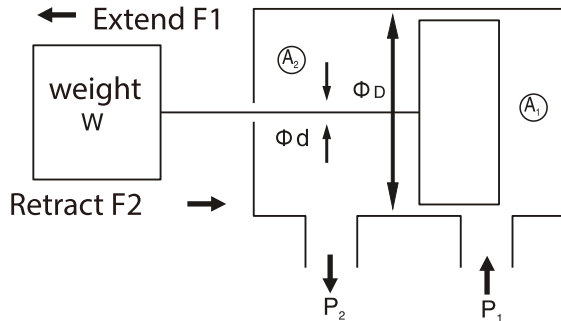


GENERAL CALCULATION



Example:
Assuming that the output of the cylinder is 1000 kg and the actuating pressure is 70kgf/cm², what is the inner diameter of the hydraulic cylinder?

- Extend $F_1 = A_1 \times P_1 \times \beta$
- Retract $F_2 = A_2 \times P_2 \times \beta$
- A₁ Piston pressure area (push)
- A₂ Piston pressure area (pull)
- D: Inner diameter of cylinder = Piston diameter
- d: Piston rod diameter
- P₁ Actuation pressure (extend)kgf/c m²
- P₂ Actuation pressure (retract)kgf/c m²
- β : Load factor

Note: 1.The actual output of the hydraulic cylinder is lower than the theoretical output.
2.Load factor β take 80% when the inertia ratio is small and take 60% when the inertial force is large.

Answer:
Output F = 1000kgf
Actuating pressure P = 70kgf/cm²
Load factor β = 0.8

$$F_1 = A_1 \times P_1 \times \beta$$

$$A_1 = F_1 / (P_1 \times \beta) = 1000 / (70 \times 0.8)$$

$$= 17.86 \text{ cm}^2$$

$$A = \pi D^2 / 4 = 0.785 D^2$$

so $D^2 = 17.86 / 0.785 = 22.75 \text{ cm}^2$

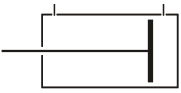
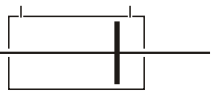
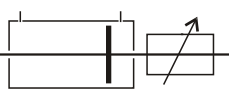
$$D = \sqrt{22.75} = 4.8 \text{ cm} = 48 \text{ mm}$$

inner diameter is 50mm

THEORETICAL FORCE

Bore		32	40	50	63	80	100	125	150	180	200	224	250			
Piston pressure area (cm ²)	Extend	8.0	12.6	19.6	31.2	50.3	78.5	122.7	176.7	254.5	314.2	394.1	490.9			
	Retract	Diameter	C	6.0	9.4	14.7	24.1	40.6	66	98.1	141.5	204.2	250.5	315.5	392.4	
			B	4.9	7.7	12.6	21.6	38	53.9	83.1	120	175.9	215.6	271.4	336.9	
Cylinder theoretical output (kg)	70kg/cm ² Pressure	Extend		560	880	1375	2182	3519	5498	8590	12370	17813	21991	27586	34361	
			Retract	C	420	660	1301	1687	2838	4618	6867	9902	14295	17538	22088	27465
		B		343	536	880	1508	2660	3774	5819	8398	12315	15095	18995	23585	
		140kg/cm ² Pressure	Extend		1120	1760	2750	4343	7038	10995	17181	24741	35626	43982	55171	68721
				Retract	C	840	1320	2062	3374	5676	9236	13734	19804	28590	35076	44176
			B		686	1072	1760	3016	5320	7548	11638	16796	24630	30190	37990	47172
	210kg/cm ² Pressure		Extend		1680	2646	4116	6552	10563	16485	25767	37107	53445	65982	82761	103089
				Retract	C	1260	1974	3087	5061	8526	13860	20601	29715	42882	52605	66255
			B		1029	1617	2646	4536	7980	11319	17451	25200	36939	45276	56994	70749

TYPE

Type	Mark	Graphics	Heat/acid & alkali resistance	Dust cover	Bore (mm)
Double acting cylinder	HC2-A		HC2-AJ	HC2-AH	32,40,50
Double rods cylinder	HC2-C		HC2-CJ	HC2-CH	63,80,100 125,150 180,200
Double rods cylinder with stroke adjustment	HC2-D		HC2-DJ	HC2-DH	224,250

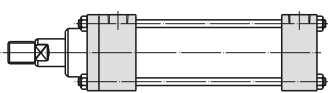
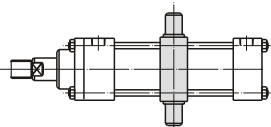
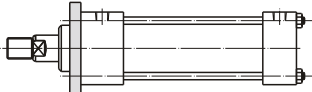
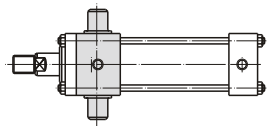
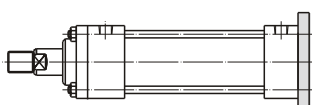
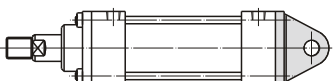
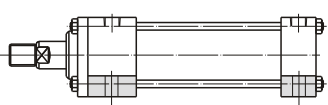
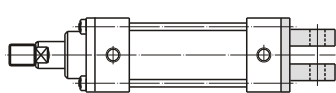
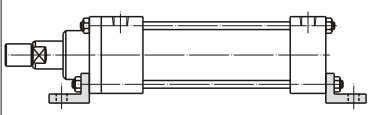
Tie-rod Hydraulic Cylinder

Mold Hydraulic Cylinders

Swivel & Clamp Hydraulic Cylinders

Booster Cylinders & Unclamping cylinders

INSTALLATION FORM

Mark	Type	Graphics	Mark	Type	Graphics
SD	Basic		TC	Mid Trunnion	
FA	Rod Flange		TA	Rod Trunnion	
FB	Head Flange		CA	Clevis	
LA	Foot fange		CB	Dual Clevis	
LB	End fange				

ISO Specifications Cylinders

Round Hydraulic Cylinders

Specific Hydraulic Cylinders

Systems & Fittings

MAXIMUM STROKE CALCULATION

(Table 1)

Form	Status	terminal coefficient	Form	Status	terminal coefficient
LA LB		1/4	FB		1/4
		2			2
		4			4
FA		1/4	TC		1
		2			
		4		CA	

$S=L-l$
 S:Stroke(mm) L:Extend length(mm)
 l : Lead in length(mm)

d) Maximum stroke (S) = Extend length (L) - Lead in length(l)
 $S = 1980\text{mm} - 152\text{mm} = 1828\text{mm}$

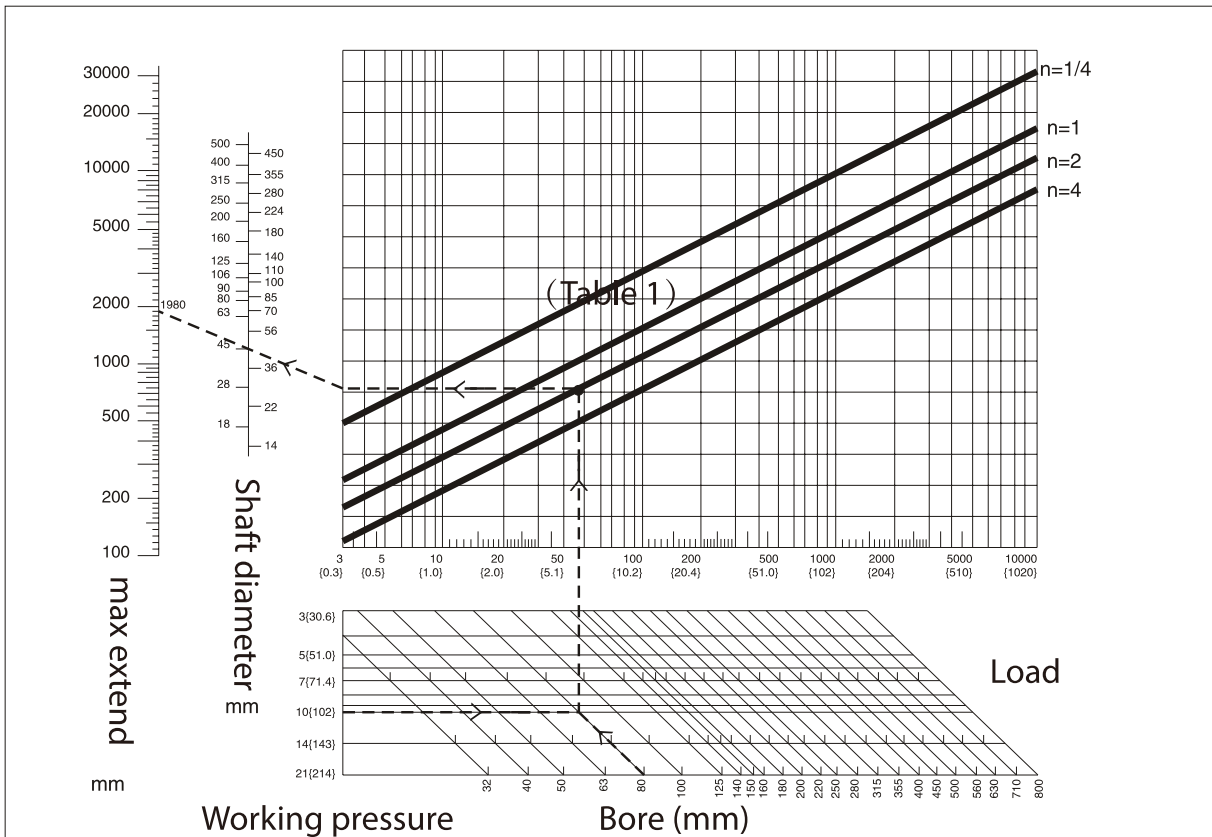
Bore of cylinder is 80mm, shaft diameter 45mm, install form FA (Front Flange), shaft end joint Y and working pressure 10MPa. What is the working stroke of the cylinder?

