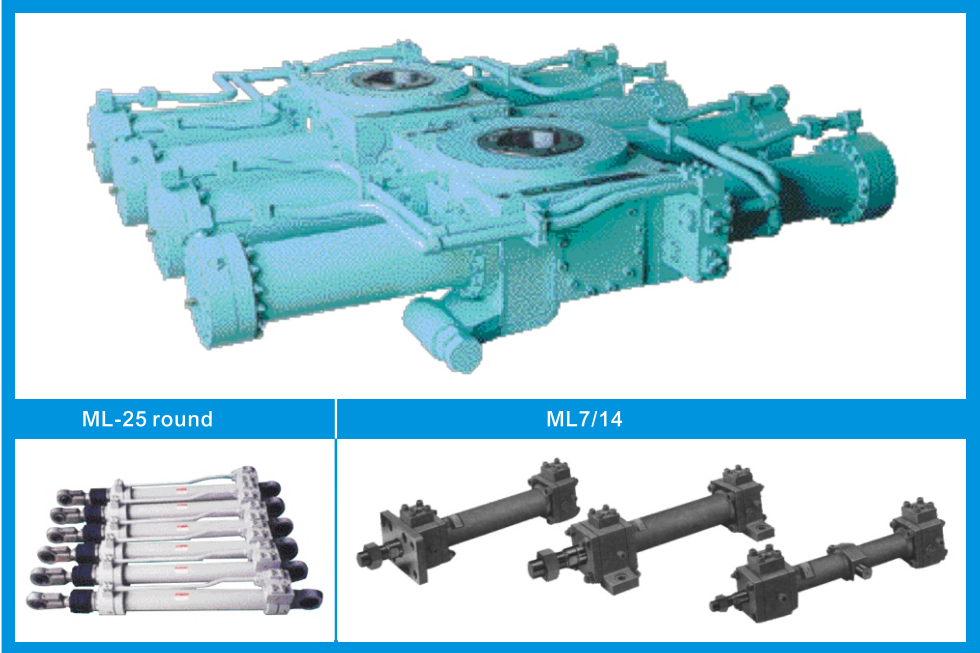


# 12 : MILL TYPE cylinders

**tüv** ISO-9001 : 2000 quality certified

- ML25 meets ISO-6022 & DIN-24333 working pressure 250kgf/cm<sup>2</sup>
- ML7/14 meets JIS-JOHS110 working pressure 70/140kgf/cm<sup>2</sup>



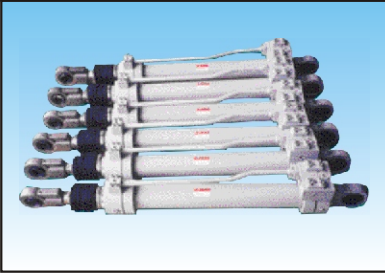
ML-25 round

ML7/14

## ■■■ Index ■■■

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ML25



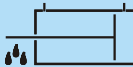
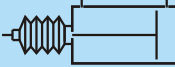
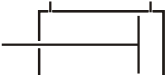
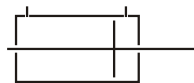
Features

- ML25 round cylinders meet ISO-6022 or DIN 24333 spec.
- Two different rod sizes can be chosen
- Suitable for mill industry

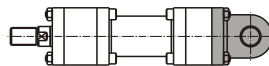
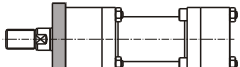
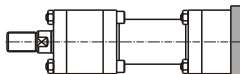
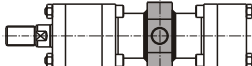
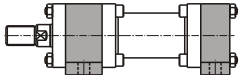
Theoretical force

