Simple Specials:

Made to Order

Simple Specials:
-XA0 to XA30: Change of Rod End Shape

These changes are dealt with Simple Specials System. Refer to front matter 54 for details.

Series **CJ2**, **CM2**, **CG1**, **MB**, **MB1** and **CA2** have been remodeled. For details, refer to "Simple Specials" and "Made to Order" in the individual product catalog.

1 Change of Rod End Shape

Applicable Series

Series			Action	Symbol for change of rod end shape	Note
CJP2	Pin cylinder	**CJP2**	Double acting, Single rod	XA0/1/10/11	ø6, ø10, ø16
CJ2	Standard type	**CJ2**	Double acting, Single rod	XA0/1/10/11	Available with air cushion
			Single acting (Spring return/extend)	XA0/1/10/11	
		CJ2W	Double acting, Double rod	XA0/1/10/11	Available with air cushion
	Non-rotating rod type	**CJ2K**	Double acting, Single rod	XA0/1/10/11	
			Single acting (Spring return/extend)	XA0/1/10/11	
	With speed controller type	**CJ2Z**	Double acting, Single rod	XA0/1/10/11	
		CJ2ZW	Double acting, Double rod	XA0/1/10/11	
	Low friction type	**CJ2□Q**	Double acting, Single rod	XA0/1/10/11	
	Direct mount type	**CJ2RA**	Double acting, Single rod	XA0/1/10/11	
			Single acting (Spring return/extend)	XA0/1/10/11	
	Non-rotating rod, Direct mount type	**CJ2RK**	Double acting, Single rod	XA0/1/10/11	
			Single acting (Spring return/extend)	XA0/1/10/11	
CM2	Standard type	**CM2**	Double acting, Single rod	XA0 to 30	
			Single acting (Spring return/extend)	XA0 to 30	
		CM2W	Double acting, Double rod	XA0 to 30	
	Non-rotating rod type	**CM2K**	Double acting, Single rod	XA0/1/6/10/11/13/14/17/19/21	
	Direct mount type	**CM2R**	Double acting, Single rod	XA0 to 30	
	Non-rotating rod, Direct mount type	**CM2RK**	Double acting, Single rod	XA0/1/6/10/11/13/14/17/19/21	
	Low friction type	**CM2Y**	Double acting, Single rod	XA0 to 30	
	Centralized piping type	**CM2□□P**	Double acting, Single rod	XA0 to 30	
	End lock cylinder	**CBM2**	Double acting, Single rod	XA0 to 30	
	Standard type (Air-hydro type)	**CM2H**	Double acting, Single rod	XA0 to 30	
		CM2WH	Double acting, Double rod	XA0 to 30	
CG1	Standard type	**CG1**	Double acting, Single rod	XA0 to 30	
		CG1W	Double acting, Double rod	XA0 to 30	
	Non-rotating rod type	**CG1K**	Double acting, Single rod	XA0 to 30	
	Direct mount type	**CG1R**	Double acting, Single rod	XA0 to 30	
	End lock cylinder	**CBG1**	Double acting, Single rod	XA0 to 30	
	Low friction type	**CG1Y**	Double acting, Single rod	XA0 to 30	
CG3	Standard type	**CG3**	Double acting, Single rod	XA0 to 30	

Symbol

-XA0 to XA30

Series			Action	Symbol for change of rod end shape	Note
MB	Standard type	MB	Double acting, Single rod	XA0 to 30	
		MBW	Double acting, Double rod	XA0 to 30	
	Non-rotating rod type	MBK	Double acting, Single rod	XA0/1/6/10/11/13/14/17/19/21	
	Low friction type	MB□Q	Double acting, Single rod	XA0 to 30	
	With end lock type	MBB	Double acting, Single rod	XA0 to 30	
MB1	Standard type	MB1	Double acting, Single rod	XA0 to 30	
		MB1W	Double acting, Double rod	XA0 to 30	
	Non-rotating rod type	MB1K	Double acting, Single rod	XA0/1/6/10/11/13/14/17/19/21	
CA2-Z	Standard type	CA2	Double acting, Single rod	XA0 to 30	
		CA2W	Double acting, Double rod	XA0 to 30	
CA2	Standard type	CA2	Double acting, Single rod	XA0 to 30	
		CA2W	Double acting, Double rod	XA0 to 30	
	Non-rotating rod type	CA2K	Double acting, Single rod	XA0/1/6/10/11/13/14/17/19/21	
	Smooth cyinder	CA2Y	Double acting, Single rod	XA0 to 30	
	Standard type (Air-hydro type)	CA2□H	Double acting, Single rod	XA1/3/5 to 8/10/11/13 to 23/26 to 30	
	End lock cylinder	CBA2	Double acting, Single rod	XA0 to 30	ø40 to ø63
CS1	Standard type	CS1	Double acting, Single rod	XA0 to 30	
		CS1W	Double acting, Double rod	XA0 to 30	
	Low friction type	CS1□Q	Double acting, Single rod	XA0 to 30	
CS2	Standard type	CS2	Double acting, Single rod	XA0 to 30	
		CS2W	Double acting, Double rod	XA0 to 30	
	Smooth cylinder	CS2Y	Double acting, Single rod	XA0 to 30	
CG5	Stainless steel cylinder	CG5·S	Double acting, Single rod	XA0 to 30	
CN MN CL	Cylinder with lock	CNG	Double acting, Single rod	XA0 to 30	
		MNB	Double acting, Single rod	XA0 to 30	
		CNA2	Double acting, Single rod	XA0 to 30	
		CNS	Double acting, Single rod	XA0 to 30	
		CLS	Double acting, Single rod	XA0 to 30	
CL	Fine lock cylinder	CLJ2	Double acting, Single rod	XA0/1/10/11	
		CLM2	Double acting, Single rod	XA0 to 30	
		CLG1	Double acting, Single rod	XA0 to 30	
CL	Locked-up cylinder	CL1	Double acting, Single rod	XA0 to 30	
CV	Valve mounted cylinder	CVJ5	Double acting, Single rod	XA0/1/10/11	
		CVJ3	Single acting (Spring return/extend)	XA0/1/10/11	
		CVM5	Double acting, Single rod	XA0 to 30	
		CVM3	Single acting (Spring return/extend)	XA0 to 30	
		CV3	Double acting, Single rod	XA0 to 30	
		CVS1	Double acting, Single rod	XA0 to 30	
		CVM5K	Double acting, Single rod	XA0/1/6/10/11/13/14/17/19/21	
		CVM3K	Single acting (Spring return/extend)	XA0/1/6/10/11/13/14/17/19/21	
		CV3K	Double acting, Single rod	XA0/1/6/10/11/13/14/17/19/21	ø40 to ø63
		CVS1K	Double acting, Single rod	XA0/1/6/10/11/13/14/17/19/21	ø40 to ø63

Simple Specials:
-XA0 to XA30: Change of Rod End Shape

These changes are dealt with Simple Specials System. Refer to front matter 54 for details.

