

Special

Overview

The balancer unit allows heavy loads of around 300 kg to be controlled with minimal force. Even if the weight of each workpiece being transported differs, this is automatically recognized and the optimal balance is maintained.

BBS

Balancer unit

ø50/ø63/ø80/ø100



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LCM
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LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
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JSC3/JSC4
USSD
UFCD
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RRC
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RV3*
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Hand
Chuk
MechHnd/Chuk
ShkAbs
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SpdContr
Ending

LCM
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Move objects weighing roughly 300 kg effortlessly!

Balancer Unit

BBS Series

BBS-A [Automatic pressure adjustment]

BBS-O [Fixed pressure adjustment]

- Objects weighing up to 285 kg can be managed by a single operator!
- Ensure personnel safety at sites where heavy objects are handled.
- No more inching along! Objects glide as if guided by hand.

ø50

ø63

ø80

ø100

No adjustment is needed when the workpiece is changed!

BBS-A type can be adjusted to the ideal condition by switching with one button without complicated adjustment.

Easy to balance just by switching

BBS-O type need be adjusted only one time according to jig and workpiece.

Can be used just by switching it.

Brakes to ensure safety as standard

Highly reliable brakes are equipped as standard. Even if the air source is cut off, the workpiece does not drop or pop up when air is restored.

Compatible with all-air methods (option)

An all-air method that does not need electricity can be set up.

This is applicable in atmospheres that must be explosion-proof.

Patented



LCM
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Series variation



Balancer unit BBS Series

LCM
LCR
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UCA2
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USSD
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LMB
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UCAC2
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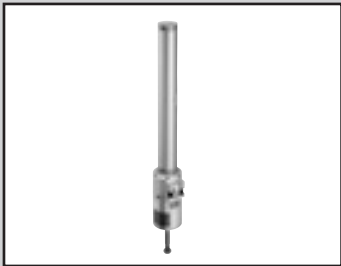
Variation	Model No.	Bore size (mm)	Stroke (mm)	
Auto pressure adjustment	BBS-A	ø50/ø63 ø80/ø100	100/200/300/400/500/600/700/800/900/ 1000/1100/1200/1300/1400/1500	
Fixed pressure adjustment control box separate	BBS-O	ø50/ø63 ø80/ø100	100/200/300/400/500/600/700/800/900/ 1000/1100/1200/1300/1400/1500	
Fixed pressure adjustment control box integrated	BBS-OB	ø50/ø63 ø80/ø100	100/200/300/400/500/600/700/800/900/ 1000/1100/1200/1300/1400/1500	

●: Standard ◎: Option ■: Not available

	Max. stroke	Min. stroke	Mounting					Accessory		Page
			Basic	Eye bracket	Clevis bracket	Rod side flange	Head side flange	Rod eye	Rod clevis	
	(mm)	(mm)	00	CA	CB	FA	FB	I	Y	
	1500	100	●	●	■	●	●	●	●	1258
			●	■	●	●	●	●	●	
	1500	100	●	●	■	●	●	●	●	1270
			●	■	●	●	●	●	●	
	1500	300	●	●	■	●	●	●	●	1270
			●	■	●	●	●	●	●	

LCM
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SpdContr
Ending



Balancer unit
Auto pressure adjustment

BBS-A Series

● Bore size : ø50, ø63, ø80, ø100



Specifications

Model No.				
Item	BBS-A-50	BBS-A-63	BBS-A-80	BBS-A-100
Working fluid	Clean compressed air			
Max. working pressure MPa	0.60 (≈87 psi, 6 bar)			
Min. working pressure MPa	0.25 (≈36 psi, 2.5 bar)			
Proof pressure MPa	0.90 (≈130 psi, 9 bar)			
Ambient temperature °C	-5 (23°F) to 50 (122°F) (no freezing)			
Bore size mm	ø50	ø63	ø80	ø100
Max. stroke mm	1500			
Working piston speed mm/s	1 to 200			
Cushion	Rubber cushion			
Lubrication	Not available			
Minimum load range kg	10	16	25	40
Maximum load range *1 kg	70	115	180	285
Operating force N	Refer to page 1277 BBS working force documentation			
Holding force N	1539		3940	

*1 : Refer to page 1277 for details about the maximum load range versus BBS working pressure.

Stroke

Standard stroke (mm)	Max. stroke (mm)	Min. stroke (mm)
100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500	1500	100

Note : The custom stroke is available in 1 mm increments.

Weight table

(Unit: kg)

Bore size (mm)	Product weight at 0 mm stroke					Additional weight per 100 mm stroke
	Basic (00)	Eye bracket (CA)	Clevis bracket (CB)	Flange		
				FA	FB	
ø50	7.22	7.62	—	8.35	7.56	0.44
ø63	7.52	8.20	—	8.65	8.02	0.52
ø80	10.96	—	11.67	12.88	11.67	0.70
ø100	12.09	—	13.37	14.01	13.44	0.86

How to order

BBS-A - A D 1 - CB - 80 D - 300 - Y

Automatic pressure adjustment balancer unit

A Type

B Load direction

*1

C Cylinder orientation (Piston rod direction)

*1

D Mounting

*2

E Bore size

⚠ Precautions for model No. selection

*1 : The load direction refers to the input direction of the load to the cylinder.

The cylinder orientation is when installed. Refer to the figure below.

*2 : Mounting bracket will be shipped with the product.

*3 : "I" and "Y" cannot be selected together.

*4 : When the automatic pressure adjustment is selected for the air method, be sure to use the control box (BBS-A-TB Page 1267).

F Stroke

G Accessory

*3

Code	Description
A Type	
Blank	Electric (24 VDC)
A	Pneumatic *4
B Load direction	
D	Push type
U	Pull type
C Cylinder orientation (piston rod direction)	
Blank	Downward
1	Upward
2	Horizontal
D Mounting	
OO	Basic
CA	Eye bracket (ø50, ø63) (pin and snap ring attached)
CB	Clevis bracket (ø80, ø100) (pin and snap ring attached)
FA	Rod side flange
FB	Head side flange
E Bore size (mm)	
50	ø50
63	ø63
80	ø80
100	ø100
F Stroke (mm)	
100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500	
G Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)

C Cylinder orientation

Load direction push (D)		
D (Piston rod downward)	D1 (Piston rod upward)	D2 (Piston rod horizontal)
Cylinder orientation: piston rod downward Load direction: push	Load direction: push Cylinder orientation: piston rod upward	Load direction: push Cylinder orientation: horizontal
Load direction pull (U)		
U (Piston rod downward)	U1 (Piston rod upward)	U2 (Piston rod horizontal)
Cylinder orientation: piston rod downward Load direction: pull	Load direction: pull Cylinder orientation: piston rod upward	Load direction: pull Cylinder orientation: horizontal

How to order mounting bracket

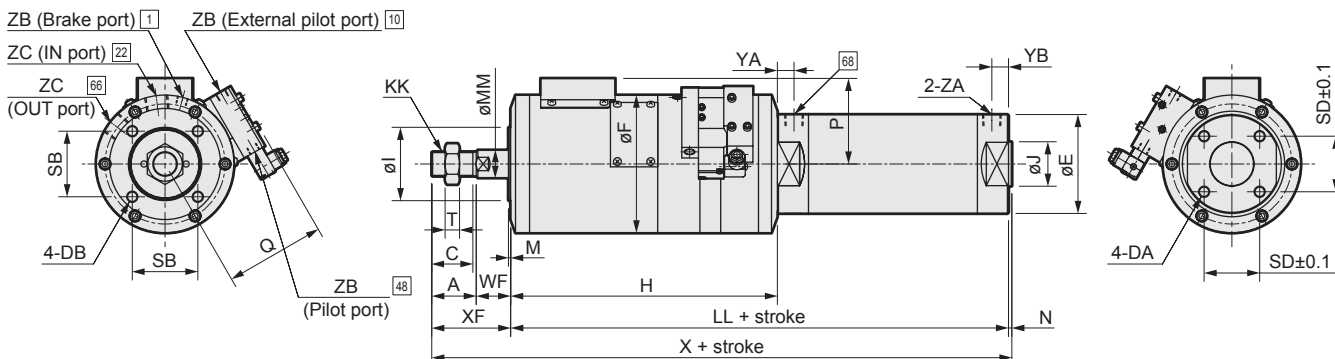
Bore size (mm)	ø50	ø63	ø80	ø100
Mounting bracket				
Flange (FA)	BBS-FA-50	BBS-FA-50	BBS-FA-80	BBS-FA-80
Flange (FB)	SCM-FA-50	SCM-FA-63	SCM-FA-80	SCM-FA-100
Eye bracket (CA)	SCM-CA-50	SCM-CA-63	-	-
Clevis bracket (CB)	-	-	SCM-CB-80	SCM-CB-100

Note : All mounting brackets have mounting bolts attached.

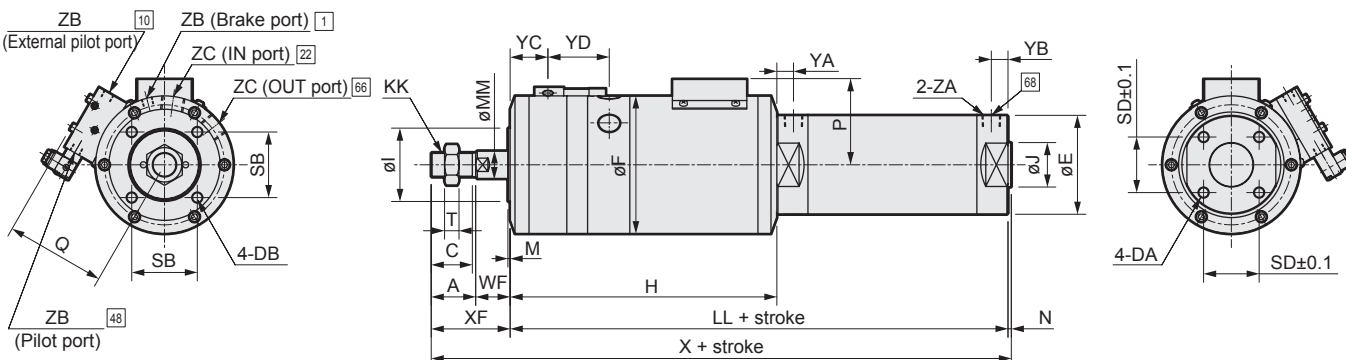
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Ending

Dimensions

● Basic (00) Load direction push (D)



● Basic (00) Load direction pull (U)

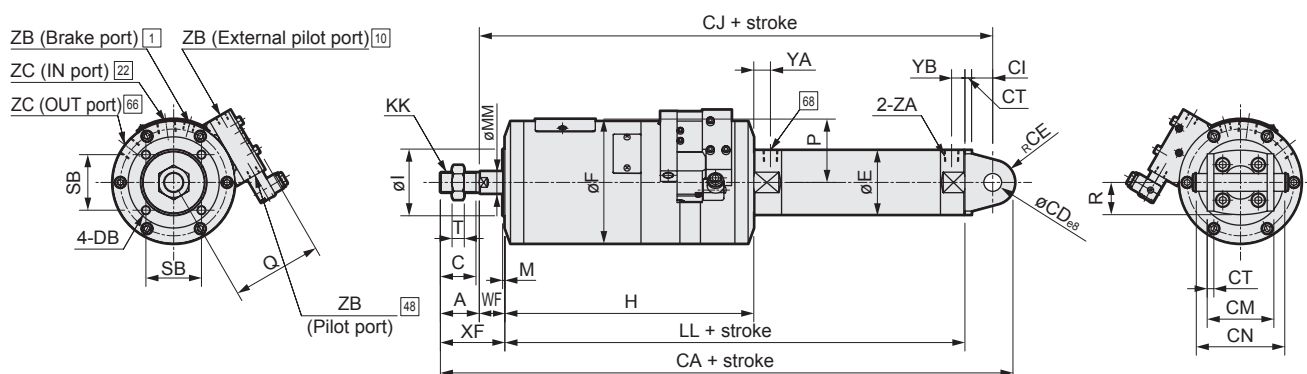


Note: [] contains the piping connection number of the air circuit diagram.