bore(mm)		50	63	80	100	125	140	160	180	200	250	320		
pressed piston area (cm <sup>2</sup> )	push	19.6	31.2	50.2	78.5	122.7	153.9	201	254.3	314	490.6	803.8		
	pull	rod bore	C	11.6	18.6	30.6	47.3	72.4	90.3	122.5	159.4	191.3	289.7	489.8
B			9.5	15.3	25.6	40	59.1	75.4	106	131.7	160.1	236.3	423.9	
output force (kg)	working pressure 50 kg/cm <sup>2</sup>	push	980	1560	2510	3925	6135	7695	10050	12715	15700	24530	40190	
		rod bore	C	580	930	1530	2365	3620	4515	6125	7970	9565	14485	24490
			B	475	765	1280	2000	2955	3770	5300	6585	8005	11815	21195
	working pressure 100 kg/cm <sup>2</sup>	push	1960	3120	5020	7850	12270	15390	20100	25430	31400	49060	80380	
		rod bore	C	1160	1860	3060	4730	7240	9030	12250	15940	19130	28970	48980
			B	950	1530	2560	4000	5910	7540	10600	13170	16010	23630	42390
	working pressure 150 kg/cm <sup>2</sup>	push	2940	4680	7530	11775	18405	23085	30150	38145	47100	73590	120570	
		rod bore	C	1740	2790	4590	7095	10860	13545	18375	23910	28695	43455	73470
			B	1425	2295	3840	6000	8865	11310	15900	19755	24015	35445	63585
	working pressure 200 kg/cm <sup>2</sup>	push	3920	6240	10040	15700	24540	30780	40200	50860	62800	98120	160760	
		rod bore	C	2320	3720	6120	9460	14480	18060	24500	31880	38260	57940	97960
			B	1900	3060	5120	8000	11820	15080	21200	26340	32020	47260	84780
	working pressure 250 kg/cm <sup>2</sup>	push	4900	7800	12550	19625	30675	38475	50250	63575	78500	122650	200950	
		rod bore	C	2900	4650	7650	11825	18100	22575	30625	39850	47825	72425	122450
			B	2375	3825	6400	10000	14775	18850	26500	32925	40025	59075	105975

Type

type	symbol	drawing	with bellow	heat proof	bore(mm)
					
double acting	ML25-A		ML 25 - A J	ML 25 - A H	50.63.80.100 125.140.160 180.200.250 320
double rod	ML25-C		ML 25 - C J	ML 25 - C H	

Installation

symbol	ISO	name	drawing	type		bore (mm)
				single rod	double rod	
CA	MP3(bushing) MP5(ball bearing)	clevis		●	✗	50.63.80
FA	MF3	rod flange		●	●	
FB	MF4	head flange		●	✗	140.160 180.200
TC	MT4	intermediate trunnion		●	●	250.320
LA	MS2	foot		●	●	

Order form

ML25 A - J - C - H - CA - 80 × 250 - B - PR...CE - L - RC  
 1 2 3 4 5 6 7 8 9 10 11

ML25 : MILL TYPE cylinders ( ISO-6022 , DIN-24333 )

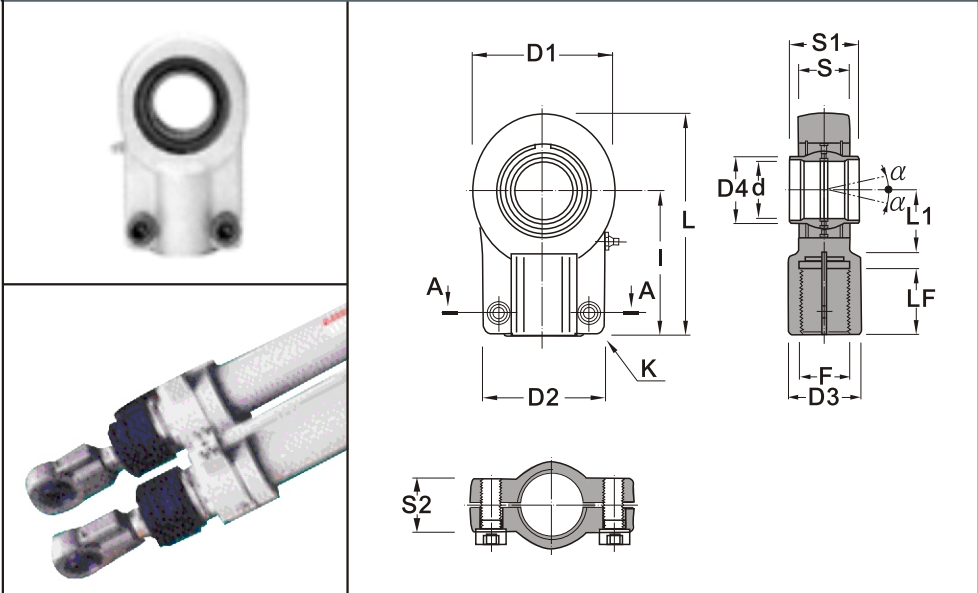
working pressure:250kg/cm<sup>2</sup> ( bar )