Calculation:

a) Installation type FA, shaft end joint Y. Table 1 shows that the terminal coefficient is $n = 2$.

b) According to bore (80mm), pressure (10MPa), terminal coefficient (2), and shaft diameter (45mm) in table 2, can find $L = 1980\text{mm}$.

c) calculated from installation FA and shaft end joint Y (FA external dimension and shaft end fittings Y)
 $= (\text{FA thickness } F) + (\text{FA to shaft } W) + (\text{Nut thickness}) + (\text{shaft joint end Y CA})$
 $= 24 + 35 + 18 + 75 = 152\text{mm}$ (lead in length)



SEAL MATERIAL

Material Symbol	(NBR)	(FPM)	(PU)
Oil	1	2	3
Mineral	○	○	○
water solution	○	X	○
Soluble	○	X	○
phosphate ester	X	X	○
Temperature	-10°C~+80°C		-10°C~+200°C
Viscosity	20~400m ² /s{cSt}		

Note:

1.mineral oil: ISO-VG32

2.If mineral oil is used,NBR will be used without specify selections of material.

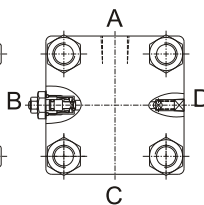
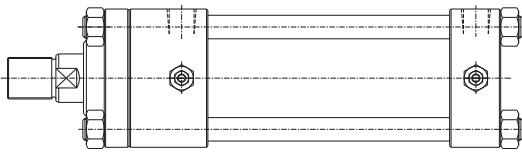
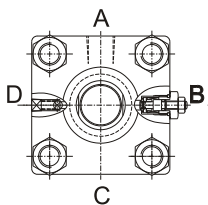
3.If phosphate ester oil is used or high temperature is applied, will show as symbol J.

4.symbol ○ = ok, X = cannot be used.

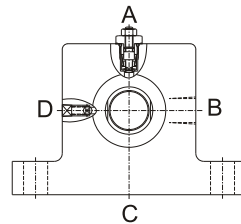
5.Temperature of FPM must set below 150°C when operate long time.

PORT AND CUSHION POSITIONS

■ SD type

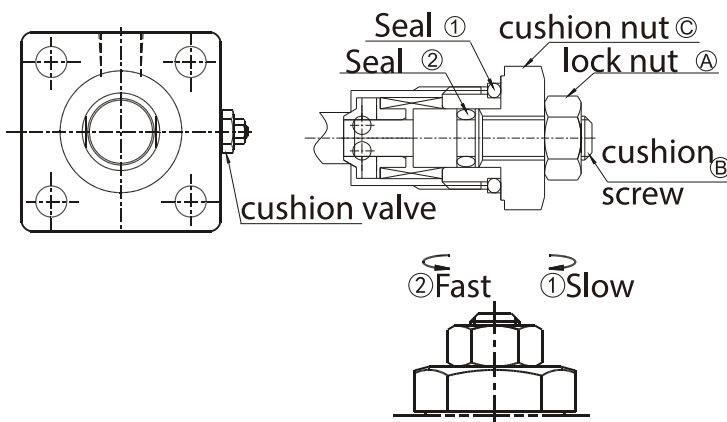


■ LA type



Standard location A = input port B = cushion position D = check valve position
 Type representation : HC2-A-70-LA-C-100X200-B-B-A Oil inlet : B cushion aligning valve : A

USE OF CUSHION VALVES



■ Alignment steps

1.Turn lock nut(A) toward counter clockwise with 1/4 circle by wrench.

2.Use wrench to lock cushion nut (C) tightly to prevent (1) (2) oil spill.

3.Use screwdriver to adjust speed of (B) (1)clockwise:rod speed will slow down(2)counter clockwise:rod speed will increase

4.After alignment,fix(B) with hex wrench then tighten(A)

Note:Loose lock nut(A) before adjust(B).

Tie-rod Hydraulic Cylinder

Mold Hydraulic Cylinders

Swivel & Clamp Hydraulic Cylinders

Booster Cylinders & Unclamping cylinders

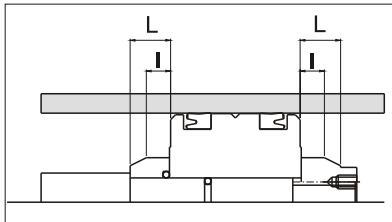
ISO Specifications Cylinders

Round Hydraulic Cylinders

Specific Hydraulic Cylinders

Systems & Fittings

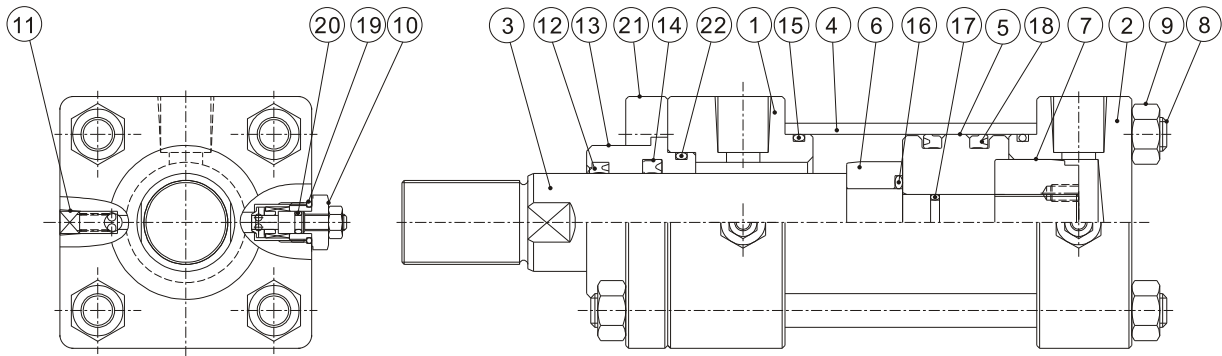
BUFFER LENGTH



Bore(mm)	L	I
32 ~ 62	20	10
80 ~ 160	25	15
180 ~ 224	30	27
250	35	32

- When the operating speed of the hydraulic cylinder reaches 500mm/s or above after being loaded, consider using a buffer device
- If reaching a higher speed, install an external deceleration valve

INTERNAL STRUCTURE AND PART NAMES



item	part name	qty	item	part name	qty
①	rod cover	1	⑫	Rod dust seal	1
②	head cover	1	⑬	Bush	1
③	piston rod	1	⑭	Rod seal	1
④	Tube	1	⑮	Cover O ring	2
⑤	Piston	1	⑯	Cushion O ring	1
⑥	rod cushion	1	⑰	Piston O ring	1
⑦	head cushion	1	⑱	Piston seal	2
⑧	Tie-rod	4	⑲	Valve O ring	2
⑨	tie-rod nut	8	⑳	Valve O ring	2
⑩	cushion adjusting valve	2	㉑	Board	1
⑪	Check valve	2	㉒	bush O ring	1

SEAL SPEC.

Bore	Item Name	⑫	⑭	⑮	⑯	⑰	⑱	⑳	㉔	
		rod dust seal (NBR)	rod seal (NBR)	Cover O ring (1B)	Cushion O ring (1B)	Piston O ring (1B)	Piston seal (NBR)	Valve O ring (1A)	Valve O ring (1A)	Bush O ring (1B)
		1	1	2	1	1	2	2	2	1
32	C	16 × 24 × 6	16 × 24 × 5	G25 cushioning SM32	SM12.5	P10A	24 × 32 × 5	P11	P5	G25
	B	20 × 28 × 6	20 × 28 × 5							
40	C	20 × 28 × 6	20 × 28 × 5	G35 cushioning SM32	P14	P10A	30 × 40 × 6	P11	P5	G30
	B	25 × 33 × 6	25 × 33 × 5							
50	C	25 × 33 × 6	25 × 33 × 5	G45	P18	P14	40 × 50 × 6	P11	P5	G35
	B	30 × 38 × 6.5	30 × 40 × 6							
63	C	30 × 38 × 6.5	30 × 40 × 6	G58	P24	P20	53 × 63 × 6	P11	P5	G45
	B	35 × 43 × 6.5	35 × 45 × 6							
80	C	35 × 43 × 6.5	35 × 45 × 6	G75	G30	G25	70 × 80 × 6	P11	P5	G50
	B	40 × 48 × 6.5	40 × 50 × 6							
100	C	40 × 48 × 6.5	40 × 50 × 6	G95	G35	G30	85 × 100 × 9	P11	P5	G65
	B	56 × 64 × 6.5	56 × 66 × 6		G45	G40				
125	C	56 × 64 × 6.5	56 × 66 × 6	G120	G50	G45	112 × 125 × 8.5	P14	P6	G85
	B	70 × 80 × 8	70 × 80 × 6							
150	C	65 × 73 × 6.5	65 × 75 × 6	G145	G55	G50	136 × 150 × 8.5	P14	P6	G100
	B	85 × 95 × 8	85 × 100 × 9							
180	C	80 × 90 × 8	80 × 90 × 6	G170	G70	G65	165 × 180 × 9.5	P14	P6	G115
	B	100 × 110 × 8	100 × 115 × 9							
200	C	90 × 100 × 8	90 × 105 × 9	G190	G80	G75	180 × 200 × 12.5	P14	P6	G130
	B	112 × 122 × 8	112 × 125 × 8.5							
224	C	100 × 110 × 8	100 × 115 × 9	G210	G90	G85	204 × 224 × 12.5	AS211	P10A	—
	B	125 × 138 × 9.5	125 × 140 × 9							
250	C	112 × 122 × 8	112 × 125 × 8.5	G240	G95	G90	230 × 250 × 12.5	AS211	P10A	—
	B	140 × 153 × 9.5	140 × 155 × 9							