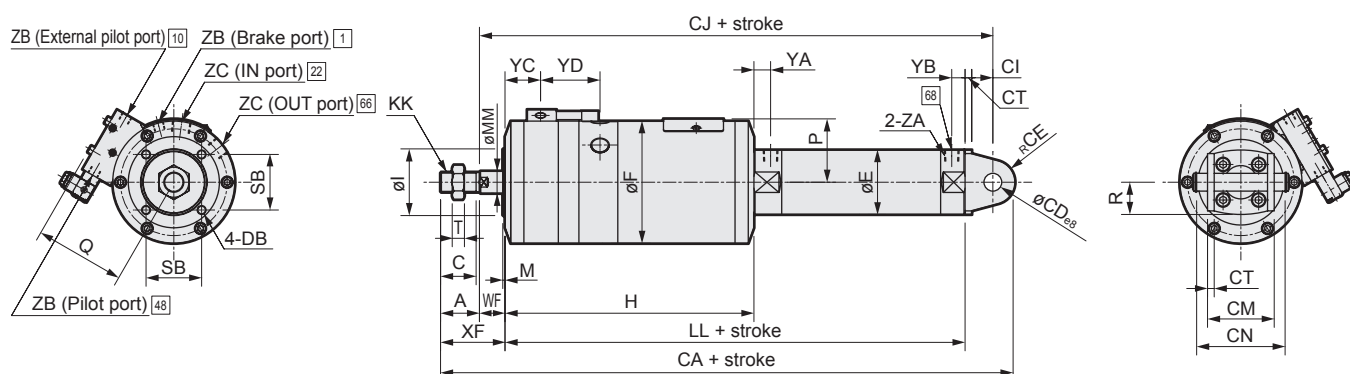
Code	A	C	DA		DB			E	F	H	I	J	KK		LL	MM	
Bore size (mm)																	
ø50	35	32	M8 x 1.25 depth 16		M8 x 1.25 depth 15			58	110	224	60	30	M18x1.5		314	20	
ø63	35	32	M10 x 1.5 depth 16		M8 x 1.25 depth 15			72	110	224	60	32	M18x1.5		314	20	
ø80	40	37	M10 x 1.5 depth 22		M10 x 1.5 depth 15			89	124	240	66	40	M22x1.5		348	25	
ø100	40	37	M12 x 1.5 depth 22		M10 x 1.5 depth 15			110	124	240	66	50	M22x1.5		348	25	
Code	M	N	P	Q	SB	SD	T	WF	X	XF	YA	YB	YC	YD	ZA	ZB	ZC
Bore size (mm)																	
ø50	2	2	57	81	50	32	11	23	374	58	15	12	32	52	Rc1/4	Rc1/8	Rc3/8
ø63	2	2	57	81	50	38	11	23	374	58	15	12	32	52	Rc1/4	Rc1/8	Rc3/8
ø80	2	3	77	90	59	50	13	31	422	71	15	15	34	55.7	Rc3/8	Rc1/8	Rc1/2
ø100	2	3	77	90	59	60	13	31	422	71	15	15	34	55.7	Rc1/2	Rc1/8	Rc1/2

Dimensions

● Eye bracket (CA) Load direction push (D)



● Eye bracket (CA) Load direction pull (U)



Note : □ contains the piping connection number of the air circuit diagram.

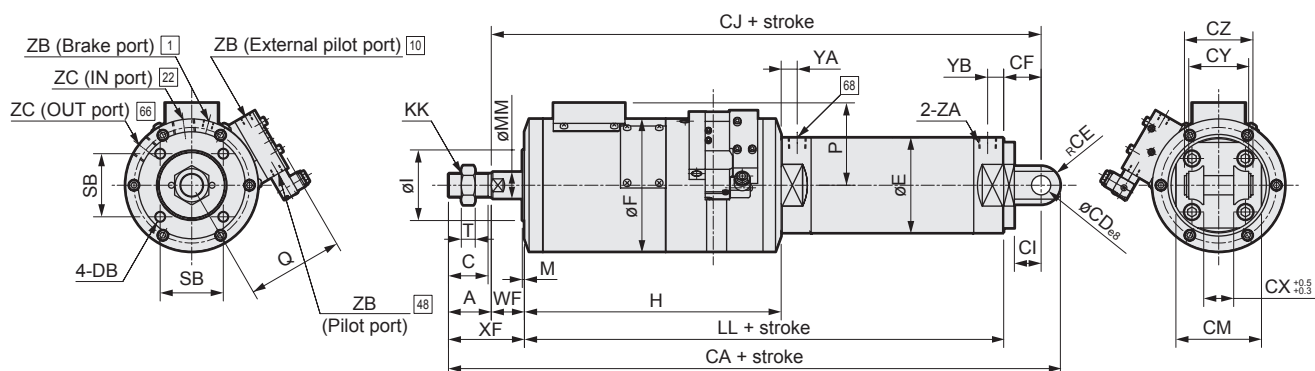
Note:  contains the piping connection number of the air circuit diagram.

Code	A	C	DB		E	F	H	I	KK	LL	MM	M	P	Q	R	SB	T
Bore size (mm)																	
ø50	35	32	M8 x 1.25 depth 15		58	110	224	60	M18x1.5	314	20	2	57	81	29	50	11
ø63	35	32	M8 x 1.25 depth 15		72	110	224	60	M18x1.5	314	20	2	57	81	36	50	11
Code	WF	XF	CA	CD	CE	CI	CT	CJ	CM	CN	YA	YB	YC	YD	ZA	ZB	ZC
Bore size (mm)																	
ø50	23	58	417	16	20	19	6	362	60	79.6	15	12	32	52	Rc1/4	Rc1/8	Rc3/8
ø63	23	58	424	18	22	22	8	367	74	97.8	15	12	32	52	Rc1/4	Rc1/8	Rc3/8

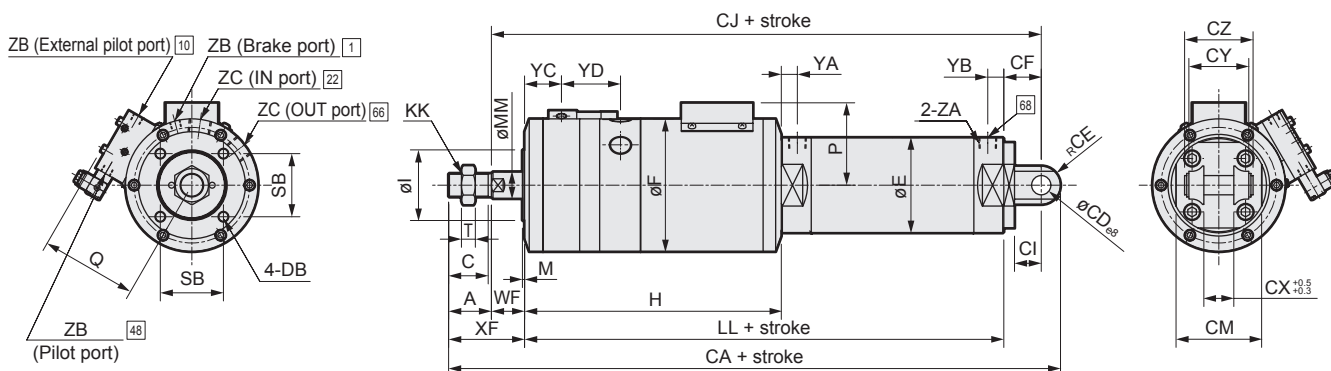
LCM
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Dimensions

● Clevis bracket (CB) Load direction push (D)



● Clevis bracket (CB) Load direction pull : (U)

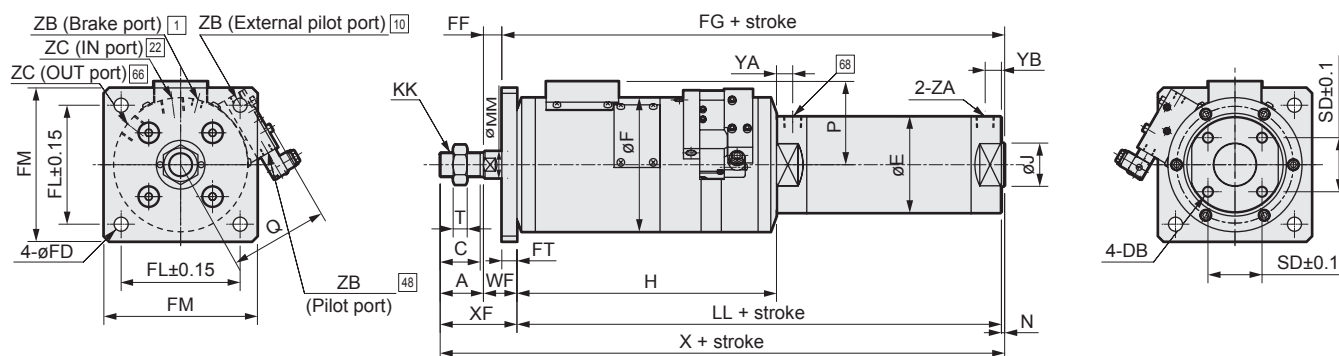


Note : □ contains the piping connection number of the air circuit diagram.

