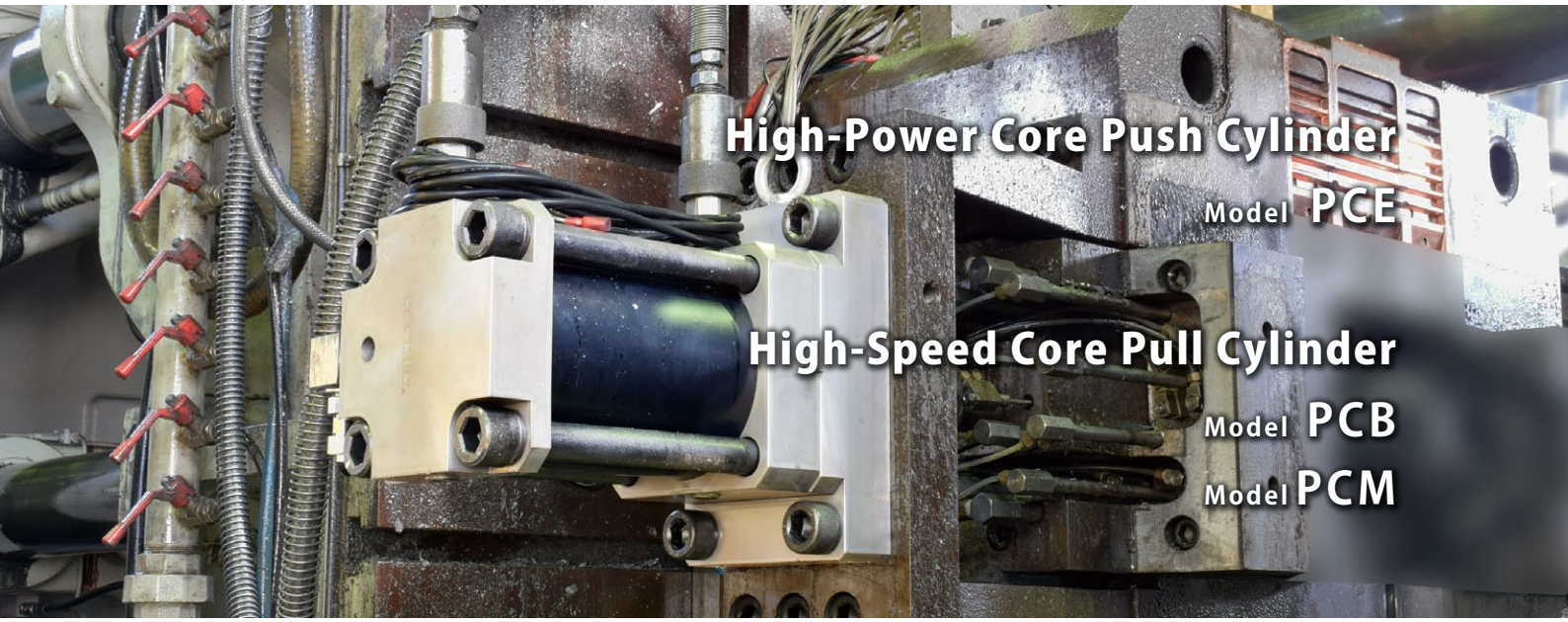
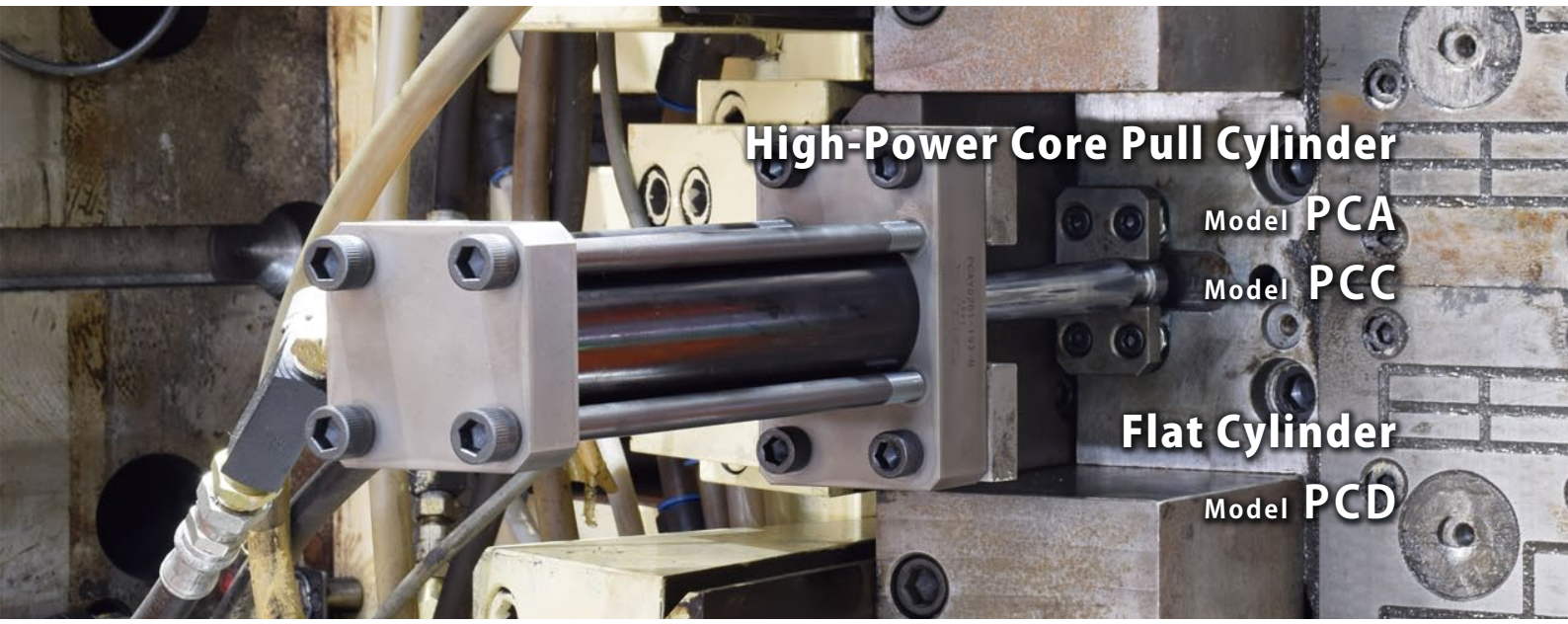
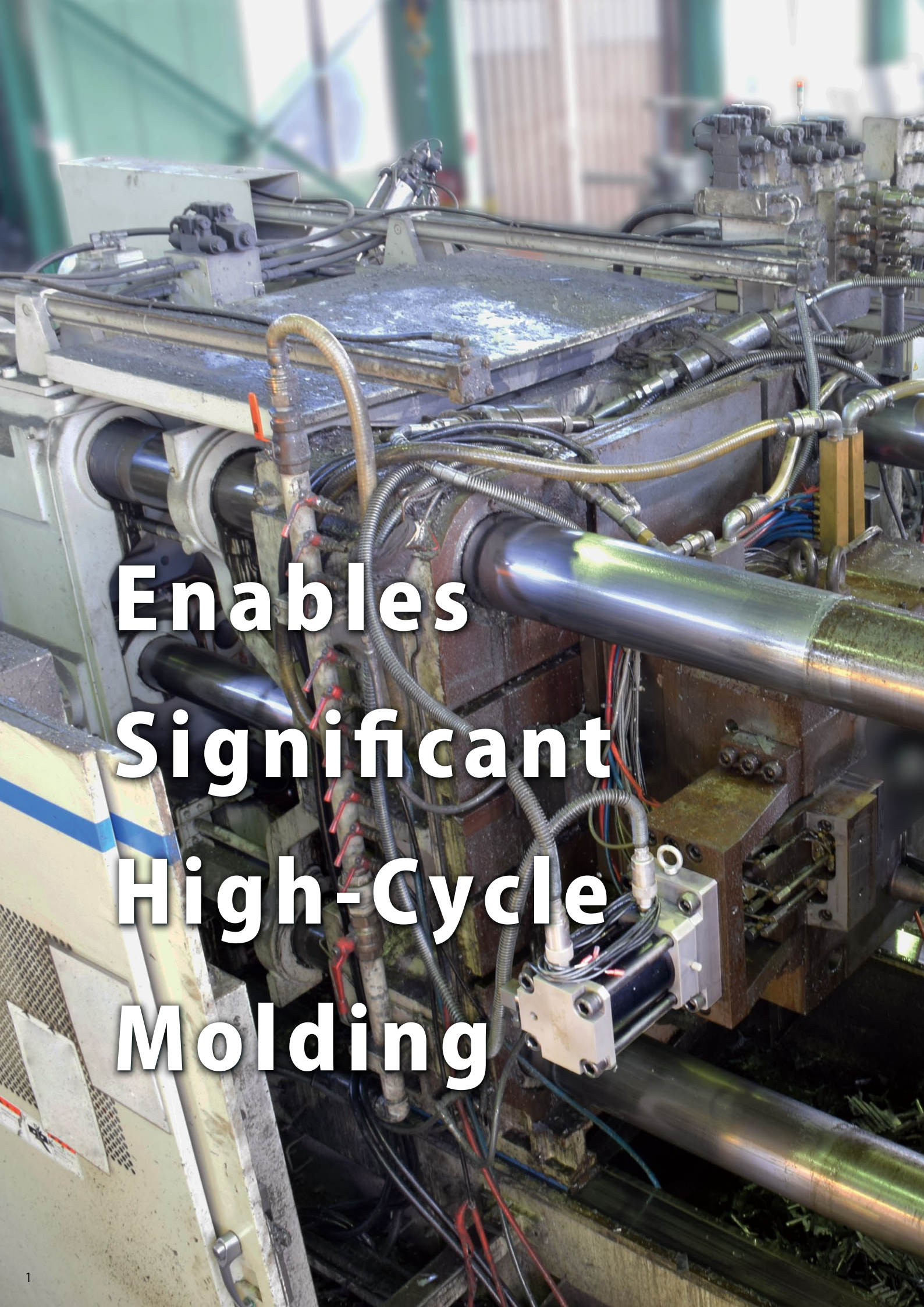
New Mold and Productivity Improvement

Diecast Mold Cylinder Series





KOSMEK
Harmony in Innovation



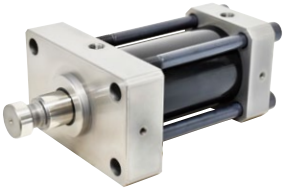
Enables Significant High-Cycle Molding

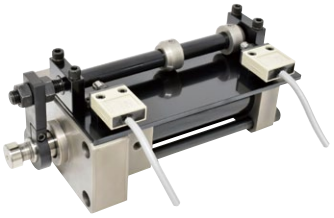
Case Study Video

Productivity improved by 11% – The case study video of the high-speed core pull cylinder is available on our website.

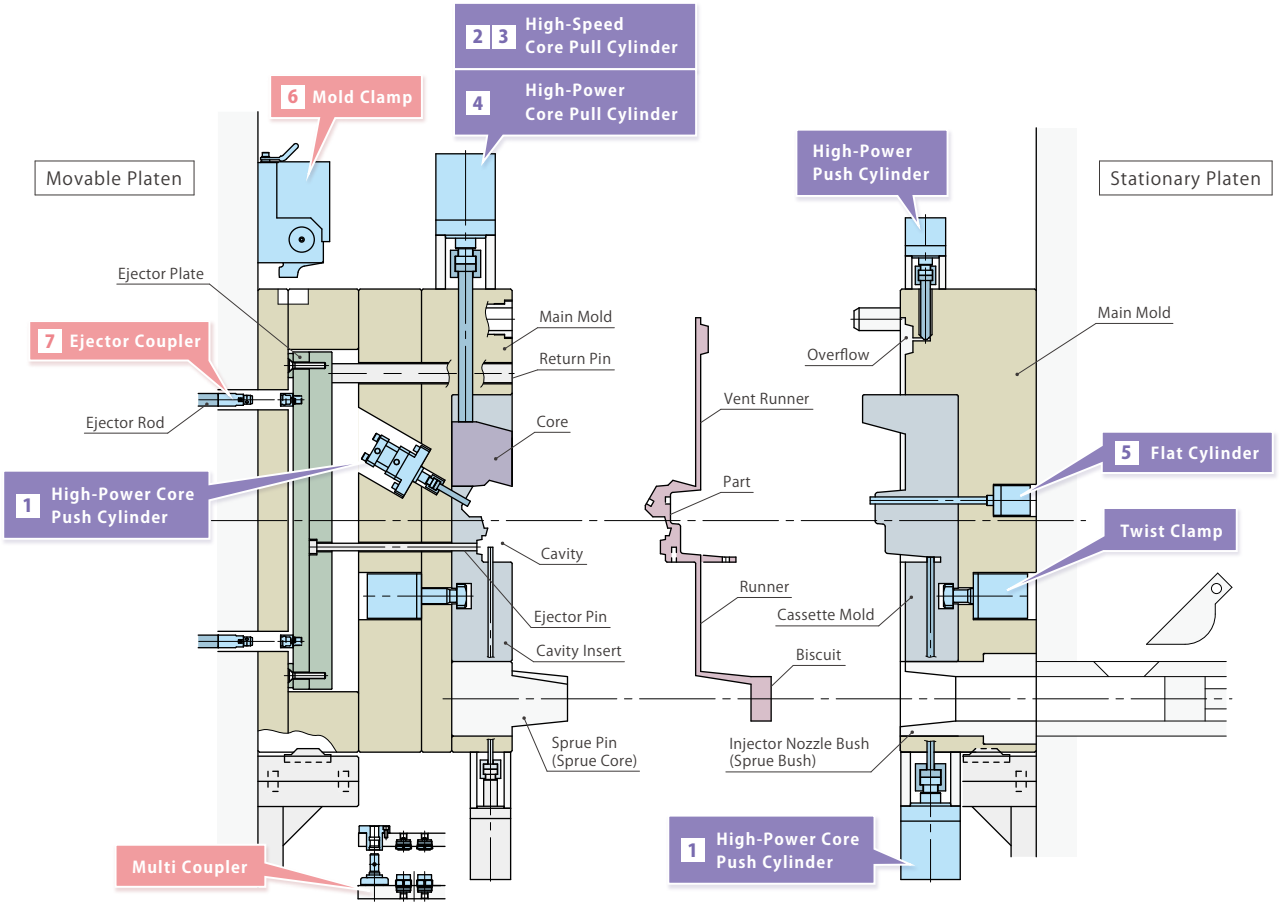
http://www.kosmek.co.jp/php_file/video_products.php?id=054&lang=2

Diecast Mold Cylinder Series





Overall View of Kosmek Products



5 P.53

Flat Cylinder

Model **PCD**

Compact Body Designed for Built-in Mold Cylinder

Suitable for partial pressurization, and opening/closing a vent valve.

Switch option and magnetostrictive sensor option have been newly added to the line-up.

P.65

Common Accessories

Joint and Coupling are available to be installed to the rod end.

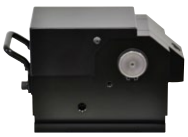
P.69

Cautions

Mold Change System for Diecast Machine

6

Diecast Mold Clamp



7

Ejector Coupler

KDCS Complete Catalog

For further information of other products,
please order the complete catalog from our website.

Scan the QR code for
Catalog Request and Inquiry

http://www.kosmek.co.jp/php_file/inquiry.php?lang=2

Kosmek Core Cylinder Comparison Table

	Feature	Applicable Size (Cylinder Inner Diameter) (mm)	Applicable Stroke (mm)	
P.07 **High-Power Core Push Cylinder** Model PCE 	PUSH	ϕ 40 ϕ 63 ϕ 80 ϕ 100 ϕ 125	30 ~ 150 ※It depends on size. ※ In 1mm increments.	
P.15 **High-Speed Core Pull Cylinder** Model PCB 	PULL	ϕ 63 ϕ 200 ϕ 80 ϕ 250 ϕ 100 ϕ 125 ϕ 160	40 ~ 500 ※It depends on size. ※In 5mm increments.	
P.25 **High-Speed Core Pull Cylinder Compact Model** Model PCM 	PULL	ϕ 40 ϕ 50	40 ~ 200 ※In 5mm increments.	
P.33 **High-Power Core Pull Cylinder High-Speed Model** Model PCA 	PULL	ϕ 63 ϕ 200 ϕ 80 ϕ 250 ϕ 100 ϕ 125 ϕ 160	40 ~ 500 ※It depends on size. ※In 5mm increments.	
P.33 **High-Power Core Pull Cylinder Standard Model** Model PCC 	PULL	ϕ 63 ϕ 80 ϕ 100 ϕ 125 ϕ 160	40 ~ 500 ※It depends on size. ※In 5mm increments.	

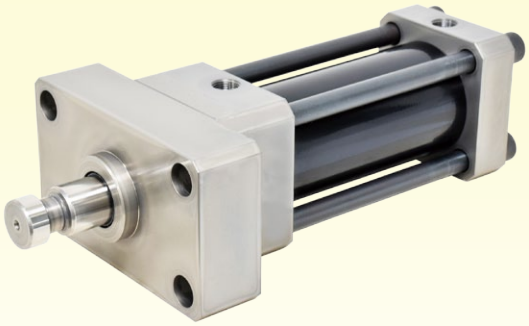
Ratio When Compared To Same-size General Linear Cylinder
*100% = Equivalent to a general cylinder

Pushing Force		Pulling Force		Cylinder Capacity (In case of Stroke = 100mm)		
Boosting Force	Idle Force	Pulling Force	Idle Force	Push side	Pull side	
170 % (Push End ~ 5mm)	**100 %** (5mm ~ Pull End)	**100 %**		**100 %**	**100 %**	Model PCE
40 %		**100 %** (Push End ~ 20mm)	**20 %** (20mm ~ Pull End)	**50 %**	**40 %**	Model PCB
50 %		**100 % or more** (Push End ~ 20mm)	**40 %** (20mm ~ Pull End)	**55 %**	**55 %**	Model PCM
40 %		**180 %** (Push End ~ 20mm)	**20 %** (20mm ~ Pull End)	**50 %**	**50 %**	Model PCA
100 %		**180 %** (Push End ~ 20mm)	**100 %** (20mm ~ Pull End)	**100 %**	**100 %**	Model PCC

For Diecast Systems

High-Power Core Push Cylinder

Model **PCE**

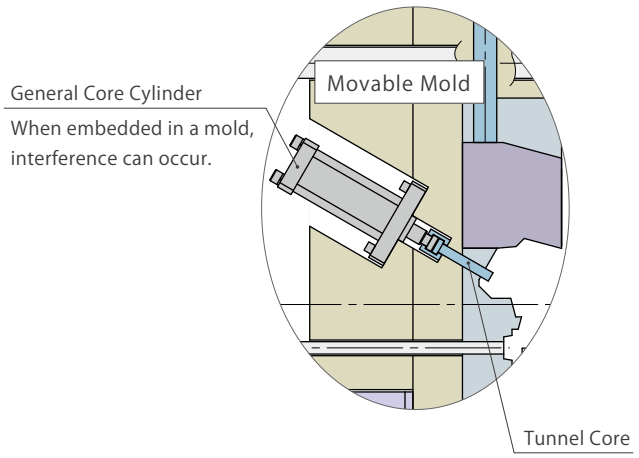


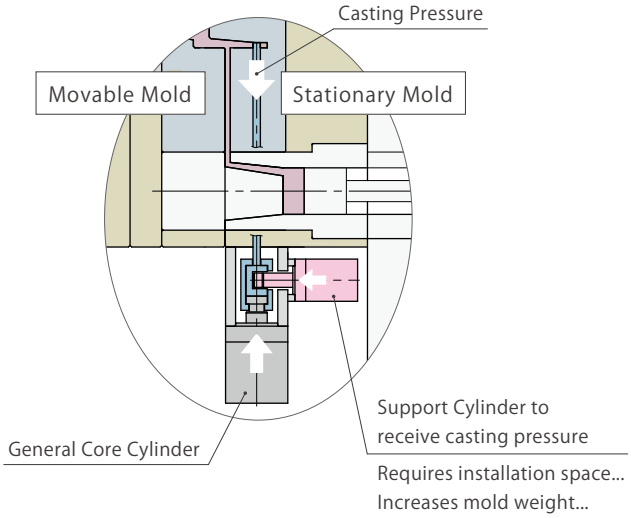
Mechanical locking withstands the casting pressure.

Best for stationary mold core and tunnel core.

Common Problems of stationary mold core and tunnel core.

Cotter cannot be used for stationary mold core or tunnel core. Therefore, it requires a core cylinder to withstand the casting pressure by itself.





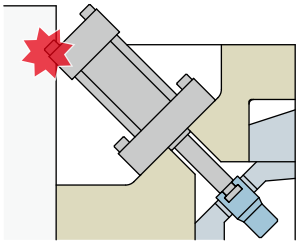
Compared to general cylinder,

Kosmek High-Power Core Push Cylinder

withstands load of 170%.

Avoid Interference — Minimize Core Cylinder

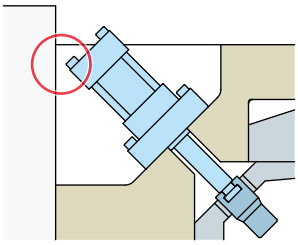
General Linear Cylinder



Interference

Requires a large cylinder to withstand casting pressure, but the mold thickness is limited, resulting in interference.

High-Power Core Push Cylinder

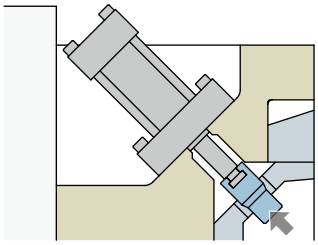


No Interference

170% of boosting force allows cylinder size to be minimized.

Reduce Cycle Time — Increase Operating Speed

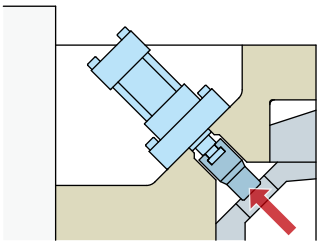
General Linear Cylinder



Operating Speed：LOW

Larger cylinder needed to withstand casting pressure, resulting in low operating speed.

High-Power Core Push Cylinder

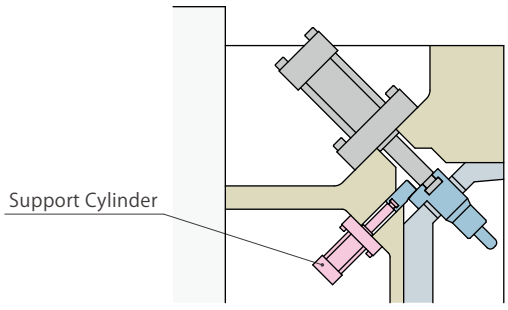


Operating Speed：HIGH

More compact cylinder enables an increased operating speed thereby reducing production cycle time.

Simplify Mold Design — Eliminate Support Cylinder

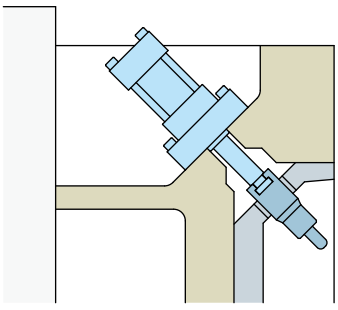
General Linear Cylinder



Support Cylinder Required

Core cylinder cannot withstand casting pressure on its own, so a support cylinder must be installed.

High-Power Core Push Cylinder



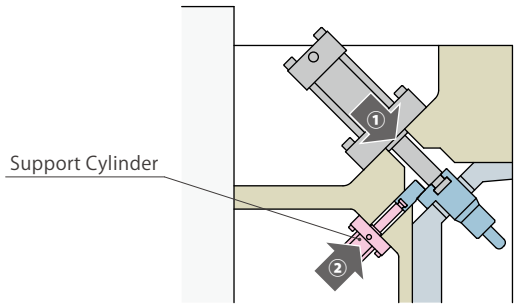
Support Cylinder Not Required

With 170% of boosting force, there is no need for a support cylinder which simplifies the mold design.

Simplify Core Control

Complicated Control Not Required

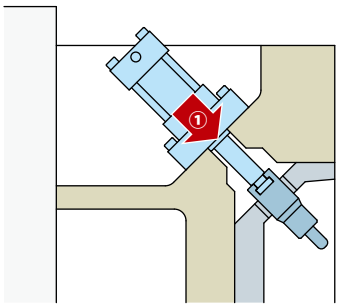
General Linear Cylinder



2-step Operation Required

2-step operation of core cylinder and support cylinder requires a complicated sequence, resulting in a longer cycle time.

High-Power Core Push Cylinder

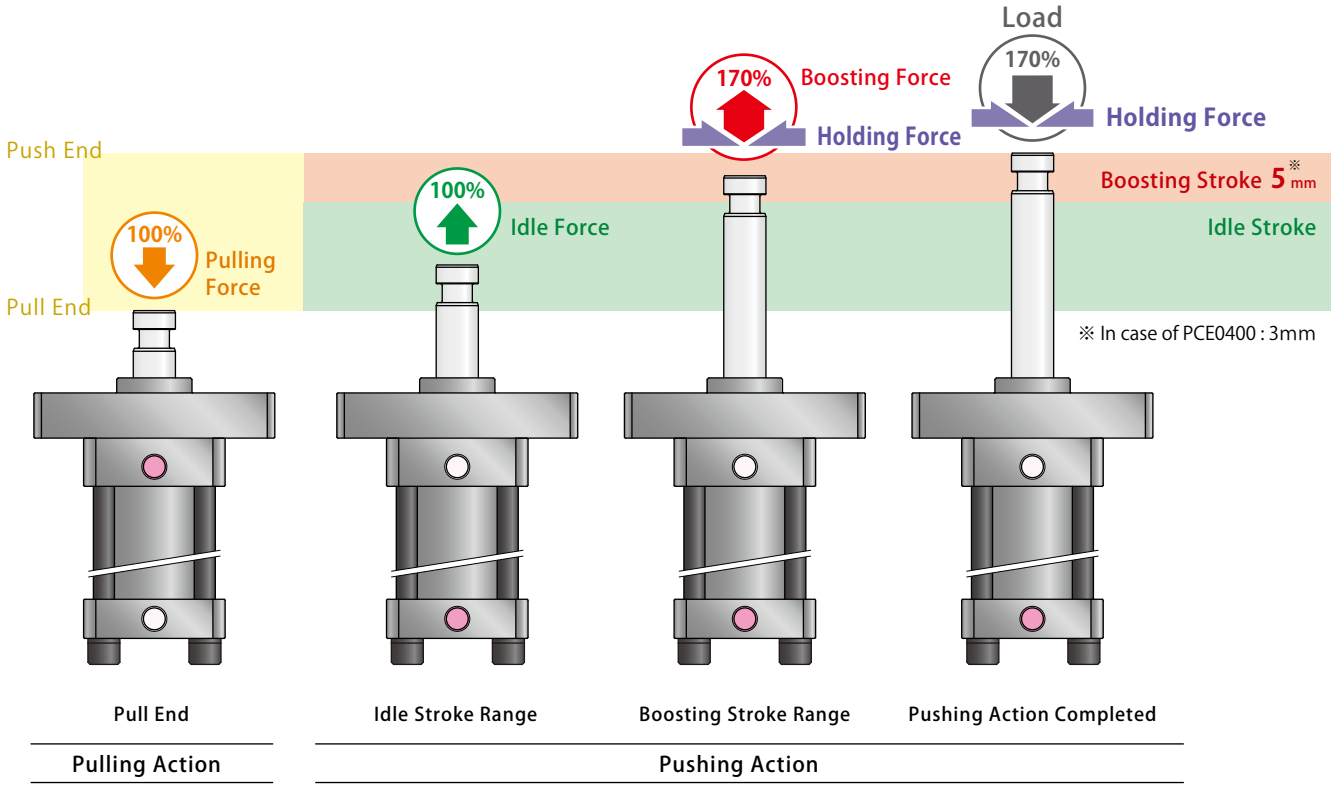


Simple Operation of Core Cylinder Only

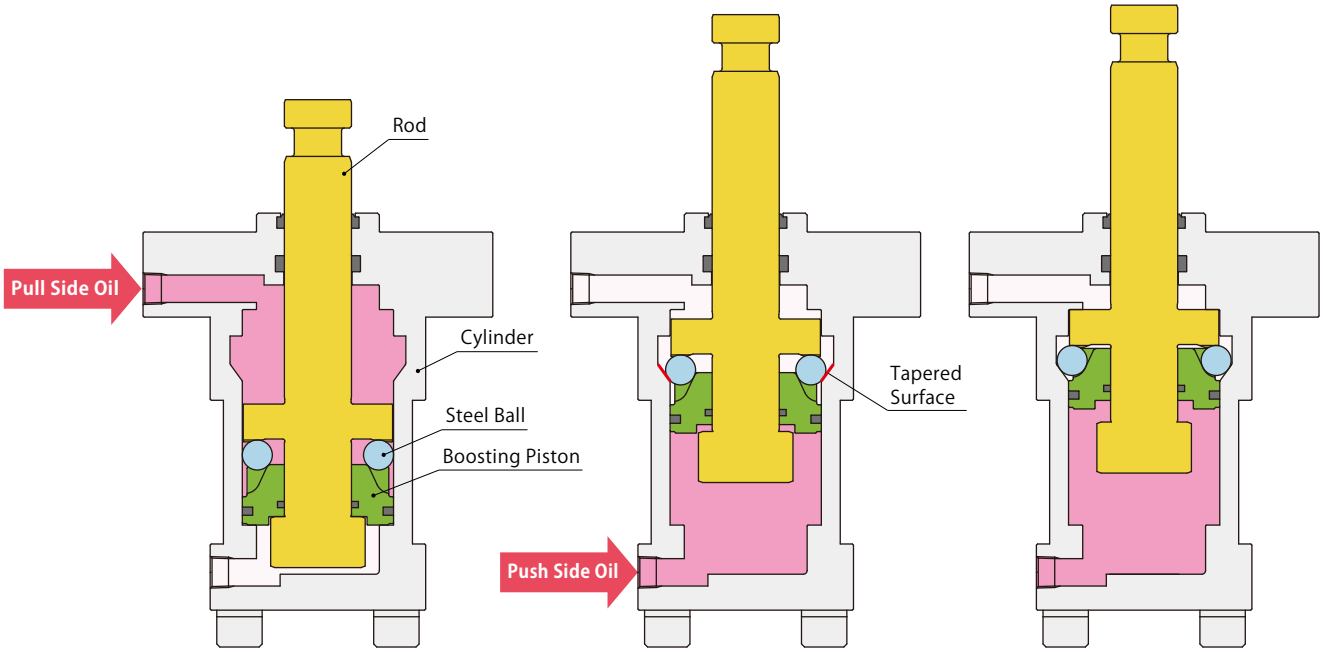
Simple sequence is possible without using a support cylinder, reducing cycle time.

High-Power Core Push Cylinder

Withstands Casting Pressure with Mechanical Lock !



Mechanical Lock Prevents Core Return



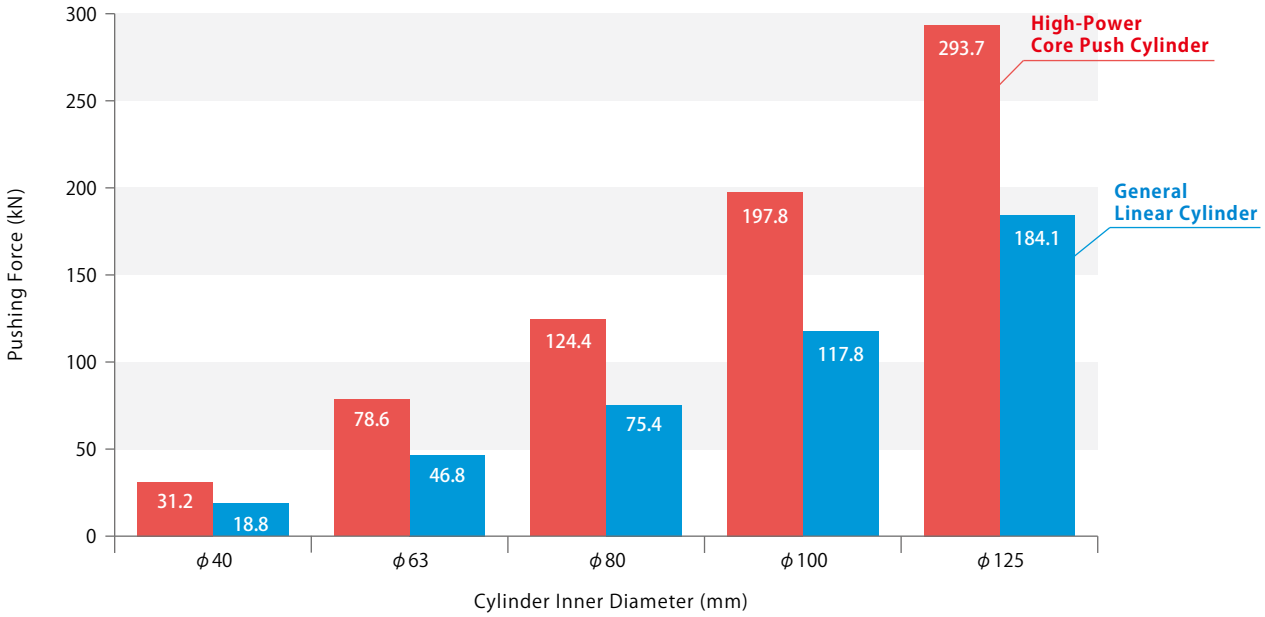
The rod is mechanically locked when the steel balls touch the tapered surface of the cylinder. Mechanical lock withstands the casting pressure and prevents the core from returning.