Tie-rod Hydraulic Cylinder

Mold Hydraulic Cylinders

Swivel & Clamp Hydraulic Cylinders

Booster Cylinders & Unclamping cylinders

ISO Specifications Cylinders

Round Hydraulic Cylinders

Specific Hydraulic Cylinders

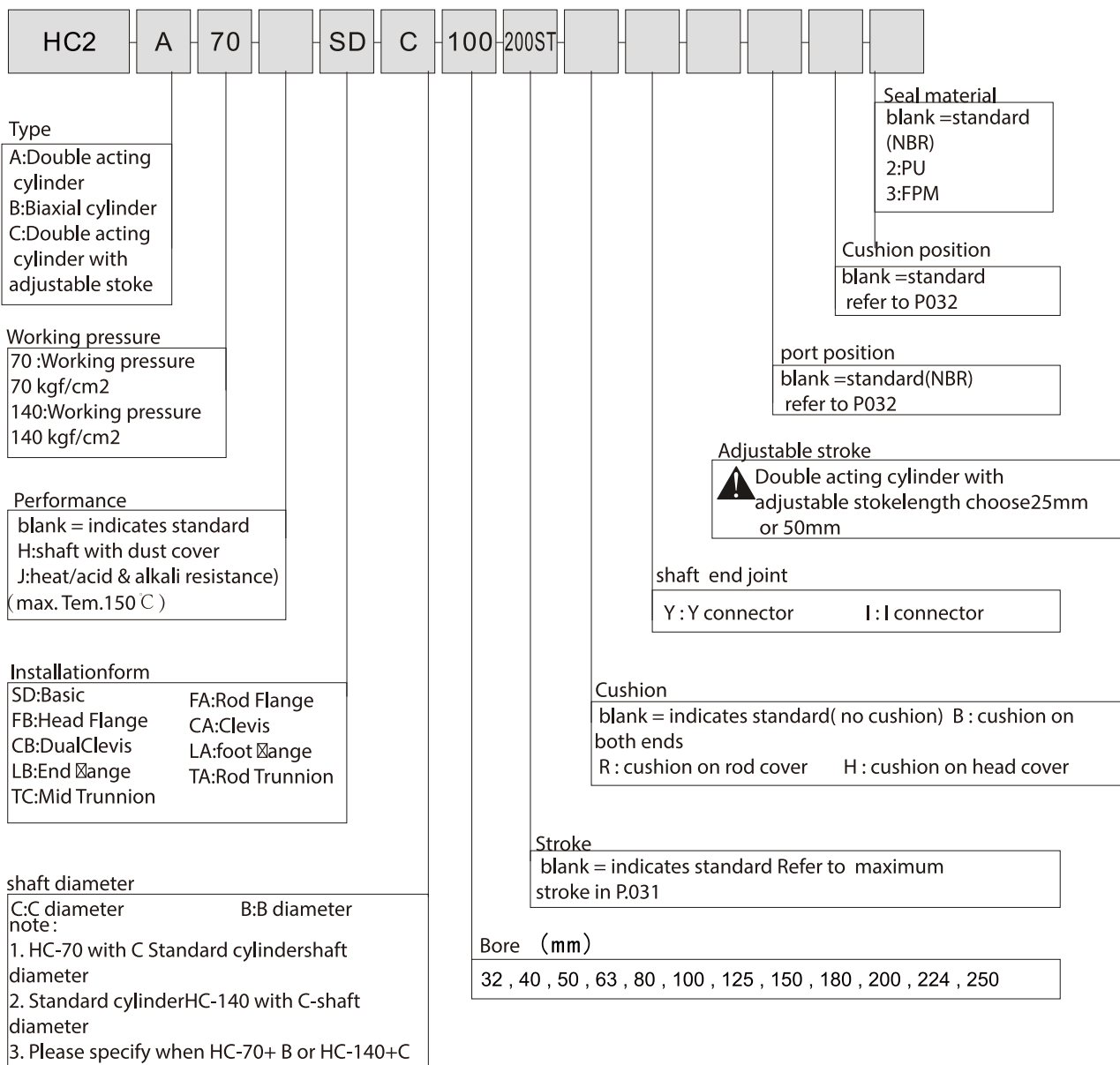
Systems & Fittings

TIE ROD CYLINDERS HC2



- Product upgrade :HC series products are transformed and upgraded to HC2 series.
- Designed and manufactured in accordance with
- Japanese JIS-B8367 standard specifications.
- Four-tie rod structure design, strong versatility,A variety of installation options are available for customers to choose.
- The piston rod adopts tempering treatment to improve product quality.
- All the seals adopt the specifications from well-known foreign brands.

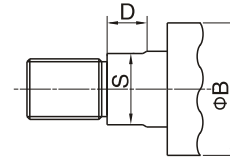
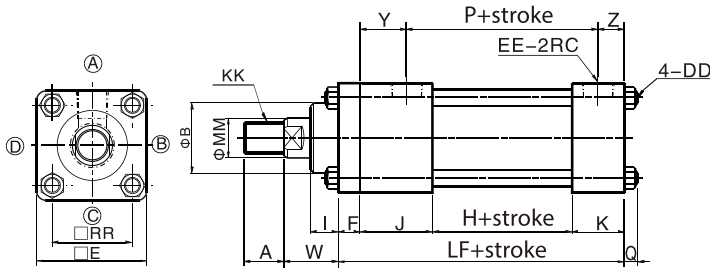
ORDER INDICATION



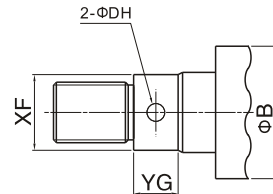
⚠ Blank field:Indicates a standard product and does not need to be marked when ordering

EXTERNAL DIMENSIONS

- HC2-A-SD double acting(basic)

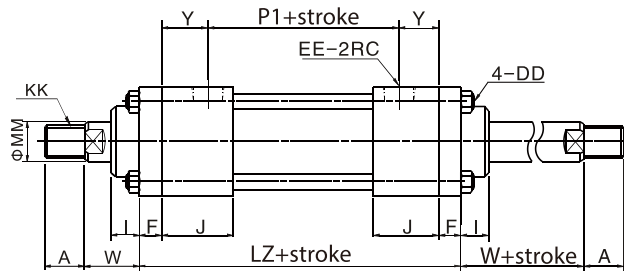


bore < 80mm

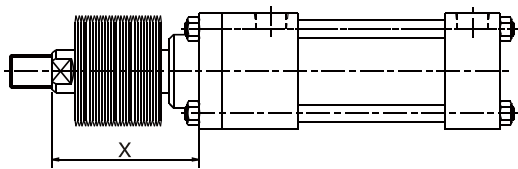


bore ≥ 80mm

- HC2-C-SD double rod(basic)



with bellow (HC2-A-H)



- specifying the needed material while order.
 - (1) N: NBR
 - (2) V:F≤150 °C

Symbol Shaft	DH	XF	YG
80	10	79	20
85	10	84	20
90	10	89	20
100	12	99	24
112	12	109	24
125	12	124	24
140	12	139	24

Symbol Bore	X
32.40.50	1/3.5×stroke+45
63.80.100	1/4×stroke+55
125.150 180.200	1/5×stroke+65
224.250	1/6×stroke+80

