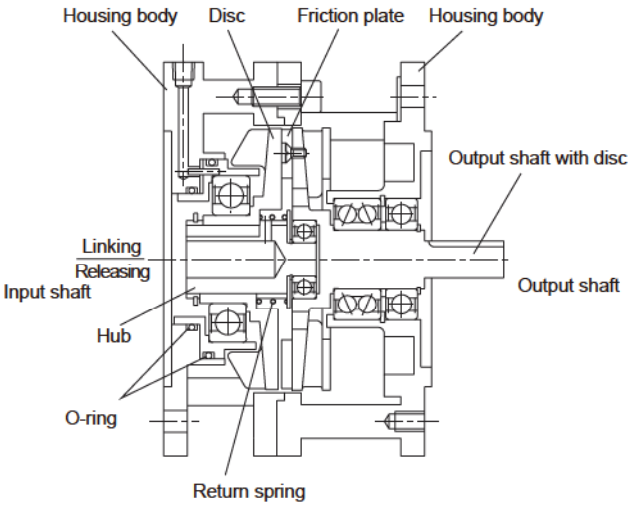
NACB model group installed onto middle shaft, using torque clamping rod to prevent sliding

Specialty

1. Linked directly to motor with flange
   Due to its design to link to motor directly, it's easy to be motor for clutch.
2. Thrust-in shaft attached with easy installation
   It can cut down cost by reducing installation parts and time to assemble them.
3. Excellent ventilation structure make durable silicon remarkable.
   It has good heat dissipation and long life due to its using machine rated disc.
4. Better response time
   It has quick response time, so it can be used in high frequency.

Structure·Action

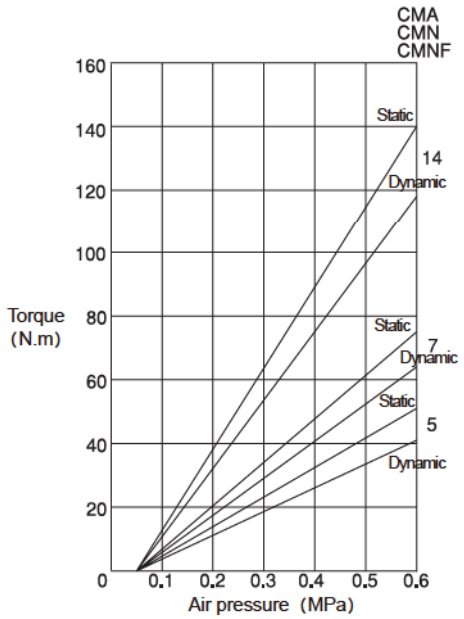
CMA model structure drawing



Template type clutch is to link by air pressure, to release by return spring. Disc with cooling fins moves forward to spline shaft by air pressure to touch friction plate completely.
Output shaft with disc is assembled to all-in-one structure.
CMA model can link directly to motor with standrad flange. The output side of clutch has the same size of motor with flange.
CMN model can install input shaft to CMA model, and input thrust by belt wheel and coupler.
CMNF model can install onto machine table in the shape of output and input shaft group, and be fixed by bolts.

Accessory
·Key slot
·Air pressure customized pipes with joint R1/8×R1/8×200

Torque versus air pressure

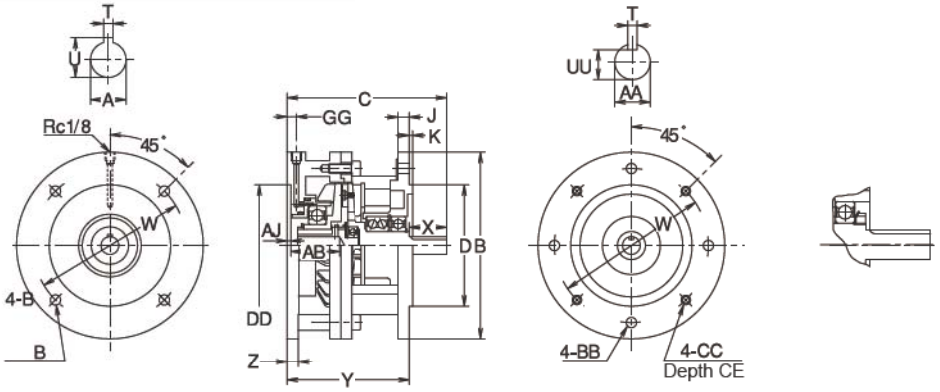


Allowable linking·Braking workload Pa

Model	Allowable linking·Braking workload Pa (W)	
	1200r/min	1800r/min
CMA5	294	324
CMN5		
CMNF5		
CMA7	368	390
CMN7		
CMNF7		
CMA14	522	566
CMN14		
CMNF14		

CMA

● Main dimensions table

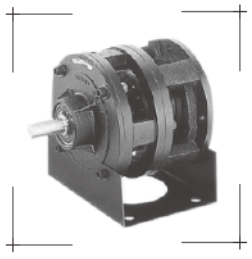


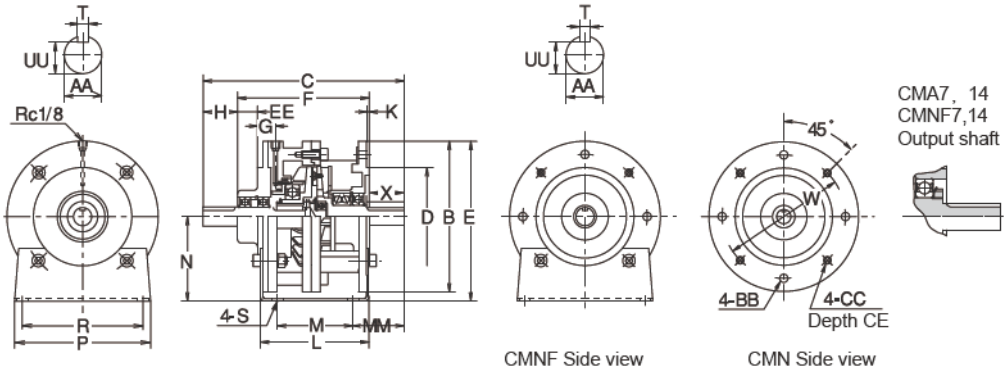
Model	Static friction torque (N·m)	Main dimensions (mm)											
	When 0.6MPa	A(G7)	AA(j6)	B	C	D(j7)	DD(G7)	J	K	W	X	Y	Z
CMA5-119MN	51	19	19	200	172	130	130	12	3.5	165	40	132	12
CMA5-124MN	51	24	24	200	182	130	130	12	3.5	165	50	132	12
CMA7-128MN	76	28	28	250	250	180	180	16	4	215	60	190	16
CMA14-138MN	140	38(F7)	38(k6)	300	270	230	230	16	4	265	80	190	16

Model	Main dimensions (mm)										Weight (kg)
	AB	AJ	BB	CC	CE	GG	T	U	UU	Key slot	
CMA5-119MN	50	4	11	M10	15	10	6	21.8	15.5	6x6x28	17.6
CMA5-124MN	50	4	11	M10	15	10	8	27.3	20	8x7x35	17.6
CMA7-128MN	67	5	15	M12	20	13.5	8	31.3	24	8x7x50	30.3
CMA14-138MN	77	5	15	M12	20	13.5	10	41.0	33	10x8x63	41

CMN&CMNF

● Main dimensions table





Model	Static friction torque (N·m)	Main dimensions (mm)											
	When 0.6MPa	AA(j7)	B	C	D(j7)	E	F	G	H	K	L	M	MM
CMN5-124MN,CMNF5-124MN	51	24	200	268	130	212	176	24	45	3.5	146	100	70
CMN7-128MN,CMNF 7-128MN	76	28	250	369	180	285	245	26.5	66.5	4	207	145	87.5
CMN14-138MN,CMNF14-138MN	140	38(k7)	300	397	230	310	245	27.5	75	4	207	145	107

Model	Main dimensions (mm)													Weight (kg)
	N	P	R	S	W	X	BB	CC	CE	EE	T	UU	Key slot	
CMN5-124MN,CMNF5-124MN	112	180	160	15	165	50	11	M10	15	26.5	8	20	8x7x35	17.6
CMN7-128MN,CMNF 7-128MN	160	280	220	19	215	60	15	M12	20	38.5	8	24	8x7x50	35.5
CMN14-138MN,CMNF14-138MN	160	280	220	19	265	80	15	M12	20	37.5	10	33	10x8x63	51

Technical Data

Model	Volume of air chamber (cm³)		Allowable linking workload Pa (W)		Allowable friction plate abrasion (cm³)	Rotational speed limit Nc (r/min)	Moment of inertia J (kg·m²)
	Minimum Vn	Maximum Vo	1200r/min	1800r/min			
CMA5,CMNF5	4.016	13.69	294	324	16.45	1800	2.3×10^{-3}
CMA7,CMNF7	5.032	17.34	368	390	25.58	1800	5.223×10^{-3}
CMA14,CMNF14	6.769	31.06	522	566	58.85	1800	1.65×10^{-2}

[Note] Vn: Volume of air chamber for new friction plate occasion
Vo: Volume of air chamber before changing friction plate necessarily occasion

Response Time

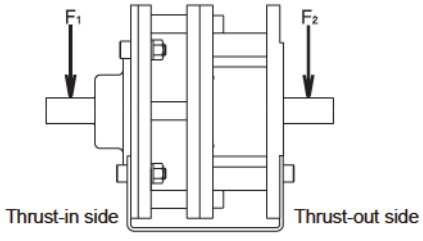
Unit : ms

Air pressure (MPa)	Model	3-way electromagnetic change-over valve						4-way electromagnetic change-over valve					
		t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^{0}	t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^{0}
0.3	CMA5,CMNF5	51	89	149	17	49	70	22	30	48	12	13	23
	CMA7,CMNF7	63	100	174	16	49	73	24	38	60	12	16	29
	CMA14,CMNF14	86	118	208	15	51	73	26	49	80	12	22	42
0.4	CMA5,CMNF5	42	91	152	20	60	85	19	28	43	14	15	25
	CMA7,CMNF7	52	103	173	18	62	85	21	34	55	13	19	32
	CMA14,CMNF14	71	126	217	17	62	88	22	46	78	12	28	46
0.5	CMA5,CMNF5	38	103	164	22	71	97	17	25	38	13	19	29
	CMA7,CMNF7	46	116	191	21	71	101	18	32	48	13	23	37
	CMA14,CMNF14	63	138	228	20	73	101	20	42	64	13	32	54

[Note] The data made under the premise: all use NEXEN company's electromagnetic change-over valve,air pressure pipe(length of 200*1/4diameter),install 1/8NPT medal joint, and use rapid exhaust port.