①	type	(1)A : double acting (2)C : double rods																										
②	options	(1)J : with heat/erosion proof (2)H : with bellow																										
③	rod size	(1)C : small (2)B : large																										
④	rod treatment	(1)space : S45C+Cr plating (2)H : SCM440+anench and temper (3)N : S45C+Ni plating + Cr plating																										
⑤	mounting type	(1)CAA : clevis with ball bearing(MP5) CAB : clevis with bushing(MP3) (2)FA : rod flange (3)FB : head flange (4)TC : intermediate trunnion (5)LA : foot																										
⑥	bore(mm)	50、63、80、100、125、140、160、180、200、250、320																										
⑦	stroke(mm)	based on customer's need																										
⑧	cushion	(1)space : no cushion (2)B : cushions on both ends (3)R : cushion on rod cover (4)H : cushion on head cover <table border="1"> <tr> <td>■ note</td> <td>bore(mm)</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> <td>125</td> <td>140</td> <td>160</td> <td>180</td> <td>200</td> <td>250</td> <td>320</td> </tr> <tr> <td></td> <td>cushion length</td> <td>20</td> <td>25</td> <td>30</td> <td>35</td> <td>50</td> <td>55</td> <td>65</td> <td>70</td> <td>90</td> <td>100</td> <td></td> </tr> </table>	■ note	bore(mm)	50	63	80	100	125	140	160	180	200	250	320		cushion length	20	25	30	35	50	55	65	70	90	100	
■ note	bore(mm)	50	63	80	100	125	140	160	180	200	250	320																
	cushion length	20	25	30	35	50	55	65	70	90	100																	
⑨	connectors	(1)space : no need (2)PR...CE ball joint (meet ISO-6982 or DIN-24338A)																										
⑩	seals	(1)space : standard (2)low friction (use PTFE with 15m/s)																										
⑪	port position	(1)RC : taper(BSP.TR) (2)G : straight(BSP.F)(ISO 228/1) (3)M : straight(ISO 6149-1)																										

Ball joints at rod end

PR....CE

PR....CE ball joint (meet ISO-6982 or DIN-24338A)



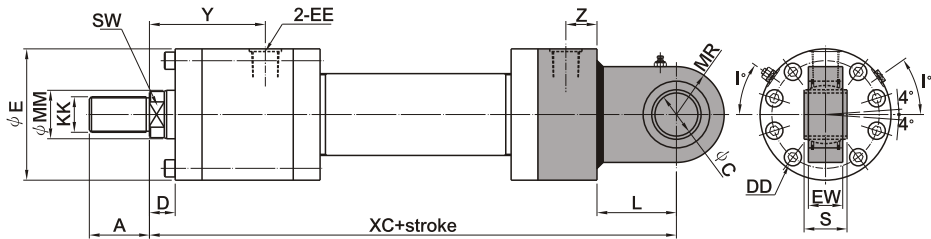
type	bore	F	d	S <sub>1</sub>	α	l	L	D1	D2	D3	D4	S	S2	L1	LF
PR32CE	50	M27×P2	32	32	4°	80	119	71	66	38	38	28	22	32	37
PR40CE	63	M33×P2	40	40	4°	97	146	90	80	47	46	33	26	41	46
PR50CE	80	M42×P2	50	50	4°	120	180	109	96	58	57	41	32	50	57
PR63CE	100	M48×P2	63	63	4°	140	212	132	114	70	71.5	53	38	62	64
PR80CE	125	M64×P3	80	80	4°	180	271	169	148	90	91	67	48	78	86
PR90CE	140	M72×P3	90	90	4°	195	296	185	160	100	99	72	52	85	91
PR100CE	160	M80×P3	100	100	4°	210	323	211	178	110	113	85	62	98	96
PR110CE	180	M90×P3	110	110	4°	235	364	235	190	125	124	88	62	105	106
PR125CE	200	M100×P3	125	125	4°	260	406	264	200	135	138	103	72	120	113
PR160CE	250	M125×P4	160	160	4°	310	488	326	250	165	177	130	82	150	126
PR200CE	320	M160×P4	200	200	4°	390	620	418	320	215	221	162	102	195	161