Tie-rod Hydraulic Cylinder

Mold Hydraulic Cylinders

Swivel & Clamp Hydraulic Cylinders

Booster Cylinders & Unclamping cylinders

ISO Specifications Cylinders

Round Hydraulic Cylinders

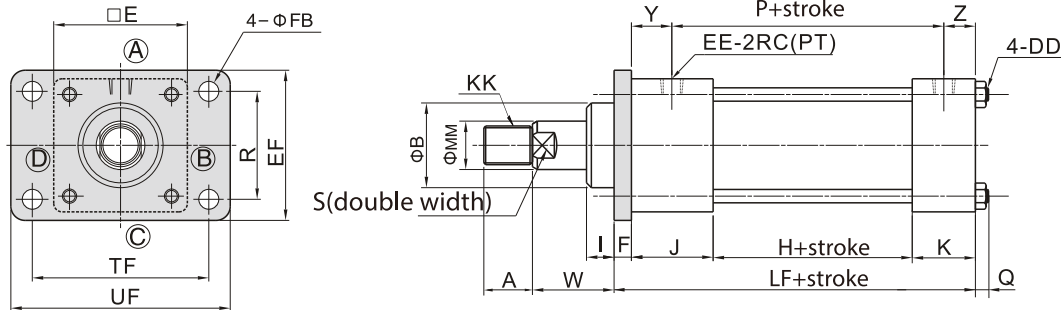
Specific Hydraulic Cylinders

Systems & Fittings

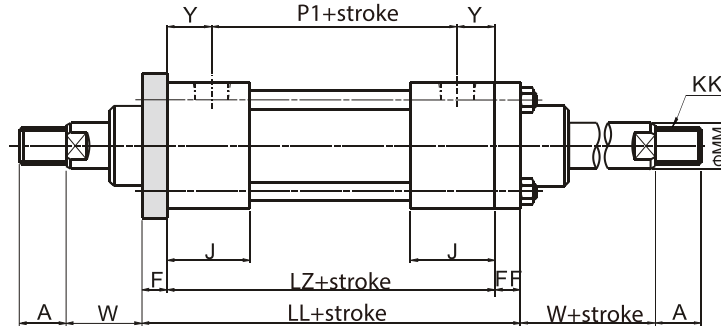
Symbol Bore	bore class C						bore class B						D		E	F	H	I	J	K	P	P1	Q	S		W	Y	Z	DD	EE	LF	LZ	RR
	MM	KK	A	MM	KK	A	B	C	B	C	B																						
	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
32	16	M12×1.5	18	20	M16×1.5	25	35	14	14	55	11	50	14	36	26	76	76	10	14	17	30	23	13	M10×1.5	3/8	123	144	40					
40	20	M16×1.5	25	25	M20×1.5	30	40	14	14	65	11	50	14	36	26	76	76	10	17	21	30	23	13	M10×1.5	3/8	123	144	45					
50	25	M20×1.5	30	30	M24×1.5	35	46	14	14	75	14	58	14	42	34	88	88	10	21	27	30	27	19	M10×1.5	3/8	148	170	52					
63	30	M24×1.5	35	35	M30×1.5	45	55	17	17	90	15	58	14	42	34	88	88	12	27	32	35	27	19	M12×1.5	1/2	149	172	63					
80	35	M30×1.5	45	40	M36×1.5	55	65	17	17	110	18	62	14	46	40	98	98	16	32	37	35	28	22	M16×1.5	1/2	166	190	80					
100	40	M36×1.5	60	56	M48×1.5	70	80	20	22	135	20	74	14	50	40	114	114	17	37	50	40	30	20	M18×1.5	3/4	184	214	102					
125	56	M48×1.5	75	70	M64×2.0	90	95	22	22	165	24	83	17	58	48	123	123	20	50	65	45	38	28	M22×1.5	3/4	213	247	122					
150	65	M60×2.0	85	85	M76×2.0	110	110	22	-	196	28	89	19	58	48	129	129	24	62	-	50	38	28	M26×1.5	3/4	223	261	148					
180	80	M72×2.0	110	100	M95×2.0	130	125	-	-	220	33	95	23	68	58	151	151	26	-	-	55	40	30	M30×1.5	1	254	297	168					
200	90	M80×2.0	120	112	M100×2.0	150	140	-	-	245	37	100	24	68	58	158	160	28	-	-	55	38	30	M33×2.0	1	263	310	190					
224	100	M95×2.0	130	125	M120×2.0	170	150	-	-	292	41	105	27	68	68	161	161	35	-	-	60	40	40	M39×2.0	1 1/4	282	323	225					
250	112	M100×2.0	140	140	M130×2.0	190	170	-	-	325	46	105	29	68	68	161	161	39	-	-	65	40	40	M42×2.0	1 1/4	287	333	250					

EXTERNAL DIMENSIONS

● HC2-A-FA double acting (rod flange)



● HC2-C-FA double rods (rod flange)



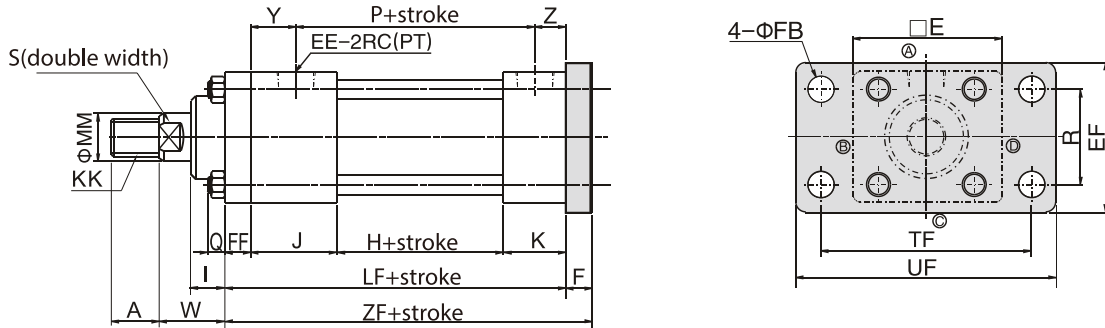
Symbol Bore	bore class C			bore class B			B	I		E	F		H	J	K	P	P1	Q	R
	MM	KK	A	MM	KK	A		C	B		70kgf/cm ²	140kgf/cm ²							
	32	16	M12×P1.5	18	20	M16×P1.5		25	35		14	14							
40	20	M16×P1.5	25	25	M20×P1.5	30	40	14	14	65	11	11	50	36	26	76	76	10	46
50	25	M20×P1.5	30	30	M24×P1.5	35	46	14	10	75	14	18	58	42	34	88	88	10	58
63	30	M24×P1.5	35	35	M30×P1.5	45	55	14	9	90	15	20	58	42	34	88	88	12	65
80	35	M30×P1.5	45	40	M36×P1.5	55	65	14	8	110	18	24	62	46	40	98	98	16	87
100	40	M36×P1.5	60	56	M48×P1.5	70	80	14	6	135	20	28	74	50	40	114	114	17	109
125	56	M48×P1.5	75	70	M64×P2.0	90	95	17	8	165	24	33	83	58	48	123	123	20	130
150	65	M60×P2.0	85	85	M76×P2.0	110	110	19	8	196	28	39	89	58	48	129	132	24	155
180	80	M72×P2.0	110	100	M95×P2.0	130	125	23	10	220	33	46	95	68	58	151	149	26	185
200	90	M80×P2.0	120	112	M100×P2.0	150	140	24	10	245	37	51	100	68	58	158	156	28	206
224	100	M95×P2.0	130	125	M120×P2.0	170	150	27	10	292	41	58	105	68	68	161	161	35	230
250	112	M100×P2.0	140	140	M130×P2.0	190	170	29	10	325	46	65	105	68	68	161	161	39	250

Symbol Bore	S		W	Y	Z	DD	EE	EF	FB	FF	LL		LF		LZ	TF	UF
	C	B									70kgf/cm ²	140kgf/cm ²	70kgf/cm ²	140kgf/cm ²			
	32	14									17	30	23	13			
40	17	21	30	23	13	M10×P1.5	3/8	69	11	11	144	144	123	123	122	95	118
50	21	27	30	27	19	M10×P1.5	3/8	85	14	14	170	174	148	152	142	115	145
63	27	32	35	27	19	M12×P1.5	1/2	98	18	15	172	177	149	154	142	132	165
80	32	37	35	28	22	M16×P1.5	1/2	118	18	18	190	196	166	172	154	155	190
100	37	50	40	30	20	M18×P1.5	3/4	150	22	20	214	222	184	192	174	190	230
125	50	65	45	38	28	M22×P1.5	3/4	175	26	24	247	256	213	222	199	224	272
150	62	-	50	38	28	M26×P1.5	3/4	210	30	28	261	272	223	234	205	270	320
180	-	-	55	40	30	M30×P1.5	1	243	33	33	297	310	254	267	231	315	375
200	-	-	55	38	30	M33×P2.0	1	272	36	37	310	324	263	277	236	355	425
224	-	-	60	40	30	M39×P2.0	1 1/4	300	42	41	323	340	282	299	241	395	475
250	-	-	65	40	30	M42×P2.0	1 1/4	335	45	46	333	352	287	306	241	425	515

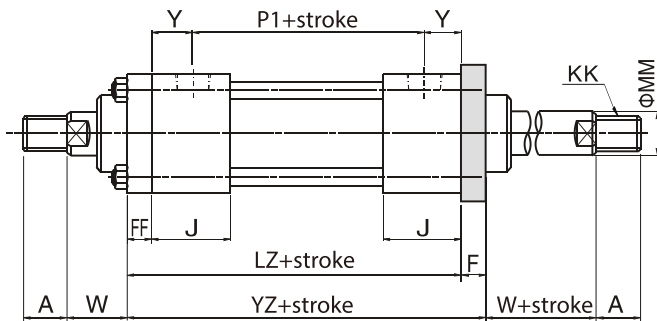
- 1.HC2 Working pressure: 70kgf/c^{m²} equipped with class C axle diameter,the flange thickness "F" value is 70kgf/c^{m²} thickness.
- 2.HC2 Working pressure: 140kgf/c^{m²}、70kgf/c^{m²} equipped with class B axle diameter,the flange thickness "F" value is 140kgf/c^{m²} thickness.
- 3.HC2 Working pressure: 140kgf/c^{m²} equipped with class C axle diameter,the flange thickness "F" value is 140kgf/c^{m²} thickness. Please pay special attention when ordering!