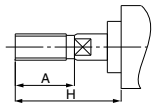
⚠ Precautions

1. SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.

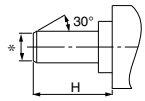
2. Standard dimensions marked with "*" will be as follows to the rod diameter (D). Enter any special dimension you desire.
D ≤ 6 → D – 1 mm, 6 < D ≤ 25 → D – 2 mm, D > 25 → D – 4 mm

3. In the case of double rod type and single acting retraction type, enter the dimensions when the rod is retracted.

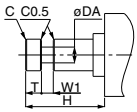
Symbol: A0



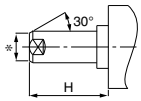
Symbol: A1



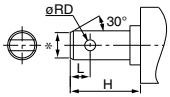
Symbol: A2



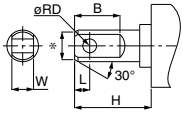
Symbol: A3



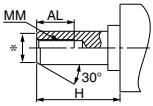
Symbol: A4



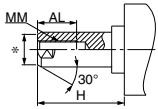
Symbol: A5



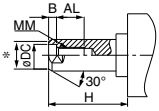
Symbol: A6



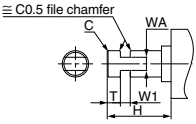
Symbol: A7



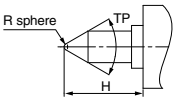
Symbol: A8



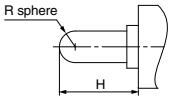
Symbol: A9



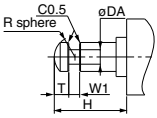
Symbol: A10



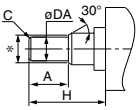
Symbol: A11



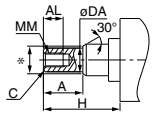
Symbol: A12



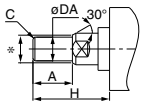
Symbol: A13



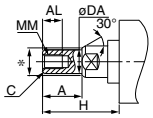
Symbol: A14



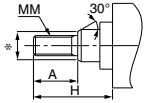
Symbol: A15



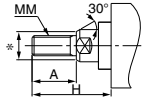
Symbol: **A16**



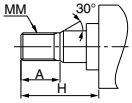
Symbol: **A17**



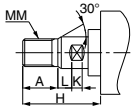
Symbol: **A18**



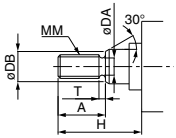
Symbol: **A19**



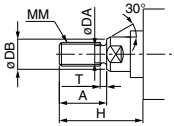
Symbol: **A20**



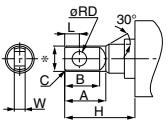
Symbol: **A21**



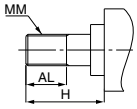
Symbol: **A22**



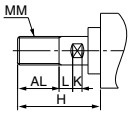
Symbol: **A23**



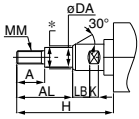
Symbol: **A24**



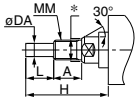
Symbol: **A25**



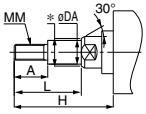
Symbol: **A26**



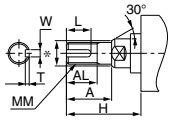
Symbol: **A27**



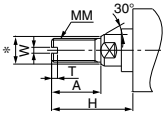
Symbol: **A28**



Symbol: **A29**



Symbol: **A30**



Simple Specials:
-XA0/1/2/6/7/11/17/18: Change of Rod End Shape

These changes are dealt with Simple Specials System. Refer to front matter 54 for details.

2 CUJ (ø6 to ø20): Change of Rod End Shape

Symbol
-XA0/1/2/6/7/11/17/18

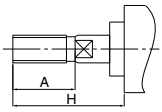
Applicable Series

Series			Action	Symbol for change of rod end shape
CUJ	Standard type	**CUJ**	Double acting, Single rod	ø6 to ø10 XA0/XA1/XA10/XA11 ø12 to ø20 XA0/XA1/XA2/XA6/XA7/XA11 XA17/XA18

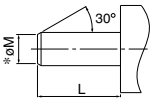
⚠ Precautions

- SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
- Standard dimensions marked with "✻" will be as follows to the rod diameter (D).
  Enter any special dimension you desire.
  ø6 to ø16→D – 1 mm ø20 →D – 2 mm
- It is impossible to manufacture when XA17 and XA18 are the same male thread diameter as the piston rod external diameter.
- Please contact SMC separately for the piston rod end pattern part numbers other than the table above and the cases other than the manufacturing conditions.

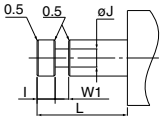
Symbol: **A0**



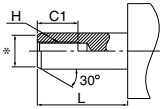
Symbol: **A1**



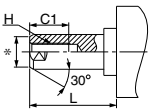
Symbol: **A2**



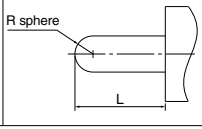
Symbol: **A6**



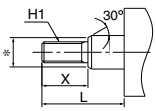
Symbol: **A7**



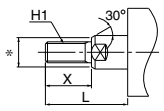
Symbol: **A11**



Symbol: **A17**



Symbol: **A18**



Conditions of Manufacture

ø6 to ø10

Symbol	Conditions of Manufacture	
XA0	ø6	A: 48 mm or less
	ø8	A: 48 mm or less
	ø10	A: 48 mm or less
XA1	ø6	øM: 3.5 mm or less
	ø8	øM: 4.5 mm or less
	ø10	øM: 5 mm or less
XA11	ø6	SR2 mm or more
	ø8	SR2.5 mm or more
	ø10	SR3 mm or more

ø12 to ø20

Symbol	Conditions of Manufacture	
XA0	ø12	A: 20 mm or less
	ø16	A: 22.5 mm or less
	ø20	A: 26.5 mm or less
XA1	ø12	øM: 3 to 5.4 mm
	ø16	øM: 3 to 7 mm
	ø20	øM: 4 to 8 mm
XA2	ø12	øJ: 4 mm or more, øI: 6 mm or less
	ø16	øJ: 4 mm or more, øI: 6 mm or less
	ø20	øJ: 5 mm or more, øI: 11 mm or less
XA6	ø12	H: M4 or less
	ø16	H: M6 or less
	ø20	H: M6 or less
XA7	ø12	H: M4 or less
	ø16	H: M5 or less
	ø20	H: M6 or less

Symbol	Conditions of Manufacture	
XA11	ø12	SR3 mm only
	ø16	SR4 mm only
	ø20	SR5 mm only
XA17	ø12	H: M5 or more, X: 20 mm or less
	ø16	H: M6 or more, X: 22.5 mm or less
	ø20	H: M8 or more, X: 26.5 mm or less
XA18	ø12	H: M5 or more, X: 20 mm or less
	ø16	H: M6 or more, X: 22.5 mm or less
	ø20	H: M8 or more, X: 26.5 mm or less

Simple Specials:
-XA1/2/6/7/11/17/18: Change of Rod End Shape

These changes are dealt with Simple Specials System. Refer to front matter 54 for details.