● Allowable shaft load

Load on output and input shaft of CMNF model. Please use under allowable load as shown in blew chart. Allowable load refers to the load that works on center of output and input shaft under rotation speed of 1000r/min, and life time 6000 hours for bearings.



Model	Allowable load (N)	
	F_1	F_2
CMNF5	640	780
CMNF7	1180	1030
CMNF14	1130	1180

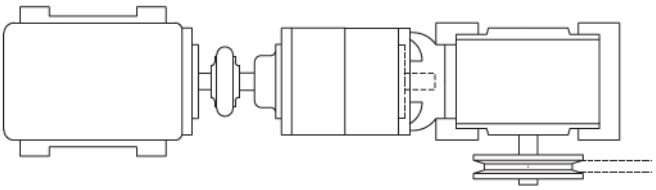
● The relationship with standard flange motor

Standard flange motor				Applicable clutch Model
Rated output (kW)	Simultaneous rotation speed (r/min) 50Hz	Simultaneous rotation speed (r/min) 60Hz	Body Type	
0.4	1000	1200	80	CMA5-119MN
0.75	1500	1800		
	1000	1200	90L	CMA5-124MN
1.5	1500	1800		
	1000	1200	100L	CMA7-128MN
2.2	1500	1800		
	1000	1200	112M	
3.7	1500	1800		
	1000	1200	132S	CMA14-138MN
5.5	1500	1800		
	1000	1200	132M	
7.5	1500	1800		

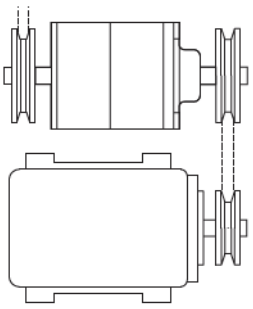
Operation precautions

1. Installation to motor and reducer
   Install CMA model onto motor.
   Install CMA model onto reducer.
   Note) Brush oil on motor's shaft and inside diameter. It can reduce friction abrasion induced by rotation for shaft and inside diameter.
2. When install pulley onto output and input shaft, please don't hit excessively.
3. When install in butt joint, please pay full attention to aligning the gear heart. Flexible couplers are recommended under this situation.

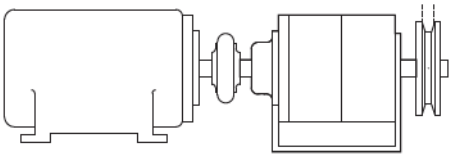
Installation Examples



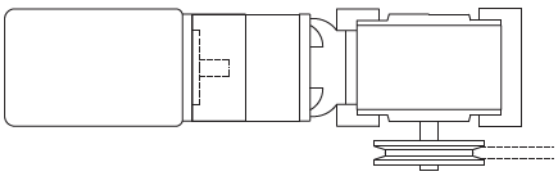
CMN model installed directly onto reducer by linking coupler and motor



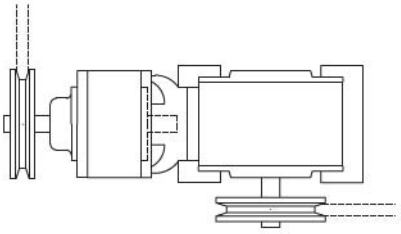
CMNF model linked to motor by V-belt pulley



CMNF model linked by coupler and motor



CMA model linked directly by reducer and motor with flange



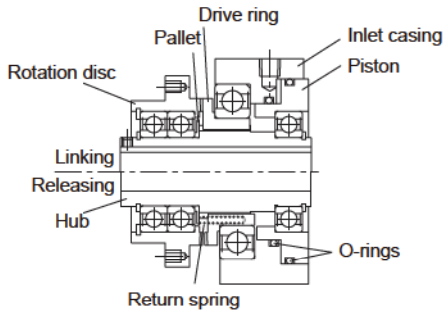
CMN model installed directly to reducer

Specialty

1. High torque without slipping
   Torque is transmitted by gear bite, and though small it is, it has no slipping but great torque.
2. A certain value basicly for transmitted torque
   Transmitted torque has no connection with rotation number, so it is a certain value not influenced by installation deviation.
3. Simple installation
   When install, do not need to adjust gear heart, due to its all-in-one structure.
4. Excellent response performance
   Both linking and releasing are instant action, gear rotation has no abrasion but longer life.
5. Can be linked in high speed
   Because it works by air pressure, compared to electromagnetic clutch, it can reach links in high speed.
6. Can be used either for wet type or dry type

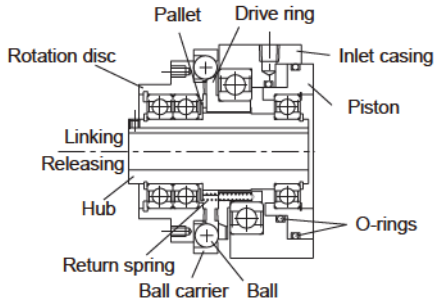
Structure·Action

CTHP model structure drawing



CTHP (gear model) clutch is linked firmly by the bite from 2 discs with full belt gear under air pressure working without slipping.

CSPP model structure drawing



CSPP (single location model) clutch is same as CTHP model. It is a combination by same gear part and ball-like halting equipment. It can be linked firmly without slipping in appointed position.

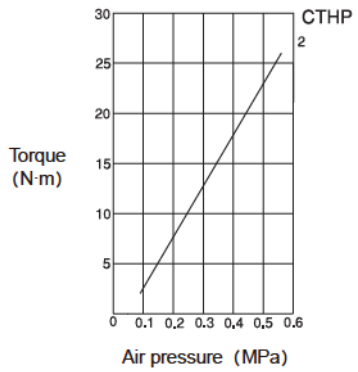
Ball-like halting equipment

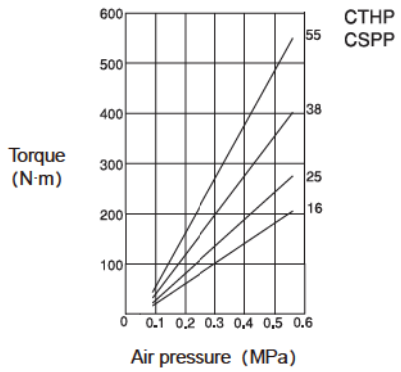
The ball goes into many equipped unequivalent bags and rotates one time.

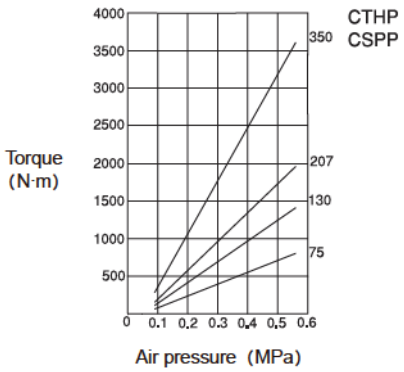
Link gear part in one position.

It has high durability and can work in high speed.

Torque versus air pressure







Relative rotation speed limit in linking

When use CTHP model

In occasion of linking during rotation, it can be restricted by loaded torque, comparing to rotation speed, moment of inertia.

In the beginning, model and air pressure are decided by using conditions. Whether in the rotation speed limit or not is decided by the formula(1).

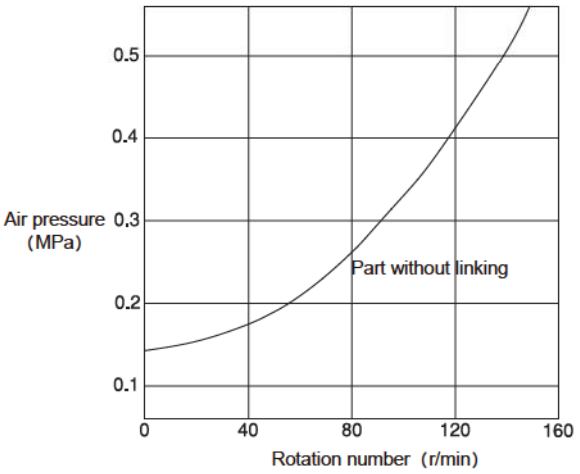
$$N=\frac{K}{(P-0.152)\sqrt{J}} \quad \cdots\cdots\cdots\cdots (1)$$

In this formula N: N: Relative rotation speed limit r / min
K: Fixed number(Refer to the following table)
P: Air pressure MPa
J: Moment of inertia of the output side kg·m²

Linking in static occasion, there is no need to consider moment of inertia, loaded torque. Besides, there is no speed limit in releasing.

When use CSPP model

Calculate air pressure by combining rotation number and below chart and then confirm by formula(1).



Model	CTHP2	CTHP16 CSPP16	CTHP25 CSPP25	CTHP38 CSPP38	CTHP55 CSPP55	CTHP75 CSPP75	CTHP130 CSPP130	CTHP207,X CSPP207	CTHP350 CSPP350
Fixed number K	34	29	25	22	20	18	15	13	11

Limited rotation number after linking

Limited rotation number after linking is decided by air pressure and bearing life.

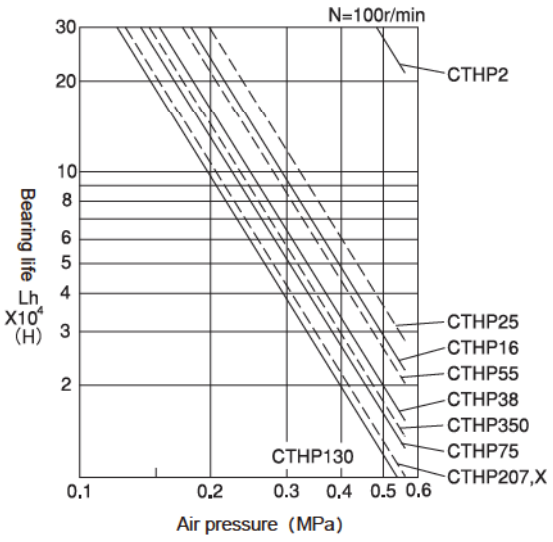
The lower air pressure is, and the longer bearing life is, the higher limited rotation number is.