EXTERNAL DIMENSIONS

● HC2-A-FB double acting(head flange)



● HC2-C-FB double rods(head flange)



Tie-rod Hydraulic Cylinder

Mold Hydraulic Cylinders

Swivel & Clamp Hydraulic Cylinders

Booster Cylinders & Unclamping cylinders

ISO Specifications Cylinders

Round Hydraulic Cylinders

Specific Hydraulic Cylinders

Systems & Fittings

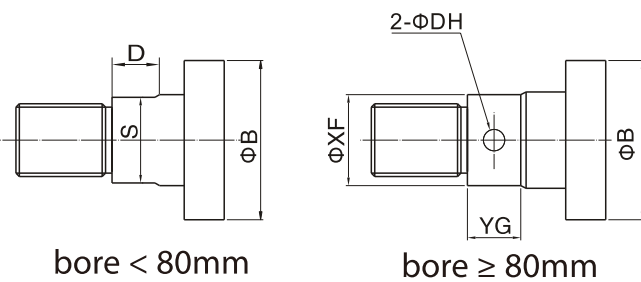
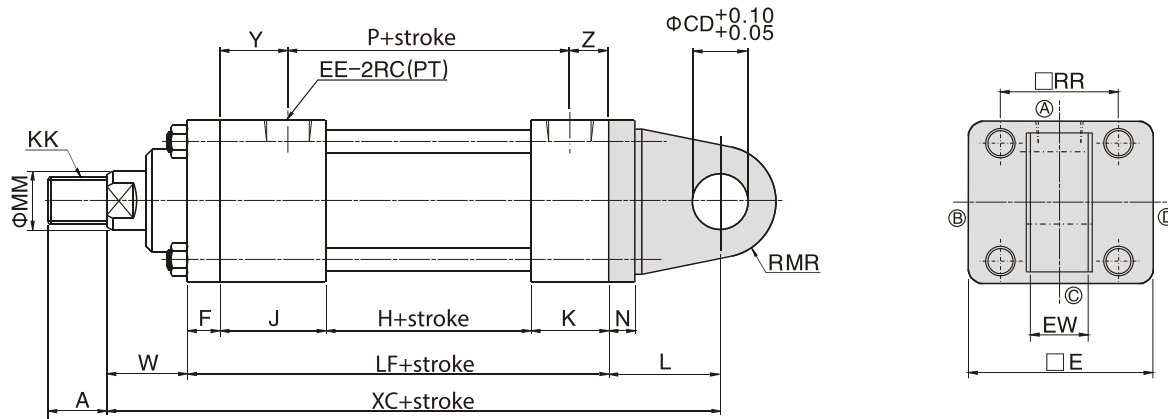
Symbol Bore	bore class C			bore class B			I	E	F		H	J	K	P	P1	Q	R
	MM	KK	A	MM	KK	A			70kgf/cm ²	140kgf/cm ²							
	32	16	M12×P1.5	18	20	M16×P1.5			25	14							
40	20	M16×P1.5	25	25	M20×P1.5	30	14	65	11	11	50	36	26	76	76	10	46
50	25	M20×P1.5	30	30	M24×P1.5	35	14	75	14	18	58	42	34	88	88	10	58
63	30	M24×P1.5	35	35	M30×P1.5	45	14	90	15	20	58	42	34	88	88	12	65
80	35	M30×P1.5	45	40	M36×P1.5	55	14	110	18	24	62	46	40	98	98	16	87
100	40	M36×P1.5	60	56	M48×P1.5	70	14	135	20	28	74	50	40	114	114	17	109
125	56	M48×P1.5	75	70	M64×P2.0	90	17	165	24	33	83	58	48	123	123	20	130
150	65	M60×P2.0	85	85	M76×P2.0	110	19	196	28	39	89	58	48	129	132	24	155
180	80	M72×P2.0	110	100	M95×P2.0	130	23	220	33	46	95	68	58	151	149	26	185
200	90	M80×P2.0	120	112	M100×P2.0	150	24	245	37	51	100	68	58	158	156	28	206
224	100	M95×P2.0	130	125	M120×P2.0	170	27	292	41	58	105	68	68	161	161	35	230
250	112	M100×P2.0	140	140	M130×P2.0	190	29	325	46	65	105	68	68	161	161	39	250

Symbol Bore	S		W	Y	Z	EE	EF	FB	FF	LF	LZ	TF	UF	ZF		YZ	
	C	B												70kgf/cm ²	140kgf/cm ²	70kgf/cm ²	140kgf/cm ²
	32	14												17	30	23	13
40	17	21	30	23	13	3/8	69	11	11	123	133	95	118	134	134	144	144
50	21	27	30	27	19	3/8	85	14	14	148	156	115	145	162	166	170	174
63	27	32	35	27	19	1/2	98	18	15	149	157	132	165	164	169	172	177
80	32	37	35	28	22	1/2	118	18	18	166	172	155	190	184	190	190	196
100	37	50	40	30	20	3/4	150	22	20	184	194	190	230	204	212	214	222
125	50	65	45	38	28	3/4	175	26	24	213	223	224	272	237	246	247	256
150	62	-	50	38	28	3/4	210	30	28	223	233	270	320	251	262	261	272
180	-	-	55	40	30	1	243	33	33	254	264	315	375	287	300	297	310
200	-	-	55	38	30	1	272	36	37	263	273	355	425	300	314	310	324
224	-	-	60	40	40	1 1/4	300	42	41	282	282	395	475	323	340	323	340
250	-	-	65	40	40	1 1/4	335	45	46	287	287	425	515	333	352	333	352

- ⚠ 1.HC2 Working pressure: 70kgf/c m² equipped with class C axle diameter,the flange thickness "F" value is 70kgf/c m² thickness
 2.HC2 Working pressure: 140kgf/c m²、70kgf/c m² equipped with class B axle diameter,the flange thickness "F" value is140kgf/c m² thickness
 3.HC2 Working pressure: 140kgf/c m² equipped with class C axle diameter,the flange thickness "F" value is 140kgf/c m² thickness
 Please pay special attention when ordering!

EXTERNAL DIMENSIONS

- HC2-A-CA double acting(clevis)

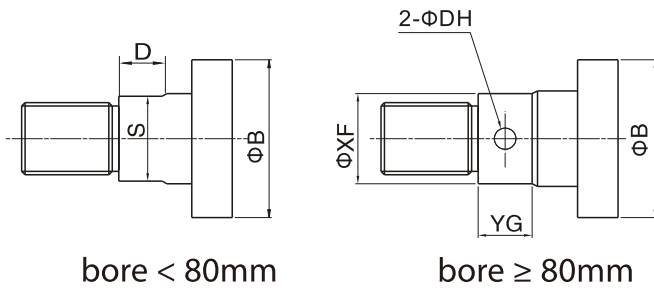
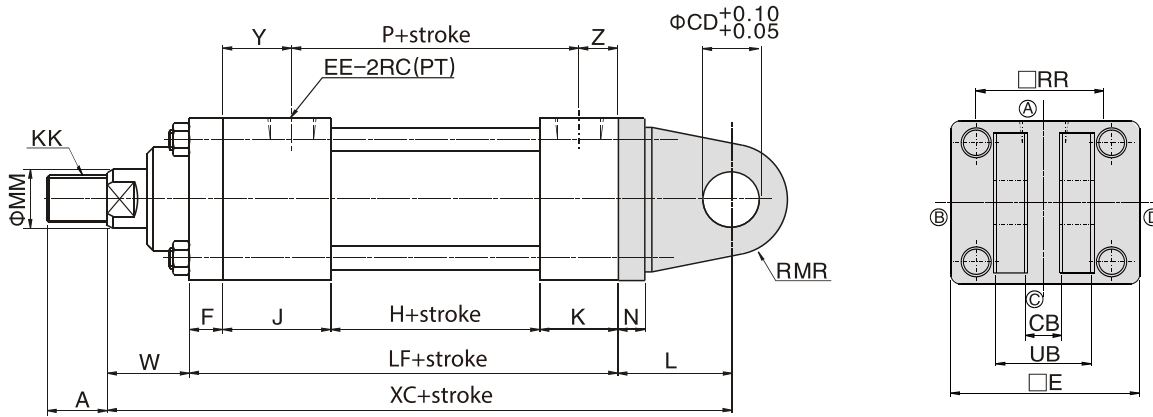