Pulling Action

Pushing Action

Powerful Pushing Force !

High-Power Core Push Cylinder can be **extremely compact** compared to a general linear cylinder with the same force.



Pushing Force Comparison (At Hydraulic Pressure：15 MPa)

Model No. Indication

PCE 100 0 - B C F - 100 - V - 0 - XH - S3

1 2 3 4 5 6 7 8 9 10

1 Cylinder Inner Diameter

040 : ϕ 40 mm
063 : ϕ 63 mm
080 : ϕ 80 mm
100 : ϕ 100 mm
125 : ϕ 125 mm

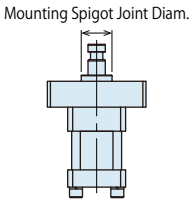
2 Design No.

0 : Revision Number

3 Mounting Spigot Joint Diameter

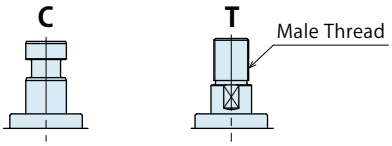
A : Type A
B : Type B

※. Refer to the external dimensions on P.13 for further information.



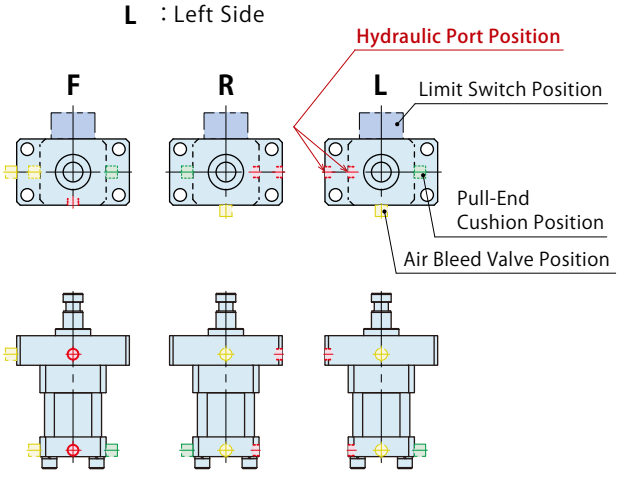
4 Rod Shape

C : Coupling
T : Male Thread



5 Hydraulic Port Position

F : Front
R : Right Side
L : Left Side



6 Stroke

30 ~ 150 : Select from Stroke 30 ~ 150mm

※. In case of 1 Cylinder Inner Diameter **040** : 6 Stroke is **30 ~ 100**.
※. Please specify 6 Stroke in 1mm increments.

7 Operating Temperature

N : Standard 0 ~ 70 ℃
V : High Temperature 0 ~ 120 ℃

8 Usable Fluid

0 : General Hydraulic Oil (Equivalent to ISO-VG-32)
G : Water・Glycol
S : Silicon Oil
F : Fatty Acid Ester

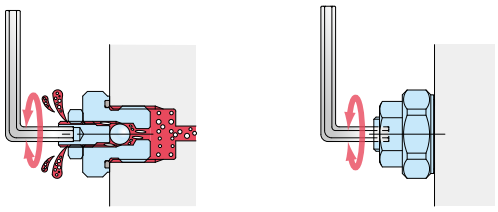
※. Refer to "Appropriate Fluid According to Packing Material" on the next page for further information.

9 Option

Blank : None
X : with Air Bleed Valve
H : with Pull-End Cushion
XH : with Air Bleed Valve and Pull-End Cushion

X : with Air Bleed Valve
Able to release the air in the circuit with a wrench.

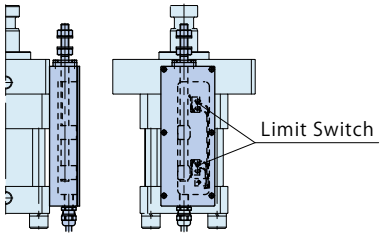
H : with Pull-End Cushion
Able to cushion at the pull end by adjusting flow rate with a wrench.



※. In case of 1 Cylinder Inner Diameter **040** : 9 Option is **Blank, X** only.

10 Limit Switch

Blank : No Limit Switch
S3 : With Limit Switch



※. Refer to P.45 "Limit Switch" for further information.

Specifications

Model No.			PCE0400	PCE0630	PCE0800	PCE1000	PCE1250
Cylinder Inner Diameter		mm	φ40	φ63	φ80	φ100	φ125
Stroke (in 1mm increments)		mm	30 ~ 100	30 ~ 150			
Boosting Stroke Range		mm	3	5			
Cylinder※1 Capacity cm3	Push Side		1.26× Stroke +5.5	3.12× Stroke +23.9	5.03× Stroke +39.0	7.85× Stroke +61.1	12.27× Stroke +90.4
	Pull Side		1.00× Stroke +5.5	2.50× Stroke +23.9	4.04× Stroke +39.0	6.26× Stroke +61.1	9.81× Stroke +90.4
Operating Pressure		MPa	15.0				
Max. Operating Pressure		MPa	16.0				
Min. Operating Pressure※2		MPa	1.0				
Withstanding Pressure		MPa	24.0				
Operating Temperature		℃	7 N:Standard 0 ~ 70 V:High Temperature 0 ~ 120				
Weight※1		kg	0.011× Stroke +4.8	0.020× Stroke +10.8	0.030× Stroke +17.2	0.040× Stroke +28.9	0.058× Stroke +46.3

Notes :

※1. The stroke in calculation of cylinder capacity and weight should be calculated in mm.

※2. Minimum pressure to operate the cylinder with no load.

Appropriate Fluid According to Packing Material

7 Operating Temperature	Packing Material	Appropriate Fluid			
		0:General Hydraulic Oil	G:Water・Glycol	S:Silicon Oil	F:Fatty Acid Ester
N: Standard 0 ~ 70 ℃	Nitrile Rubber (NBR)	○	○	○	○
V: High Temperature 0 ~ 120 ℃	Fluor Rubber (FKM)	○	△※3	○	○

Notes :

※3. Please contact us in case of using 8 G : Water・Glycol with 7 V : High Temperature.

1. Please contact us for other conditions.

Cylinder Thrust Force

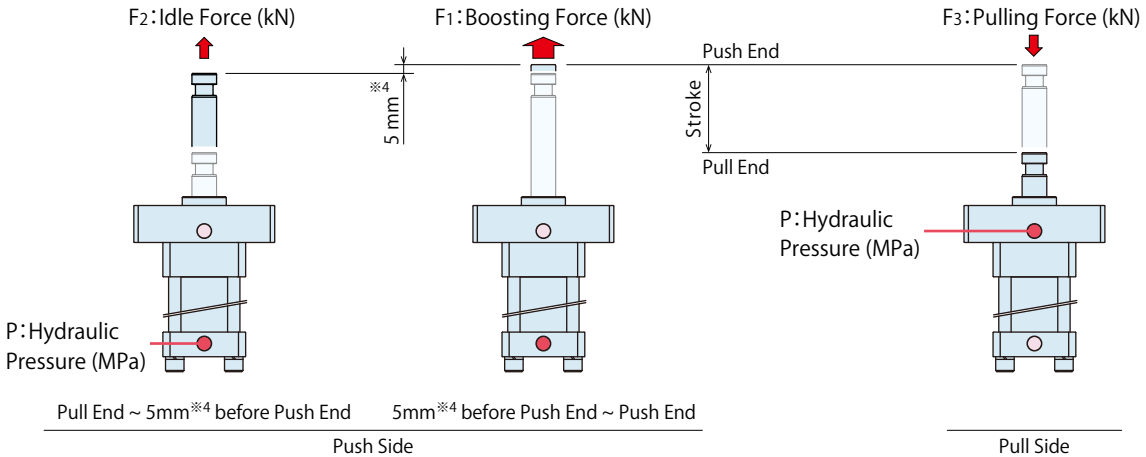
(kN)

Model No.			PCE0400	PCE0630	PCE0800	PCE1000	PCE1250
Push Side	Boosting Force (Push End ~ 5mm※4)	at P:15MPa	31.2	78.6	124.4	197.8	293.7
		Calculation Formula※5	F1=2.08×P	F1=5.24×P	F1=8.29×P	F1=13.19×P	F1=19.58×P
	Idle Force (5mm※4 ~ Pull End)	at P:15MPa	18.8	46.8	75.4	117.8	184.1
		Calculation Formula※5	F2=1.25×P	F2=3.12×P	F2=5.03×P	F2=7.85×P	F2=12.27×P
Pulling Force		at P:15MPa	15	37.5	60.6	94	147.1
		Calculation Formula※5	F3=1.00×P	F3=2.50×P	F3=4.04×P	F3=6.27×P	F3=9.81×P

Notes :

※4. In case of PCE0400 : 3mm

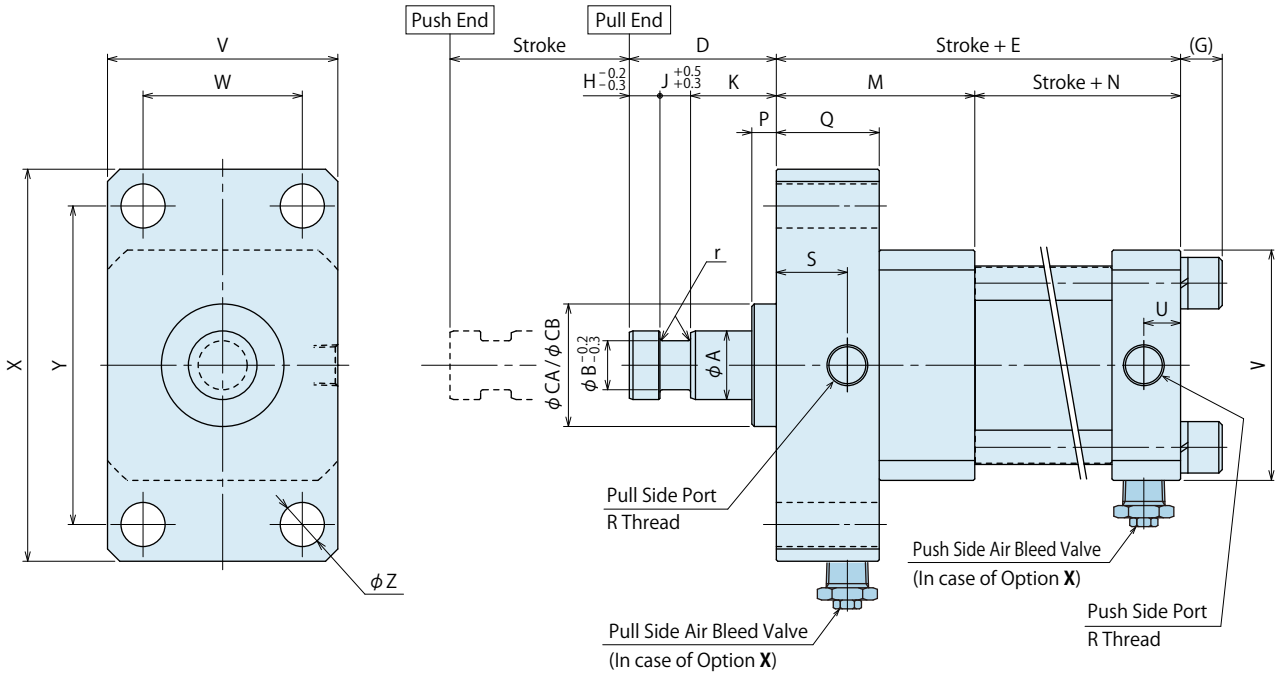
※5. F1 : Boosting Force (kN)、F2 : Idle Force (kN)、F3 : Pulling Force (kN)、P : Supply Hydraulic Pressure (MPa).



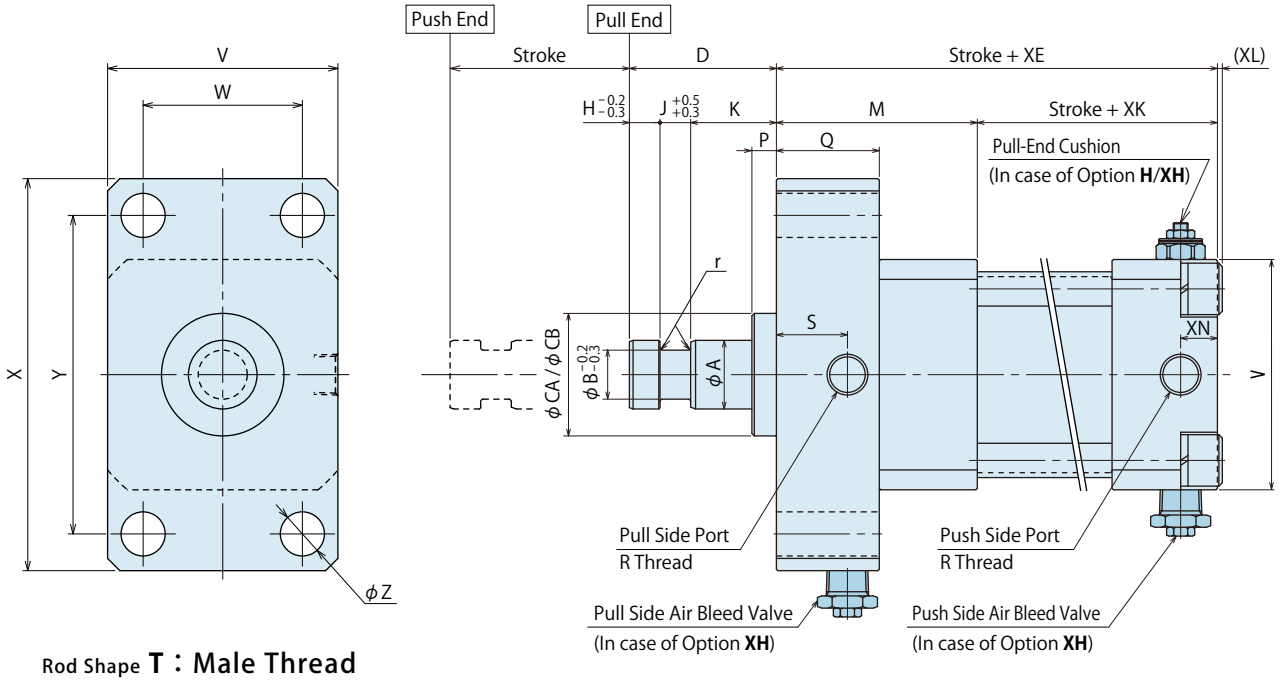
External Dimensions

※ This drawing shows the pull end state.

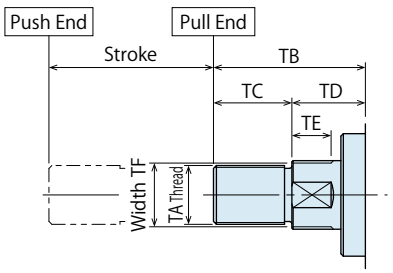
Rod Shape C：Coupling, Port Position F：Front, Option Blank：None X：with Air Bleed Valve



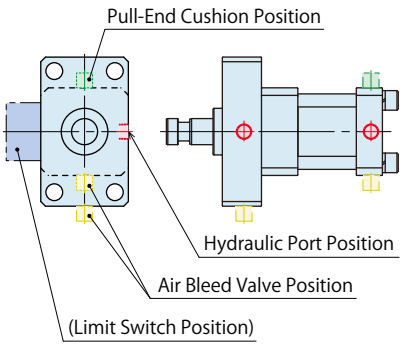
Rod Shape C：Coupling, Port Position F：Front,
Option H：with Pull-End Cushion, XH：with Air Bleed Valve and Pull-End Cushion



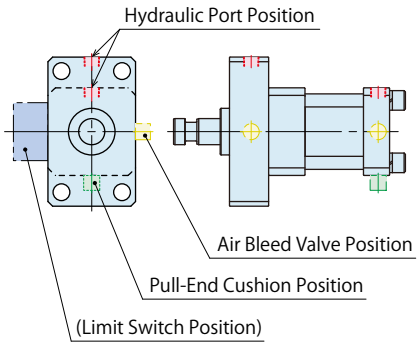
Rod Shape T：Male Thread



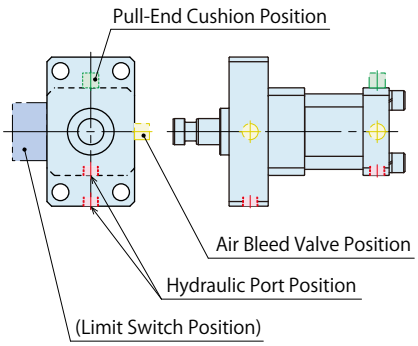
Port Position **F**：Front



Port Position **R**：Right Side



Port Position **L**：Left Side



External Dimension List

Rod Shape **C**：Coupling, Option **Blank**：None, **X**：with Air Bleed Valve

(mm)

Model No.	PCE0400-C PCE0400-C-X	PCE0630-C PCE0630-C-X	PCE0800-C PCE0800-C-X	PCE1000-C PCE1000-C-X	PCE1250-C PCE1250-C-X
A	18 f7 $^{-0.016}_{-0.034}$	28 f7 $^{-0.020}_{-0.041}$	35.5 f7 $^{-0.025}_{-0.050}$	45 f7 $^{-0.025}_{-0.050}$	56 f7 $^{-0.030}_{-0.060}$
B	13	20	25	31	38
CA (Mounting Spigot Joint Diam. **A**)	30 f7 $^{-0.020}_{-0.041}$	43 f7 $^{-0.025}_{-0.050}$	52 f7 $^{-0.030}_{-0.060}$	62 f7 $^{-0.030}_{-0.060}$	72 f7 $^{-0.030}_{-0.060}$
CB (Mounting Spigot Joint Diam. **B**)	36 f7 $^{-0.025}_{-0.050}$	50 f7 $^{-0.025}_{-0.050}$	65 f7 $^{-0.030}_{-0.060}$	70 f7 $^{-0.030}_{-0.060}$	85 f7 $^{-0.036}_{-0.071}$
D	55	60	70	75	90
E	120	135	150	175	200
G	12.5	17	19.5	24.5	29
H	12.5	12.5	15	15	20
J	12.5	12.5	15	15	20
K	30	35	40	45	50
M	72	82	90	110	125
N	48	53	60	65	75
P	5	10	10	10	10
Q	42	42	45	55	60
R	Rc3/8	Rc3/8	Rc3/8	Rc1/2	Rc1/2
S	29	29	30	35	40
U	15	15	20	21	25
V	65	94	114	136	165
W	40	65	80	100	125
X	118	160	185	220	255
Y	94	130	150	180	210
Z	14	18	18	22	26
r	R1	R1	R1.5	R2	R2
Mounting Bolt	M12×1.75	M16×2	M16×2	M20×2.5	M24×3

Option **H**：with Pull-End Cushion, **XH**：with Air Bleed Valve and Pull-End Cushion

Unlisted dimensions are the same with Option **Blank**：None and **X**：with Air Bleed Valve.

(mm)

Model No.	PCE0630-H PCE0630-XH	PCE0800-H PCE0800-XH	PCE1000-H PCE1000-XH	PCE1250-H PCE1250-XH
XE	150	165	190	215
XK	68	75	80	90
XL	2	4.5	9.5	14
XN	15	19	22	21

Rod Shape **T**：Male Thread

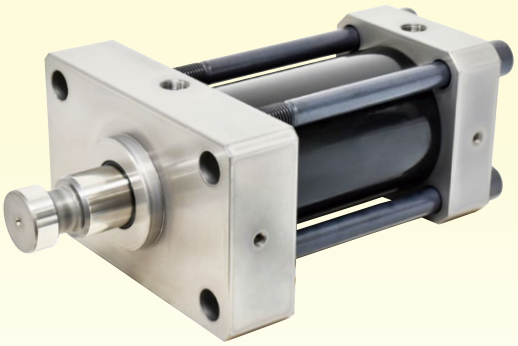
(mm)

Model No.	PCE0400-T	PCE0630-T	PCE0800-T	PCE1000-T	PCE1250-T
TA	M16×1.5	M24×1.5	M30×1.5	M40×1.5	M50×1.5
TB	45	62	66	80	96
TC	20	32	36	45	56
TD	25	30	30	35	40
TE	12	16	17	22	23
TF	17	26	32	41	54

For Diecast Systems

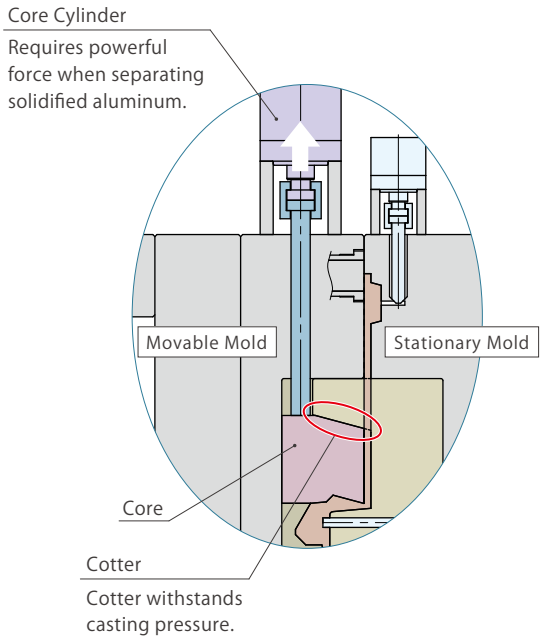
High-Speed Core Pull Cylinder

Model **PCB**



Maintains Pulling Force with Much Less Cylinder Capacity

Interchangeable with General Core Cylinder / Reduce Cycle Time



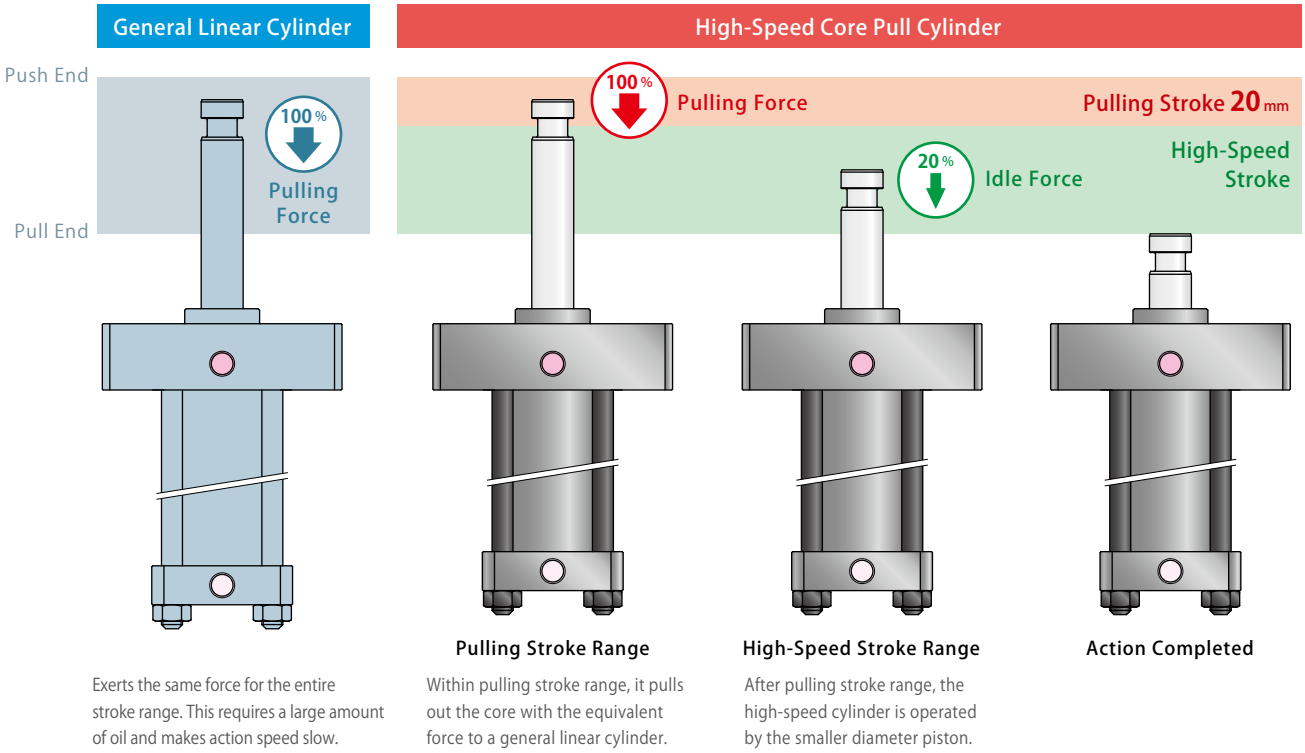
Core-Pulling Mechanism for Diecasting Molds

Cylinder for sliding core requires strong force when pulling out the core after casting. No great power is required when moving forward and backward.

Kosmek High-Speed Core Pull Cylinder exerts

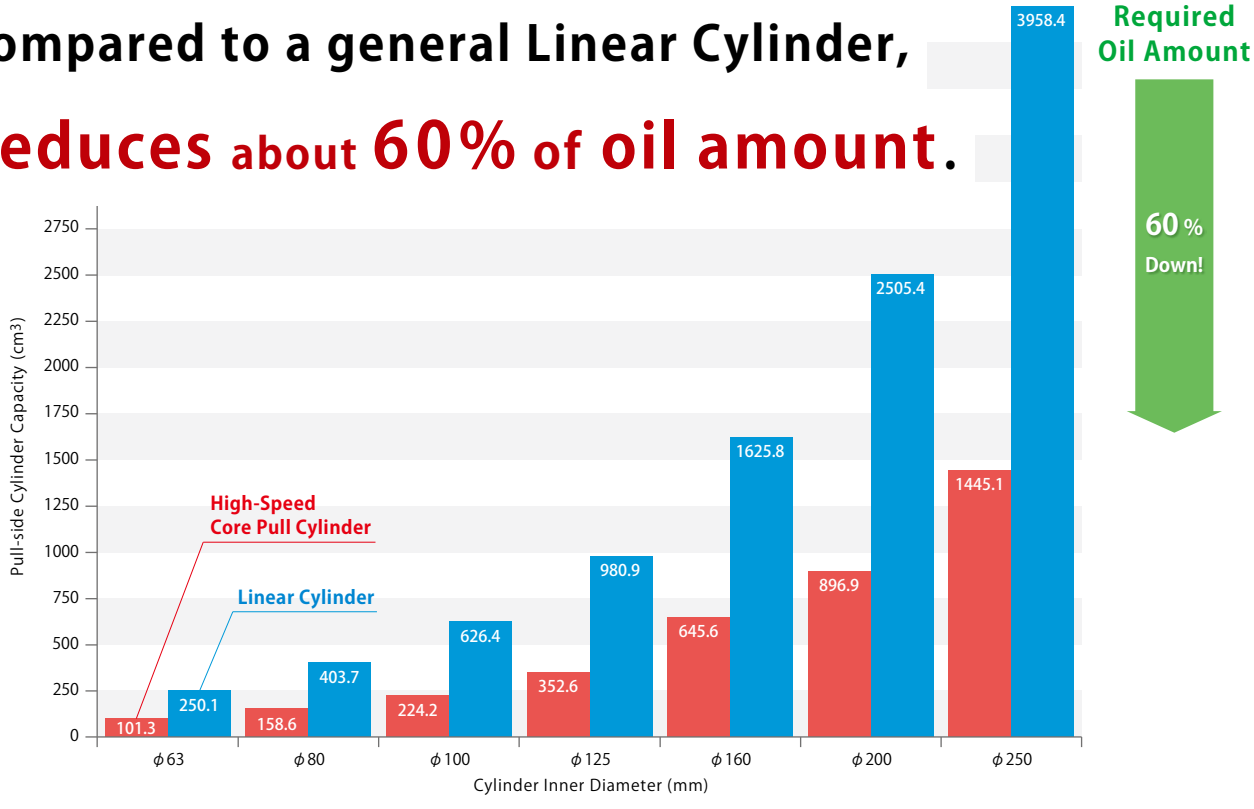
high power only when pulling out the core.

Idle force is 20% of pulling force so that working oil amount will be reduced.



Pulling Action

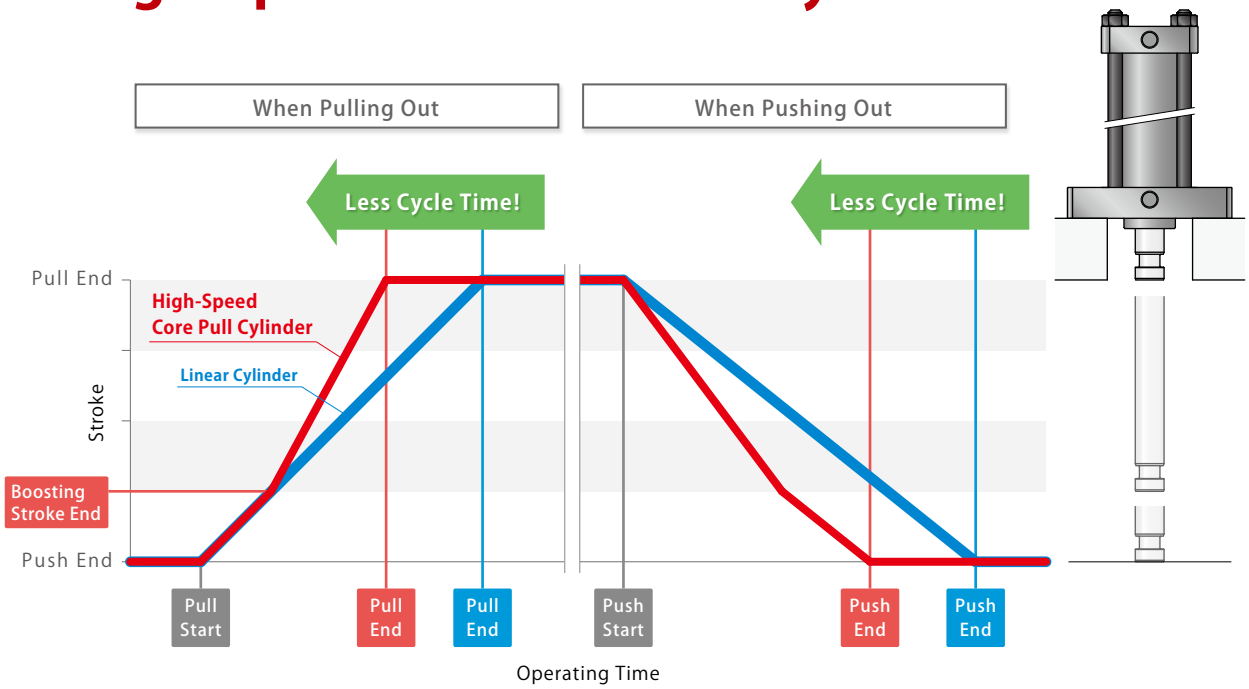
Compared to a general Linear Cylinder, Reduces about 60% of oil amount.



Pull-side Cylinder Capacity Comparison (Stroke : 100 mm)

Smaller cylinder capacity enables

high speed and reduces cycle time.



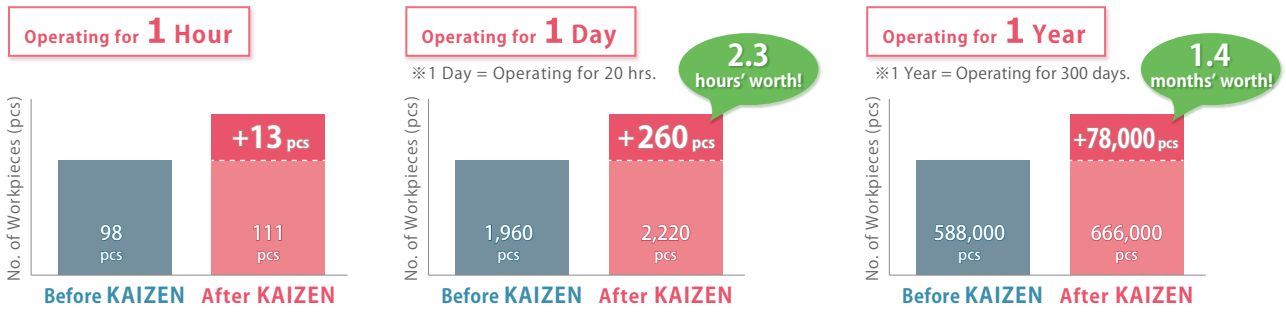
Operating Time Image (Compared to cylinder with the same pulling force.)

Only several sec reduction per shot, yet it will

make a huge difference in the long term.

Case Study with 350ton Diecasting Machine

【Condition】Reduced Cycle Time per Shot: 4.3 sec. (before Kaizen: 36.7 sec, after Kaizen: 32.4 sec.)



13 more workpieces
by one-hour operation !

260 more workpieces
by one-day operation !

78,000 more workpieces
by one-year operation !

4.3 sec per shot allows for 78,000 more workpieces production possible in one year.