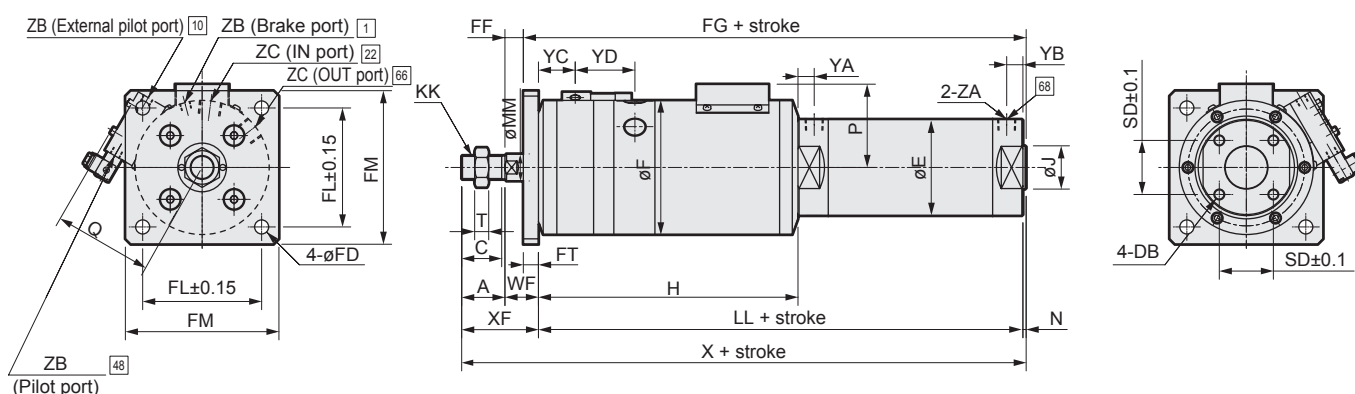
Code	A	C	DB		E	F	H	I	KK		LL	MM	M	P	Q	SB	T		
Bore size (mm)																			
ø80	40	37	M10 x 1.5 depth 15		89	124	240	66	M22x1.5		348	25	2	77	90	59	13		
ø100	40	37	M10 x 1.5 depth 15		110	124	240	66	M22x1.5		348	25	2	77	90	59	13		
Code	WF	XF	CA	CD	CE	CF	CI	CJ	CM	CX	CY	CZ	YA	YB	YC	YD	ZA	ZB	ZC
Bore size (mm)																			
ø80	31	71	472	18	18	35	25	414	80	28	56	64	15	15	34	55.7	Rc3/8	Rc1/8	Rc1/2
ø100	31	71	484	22	22	43	31	422	100	32	64	72	15	15	34	55.7	Rc1/2	Rc1/8	Rc1/2

Dimensions

- Rod side flange (FA) Load direction push (D)



- Rod side flange (FA) Load direction pull : (U)



Note : □ contains the piping connection number of the air circuit diagram.

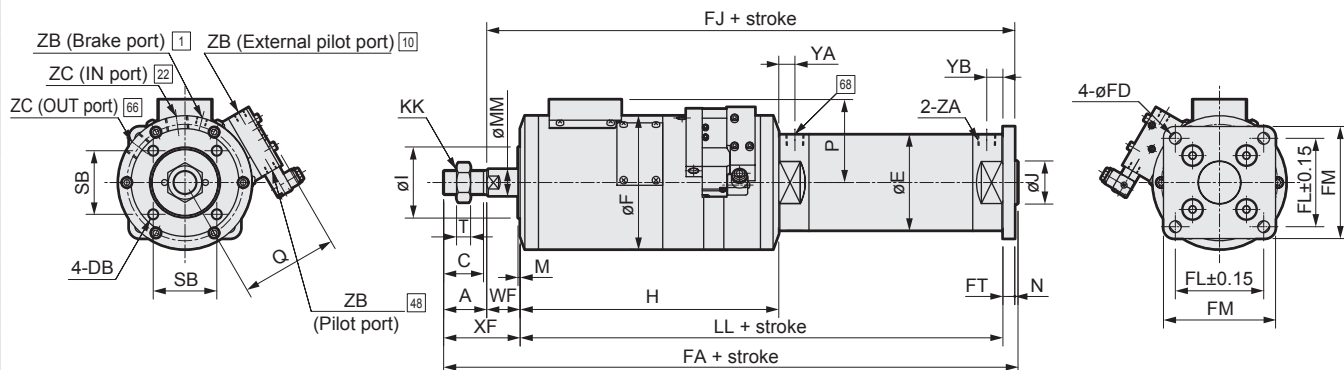
Code	A	C	DB				E	F	H	J	KK		LL	MM	N	P	Q	SD
Bore size (mm)																		
ø50	35	32	M8 x 1.25 depth 16				58	110	224	30	M18x1.5		314	20	2	57	81	32
ø63	35	32	M10 x 1.5 depth 16				72	110	224	32	M18x1.5		314	20	2	57	81	38
ø80	40	37	M10 x 1.5 depth 22				89	124	240	40	M22x1.5		348	25	3	77	90	50
ø100	40	37	M12x1.75 depth 22				110	124	240	50	M22x1.5		348	25	3	77	90	60
Code	T	WF	X	XF	FD	FF	FG	FL	FM	FT	YA	YB	YC	YD	ZA	ZB	ZC	
Bore size (mm)																		
ø50	11	23	374	58	11	11	328	95	120	12	15	12	32	52	Rc1/4	Rc1/8	Rc3/8	
ø63	11	23	374	58	11	11	328	95	120	12	15	12	32	52	Rc1/4	Rc1/8	Rc3/8	
ø80	13	31	422	71	13	17	365	110	142	14	15	15	34	55.7	Rc3/8	Rc1/8	Rc1/2	
ø100	13	31	422	71	13	17	365	110	142	14	15	15	34	55.7	Rc1/2	Rc1/8	Rc1/2	

Dimensions

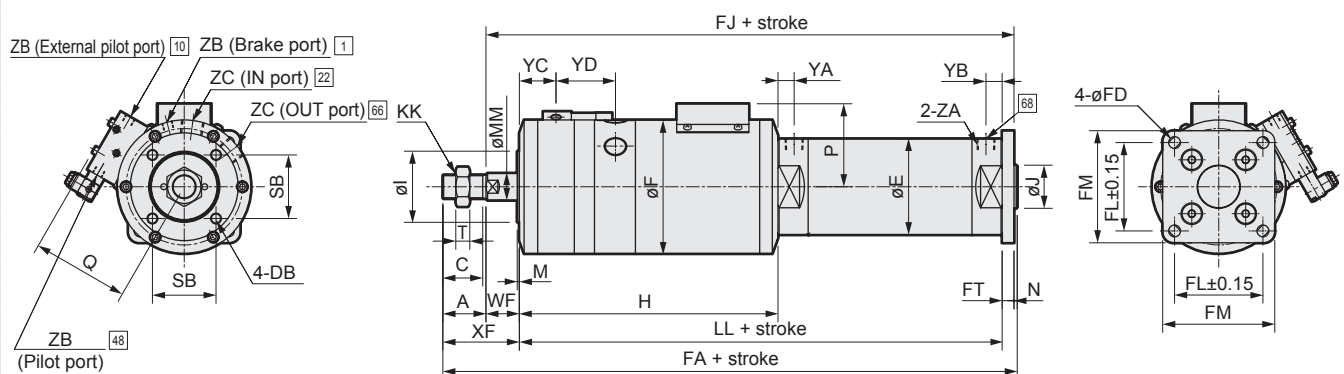
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SpdContr
Endino

Dimensions

● Head side flange (FB) Load direction push (D)



● Head side flange (FB) Load direction pull : (U)



Note : □ contains the piping connection number of the air circuit diagram.

Code	A	C	DB		E	F	H	I	J	KK			LL	MM	M	N	P	Q
Bore size (mm)																		
ø50	35	32	M8 x 1.25 depth 15		58	110	224	60	30	M18x1.5			314	20	2	2	57	81
ø63	35	32	M8 x 1.25 depth 15		72	110	224	60	32	M18x1.5			314	20	2	2	57	81
ø80	40	37	M10 x 1.5 depth 15		89	124	240	66	40	M22x1.5			348	25	2	3	77	90
ø100	40	37	M10 x 1.5 depth 15		110	124	240	66	50	M22x1.5			348	25	2	3	77	90
Code	SB	T	WF	XF	FA	FD	FJ	FL	FM	FT	YA	YB	YC	YD	ZA	ZB	ZC	
Bore size (mm)																		
ø50	50	11	23	58	383	9	346	58	76	9	15	12	32	52	Rc1/4	Rc1/8	Rc3/8	
ø63	50	11	23	58	383	11	346	70	92	9	15	12	32	52	Rc1/4	Rc1/8	Rc3/8	
ø80	59	13	31	71	433	11	390	82	104	11	15	15	34	55.7	Rc3/8	Rc1/8	Rc1/2	
ø100	59	13	31	71	436	13	393	100	128	14	15	15	34	55.7	Rc1/2	Rc1/8	Rc1/2	

Control box (for electric)

How to order

BBS-A - ETB

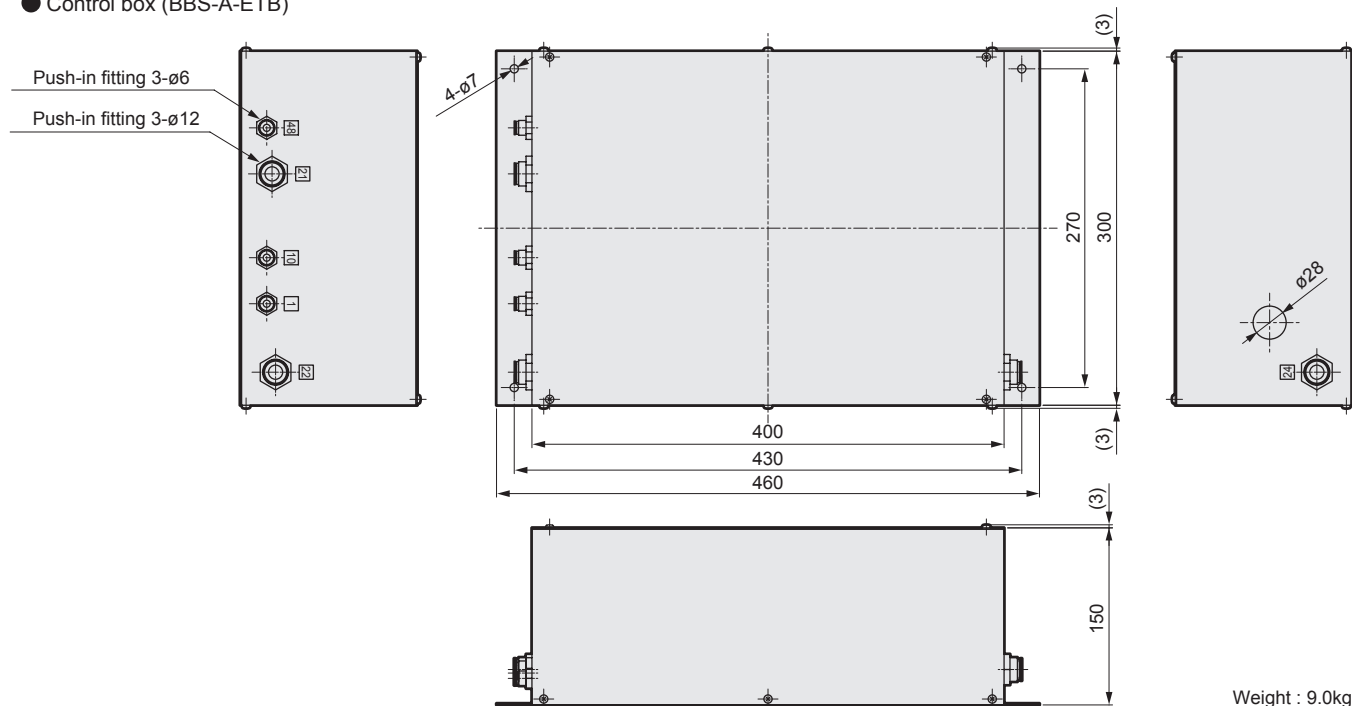
Auto pressure
adjustment
balancer unit

Control box

Custom-made circuits are available to suit customer usage criteria. Contact CKD for details.