Symbol	DH	XF	YG
80	10	79	20
85	10	84	20
90	10	89	20
100	12	99	24
112	12	109	24
125	12	124	24
140	12	139	24

Symbol Bore	bore class C			bore class B			D		E	F	H	J	K	L	P	S		W	Y	Z	CD	EE	EW	LF	MR	RR	XC	N
	MM	KK	A	MM	KK	A	C	B								C	B											
32	16	M12×P1.5	18	20	M16×P1.5	25	14	14	55	11	50	36	26	38	76	14	17	30	23	13	16	3/8	25	123	16	40	191	11
40	20	M16×P1.5	25	25	M20×P1.5	30	14	14	65	11	50	36	26	38	76	17	21	30	23	13	16	3/8	25	123	16	45	191	11
50	25	M20×P1.5	30	30	M24×P1.5	35	14	14	75	14	58	42	34	45	88	21	27	30	27	19	20	3/8	31.5	148	20	52	223	14
63	30	M24×P1.5	35	35	M30×P1.5	45	17	17	90	15	58	42	34	63	88	27	32	35	27	19	31.5	1/2	40	149	31.5	63	247	15
80	35	M30×P1.5	45	40	M36×P1.5	55	17	17	110	18	62	46	40	72	98	32	37	35	28	22	31.5	1/2	40	166	31.5	80	273	18
100	40	M36×P1.5	60	56	M48×P1.5	70	20	22	135	20	74	50	40	84	114	37	50	40	30	20	40	3/4	50	184	40	102	308	18
125	56	M48×P1.5	75	70	M64×P2.0	90	22	22	165	24	83	58	48	100	123	50	65	45	38	28	50	3/4	63	213	50	122	358	24
150	65	M60×P2.0	85	85	M76×P2.0	110	22	-	196	28	89	58	48	122	129	62	-	50	38	28	63	3/4	80	223	63	148	395	28
180	80	M72×P2.0	110	100	M95×P2.0	130	-	-	220	33	95	68	58	150	151	-	-	55	40	30	80	1	100	254	80	168	459	33
200	90	M80×P2.0	120	112	M100×P2.0	150	-	-	245	37	100	68	58	170	158	-	-	55	38	30	90	1	125	263	90	190	488	37
224	100	M95×P2.0	130	125	M120×P2.0	170	-	-	292	41	105	68	68	185	161	-	-	60	40	40	100	1 1/4	125	282	100	225	527	40
250	112	M100×P2.0	140	140	M130×P2.0	190	-	-	325	46	105	68	68	185	161	-	-	65	40	40	100	1 1/4	125	287	100	250	537	47

EXTERNAL DIMENSIONS

- HC2-A-CB double acting(dual clevis)



Symbol	Shaft		
	DH	XF	YG
80	10	79	20
85	10	84	20
90	10	89	20
100	12	99	24
112	12	109	24
125	12	124	24
140	12	139	24

Symbol	bore class C			bore class B			D		E	F	H	J	K	L	P	S		W	Y	Z	CB	CD	EE	LF	MR	RR	UB	XC	N
	MM	KK	A	MM	KK	A	C	B								C	B												
32	16	M12×P1.5	18	20	M16×P1.5	25	14	14	55	11	50	36	26	38	76	14	17	30	23	13	25	16	3/8	123	16	40	50	191	11
40	20	M16×P1.5	25	25	M20×P1.5	30	14	14	65	11	50	36	26	38	76	17	21	30	23	13	25	16	3/8	123	16	45	50	191	11
50	25	M20×P1.5	30	30	M24×P1.5	35	14	14	75	14	58	42	34	45	88	21	27	30	27	19	31.5	20	3/8	148	20	52	63.5	223	14
63	30	M24×P1.5	35	35	M30×P1.5	45	17	17	90	15	58	42	34	63	88	27	32	35	27	19	40	31.5	1/2	149	31.5	63	80	247	15
80	35	M30×P1.5	45	40	M36×P1.5	55	17	17	110	18	62	46	40	72	98	32	37	35	28	22	40	31.5	1/2	166	31.5	80	80	273	18
100	40	M36×P1.5	60	56	M48×P1.5	70	20	22	135	20	74	50	40	84	114	37	50	40	30	20	50	40	3/4	184	40	102	100	308	18
125	56	M48×P1.5	75	70	M64×P2.0	90	22	22	165	24	83	58	48	100	123	50	65	45	38	28	63	50	3/4	213	50	122	126	358	24
150	65	M60×P2.0	85	85	M76×P2.0	110	22	-	196	28	89	58	48	122	129	62	-	50	38	28	80	63	3/4	223	63	148	160	395	28
180	80	M72×P2.0	110	100	M95×P2.0	130	-	-	220	33	95	68	58	150	151	-	-	55	40	30	100	80	1	254	80	168	200	459	33
200	90	M80×P2.0	120	112	M100×P2.0	150	-	-	245	37	100	68	58	170	158	-	-	55	38	30	125	90	1	263	90	190	225	488	37
224	100	M95×P2.0	130	125	M120×P2.0	170	-	-	292	41	105	68	68	185	161	-	-	60	40	40	125	100	1 1/4	282	100	225	251	527	40
250	112	M100×P2.0	140	140	M130×P2.0	190	-	-	325	46	105	68	68	185	161	-	-	65	40	40	125	100	1 1/4	287	100	250	251	537	47

Tie-rod Hydraulic Cylinder

Mold Hydraulic Cylinders

Swivel & Clamp Hydraulic Cylinders

Booster Cylinders & Unclamping cylinders

ISO Specifications Cylinders

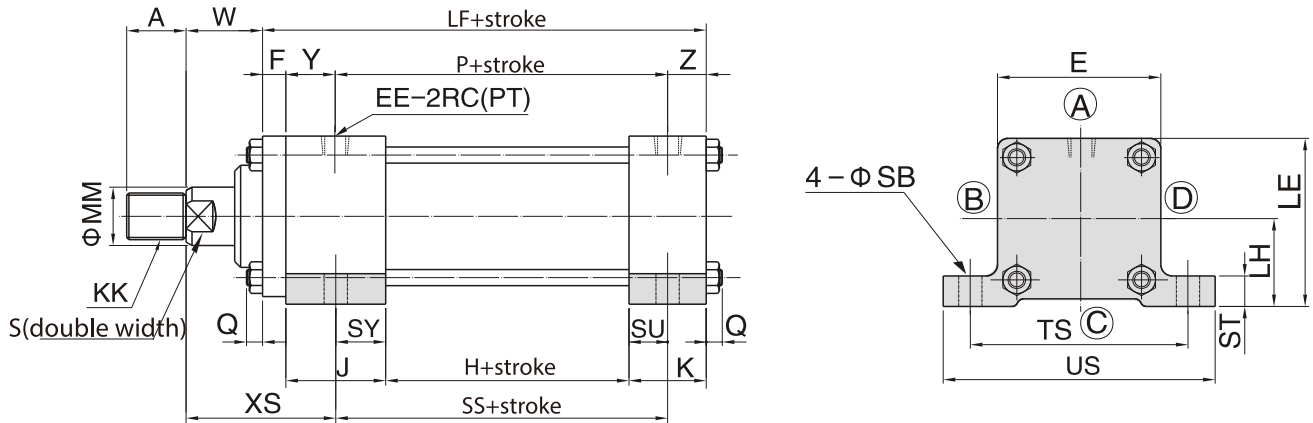
Round Hydraulic Cylinders

Specific Hydraulic Cylinders

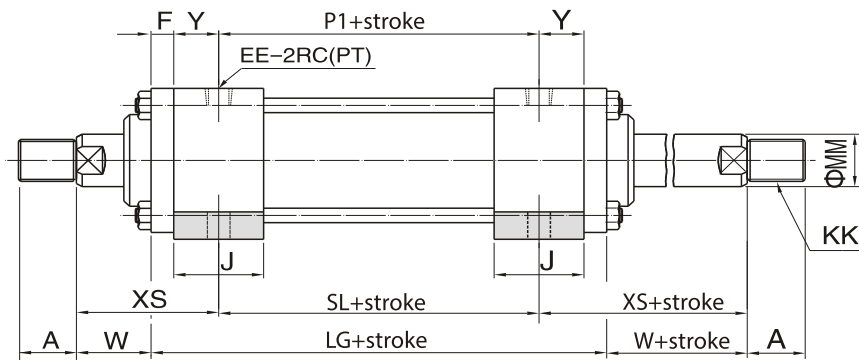
Systems & Fittings

EXTERNAL DIMENSIONS

- HC2-A-LA double acting (foot flange)



- HC2-C-LA double rods (foot flange)