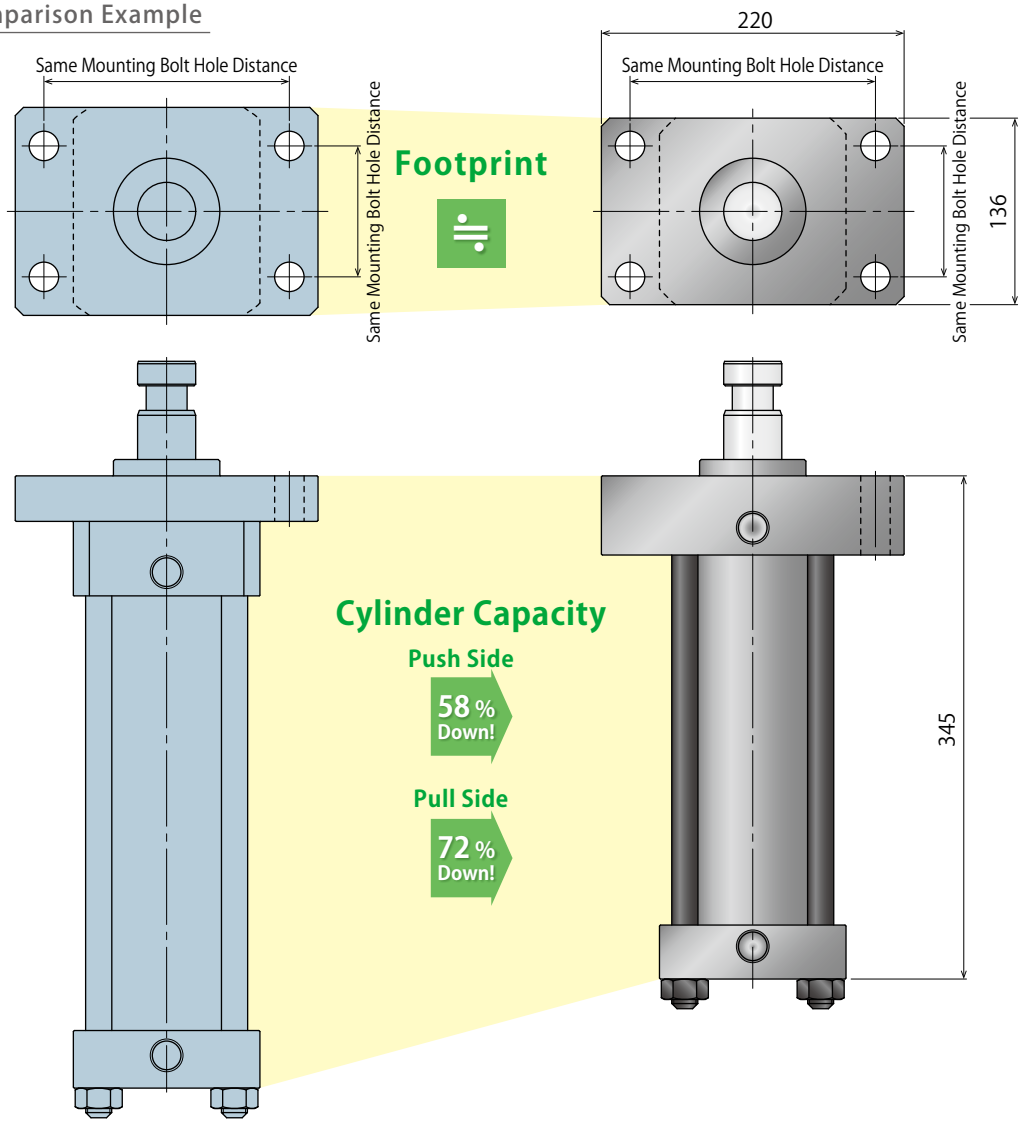
Also, 12-month amount (before Kaizen) can be manufactured in 10.6 months.

※ Improvement Result per Diecasting Machine

General Linear Cylinder is Interchangeable

with High-Speed Core Pull Cylinder

Size Comparison Example



General Linear Cylinder		High-Speed Core Pull Cylinder
Cylinder Inner Diameter ϕ100 mm	Cylinder Weight	Cylinder Inner Diameter ϕ100 mm
Pulling Force 94 kN	9 % Down!	Pulling Force 94 kN
Weight About 39 kg		Weight About 35.3 kg

※Stroke：200 mm
Hydraulic Pressure：15 MPa

Drastically improves the productivity

by interchanging to High-Speed Core Pull Cylinder.

Model No. Indication

PCB 100 3 - B C F - 150 - V - 0 - X - S1R

1 2 3 4 5 6 7 8 9 10

1 Cylinder Inner Diameter

063 : ϕ 63 mm
080 : ϕ 80 mm
100 : ϕ 100 mm
125 : ϕ 125 mm
160 : ϕ 160 mm
200 : ϕ 200 mm
250 : ϕ 250 mm

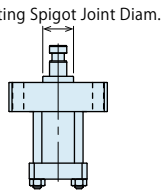
2 Design No.

3 : Revision Number

3 Mounting Spigot Joint Diameter

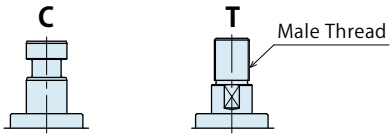
A : Type A
B : Type B

※. Refer to the external dimensions on P.21 for further information.
※. Only 3 **A**:Type A for 1 **160, 200, 250**.



4 Rod Shape

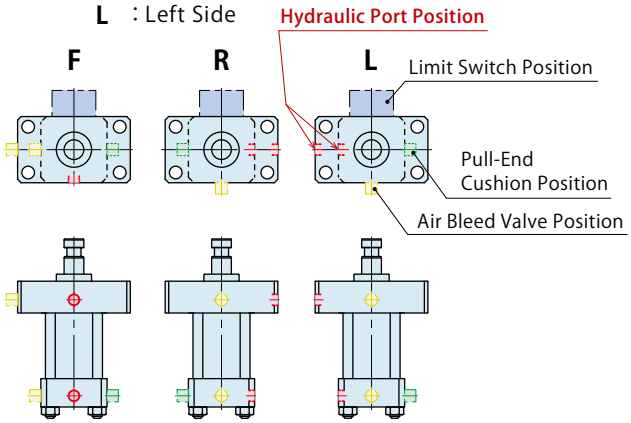
C : Coupling
T : Male Thread



※. Only 4 **C**:Coupling for 1 **160, 200, 250**.

5 Hydraulic Port Position

F : Front
R : Right Side
L : Left Side



6 Stroke

40 ~ 500 : Select from Stroke 40 ~ 500mm

※. 6 **Stroke** differs depending on 1 **Cylinder Inner Diameter**. Refer to the stroke on the specifications on the next page.
※. Specify 6 **Stroke** in 5mm increments.

7 Operating Temperature

N : Standard 0 ~ 70 ℃
V : High Temperature 0 ~ 120 ℃

8 Usable Fluid

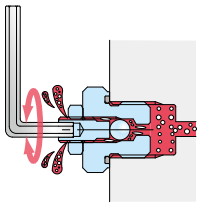
0 : General Hydraulic Oil (Equivalent to ISO-VG-32)
G : Water･Glycol
S : Silicon Oil
F : Fatty Acid Ester

※. Refer to "Appropriate Fluid According to Packing Material" on the next page for further information.

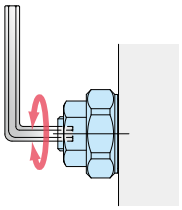
9 Option

Blank : None
X : with Air Bleed Valve
H : with Pull-End Cushion
XH : with Air Bleed Valve and Pull-End Cushion

X : with Air Bleed Valve
Able to release the air in the circuit with a wrench.

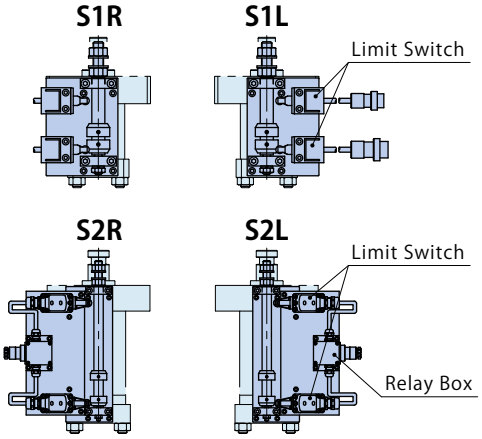


H : with Pull-End Cushion
Able to cushion at the pull end by adjusting flow rate with a wrench.



10 Limit Switch

Blank : No Limit Switch
S1R : Standard Model
S1L : Standard Model
Mounting position is as shown in the below drawing.
S2R : Relay Box Model
S2L : Relay Box Model
Mounting position is as shown in the below drawing.



※. Refer to "Limit Switch" on P.45 for further information.

Specifications

Model No.			PCB0633	PCB0803	PCB1003	PCB1253	PCB1603	PCB2003	PCB2503
Cylinder Inner Diameter		mm	φ63	φ80	φ100	φ125	φ160	φ200	φ250
Stroke (in 5mm increments)		mm	40 ~ 250	40 ~ 300	40 ~ 400	40 ~ 500			
Cylinder Capacity cm³ ※1	Push Side		1.26×Stroke+37.2	1.96×Stroke+61.3	2.83×Stroke+100.5	4.42×Stroke+157.1	7.85×Stroke+245.0	11.31×Stroke+402.1	17.67×Stroke+628.3
	Pull Side		0.64×Stroke+37.2	0.97×Stroke+61.3	1.24×Stroke+100.5	1.95×Stroke+157.1	4.01×Stroke+245.0	4.95×Stroke+402.1	8.17×Stroke+628.3
Operating Pressure		MPa	15.0						
Max. Operating Pressure		MPa	16.0						
Min. Operating Pressure ※2		MPa	1.0						
Withstanding Pressure		MPa	24.0						
Operating Temperature		℃	7 N: Standard 0 ~ 70 V: High Temperature 0 ~ 120						
Weight ※1		kg	0.033×Stroke+7.0	0.053×Stroke+11.0	0.083×Stroke+18.7	0.130×Stroke+29.4	0.180×Stroke+75.5	0.293×Stroke+139.5	0.440×Stroke+224.5

Notes :

※1. The stroke in calculation of cylinder capacity and weight should be calculated in mm.

※2. Minimum pressure to operate the cylinder with no load.

Appropriate Fluid According to Packing Material

7 Operating Temperature	Packing Material	Appropriate Fluid			
		0: General Hydraulic Oil	G: Water・Glycol	S: Silicon Oil	F: Fatty Acid Ester
N: Standard 0 ~ 70 ℃	Nitrile Rubber (NBR)	○	○	○	○
V: High Temperature 0 ~ 120 ℃	Fluor Rubber (FKM)	○	△ ※3	○	○

Notes :

※3. Please contact us when using 8 G : Water・Glycol with 7 V : High Temperature.

1. Please contact us for other conditions.

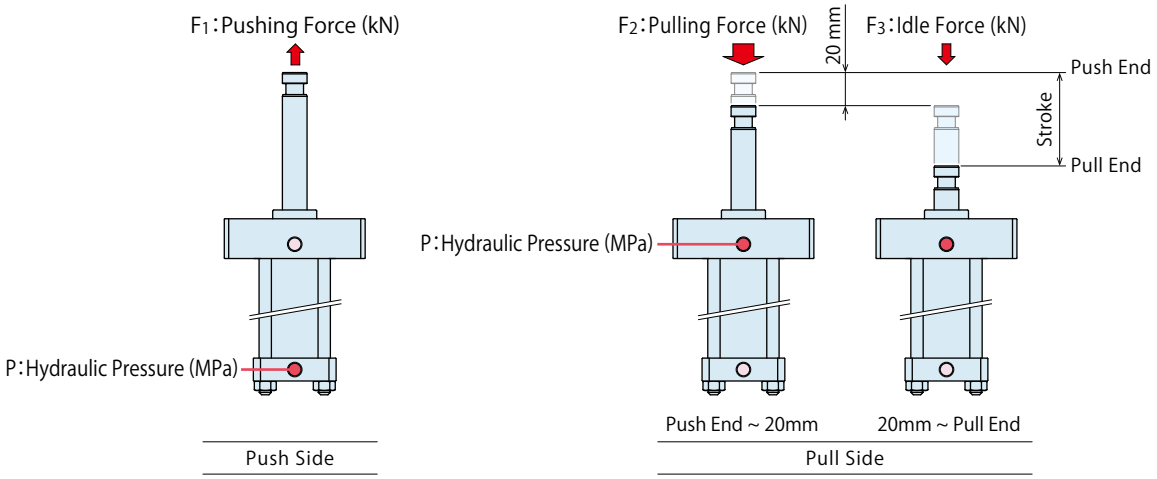
Cylinder Thrust Force

(kN)

Model No.			PCB0633	PCB0803	PCB1003	PCB1253	PCB1603	PCB2003	PCB2503
Pushing Force		at P: 15MPa	18.8	29.5	42.4	66.3	117.8	169.6	265.1
		Calculation Formula ※4	$F_1=1.26\times P$	$F_1=1.96\times P$	$F_1=2.83\times P$	$F_1=4.42\times P$	$F_1=7.85\times P$	$F_1=11.31\times P$	$F_1=17.67\times P$
Pull Side	Pulling Force (Push End ~ 20mm)	at P: 15MPa	37.5	60.6	94.0	147.1	243.9	375.8	593.8
		Calculation Formula ※4	$F_2=2.50\times P$	$F_2=4.04\times P$	$F_2=6.26\times P$	$F_2=9.81\times P$	$F_2=16.26\times P$	$F_2=25.05\times P$	$F_2=39.58\times P$
	Idle Force (20mm ~ Pull End)	at P: 15MPa	9.6	14.6	18.6	29.3	60.1	74.2	122.5
		Calculation Formula ※4	$F_3=0.64\times P$	$F_3=0.97\times P$	$F_3=1.24\times P$	$F_3=1.95\times P$	$F_3=4.01\times P$	$F_3=4.95\times P$	$F_3=8.17\times P$

Note :

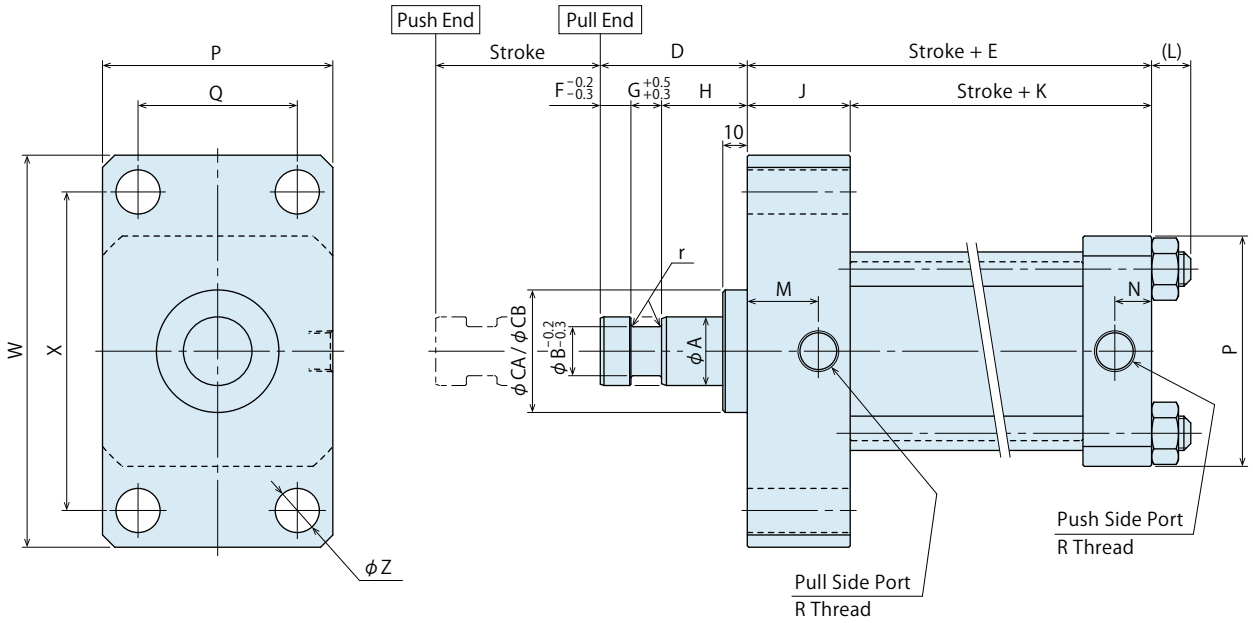
※4. F_1 : Pushing Force (kN), F_2 : Pulling Force (kN), F_3 : Idle Force (kN), P : Hydraulic Pressure (MPa)



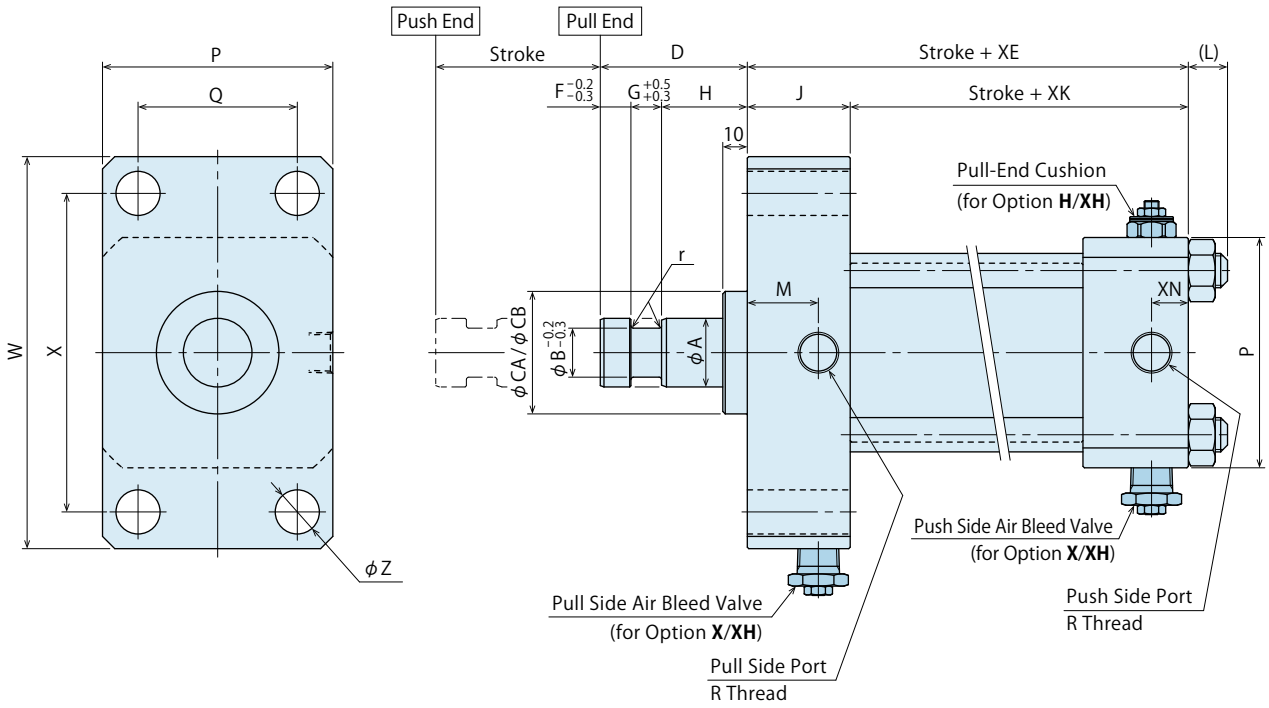
External Dimensions：Cylinder Inner Diameter 063 ~ 200

※ This drawing shows the pull end state of PCB0633 ~ PCB2003.

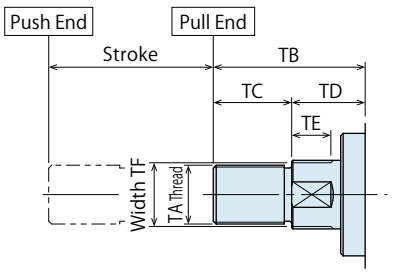
Rod Shape C：Coupling, Port Position F：Front, Option Blank：None



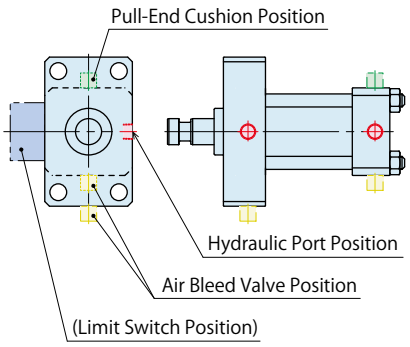
Rod Shape C：Coupling, Port Position F：Front, Option X：with Air Bleed Valve, Option H：with Pull-End Cushion, Option XH：with Air Bleed Valve and Pull-End Cushion



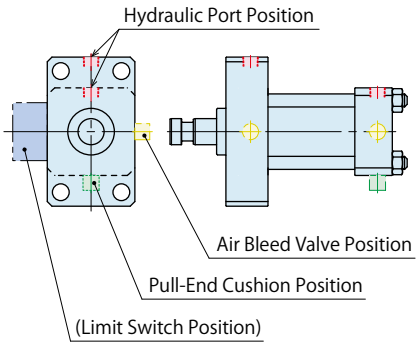
Rod Shape T：Male Thread



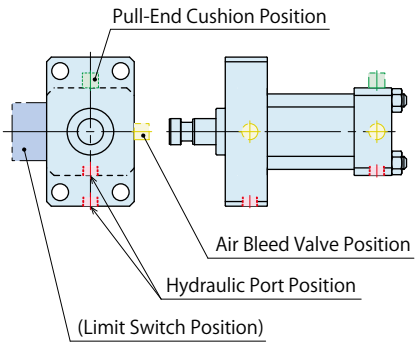
Port Position **F**：Front



Port Position **R**：Right Side



Port Position **L**：Left Side



External Dimension List

Rod Shape **C**：Coupling, Option **Blank**：None

(mm)

Model No.	PCB0633-C	PCB0803-C	PCB1003-C	PCB1253-C	PCB1603-C	PCB2003-C
A	28 f7 $^{-0.020}_{-0.041}$	35.5 f7 $^{-0.025}_{-0.050}$	45 f7 $^{-0.025}_{-0.050}$	56 f7 $^{-0.030}_{-0.060}$	70 f7 $^{-0.030}_{-0.060}$	90 f7 $^{-0.036}_{-0.071}$
B	20	25	31	38	49	60
CA (Mounting Spigot Joint Diam. **A**)	43 f7 $^{-0.025}_{-0.050}$	52 f7 $^{-0.030}_{-0.060}$	62 f7 $^{-0.030}_{-0.060}$	72 f8 $^{-0.030}_{-0.076}$	105 f8 $^{-0.036}_{-0.090}$	125 f8 $^{-0.043}_{-0.106}$
CB (Mounting Spigot Joint Diam. **B**)	50 f7 $^{-0.025}_{-0.050}$	65 f7 $^{-0.030}_{-0.060}$	70 f7 $^{-0.030}_{-0.060}$	85 f8 $^{-0.036}_{-0.090}$	-	-
D	60	70	75	90	115	130
E	115	125	145	155	200	225
F	12.5	15	15	20	25	30
G	12.5	15	15	20	25	30
H	35	40	45	50	65	70
J	42	45	55	60	75	85
K	73	80	90	95	125	140
L	16	18	22	25	30	37
M	29	30	35	40	50	60
N	12.5	16	19	24	31	41
P	94	114	136	165	212	278
Q	65	80	100	125	160	210
R	Rc3/8	Rc3/8	Rc1/2	Rc1/2	Rc3/4	Rc3/4
W	160	185	220	255	335	405
X	130	150	180	210	275	335
Z	18	18	22	26	33	39
r	R1	R1.5	R2	R2	R3.5	R5
Mounting Bolt	M16×2	M16×2	M20×2.5	M24×3	M30×3.5	M36×4

Option **X**：with Air Bleed Valve, **H**：with Pull-End Cushion, **XH**：with Air Bleed Valve and Pull-End Cushion

Unlisted dimensions are the same with Option **Blank**：None.

(mm)

Model No.	PCB0633-□-X/H/XH	PCB0803-□-X/H/XH	PCB1003-□-X/H/XH	PCB1253-□-X/H/XH	PCB1603-□-X/H/XH	PCB2003-□-X/H/XH
XE	130	140	160	170	215	240
XK	88	95	105	110	140	155
XN	15	19	22	21	31	41

Rod Shape **T**：Male Thread

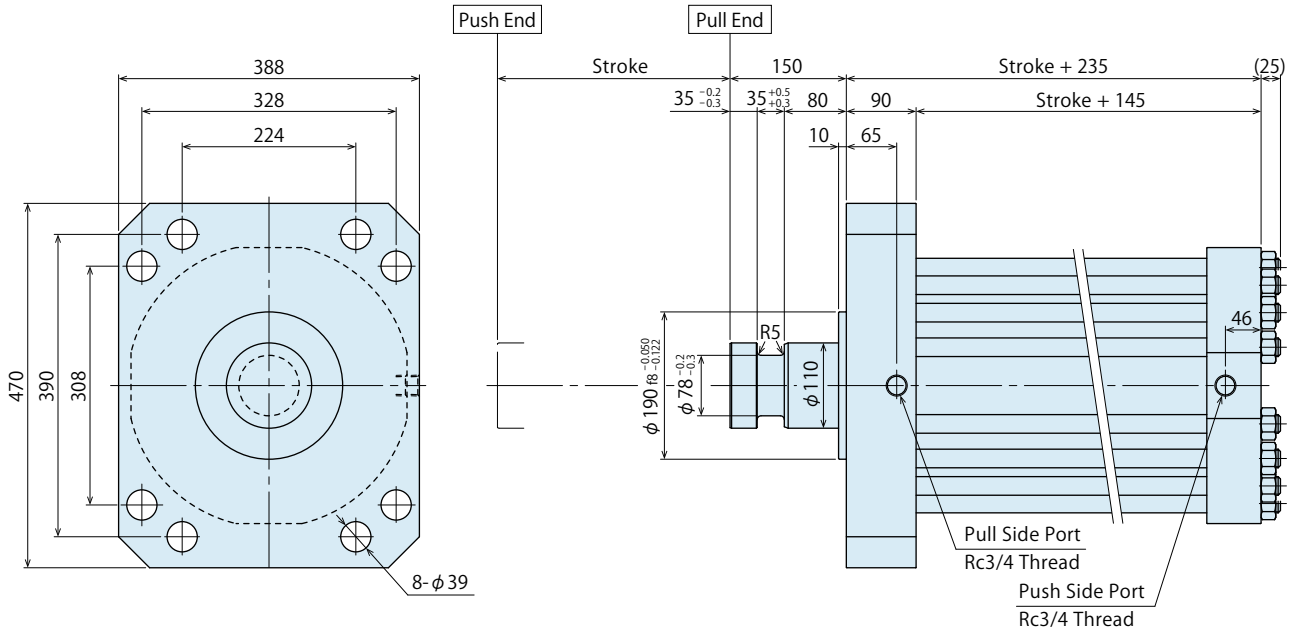
(mm)

Model No.	PCB0633-T	PCB0803-T	PCB1003-T	PCB1253-T
TA	M24×1.5	M30×1.5	M40×1.5	M50×1.5
TB	62	66	80	96
TC	32	36	45	56
TD	30	30	35	40
TE	16	17	22	23
TF	26	32	41	54

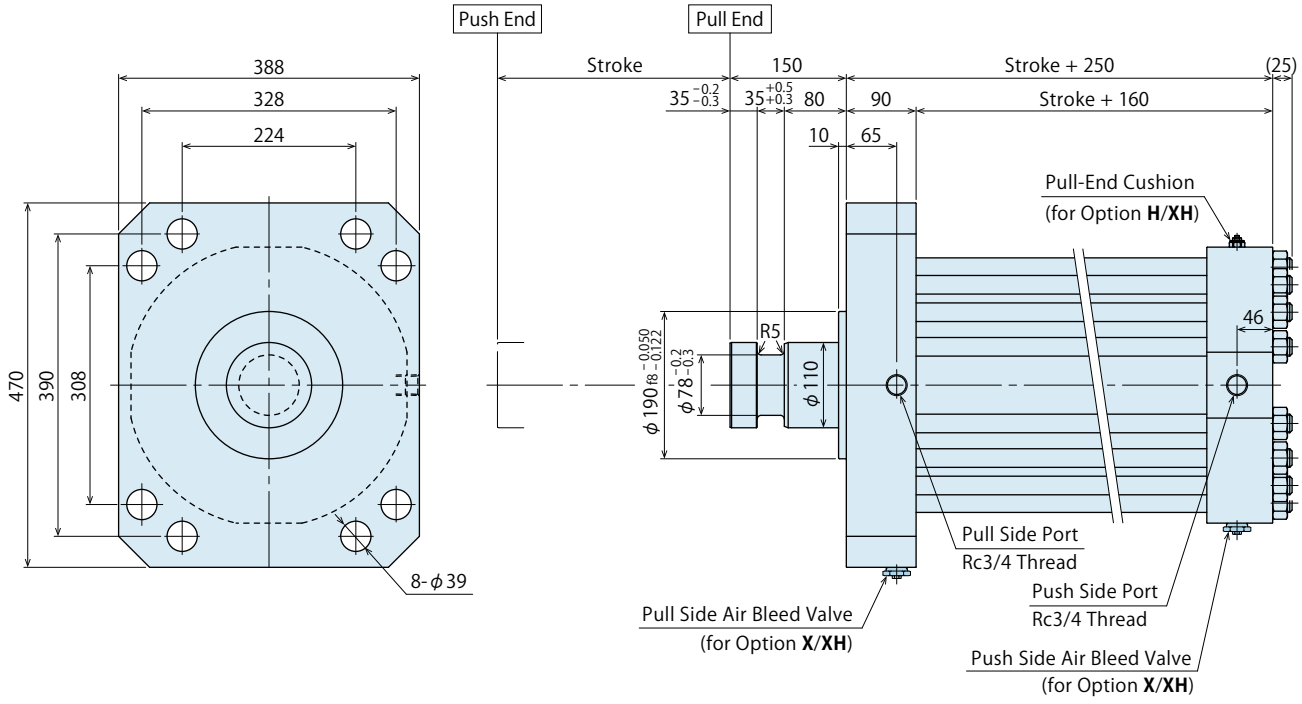
External Dimensions : Cylinder Inner Diameter 250

※ This drawing shows the pull end state of PCB2503.