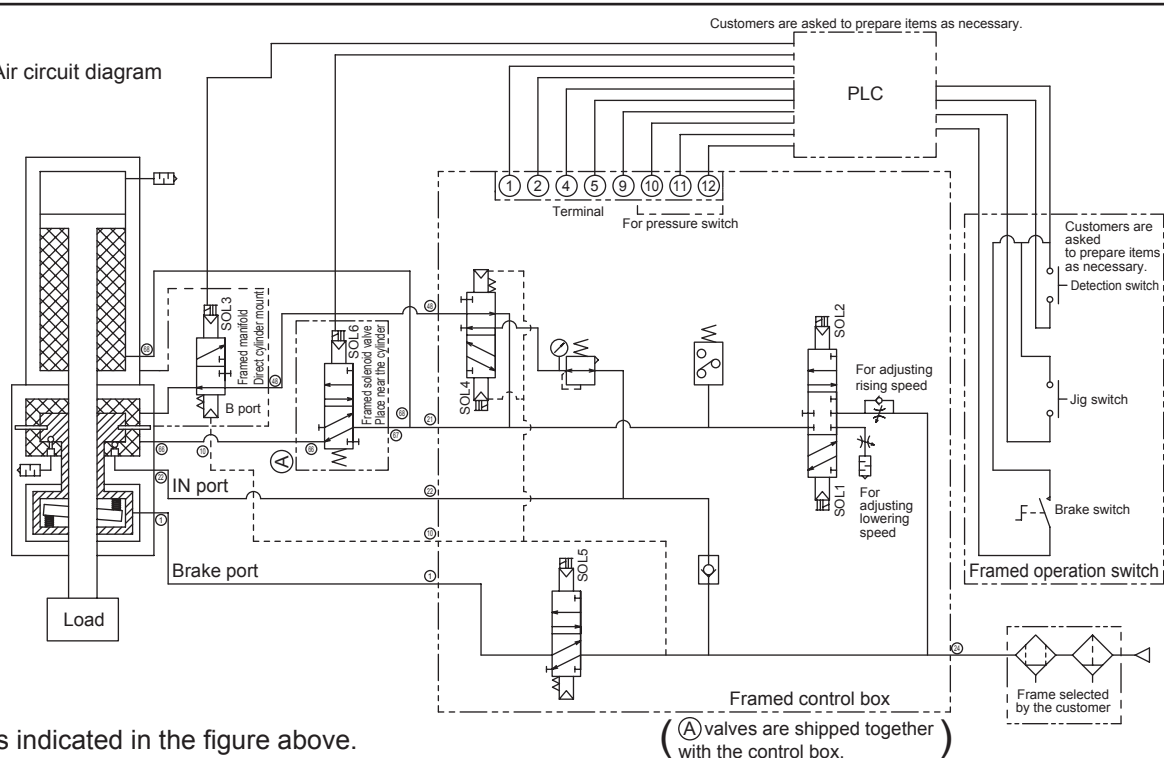
Dimensions

● Control box (BBS-A-ETB)



Air circuit diagram

● Control box (BBS-A-ETB) Air circuit diagram



D (push load) is indicated in the figure above.
For U (pull load), the piping to the cylinder is on the head side.

LCM
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STS/STL
STR2
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SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Control box (for electric, 2-stage speed switchable)

How to order

BBS-A - ETB2

Auto pressure
adjustment
balancer unit

Control box

Custom-made circuits are available to suit customer usage criteria. Contact CKD for details.

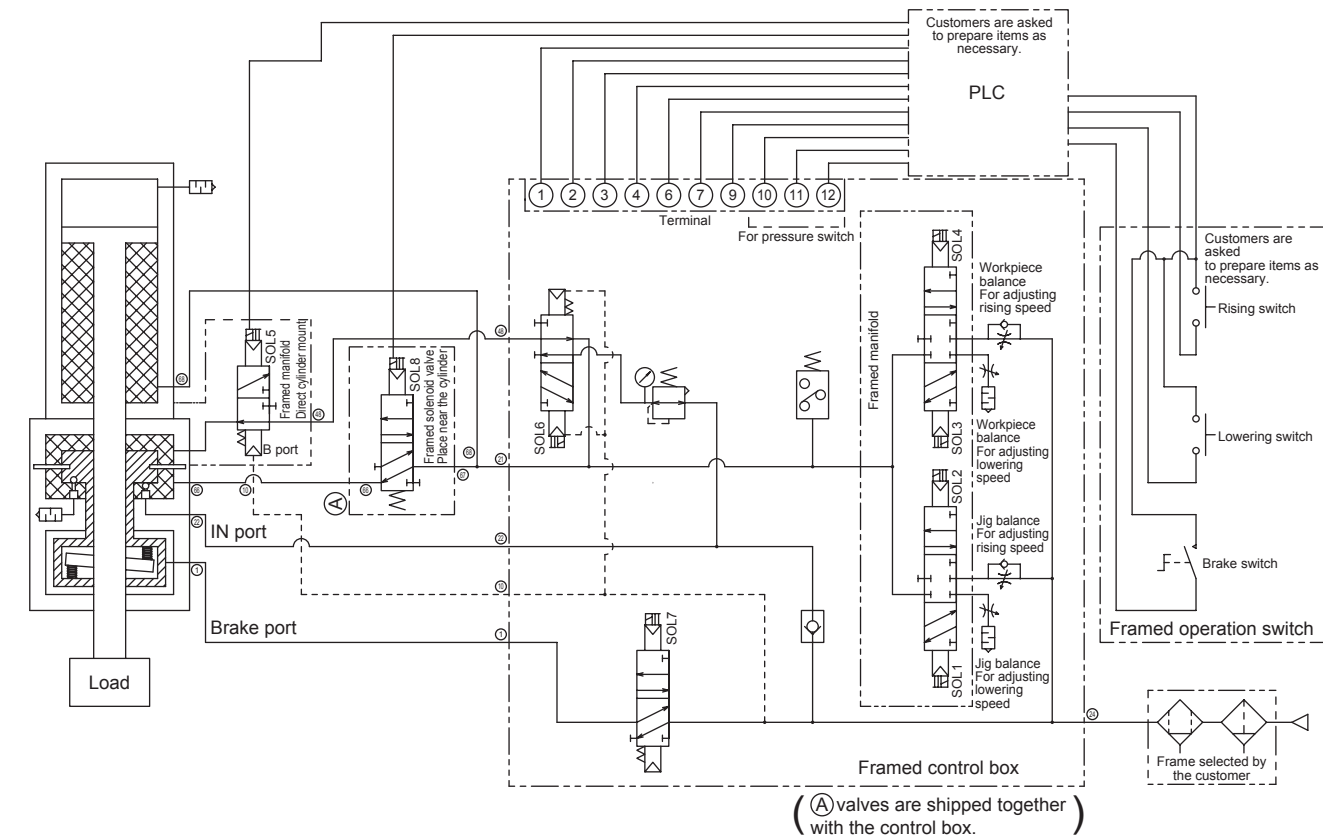
Dimensions

- Same as control box (BBS-A-ETB). Refer to page 1265.

Weight: 9.5kg

Air circuit diagram

- Control box (BBS-A-ETB2) air circuit diagram



D (push load) is indicated in the figure above.
For U (pull load), the piping to the cylinder is on the head side.

Control box (for pneumatic)

How to order

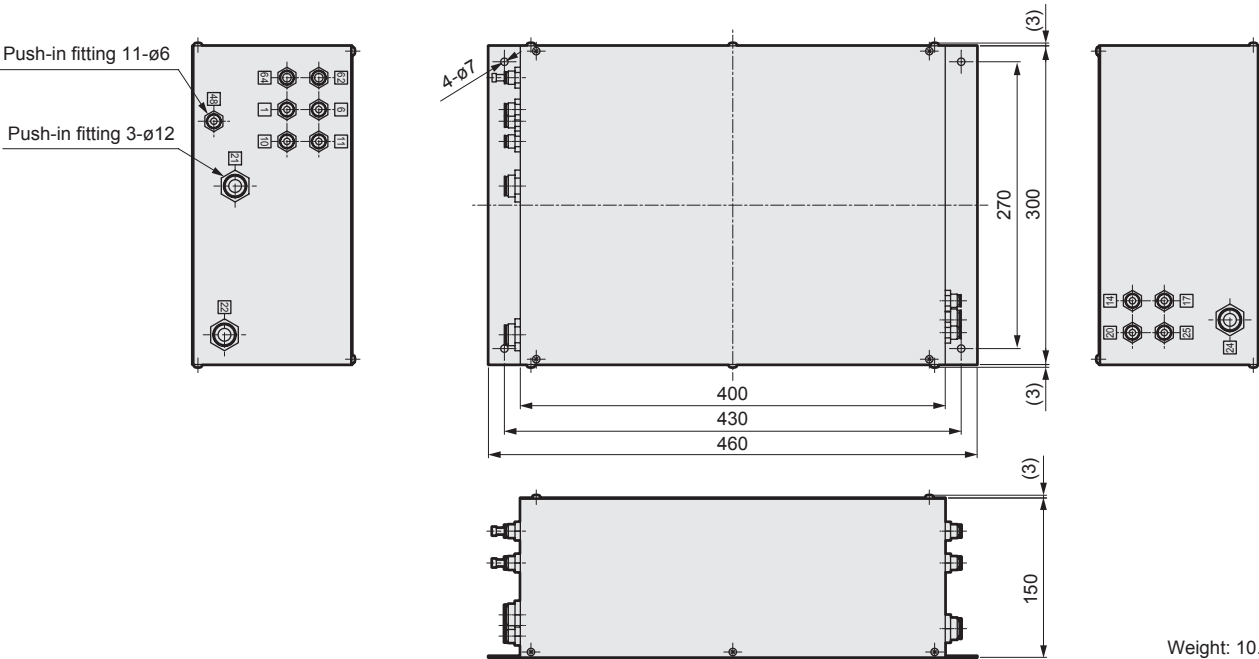
BBS-A - TB

Automatic pressure
adjustment
balancer unit Control box

Custom-made circuits are available to suit customer usage criteria. Contact CKD for details.