3 CQS/CQ2 (ø12 to ø25): Change of Rod End Shape

Symbol: **-XA1/2/6/7/11/17/18**

Applicable Series

Series			Action	Symbol for change of rod end shape
CQS	Standard type	CQS	Double acting, Single rod	XA1/XA2/XA6
			Spring acting (Spring return)Note)	
		CQSW	Double acting, Double rod	XA7/XA11
	Long stroke	CQS	Double acting, Single rod	XA17/XA18
	Anti-lateral load	CQS□S	Double acting, Single rod	
	Non-rotating rod type	CQSK	Double acting, Single rod	XA1/XA2 XA6/XA11
		CQSKW	Double acting, Double rod (Non-rotating side)	
			Double acting, Double rod (Round rod side)	XA1/XA2/XA6/XA7 XA11/XA17/XA18

Note) Single acting, spring extend type is available as a special order.

Series			Action	Symbol for change of rod end shape
CQ2 (ø12 to ø25)	Standard type	CQ2	Double acting, Single rod	XA1/XA2/XA6 XA7/XA11 XA17/XA18
			Spring acting (Spring return)	
		CQ2W	Double acting, Double rod	
	Axial piping type (Centralized piping type)	CQP2	Double acting, Single rod	
			Single acting (Spring return)	
	Non-rotating rod type	CQ2K	Double acting, Single rod	XA1/XA2/XA6 XA11/XA17
		CQ2KW	Double acting, Double rod (Non-rotating side)	
			Double acting, Double rod (Round rod side)	XA1/XA2/XA6/XA7 XA11/XA17/XA18

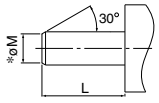
Series			Action	Symbol for change of rod end shape
RQ	Standard type	RQ	Double acting, Single rod	XA1/XA2/XA6/XA7 XA11/XA17/XA18

Series			Action	Symbol for change of rod end shape
CLQ (ø20 to ø25)	With lock	CLQ	Double acting, Single rod	XA1/XA2/XA6/XA7 XA11/XA17/XA18

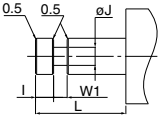
⚠ Precautions

- SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
- Standard dimensions marked with "*" will be as follows to the rod diameter (D). Enter any special dimension you desire.
  ø12, ø16→D – 1 mm ø20, ø25→D – 2 mm
- In the case of double rod, fill in the dimension when the rod is retracted.
- It is impossible to manufacture when XA17 and XA18 are the same male thread diameter as the piston rod external diameter.
- Please contact SMC separately for the piston rod end pattern part numbers other than the table above and the cases other than the manufacturing conditions.

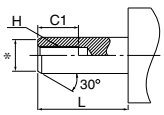
Symbol: **A1**



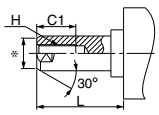
Symbol: **A2**



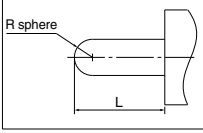
Symbol: **A6**



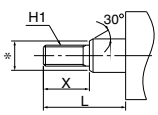
Symbol: **A7**



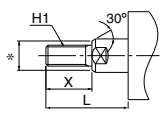
Symbol: **A11**



Symbol: **A17**



Symbol: **A18**



Conditions of Manufacture

Change of rod end shape/Symbol	Single rod type		Double rod type
XA1	For ø12	øM: 3 mm or more 5 mm or less	øM: ø5 mm or less
	ø16	øM: 3 mm or more 7 mm or less	øM: ø7 mm or less
	ø20	øM: 4 mm or more 8 mm or less	øM: ø8 mm or less
	ø25	øM: 4 mm or more 10 mm or less	øM: ø10 mm or less
XA2	For ø12	øJ: 4 mm or more, W1: 6 mm or less	øJ: 3 mm or more, W1: 6 mm or less
	ø16	øJ: 4 mm or more, W1: 6 mm or less	øJ :4 mm or more, W1: 6 mm or less
	ø20	øJ: 5 mm or more, W1: 11 mm or less	øJ: 5 mm or more, W1 :11 mm or less
	ø25	øJ: 6 mm or more, W1: 13 mm or less	øJ: 6 mm or more, W1: 13 mm or less
XA6	For ø12	H: M4 or less	H: M4 or less
	ø16	H: M6 or less	H: M6 or less
	ø20	H: M6 or less	H: M6 or less
	ø25	H: M8 or less	H: M8 or less
XA7	For ø12	H: M4 or less	H: M4 or less
	ø16	H: M5 or less	H: M5 or less
	ø20	H: M6 or less	H: M6 or less
	ø25	H: M8 or less	H: M8 or less

Change of rod end shape/Symbol	Single rod type		Double rod type
XA11	For ø12	SR3 mm only	SR3 mm or more
	ø16	SR4 mm only	SR4 mm or more
	ø20	SR5 mm only	SR5 mm or more
	ø25	SR6 mm only	SR6 mm or more
XA17	For ø12	H: M5 or more, X: 20 mm or less	H: M5 or less
	ø16	H: M6 or more, X: 22.5 mm or less	H: M6 or less
	ø20	H: M8 or more, X: 26.5 mm or less	H: M8 or less
	ø25	H : M10 or more, X: 33 mm or less	H: M10 or less
XA18	For ø12	H: M5 or more, X: 20 mm or less	H: M5 or less
	ø16	H: M6 or more, X: 22.5 mm or less	H: M6 or less
	ø20	H: M8 or more, X: 26.5 mm or less	H: M8 or less
	ø25	H: M10 or more, X: 33 mm or less	H: M10 or less

Simple Specials:
-XA1 to XA23/-XA26 to XA30: Change of Rod End Shape

These changes are dealt with Simple Specials System. Refer to front matter 54 for details.

4 CQ2/RQ (ø32 to ø100)/CQ2 large bore size(ø125 to ø200) : Change of Rod End Shape

Applicable Series

Series			Action	Symbol for change of rod end shape
CQ2 CLQ	Standard type	CQ2	Double acting, Single rod	XA1 to 23 XA26 to 30
			Spring acting (Spring return)(Note)	
		CQ2W	Double acting, Double rod	
	Axial piping type (Centralized piping type)	CQP2	Double acting, Single rod	
			Single acting (Spring return)	
	Anti-lateral load	CQ2□S	Double acting, Single rod	
	With lock	CLQ	Double acting, Single rod	
	Long stroke	CQ2	Double acting, Single rod	
	Non-rotating rod type	CQ2K	Double acting, Single rod	XA1/XA2/XA6 XA10 to XA14 XA19/XA21
		CQ2KW	Double acting, Double rod (Non-rotating side)	
			Double acting, Double rod (Round rod side)	XA1 to 23 XA26 to 30

Note) Single acting, spring extend type is available as a special order.