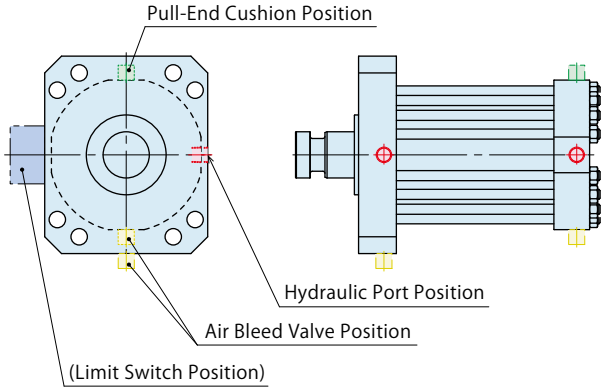
Rod Shape C : Coupling, Port Position F : Front, Option Blank : None



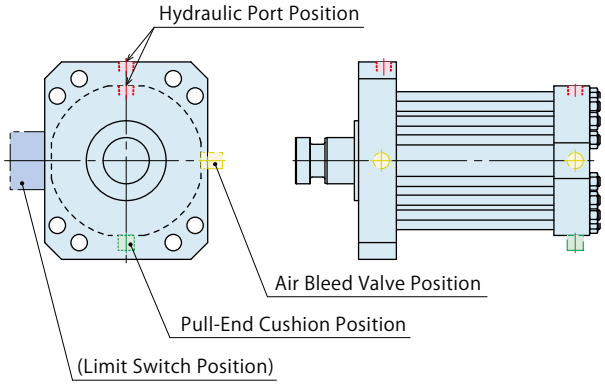
Rod Shape C : Coupling, Port Position F : Front, Option X : with Air Bleed Valve, Option H : with Pull-End Cushion, Option XH : with Air Bleed Valve and Pull-End Cushion



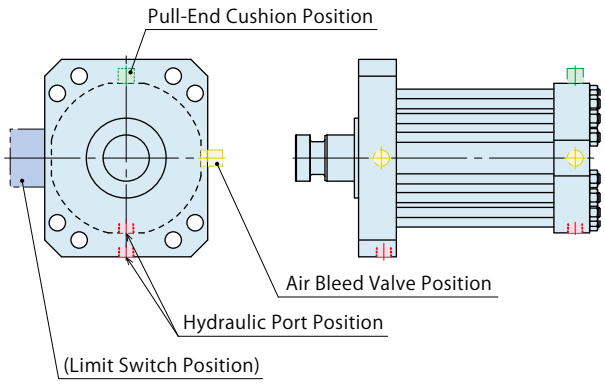
Port Position F : Front



Port Position R : Right Side



Port Position L : Left Side

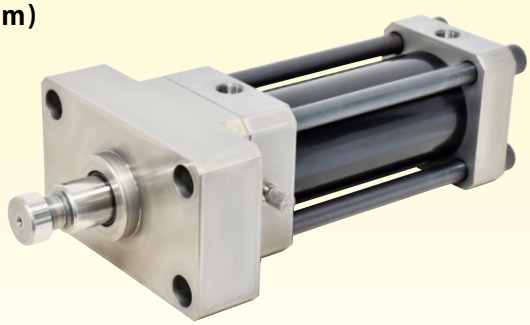


For Diecast Systems

High-Speed Core Pull Cylinder

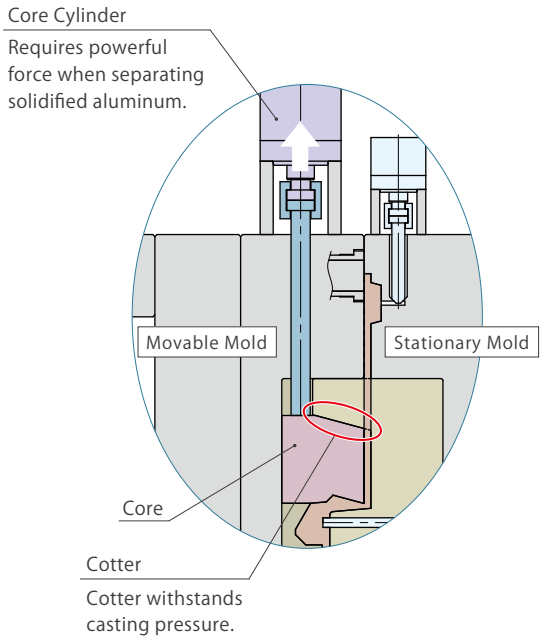
Compact Model (Cylinder Inner Diameter ϕ40, ϕ50mm)

Model **PCM**



Maintains Pulling Force with Much Less Cylinder Capacity

Interchangeable with General Core Cylinder / Reduce Cycle Time



Core-Pulling Mechanism for Diecasting Molds

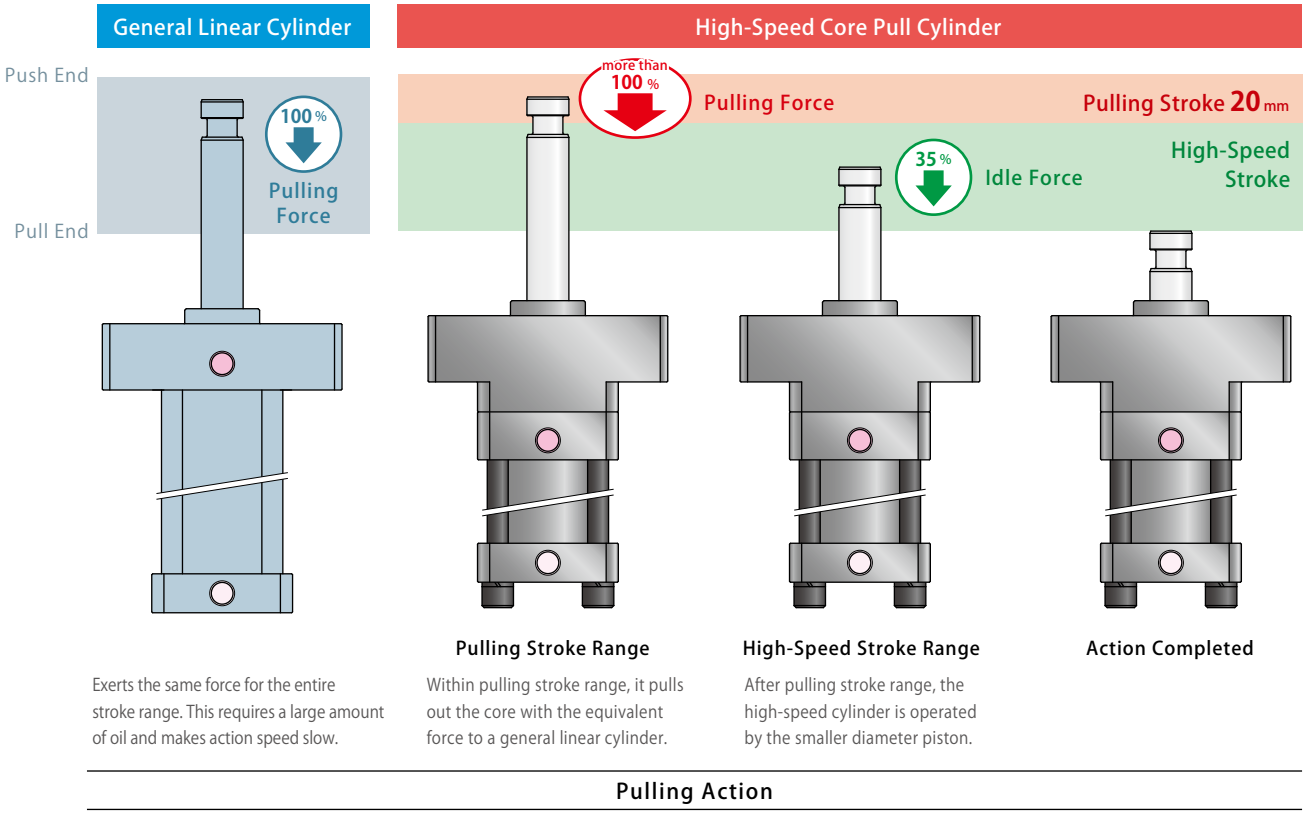
Cylinder for sliding core requires strong force when pulling out the core after casting. No great power is required when moving forward and backward.

Kosmek High-Speed Core Pull Cylinder exerts

high power only when pulling out the core.

Idle force is 35% of pulling force

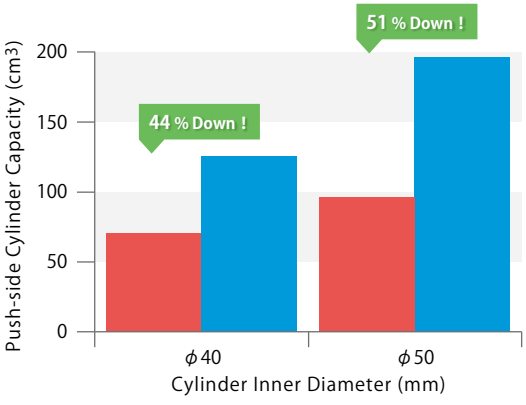
so that working oil amount will be reduced.



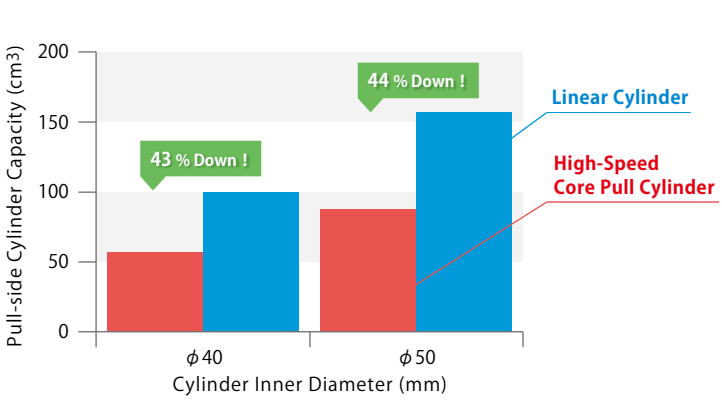
Pulling Action

Compared to a general Linear Cylinder,

Reduces about 45% of oil amount.



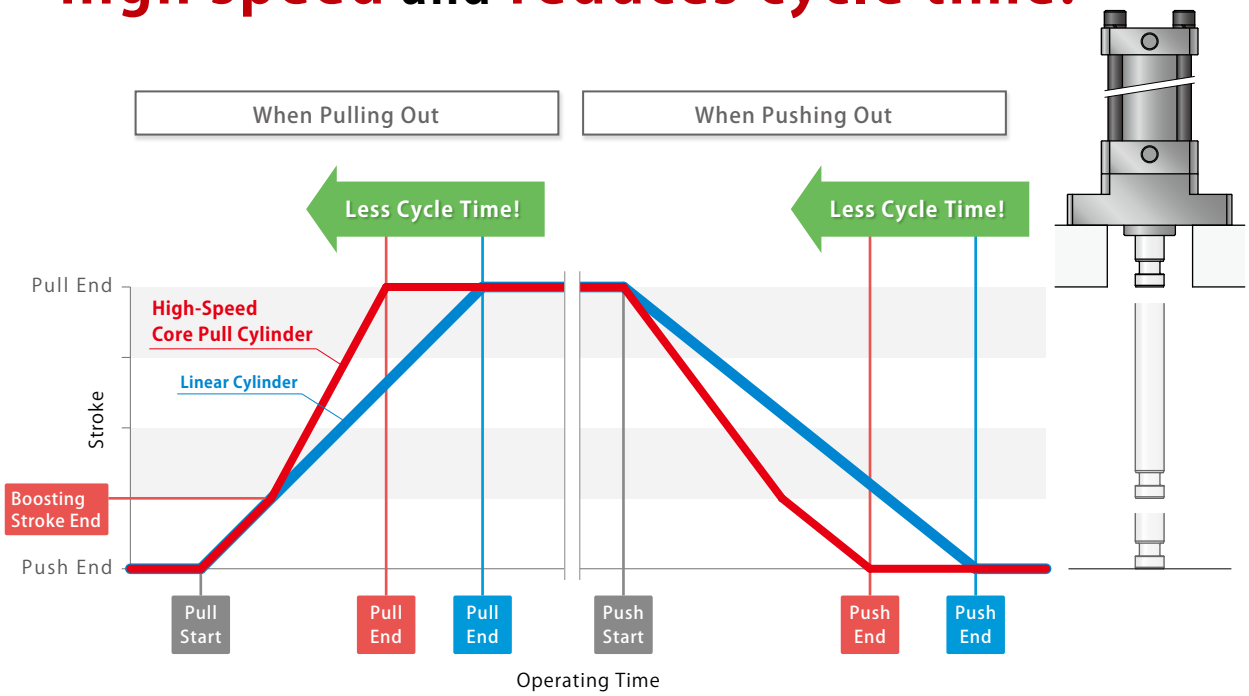
Push-side Cylinder Capacity Comparison
(Stroke：100 mm)



Pull-side Cylinder Capacity Comparison
(Stroke：100 mm)

Smaller cylinder capacity enables

high speed and reduces cycle time.



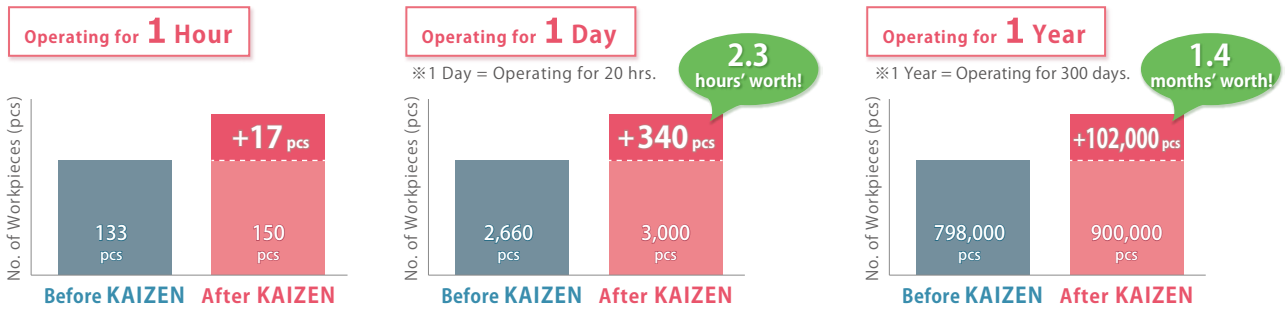
Operating Time Image (Compared to cylinder with the same pulling force.)

Only several sec reduction per shot, yet it will

make a huge difference in the long term.

Case Study with 850ton Diecasting Machine

【Condition】Reduced Cycle Time per Shot: 3 sec. (before Kaizen: 27 sec, after Kaizen: 24 sec.)



17 more workpieces
by one-hour operation !

340 more workpieces
by one-day operation !

102,000 more workpieces
by one-year operation !

3 sec per shot allows for 102,000 more workpieces production possible in one year.

Also, 12-month amount (before Kaizen) can be manufactured in 10.6 months.

※ Improvement Result per Diecasting Machine

General Linear Cylinder is Interchangeable with High-Speed Core Pull Cylinder

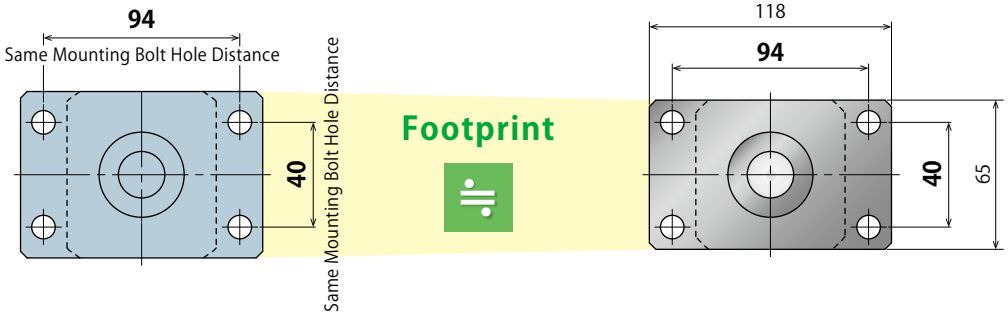
Size Comparison

※When stroke is 100 mm and supply hydraulic pressure is 14 MPa.

General Linear Cylinder
Cylinder Inner Diameter ϕ40 mm
Pulling Force 14 kN

Cylinder Capacity
Push Side 44 % Down!
Pull Side 43 % Down!

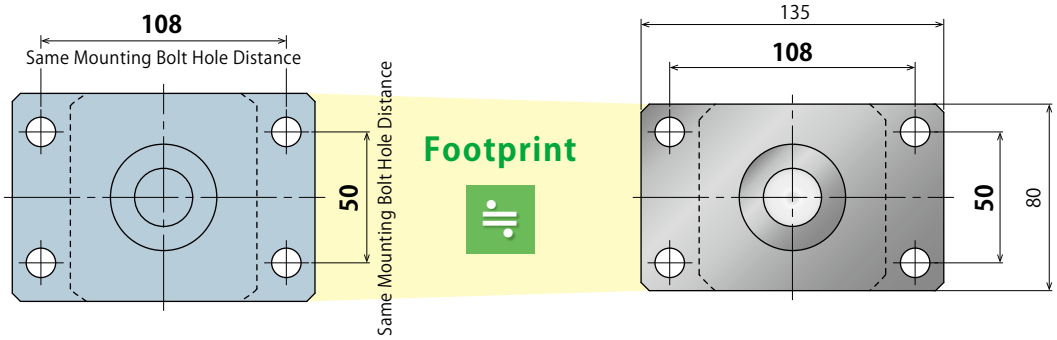
High-Speed Core Pull Cylinder
Cylinder Inner Diameter ϕ40 mm
Pulling Force 14.7 kN



General Linear Cylinder
Cylinder Inner Diameter ϕ50 mm
Pulling Force 22 kN

Cylinder Capacity
Push Side 51 % Down!
Pull Side 44 % Down!

High-Speed Core Pull Cylinder
Cylinder Inner Diameter ϕ50 mm
Pulling Force 28.7 kN



Drastically improves the productivity

by interchanging to High-Speed Core Pull Cylinder.

Model No. Indication

PCM 050 0 - C F - 150 - V - 0 - S3

1 2 3 4 5 6 7

1 Cylinder Inner Diameter

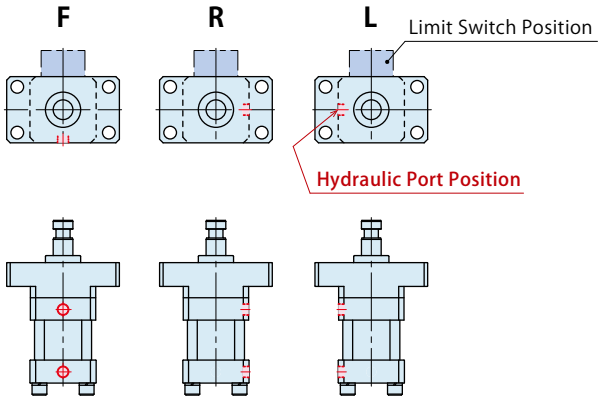
040 : ϕ 40 mm
050 : ϕ 50 mm

2 Design No.

0 : Revision Number

3 Hydraulic Port Position

F : Front
R : Right Side
L : Left Side



4 Stroke

40 ~ 200 : Select from Stroke 40 ~ 200mm

※. Specify 4 **Stroke** in 5mm increments.

5 Operating Temperature

N : Standard 0 ~ 70 ℃
V : High Temperature 0 ~ 120 ℃

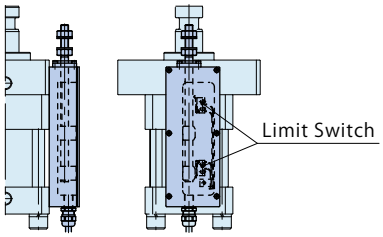
6 Usable Fluid

0 : General Hydraulic Oil (Equivalent to ISO-VG-32)
G : Water•Glycol
S : Silicon Oil
F : Fatty Acid Ester

※. Refer to "Appropriate Fluid According to Packing Material" on the next page for further information.

7 Limit Switch

Blank : No Limit Switch
S3 : With Limit Switch



※. Refer to "Limit Switch" on P.45 for further information.

Specifications

Model No.			PCM0400	PCM0500
Cylinder Inner Diameter		mm	ϕ40	ϕ50
Stroke (in 5mm increments)		mm	40 ~ 200	
Cylinder ※1 Capacity cm3	Push Side		0.71×Stroke	0.96×Stroke
	Pull Side		0.45×Stroke+11.9	0.58×Stroke+29.4
Max. Operating Pressure		MPa	14.0	
Min. Operating Pressure ※2		MPa	3.0	
Withstanding Pressure		MPa	17.5	
Operating Temperature		℃	5 **N**:Standard 0 ~ 70	**V**:High Temperature 0 ~ 120
Weight ※1		kg	0.009×Stroke+5.0	0.011×Stroke+7.3

Notes :

※1. The stroke in calculation of cylinder capacity and weight should be calculated in mm.

※2. Minimum pressure to operate the cylinder with no load.

Appropriate Fluid According to Packing Material

5 Operating Temperature	Packing Material	Appropriate Fluid			
		0:General Hydraulic Oil	**G**:Water・Glycol	**S**:Silicon Oil	**F**:Fatty Acid Ester
N: Standard 0 ~ 70 ℃	Nitrile Rubber (NBR)	○	○	○	○
V: High Temperature 0 ~ 120 ℃	Fluor Rubber (FKM)	○	△ ※3	○	○

Notes :

※3. Please contact us when using 6 **G** : Water・Glycol with 5 **V** : High Temperature.

1. Please contact us for other conditions.

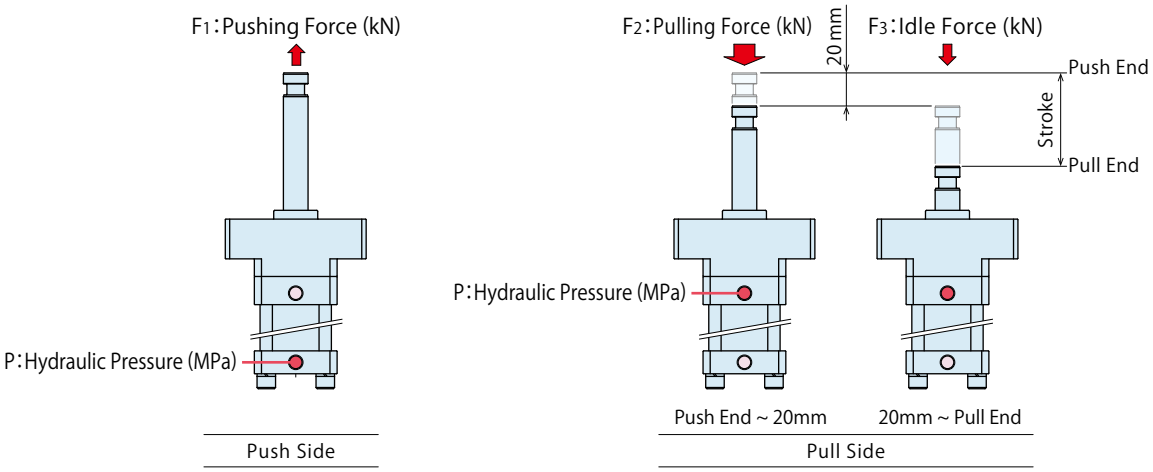
Cylinder Thrust Force

(kN)

Model No.			PCM0400	PCM0500
Pushing Force		at P:14MPa	9.9	13.5
		Calculation Formula ※4	$F_1=0.71\times P$	$F_1=0.964\times P$
Pull Side	Pulling Force (Push End ~ 20mm)	at P:14MPa	14.7	28.7
		Calculation Formula ※4	$F_2=1.05\times P$	$F_2=2.05\times P$
	Idle Force (20mm ~ Pull End)	at P:14MPa	6.3	8.1
		Calculation Formula ※4	$F_3=0.45\times P$	$F_3=0.58\times P$

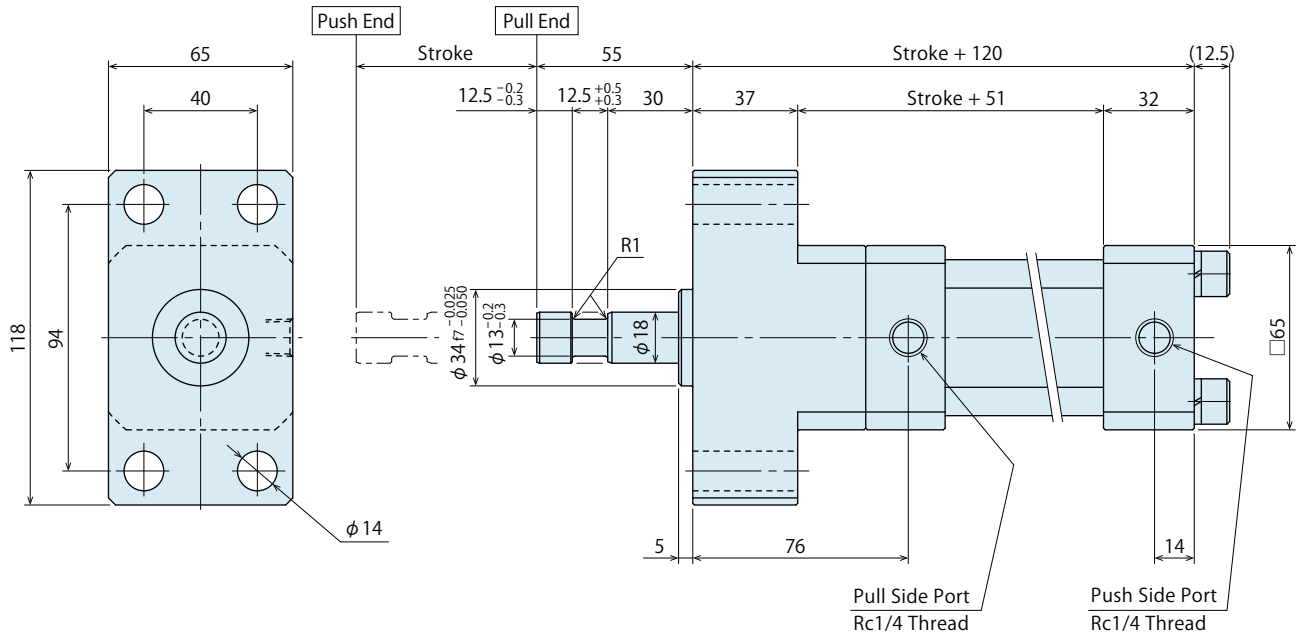
Note :

※4. F_1 : Pushing Force (kN), F_2 : Pulling Force (kN), F_3 : Idle Force (kN), P : Hydraulic Pressure (MPa)



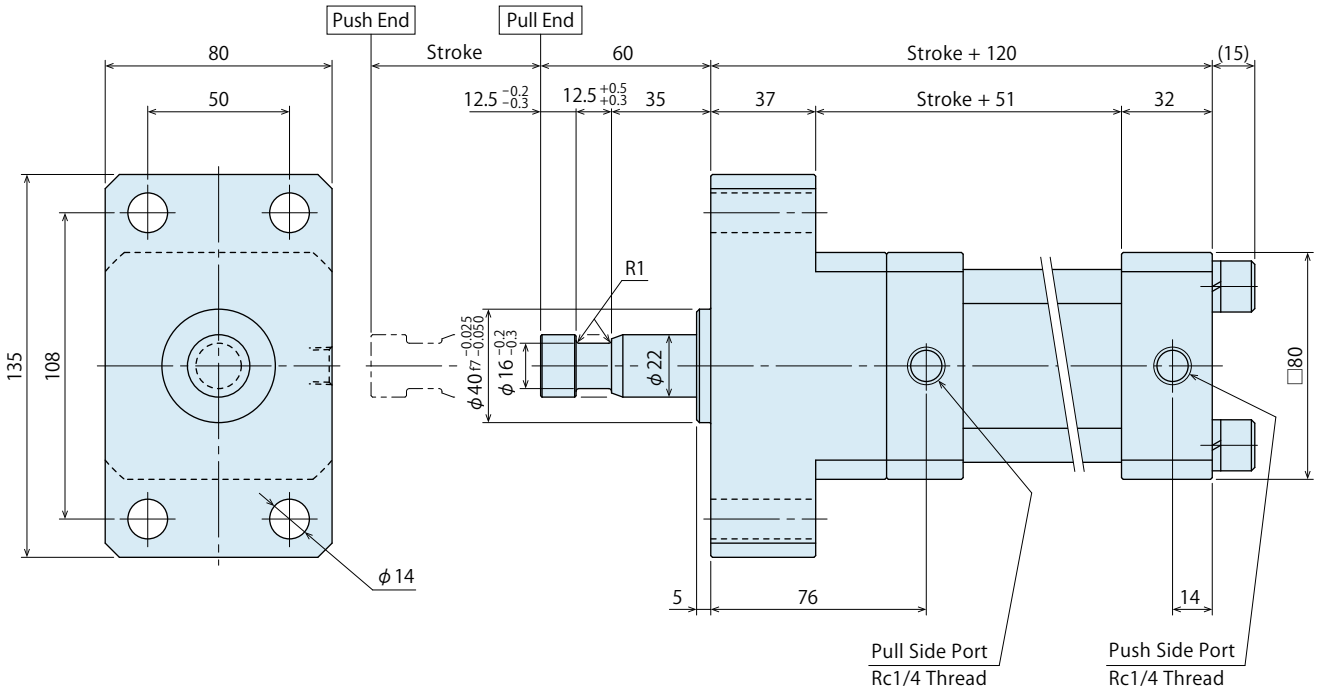
External Dimensions：PCM0400

※ This drawing shows the pull end state of PCM0400-CF.



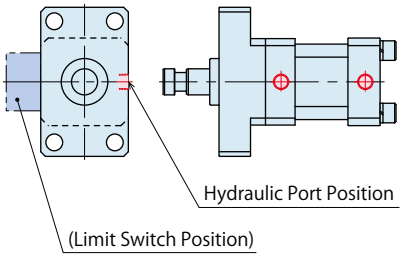
External Dimensions：PCM0500

※ This drawing shows the pull end state of PCM0500-CF.

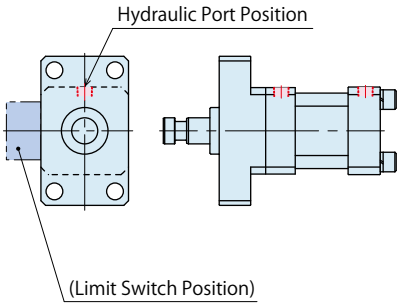


Hydraulic Port Position

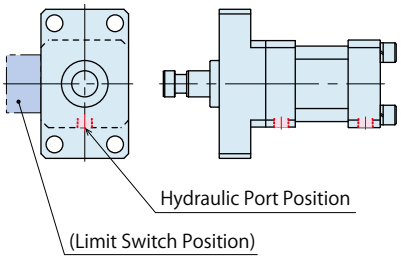
Port Position F : Front



Port Position R : Right Side



Port Position L : Left Side

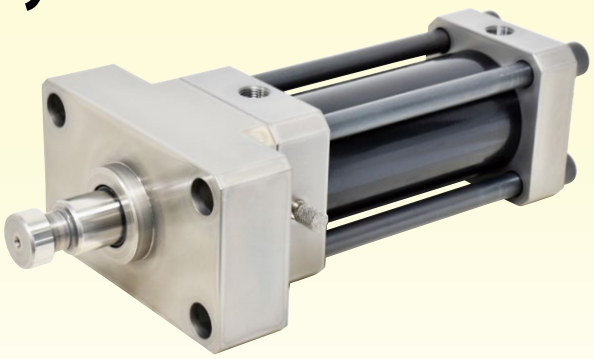


For Diecast Systems

High-Power Core Pull Cylinder

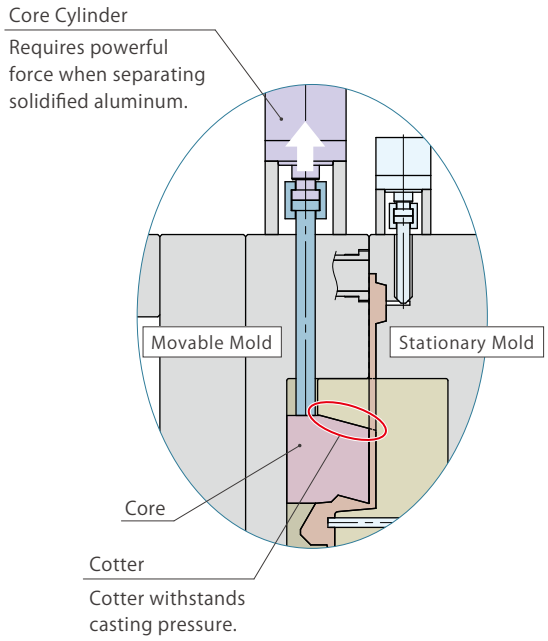
Model PCA (High-Speed Model)

Model PCC (Standard Model)



Mechanical Locking to Exert 180% Thrust Force

Compared to the Same Size Cylinder, Able to Downsize Molds and Reduce the Cycle Time.



Core-Pulling Mechanism for Diecasting Molds

Cylinder for sliding core requires strong force when pulling out the core after casting. No great power is required when moving forward and backward.

Kosmek High-Power Core Pull Cylinder exerts

high power only when pulling out the core.

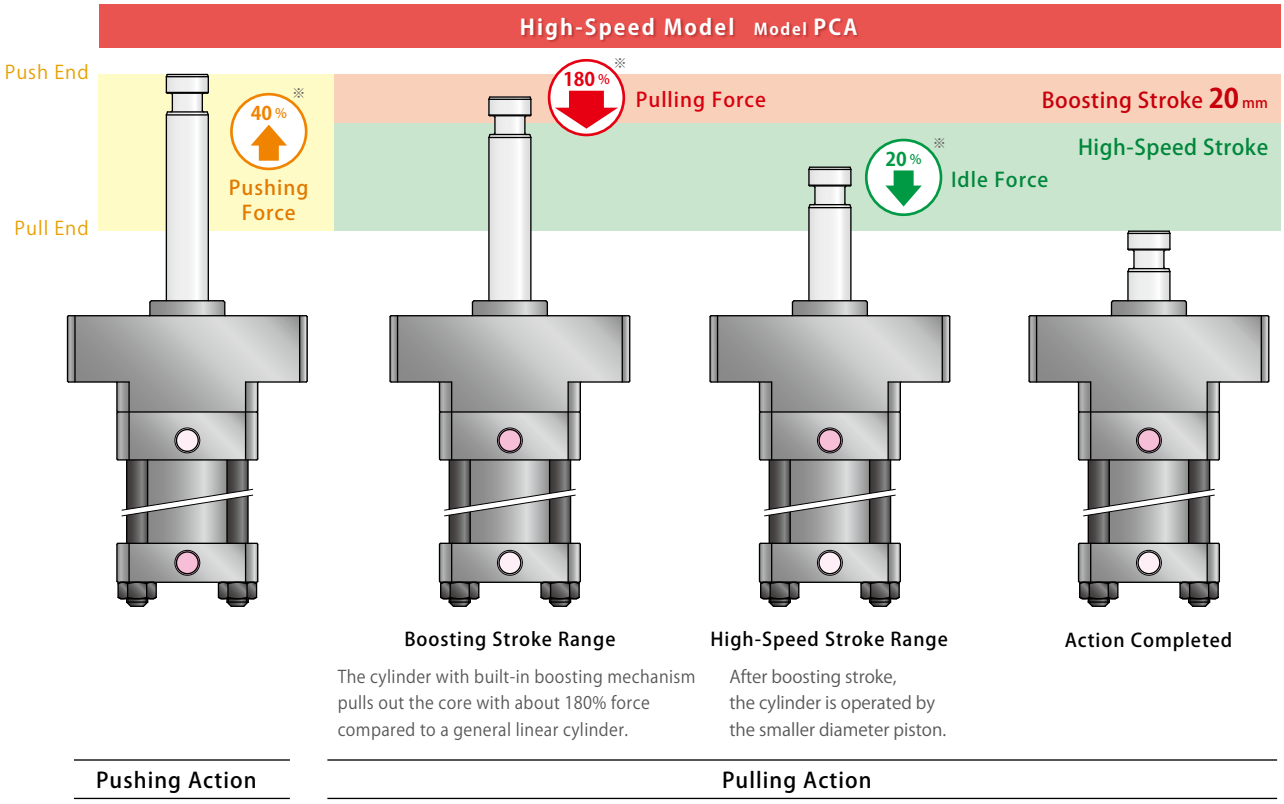
Compared to a general linear cylinder,

Enables to Exert about 180% Thrust Force

Idle force of high-speed model (model PCA) is

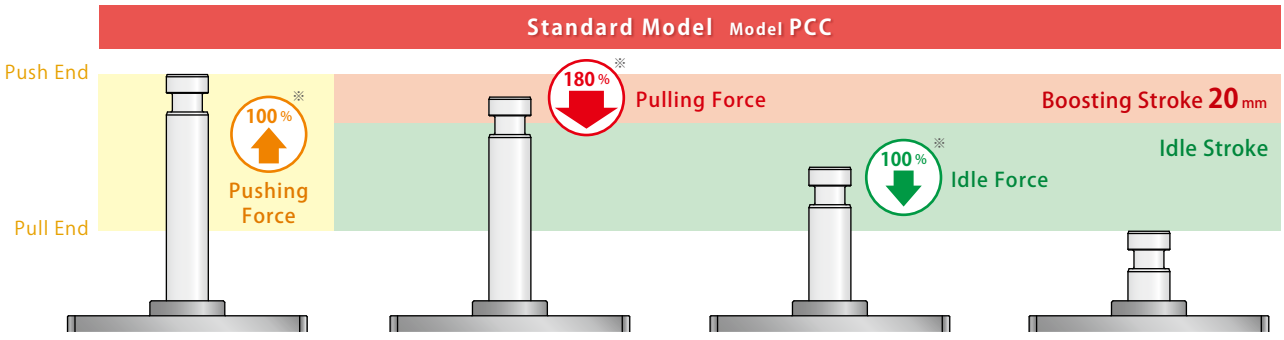
20% of cylinder force so that

working oil amount will be reduced.