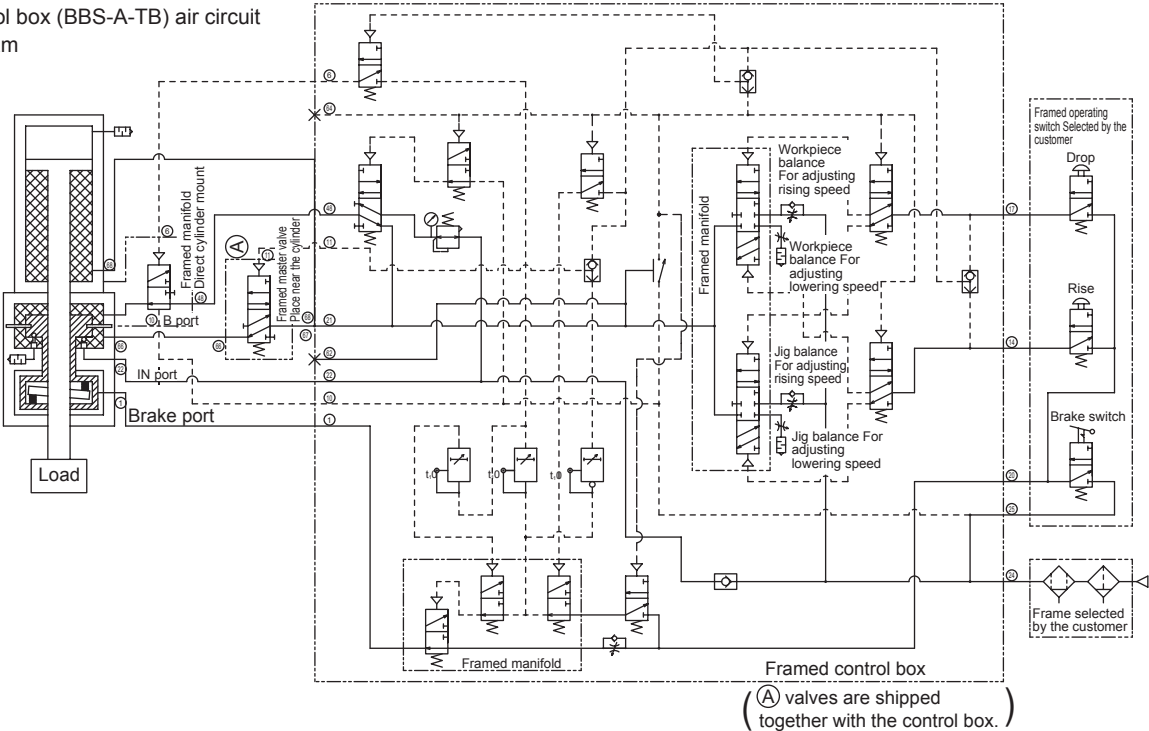
Dimensions

● Control box (BBS-A-TB)



Air circuit diagram

● Control box (BBS-A-TB) air circuit diagram



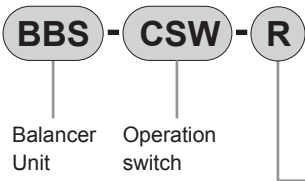
D (push load) is indicated in the figure above.
For U (pull load), the piping to the cylinder is on the head side.

LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Operation switch (for pneumatic type)

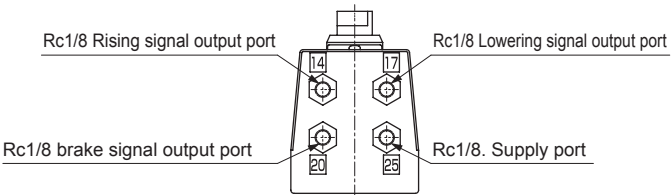
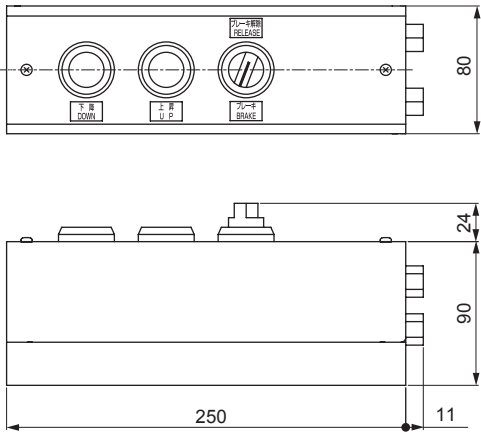
How to order



Code	Description
A Type	
P	Push type
H	Hand
R	Lever
G	Grip

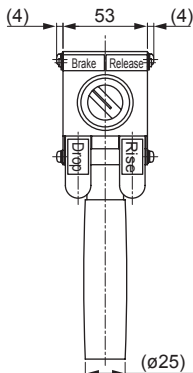
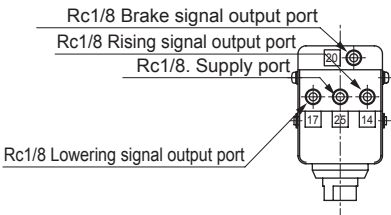
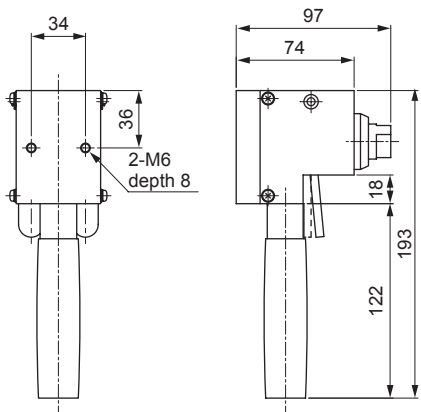
Operation switch outline drawing

● Push type (BBS-CSW-P)



Weight: 1.4kg

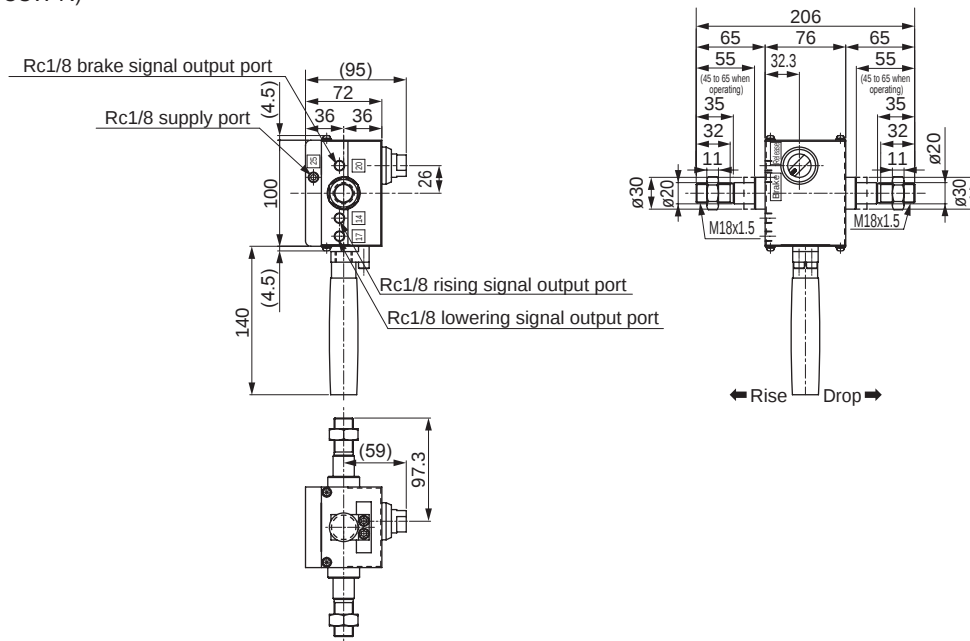
● Hand (BBS-CSW-H)



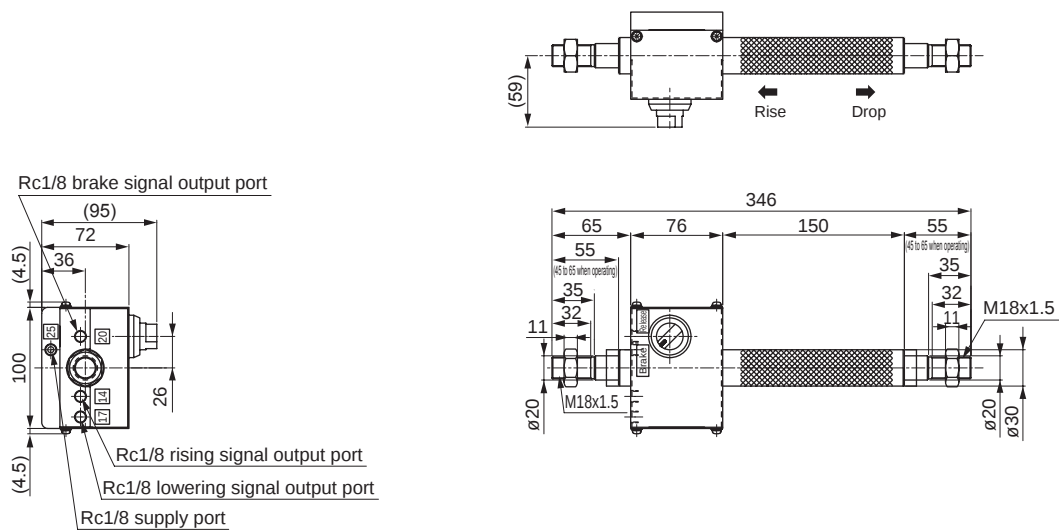
Weight: 1.0kg

Operation switch outline drawing

● Lever (BBS-CSW-R)



● Grip (BBS-CSW-G)



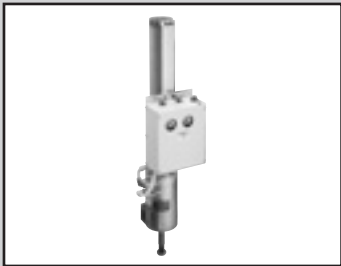
Weight : 2.0kg

Weight : 2.5kg

Assemble the lever and grip operation switch to the piston rod before use.
Adapters for assembly are also available. Contact CKD.

LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending



Balancer unit
Fixed pressure adjustment
Control box separate

Control box integrated

BBS-O Series BBS-OB Series

● Bore size : ø50, ø63, ø80, ø100

RoHS

Specifications

Model No.				
Item	BBS-O-50	BBS-O-63	BBS-O-80	BBS-O-100
Working fluid	Clean compressed air			
Max. working pressure MPa	0.60 (≈87 psi, 6 bar)			
Min. working pressure MPa	0.25 (≈36 psi, 2.5 bar)			
Proof pressure MPa	0.90 (≈130 psi, 9 bar)			
Ambient temperature °C	-5 (23°F) to 50 (122°F) (no freezing)			
Bore size mm	ø50	ø63	ø80	ø100
Max. stroke mm	1500			
Working piston speed mm/s	1 to 200			
Cushion	Rubber cushion			
Lubrication	Not available			
Minimum load range kg	10	16	25	40
Maximum load range *1 kg	70	115	180	285
Operating force N	Refer to page 1277 BBS working force documentation			
Holding force N	1539		3940	

*1 : Refer to page 1277 for details about the maximum load range versus BBS working pressure.