ML25 MILL TYPE external dimensions

CAA

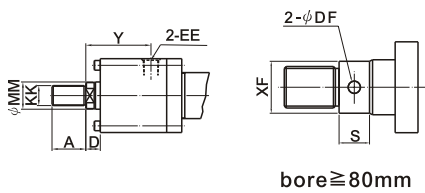
● bore :  $\phi 50\sim 100$ (CAA)(MP5)

● MP5(ball bearing)

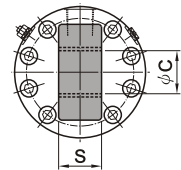


● bore :  $\phi 125\sim 320$ (CAB)(MP3)

● MP3(bushing)



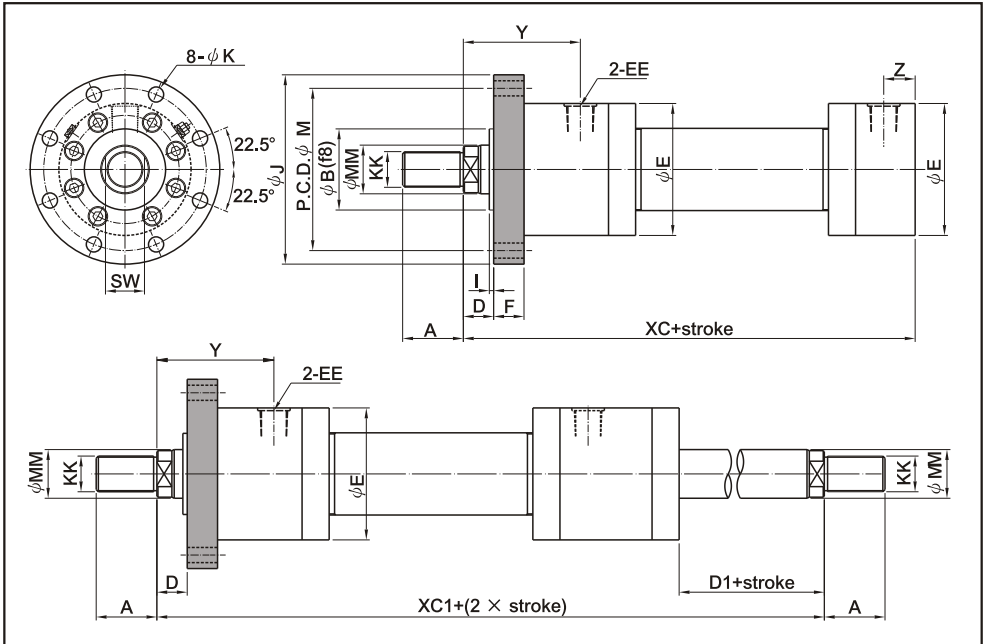
Symbol bore	DF	XF	S
80	$\phi 10$	78	20
90	$\phi 10$	88	20
100	$\phi 10$	98	20
110	$\phi 12$	108	20
125	$\phi 12$	123	24
140	$\phi 12$	138	24
160	$\phi 12$	158	24
200	$\phi 14$	198	24