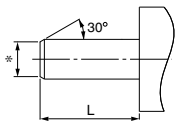
Series			Action	Symbol for change of rod end shape
CQ2	Large bore size ø125 to ø200	CQ2	Double acting, Single rod	XA1 to 23 XA26 to 30
		CQ2W	Double acting, Double rod	

Series			Action	Symbol for change of rod end shape
RQ	Standard type	RQ	Double acting, Single rod	XA1 to 23 XA26 to 30

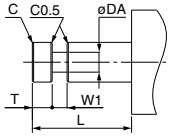
⚠ Precautions

- SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
- Standard dimensions marked with "*" will be as follows to the rod diameter (D).
  Enter any special dimension you desire.
  D – 2 mm
- In the case of double rod, fill in the dimension when the rod is retracted.

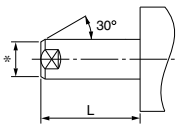
Symbol: **A1**



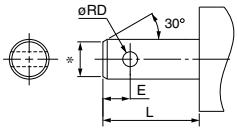
Symbol: **A2**



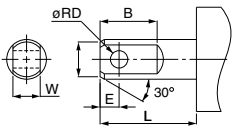
Symbol: **A3**



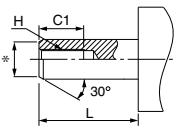
Symbol: **A4**



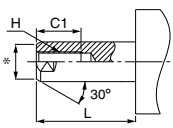
Symbol: **A5**



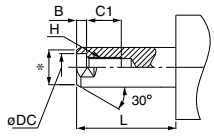
Symbol: **A6**



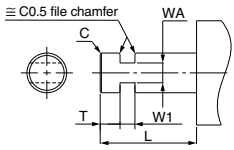
Symbol: **A7**



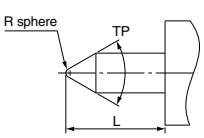
Symbol: **A8**



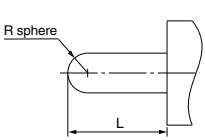
Symbol: **A9**



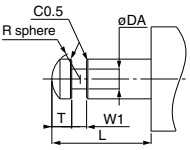
Symbol: **A10**



Symbol: **A11**

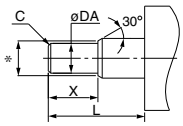


Symbol: **A12**

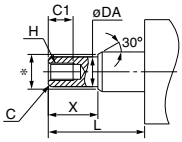


Symbol
-XA1 to XA23/-XA26 to XA30

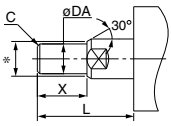
Symbol: **A13**



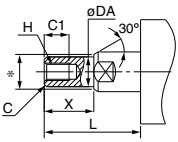
Symbol: **A14**



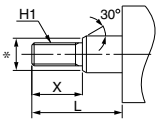
Symbol: **A15**



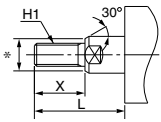
Symbol: **A16**



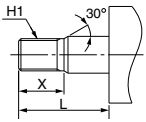
Symbol: **A17**



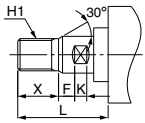
Symbol: **A18**



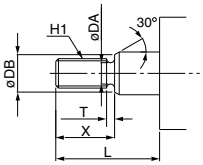
Symbol: **A19**



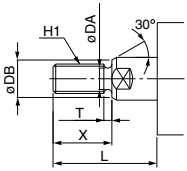
Symbol: **A20**



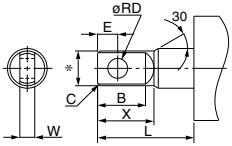
Symbol: **A21**



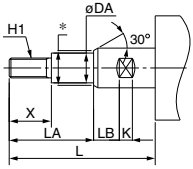
Symbol: **A22**



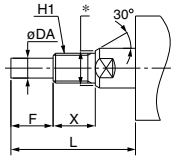
Symbol: **A23**



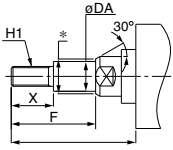
Symbol: **A26**



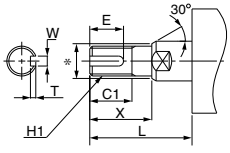
Symbol: **A27**



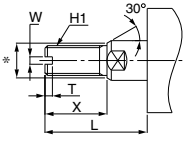
Symbol: **A28**



Symbol: **A29**



Symbol: **A30**



Simple Specials
-XA1 to XA38: Change of Rod End Shape

These changes are dealt with Simple Specials System. Refer to front matter 54 for details.

5 RSQ (ø12 to ø50)/RSG (ø40, ø50): Change of Rod End Shape

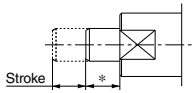
Symbol
-XA1 to XA38

Applicable Series

Series			Action	Symbol for change of rod end shape
RSQ RSG	Stopper cylinder Fixed mounting height	RSQ	Double acting	• For round bar type ø12, ø16 XA1,3,6,7,11,13,17,18,19,32,34 ø20 to ø50 XA1,3,6,7,8,10,11,13,19,32,33,34 • For chamfered type XA35, 36, 37, 38
			Double acting with spring loaded	
			Single acting	
	Stopper cylinder Adjustable mounting height	RSG	Double acting	
			Double acting with spring loaded	
			Single acting	

⚠ Precautions

- SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
- Standard dimensions marked with "∗" will be D – 2 mm to the rod diameter (D).
  Enter any special dimension you desire.
- Bore size ø12, ø16 requires the request for special separately.
- The following diagram shows piston rod at spring extend.



For the lengthwise dimension, enter the amount that you wish to add to the standard dimension.
(If the length is the same for the standard type, ∗ in the figure on the left becomes 0.)

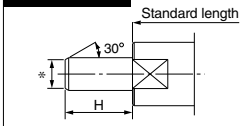
- For chamfered type (XA35 to XA38), make the H dimension to be equal to or less than the values on Table (1). (For the case with larger dimension than Table (1), it will be made-to-order separately.)