Below is the rotation number under the situation that air pressure is 0.3MPa, and bearing life is 8000-10000 hours (extending linking time).

Under 0.3MPa, it can get pretty highly limited rotation number, which should be controlled under the maximum speed 1800r/min (CTHP350 and CSPP350 are under 1300r/min)

When you go through some occasions like: bearing life is above 8000-10000 hours and high-speed rotation is (700-800-min), please contact with our company.

Model	CTHP2	CTHP16 CSPP16	CTHP25 CSPP25	CTHP38 CSPP38	CTHP55 CSPP55	CTHP75 CSPP75	CTHP130 CSPP130	CTHP207,X CSPP207	CTHP350 CSPP350
Limited rotation number after linking (r/min)	1800	1500	1500	1000	1000	800	700	700	700



Pressure and bearing life versus limited rotation number

Model, air pressure and bearing life are decided by using conditions.

Calculate bearing life from model and air pressure used according to the left chart while deciding the limited rotation number after linking according to the below formula.

$$\text{Limited rotation number after linking} = 100\times\frac{\text{Bearing life Lh (when 100r/min)}}{\text{Expected bearing life}}$$

For example)

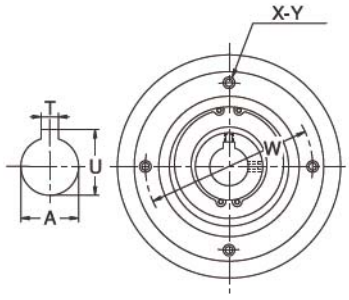
CTHP55 model expects its bearing life 6000 hours when air pressure is 0.3MPa. According to the left chart, bearing life is about 8400 hours when air pressure is 0.3MPa.

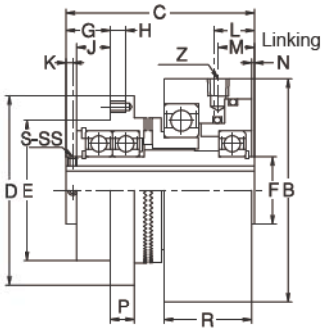
$$\text{Limited rotation number after linking} = 100\times\frac{84000}{6000} = 1400\text{r/min}$$

CTHP

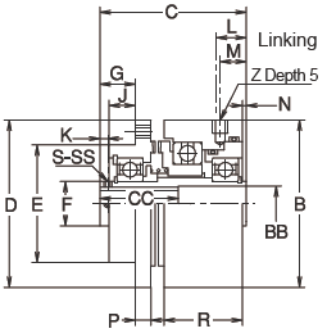
● Main dimensions table

CTHP





CTHP 2



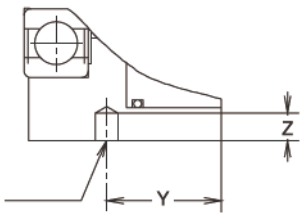
Model	Torque (N·m)	Main dimensions (mm)												
	0.56MPa at	A(H7)	B	C	D	E(h7)	F	G	H	J	K	L	M	N
CTHP 2	26	10	64	56	64	45	17	13.5	6	10	3	11.5	10	1.5
CTHP 16	205	20	116	98	98.5	73	35	23	8	17.5	3.5	21.1	18.9	1.5
CTHP 25	274	25	128.5	105	114.5	89	45	27	8	20	3.5	21.2	19.2	1.8
CTHP 38	402	30	135	106	124	89	45	24	12	17.5	3.5	19.5	17.5	1
CTHP 55	550	35	154	117	136.5	105	60	28	11	21.5	3.5	21.8	19.8	3.4
CTHP 75	804	40	166.5	120	152.5	114	65	29	13	20	4	22.7	20.6	3.5
CTHP130	1411	50	192	136	178	133	75	30	14	22	4	26.7	24.6	5.7
CTHP207,X	1960	60	211	154	209	145	85	42	14	32	5	28.5	26.4	5.3
CTHP350	3610	75	235	220	242	190	95	76	20	48	16	59.1	57	7.6

Model	Main dimensions (mm)													Weight (kg)
	P	R	S	SS	W	X	Y	Z	BB	CC	T	U	Key	
CTHP 2	6	30	2	M3	55	3	M5	M5	13.5	30	3	11.4	3x3x30	0.6
CTHP 16	12.5	45.5	2	M5	87	4	M6	Rc1/8	—	—	6	22.8	6x6x95	3.2
CTHP 25	14.7	45.6	2	M5	103	4	M6	Rc1/8	—	—	8	28.3	8x7x95	4.5
CTHP 38	17	47.5	2	M5	108	4	M6	Rc1/8	—	—	8	33.3	8x7x95	5.4
CTHP 55	18.7	49.6	2	M5	120	4	M6	Rc1/8	—	—	10	38.3	10x8x95	7.2
CTHP 75	21.2	49.6	2	M6	133	4	M8	Rc1/8	—	—	12	43.3	12x8x95	8.6
CTHP130	25.2	56	2	M6	156	4	M8	Rc1/8	—	—	16	54.3	16x10x130	13.5
CTHP207,X	24.2	64	2	M6	180	6	M10	Rc1/4	—	—	18	64.4	18x11x140	20.3
CTHP350	30	85.6	3	M16	216	6	M12	Rc1/4	—	—	18	79.4	18x11x200	31.8

The pin hole size for stopping rotation

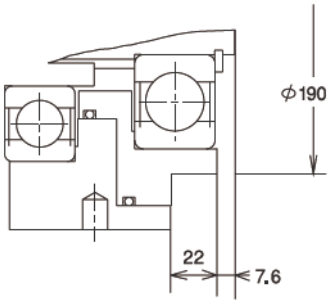
The following models are holes towards a 180° pipe hole

Model	X	Y	Z
CTHP 207, X	10	27	12
CTHP350	10	30	12



CTHP 350 Part of Piston·Cylinder

Shape of the part of Piston·Cylinder is as following

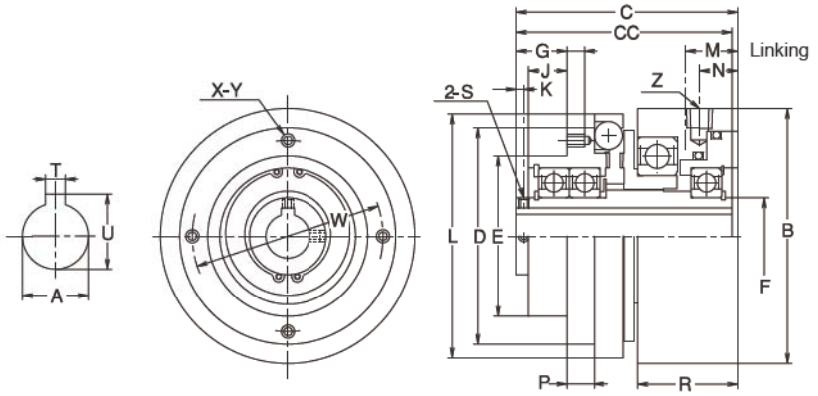


CTHP700 (special customized product)

Our company can make more larger gear pneumatic clutches, and consultations are welcomed.
CTHP700 6760N·m at 0.56MPa(IDØ 100, ODØ310, Width266)

CSPP

● Main dimensions table



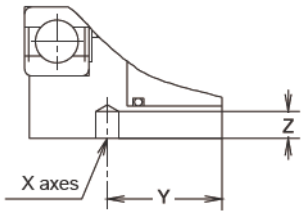
Model	Torque (N·m)	Main dimensions (mm)											
	0.56MPa at	A(H7)	B	C	CC	D	E(h7)	F	G	H	J	K	L
CSPP 16	205	20	116	100	98	98.5	73	35	23	8	17.5	3.5	111
CSPP 25	274	25	128.5	107	105	114.5	89	45	27	8	20	3.5	124
CSPP 38	402	30	135	109	106	124	89	45	24	11	17.5	3.5	137
CSPP 55	550	35	154	118	117	136.5	105	60	28	11	21.5	3.5	149
CSPP 75	804	40	166.5	120.5	120	152.5	114	65	29	13	20	4	162
CSPP130	1411	50	192	135	136	178	133	75	30	14	22	4	187
CSPP207	1960	60	211	152.5	154	209	145	85	42	14	32	5	214
CSPP350	3610	75	235	220	220	242	190	95	76	20	48	16	238

Model	Main dimensions (mm)												Weight (kg)
	M	N	P	R	S	W	X	Y	Z	T	U	Key	
CSPP 16	23.1	17	12.5	45.5	M5	87	4	M6	Rc1/8	6	22.8	6x6x95	3.2
CSPP 25	23.2	17	14.7	45.6	M5	103	4	M6	Rc1/8	8	28.3	8x7x95	4.5
CSPP 38	24.1	18	17	47.5	M5	108	4	M6	Rc1/8	8	33.3	8x7x95	5.4
CSPP 55	24.4	18	18.7	49.6	M5	120	4	M6	Rc1/8	10	38.3	10x8x95	7.2
CSPP 75	23	17.5	21.2	49.6	M6	133	4	M8	Rc1/8	12	43.3	12x8x95	9
CSPP130	26.3	20	25.2	56	M6	156	4	M8	Rc1/8	16	54.3	16x10x130	13.5
CSPP207	26.9	21	24.2	64	M6	180	6	M10	Rc1/4	18	64.4	18x11x140	20.3
CSPP350	59.6	54.6	30	89.8	3-M16	216	6	M12	Rc1/4	18	79.4	18x11x200	31.8

The pin hole size for stopping rotation

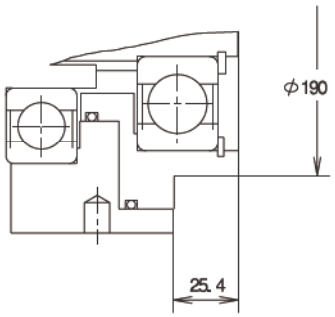
The following models are holes towards a 180° pipe hole