Symbol bore	bore C class		bore B class		A	C	D	DD	E	EE(thread)			I	L	S	SW		Y	Z	EW	MR	XC
	MM	KK	MM	KK						RC	G	M				C	B					
50	32	M27×P2	36	M27×P2	36	32	18	M10	108	1/2	M22×P1.5	40°	65	32	27	32	95	20	28	35	305	
63	40	M33×P2	45	M33×P2	45	40	21	M10	122	3/4	M27×P2.0		78	40	36	39	105	25	33	44.5	348	
80	50	M42×P2	56	M42×P2	56	50	24	M12	142	1	M33×P2.0		95	50	46	50	122	26	41	54	395	
100	63	M48×P2	70	M48×P2	63	63	27	M16	172	1 1/4	M42×P2.0	45°	107	63	55	64	135	30	53	66	442	
125	80	M64×P3	90	M64×P3	85	80	31	M16	215				155	90	-	-	181	36	72	92.5	580	
140	90	M72×P3	100	M72×P3	90	90	31	M20	255				157	100	-	-	190	40	85	105	617	
160	100	M80×P3	110	M80×P3	95	100	35	M20	275	1 1/2	M48×P2.0	90°	190	110	-	-	205	45	88	117.5	690	
180	110	M90×P3	125	M90×P3	105	110	40	M24	315				216	125	-	-	225	45	103	131	756	
200	125	M100×P3	140	M100×P3	112	125	40	M24	330				263	160	-	-	260	55	130	163	903	
250	160	M125×P4	180	M125×P4	125	160	42	M30	412	2	M60×P2.0	90°	330	200	-	-	310	90	162	209	1080	
320	200	M160×P4	220	M160×P4	160	180	48	M30	500													

ML25 MILL TYPE external dimensions

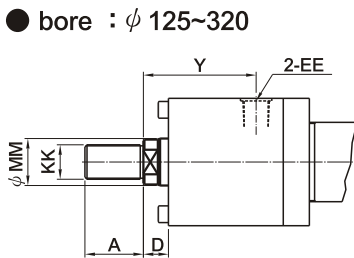
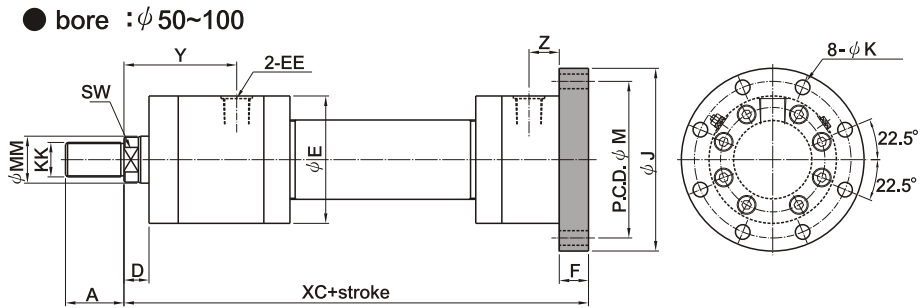
FA



Symbol bore	bore C class		bore B class		A	B	D	E	EE(thread)			F	I	J	K	M	SW		Y	Z	XC	D <sub>1</sub>	XC1
	MM	KK	MM	KK					RC	G	M						C	B					
50	32	M27×P2	36	M27×P2	36	63	22	108	1/2	M22×P1.5	25	4	155	14	132	27	32	95	20	240	18	315	
63	40	M33×P2	45	M33×P2	45	75	25	122	3/4	M27×P2.0	28		175	14	150	36	39	105	25	270	21	350	
80	50	M42×P2	56	M42×P2	56	90	28	142			1	M33×P2.0	32	210	18	180	46	50	122	25	300	24	396
100	63	M48×P2	70	M48×P2	63	110	32	172	1/4	M42×P2.0			36	250	22	212	55	64	135	30	335	27	440
125	80	M64×P3	90	M64×P3	85	132	36	215			5	40	40	290	22	250	-	-	165	35	390	31	520
140	90	M72×P3	100	M72×P3	90	145	36	255	8	56			40	340	26	300	-	-	181	36	425	31	570
160	100	M80×P3	110	M80×P3	95	160	40	275			8	56	45	360	26	315	-	-	190	40	460	35	610
180	110	M90×P3	125	M90×P3	105	185	45	315	8	56			50	420	33	365	-	-	205	45	500	40	660
200	125	M100×P3	140	M100×P3	112	200	45	330			8	56	56	440	33	385	-	-	225	45	540	40	720
250	160	M125×P4	180	M125×P4	125	250	50	412	11/2	M48×P2.0			63	8	540	39	475	-	-	260	55	640	42
320	200	M160×P4	220	M160×P4	160	320	56	500	2	M60×P2.0	80	8	675	45	600	-	-	310	90	750	48	970	