※ Ratio when compared to same-size general linear cylinder.

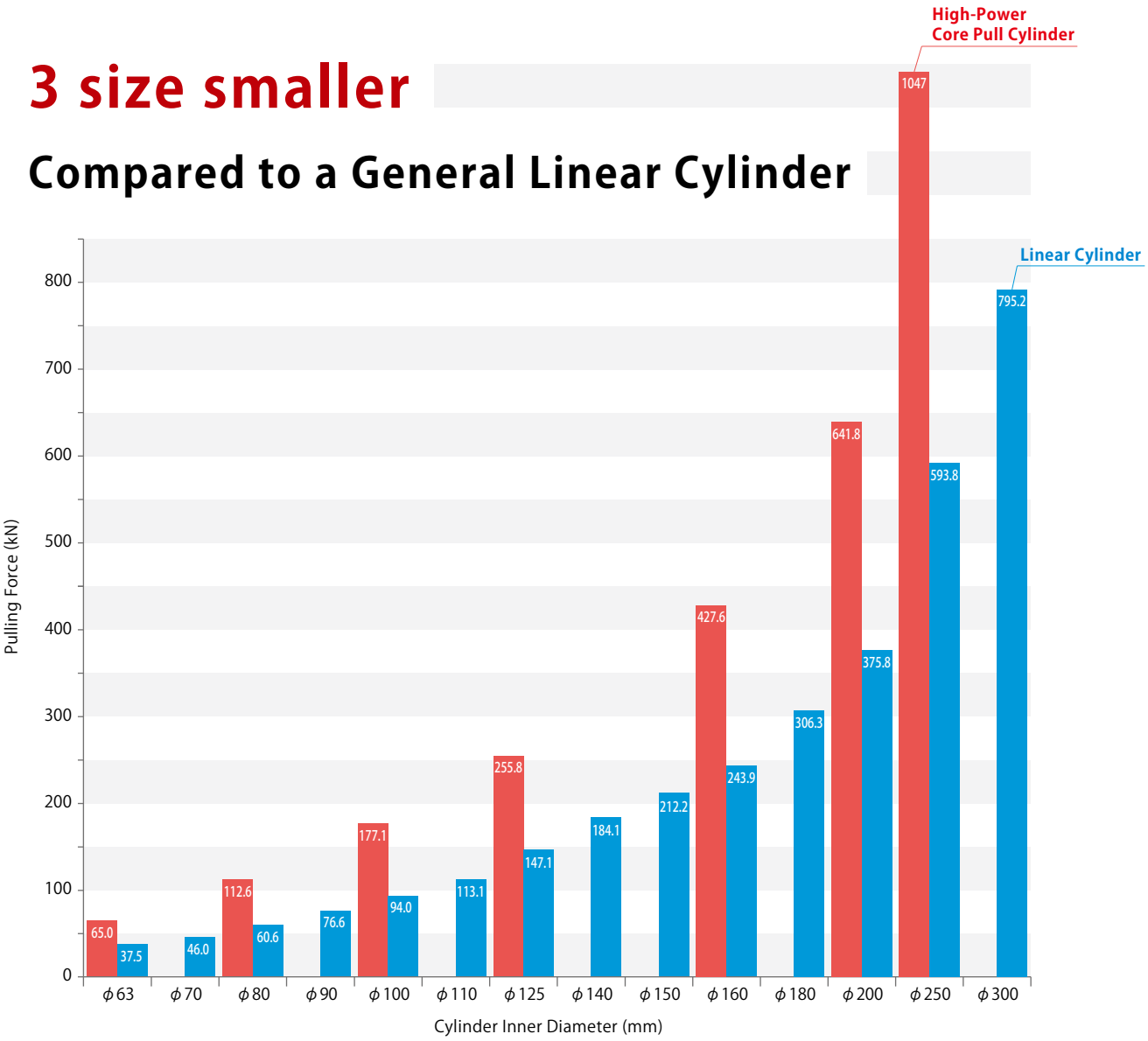
Select the Standard Model (Model PCC) when strong power is required for idle stroke on both push and pull sides.



※ Ratio when compared to same-size general linear cylinder.

3 size smaller

Compared to a General Linear Cylinder



Pulling Force Comparison (Supply Hydraulic Pressure at 15MPa)

3 Size Down Example

General Linear Cylinder

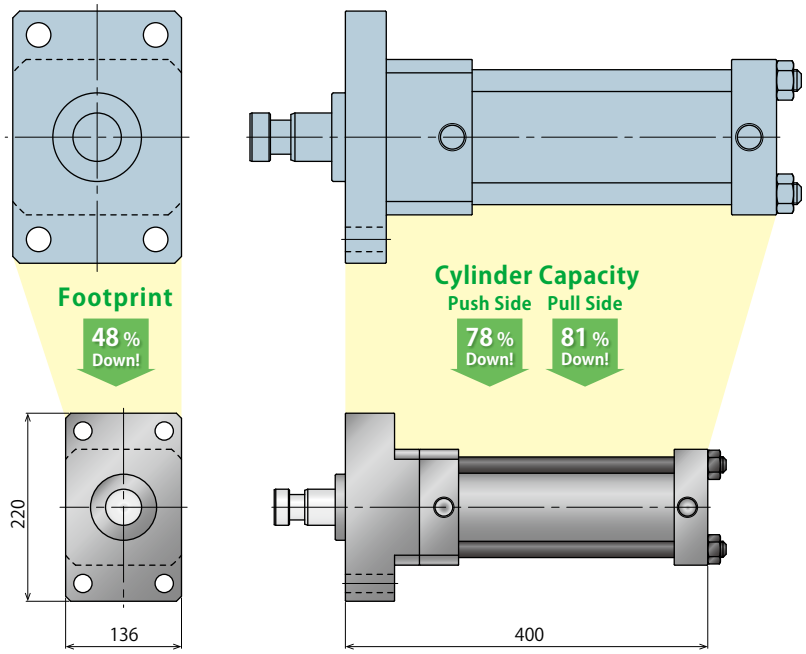
Cylinder Inner Diameter	ϕ140 mm
Pulling Force	184.1 kN
Weight	About 80 kg

Cylinder Weight
46 % Down!

High-Power Core Pull Cylinder

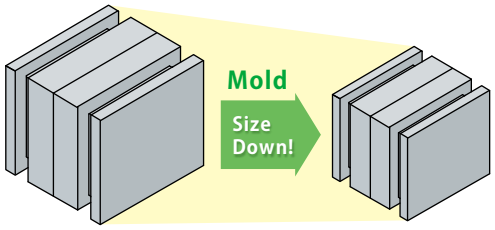
Cylinder Inner Diameter	ϕ100 mm
Pulling Force	177.1 kN
Weight	About 43.3 kg

※ High-Speed Model (PCA)
When stroke is 200 mm and hydraulic pressure is 15 MPa.



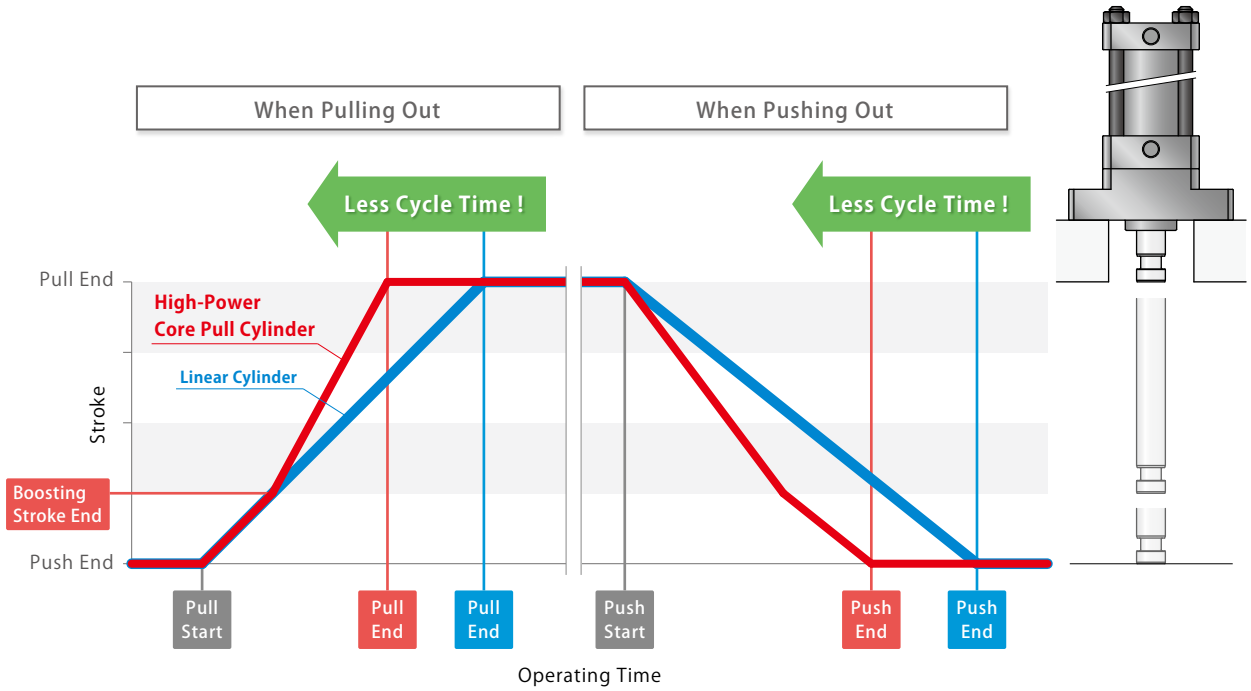
Downsizing the Core Cylinder allows for

Downsizing the Entire Mold



Smaller footprint of the core cylinder enables to reduce the mold size and weight.

Reducing the idle force and cylinder size enables to reduce oil amount※ and improve operation speed, allowing for drastic cycle time reduction.



Operating Time Image (Compared to cylinder with the same pulling force.)

※ Reducing improvement of the idle force is only available for High-Speed Model (model PCA).
With the Standard Model (model PCC), the cycle time will be reduced by downsizing of the cylinder.

Model No. Indication

PC **A** **100** **3** - **B** **C** **F** - **150** - **V** - **0** - **X** - **S1R**

1 2 3 4 5 6 7 8 9 10 11

1 Operating Speed

A : High Speed
C : Standard

2 Cylinder Inner Diameter

063 : ϕ 63 mm
080 : ϕ 80 mm
100 : ϕ 100 mm
125 : ϕ 125 mm
160 : ϕ 160 mm
200 : ϕ 200 mm
250 : ϕ 250 mm
Only available for 1 **A** : High Speed

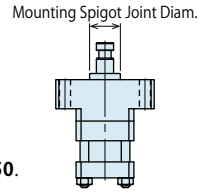
3 Design No.

3 : Revision Number

4 Mounting Spigot Joint Diameter

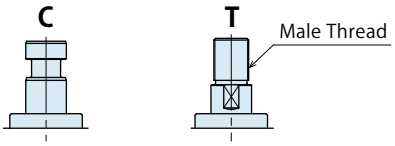
A : Type A
B : Type B

※. Refer to the external dimensions on P.41 for further information.
※. Only 4 **A**:Type A for 2 **160, 200, 250**.



5 Rod Shape

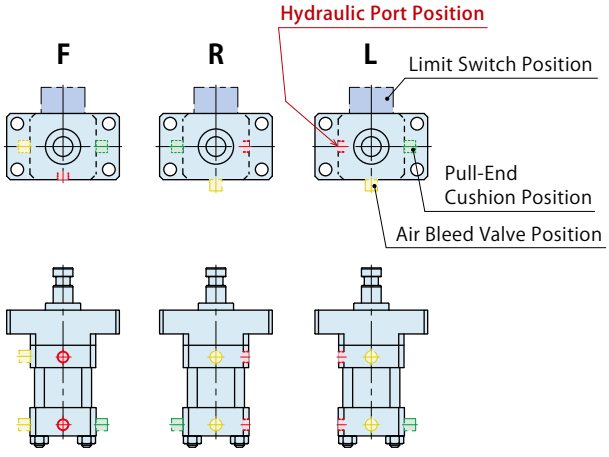
C : Coupling
T : Male Thread



※. Only 5 **C**:Coupling for 2 **125, 160, 200, 250**.

6 Hydraulic Port Position

F : Front
R : Right Side
L : Left Side



7 Stroke

40 ~ 500 : Select from Stroke 40 ~ 500mm

※. 7 **Stroke** differs depending on 2 **Cylinder Inner Diameter**. Refer to the stroke on the specifications on the next page.
※. Specify 7 **Stroke** in 5mm increments.

8 Operating Temperature

N : Standard 0 ~ 70 ℃ **V** : High Temp. 0 ~ 120 ℃

9 Usable Fluid

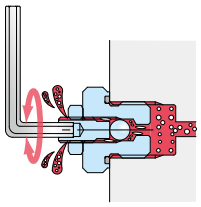
0 : General Hydraulic Oil (Equivalent to ISO-VG-32)
G : Water・Glycol
S : Silicon Oil
F : Fatty Acid Ester

※. Refer to "Appropriate Fluid According to Packing Material" on the next page for further information.

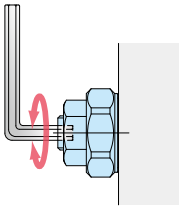
10 Option

Blank : None
X : with Air Bleed Valve
H : with Pull-End Cushion
XH : with Air Bleed Valve and Pull-End Cushion

X : with Air Bleed Valve
Able to release the air in the circuit with a wrench.

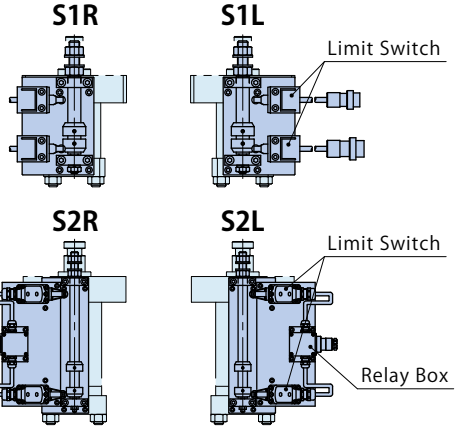


H : with Pull-End Cushion
Able to cushion at the pull end by adjusting flow rate with a wrench.



11 Limit Switch

Blank : No Limit Switch
S1R : Standard Model
S1L : Standard Model
Mounting position is as shown in the below drawing.
S2R : Relay Box Model
S2L : Relay Box Model
Mounting position is as shown in the below drawing.



※. Refer to "Limit Switch" on P.45 for further information.

Specifications

PCA : High-Speed Model

Model No.		PCA0633	PCA0803	PCA1003	PCA1253	PCA1603	PCA2003	PCA2503
Cylinder Inner Diameter	mm	φ63	φ80	φ100	φ125	φ160	φ200	φ250
Stroke (in 5mm increments)	mm	40 ~ 250	40 ~ 300	40 ~ 400	40 ~ 500			
Cylinder※1 Capacity cm3	Push Side	1.26×Stroke+37.2	1.96×Stroke+61.3	2.83×Stroke+100.5	4.42×Stroke+157.1	7.85×Stroke+245.0	11.31×Stroke+402.1	17.67×Stroke+628.3
	Pull Side	0.64×Stroke+73.8	0.97×Stroke+130.7	1.24×Stroke+211.3	1.95×Stroke+302.0	4.01×Stroke+490.1	4.95×Stroke+756.7	8.17×Stroke+1232.7
Operating Pressure	MPa	15.0						
Max. Operating Pressure	MPa	16.0						
Min. Operating Pressure※2	MPa	1.0						
Withstanding Pressure	MPa	24.0						
Operating Temperature	℃	8 **N**:Standard 0 ~ 70 **V**:High Temperature 0 ~ 120						
Weight※1	kg	0.033×Stroke+10.0	0.053×Stroke+16.5	0.083×Stroke+26.7	0.130×Stroke+43.3	0.180×Stroke+91.4	0.293×Stroke+166.9	0.440×Stroke+273.3

PCC : Standard Model

Model No.		PCC0633	PCC0803	PCC1003	PCC1253	PCC1603
Cylinder Inner Diameter	mm	φ63	φ80	φ100	φ125	φ160
Stroke (in 5mm increments)	mm	40 ~ 250	40 ~ 300	40 ~ 400	40 ~ 500	
Cylinder※1 Capacity cm3	Push Side	3.12×Stroke	5.03×Stroke	7.85×Stroke	12.27×Stroke	20.11×Stroke
	Pull Side	2.50×Stroke+36.6	4.04×Stroke+69.4	6.26×Stroke+110.8	9.81×Stroke+144.9	16.26×Stroke+245.0
Operating Pressure	MPa	15.0				
Max. Operating Pressure	MPa	16.0				
Min. Operating Pressure※2	MPa	1.0				
Withstanding Pressure	MPa	24.0				
Operating Temperature	℃	8 **N**:Standard 0 ~ 70 **V**:High Temperature 0 ~ 120				
Weight※1	kg	0.013×Stroke+10.0	0.022×Stroke+16.5	0.034×Stroke+26.7	0.053×Stroke+43.3	0.126×Stroke+84.8

Notes :

※1. The stroke in calculation of cylinder capacity and weight should be calculated in mm.

※2. Minimum pressure to operate the cylinder with no load.

Appropriate Fluid According to Packing Material

8 Operating Temperature	Packing Material	Appropriate Fluid			
		0:General Hydraulic Oil	**G**:Water・Glycol	**S**:Silicon Oil	**F**:Fatty Acid Ester
N: Standard 0 ~ 70 ℃	Nitrile Rubber (NBR)	○	○	○	○
V: High Temperature 0 ~ 120 ℃	Fluor Rubber (FKM)	○	△※3	○	○

Notes :

※3. Please contact us when using 9 **G** : Water・Glycol with 8 **V** : High Temperature.

1. Please contact us for other conditions.

Cylinder Thrust Force

PCA：High-Speed Model

(kN)

Model No.			PCA0633	PCA0803	PCA1003	PCA1253	PCA1603	PCA2003	PCA2503
Pushing Force		at P：15MPa	18.8	29.5	42.4	66.3	117.8	169.6	265.1
		Calculation Formula※1	$F_1=1.26\times P$	$F_1=1.96\times P$	$F_1=2.83\times P$	$F_1=4.42\times P$	$F_1=7.85\times P$	$F_1=11.31\times P$	$F_1=17.67\times P$
Pull Side	Pulling Force (Push End ~ 20mm)	at P：15MPa	65.0	112.6	177.1	255.8	427.6	641.8	1047.0
		Calculation Formula※1	$F_2=4.33\times P$	$F_2=7.51\times P$	$F_2=11.81\times P$	$F_2=17.05\times P$	$F_2=28.51\times P$	$F_2=42.79\times P$	$F_2=69.80\times P$
	Idle Force (20mm ~ Pull End)	at P：15MPa	9.6	14.6	18.6	29.3	60.1	74.2	122.5
		Calculation Formula※1	$F_3=0.64\times P$	$F_3=0.97\times P$	$F_3=1.24\times P$	$F_3=1.95\times P$	$F_3=4.01\times P$	$F_3=4.95\times P$	$F_3=8.17\times P$

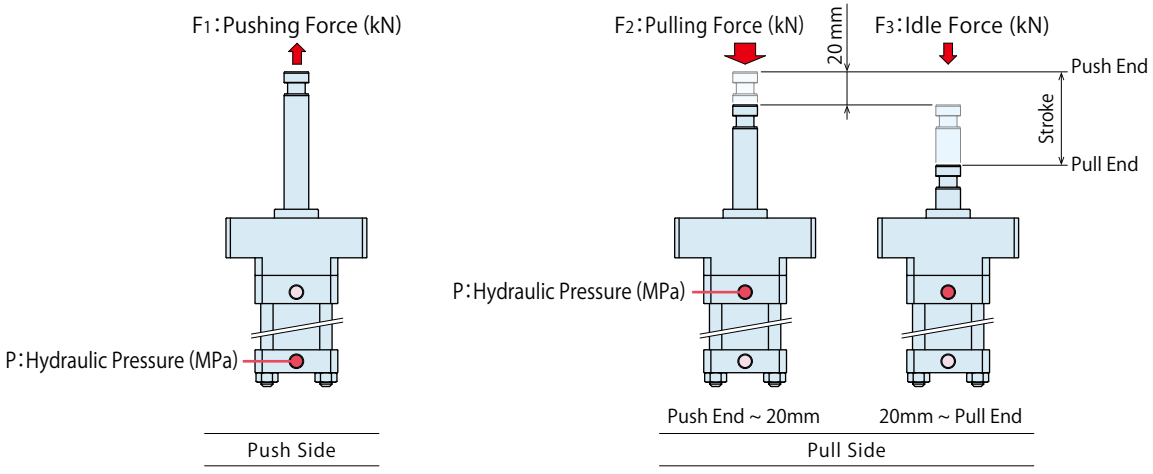
PCC：Standard Model

(kN)

Model No.			PCC0633	PCC0803	PCC1003	PCC1253	PCC1603
Pushing Force		at P：15MPa	46.8	75.4	117.8	184.1	301.6
		Calculation Formula※1	$F_1=3.12\times P$	$F_1=5.03\times P$	$F_1=7.85\times P$	$F_1=12.27\times P$	$F_1=20.11\times P$
Pull Side	Pulling Force (Push End ~ 20mm)	at P：15MPa	65.0	112.6	177.1	255.8	427.6
		Calculation Formula※1	$F_2=4.33\times P$	$F_2=7.51\times P$	$F_2=11.81\times P$	$F_2=17.05\times P$	$F_2=28.51\times P$
	Idle Force (20mm ~ Pull End)	at P：15MPa	37.5	60.6	94.0	147.1	243.9
		Calculation Formula※1	$F_3=2.50\times P$	$F_3=4.04\times P$	$F_3=6.26\times P$	$F_3=9.81\times P$	$F_3=16.26\times P$

Note :

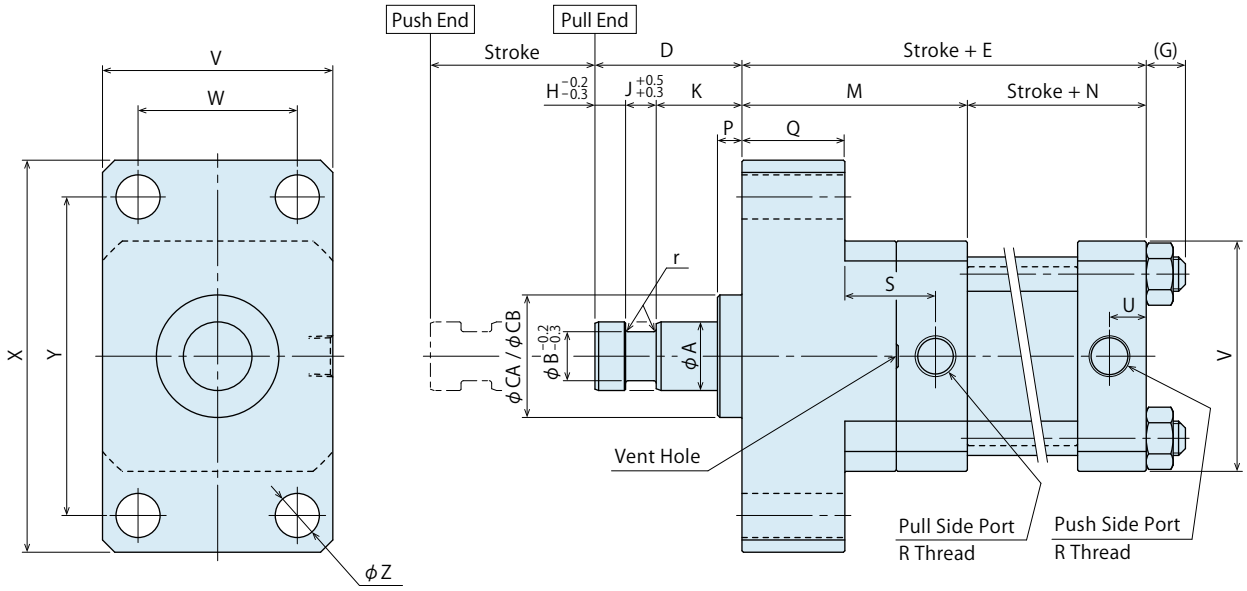
※1. F_1：Pushing Force (kN), F_2：Pulling Force (kN), F_3：Idle Force (kN), P：Hydraulic Pressure (MPa)



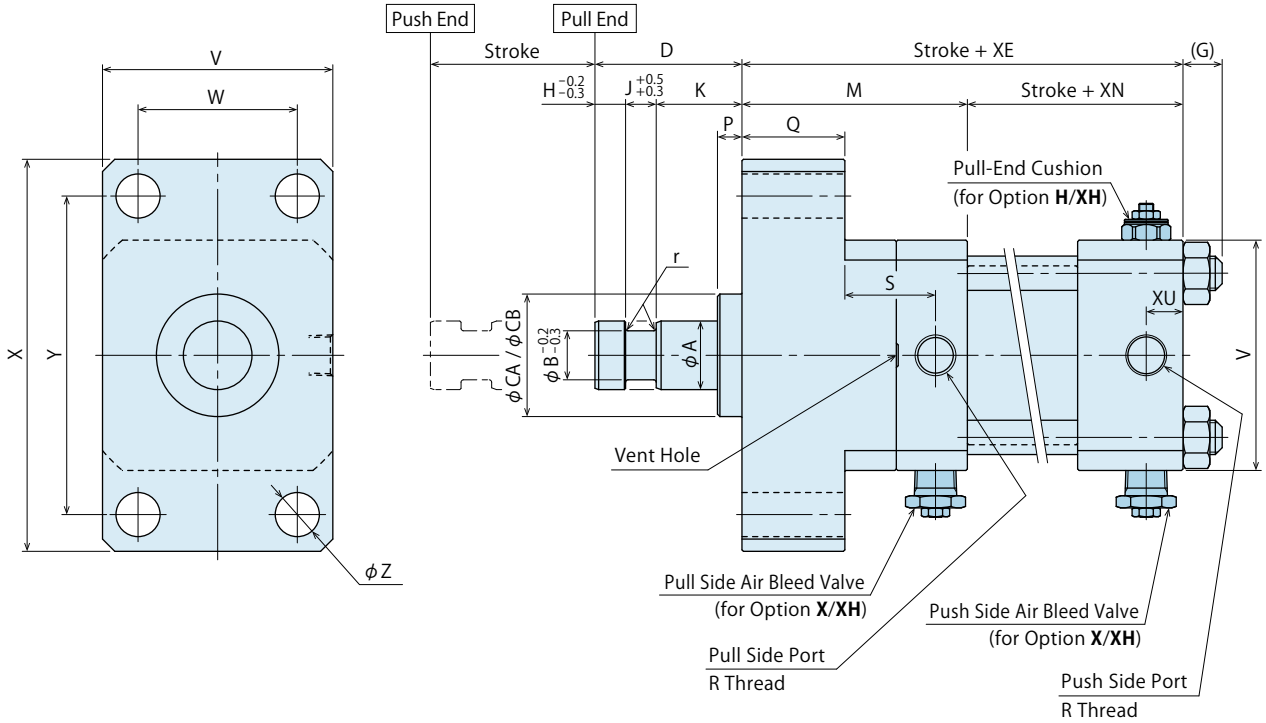
External Dimensions : Cylinder Inner Diameter 063 ~ 200

※ This drawing shows the pull end state of PCA0633 ~ PCA2003, PCC0633 ~ PCC1603. External dimensions of PCA and PCC are the same.

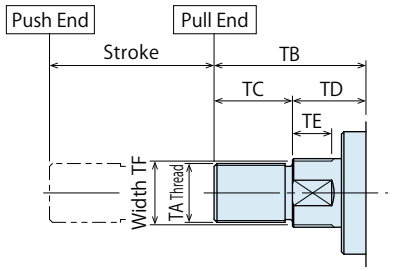
Rod Shape C : Coupling, Port Position F : Front, Option Blank : None



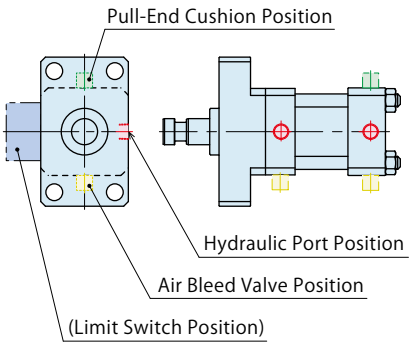
Rod Shape C : Coupling, Port Position F : Front, Option X : with Air Bleed Valve, Option H : with Pull-End Cushion, Option XH : with Air Bleed Valve and Pull-End Cushion



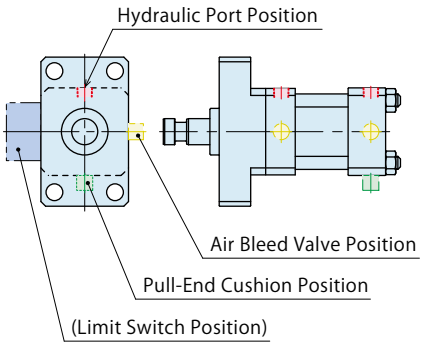
Rod Shape T : Male Thread



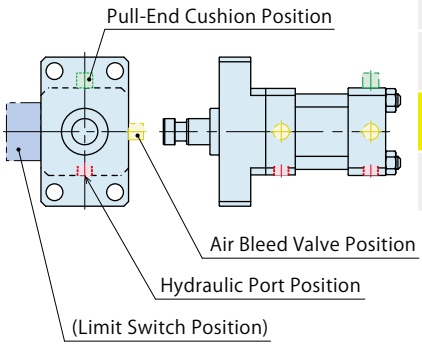
Port Position **F**：Front



Port Position **R**：Right Side



Port Position **L**：Left Side



External Dimension List

Rod Shape **C**：Coupling, Option **Blank**：None

(mm)

Model No.	PCA0633-C PCC0633-C	PCA0803-C PCC0803-C	PCA1003-C PCC1003-C	PCA1253-C PCC1253-C	PCA1603-C PCC1603-C	PCA2003-C
A	28 f7 $^{-0.020}_{-0.041}$	35.5 f7 $^{-0.025}_{-0.050}$	45 f7 $^{-0.025}_{-0.050}$	56 f7 $^{-0.030}_{-0.060}$	70 f7 $^{-0.030}_{-0.060}$	90 f7 $^{-0.036}_{-0.071}$
B	20	25	31	38	49	60
CA (Mounting Spigot Joint Diam. **A**)	43 f7 $^{-0.025}_{-0.050}$	52 f7 $^{-0.030}_{-0.060}$	62 f7 $^{-0.030}_{-0.060}$	72 f8 $^{-0.030}_{-0.076}$	105 f8 $^{-0.036}_{-0.090}$	125 f8 $^{-0.043}_{-0.106}$
CB (Mounting Spigot Joint Diam. **B**)	50 f7 $^{-0.025}_{-0.050}$	65 f7 $^{-0.030}_{-0.060}$	70 f7 $^{-0.030}_{-0.060}$	85 f8 $^{-0.036}_{-0.090}$	-	-
D	60	70	75	90	115	130
E	165	180	200	220	270	305
G	16	18	22	25	30	37
H	12.5	15	15	20	25	30
J	12.5	15	15	20	25	30
K	35	40	45	50	65	70
M	92	100	110	125	145	165
N	73	80	90	95	125	140
P	10	10	10	10	10	10
Q	42	45	55	60	75	85
R	Rc3/8	Rc3/8	Rc1/2	Rc1/2	Rc3/4	Rc3/4
S	37	40	38.5	45	45	55
U	12.5	16	19	24	31	41
V	94	114	136	165	212	278
W	65	80	100	125	160	210
X	160	185	220	255	335	405
Y	130	150	180	210	275	335
Z	18	18	22	26	33	39
r	R1	R1.5	R2	R2	R3.5	R5
Mounting Bolt	M16×2	M16×2	M20×2.5	M24×3	M30×3.5	M36×4

Option **X**：with Air Bleed Valve, **H**：with Pull-End Cushion, **XH**：with Air Bleed Valve and Pull-End Cushion

Unlisted dimensions are the same with Option **Blank**：None.