Stroke

Model	Standard stroke (mm)	Max. stroke (mm)	Min. stroke (mm)
BBS-O	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500	1500	100
BBS-OB	300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500	1500	300

Note : The custom stroke is available in 1 mm increments.

Weight table

● Control box separate BBS-O

(Unit : kg)

Bore size (mm)	Product weight at 0 mm stroke					Additional weight per 100 mm stroke
	Basic (00)	Eye bracket (CA)	Clevvis bracket (CB)	Flange		
				FA	FB	
ø50	7.22	7.62	—	8.35	7.56	0.44
ø63	7.52	8.20	—	8.65	8.02	0.52
ø80	10.96	—	11.67	12.88	11.67	0.70
ø100	12.09	—	13.37	14.01	13.44	0.86

● Control box integrated BBS-OB

(Unit : kg)

Bore size (mm)	Product weight at 0 mm stroke					Additional weight per 100 mm stroke
	Basic (00)	Eye bracket (CA)	Clevvis bracket (CB)	Flange		
				FA	FB	
ø50	11.14	11.54	—	12.27	11.48	0.58
ø63	11.44	12.12	—	12.57	11.94	0.66
ø80	14.78	—	15.49	16.70	15.49	0.84
ø100	15.91	—	17.19	17.83	17.26	1.00

How to order

BBS-O - D - CB - 80 D - 300 - Y

A Model No.

B Load direction

*1

C Mounting

*2

D Bore size

E Stroke

*3

F Accessory

*4

⚠ Precautions for model No. selection

*1 : The load direction refers to the input direction of the load to the cylinder.

*2 : Mounting bracket will be shipped with the product.

*3 : The min. stroke of BBS-OB is 300 mm.

*4 : "I" and "Y" cannot be selected together.

*5 : BBS-O control boxes are attached separately.
Connect them to the cylinder yourself.

Code	Description
A Model No.	
BBS-O	Control box separate (*5)
BBS-OB	Control box integrated
B Load direction	
D	Push type
U	Pull type
C Mounting	
OO	Basic
CA	Eye bracket (ø50, ø63) (pin and snap ring attached)
CB	Clevis bracket (ø80, ø100) (pin and snap ring attached)
FA	Rod side flange
FB	Head side flange
D Bore size (mm)	
50	ø50
63	ø63
80	ø80
100	ø100
E Stroke (mm)	
100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500	
F Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)

How to order mounting bracket

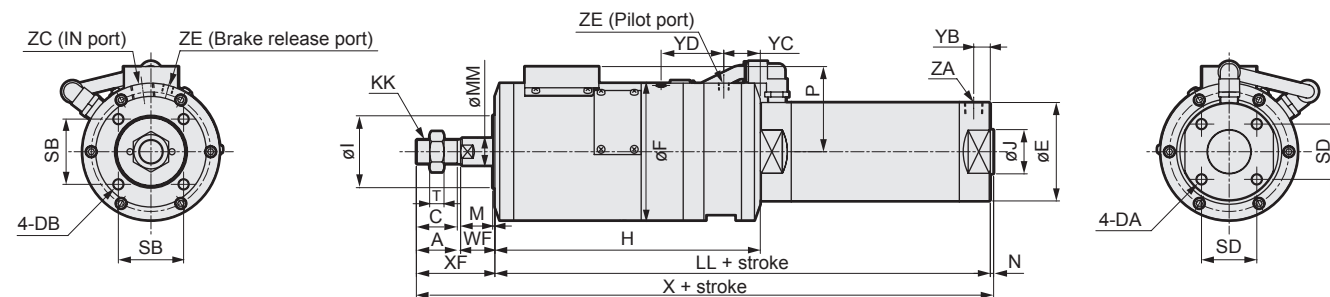
Bore size (mm)	ø50	ø63	ø80	ø100
Mounting bracket				
Flange (FA)	BBS-FA-50	BBS-FA-50	BBS-FA-80	BBS-FA-80
Flange (FB)	SCM-FA-50	SCM-FA-63	SCM-FA-80	SCM-FA-100
Eye bracket (CA)	SCM-CA-50	SCM-CA-63	—	—
Clevis bracket (CB)	—	—	SCM-CB-80	SCM-CB-100

*1 : All mounting brackets have mounting bolts attached.

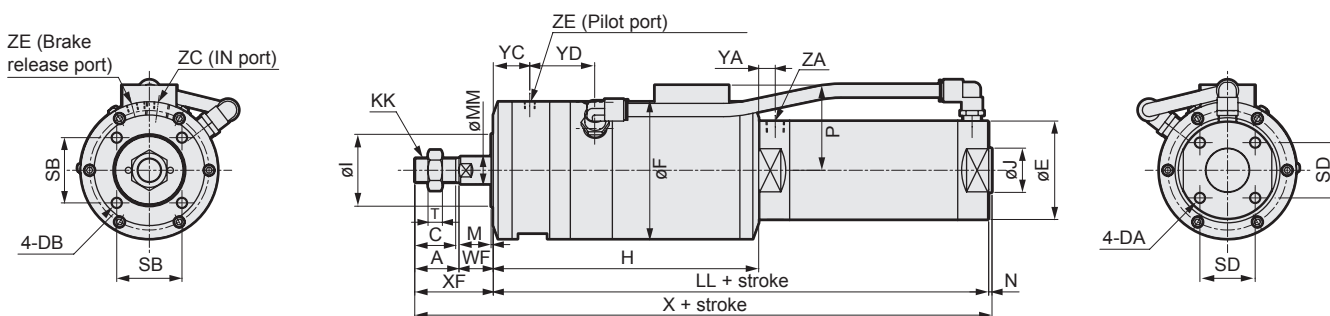
LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MedHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Dimensions

● Control box separated, basic (00), load direction push : (D)



● Control box separated, basic (00), load direction pull : (U)

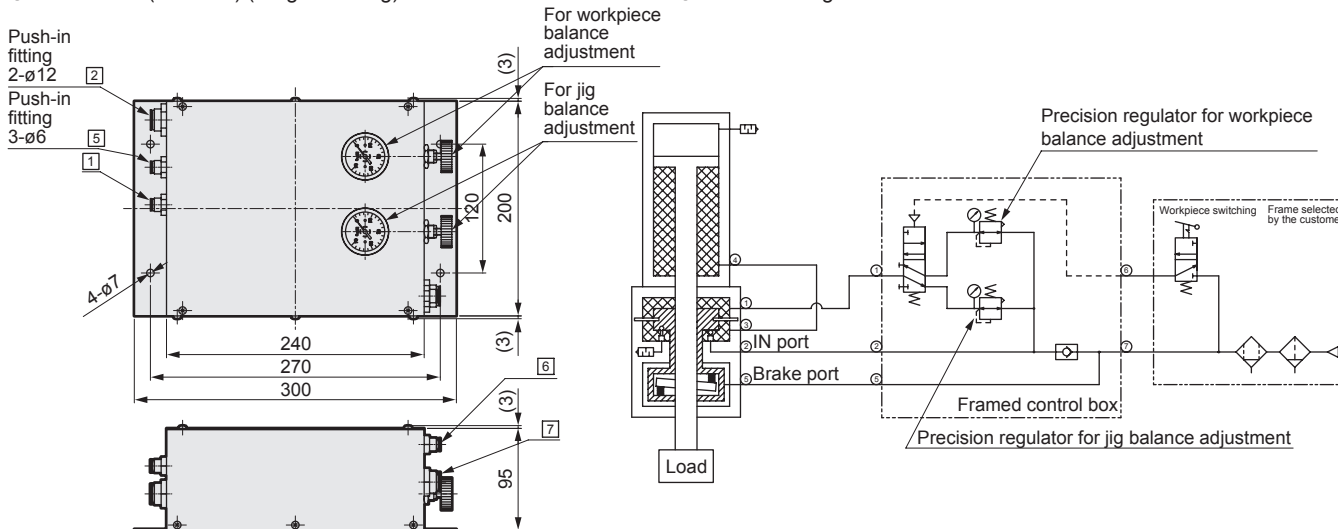


Code	A	C	DA	DB	E	F	H	I	J	KK	LL	MM	M	N
Bore size (mm)														
ø50	35	32	M8 x 1.25 depth 16	M8 x 1.25 depth 15	58	110	224	60	30	M18x1.5	314	20	2	2
ø63	35	32	M10 x 1.5 depth 16	M8 x 1.25 depth 15	72	110	224	60	32	M18x1.5	314	20	2	2
ø80	40	37	M10 x 1.5 depth 22	M10 x 1.5 depth 15	89	124	240	66	40	M22x1.5	348	25	2	3
ø100	40	37	M12 x 1.5 depth 22	M10 x 1.5 depth 15	110	124	240	66	50	M22x1.5	348	25	2	3

Code	P	SB	SD	T	WF	X	XF	YA	YB	YC	YD	ZA	ZE	ZC
Bore size (mm)														
ø50	57	50	32	11	23	374	58	15	12	37	48.5	Rc1/4	Rc1/8	Rc3/8
ø63	57	50	38	11	23	374	58	15	12	37	48.5	Rc1/4	Rc1/8	Rc3/8
ø80	77	59	50	13	31	422	71	15	15	33	56.7	Rc3/8	Rc1/8	Rc1/2
ø100	77	59	60	13	31	422	71	15	15	33	56.7	Rc1/2	Rc1/8	Rc1/2

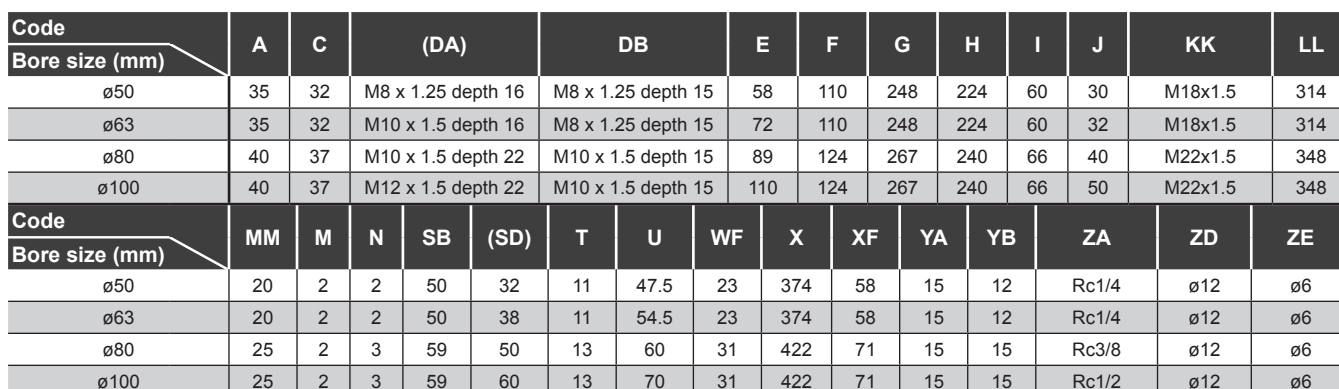
● Control box (included) (weight : 3.7 kg)

● Air circuit diagram



Mounting dimensions of each mounting are the same as BBS-A. Refer to pages 1261 to 1264.