Table (1)

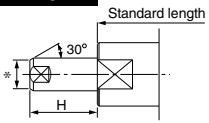
Bore size (mm)	H (mm)
ø12, ø16	40
ø20, ø32	63
ø40, ø50	83

Round Bar

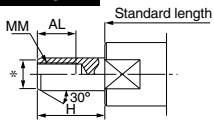
Symbol: **A1**



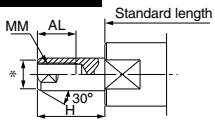
Symbol: **A3**



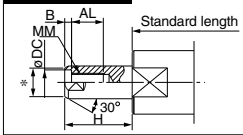
Symbol: **A6**



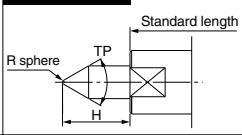
Symbol: **A7**



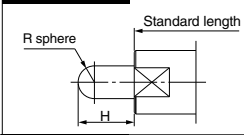
Symbol: **A8**



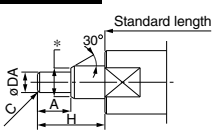
Symbol: **A10**



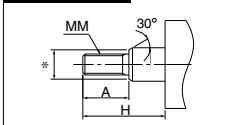
Symbol: **A11**



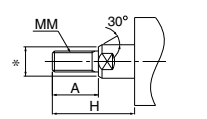
Symbol: **A13**



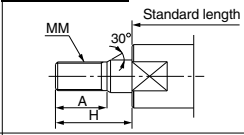
Symbol: **A17**



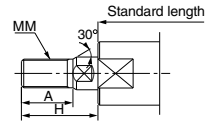
Symbol: **A18**



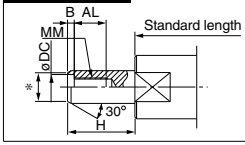
Symbol: **A19**



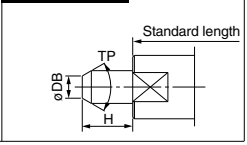
Symbol: **A32**



Symbol: **A33**

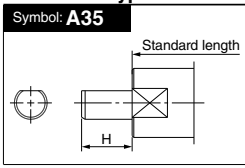


Symbol: **A34**

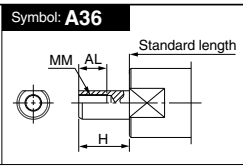


Chamfered Type

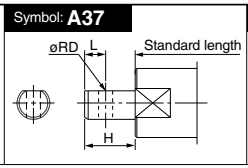
Symbol: **A35**



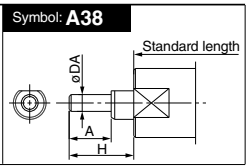
Symbol: **A36**



Symbol: **A37**



Symbol: **A38**



Simple Specials:
-XA1/6/17/21: Change of Guide Rod End Shape

These changes are dealt with Simple Specials System. Refer to front matter 54 for details.

6 MGP/MGQ: Change of Guide Rod End Shape

Symbol **-XA1/6/17/21**

Applicable Series

Series			Action	Symbol for change of rod end shape
MGP-Z MGP	Standard type	MGPM-Z MGPM	Slide bearing	XA1, 6, 17, 21
		MGPA-Z MGPA	Ball bushing bearing	XA1, 6
		MGPL-Z MGPL		
	With lock	MLGPM	Slide bearing	XA1, 6, 17, 21
		MLGPL	Ball bushing bearing	XA1, 6
MGQ	Standard type	MGQM	Slide bearing	XA1, 6, 17, 21
		MGQL	Ball bushing bearing	XA1, 6
	With valve	MVGQM	Slide bearing	XA1, 6, 17, 21
		MVGQL	Ball bushing bearing	XA1, 6

∗ In the case of MGP, it is only applicable for the standard products with rubber bumper.

⚠ Precautions

- Ensure that the cylinder's overall length should not exceed the allowable overall length. In the case of exceeding the allowable overall length, it will be available as specials.
- In fig. (1), (2) below, E′ dimension cannot make it into E dimension or less of the standard products. Confirm by referring to catalog.
- SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
- ∗ dimension should be the guide rod diameter (D) – 2 mm. In the case that the preferred dimension is different, fill in that dimension.

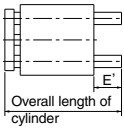


Fig. (1) For XA1, XA6

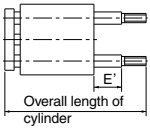


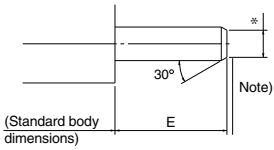
Fig. (2) For XA17, XA21

(mm)

Bore size (mm)	Allowable overall length of cylinder
12, 16	345
20 to 32	540
40 to 63	561
80, 100	603

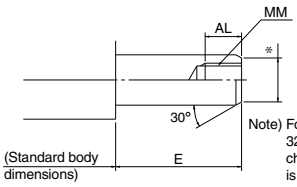
Guide Rod End Shape Pattern

-XA1



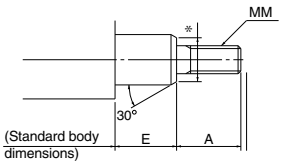
Note) For bore sizes of more than 32 of M□GPL and M□GQL, chamfering of guide rod end is not 30°. It will be C0.5.

-XA6

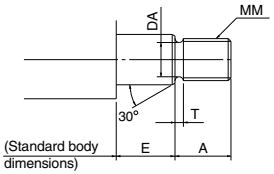


Note) For bore sizes of more than 32 of M□GPL and M□GQL, chamfering of guide rod end is not 30°. It will be C0.5.

-XA17



-XA21



Simple Specials:
-XC14: Change of Trunnion Bracket Mounting Position

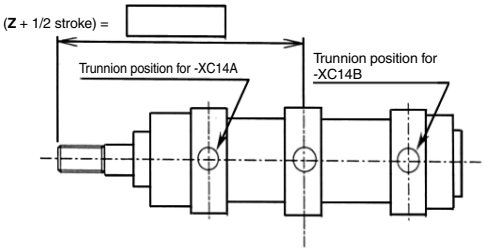
These changes are dealt with Simple Specials System. Refer to front matter 54 for details.

Series **MB** and **CA2** have been remodeled. For details, refer to "Simple Specials" and "Made to Order" in the individual product catalog.

7 Change of Trunnion Bracket Mounting Position

The position for mounting the trunnion pivot bracket on the cylinder can be moved from the standard mounting position to any desired position.

Series	Description	Model	Action	Note
MB	Standard type	MB	Double acting, Single rod	
		MBW	Double acting, Double rod	
	Non-rotating rod type	MBK	Double acting, Single rod	
	Low friction type	MB□Q	Double acting, Single rod	
	End lock cylinder	MBB	Double acting, Single rod	
CA2-Z	Standard type	CA2	Double acting, Single rod	
		CA2W	Double acting, Double rod	
CA2	Standard type	CA2	Double acting, Single rod	
		CA2W	Double acting, Double rod	
	Non-rotating rod type	CA2K	Double acting, Single rod	Applicable to ø40 to ø63
		CA2KW	Double acting, Double rod	Applicable to ø40 to ø63
	Smooth cylinder	CA2Y	Double acting, Single rod	
	End lock cylinder	CBA2	Double acting, Single rod	
	Air-hydro cylinder	CA2H	Double acting, Single rod	
CS1	Standard type	CS1	Double acting, Double rod	
		CS1W	Double acting, Single rod	
	Low friction type	CS1□Q	Double acting, Single rod	
CS2	Standard type	CS2	Double acting, Double rod	
		CS2W	Double acting, Single rod	
	Smooth cylinder	CS2Y	Double acting, Single rod	
CNA2	Cylinder with lock	CNA2	Double acting, Double rod	
		CNA2W	Double acting, Single rod	
CNS		CNS	Double acting, Single rod	
CLS		CLS	Double acting, Single rod	
CL1	Lock-up cylinder	CL1	Double acting, Single rod	Applicable to ø40 to ø100
CVS1	Valve mounted cylinder	CVS1	Double acting, Single rod	
		CVS1K	Double acting, Single rod	Applicable to ø40 to ø63



⚠ Precautions

1. Specify "Z + 1/2 stroke" in the case the trunnion bracket position is not -XC14A, B or trunnion is not a center trunnion.
2. SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
3. The possible range of trunnion bracket mounting position is indicated in the table below.
4. Some trunnion mounting positions do not allow auto switch mounting. Please consult with SMC for more information.
5. When the trunnion position is changed to somewhere close to the cover for the end lock cylinder, there is a possibility that the lock part and the trunnion pivot bracket may interfere with each other. Change the lock position (-X3) at the same time.
6. Series CS2 has a greater range of trunnion bracket mounting positions than Series CS1, so the value of "Z + 1/2 stroke" at -XC14A and -XC14B is different.