Model	X	Y	Z
CSPP 207	10	27	12
CSPP 350	10	30	12



CSPP 350 Part of Piston·Cylinder

Shape of the part of Piston·Cylinder is as following



Technical Data

Model	Volume of air chamber (cm^3)	Gear tooth number	Rotation speed limit Nc (r/min)	Moment of inertia J ($kg \cdot m^2$)	
				J_1	J_2
CTHP 2	0.70	100	1800	1.065×10^{-4}	3.083×10^{-5}
CTHP 16	7.19	91	1500	1.28×10^{-3}	4.068×10^{-4}
CTHP 25	8.06	106	1500	2.548×10^{-3}	8.515×10^{-4}
CTHP 38	10.47	122	1000	3.913×10^{-3}	1.094×10^{-3}
CTHP 55	12.50	137	1000	5.323×10^{-3}	2.708×10^{-3}
CTHP 75	16.29	152	800	9.62×10^{-3}	3.565×10^{-3}
CTHP130	23.76	183	700	2.081×10^{-2}	8.173×10^{-3}
CTHP207,X	28.37	214	700	3.965×10^{-2}	1.838×10^{-2}
CTHP350	43.38	244	700	7.51×10^{-2}	2.903×10^{-2}
CSPP 16	18.07	91	1500	1.893×10^{-3}	6.788×10^{-4}
CSPP 25	20.25	106	1500	3.365×10^{-3}	1.369×10^{-3}
CSPP 38	26.30	122	1000	4.793×10^{-3}	1.98×10^{-3}
CSPP 55	31.41	137	1000	6.92×10^{-3}	4.333×10^{-3}
CSPP 75	40.90	152	800	1.111×10^{-2}	5.34×10^{-3}
CSPP130	59.67	183	700	2.705×10^{-2}	1.111×10^{-2}
CSPP207	77.73	214	700	4.9×10^{-2}	1.992×10^{-2}
CSPP350	105.3	244	700	9.605×10^{-2}	3.693×10^{-2}

[Note] J_1: Moment of inertia of common rotation part with pulley, ect.
J_2: Moment of inertia of common rotation part with shaft.

Response Time

CTHP

Unit: ms

Model	Air pressure (MPa)	3-way valve		4-way valve		Air pressure (MPa)	3-way valve		4-way valve		Air pressure (MPa)	3-way valve		4-way valve	
		t_1	t_3	t_1	t_3		t_1	t_3	t_1	t_3		t_1	t_3	t_1	t_3
CTHP 2	0.3	18	13			0.4	13	13			0.5	12	17		
CTHP 16		42	17	20	13		35	20	17	13		31	23	16	13
CTHP 25		46	17	21	13		38	19	18	13		34	22	16	13
CTHP 38		57	16	22	12		48	18	20	13		42	21	18	13
CTHP 55		67	16	24	12		56	18	21	12		49	21	19	12
CTHP 75		84	15	26	12		70	17	22	12		62	20	20	12
CTHP130		116	14	29	11		98	16	25	12		85	19	23	12
CTHP207,X		127	14	30	11		107	16	26	11		94	19	23	12
CTHP350		158	14	34	11		133	16	30	11		116	18	27	11

[Note] The data made under the premise: all use American NEXEN company's electromagnetic change-over valve,air pressure pipe(length of 200*1/4 diameter), install1/8NPT medal joint, and use rapid exhaust port.

CSPP model

CSPP(SINGLE LOCATION MODEL) linking time is determined by relative rotation number of structure, input and output.

When ball and bag reach till the linking position, it may have the maximum delay amount to one circle rotation time.

Operation precautions

1. Convected rotation

   Cylinder and piston part can induce convected rotation under bearing work, please use affiliated and matched pipe with joint (oil pressure, rubber pipe) to prevent it happening. CTHP207, x, 350, CSPP 207,350, ect., according to using condition, insert spring into bolt hole of one part of inlet casing to prevent convected rotation happening. Please install after confirming that the part of inlet casing can work smoothly.

2. Tractive torque

   In the structure of CTHP model, it will induce convected rotation when reach the linking position. It can be used with brake to prevent convected rotation happening when it happens on passive side. Tractive torque is under 10% of clutch conveyed torque.

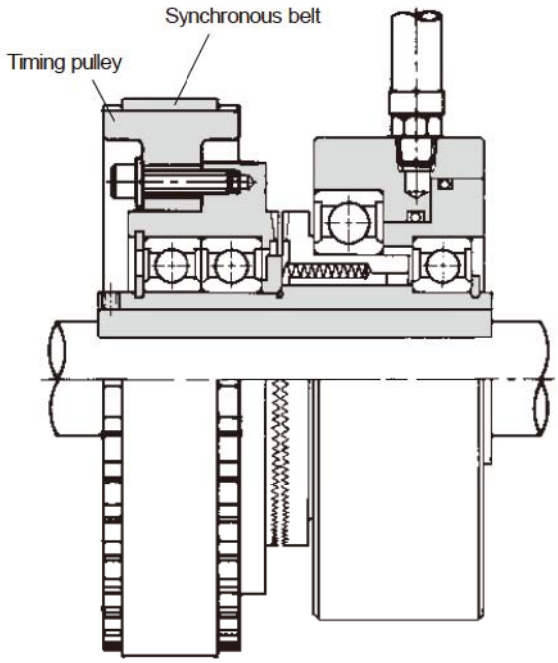
3. Installation precautions

   When install clutch onto shaft, please press the hub. Do not give excessive hit on cylinder or piston. When install timing pulley and timing gear, use cylinder and piston to bear, and do not hit them.

4. Protection at overload

   As for CTHP and CSPP models, if they work overloadly, it will trip. After tripping, if keep it running as before, gear part and ball stopping part may be damaged, so please stop running.

Installation Examples



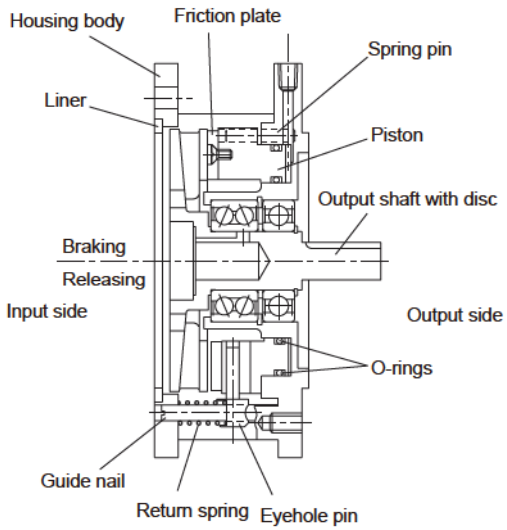
CTHP(gear model) clutch installed with synchronous belt and pulley

Specialty

1. Linked directly to motor with flange
   It is simple because it has the structure that can be linked directly to the motor with standard flange. (BMA model)
2. Simple installation
   It can reduce cost because of economized components and fewer assembly hours.
3. Excellent ventilation structure and remarkable durablity
   It has great heat dissipation due to the use of machine-type rated disc.
4. Better response performance
   It can be used frequently due to its quick response.

Structure·Action

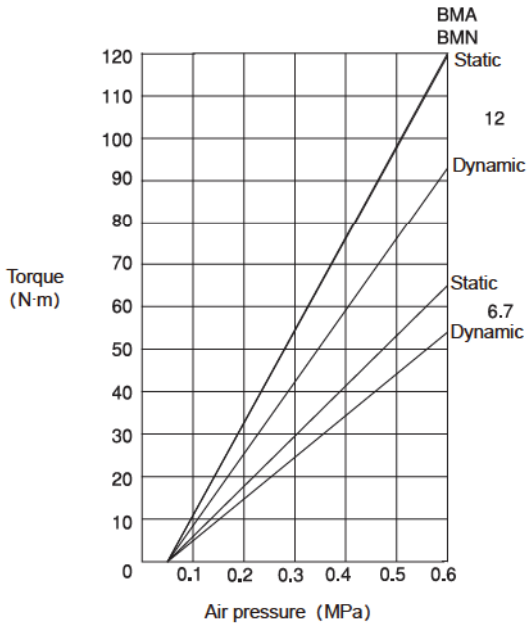
BMA7 structure drawing



BMA model and BMN model brakes can be used directly through connection with reducer and flange disc with motor.
It brakes by air pressure, and releases by return spring.

Accessory
· 2 keys
· 2 air pressure customized pipes with joint R1/8×R1/8×200

Torque versus air pressure

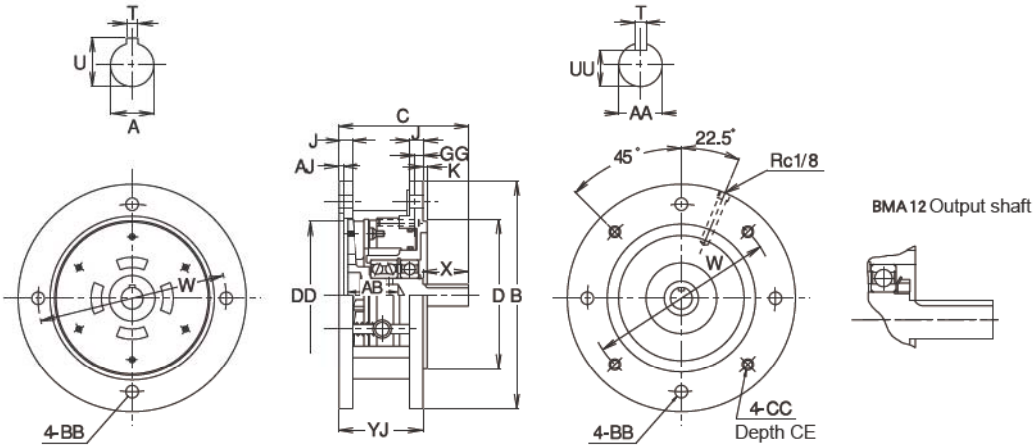


Allowable braking effort Pa

Model	Allowable braking effort Pa (W)	
	1200(r/min)	1800(r/min)
BMA6,7 BMN6	150	170
BMA12 BMN12	220	240