ML25 MILL TYPE external dimensions

FB



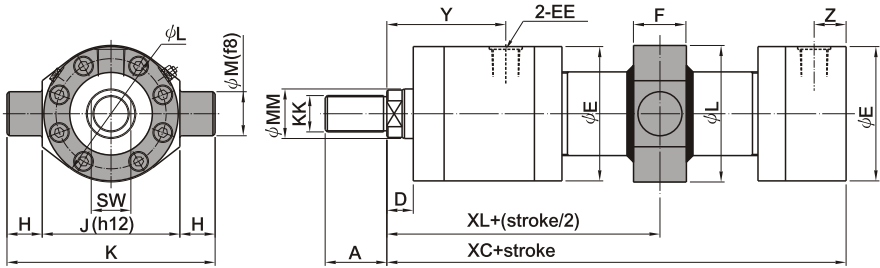
Symbol bore	bore C class		bore B class		A	D	E	EE(thread)			F	SW		J	K	M	Y	Z	XC
	MM	KK	MM	KK				RC	G	M		C	B						
50	32	M27×P2	36	M27×P2	36	18	108	1/2		M22×P1.5	25	27	32	155	14	132	95	20	265
63	40	M33×P2	45	M33×P2	45	21	122	3/4		M27×P2.0	28	36	39	175	14	150	105	25	298
80	50	M42×P2	56	M42×P2	56	24	142				32	46	50	210	18	180	122	26	332
100	63	M48×P2	70	M48×P2	63	27	172	1		M33×P2.0	36	55	64	250	22	212	135	30	371
125	80	M64×P3	90	M64×P3	85	31	215				40	-	-	290	22	250	165	35	430
140	90	M72×P3	100	M72×P3	90	31	255	11/4		M42×P2.0	40	-	-	340	26	300	181	36	465
160	100	M80×P3	110	M80×P3	95	35	275				45	-	-	360	26	315	190	40	505
180	110	M90×P3	125	M90×P3	105	40	315				50	-	-	420	33	365	205	45	550
200	125	M100×P3	140	M100×P3	112	40	330				56	-	-	440	33	385	225	45	596
250	160	M125×P4	180	M125×P4	125	42	412	11/2		M48×P2.0	63	-	-	540	39	475	260	55	703
320	200	M160×P4	220	M160×P4	160	48	500	2		M60×P2.0	80	-	-	675	45	600	310	90	830