Series MB

(mm)

Symbol / Bore size (mm)	Z + 1/2 stroke					
	For -XC14A	For -XC14B	For -XC14		Reference	Minimum stroke
			Minimum	Maximum	Standard (Center trunnion)	
32	82.5	95.5 + Stroke	84	94 + Stroke	89 + 1/2 stroke	1
40	89	97 + Stroke	90	96 + Stroke	93 + 1/2 stroke	1
50	100.5	109.5 + Stroke	102	108 + Stroke	105 + 1/2 stroke	1
63	103.5	106.5 + Stroke	105	105 + Stroke	105 + 1/2 stroke	1
80	127	131 + Stroke	128	130 + Stroke	129 + 1/2 stroke	1
100	130	128 + Stroke	131	127 + Stroke	129 + 1/2 stroke	1
125	160	154 + Stroke	160.5	153.5 + Stroke	157 + 1/2 stroke	1

Series CA2-Z/CA2/CBA2/CVS1

(mm)

Symbol / Bore size (mm)	Z + 1/2 stroke					
	For -XC14A	For -XC14B	For -XC14		Reference	Minimum stroke
			Minimum	Maximum	Standard (Center trunnion)	
40	89	97 + Stroke	89.5	96.5 + Stroke	93 + 1/2 stroke	1
50	99	107 + Stroke	99.5	106.5 + Stroke	103 + 1/2 stroke	1
63	103	111 + Stroke	103.5	110.5 + Stroke	107 + 1/2 stroke	1
80	125	133 + Stroke	125.5	132.5 + Stroke	129 + 1/2 stroke	1
100	132	138 + Stroke	132.5	137.5 + Stroke	135 + 1/2 stroke	1

Series CS1

(mm)

Symbol / Bore size (mm)	Z + 1/2 stroke					
	For -XC14A	For -XC14B	For -XC14		Reference	Minimum stroke
			Minimum	Maximum	Standard (Center trunnion)	
125	170	148 + Stroke	170.5	147.5 + Stroke	159 + 1/2 stroke	25
140	172.5	145.5 + Stroke	173	145 + Stroke	159 + 1/2 stroke	30
160	189	157 + Stroke	189.5	156.5 + Stroke	173 + 1/2 stroke	35
180	203.5	177.5 + Stroke	204	177 + Stroke	190.5 + 1/2 stroke	30
200	203.5	177.5 + Stroke	204	177 + Stroke	190.5 + 1/2 stroke	30
250	243.5	217.5 + Stroke	244	217 + Stroke	230.5 + 1/2 stroke	30
300	263.5	232.5 + Stroke	264	232 + Stroke	248 + 1/2 stroke	35

Symbol
-XC14

Series CS2

(mm)

Bore size (mm) \ Symbol	Z + 1/2 x Stroke					
	For -XC14A	For -XC14B	For -XC14		Reference Standard (Center trunnion)	Minimum stroke
			Minimum	Maximum		
125	165.5	152.5 + Stroke	166	152 + Stroke	159 + 1/2 x Stroke	25
140	168	150 + Stroke	168.5	149.5 + Stroke	159 + 1/2 x Stroke	30
160	186	160 + Stroke	186.5	159.5 + Stroke	173 + 1/2 x Stroke	35

Series CNA2

(mm)

Bore size (mm) \ Symbol	Z + 1/2 stroke Without rod boot					
	For -XC14A	For -XC14B	For -XC14		Reference Standard (Center trunnion)	Minimum stroke
			Minimum	Maximum		
40	158	166 + Stroke	158.5	165.5 + Stroke	162 + 0.5 stroke	25
50	177	185 + Stroke	177.5	184.5 + Stroke	181 + 0.5 stroke	25
63	187	195 + Stroke	187.5	194.5 + Stroke	191 + 0.5 stroke	32
80	227	235 + Stroke	227.5	234.5 + Stroke	231 + 0.5 stroke	41
100	252	258 + Stroke	252.5	257.5 + Stroke	255 + 0.5 stroke	45

Series CNS

(mm)

Bore size (mm) \ Symbol	Z + 1/2 stroke Without rod boot					
	For -XC14A	For -XC14B	For -XC14		Reference Standard (Center trunnion)	Minimum stroke
			Minimum	Maximum		
125	375	353 + Stroke	375.5	352.5 + Stroke	364 + 0.5 stroke	25
140	417.5	390.5 + Stroke	418	390 + Stroke	404 + 0.5 stroke	30
160	479	447 + Stroke	479.5	446.5 + Stroke	463 + 0.5 stroke	35
Bore size (mm) \ Symbol	Z + ℓ + 1/2 stroke With rod boot					
	For -XC14A	For -XC14B	For -XC14		Reference Standard (Center trunnion)	Minimum stroke
			Minimum	Maximum		
125	398 + ℓ	376 + ℓ + Stroke	398.5 + ℓ	375.5+ℓ + Stroke	387 + ℓ + 1/2 stroke	30
140	440.5 + ℓ	413.5 + ℓ + Stroke	441 + ℓ	413+ℓ + Stroke	427 + ℓ + 1/2 stroke	30
160	500 + ℓ	468 + ℓ + Stroke	500.5 + ℓ	467.5+ℓ + Stroke	484 + ℓ + 1/2 stroke	35

Series CLS

(mm)

Bore size (mm) \ Symbol	Z + 1/2 stroke Without rod boot					
	For -XC14A	For -XC14B	For -XC14		Reference Standard (Center trunnion)	Minimum stroke
			Minimum	Maximum		
125	280	258 + Stroke	280.5	257.5 + Stroke	269 + 0.5 stroke	25
140	282.5	255.5 + Stroke	283	255 + Stroke	269 + 0.5 stroke	30
160	321	289 + Stroke	321.5	288.5 + Stroke	305 + 0.5 stroke	35
Bore size (mm) \ Symbol	With rod boot					
	For -XC14A	For -XC14B	For -XC14		Reference Standard (Center trunnion)	Minimum stroke
			Minimum	Maximum		
125	303 + 0.2 stroke	281+1.2 stroke	303.5 + 0.2 stroke	280.5 + 1.2 stroke	292 + 0.7 stroke	25
140	305.5 + 0.2 stroke	278.5+1.2 stroke	306 + 0.2 stroke	278 + 1.2 stroke	292 + 0.7 stroke	30
160	345 + 0.2 stroke	310+1.2 stroke	345.5 + 0.2 stroke	309.5 + 1.2 stroke	326 + 0.7 stroke	35