BMA

● Main dimensions table

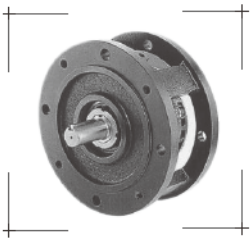


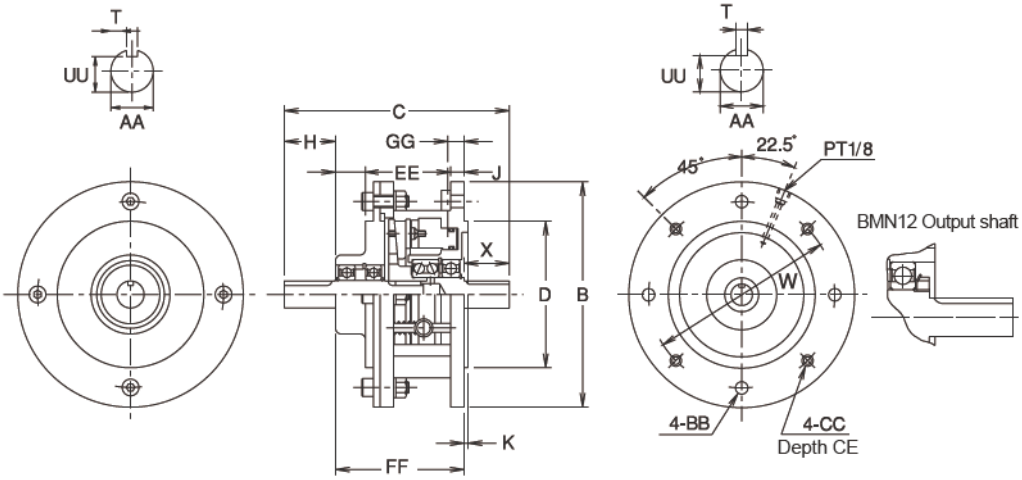
Model	Static friction torque(N·m)	Main dimensions (mm)										
	When 0.6Mpa	A(G7)	AA(j6)	B	C	D(j7)	DD(G7)	J	K	W	X	YJ
BMA7-119MN	65	19	19	200	114.5	130	130	12	3.5	165	40	74.5
BMA6-124MN	65	24	24	200	124.5	130	130	12	3.5	165	50	77
BMA12-128MN	120	28	28	250	166	180	180	16	4	215	60	106

Model	Main dimensions (mm)									Weight (kg)
	AB	AJ	BB	CC	CE	GG	T	U	UU	Key	
BMA7-119MN	43	4	11	M10	15	7	6	21.8	15.5	6x6x28	8
BMA6-124MN	55	4	11	M10	15	10	8	27.3	20	8x7x35	8
BMA12-128MN	60	5	15	M12	20	18	8	31.3	24	8x7x50	17.1

BMN

● Main dimensions table





Model	Static friction torque (N·m)	Main dimensions (mm)										
	0.6MPa Time	AA(j7)	B	C	D(j7)	H	J	K	W	X	BB	CC
BMN6-124MN	65	24	200	211	130	45	12	3.5	165	50	11	M10
BMN12-128MN	120	28	250	285	180	66.5	16	4	215	60	15	M12

Model	Main dimensions (mm)							Weight (kg)
	CE	EE	FF	GG	T	UU	Key	
BMN6-124MN	15	26.5	117.5	10	8	20	8x7x35	11.4
BMN12-128MN	20	38.5	157.5	18	8	24	8x7x50	22.3

Technical Data

Model	Volume of air chamber (cm^3)		Allowable braking workload Pa (W)		Allowable friction plate abrasion (cm^3)	Rotation speed limit Nc (r/min)	Moment of inertia J ($kg·m^2$)
	Minimum Vn	Maximum Vo	1200r/min	1800r/min			
BMA6,7 BMN6	9.015	22.82	150	170	16.45	1800	2.3×10^{-3}
BMA12 BMN12	20.91	42.78	220	240	25.58	1800	5.223×10^{-3}

[Note] Vn: Volume of air chamber for new friction plate occasion
Vo: Volume of air chamber before changing friction plate necessarily occasion

Response Time

Unit: m

Air pressure (MPa)	Model	3-way electromagnetic change-over valve						4-way electromagnetic change-over valve					
		t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^0	t_1	t_2^{90}	t_2^{100}	t_3	t_4^{10}	t_4^0
0.3	**BMA6,7 BMN6**	63	100	170	16	49	73	24	38	62	12	16	30
	BMA12 BMN12	93	126	224	15	52	75	27	55	93	11	25	46
0.4	**BMA6,7 BMN6**	52	102	174	18	62	85	21	34	55	13	19	33
	BMA12 BMN12	76	135	234	16	62	90	23	51	86	12	32	53
0.5	**BMA6,7 BMN6**	46	116	187	21	71	101	18	32	50	13	24	38
	BMA12 BMN12	69	146	246	20	75	104	21	46	74	12	37	59

[Note] The data made under the premise: all use American NEXEN company's electromagnetic change-over valve,air pressure pipe (length of 200*1/4diameter),install1/8NPT medal joint, and use rapid exhaust port.

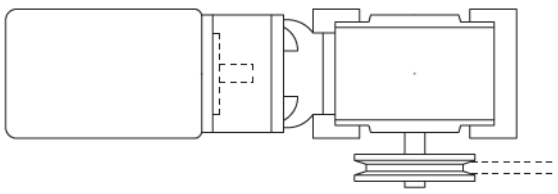
Operation precautions

1. Installation onto motor and reducer
   Install BMA model brake onto motor or reducer.
   note: Please brush lubricating oil onto motor shaft to prevent little abrasion between inside diameter and motor shaft.
2. When install pulley onto output and input shaft, please do not hit excessively.
3. When use in butt joint, please pay attention to the skewing of linked core parts, in which flexible coupler is recommended to use.

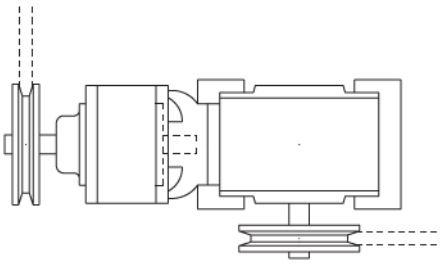
Relationship with motor with standard flange

Motor with standard flange				Applicable clutch nominal model
Rated output (kw)	Simultaneous rotation speed(r/min)		Body Type	
	50Hz	60Hz		
0.4	1000	1200	80	BMA7-119MN
0.75	1500	1800		
	1000	1200	90L	BMA6-124MN
1.5	1500	1800		
	1000	1200	100L	BMA12-128MN
2.2	1500	1800		
	1000	1200	112M	
3.7	1500	1800		

Installation Examples



BMA model installed directly onto reducer and flange motor



BMN model installed directly onto reducer

BSE MODEL (SPRING BRAKING) AIR SHAFT BRAKE

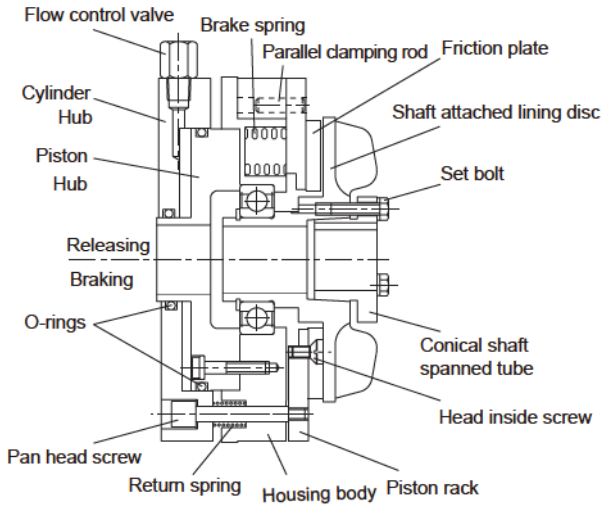
STEKI Industrial Automation

Specialty

1. Braking by spring
   It brakes by spring, releases by air injection.
2. Braking without running
   In occasion of power cut and low air pressure, it brakes naturally.
3. Excellent heat dissipation
   Disc has cooling fins, which can be used in extreme harsh conditions.
4. Easy replacement for friction plate
   Friction plate is two-incisions against type, so it can be replaced even when it is still inside the equipment.
5. Simple but solid structure
   It has simple structre, high reliability and long life.

Structure·Action

BSE model structure drawing



BSE model brake brakes by spring, and releases by air pressure.
If air is supplied by flow control valve, cylinder would have movements, besides, head inside screw and piston rack would run together.
Compress brake spring, split friction plate and shaft attached lining disc to stop braking. If exhaust air, brake spring would compress piston rack, and friction plate would touch shaft attached lining disc.

Accessory
·Key slot
·Flow control valve and air pressure customized pipes with joint R1/8×R1/8×200

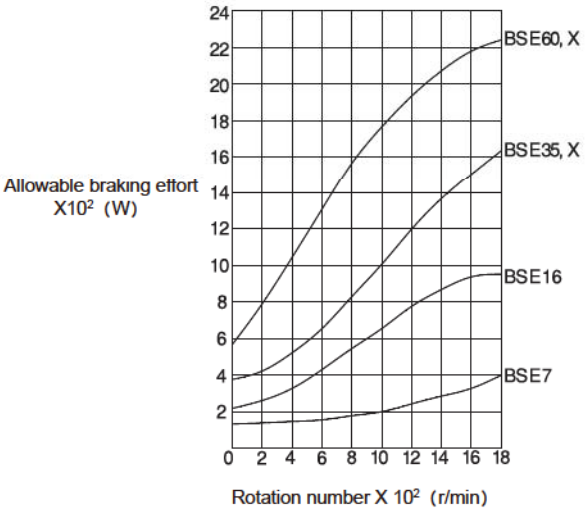
Torque versus air pressure

Specification	Model	Static friction torque (N·m)		Minimum release air pressure (MPa)
		Maximum	Minimum	
Standard	BSE7-608	59	39	0.49
	BSE16-608	127	88	0.49
	BSE35-608,X	265	225	0.44
	BSE60-608,X	451	343	0.44
Low pressure release	BSE7-606	39	29	0.34
	BSE16-606	88	59	0.34
	BSE35-606,X	176	147	0.34
	BSE60-606,X	314	245	0.34
High pressure release (Low frequency use)	* BSE7-610	69	49	0.59
	* BSE16-610	157	108	0.59
	* BSE35-610,X	343	284	0.54
	* BSE60-610,X	588	421	0.59

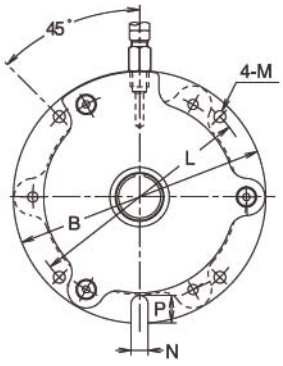
[Note] If you choose model with marks*, please contact with our company.