● Control box integrated, basic (00), load direction push : (D)



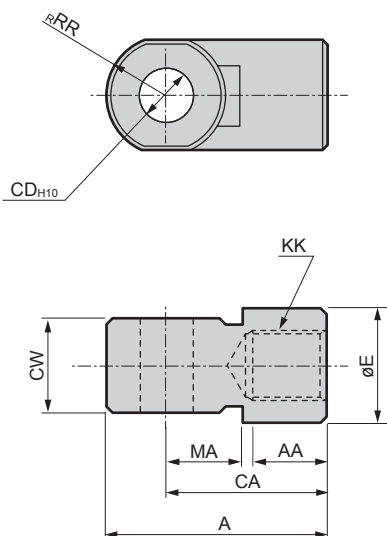
Mounting dimensions of each mounting are the same as BBS-A. Refer to pages 1261 to 1264.

LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MechInd/Chuk
ShkAbs
FJ
FK
SpdContr

Accessory dimensions

● Rod eye

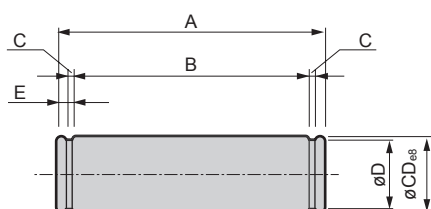
Material : Cast iron
Painting



No.	Bore size (mm)	A	AA	CA	CD	CW	E	KK	MA	RR	Weight (g)
SCM-I-50	50, 63	56	18	40	14	22 ± 0.3	28	M18x1.5	20	16	158
SCM-I-80	80, 100	71	21	50	18	28 ± 0.3	38	M22x1.5	27	21	395

● Pin for clevis

Material : Steel
Zinc chromate plating treatment

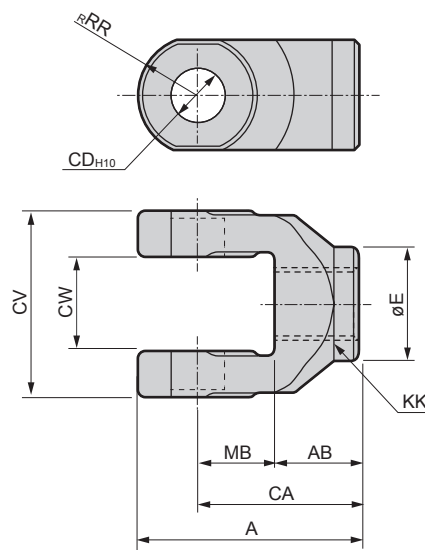


No.	Bore size (mm)	A	B	C	CD	D	E	Applicable snap ring	Weight (g)
SCM-P1-50	50	86	79.6	1.15	16	15.2	2.1	C type for shaft 16	133
SCM-P1-63	63	105.4	97.8	1.35	18	17	2.5	C type for shaft 18	207

*1 : For bore sizes ø80 and ø100, the dimension is the same as the pin for rod eye.

● Rod clevis

Material : Cast iron
Painting

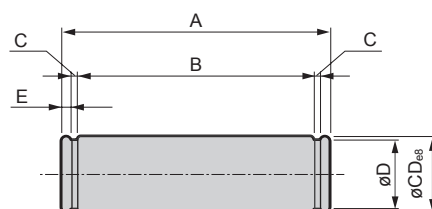


No.	Bore size (mm)	A	AB	CA	CD	CV	CW	E	KK	MB	RR	Pin No.	Weight (g)
SCM-Y-50	50, 63	56	20	40	14	44	22 ± 0.3	28	M18x1.5	20	16	SCM-P-50	258
SCM-Y-80	80, 100	71	23	50	18	56	28 ± 0.3	38	M22x1.5	27	21	SCM-P-80	590

Note : A pin and a snap ring are attached.

● Rod eye pin

Material : Steel
Zinc chromate plating treatment



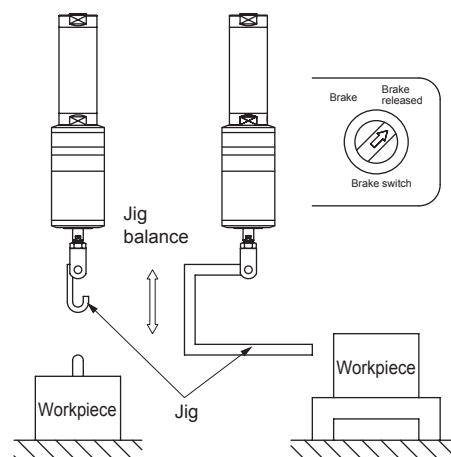
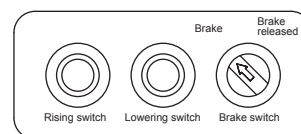
No.	Bore size (mm)	A	B	C	CD	D	E	Applicable snap ring	Weight (g)
SCM-P-50	50, 63	50.6	44.2	1.15	14	13.4	2.1	C type for shaft 14	60
SCM-P-80	80, 100	64	56.2	1.35	18	17	2.6	C type for shaft 18	126

Technical data

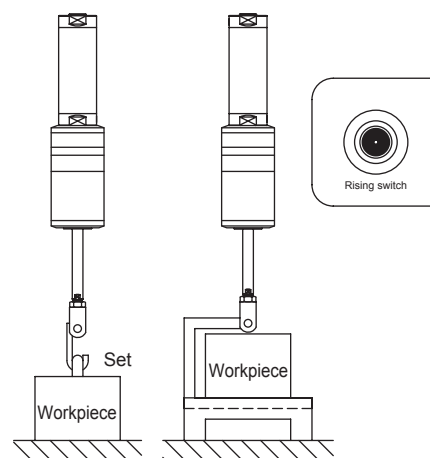
BBS-A Series (auto pressure adjustment) operating method

Operate according to the following procedure.

- 1) Check that the brake switch is in the braking position (brake is ON).
- 2) Supply air.
- 3) Operate the brake switch to release the brake. (Jig balanced state)
- 4) The rising and lowering switches can be operated manually.



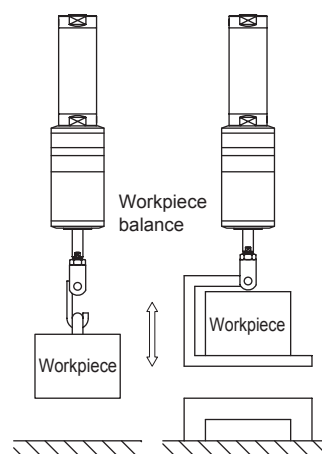
- 5) Set the workpiece into the jig.
- 6) Hold down the rising switch to lift the workpiece, releasing when the workpiece has risen about 50 mm.
The workpiece will balance about 1 second later.
(Note) The weight is detected about 1 second after releasing the switch. Please note that in the interim, any force applied to the workpiece or jig will be detected, causing improper balancing to occur.



- 7) The rising and lowering switches can be operated manually. However, continuous operation (inching operation) with switch cannot be performed.
- 8) Set the workpiece in the required position and press the lowering switch for 1 second to balance the jig.

Return to 4) and then move to the following operation.

If the main air source is cut off due to trouble of some kind, position locking will be activated by the built-in brakes.
For safety reasons, return the brake switch to the braking position after completing operation.



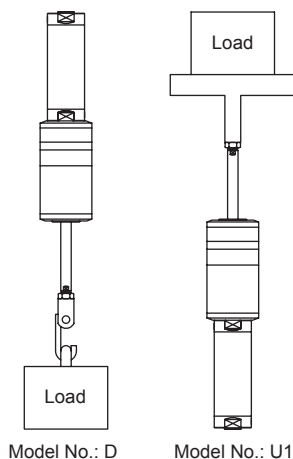
LCM
LCR
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LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr

Ending

Technical data

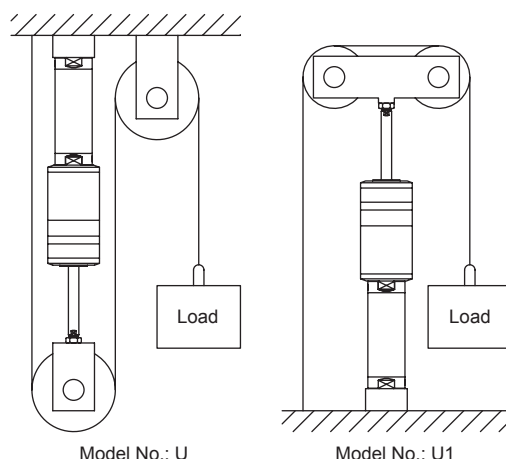
Using the balancer unit more effectively

Standard usage



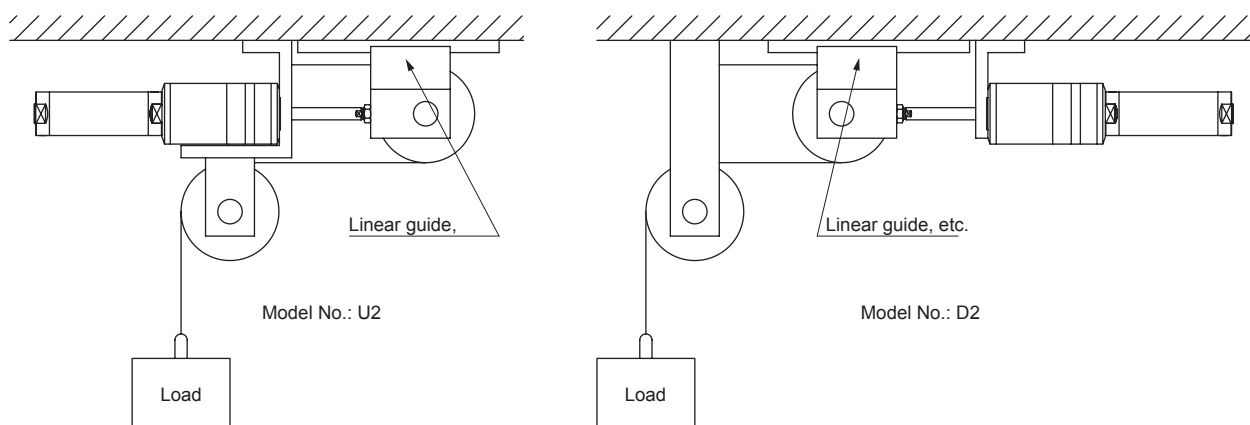
This is the simplest method of use.
The overall height of the unit increases if the cylinder stroke is long.
Operating force may increase slightly if the workpiece is moved rapidly due to flow resistance.