(mm)

Model No.	PCA0633-□-X/H/XH PCC0633-□-X/H/XH	PCA0803-□-X/H/XH PCC0803-□-X/H/XH	PCA1003-□-X/H/XH PCC1003-□-X/H/XH	PCA1253-□-X/H/XH PCC1253-□-X/H/XH	PCA1603-□-X/H/XH PCC1603-□-X/H/XH	PCA2003-□-X/H/XH
XE	180	195	215	235	285	320
XN	88	95	105	110	140	155
XU	15	19	22	21	31	41

Rod Shape **T**：Male Thread

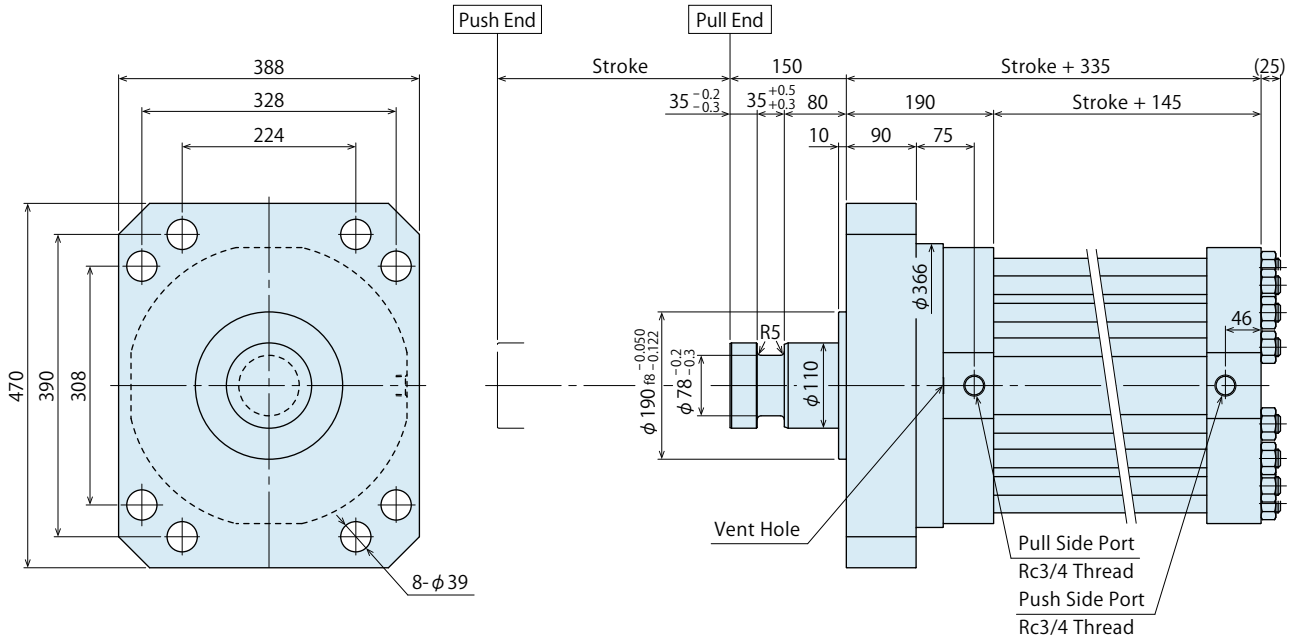
(mm)

Model No.	PCA0633-T PCC0633-T	PCA0803-T PCC0803-T	PCA1003-T PCC1003-T
TA	M24×1.5	M30×1.5	M40×1.5
TB	62	66	80
TC	32	36	45
TD	30	30	35
TE	16	17	22
TF	26	32	41

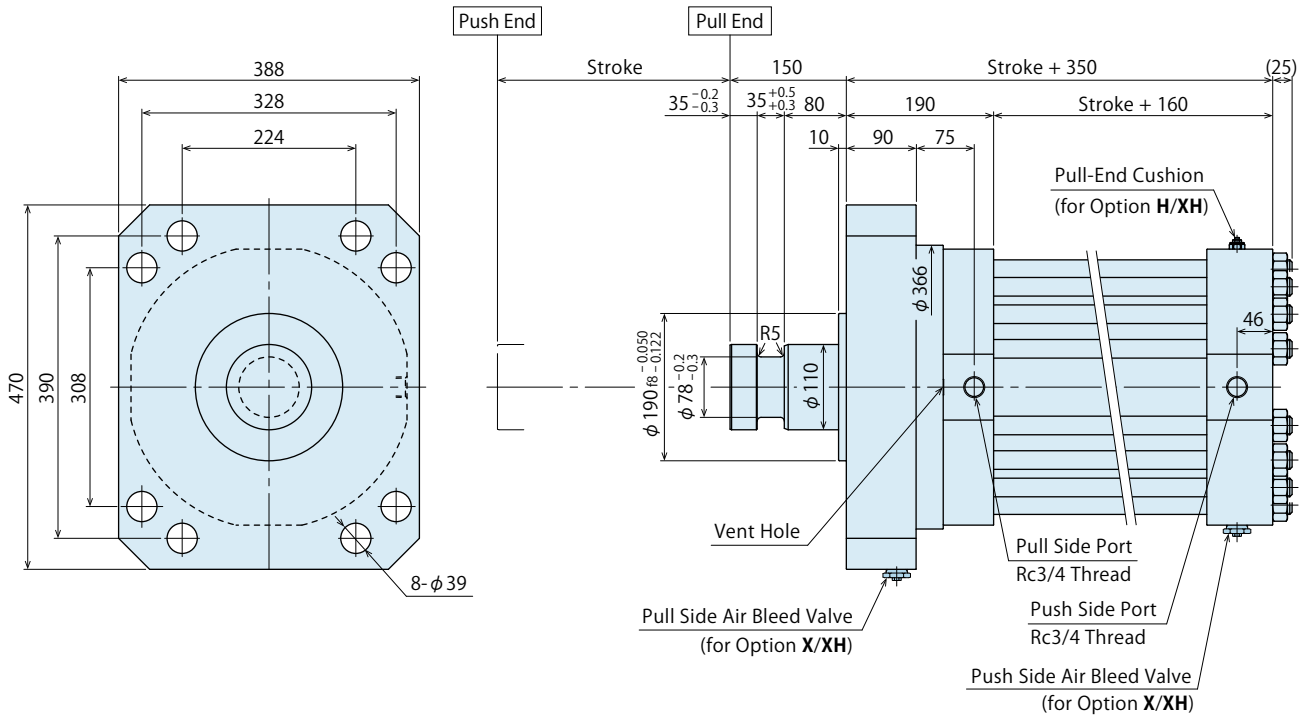
External Dimensions : Cylinder Inner Diameter 250

※ This drawing shows the pull end state of PCA2503.

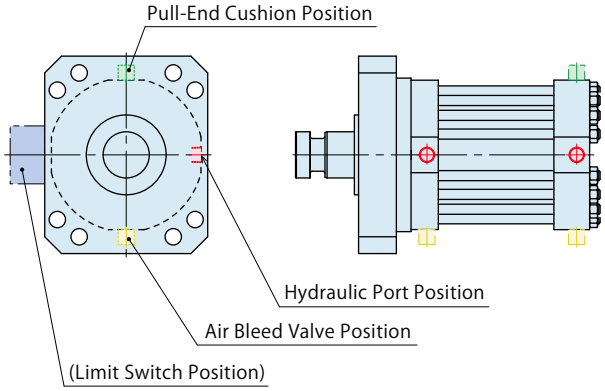
Rod Shape C : Coupling, Port Position F : Front, Option Blank : None



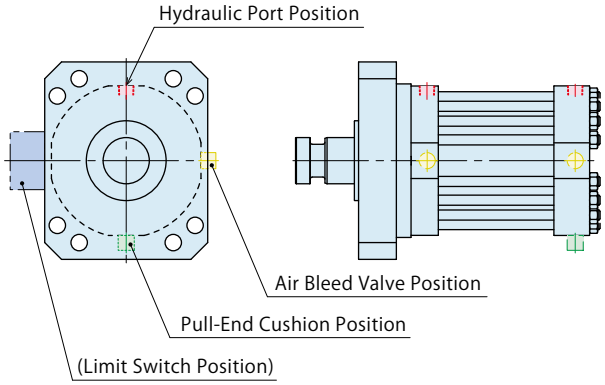
Rod Shape C : Coupling, Port Position F : Front, Option X : with Air Bleed Valve, Option H : with Pull-End Cushion, Option XH : with Air Bleed Valve and Pull-End Cushion



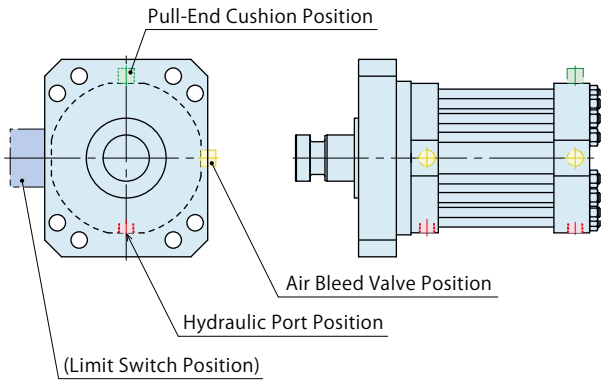
Port Position F : Front



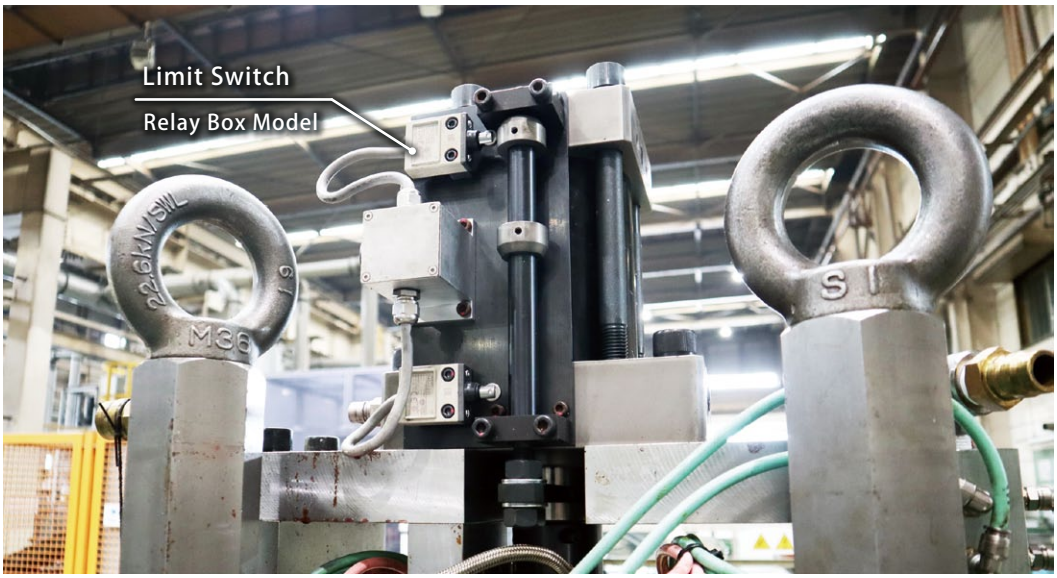
Port Position R : Right Side



Port Position L : Left Side

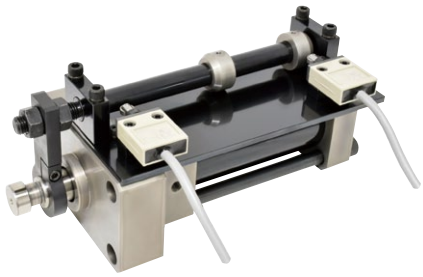


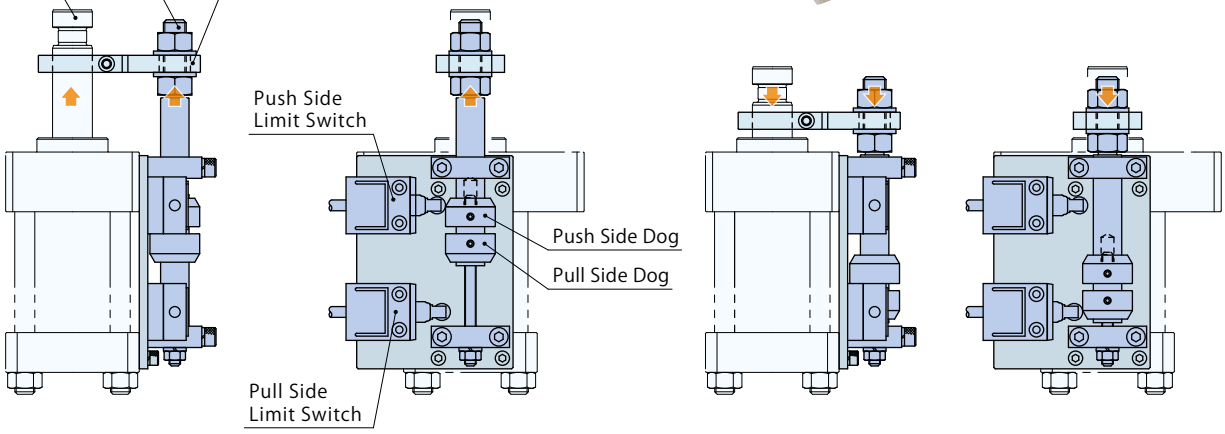
Limit Switch



Action Description

※ This drawing shows the standard model.





Push Side

Pull Side

Limit Switch Applicable List

Model No.	PCE	PCB	PCM	PCA/PCC
S1□：Standard Model		○		○
S2□：Relay Box Model		○		○
S3 ：Compact Model	○		○	

● Limit Switch：Standard Model

Model No. Indication

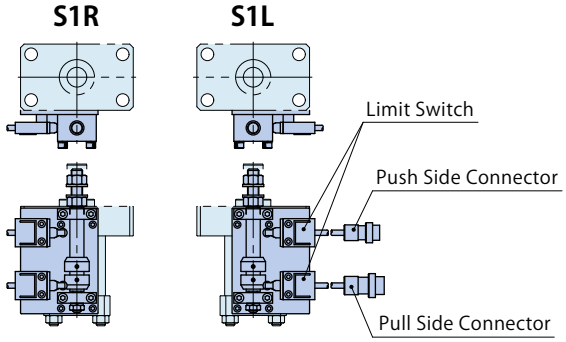
PCA / PCB / PCC □ 3 - A / B - C / T - F / R / L - □ - N / V - 0 / G / S / F - Blank / X / H / XH - S1R / S1L

When selecting Limit Switch **S1R / S1L**

Specifications

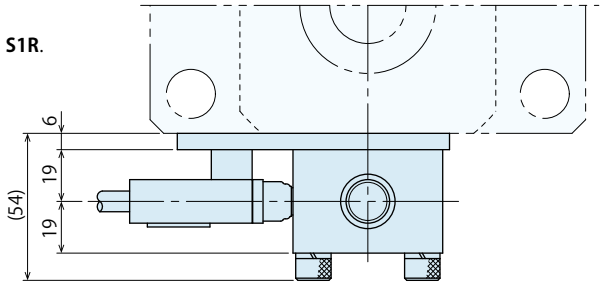
Limit Switch Model No.		D4C-1232 (Made by OMRON)
Electrical Rating		AC250V 5A / DC30V 4A
Cable Specification		VCTF Oil-Resistant Cable 3m
Operating Temperature		–10 ~ 70℃
Connector Model No.	Push Side	NCS-252-PM (Made by Nanaboshi)
	Pull Side	NCS-302-PM (Made by Nanaboshi)

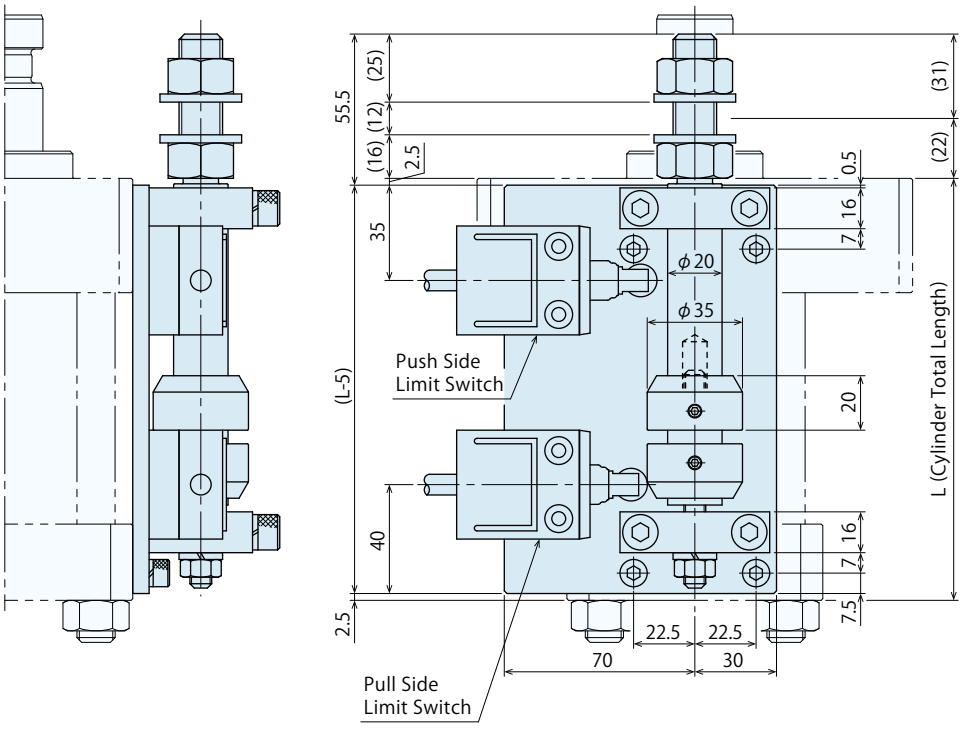
※. Refer to maker's specifications for the detail of the limit switch.



External Dimensions

※ This drawing shows dimensions when selecting **S1R**.





Limit Switch：Relay Box Model

Model No. Indication

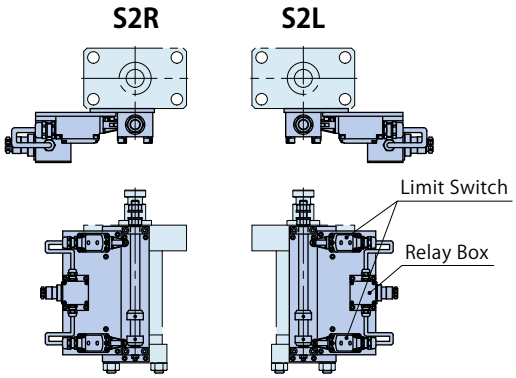
PCA / PCB / PCC □ 3 - A B / C T / F R L - □ - N V - 0 G S F - Blank X H XH - S2R S2L

When selecting Limit Switch **S2R** / **S2L**

Specifications

Limit Switch Model No.	5LS1-J (Made by Azbil)
Cable Specification	VCTF Oil-Resistant Cable
Operating Temperature	–10 ~ 70℃
Protection Level	IP67

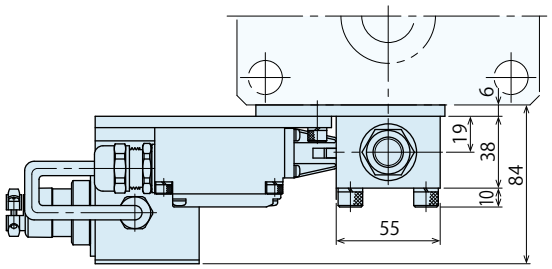
※. Refer to maker's specifications for the detail of the limit switch.

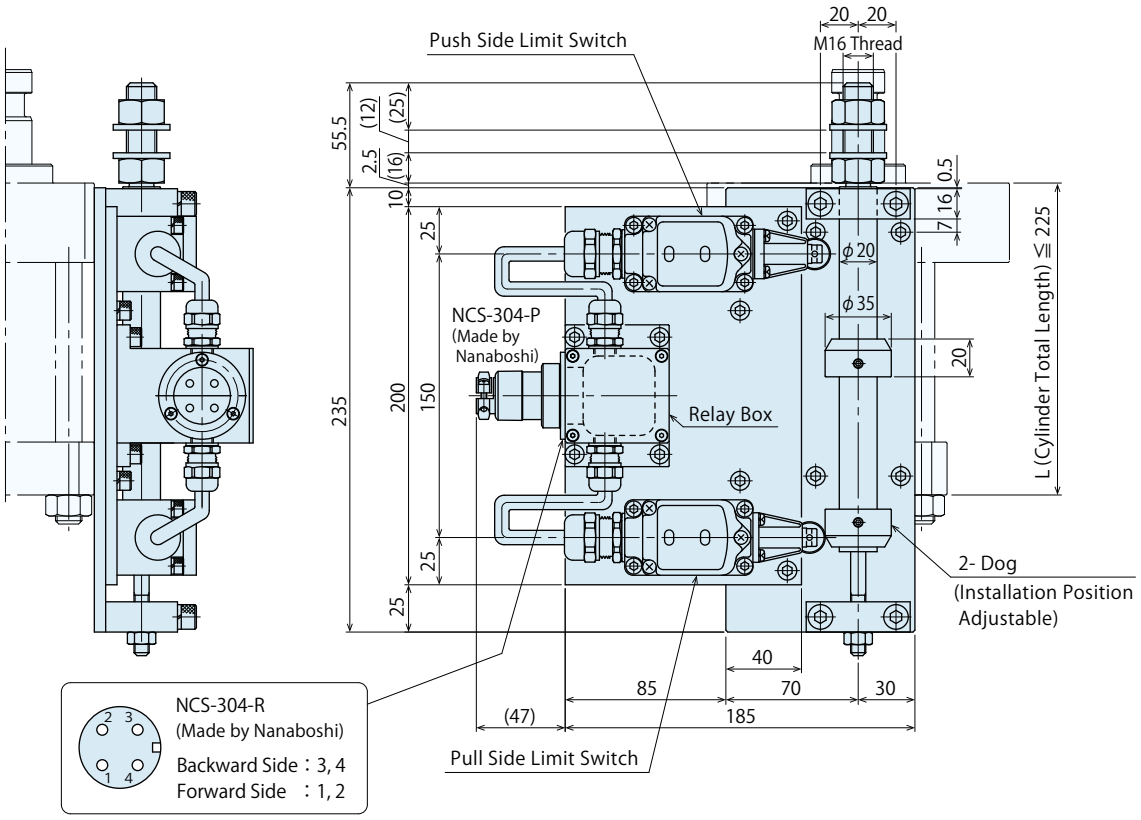


External Dimensions

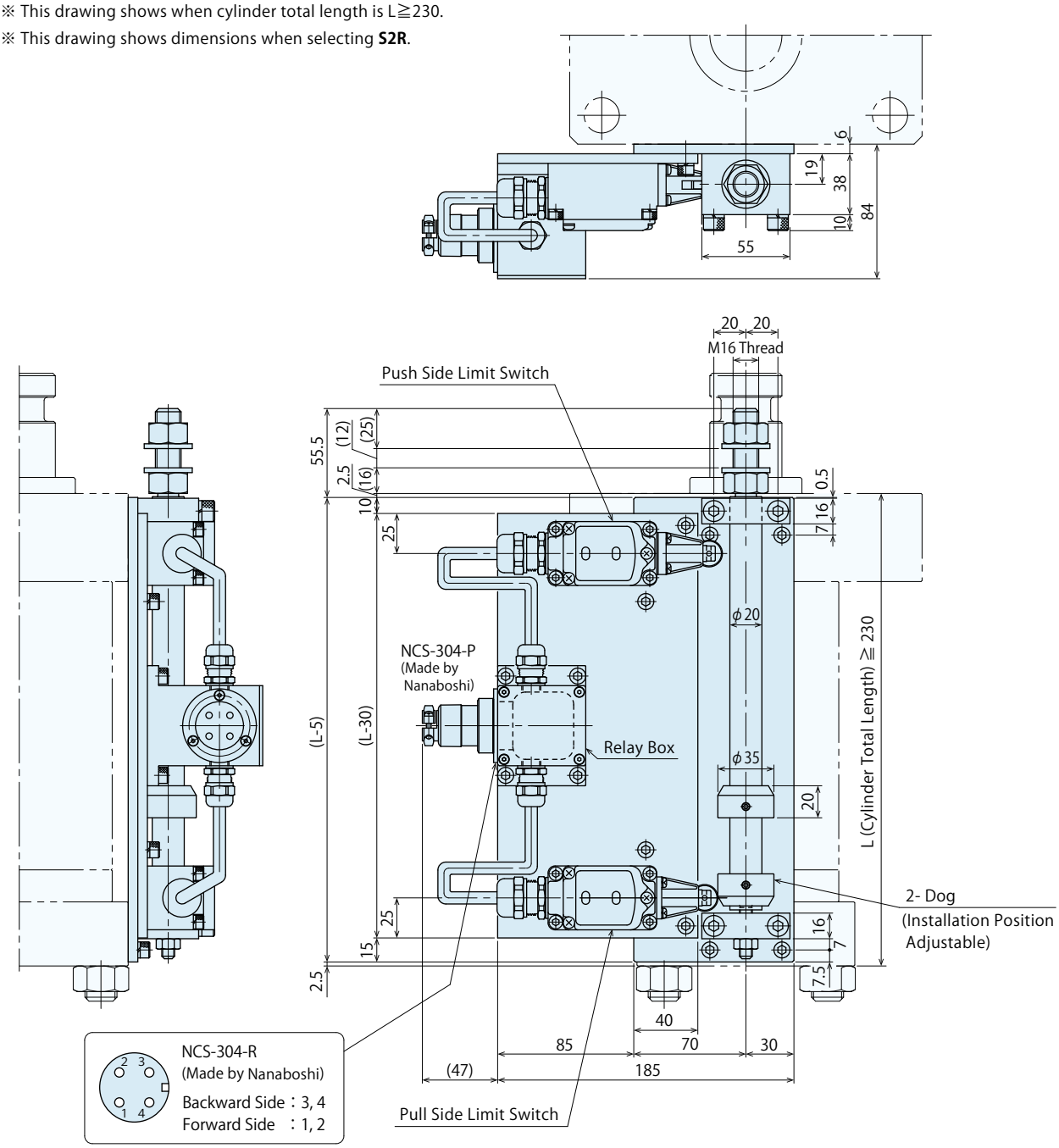
※ This drawing shows when cylinder total length is L≦225.

※ This drawing shows dimensions when selecting **S2R**.





※ This drawing shows when cylinder total length is L≧230.
※ This drawing shows dimensions when selecting **S2R**.



Limit Switch：Compact Model

Model No. Indication

PCE □ 0 - (A B) (C T) (F R L) - □ - (N V) - (0 G S F) - (Blank X H XH) - S3

When selecting Limit Switch S3

PCM □ 0 - (C) (F R L) - □ - (N V) - (0 G S F) - S3

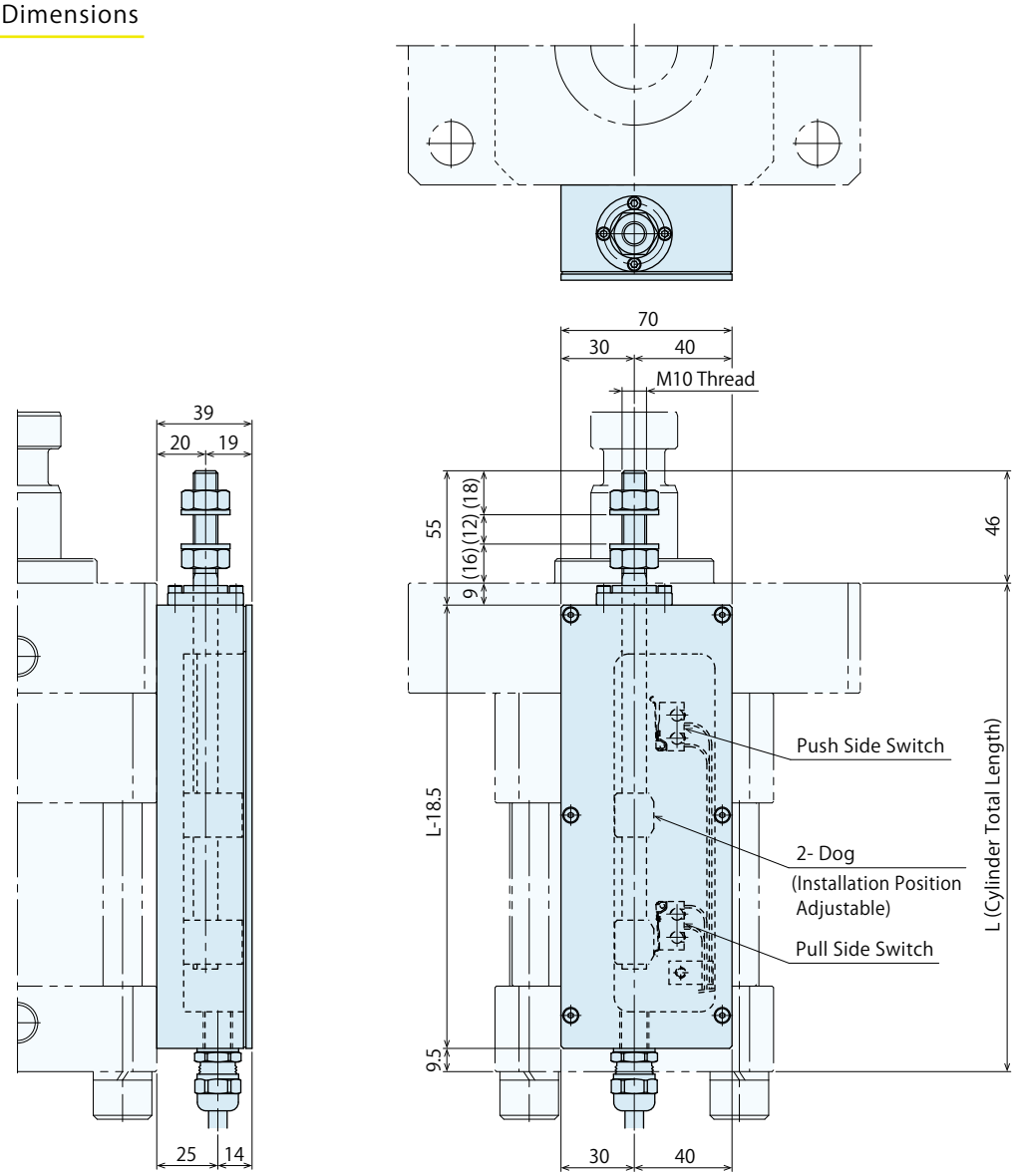
When selecting Limit Switch S3

Specifications

Limit Switch Model No.	D2SW-01L3H (Made by OMRON)
Electrical Rating	AC125V 0.1A / DC30V 0.1A
Cable Specification	VCTF Oil-Resistant Cable 4m
Operating Temperature	−10 ~ 70℃

※. Refer to maker's specifications for the detail of the limit switch.

External Dimensions



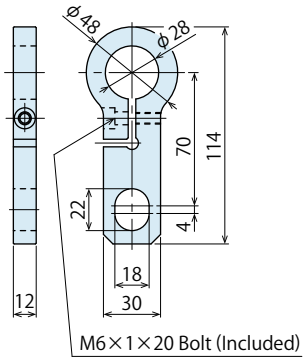
Accessory for Limit Switch : LS Arm

LS Arm for S1/S2 Limit Switch Unit

The arm to connect S1/S2 limit switch unit and the rod of PCA/PCB/PCC cylinder.

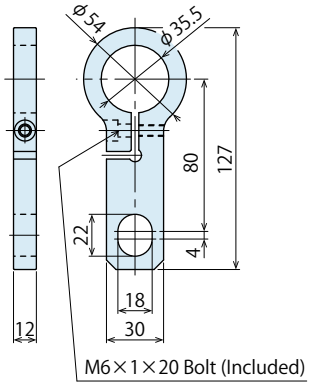
Model No. : **PCZ0630-A**

Applicable Models: PCA0633-S1/PCA0633-S2, PCB0633-S1/PCB0633-S2, PCC0633-S1/PCC0633-S2



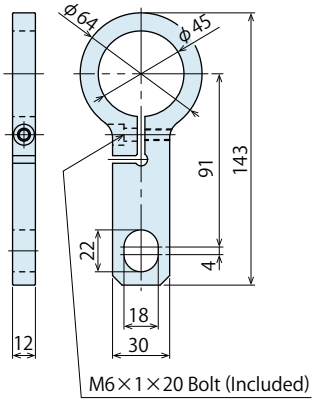
Model No. : **PCZ0800-A**

Applicable Models: PCA0803-S1/PCA0803-S2, PCB0803-S1/PCB0803-S2, PCC0803-S1/PCC0803-S2



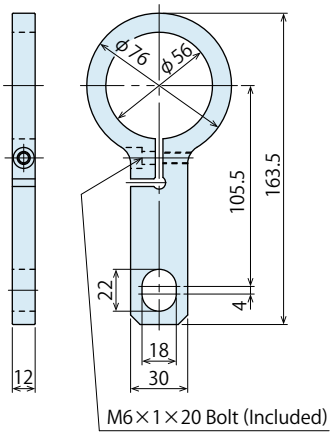
Model No. : **PCZ1000-A**

Applicable Models: PCA1003-S1/PCA1003-S2, PCB1003-S1/PCB1003-S2, PCC1003-S1/PCC1003-S2



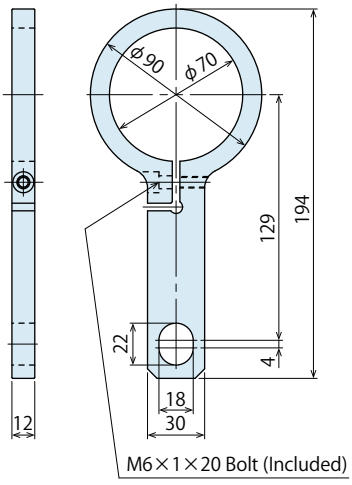
Model No. : **PCZ1250-A**

Applicable Models: PCA1253-S1/PCA1253-S2, PCB1253-S1/PCB1253-S2, PCC1253-S1/PCC1253-S2



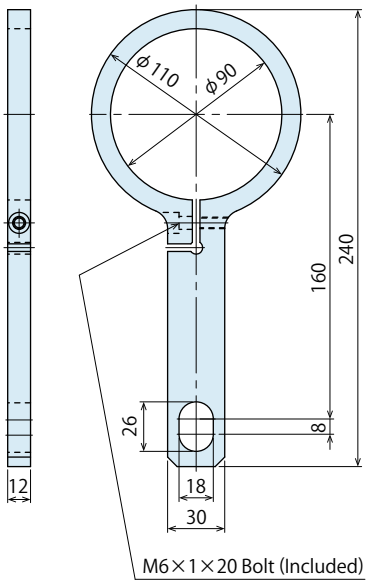
Model No. : **PCZ1600-A**

Applicable Models: PCA1603-S1/PCA1603-S2, PCB1603-S1/PCB1603-S2, PCC1603-S1/PCC1603-S2



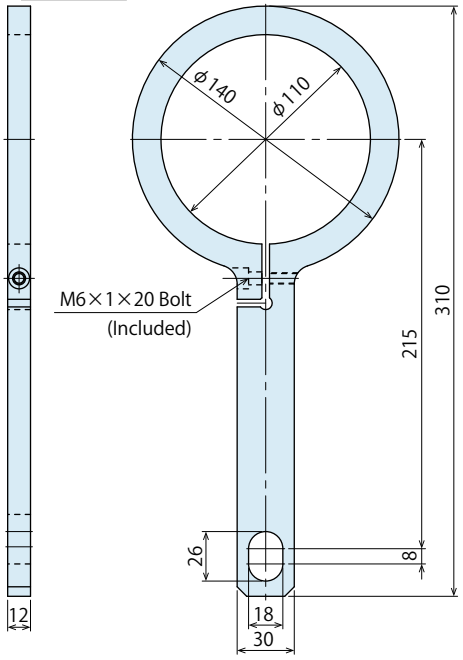
Model No. : **PCZ2000-A**

Applicable Models: PCA2003-S1/PCA2003-S2, PCB2003-S1/PCB2003-S2



Model No. : **PCZ2500-A**

Applicable Models: PCA2503-S1/PCA2503-S2, PCB2503-S1/PCB2503-S2

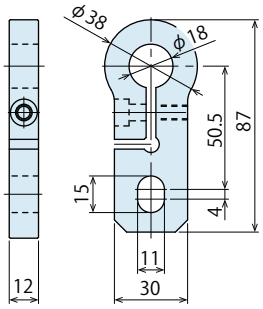


LS Arm for S3 Limit Switch Unit

The arm to connect S3 limit switch unit and the rod of PCE/PCM cylinder.