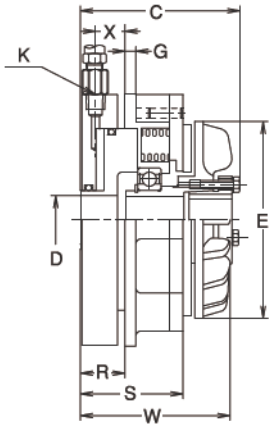
[Remarks]
1) Maximum torque is in occasion of using new friction plate, and minimum torque is in occasion of having to replace friction plate.
2) Torque and minimum released air pressure would have changes of+-10% degree .

Allowable braking effort Pa



● Main dimensions table



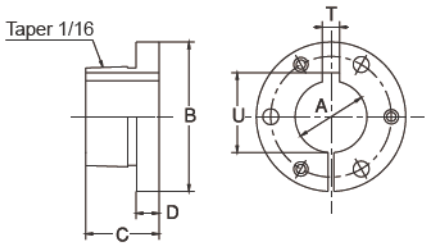


Model	Static friction torque(N·m)	Main dimensions (mm)											
	Maximum	A	B	C	D	E	G	K	L	M	N	P	R
BSE7-608	59	25	150	95	28	117	6.5	Rc1/8	135	7	10	16.5	26.5
BSE16-608	127	35	182	106.5	38	155	10	Rc1/8	165	9	16	16	27
BSE35-608,X	265	50	228	117.5	57	206	10	Rc1/8	210	9	20	20	28
BSE60-608,X	451	75	302	149	120	256	13	Rc1/8	278	14	22	22	30

Model	Main dimensions (mm)						Weight (kg)
	S	W	X	T	U	Key	
BSE7-608	61	90	17.5	6	27.8	6x6x25	5.6
BSE16-608	71	103	18	10	38.3	10x8x30	8.6
BSE35-608,X	68.5	109	17	12	53.3	12x8x45	14.1
BSE60-608,X	88	144	20	18	79.4	18x11x 65	30.8

[Note] Products which end of model follow 606,or 610, have same dimensions.

Conical shaft spanned tube main dimensions



Conical shaft spanned tube model	Main dimensions (mm)						Brake Model
	A	B	C	D	T	U	
TB25-10D *	10	52	25.5	8	—	—	BSE7-608+TB25-10D
TB25-20	20				5	22.3	BSE7-608+TB25-20
TB25	25				6	27.8	BSE7-608
TB35-10D *	10	68	32	10	—	—	BSE16-608+TB35-10D
TB35-25	25				6	27.8	BSE16-608+TB35-25
TB35	35				10	38.3	BSE16-608
TB50-20D *	20	98	48	13	—	—	BSE35-608,X+TB50-20D
TB50-35	35				10	38.3	BSE35-608,X+TB50-35
TB50	50				12	53.3	BSE35-608,X
TB75-20D *	20	149	66	19	—	—	BSE60-608,X+TB75-20D
TB75-50	50				12	53.3	BSE60-608,X+TB75-50
TB75	75				18	79.4	BSE60-608,X

[Note] Conical shaft spanned tube with mark*is kind a punching-processed product of having bottom hole with thread. Once having inside diameter or key slot especially, please process this conical shaft spanned tube (with D attached to the end) to make a cut required.

Technical Data

Model	Volume of air chamber (cm^3)	Allowable friction plate abrasion Vf (cm^3)	Rotation speed limit Nb(r/min)	Moment of inertia J ($kg \cdot m^2$)
BSE7	38.4	14.74	3600	9.69×10^{-4}
BSE16	65.3	25.12	2800	4.59×10^{-3}
BSE35,X	78.8	58.05	2200	1.694×10^{-2}
BSE60,X	201	146.6	1800	4.74×10^{-2}

Response Time

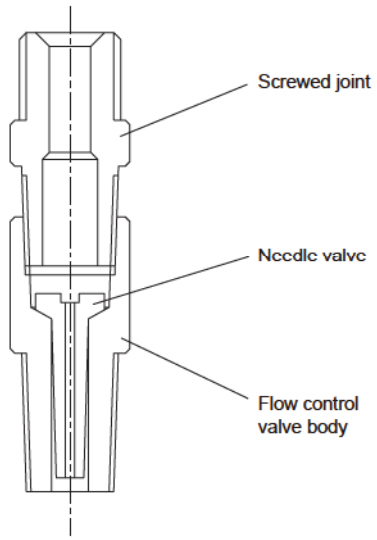
Unit：ms

Model	3-way electromagnetic change-over valve		4-way electromagnetic change-over valve	
	Linking	Releasing	Linking	Releasing
BSE7	216	304	262	232
BSE16	293	584	336	192
BSE35,X	448	449	420	296
BSE60,X	792	736	988	536

[Note] The data made under the premise: all use American NEXEN company's electromagnetic change-over valve,air pressure pipe (length of 200*1/4diameter), install flow control valve and use rapid exhaust port.

Air pressure customized pipe

Flow control valve structure drawing



1. Install attached part of flow control valve onto pipe connection joint of cylinder.

⚠ Note
Please intall flow control valve first, then control braking.

2. Install attached part of insert&extract type rubber onto flow control valve.

⚠ Note
Please do not use metal customized pipe because it may hinder braking.

3. More air pressure are needed when release braking.
Please set the minimum air pressure value acquired from practical test and add more about 0.05MPa on pressure reducer valve.
Please do not add excessive air pressure (exceeding the necessity)
Excessive air pressure provided is the main reason that would reduce brake lifetime.

Selected calculation

1.Torque

(1) When calculate according to motor and load In occasion of light weight, and low frequency use, according to formula (1) and (2), calculate torque by motor and load, and then multiply by safety coefficient.

$$T_p = 9550\frac{P_1}{N_p} \quad \cdots\cdots (1)$$

T_p	: Motor torque	N·m
P_1	: Motor capacity	kW
N_p	: Motor rotation number	r/min

$$T_\ell = \frac{F \cdot V}{6.3N_\ell \cdot \eta} \quad \cdots\cdots (2)$$

T_ℓ	: Load torque	N·m
F	: Power	N
V	: Speed	m/min
N_ℓ	: Load side rotation number	r/min
η	: Mechanical efficiency	

$$T_{rs} \geqq T_S = T_p \cdot f_1 = T_\ell \cdot f_1 \quad \cdots\cdots (3)$$

T_{rs}	: Static friction torque needed	N·m
T_s	: Static friction torque	N·m
f_1	: Safety coefficient	

Type and nature of load	Safety coefficient f_1
Small moment of inertia(low load), low frequency	1.2
General use	1.6
Large moment of inertia(high load), high frequency	2

(2) In urgent acceleration/deceleration and high frequency occasion

In small starting load and urgent acceleration/ deceleration occasion, calculate moment of inertia of load, decide real linking time, and then calculate torque according to formula(4).

$$T_{ac} = \frac{J \cdot N_2}{9.55t_{ae}}$$

$$T_{de} = \frac{J \cdot N_1}{9.55t_{ab}} \quad \cdots\cdots (4)$$

T_{ac}	: Torque required to acceleration	N·m
T_{de}	: Torque required to deceleration	N·m
J	: Moment of inertia	kg·m²
N_2	: Final rotation number	r/min
N_1	: Initial rotation number	r/min
t_{ae}	: Real linking time	s
t_{ab}	: Real braking time	s

$$T_{rd} \geqq T_d = T_{ac} \cdot f_1 = T_{de} \cdot f_1 \quad \cdots\cdots (5)$$

T_{rd}	: Dynamic friction torque required	N·m
T_d	: Dynamic friction torque	N·m

(3) In speed change occasion

When there is speed change between Motor or load side and clutch or brake bearing, according to formula(6), calculate respective torque into clutch or brake torque.

$$T_c = T_p\frac{N_p}{N_c}, \quad T_c = T_r\frac{N_\ell}{N_c}$$

$$T_b = T_p\frac{N_p}{N_b}, \quad T_b = T_r\frac{N_\ell}{N_b} \quad \cdots\cdots (6)$$

T_c	: Clutch bearing torque	N·m
T_b	: Brake bearing torque	N·m
N_c	: Clutch bearing rotation number	r/min
N_b	: Brake bearing rotation number	r/min

(4) In load torque occasion

Remove formula (2), when there is more unignored load torque, add and subtract according to formula (5).

$$T_{rd} \geqq T_d = (T_{ac} \pm T_\ell)f_1 = (T_{de} \pm T_\ell)f_1 \quad \cdots\cdots (7)$$

	Movement direction of load torque	
	Acceleration	Deceleration
Clutch	$-T_\ell$	$+T_\ell$
Brake	$+T_\ell$	$-T_\ell$

(5) In tension control occasion

Calculate torque generated by tension according to formula (8).

$$T_{tmax} = \frac{P_t \cdot D_{max}}{2}$$

$$T_{tmin} = \frac{P_t \cdot D_{min}}{2} \quad \cdots\cdots (8)$$

T_t	: Torque determined by tension	N·m
P_t	: Tension	N
D	: Roll diameter	m

(6)Punch occasion

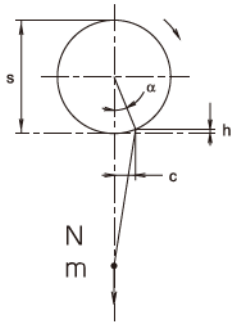
1) Clutch (directly installed onto crankshaft occasion)

$$T_c = P\frac{S}{2} \cdot \sin\alpha \quad \cdots\cdots (9)$$

And

$$T_c = P \cdot C$$

$$C = \frac{S}{2} \cdot \sin\alpha \quad \cdots\cdots (10)$$



P	: Nominal capacity of punch	N
S	: Stroke	m
α	: Angle generated by the maximum power	

2) Brake (directly installed onto crankshaft occasion)

Brake torque=Clutch torque*0.5

2. Linking • Braking workload

(1) Batch-type running occasion

In high frequency use occasion, calculate linking power according to formula (11), and calculate linking, braking workload, allowable linking number according to formula (12),(13).

$$E = \frac{J \cdot N_r^2}{182} \times \frac{T_d}{T_d \pm T_\ell} \quad \cdots\cdots (11)$$

$$P_2 = \frac{E \cdot t_s'}{60} \quad \cdots\cdots (12)$$

$$t_s = \frac{60 \cdot P_a}{E} \quad \cdots\cdots (13)$$

E	: Linking power	J
N_r	: Relative rotation number	r/min
P_2	: Linking • Braking workload	W
t_s'	: Linking number	cpm
t_s	: Allowable linking number	cpm
P_a	: Allowable linking,braking workload	W

Linking load calculated by formula (12) can confirm something that under allowable linking,braking workload.