Series CL1

(mm)

Bore size (mm) \ Symbol	Z + 1/2 stroke Without rod boot					
	For -XC14A	For -XC14B	For -XC14		Reference Standard (Center trunnion)	Minimum stroke
			Minimum	Maximum		
40	158	166 + Stroke	158.5	165.5 + Stroke	162 + 1/2 stroke	—
50	177	185 + Stroke	177.5	184.5 + Stroke	181 + 1/2 stroke	—
63	187	195 + Stroke	187.5	194.5 + Stroke	191 + 1/2 stroke	—
80	217	225 + Stroke	217.5	224.5 + Stroke	221 + 1/2 stroke	—
100	232	238 + Stroke	232.5	237.5 + Stroke	235 + 1/2 stroke	—
Bore size (mm) \ Symbol	Z + ℓ + 1/2 stroke With rod boot					
	For -XC14A	For -XC14B	For -XC14		Reference Standard (Center trunnion)	Minimum stroke
			Minimum	Maximum		
40	166 + ℓ	174 + ℓ + Stroke	166.5 + ℓ	173.5 + ℓ + Stroke	170 + ℓ+1/2 stroke	20
50	185 + ℓ	193 + ℓ + Stroke	185.5 + ℓ	192.5 + ℓ + Stroke	189 + ℓ+1/2 stroke	20
63	195 + ℓ	203 + ℓ + Stroke	195.5 + ℓ	202.5 + ℓ + Stroke	199 + ℓ+1/2 stroke	20
80	226 + ℓ	234 + ℓ + Stroke	226.5 + ℓ	233.5 + ℓ + Stroke	230 + ℓ+1/2 stroke	20
100	241 + ℓ	247 + ℓ + Stroke	241.5 + ℓ	246.5 + ℓ + Stroke	244 + ℓ+1/2 stroke	20

Simple Specials:
-XC15: Change of Tie-rod Length

These changes are dealt with Simple Specials System. Refer to front matter 54 for details.

Series **CA2** has been remodeled. For details, refer to "Simple Specials" and "Made to Order" in the individual product catalog.

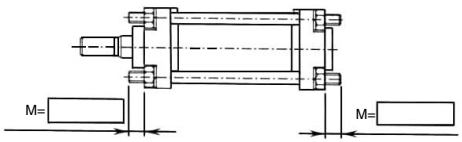
Symbol
-XC15

8 Change of Tie-rod Length

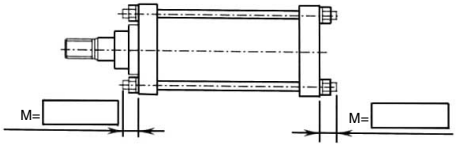
Cylinder with M dimension for tie-rod length changed from the standard length.

Series	Description	Model	Action	Note
CA2-Z	Standard type	**CA2**	Double acting, Single rod	
		CA2W	Double acting, Double rod	
CA2	Standard type	**CA2**	Double acting, Single rod	
		CA2W	Double acting, Double rod	
	Non-rotating rod type	**CA2K**	Double acting, Single rod	Applicable to ø40 to ø63
		CA2KW	Double acting, Double rod	Applicable to ø40 to ø63
	Smooth cylinder	**CA2Y**	Double acting, Single rod	
	Air-hydro cylinder	**CA2H**	Double acting, Single rod	
	End lock cylinder	**CBA2**	Double acting, Single rod	
CS1	Standard type	**CS1**	Double acting, Single rod	
		CS1W	Double acting, Double rod	
	Low friction type	**CS1□Q**	Double acting, Single rod	
CS2	Standard type	**CS2**	Double acting, Single rod	
		CS2W	Double acting, Double rod	
	Smooth cylinder	**CS2Y**	Double acting, Single rod	
CNA2	Cylinder with lock	**CNA2**	Double acting, Single rod	
		CNA2W	Double acting, Double rod	
CV	Valve mounted cylinder	**CV3**	Double acting, Single rod	
		CV3K	Double acting, Single rod	Applicable to ø40 to ø63
		CVS1	Double acting, Single rod	
		CVS1K	Double acting, Single rod	Applicable to ø40 to ø63

Series CA2, CNA2, CBA2, CV



Series CS1, CS2



⚠ Precautions

1. To order, specify the M dimension as well as the part number.
2. SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
3. Tie-rod length changeable range is described in the below.
4. The M dimension of the bracket mounting side of Flange (F, G), Clevis (C, D) types cannot be specified.

Tie-rod Length Changeable Range

(mm)

Model	CA2, CNA2, CBA2, CV	CS1						
Bore size (mm)	All bore size	125	140	160	180	200	250	300
M Min.	0	15.5		18	20.5	22	26	32.5
M Max.	300 (1)	270						

Note 1) The maximum value of M on the rod side for the CNA2 series is 50.

Tie-rod Length Changeable Range

(mm)

Model	CS2					
Bore size (mm)	125		140		160	
Mounting bracket	L	B, F, G, C, D, T	L	B, F, G, C, D, T	L	B, F, G, C, D, T
M Min.	20	12	21	12	23	14
M Max.	270					

Simple Specials:
-XC79: Tapped Hole, Drilled Hole, Pinned Hole Machined Additionally

These changes are dealt with Simple Specials System. Refer to front matter 54 for details.

Symbol **-XC79**

9 Tapped Hole, Drilled Hole, Pinned Hole Machined Additionally

This simple special is meant for machining additionally tapped hole, drilled hole, and pinned hole, as requested from customer, on parts designed largely for mounting a workpiece, etc. in the combined air cylinders.
But, for each model, since they have the portions which are impossible to machine additionally, refer to the additional machining limitation.