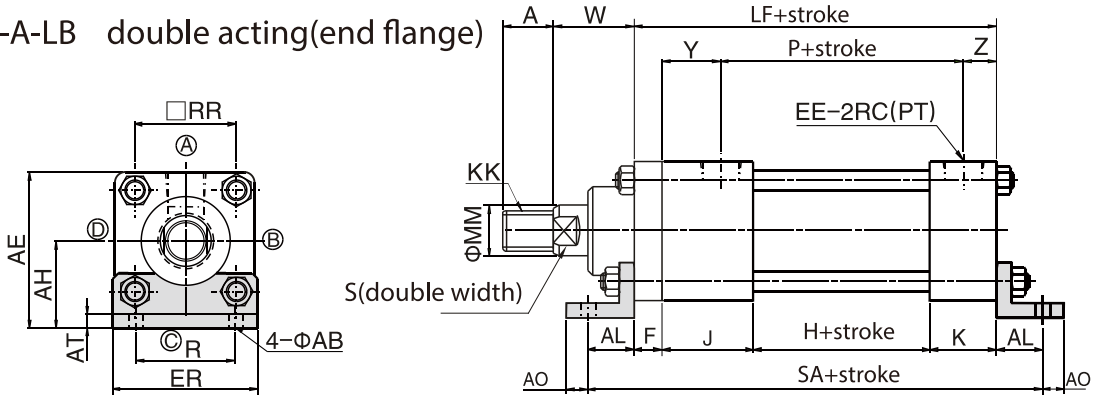


Symbol Bore	bore class C			bore class B			E	F	H	J	K	P	P1	Q	S	
	MM	KK	A	MM	KK	A									C	B
32	16	M12×P1.5	18	20	M16×P1.5	25	55	11	50	36	26	76	76	10	14	17
40	20	M16×P1.5	25	25	M20×P1.5	30	65	11	50	36	26	76	76	10	17	21
50	25	M20×P1.5	30	30	M24×P1.5	35	75	14	58	42	34	88	88	10	21	27
63	30	M24×P1.5	35	35	M30×P1.5	45	90	15	58	42	34	88	88	12	27	32
80	35	M30×P1.5	45	40	M36×P1.5	55	110	18	62	46	40	98	98	16	32	37
100	40	M36×P1.5	60	56	M48×P1.5	70	135	20	74	50	40	114	114	17	37	50
125	56	M48×P1.5	75	70	M64×P2.0	90	165	24	83	58	48	123	124	20	50	65
150	65	M60×P2.0	85	85	M76×P2.0	110	196	28	89	58	48	129	132	24	62	-
180	80	M72×P2.0	110	100	M95×P2.0	130	220	33	95	68	58	151	149	26	-	-
200	90	M80×P2.0	120	112	M100×P2.0	150	245	37	100	68	58	158	156	28	-	-
224	100	M95×P2.0	130	125	M120×P2.0	170	292	41	105	68	68	161	161	35	-	-
250	112	M100×P2.0	140	140	M130×P2.0	190	325	46	105	68	68	161	161	39	-	-

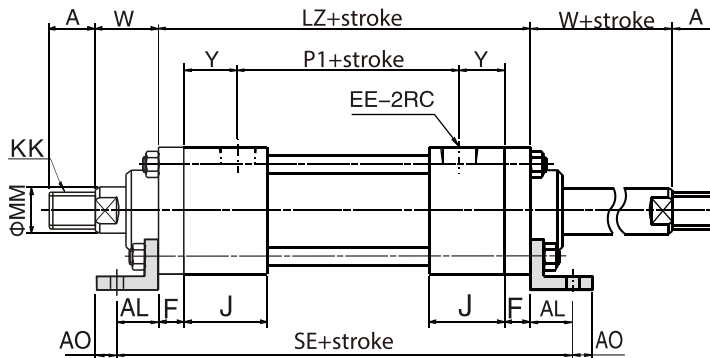
Symbol Bore	Y	Z	EE	LE	LF	LG	LH	SB	SL	SS	ST	SU	SY	TS	US	W	XS
32	23	13	3/8	62.5	123	144	35	11	86	81	14	13	18	88	109	30	59
40	23	13	3/8	70	123	144	37.5	11	86	81	14	13	18	95	118	30	59
50	27	19	3/8	82.5	148	170	45	14	100	96	17	17	21	115	145	30	65
63	27	19	1/2	95	149	172	50	18	100	96	19	17	21	132	165	35	71
80	28	22	1/2	115	166	190	60	18	108	105	25	20	23	155	190	35	76
100	30	20	3/4	138.5	184	214	71	22	124	119	27	20	25	190	230	40	85
125	38	28	3/4	167.5	213	247	85	26	141	136	32	24	29	224	272	45	98
150	38	28	3/4	204	223	261	106	30	147	142	37	24	29	270	320	50	107
180	40	30	1	235	254	297	125	33	163	158	47	29	34	315	375	55	122
200	38	30	1	262.5	263	310	140	36	168	163	52	29	34	355	425	55	126
224	40	40	1 1/4	296	282	323	150	42	173	168	52	29	34	395	475	60	135
250	40	40	1 1/4	332.5	287	333	170	45	173	168	57	29	34	425	515	65	145

EXTERNAL DIMENSIONS

- HC2-A-LB double acting(end flange)



- HC2-C-LB double rods(end flange)



Symbol Bore	bore class C			bore class B			ER	F	H	J	K	P	P1	R	S		W
	MM	KK	A	MM	KK	A									C	B	
32	16	M12×P1.5	18	20	M16×P1.5	25	55	11	50	36	26	76	76	35	14	17	30
40	20	M16×P1.5	25	25	M20×P1.5	30	65	11	50	36	26	76	76	45	17	21	30
50	25	M20×P1.5	30	30	M24×P1.5	35	75	14	58	42	34	88	88	50	21	27	30
63	30	M24×P1.5	35	35	M30×P1.5	45	90	15	58	42	34	88	88	58	27	32	35
80	35	M30×P1.5	45	40	M36×P1.5	55	110	18	62	46	40	98	98	78	32	37	35
100	40	M36×P1.5	60	56	M48×P1.5	70	135	20	74	50	40	114	114	96	37	50	40
125	56	M48×P1.5	75	70	M64×P2.0	90	165	24	83	58	48	123	123	120	50	65	45
150	65	M60×P2.0	85	85	M76×P2.0	110	196	28	89	58	48	129	132	146	62	-	50
180	80	M72×P2.0	110	100	M95×P2.0	130	235	33	95	68	58	151	149	180	-	-	55
200	90	M80×P2.0	120	112	M100×P2.0	150	262	37	100	68	58	158	156	200	-	-	55
224	100	M95×P2.0	130	125	M120×P2.0	170	310	41	105	68	68	161	161	222	-	-	60
250	112	M100×P2.0	140	140	M130×P2.0	190	335	46	105	68	68	161	161	250	-	-	65

Symbol Bore	Y	Z	AB	AE	AH	AL	AO	AT	RR	EE	LF	LZ	SA	SE
32	23	13	11	67.5	40	32	13	6	40	3/8	123	144	187	208
40	23	13	11	75.5	43	32	13	6	45	3/8	123	144	187	208
50	27	19	14	87.5	50	35	15	6	52	3/8	148	170	218	240
63	27	19	18	105	60	42	18	8	63	1/2	149	172	233	256
80	28	22	18	127	72	50	20	9	80	1/2	166	190	266	290
100	30	20	22	152.5	85	55	20	12	102	3/4	184	214	294	324
125	38	28	26	187.5	105	66	29	13	122	3/4	213	247	345	379
150	38	28	30	221	123	75	30	18	148	3/4	223	261	373	411
180	40	30	33	258	148	85	40	18	168	1	254	297	424	467
200	38	30	36	287.5	165	98	40	25	190	1	263	310	459	506
224	40	40	42	331	185	115	45	30	225	1 1/4	282	323	512	553
250	40	40	45	370.5	208	130	50	35	250	1 1/4	287	333	547	593

Tie-rod Hydraulic Cylinder

Mold Hydraulic Cylinders

Swivel & Clamp Hydraulic Cylinders

Booster Cylinders & Unclamping cylinders

ISO Specifications Cylinders

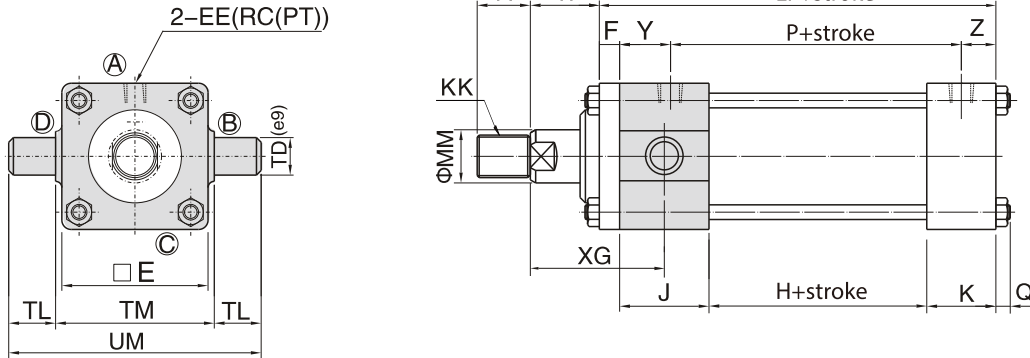
Round Hydraulic Cylinders

Specific Hydraulic Cylinders

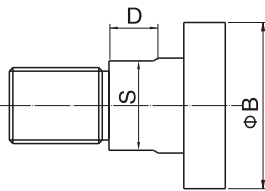
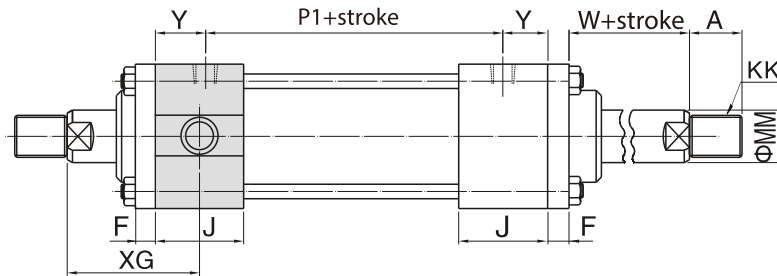
Systems & Fittings