If exceed the allowable linking,braking workload, please change using condition or select clutch and brake with larger allowable linking,braking workload.

(2) Continuously sliding movement occasion

1) Clutch (Reeling)

The largest diameter is, the maximum linking workload is.

$$P_{2max} = \frac{N_s \cdot T_{tmax}}{9.55} \quad \cdots\cdots (14)$$

$$N_s = N_d \cdot \frac{V}{\pi \cdot D_{max}} \quad \cdots\cdots (15)$$

N_s	: Sliding movement rotation number	r/min
N_d	: Input side rotation number	r/min
V	: Running speed	m/min

2) Brake (Roll out)

Calculate braking workload according to below formula to be fixed value.

$$P_2 = \frac{P_t \cdot V}{60} \quad \cdots\cdots (16)$$

Calculate rotation number and torque of brake shaft according to formula (14).

(3) Starting or stopping of high inertia

In cooling starting or stopping of high inertia occasion, calculate linking,braking energy according to inertia torque of load and formula (11). When real linking and braking time is between 30-60 seconds, do not exceed the one-time allowable absorbed energy as shown in below chart.

In occasion of exceeding 60 seconds, take it as sliding movement to discuss.

When real linking and braking time is under 30 seconds, please refer to below chart.

Model	One-time allowable absorbed energy (J)
NAC2	40,700
NAC5	81,300
NAC10	149,000
NAC40	311,600
NAC60	271,500
NAB5	40,700
NAB16	81,300
NAB20	169,500
NAB40	271,500
NAB65	356,700

3.Real linking • braking time

In general, set real linking·braking time to calculate acceleration/deceleration torque. If you want to confirm real linking,braking time, please calculate according to formula (17).

Torque

$$t_{ae} = \frac{J \cdot N_c}{9.55(T_{ac} \pm T_\ell)}$$

$$t_{ab} = \frac{J \cdot N_b}{9.55(T_{de} \pm T_\ell)} \quad \cdots\cdots (17)$$

t_{ab} : Clutch real linking time s

t_{ae} : Brake real braking time s

About SI units

Way of converting to SI unit

Key term	Power	Torque	Rotation number	Pressure	Workload (rate)	Energy (work)	Inertia
Original unit	kg	kg • m	rpm	kg/cm²	kg • m/min	kg • m	kg • m²(GD²)
SI unit	N	N • m	r/min	MPa	W	J	kg • m²(J)
Convertion coefficient	9.8	9.8	1	0.098	1/6.12	9.8	1/4

Original unit multiply by convertion coefficient to get SI unit

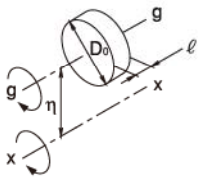
(For example)Torque 10kgf • m, 10X9.8=98N • m

GD²=0.8kgf • m², J=0.8X1/4=0.2kg • m²

4. Moment of inertia J algorithm

(1) In rotation body occasion

● Column

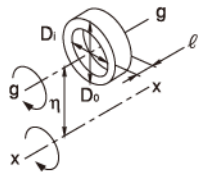


$$J_{gg} = \frac{\pi}{32}\cdot\gamma\cdot\ell\cdot D_0^4 = \frac{1}{8}\cdot M\cdot D_0^2 \quad \cdots\cdots (18)$$

$$J_{xx} = \frac{1}{8}\cdot M\cdot D_0^2 + M\eta^2 \quad \cdots\cdots (19)$$

M : Weight of column kg

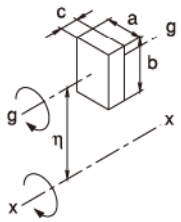
● Cylinder



$$J_{gg} = \frac{\pi}{32}\cdot\gamma\cdot\ell\cdot(D_0^4 - D_i^4) = \frac{1}{8}\cdot M\cdot(D_0^2 + D_i^2) \quad \cdots\cdots (20)$$

$$J_{xx} = \frac{1}{8}\cdot M\cdot(D_0^2 + D_i^2) + M\cdot\eta^2 \quad \cdots\cdots (21)$$

● Straight cube body



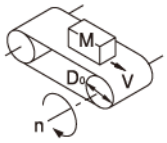
$$J_{gg} = \frac{1}{12}\cdot\gamma\cdot a\cdot b\cdot c\cdot(a^2+b^2) = \frac{1}{12}\cdot M\cdot(a^2+b^2) \quad \cdots\cdots (22)$$

$$J_{xx} = \frac{1}{12}\cdot M\cdot(a^2+b^2) + M\cdot\eta^2 \quad \cdots\cdots (23)$$

Here , γ : Density

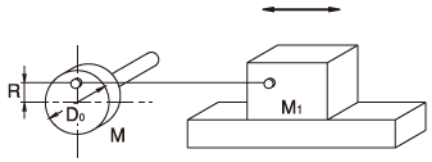
(Steel occasions 7800kg/m³)

(2) In linear motion occasion



$$J_0 = \frac{1}{4}\cdot M\cdot\left(\frac{V}{\pi\cdot n}\right)^2 \quad \cdots\cdots (24)$$

(3) In crank structure occasion



$$J_0 = \frac{1}{8}\cdot M\cdot D_0^2 + M_1\cdot R^2 \quad \cdots\cdots (25)$$

(4) Moment of inertia J calculation in speed change occasion

When calculate moment of inertia J and of clutch/brake in speed change occasion, according to formula (26), you can obtain converted data Jc,Jb for clutch/brake shaft.

$$J_C = J_\ell\cdot\left(\frac{N_\ell}{N_c}\right)^2 \qquad J_b = J_\ell\cdot\left(\frac{N_\ell}{N_b}\right)^2 \quad \cdots\cdots (26)$$

J	: Moment of inertia of load side	kg·m²
N_c	: Clutch shaft rotation number	r/min
N_b	: Brake shaft rotation number	r/min
N_ℓ	: Load side rotation number	r/min

Steel cylinder moment of inertia J (Length 10mm, Density 7800kg / m³)

Unit kg·m²

Diameter (mm)	J	Diameter (mm)	J	Diameter (mm)	J	Diameter (mm)	J
6	9.924×10^{-9}	70	1.839×10^{-4}	160	5.019×10^{-3}	450	0.3140
10	7.658×10^{-8}	80	3.137×10^{-4}	170	6.396×10^{-3}	500	0.4786
12	1.588×10^{-7}	90	5.024×10^{-4}	180	8.039×10^{-3}	600	0.9924
17	6.396×10^{-7}	100	7.658×10^{-4}	190	9.980×10^{-3}	700	1.839
20	1.225×10^{-6}	110	1.121×10^{-3}	200	1.225×10^{-2}	800	3.137
30	6.203×10^{-6}	120	1.588×10^{-3}	250	2.991×10^{-2}	900	5.024
40	1.960×10^{-5}	130	2.187×10^{-3}	300	6.203×10^{-2}	1000	7.658
50	4.786×10^{-5}	140	2.942×10^{-3}	350	1.149×10^{-1}		
60	9.924×10^{-5}	150	3.877×10^{-3}	400	1.960×10^{-1}		

[Note] Moment of inertia of other materials beyond steel, please multiply by the below coefficient to calculate.

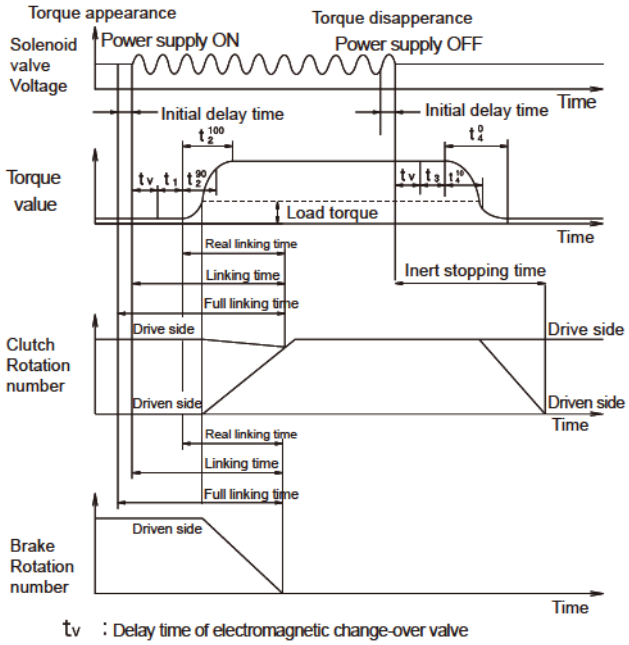
$$\text{Coefficient} = \frac{\text{Density of that kind of material}}{\text{Density of steel}}$$

(For example) Cast iron ····· 0.929, Al ····· 0.346

Response Time

1. Way of obtaining response time

Linking/releasing response time relationship for air pressure clutch/brake is as shown in blew chart. As for air pressure clutch/brake response time, please refer to model iterms with respective response time.
In occasion of high frequency use and acceleration /deceleration ect. which need quick response, it is necessary to check response time. Besides, it is necessary to study allowable linking number when calcuate real linking,braking time by moment of inertia.



t_v : Delay time of electromagnetic change-over valve
1/16-3-way electromagnetic change-over valve 5ms
Hydraulic control 4-way electromagnetic change-over valve 8ms

t_1 : Time between releasing electromagnetic change-over valve and starting torque. ms

t_2^{90} : Time netween starting torque(torsion) and reaching 90% torque. ms

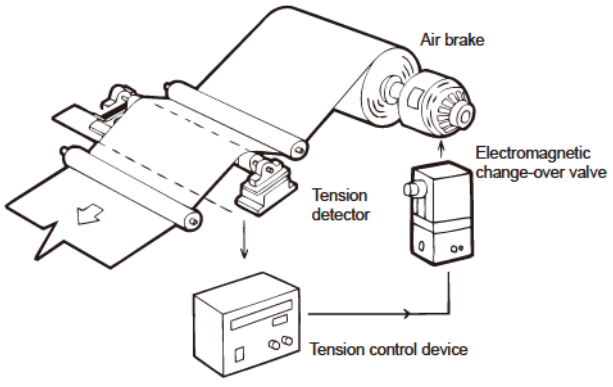
t_2^{100} : Time netween starting torque(torsion) and reaching 100% torque. ms

t_3 : Time netween electromagnetic change-over valve exhausting and torque(torsion) disapperance. ms

t_4^{10} : Time netween torque weakening and 10% torque left. ms

t_4^{0} : Time netween torque weakening and 0% torque left. ms

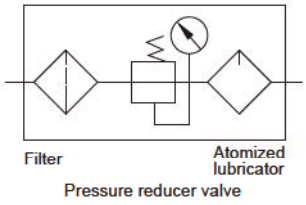
Example



Machine controlment

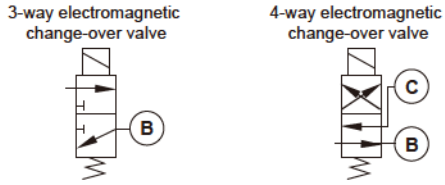
1. Machine adjustment

Filter, pressure reducer valve and lubricator must be installed between air pressure source and electromagnetic change-over valve.