Speed multiplied usage



The overall height of the unit decreases as the cylinder stroke is halved compared to standard usage.
(At 2 times speed)
In theory the operating force is half that of the standard usage type, but the allowable maximum load is also halved.

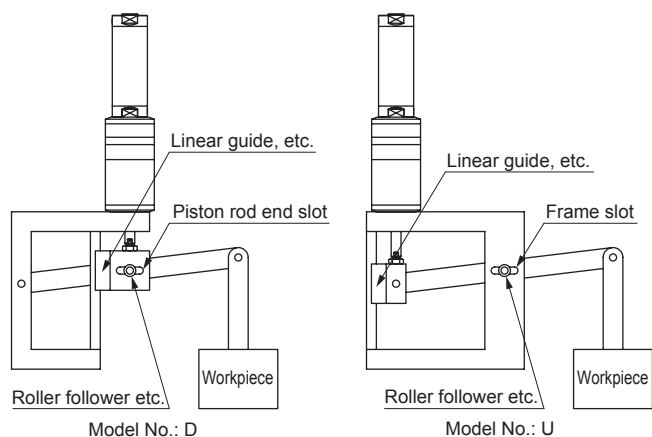
Horizontal speed multiplied usage



The basic specifications are the same as speed multiplied usage, but the overall height of the unit decreases due to the cylinder being horizontal.

(At 2 times speed) In theory the operating force is half that of the standard usage type, but the allowable maximum load is also halved.
Use a linear guide and take care to ensure that self-weight moment of the piston rod or cylinder is not applied.

Lever usage

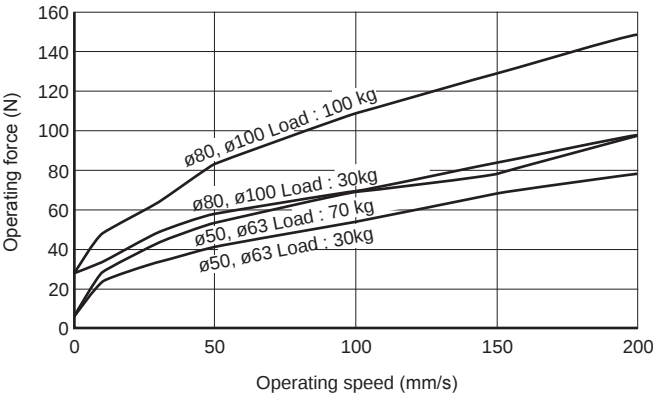


Enables greater freedom of design as the speed multiplier can be freely selected using the lever ratio.

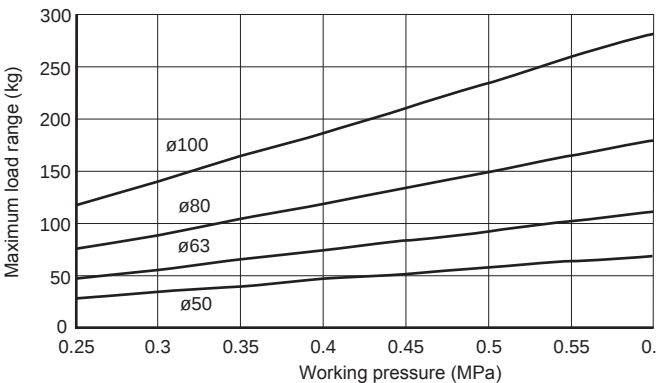
Theoretically, the operating force is divided by the lever ratio. However, the allowable maximum load is also divided by the lever ratio.

Take care to ensure the lever ratio does not change due to vertical operation by using roller followers, etc., and use a linear guide to ensure that eccentric load is not applied to the piston rod.

Operating force



Maximum load range versus working pressure



LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending



Safety Precautions

Be sure to read this section before use.

Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: Balancer unit BBS Series

Design/selection

WARNING

- Do not use the balancer unit at pressures exceeding the max. working pressure or working piston speed.
- Do not rotate the piston rod while brakes are on. It may cause damage.

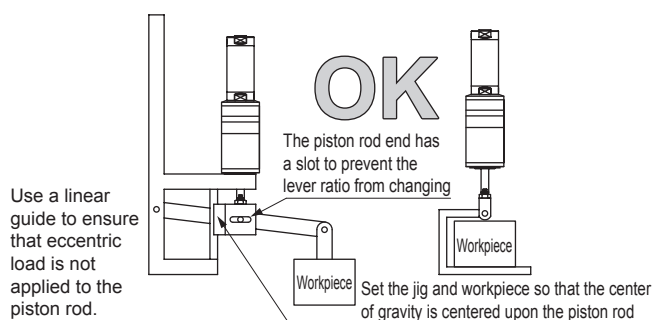
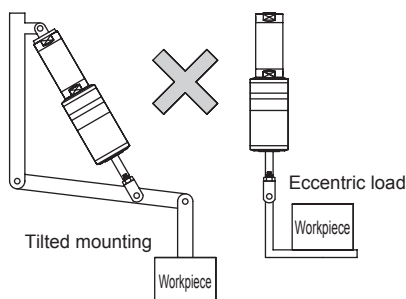
CAUTION

- Compressed air must be clean and dry and passed through an air or oil mist filter. Install a filter on the circuit and note the filtration rating (5 μm or less required), flow rate, and mounting location (near the control circuit).
- When the automatic pressure adjustment is selected for the air method, be sure to use the control box (BBS-A-TB).

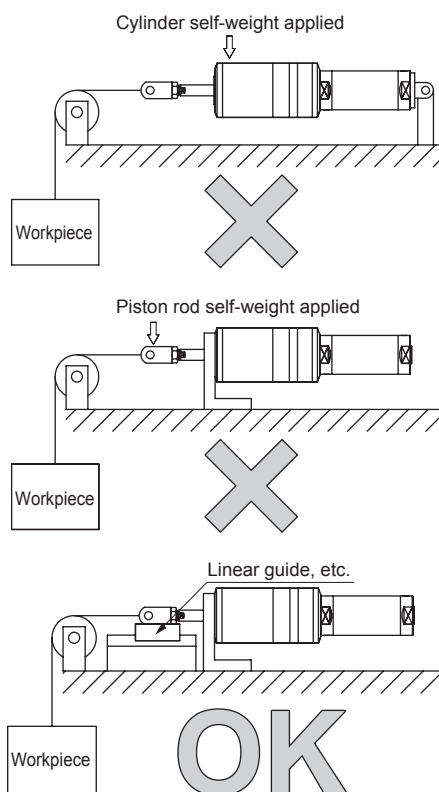
- Periodically discharge the drainage built up in the filter before it exceeds the specified line.
- The valve or cylinder could malfunction if carbonized compressor oil (carbon or tar, etc.) enters the circuit. Take sufficient care when performing compressor maintenance and inspection.
- This unit does not require lubrication. Moreover, lubricating may cause various problems, so refrain from doing so.
- This balancer unit should, in principle, be used indoors only. It can be used outdoors as a movable unit, but must be returned and stored indoors after use.
- Be sure to apply brakes when stepping away from the device during operation. Otherwise serious accidents such as jigs or workpieces falling could result.

Mounting, installation and adjustment

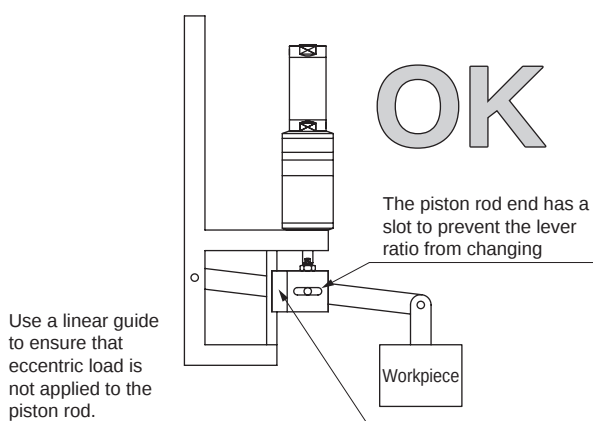
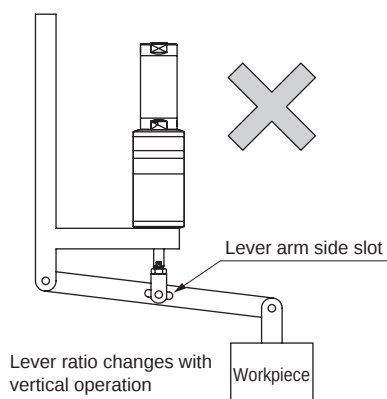
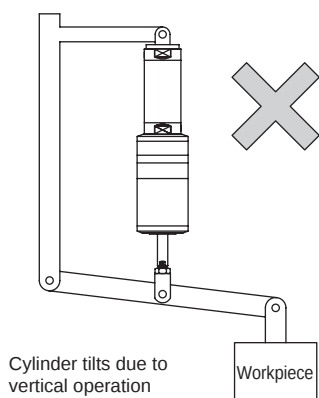
- This balancer unit has a mechanism that automatically detects the load applied to the piston rod; therefore, take care to ensure that eccentric load (tilted mounting or other eccentric loads) is not applied to the piston rod. The piston rod will operate poorly if an eccentric load is applied, requiring additional operating force. Furthermore, the automatic detection function may produce inaccurate results.



- When using the balancer horizontally, check that the piston rod and self-weight moment are not applied.



- When using with a link, use so that the lever ratio stays the same. (Example: fulcrum movement) If the lever ratio changes with vertical movement, the load could move up or down depending on the detection position regardless of manual operation.



- Do not rotate the piston rod while holding the load with brakes.
The piston rod and brake or detector are connected together, so the detector or brake may be damaged if a rotational torque is applied.
- The pilot chamber valve is mounted onto the product, so please do not loosen the bolts in an attempt to remove it. Otherwise air leaks could cause detection pressure to decrease and the jig or workpiece to fall during operation.
- Consider the supplied air flow rate when piping between the balancing unit and control box.
Moreover, the control box should be placed as close to the balancer as possible in order to reduce the piping length. Otherwise the flow volume will decrease, piping length will increase and more operating force will be required.
- When the BBS-A air method is selected, use the pressure gauge and air lamp (use of 2 pressure gauges is possible) for the default setting. The customer is requested to prepare this equipment.
- Please note that the operating force may change during operation depending on the conditions of use.

LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Use/maintenance

⚠ WARNING

- Do not disassemble the product.

⚠ CAUTION

- For safety reasons, return the brake switch to the braking position after completing operation.