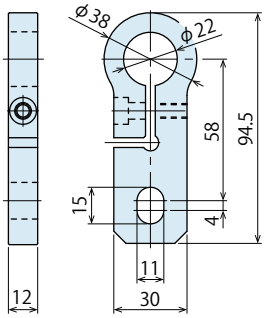
Model No. : **PCZ0400-E**

Applicable Models: PCE0400-S3, PCM0400-S3



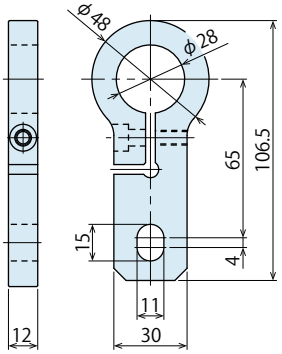
Model No. : **PCZ0500-E**

Applicable Model: PCM0500-S3



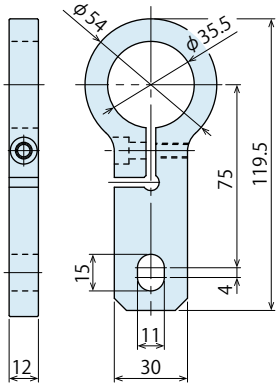
Model No. : **PCZ0630-E**

Applicable Model: PCE0630-S3



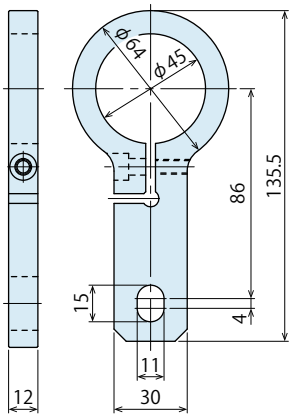
Model No. : **PCZ0800-E**

Applicable Model: PCE0800-S3



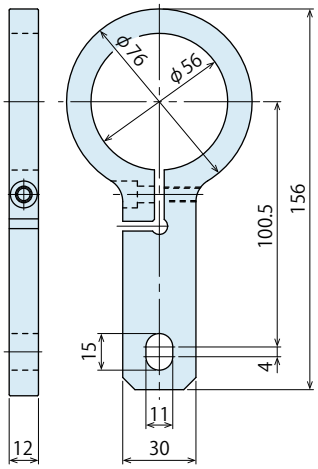
Model No. : **PCZ1000-E**

Applicable Model: PCE1000-S3



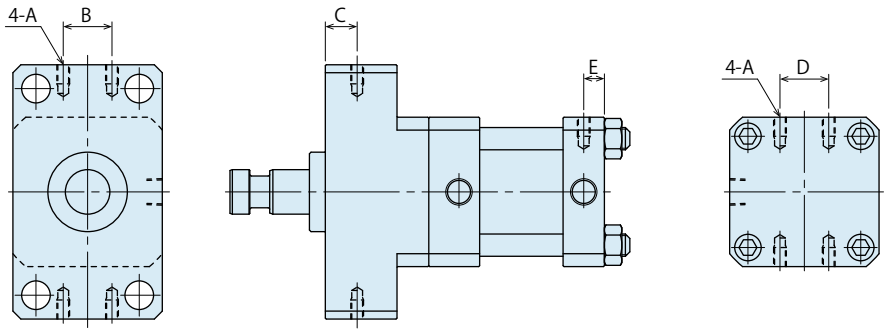
Model No. : **PCZ1250-E**

Applicable Model: PCE1250-S3



Tapped Hole Position for Hanging Bolt

Corresponding Model No. : Cylinder Inner Diameter **080 ~ 200**



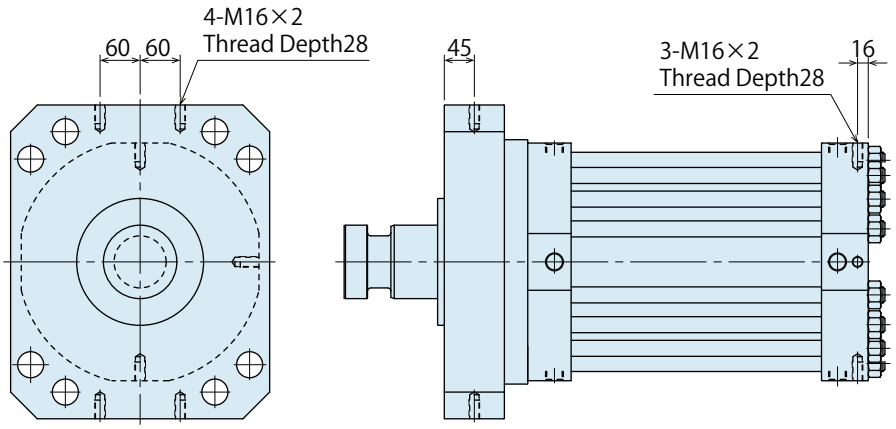
(mm)

Corresponding Model No.	**PCA0803 PCB0803 PCC0803**	**PCA1003 PCB1003 PCC1003**	**PCA1253 PCB1253 PCC1253**	**PCA1603 PCB1603 PCC1603**	**PCA2003 PCB2003**
A (Nominal×Pitch×Depth)	M8×1.25×15	M10×1.5×19	M12×1.75×23	M16×2×28	M16×2×28
B	40	50	60	70	100
C	20	25	25	30	45
D	40	56	70	90	120
E	10	12	12	16	16

(mm)

Corresponding Model No.	**PCE0800**	**PCE1000**	**PCE1250**
A (Nominal×Pitch×Depth)	M8×1.25×15	M10×1.5×19	M12×1.75×23
B	40	50	60
C	20	25	25
D	40	50	70
E	20	15	15

Corresponding Model No. : Cylinder Inner Diameter **250 (PCA2503/PCB2503)**



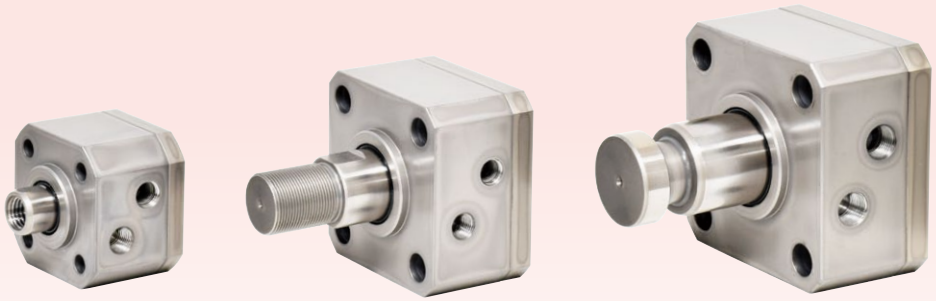
Note :

1. No tapped holes for hanging bolt are provided for cylinder inner diameter **040**, **050**, **063**.

For Diecast Systems

Flat Cylinder

Model **PCD**



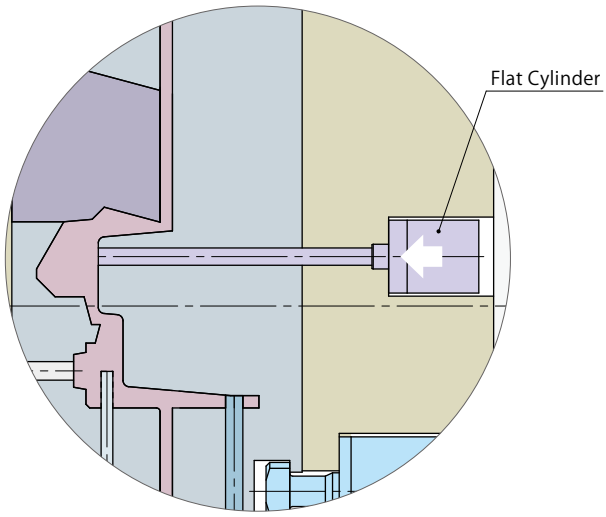
Compact Body Designed for Built-in Mold Cylinder

Suitable for Partial Pressurization, and Opening/Closing a Vent Valve

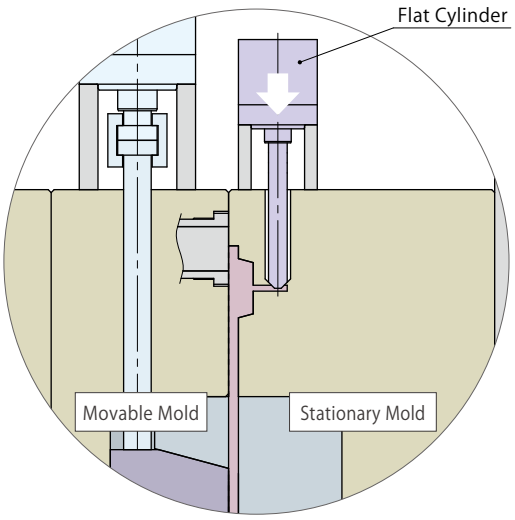
PAT.P.

The Compact Cylinder,

Can be Installed in the Mold



For Partial Pressurization Cylinder,
Squeeze Cylinder



As a Cylinder for Opening/
Closing a Vent Valve

Auto Circulating model enables air bleeding and cooling, suitable for partial pressurization.

Required Points of Partial Pressurization Cylinder

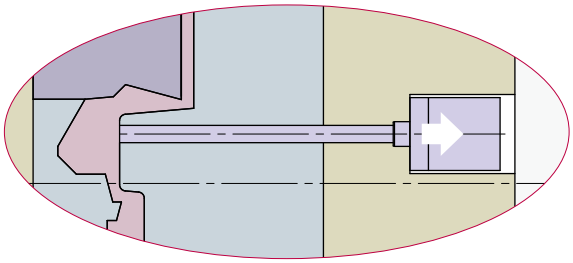
A cylinder for partial pressurization is installed near the cavity inside mold, so it is easy to become high temperature during operation. Also, the timing of pressurization is very important for this cylinder, since it will cause knocking and/or action delay if air is mixed in oil leading to low quality of products.

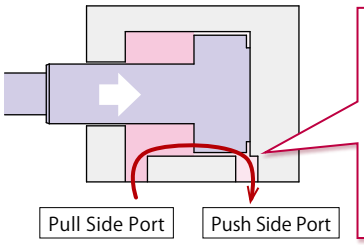
Auto Circulating Cylinder

Kosmek Auto Circulating Cylinder enables air bleeding and cooling by auto circulation of hydraulic oil.

Pulling Action

At pull end, auto oil circulation by intended internal leak ensures air bleeding per cycle. Also, it supplies cooled oil from outside all the time, thus sealing life span will be longer.

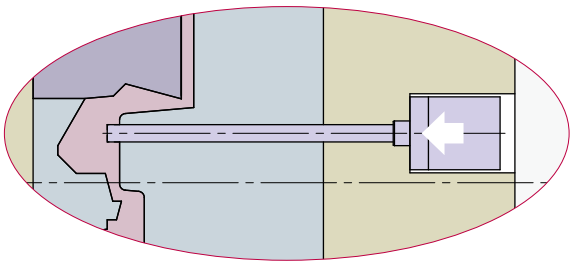


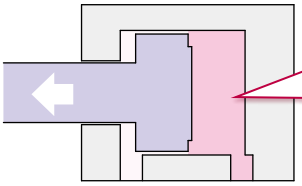


At pull end, hydraulic oil circulates automatically from the pull side port to the push side port to release the mixed air.

Pushing Action

Air bleeding of hydraulic oil per cycle prevents knocking and/or action delay, and ensures pushing action at the right time.





Hydraulic fluid with no air mixed ensures pushing action at the right time.

Model No. Indication

PCD 040 0 - A - 015 - N - 0 - J - S2
1 2 3 4 5 6 7 8

1 Cylinder Inner Diameter

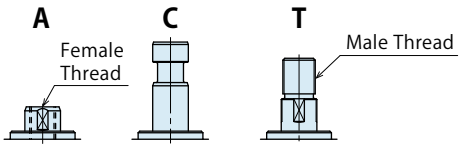
040 : ϕ40 mm
063 : ϕ63 mm
080 : ϕ80 mm

2 Design No.

0 : Revision Number

3 Rod Shape

A : Female Thread
C : Coupling
T : Male Thread



4 Stroke

010 ~ 080 : Select from Stroke 10 ~ 80 mm

※. Specify 4 Stroke in 5mm increments.

5 Operating Temperature

N : Standard 0 ~ 70 ℃
V : High Temperature 0 ~ 120 ℃

6 Usable Fluid

0 : General Hydraulic Oil (Equivalent to ISO-VG-32)
G : Water･Glycol
S : Silicon Oil
F : Fatty Acid Ester

※. Refer to "Appropriate Fluid According to Packing Material" on the next page for further information.

7 Auto Circulation

Blank : None
J : with Auto Circulation

8 Option

Blank : None
S1 : with Backward End Confirmation Switch
S2 : with Magnetostrictive Sensor

Specifications

Model No.			PCD0400	PCD0630	PCD0800
Cylinder Inner Diameter		mm	φ40	φ63	φ80
Stroke (in 5mm increments)		mm	10 ~ 80		
Cylinder ※1 Capacity cm3	Push Side		1.257×Stroke	3.117×Stroke	5.026×Stroke
	Pull Side		0.877×Stroke	2.127×Stroke	3.436×Stroke
Operating Pressure		MPa	15.0		
Max. Operating Pressure		MPa	16.0		
Min. Operating Pressure※2		MPa	1.0		
Withstanding Pressure		MPa	24.0		
Operating Temperature		℃	5 **N**:Standard 0 ~ 70 **V**:High Temperature 0 ~ 120		
Weight ※1		kg	0.031×Stroke+1.6	0.052×Stroke+3.3	0.074×Stroke+5.6

Notes :

※1. The stroke in calculation of cylinder capacity and weight should be calculated in mm.

※2. Minimum pressure to operate the cylinder with no load.

Appropriate Fluid According to Packing Material

5 Operating Temperature	Packing Material	Appropriate Fluid			
		0:General Hydraulic Oil	**G**:Water・Glycol	**S**:Silicon Oil	**F**:Fatty Acid Ester
N: Standard 0 ~ 70 ℃	Nitrile Rubber (NBR)	○	○	○	○
V: High Temperature 0 ~ 120 ℃	Fluor Rubber (FKM)	○	△ ※3	○	○

Notes :

※3. Please contact us when using 6 **G** : Water・Glycol with 5 **V** : High Temperature.

1. Please contact us for other conditions.

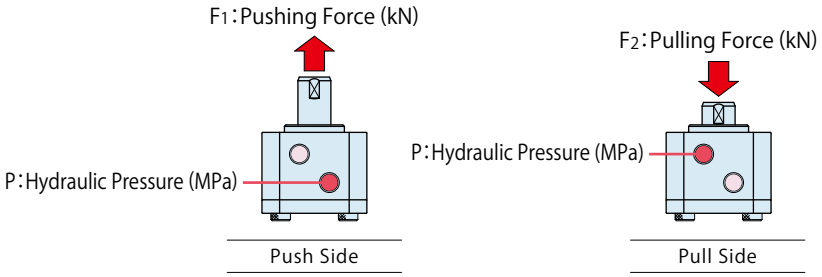
Cylinder Thrust Force

(kN)

Model No.		PCD0400	PCD0630	PCD0800
Pushing Force	at P:15MPa	18.8	46.8	75.4
	Calculation Formula※4	F_1=1.26×P	F_1=3.12×P	F_1=5.03×P
Pulling Force	at P:15MPa	13.1	31.9	51.5
	Calculation Formula※4	F_2=0.88×P	F_2=2.13×P	F_2=3.44×P

Note :

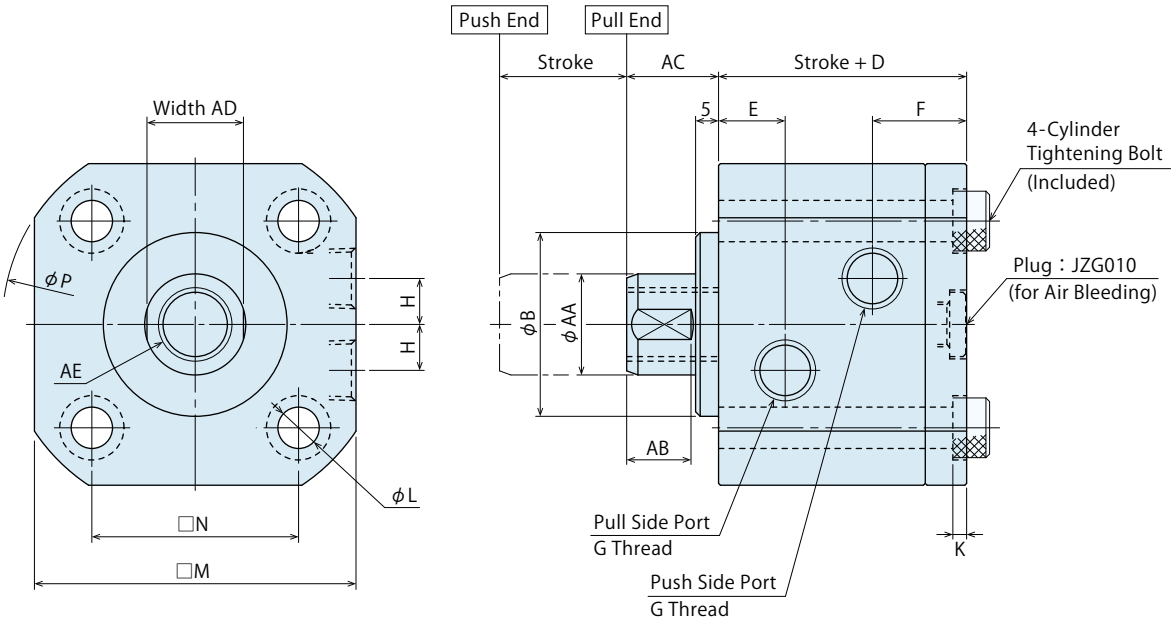
※4. F_1 : Pushing Force (kN), F_2 : Pulling Force (kN), P : Hydraulic Pressure (MPa)



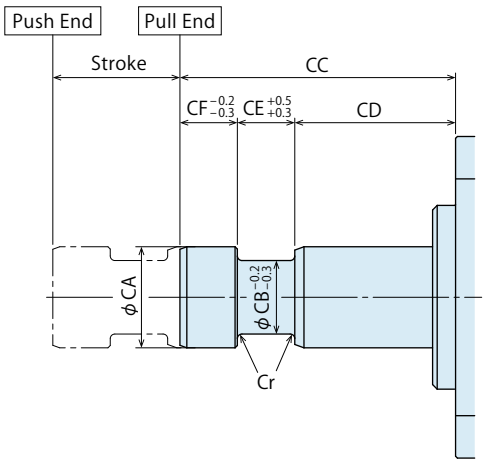
External Dimensions : Option **Blank**

※ This drawing shows the pull end state of PCD.

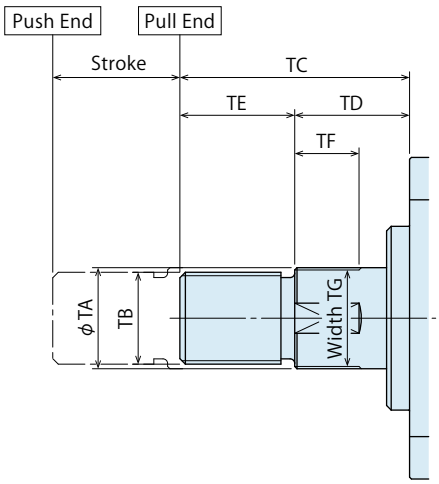
Rod Shape **A** : Female Thread



Rod Shape **C** : Coupling



Rod Shape **T** : Male Thread



External Dimension List : Option **Blank**

Cylinder Body Part

(mm)

Model No.	**PCD0400**	**PCD0630**	**PCD0800**
B	40 f7 $^{-0.025}_{-0.050}$	52 f7 $^{-0.030}_{-0.060}$	62 f7 $^{-0.030}_{-0.060}$
D	39	47	53
E	14.5	17	18
F	20.5	24	29
G	Rc1/4	Rc1/4	Rc3/8
H	10	12	15
K	3	4	4
L	9	14	16
M	70	94	114
N	45	67	83
P	84	122	148
Cylinder Tightening Bolt	M8×1.25	M12×1.75	M14×2

Rod Shape **A** : Female Thread

(mm)

Model No.	**PCD0400-A**	**PCD0630-A**	**PCD0800-A**
AA	22	35.5	45
AB	14	17	22
AC	20	25	30
AD	21	32	41
AE (Nominal×Pitch×Depth)	M16×2×20	M27×3×35	M30×3.5×35

Rod Shape **C** : Coupling

(mm)

Model No.	**PCD0400-C**	**PCD0630-C**	**PCD0800-C**
CA	22	35.5	45
CB	16	25	31
CC	60	70	75
CD	35	40	45
CE	12.5	15	15
CF	12.5	15	15
Cr	R1	R1.5	R2

Rod Shape **T** : Male Thread

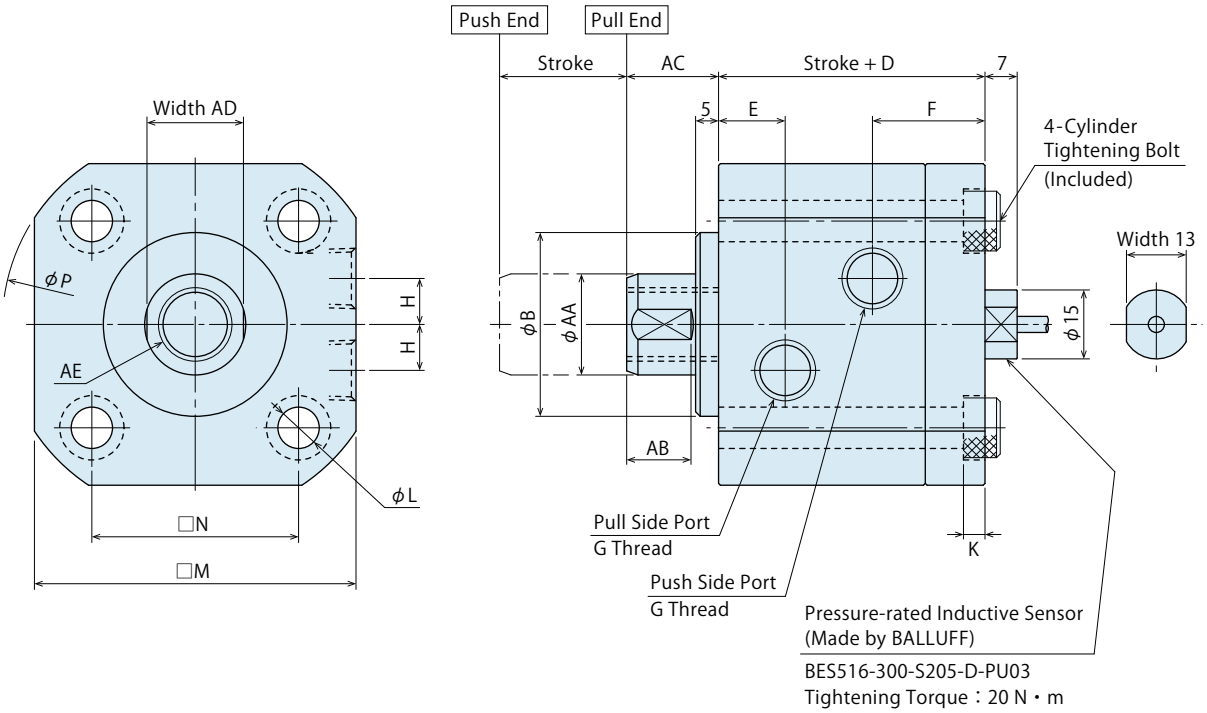
(mm)

Model No.	**PCD0400-T**	**PCD0630-T**	**PCD0800-T**
TA	22	35.5	45
TB	M20×1.5	M30×1.5	M40×1.5
TC	50	66	80
TD	25	30	35
TE	25	36	45
TF	14	17	22
TG	21	32	41

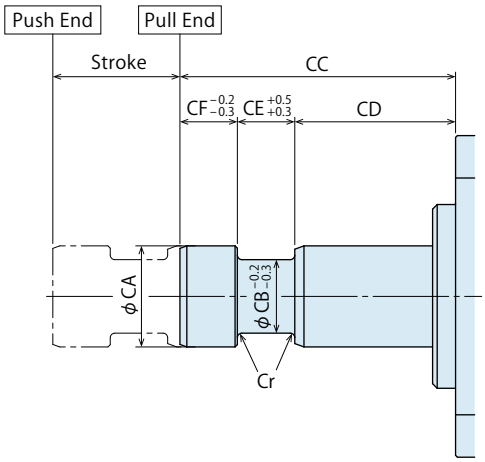
External Dimensions：Option S1 with Backward End Confirmation Switch

※ This drawing shows the pull end state of PCD-S1.

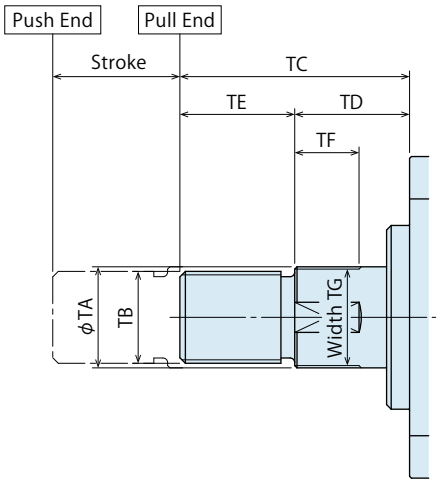
Rod Shape A：Female Thread



Rod Shape C：Coupling



Rod Shape T：Male Thread



External Dimension List : Option **S1** with Backward End Confirmation Switch

Cylinder Body Part

(mm)

Model No.	**PCD0400-S1**	**PCD0630-S1**	**PCD0800-S1**
B	40 f7 $^{-0.025}_{-0.050}$	52 f7 $^{-0.030}_{-0.060}$	62 f7 $^{-0.030}_{-0.060}$
D	43	48	53
E	14.5	17	18
F	24.5	25	29
G	Rc1/4	Rc1/4	Rc3/8
H	10	12	15
K	7.5	5	4
L	9	14	16
M	70	94	114
N	45	67	83
P	84	122	148
Cylinder Tightening Bolt	M8×1.25	M12×1.75	M14×2

Rod Shape **A** : Female Thread

(mm)

Model No.	**PCD0400-A-S1**	**PCD0630-A-S1**	**PCD0800-A-S1**
AA	22	35.5	45
AB	14	17	22
AC	20	25	30
AD	21	32	41
AE (Nominal×Pitch×Depth)	M16×2×20	M27×3×35	M30×3.5×35

Rod Shape **C** : Coupling

(mm)

Model No.	**PCD0400-C-S1**	**PCD0630-C-S1**	**PCD0800-C-S1**
CA	22	35.5	45
CB	16	25	31
CC	60	70	75
CD	35	40	45
CE	12.5	15	15
CF	12.5	15	15
Cr	R1	R1.5	R2

Rod Shape **T** : Male Thread

(mm)

Model No.	**PCD0400-T-S1**	**PCD0630-T-S1**	**PCD0800-T-S1**
TA	22	35.5	45
TB	M20×1.5	M30×1.5	M40×1.5
TC	50	66	80
TD	25	30	35
TE	25	36	45
TF	14	17	22
TG	21	32	41

Switch Specifications

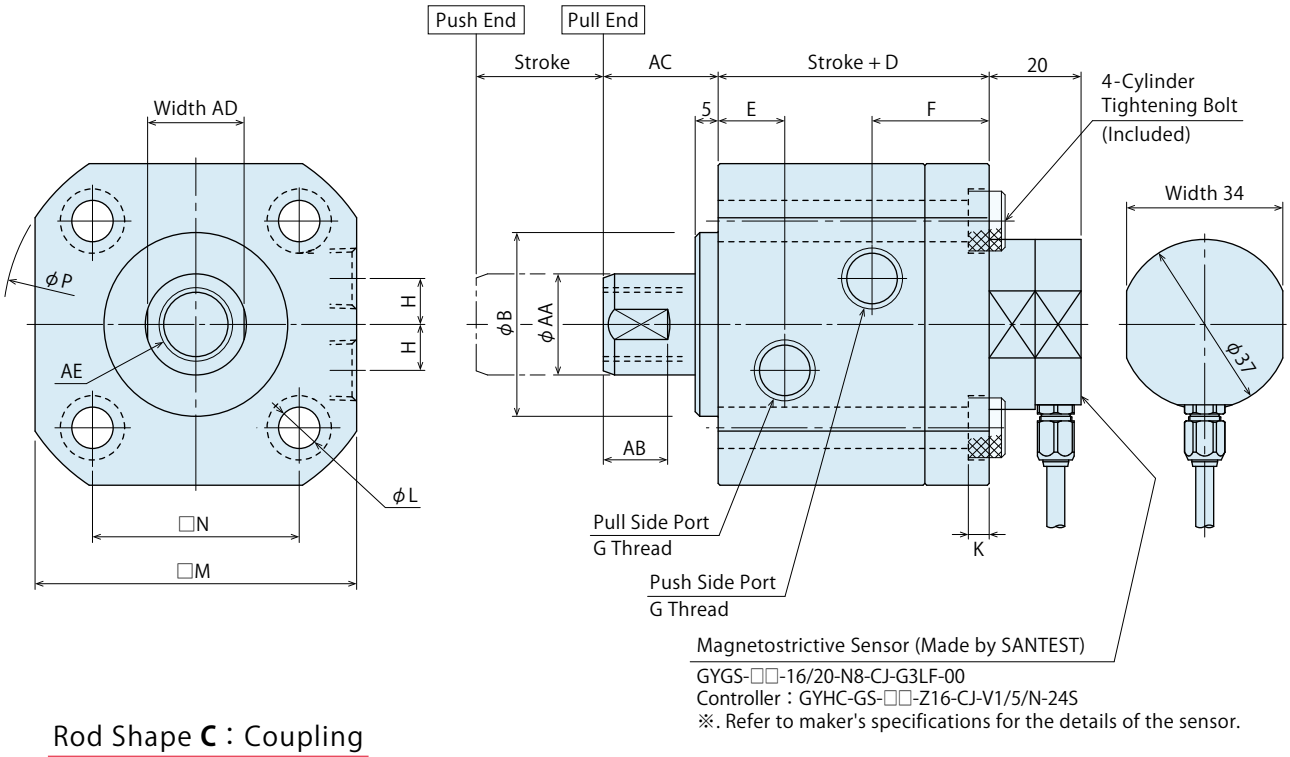
Proximity Switch Model No.	BES516-300-S205-D-PU03 (Made by BALLUFF)
Electrical Rating	DC10 ~ 30V 200mA
Cable Specification	PUR Cable 3 Cores 3m
Operating Temperature	0 ~ 80℃
Protection Level	IP68
Switching Output	PNP (N.O.)

※. Refer to maker's specifications for the detail of the switch.

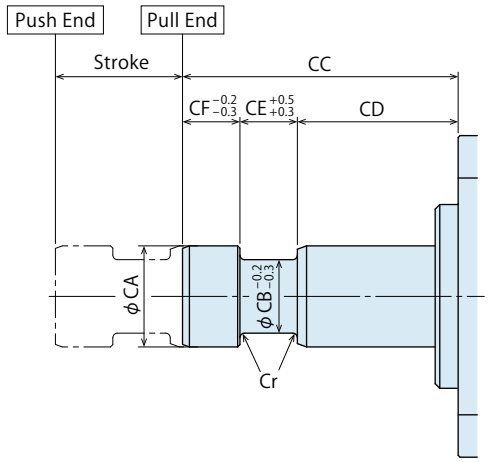
External Dimensions : Option S2 with Magnetostrictive Sensor

※ This drawing shows the pull end state of PCD-S2.