2. Electromagnetic change-over valve

3-way valve	Clutch, brake monomer
4-way valve and 5-way valve	Clutch, brake combination



In high frequency using occasion, effective area is relatively larger, so please select electromagnetic change-over valve with quick response.

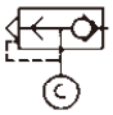
2. Response time controlment

Install the below air pressure machine and its smooth starting and stopping is for high frequency using.

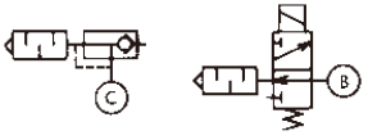
(1) Torque(torsion) appearance
In order to have a smooth starting and stopping, please install speed controller between electromagnetic change-over valve and clutch/brake to control torque appearance time.

(2) Torque disappearance
Please install speed controller on exhaust side to control torque disappearance time, and release clutch/brake smoothly.

(3) Fast torque disappearance
Install fast exhaust valve onto clutch/brake or clutch and brake group to prevent intervene by them. Direct connection between fast exhaust valve and clutch/brake make quick exhaust time.



(4) Quiet exhaust
Install silencer onto fast exhaust valve or electromagnetic change-over valve.



⚠ Note
In order not to spray oil and mist to friction plate surface from exhaust port, please pay attention to installation direction for air pressure machine.

Air customized pipe

1. Air pipe

(1) Air pressure pipe uses customized rubber pipe.
(2) Customized pipe between electromagnetic change-over valve and clutch/brake is shortest for best. The longer pipe is, the slower response is.
(3) Response time adjustment
When air pressure customized pipe is more than 200mm, (below 3 meters), response time gets longer.
Please use below formula(28) to get adjustment value and multiply by respective response time to adjust.

$$C_L = \frac{t_1 + 2.3(L - 0.2)}{t_1} \quad \cdots\cdots (28)$$

L : Pipe length m

2.O-ring lubrication

Clutch/brake uses o-ring and gasket, in order to have a longer use, please provide compressed air without moisture, coagulated water and rubbish oil/mist clearance. Because o-ring slot is brushed by lubrication, so there is no need to inject oil in the beginning.

3. Air pressure use

(1) The maximum air pressure for clutch/brake is 0.6MPa.
(2) Please use it when there is air pressure with required torque or above 0.05~0.1MPa.

4. Fastened torque for customized pipe nut

Please use recommended proper torque nut to fasten customized pipe. When there is insufficient in torque fastening, it may lead to slipping or gasket bad performance. If opposite, it may be the main cause for breakage.

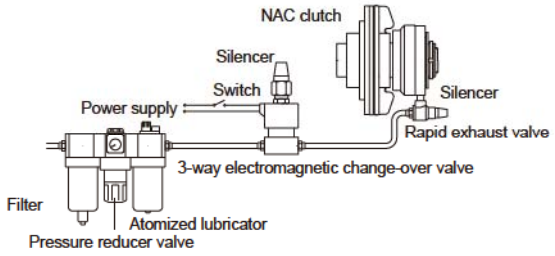
Continue screw	M5 × 0.8	M6 × 0.75	M6 × 1	1/8	1/4	3/8	1/2
Recommended fastened torque (N·m)	1 ~ 1.5	0.8 ~ 1	1.8 ~ 2.3	7 ~ 9	12 ~ 14	22 ~ 24	28 ~ 30

5. Precautions for customizing pipe by air pressure

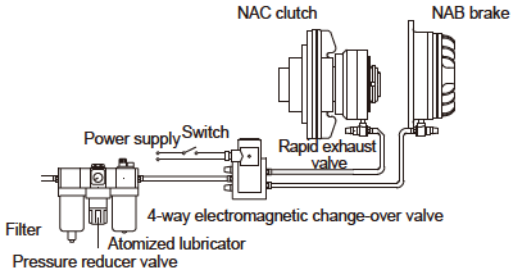
(1) Please try to install filter onto air inlet hole for air pressure clutch/brake, but due to it can not eliminate completely the coagulated air from water, please install it below the machine to reduce the remains.
(2) If mouth of customized pipe is small, it will has longer response time.So please use the same or above materials as clutch/brake customized pipe mouth.
(3) Before connecting customized pipe with air pressure clutch/brake, please flush it fully to remove its rubbish and rust.

Customized pipe example

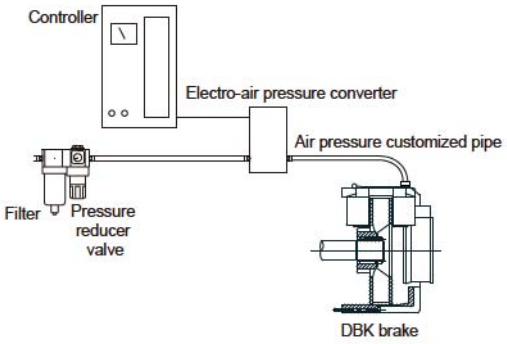
Clutch and Brake



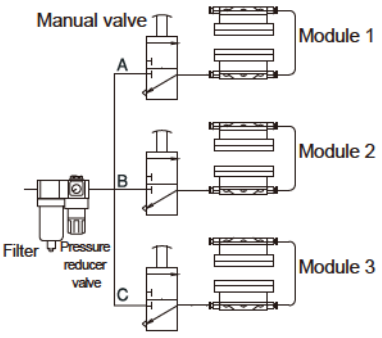
Clutch and Brake group



Automatic tension control occasion



DBK model brake
(Module-3 groups occasion)



Design and Installation

When clutch and brake have friction plates in them, if their bodies are cohered with water, oil thing, it's easy to has the same situation for friction plate surface and it may lead to low torque. Even abnormal running for machine may happen, which may cause injury accident. So please design it resisted to water and oil thing at first.
As for installation position, if install clutch and brake onto the rotation side, required torque may become small but greater heat dissipation it will have, so that small model ones can be used for its economy.
When there is requirement for stopping precision, please try to install brake onto low-speed side.

Security

(1) For air pressure brake does not use electrical parts, so it would not generate sparks. However, when in the environment of having solvent that will easily generate sparks, please consider and study the rotation number and heat produced during linking or braking.
(2) Please use within allowable linking and braking workload, if overload, it will produce more heat, and so same with friction plate surface, so that it may be the main cause for fire.
(3) Please do not exceed the rotation number rather than increasing rotation number. If increase rotation number, it may have greater vibration, and according to different occasions, it may cause breakage, flyoff, and some other dangerous status. So please use under the rotation number.
(4) When fasten the bolt, if breakage happens, it may cause extreme dangers. Please fasten the bolt according to required torque, and use required material to make bolt, adhesive, and spring gasket to carry out measures that prevent loosening and slipping.

Adaptive running

Incomplete touch between friction plate and disc as new products may cause low torque that is 30%-40% of torque recorded on product manual, (may be much lower in some occasions) In those occasions, please increase air pressure. As for using condition, when there is no torque capacity,there is need to adaptive running.

Use condition

Before using, please confirm the surrounding environment, any situation like water drop,oil drop, dust intrusion, vibration, strike or high temperature, high humidity, could be the reason for brake damage, wrong action. So please don't in those conditions.
When the temperature is over 40 degrees, allowable linking/braking workload is low. When you suffer the same situation, please contact with our company.

Friction plate maintenance

(1) Friction plate using life differs a lot due to different environments.The calculation formula is as following:

$$L_h = \frac{V_f}{3600\sigma' \cdot P_2 \cdot f_2}$$

L_h	: Friction plate life time	H
V_f	: Friction plate allowable abrasion	cm^3
σ'	: Friction plate abrasion coefficient	cm^3/J
P_2	: Linking/braking workload	W
f_2	: Life coefficient (1~1.6)	

* Standard friction plate abrasion coefficient 0.3cm3/J.

Shaft through clutch/brake uses head inside screw to fix friction plate, which is divided into two parts.There is no need to dismantle brake because you can replace it by taking out head inside screw from disc hole using screwdriver. Please replace only when the length of friction plate is beyond using and it is easy.
As for disc brake, you can pull up the keeping bolt to complete friction plate replacement, no need for other tools, quick and convenient.
Friction plates used in clutch/brake are all non-asbestos materials.

Sealing portion

(1) Long time air pressure work makes sealing portion(o-ring,ect.) more resistant, not smooth enough to come back. If it does, please replace sealing parts.
(2) If the surround environment temperature is over 40-60 degrees, or the rotation number is too large, please make o-ring from fluoror rubber rather than buna rubber.

About Consumables

Friction plate, head inside screw, o-ring,cylinder diaphragm,return spring,bearing, ect. are consumables in storage.

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Mail:steki@stekitw.com

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Beijing
E-mail:bj@steki.cn
TEL:0086-10-60593852
FAX:0086-10-60593862

Guangzhou
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TEL:0086-20-84620672
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