EXTERNAL DIMENSIONS

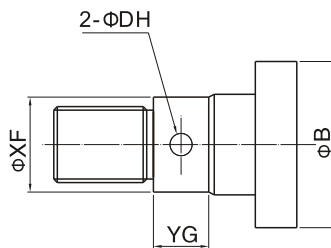
- HC2-A-TA double acting(rod trunnion)



- HC2-C-TA double rods(rod trunnion)



bore < 80mm



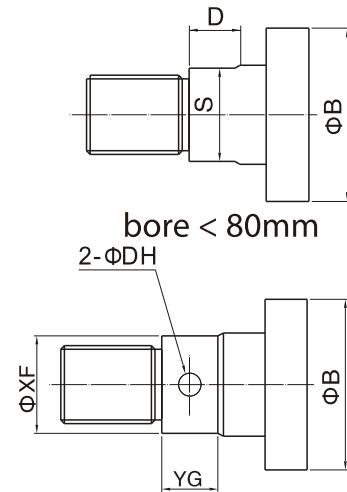
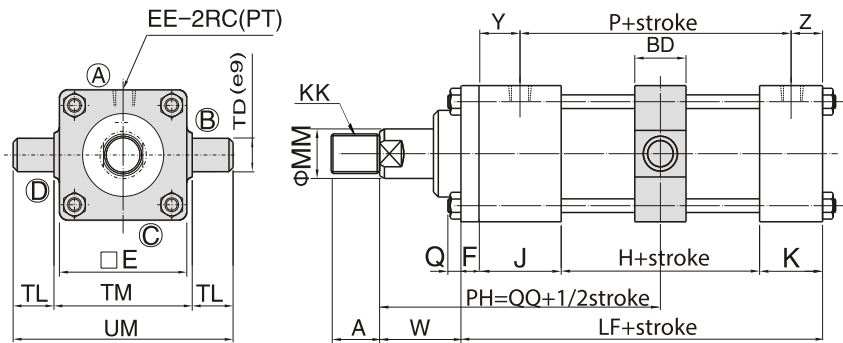
bore ≥ 80mm

symbol shaft	DH	XF	YG
80	10	79	20
85	10	84	20
90	10	89	20
100	12	99	24
112	12	109	24
125	12	124	24
140	12	139	24

Symbol Bore	bore class C			bore class B			D		E	F	H	J	K	P	P1	Q	S		W	Y	Z	EE	LF	TD	TL	TM	UM	XG
	MM	KK	A	MM	KK	A	C	B									C	B										
32	16	M12×P1.5	18	20	M16×P1.5	25	14	14	55	11	50	36	26	76	76	10	14	17	30	23	13	3/8	123	20	20	58 ⁰ _{-0.3}	98	59
40	20	M16×P1.5	25	25	M20×P1.5	30	14	14	65	11	50	36	26	76	76	10	17	21	30	23	13	3/8	123	20	20	69 ⁰ _{-0.3}	109	59
50	25	M20×P1.5	30	30	M24×P1.5	35	14	14	75	14	58	42	34	88	88	10	21	27	30	27	19	3/8	148	25	25	85 ⁰ _{-0.35}	135	65
63	30	M24×P1.5	35	35	M30×P1.5	45	17	17	90	15	58	42	34	88	88	12	27	32	35	27	19	1/2	149	31.5	31.5	98 ⁰ _{-0.35}	161	71
80	35	M30×P1.5	45	40	M36×P1.5	55	17	17	110	18	62	46	40	98	98	16	32	37	35	28	22	1/2	166	31.5	31.5	118 ⁰ _{-0.35}	181	76
100	40	M36×P1.5	60	56	M48×P1.5	70	20	22	135	20	74	50	40	114	114	17	37	50	40	30	20	3/4	184	40	40	145 ⁰ _{-0.40}	225	85
125	56	M48×P1.5	75	70	M64×P2.0	90	22	22	165	24	83	58	48	123	123	20	50	65	45	38	28	3/4	213	50	50	175 ⁰ _{-0.40}	275	98
150	65	M60×P2.0	85	85	M76×P2.0	110	22	-	196	28	89	58	48	129	132	24	62	-	50	38	28	3/4	223	50	50	206 ⁰ _{-0.46}	306	107

EXTERNAL DIMENSIONS

- HC2-A-TC double acting(mid trunnion)



Tie-rod Hydraulic Cylinder

Mold Hydraulic Cylinders

Swivel & Clamp Hydraulic Cylinders

Booster Cylinders & Unclamping cylinders

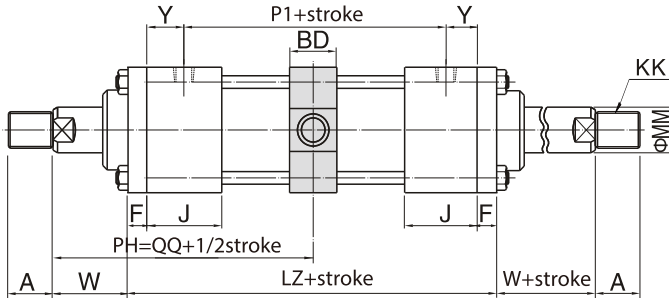
ISO Specifications Cylinders

Round Hydraulic Cylinders

Specific Hydraulic Cylinders

Systems & Fittings

- HC2-C-TC double rods(mid trunnion)



symbol		DH	XF	YG
shaft	80	10	79	20
	85	10	84	20
	90	10	89	20
	100	12	99	24
	112	12	109	24
	125	12	124	24
	140	12	139	24

Symbol Bore	bore class C			bore class B			D		E	F	H	J	K	P	P1
	MM	KK	A	MM	KK	A	C	B							
32	16	M12 x P1.5	18	20	M16 x P1.5	25	14	14	55	11	50	36	26	76	76
40	20	M16 x P1.5	25	25	M20 x P1.5	30	14	14	65	11	50	36	26	76	76
50	25	M20 x P1.5	30	30	M24 x P1.5	35	14	14	75	14	58	42	34	88	88
63	30	M24 x P1.5	35	35	M30 x P1.5	45	17	17	90	15	58	42	34	88	88
80	35	M30 x P1.5	45	40	M36 x P1.5	55	17	17	110	18	62	46	40	98	98
100	40	M36 x P1.5	60	56	M48 x P1.5	70	20	22	135	20	74	50	40	114	114
125	56	M48 x P1.5	75	70	M64 x P2.0	90	22	22	165	24	83	58	48	123	123
150	65	M60 x P2.0	85	85	M76 x P2.0	110	22	-	196	28	89	58	48	129	132
180	80	M72 x P2.0	110	100	M95 x P2.0	130	-	-	220	33	95	68	58	151	149
200	90	M80 x P2.0	120	112	M100 x P2.0	150	-	-	245	37	100	68	58	158	156
224	100	M95 x P2.0	130	125	M120 x P2.0	170	-	-	292	41	105	68	68	161	161
250	112	M100 x P2.0	140	140	M130 x P2.0	190	-	-	325	46	105	68	68	161	161

Symbol Bore	Q	S		W	Y	Z	BD	EE	LF	LZ	QQ	TD	TL	TM	UM
		C	B												
32	10	14	17	30	23	13	28	3/8	123	144	102	20	20	58 ⁰ _{-0.3}	98
40	10	17	21	30	23	13	28	3/8	123	144	102	20	20	69 ⁰ _{-0.3}	109
50	10	21	27	30	27	19	33	3/8	148	170	115	25	25	85 ⁰ _{-0.35}	135
63	12	27	32	35	27	19	43	1/2	149	172	121	31.5	31.5	98 ⁰ _{-0.35}	161
80	16	32	37	35	28	22	43	1/2	166	190	130	31.5	31.5	118 ⁰ _{-0.35}	181
100	17	37	50	40	30	20	53	3/4	184	214	147	40	40	145 ⁰ _{-0.40}	225
125	20	50	65	45	38	28	58	3/4	213	247	168.5	50	50	175 ⁰ _{-0.40}	275
150	24	62	-	50	38	28	78	3/4	223	261	180.5	63	63	206 ⁰ _{-0.46}	332
180	26	-	-	55	40	30	98	1	254	297	203.5	80	80	243 ⁰ _{-0.46}	403
200	28	-	-	55	38	30	108	1	263	310	210	90	90	272 ⁰ _{-0.52}	452
224	35	-	-	60	40	40	117	1 1/4	282	323	221.5	100	100	308 ⁰ _{-0.52}	508
250	39	-	-	65	40	40	117	1 1/4	287	333	231.5	100	100	335 ⁰ _{-0.57}	535