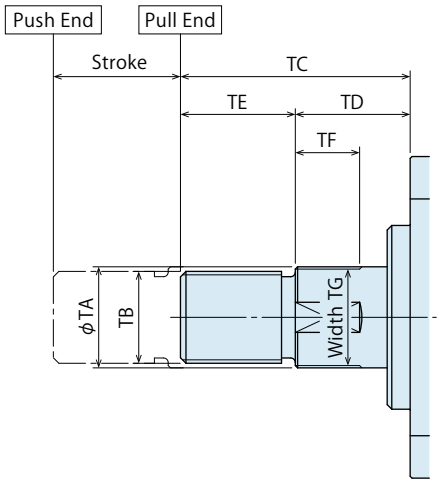
Rod Shape A : Female Thread



Rod Shape C : Coupling



Rod Shape T : Male Thread



External Dimension List : Option **S2** with Magnetostrictive Sensor

Cylinder Body Part

(mm)

Model No.	PCD0400-S2	PCD0630-S2	PCD0800-S2
B	40 f7 $^{-0.025}_{-0.050}$	52 f7 $^{-0.030}_{-0.060}$	62 f7 $^{-0.030}_{-0.060}$
D	44	52	58
E	14.5	17	18
F	25.5	29	34
G	Rc1/4	Rc1/4	Rc3/8
H	10	12	15
K	8	9	9
L	9	14	16
M	70	94	114
N	45	67	83
P	84	122	148
Cylinder Tightening Bolt	M8×1.25	M12×1.75	M14×2

Rod Shape **A** : Female Thread

(mm)

Model No.	PCD0400-A-S2	PCD0630-A-S2	PCD0800-A-S2
AA	22	35.5	45
AB	14	17	22
AC	25	40	35
AD	21	32	41
AE (Nominal×Pitch×Depth)	M16×2×20	M27×3×35	M30×3.5×35

Rod Shape **C** : Coupling

(mm)

Model No.	PCD0400-C-S2	PCD0630-C-S2	PCD0800-C-S2
CA	22	35.5	45
CB	16	25	31
CC	60	70	75
CD	35	40	45
CE	12.5	15	15
CF	12.5	15	15
Cr	R1	R1.5	R2

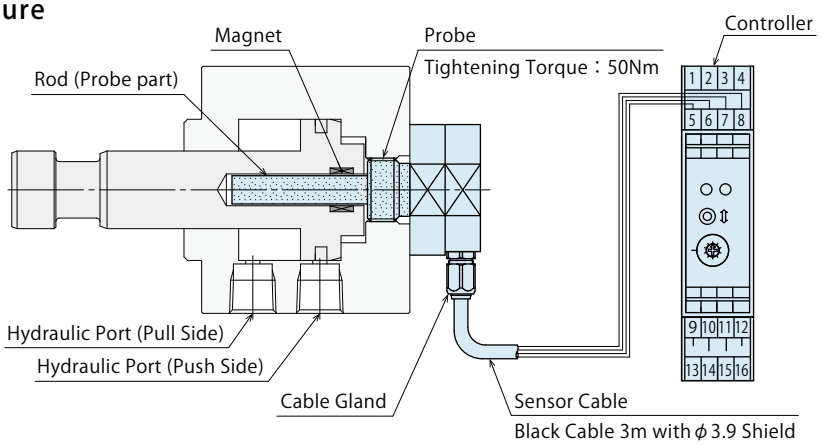
Rod Shape **T** : Male Thread

(mm)

Model No.	PCD0400-T-S2	PCD0630-T-S2	PCD0800-T-S2
TA	22	35.5	45
TB	M20×1.5	M30×1.5	M40×1.5
TC	50	66	80
TD	25	30	35
TE	25	36	45
TF	14	17	22
TG	21	32	41

Notes for Handling Magnetostrictive Sensor

Outline Figure



Specifications

Probe

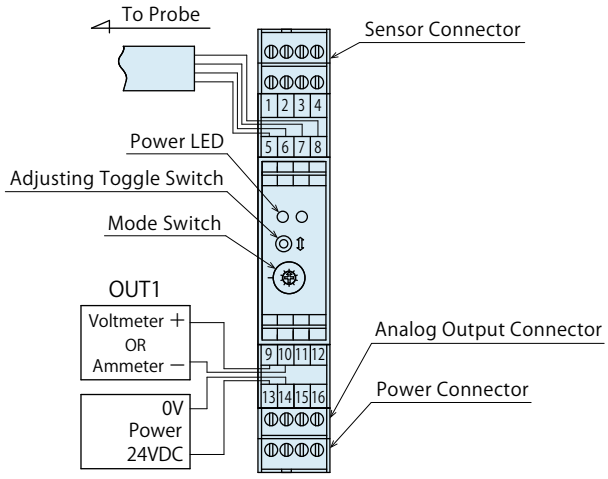
Probe Model No.	GYGS-□□-16/20-N8-CJ-G3LF-00 (Made by SANTEST)
Repeatability	±0.15%FS or less
Temperature Drift	±0.06%FS/℃
Output	1 ~ 5 V Voltage Output (Load Current Max.5mA, Load Resistance 500Ω)
Sampling Frequency	About 1kHz
Withstanding Pressure	35MPa (Probe Rod)
Operating Temperature	0 ~ 80℃
Vibration Resistance	6G (or 40Hz 2mmPP)
Shock Resistance	50G (2msec)
Protection Grade	IP67

Controller

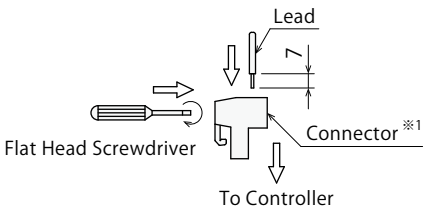
Controller Model No.	GYHC-GS-□□-Z16-CJ-V1/5/N-24S (Made by SANTEST)
Power Supply	±24VDC±5% (150mA or less)
Operating Temperature	0℃ ~ 65℃
Storage Temperature	-20℃ ~ 85℃
Temperature Drift	±3μm/℃

Magnetostrictive Sensor Connection Diagram

Terminal No.	Terminal Name	Function (or Cable Color)
1	–	–
2	–	–
3	–	–
4	–	–
5	R	Probe Red Cable
6	W	Probe White Cable
7	B	Probe Black Cable
8	S	Probe Shield Cable
9	OUT1	Analog Position Output
10	COM	COM
11	–	–
12	–	–
13	24V	Power 24VDC
14	0V	Power 0V
15	–	–
16	–	–



How to Connect Lead to Connector



Note :

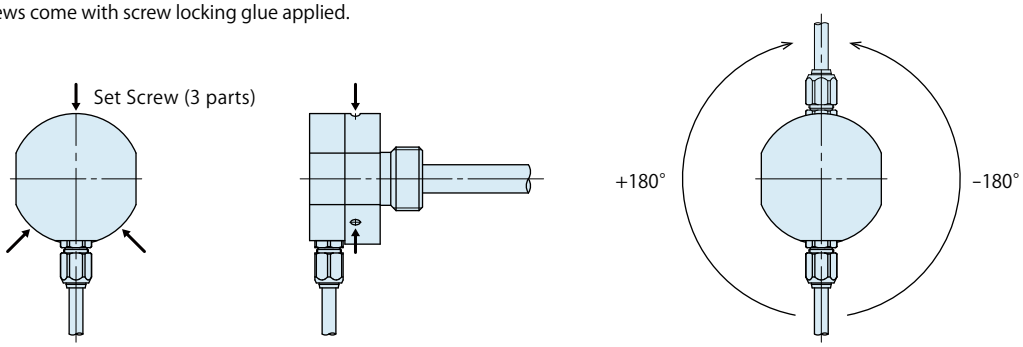
※1. Connector is installed to the controller.

Connecting Lead Diam.	0.2mm² ~ 2.5mm²
Screw Tightening Torque	0.5Nm (Max. 1.0Nm)
Driver Width	3mm or less
Connector	MSTBT2.5/4-ST (Made by PHOENIX CONTACT)

1. Please wire with care. Wiring error can cause a malfunction.

How to Change the Direction of Cable Outlet

The head with cable gland turns ±180° by loosening the three set screws on the hexagonal flange.
After deciding the cable outlet position, tighten the set screws (recommended torque : 0.3Nm).
Set screws come with screw locking glue applied.



How to Adjust Zero-Scale and Full-Scale Output

Adjustment of Zero-Scale Output

① Move the piston to the backward end.
② Set the "Mode Switch" to No. 1.
③ Tilt the adjusting toggle switch up and down to set the output 1V.
Keeping the toggle switch up or down increases adjusting amount.
④ After adjusting is completed, return the "Mode Switch" to No. 0.

Adjustment of Full-Scale Output

① Move the piston to the forward end.
② Set the "Mode Switch" to No.2.
③ Tilt the adjusting toggle switch up and down to set the output 5V.
Keeping the toggle switch up or down increases adjusting amount.
④ After adjusting is completed, return the "Mode Switch" to No. 0.

Notes for Handling

Probe Part

- Do not bend or damage the rod.
- The cable gland part cannot be removed. Removing it forcibly will break the probe part.

Sensor Cable Part

- Do not strongly pull or damage the cable.
- Parts of the cable gland are designed to be waterproof.
  However, we recommend a shielding plate for waterproofing purpose especially in the environment where cable is exposed to water and oil.
- To avoid pulling the cable, make sure to fix the cable to a nearby pillar, existing machine or building.

Notes for Wiring

- Make sure to shut off the power before wiring.
- Make sure to confirm that terminal and connector are securely tightened before turning on the power.

- This sensor is designed to process extremely small signals.
  Please be careful with the following points in order to exert full ability of the sensor.
  Make wiring length as short as possible.
  Separate the power line, electric power line and sensor cables.
  Install a surge-absorption device to coil products such as relay, electromagnetic switch and others.

- Before connecting cables, make sure that there is no dirt, water or oil adhered on the cable connecting part and the terminal part of the controller.
- When extending cables, be careful of wiring. Wiring error can cause a malfunction.

Accessories

P Joint

Model No.

PCZ 100 0 - P

2 Design No.

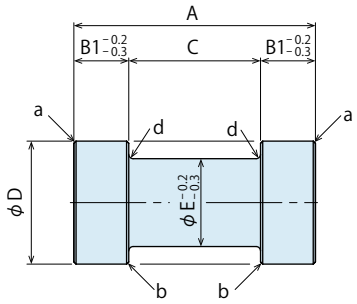
1 Size

PCMZ 40 0 - P

2 Design No.

1 Size

External Dimensions



External Dimension List

(mm)

Model No.	PCMZ400-P	PCZ0400-P	PCZ0630-P	PCZ0800-P	PCZ1000-P	PCZ1250-P	PCZ1600-P	PCZ2000-P	PCZ2500-P
Corresponding Model No.	PCE0400-C PCM0400-C	PCM0500-C PCD0400-C	PCA0633-C PCB0633-C PCC0633-C PCE0630-C	PCA0803-C PCB0803-C PCC0803-C PCE0800-C PCD0630-C	PCA1003-C PCB1003-C PCC1003-C PCE1000-C PCD0800-C	PCA1253-C PCB1253-C PCC1253-C PCE1250-C	PCA1603-C PCB1603-C PCC1603-C	PCA2003-C PCB2003-C	PCA2503-C PCB2503-C
A	55	55	55	65.5	65.5	85.5	105.5	125.5	145.5
B1	12.5	12.5	12.5	15	15	20	25	30	35
C	30	30	30	35.5	35.5	45.5	55.5	65.5	75.5
D (Rod Diameter)	18 f7 −0.016 −0.034	22 f7 −0.020 −0.041	28 f7 −0.020 −0.041	35.5 f7 −0.025 −0.050	45 f7 −0.025 −0.050	56 f7 −0.030 −0.060	70 f7 −0.030 −0.060	90 f7 −0.036 −0.071	110 f7 −0.036 −0.071
E	13	16	20	25	31	38	49	60	78
a	C0.5	C0.5	C0.5	C1	C1.5	C1.5	C2	C2	C2
b	C0.5	C0.5	C0.5	C1	C1	C1	C1	C1	C2
d	R1	R1	R1	R1.5	R2	R2	R3.5	R5	R5

S Joint

Model No.

PCZ 100 0 - S

2 Design No.

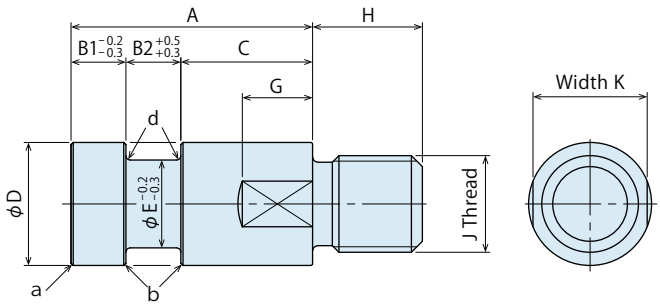
1 Size

PCMZ 40 0 - S

2 Design No.

1 Size

External Dimensions



External Dimension List

(mm)

Model No.	PCMZ400-S	PCZ0400-S	PCZ0630-S	PCZ0800-S	PCZ1000-S	PCZ1250-S	PCZ1600-S	PCZ2000-S	PCZ2500-S
Corresponding Model No.	PCE0400-C PCM0400-C	PCM0500-C PCD0400-C	PCA0633-C PCB0633-C PCC0633-C PCE0630-C	PCA0803-C PCB0803-C PCC0803-C PCE0800-C PCD0630-C	PCA1003-C PCB1003-C PCC1003-C PCE1000-C PCD0800-C	PCA1253-C PCB1253-C PCC1253-C PCE1250-C	PCA1603-C PCB1603-C PCC1603-C	PCA2003-C PCB2003-C	PCA2503-C PCB2503-C
A	55	55	55	65.5	65.5	85.5	105.5	125.5	145.5
B1	12.5	12.5	12.5	15	15	20	25	30	35
B2	12.5	12.5	12.5	15	15	20	25	30	35
C	30	30	30	35.5	35.5	45.5	55.5	65.5	75.5
D (Rod Diameter)	18 f7 $^{-0.016}_{-0.034}$	22 f7 $^{-0.020}_{-0.041}$	28 f7 $^{-0.020}_{-0.041}$	35.5 f7 $^{-0.025}_{-0.050}$	45 f7 $^{-0.025}_{-0.050}$	56 f7 $^{-0.030}_{-0.060}$	70 f7 $^{-0.030}_{-0.060}$	90 f7 $^{-0.036}_{-0.071}$	110 f7 $^{-0.036}_{-0.071}$
E	13	16	20	25	31	38	49	60	78
G	12	14	16	17	22	23	27	20	20
H	14	22	25	25	30	40	50	60	80
J	M12×1.75	M20×2.5	M22×2.5	M24×3	M30×3.5	M39×4	M48×5	M60×5.5	M80×2
K	17	21	26	32	41	54	67	86	105
a	C0.5	C0.5	C0.5	C1	C1.5	C1.5	C2	C2	C2
b	C0.5	C0.5	C0.5	C1	C1	C1	C1	C1	C2
d	R1	R1	R1	R1.5	R2	R2	R3.5	R5	R5

Accessories

Coupling

Model No.

PCZ 100 0 - C

2 Design No.

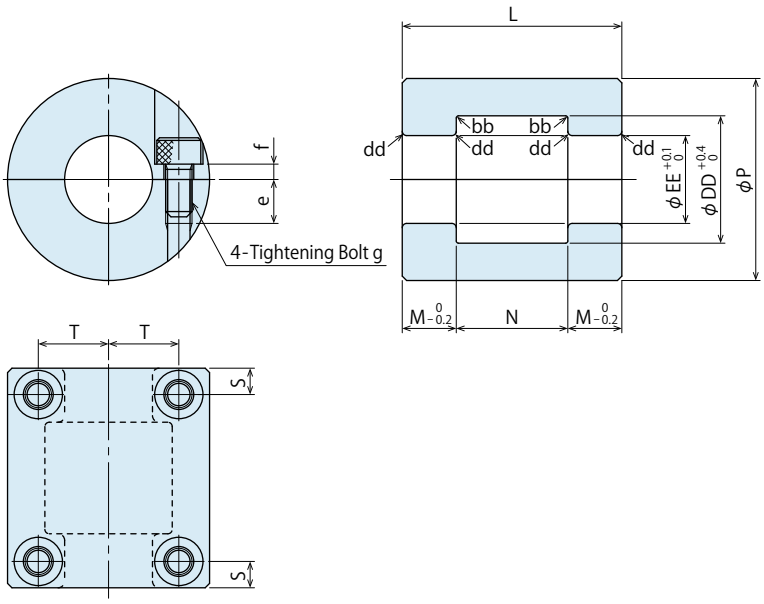
1 Size

PCMZ 40 0 - C

2 Design No.

1 Size

External Dimensions



External Dimension List

(mm)

Model No.	PCMZ400-C	PCZ0400-C	PCZ0630-C	PCZ0800-C	PCZ1000-C	PCZ1250-C	PCZ1600-C	PCZ2000-C	PCZ2500-C
Corresponding Model No.	PCE0400-C PCM0400-C	PCM0500-C PCD0400-C	PCA0633-C PCB0633-C PCC0633-C PCE0630-C	PCA0803-C PCB0803-C PCC0803-C PCE0800-C PCD0630-C	PCA1003-C PCB1003-C PCC1003-C PCE1000-C PCD0800-C	PCA1253-C PCB1253-C PCC1253-C PCE1250-C	PCA1603-C PCB1603-C PCC1603-C	PCA2003-C PCB2003-C	PCA2503-C PCB2503-C
L	50	50	50	60	60	80	100	120	140
M	12.3	12.3	12.3	14.8	14.8	19.8	24.8	29.7	34.7
N	25.4	25.4	25.4	30.4	30.4	40.4	50.4	60.6	70.6
P	35	42	46	54	62	75	94	118	144
DD	18.3	22.3	29	36.5	46	58	72	92.5	112.5
EE	13	16	20	25.5	32	39	50	62	80
bb	R0.5	R0.5	R0.5	R1	R1	R1	R1	R1	R1
dd	R1	R1	R1	R1.5	R2	R2	R3.5	R5	R5
S	6	6	6	7	7	9	12	15	14
T	11.5	14	16	19	22	27	35	45	55
e	9	10	10	10.5	10	13	14.5	14.5	21
f	3.5	3	3.5	6	8	12.5	11	16	12
Tightening Bolt g	M5×0.8×12	M6×1×12	M6×1×12	M6×1×16	M6×1×20	M6×1×25	M8×1.25×25	M8×1.25×30	M14×2×30

Cautions

Notes for Design

1) Check Specifications
- Please use each product according to the specifications. Applying excessive load on the cylinder leads to deformation, galling and oil leak.
- Since this product is used under various conditions, the suitability to the system should be decided by a hydraulic/pneumatic system designer or a person who decides specifications after conducting an analysis and a test as needed.

2) Notes for Circuit Design
- Please read "Notes on Hydraulic Cylinder Speed Control Unit" for proper hydraulic circuit design. Improper circuit design may lead to malfunctions and damages. (Refer to P.71)
- Ensure there is no possibility of supplying hydraulic pressure to the push side and the pull side simultaneously.

3) Make sure no force is applied to the rod except from the axial direction.
- Applying offset load on the rod leads to deformation, galling and oil leak.

4) Please use with extra stroke taken into consideration.

5) Keep clear condition at vent hole. (PCA/PCC Only)
- Keep clear condition at vent hole for smooth cylinder operation. Make sure not to block the vent hole when designing and mounting molds. Prevent invasion of liquid from the vent hole.

6) For using option：with Auto Circulation (PCD-J)
- This option automatically circulates (leaks inside) on the piston pull end. By leaking oil inside, it is able to release air in the cylinder automatically. Also, it cools oil since the oil remained in the cylinder is replaced with the oil in the tank.
  Oil is leaked inside when the piston moves backward, so pressure in the circuit might be largely decreased depending on the supply flow rate.

Installation Notes

1) Check the Usable Fluid
- Please use the appropriate fluid by referring to the Hydraulic Fluid List.

2) Preparation before Piping
- Pipeline, piping connector and fixture circuits should be cleaned by thorough flushing.
- Dust and cutting chips in the circuit may lead to oil leak and malfunction.
- Our products, except some valves, are not equipped with protective function to prevent dust and cutting chips going into the hydraulic system and pipeline.

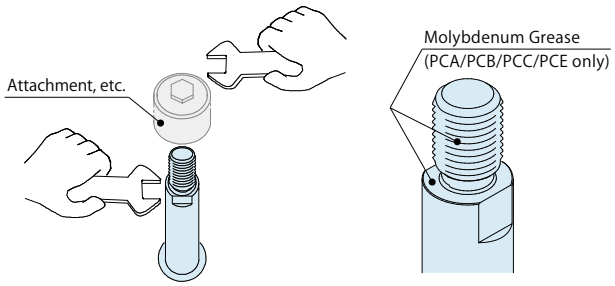
3) Applying Sealing Tape
- Wrap with tape 1 to 2 times following the screwing direction.
- Pieces of the sealing tape can lead to oil leak and malfunction.
- In order to prevent contaminants from going into the product during piping, it should be carefully cleaned.

4) Cylinder Installation
- Use four hexagonal socket bolts and tighten them with the torque shown in the list below. Installation failure leads to oil leak, deformation and damage of the cylinder.

Model No.	Mounting Bolt Size	Strength	Tightening Torque (N·m)
PCA/PCB/PCC0633	M16×2	12.9	200
PCA/PCB/PCC0803	M16×2	12.9	200
PCA/PCB/PCC1003	M20×2.5	12.9	400
PCA/PCB/PCC1253	M24×3	10.9	630
PCA/PCB/PCC1603	M30×3.5	10.9	1250
PCA/PCB2003	M36×4	10.9	1600
PCA/PCB2503	M36×4	10.9	1600
PCE0400	M12×1.75	12.9	80
PCE0630	M16×2	12.9	200
PCE0800	M16×2	12.9	200
PCE1000	M20×2.5	12.9	400
PCE1250	M24×3	10.9	630
PCM0400	M12×1.75	12.9	80
PCM0500	M12×1.75	12.9	80
PCD0400	M8×1.25	12.9	25
PCD0630	M12×1.75	12.9	80
PCD0800	M14×2	12.9	125

- The bottom cover of PCD cylinder is just temporarily tightened, so pressure supply to the product without mounted on a mold is extremely dangerous causing damages. It must be mounted on the mold and tightened with four mounting bolts before pressure supply. Also, make sure to inspect that the product is securely tightened on a regular basis.

5) Attachment Installation
- For using rod shape **T**：Male Thread, when mounting and removing the attachment, hold the piston with a spanner or adjustable wrench at edge.
- In order to stabilize tightening axial force, apply molybdenum grease on the thread part and seating surface. (Grease is applied at shipment.) And after : When tightening, it is recommended to apply grease (lithium based) available in the market. (Only for PCA/PCB/PCC/PCE)
- Installation failure leads to deformation and damage of the clamp, so make sure that the product is securely tightened on a regular basis.



Rod Shape	Model No.		Head Thread Size	Tightening Torque (N·m)
T Male Thread	**PCA PCC**	**PCA/PCC0633-T**	M24×1.5	350
		PCA/PCC0803-T	M30×1.5	730
		PCA/PCC1003-T	M40×1.5	1390
	PCB	**PCB0633-T**	M24×1.5	200
		PCB0803-T	M30×1.5	400
		PCB1003-T	M40×1.5	800
		PCB1253-T	M50×1.5	1400
	PCE	**PCE0400-T**	M16×1.5	120
		PCE0630-T	M24×1.5	200
		PCE0800-T	M30×1.5	400
		PCE1000-T	M40×1.5	800
		PCE1250-T	M50×1.5	1400
	PCD	**PCD0400-T**	M20×1.5	150
		PCD0630-T	M30×1.5	400
		PCD0800-T	M40×1.5	800
A Female Thread	**PCD**	**PCD0400-A**	M16×2	100
		PCD0630-A	M27×3	400
		PCD0800-A	M30×3.5	630

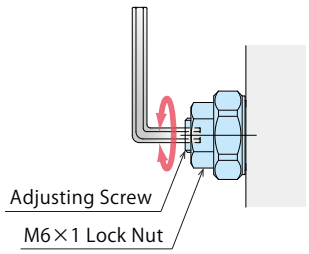
6) Trial Operation Method

- There is a lot of air in the circuit just after installation. If high pressure with large flow rate is supplied under such condition, action time will be extremely fast leading to severe damage on a cylinder. Make sure to perform running-in operation with low pressure with small flow rate and release the air in the circuit.

7) Operating Speed Adjustment

- Excessively fast operating speed of the cylinder may lead to wear-out or damage of internal components.
- Install a flow control valve and gradually control the flow rate from the low-speed side (small flow) to the designated speed. Controlling from the high-speed side (large flow) causes excessive surge pressure or overload to the cylinder leading to damage of a product and/or device.
- When controlling the speed with a flow control valve, make sure there is no excessively high pressure in the hydraulic circuit.
- Speed control may not be conducted if there is excessive air in the hydraulic circuit.
- The viscosity of fluid will decrease when its temperature increases. This will slow the operating speed of the cylinder. Adjust the speed under the proper temperature condition.
- When using option：with Pull-End Cushion (PCA/PCB/PCC/PCE-H)

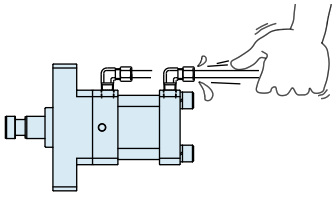
① Adjust cushioning only after air bleeding.
② For cushion speed adjustment, start from the low piston speed 50mm/sec or less, and increase the speed gradually. (Adjusting Screw; Clockwise = Large Cushioning, Counter-Clockwise = Small Cushioning)
③ After speed adjustment is completed, fix the adjusting screw and tighten the M6×1 Lock Nut.



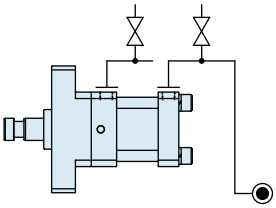
8) Air Bleeding in the Hydraulic Circuit

- If the hydraulic circuit has excessive air, the action time may become very long. If air enters the circuit after connecting the hydraulic port or under the condition of no oil in a tank of a pump, please perform the following steps.

① Reduce hydraulic pressure to less than 2MPa.
② Loosen the cap nut of pipe fitting closest to the cylinder by one full turn.
③ Wiggle the pipeline to loosen the outlet of pipe fitting. Hydraulic fluid mixed with air comes out.

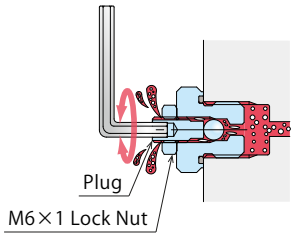


④ Tighten the cap nut after air bleeding.
⑤ It is more effective to release air at the highest point inside the circuit or at the end of the circuit. (Set an air bleeding valve at the highest point inside the circuit.)



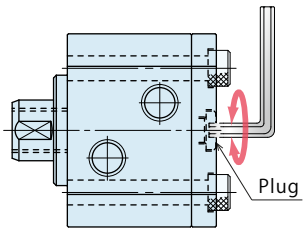
- When using option：with Air Bleed Valve (PCA/PCB/PCC/PCE-X)

① It is dangerous to release air during operation under high pressure. It must be done under lower pressure. (2MPa or less)
② When releasing air, do not loosen the plug too much. (Do not loosen more than two turns from fully closed state.)
③ Oil might be suddenly spouted during air bleeding. Do not release air toward fire or people.
④ After air bleeding completed, tighten the plug to stop the oil. After that, securely tighten the M6×1 Lock Nut.



- When Using Air Bleeding Plug (PCD)
  Air bleeding on the push side circuit is possible by loosening the plug on the cylinder bottom.

① It is dangerous to release air during operation under high pressure. It must be done under lower pressure. (2MPa or less)
② When releasing air, do not loosen the plug too much. (Should be loosened about 90° as a guide.)
③ Oil might be suddenly spouted during air bleeding. Do not release air toward fire or people.
④ After air bleeding completed, tighten the plug to stop the oil.



9) Checking Looseness and Retightening

- At the beginning of installation, bolts may be tightened lightly. Check torque and re-tighten as required.

Cautions

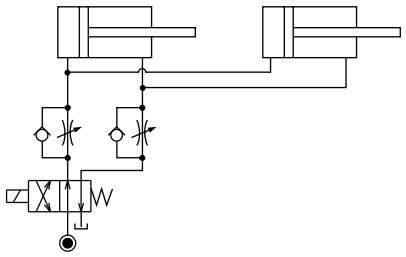
Notes on Hydraulic Cylinder Speed Control Circuit

Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder.
Improper circuit design may lead to malfunctions and damages.
Please review the circuit design in advance.

1) Speed Control Circuit

- For speed control it should have meter-in circuits for both the push and pull sides. In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action depending on fluid volume.

【Meter-in Circuit】



Hydraulic Fluid List

- Please use appropriate fluid referring to the fluid lists below.
- Appropriate fluid differs depending on materials of cylinder packing. Check the appropriate fluid on specifications.

● General Hydraulic Oil — ISO Viscosity Grade ISO-VG-32

Maker	Anti-Wear Hydraulic Oil	Multi-Purpose Hydraulic Oil
Showa Shell Sekiyu	Tellus S2 M 32	Morlina S2 B 32
Idemitsu Kosan	Daphne Hydraulic Fluid 32	Daphne Super Multi Oil 32
JX Nippon Oil & Energy	Super Hyrando 32	Super Mulpus DX 32
Cosmo Oil	Cosmo Hydro AW32	Cosmo New Mighty Super 32
ExxonMobil	Mobil DTE 24	Mobil DTE 24 Light
Matsumura Oil	Hydol AW-32	-
Castrol	Hyspin AWS 32	-

● Water・Glycol — ISO Viscosity Grade ISO-VG-32

Maker	Water・Glycol
JX Nippon Oil & Energy	Hyrando FRZ32
Cosmo Oil	Cosmo Fluid HQ46
Matsumura Oil	Hydol HAW32

● Silicon Oil — ISO Viscosity Grade ISO-VG-68

Maker	Silicon Oil
Shin-Etsu Chemical	KF-50-100cs

● Fatty Acid Ester

Maker	Fatty Acid Ester	ISO Viscosity Grade
Showa Shell Sekiyu	Shell Irus Fluid DU56	(ISO-VG-56)
Idemitsu Kosan	Firgist ES	ISO-VG-68
JX Nippon Oil & Energy	Hyrando SS56	(ISO-VG-56)
Cosmo Oil	Cosmo Fluid E46	ISO-VG-46
Nippon Quaker Chemical	QUINTOLUBRIC® 822-200	ISO-VG-46

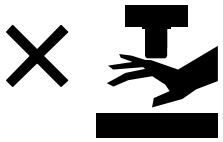
Note : Please contact manufacturers when customers require products in the list above.

Notes on Handling

1) It should be operated by qualified personnel.
- The diecast machines and the products should be operated and maintained by qualified personnel.

2) Do not operate or remove the product unless the safety protocols are ensured.
① The machine and equipment can only be inspected or prepared when it is confirmed that the safety devices are in place.
② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
③ After stopping the machine, do not remove until the product cools down.
④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.

3) Do not touch cylinders while they are working.
Otherwise, your hands may be injured.



4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

5) Please do not pour water / oil over the product.
- It may lead to malfunction or deterioration of the product and cause an accident.

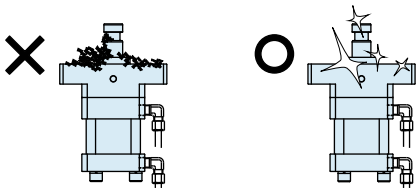
Maintenance and Inspection

1) Removal of the Product and Shut-off of Pressure Source

- Before the product is removed, make sure that safety devices and preventive devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the hydraulic and air circuits.
- Make sure there is no abnormality in the bolts and respective parts before restarting.

2) Regularly clean the area around the cylinder.

- If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunction and oil leak.



3) If disconnecting by couplers, air bleeding should be carried out on a regular basis to avoid air mixed in the circuit.
4) Regularly tighten bolts and pipe line and mounting bolts to ensure proper use.
5) Make sure the hydraulic fluid has not deteriorated.
6) Make sure there is smooth action and no abnormal noise.

- Especially when it is restarted after being left unused for a long period, make sure it can be operated properly.

7) The products should be stored in the cool and dark place without direct sunshine or moisture.
8) Please contact us for overhaul and repair.

Warranty

1) Warranty Period

- The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.

2) Warranty Scope

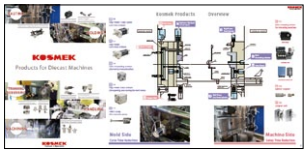
- If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.
  Defects or failures caused by the following are not covered.

① If the stipulated maintenance and inspection are not carried out.
② If the product is used while it is not suitable for use based on the operator's judgment, resulting in defect.
③ If it is used or handled in inappropriately by the operator. (Including damage caused by the misconduct of the third party.)
④ If the defect is caused by reasons other than our responsibility.
⑤ If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
⑥ Other damages caused by natural disasters or calamities not attributable to our company.
⑦ Parts or replacement expenses due to parts consumption and deterioration. (Such as rubber, plastic, seal material and some electric components.)

Damages excluding from direct result of a product defect shall be excluded from the warranty.

KOSMEK Products for Diecast Systems

Application examples with press machine related KOSMEK products are available on our website.



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- For Further Information on Unlisted Specifications and Sizes, Please call us.
- Specifications in this Leaflet are Subject to Change without Notice.

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