Applicable Series

Series			Type
MGP-Z **MGP** **MGQ**	Compact guide cylinder	**MGP-Z** **MGP**	Standard type
		MGP	With air cushion
			With end lock
		MLGP	With lock
		MGPA-Z **MGPA**	High precision ball bushing bearing type
		MGQ	Standard type
		MVGQ	With valve

Series			Type
MGG **MGC**	Guide cylinder	**MGG**	Standard type
			With end lock
		MGC	Compact type
		MLGC	Compact type/With lock
MGF	Guide table	**MGF**	
MXH	Compact slide	**MXH-Z**	Standard type

Applicable Series and Component Parts Machined Additionally

Applicable series	Component parts applicable for additional machining
MGP-Z, MGP, MGQ, MLGP	Plate
MGG, MGC, MLGC	Front plate
MGF	Plate (Upper plate only)
MXH-Z	Table

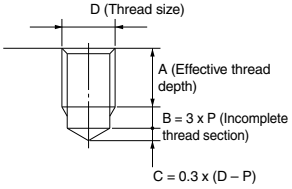
⚠ Precautions

- We cannot take any responsibility as for the intensity of holes machined additionally and the effects of decreased intensity for the product itself.
- It will not be plated again for the machined part additionally.
- Be sure to fill in “through” for through-hole, and “effective depth” for blind hole.
- When using by machining through-hole additionally, ensure that the tip of the bolt, etc. for mounting workpiece should not stick into the cylinder side. It may result in an unexpected problem.
- Use caution not to interfere the existing mounting hole on the standard products with the hole to be machined additionally. But it is possible to drill additionally the larger size of hole at the same position as the existing hole.

Common Complementary Explanation/Holes which can be additionally machined are the following 3 types.

Tapped hole

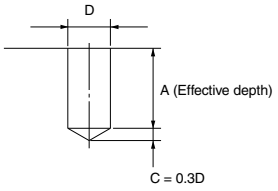
Designated nominal diameter and tapped hole of a pitch are machined additionally. (Maximum nominal thread diameter M20)
Blind hole is deep into the bottom of prepared hole which sums up A to C in the figure below in contrast to the effective depth of tapped hole. When there is a condition which does not allow through-hole, etc., leave sufficient thickness in the inner part of hole.



Note) P stands for thread pitch.

Drilled hole

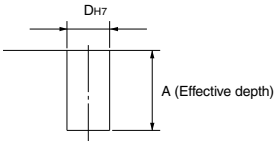
Drilled hole of a designated internal diameter is machined.
(Maximum hole diameter 20 mm)
If you wish for blind hole, instruct us with effective depth. (Refer to the figure below.) Besides, dimensional accuracy for internal diameter will be ±0.2 mm.



Pinned hole

Pinned hole of a designated diameter (reamer hole) is machined. (Maximum hole diameter 20 mm)
Internal dimension tolerates H7 tolerance to the designated hole diameter. (Refer to the table below.)

Hole dia.	3 or less	Over 3 to 6	Over 6 to 10	Over 10 to 18	Over 18 to 20
Tolerance	+0.01 0	+0.012 0	+0.015 0	+0.018 0	+0.021 0



-X□

Simple Specials:
-XC79: Tapped Hole, Drilled Hole, Pinned Hole Machined Additionally

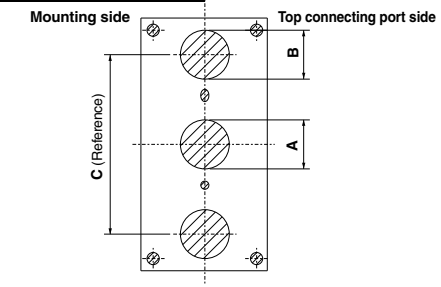
These changes are dealt with Simple Specials System. Refer to front matter 54 for details.

9 Tapped Hole, Drilled Hole, Pinned Hole Machined Additionally

Limitation for Machining Additionally/Since the slanted lines denote the restricted range for machining additionally, design the dimensions, referring to below.

Series MGP-Z/MGP/MLGP/MGPA

Plate material: Steel

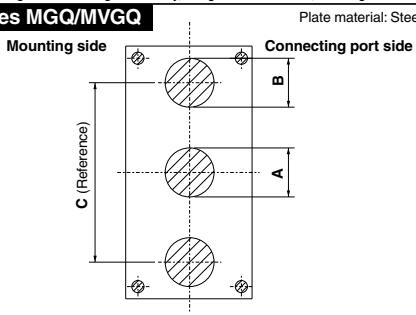


Dimensional Range Not Possible to Machine Additionally (mm)

Bore size (mm)	A	B	C
12	8	11	41
16	10	13	46
20	12	15	54
25	14	21	64
32	25	25	78
40	25	25	86
50	30	30	110
63	30	30	124
80	34	34	156
100	42	42	188

Series MGQ/MVGQ

Plate material: Steel

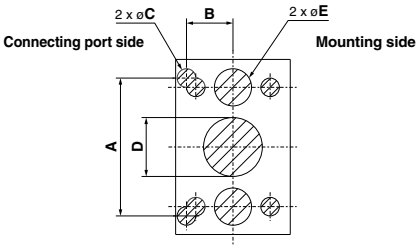


Dimensional Range Not Possible to Machine Additionally (mm)

Bore size (mm)	A	B	C
12	8	11	36
16	10	13	38
20	12	15	46
25	14	21	56
32	25	25	80
40	25	25	90
50	30	30	100
63	30	30	110
80	34	34	140
100	42	42	170

Series MGG

Front plate material: Steel

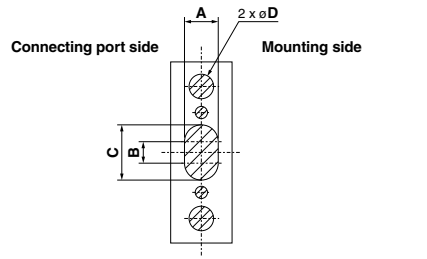


Dimensional Range Not Possible to Machine Additionally (mm)

Bore size (mm)	A	B	C	D	E
20	70	17.5	9	24	12.5
25	85	20	13	31	13
32	91	23	13	31	19
40	114	29	19	36	23
50	132	34	19	44	29
63	156	38	19	44	30
80	186	44	26	58	35
100	214	49	26	64	40

Series MGC/MLGC

Front plate material: Steel



MGC Dimensional Range Not Possible to Machine Additionally (mm)

Bore size (mm)	A	B	C	D
20	18	10	28	12.5
25	23	13	36	12.5
32	23	13	36	19
40	27	15	42	23
50	33	19	52	28

MLGC Dimensional Range Not Possible to Machine Additionally (mm)

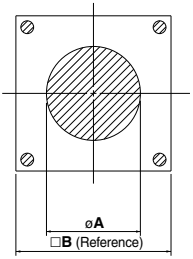
Bore size (mm)	A	B	C	D
20	18	10	28	16
25	23	13	36	20
32	23	13	36	20
40	27	15	42	25

Symbol
-XC79

Limitation for Machining Additionally/Since the slanted lines denote the restricted range for machining additionally, design the dimensions, referring to below.

Series MGF

Top plate material: Aluminum



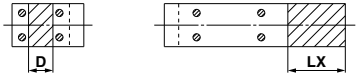
Connecting port side

Dimensional Range Not Possible to Machine Additionally (mm)

Model	A	B
MGF40	90	120
MGF63	120	160
MGF100	160	200

Series MXH-Z

Table material: Aluminum



Dimensional Range Not Possible to Machine Additionally (mm)

Model	D	LX
MXH6	9	20
MXH10	11	22
MXH16	16	29
MXH20	22	32