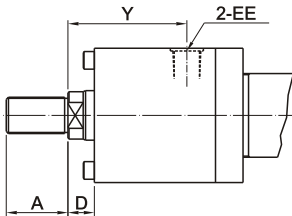
ML25 MILL TYPE external dimensions

TC

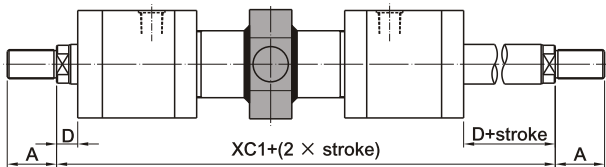
● bore :  $\phi 50\sim 100$



● bore :  $\phi 125\sim 320$



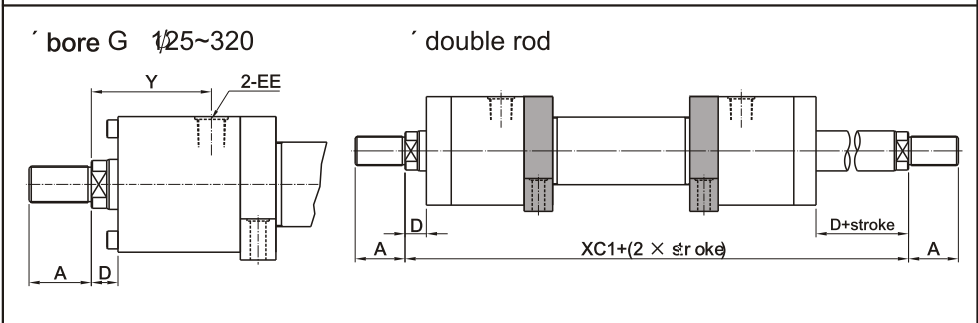
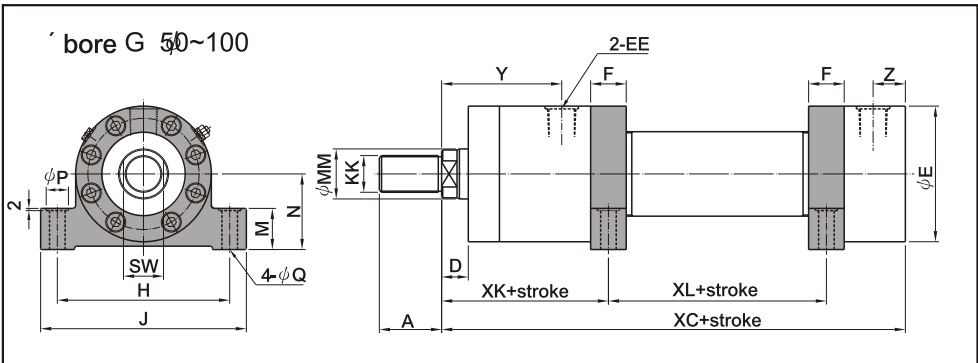
● double rod



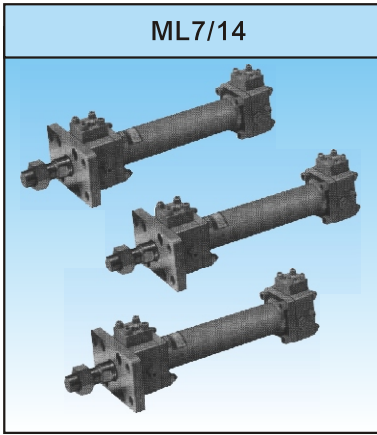
bore	bore C class		bore B class		A	D	E	EE(thread)			F	H	J	K	L	M	SW		Y	Z	XC	XC1	XL
	MM	KK	MM	KK				RC	G	M							C	B					
50	32	M27×P2	36	M27×P2	36	18	108	1/2		M22×P1.5	38	25	112	162	110	32	27	32	95	20	240	315	157.5
63	40	M33×P2	45	M33×P2	45	21	122	3/4		M27×P2.0	48	32	125	189	124	40	36	39	105	25	270	350	175
80	50	M42×P2	56	M42×P2	56	24	142				58	40	150	230	148	50	46	50	122	26	300	396	198
100	63	M48×P2	70	M48×P2	63	27	172	1		M33×P2.0	73	50	180	280	175	63	55	64	135	30	335	440	220
125	80	M64×P3	90	M64×P3	85	31	215				88	63	224	350	215	80	-	-	165	35	390	520	260
140	90	M72×P3	100	M72×P3	90	31	255	1 1/4		M42×P2.0	96	70	265	405	260	90	-	-	181	36	425	570	285
160	100	M80×P3	110	M80×P3	95	35	275				108	80	280	440	275	100	-	-	190	40	460	610	305
180	110	M90×P3	125	M90×P3	105	40	315				118	90	320	500	315	110	-	-	205	45	500	660	330
200	125	M100×P3	140	M100×P3	112	40	330				133	100	335	535	330	125	-	-	225	45	540	720	360
250	160	M125×P4	180	M125×P4	125	42	412	1 1/2		M48×P2.0	180	125	425	675	412	160	-	-	260	55	640	845	422.5
320	200	M160×P4	220	M160×P4	160	48	500	2		M60×P2.0	220	160	530	850	500	200	-	-	310	90	750	970	485

ML25 MILL TYPE external dimensions

LA



Symbol bore	bore C class		bore B class		A	D	E	EE(thread)			F	H	J	M	N	P	Q	SW		Y	Z	XC	XC1	XK	XL
	MM	KK	MM	KK				RC	G	M								C	B						
50	32	M27×P2	36	M27×P2	36	18	108	1/2	M22×P1.5	30	135	160	32	60	18	11	27	32	95	20	240	315	130	55	
63	40	M33×P2	45	M33×P2	45	21	122	3/4	M27×P2.0	35	155	185	37	68	20	14	36	39	105	25	270	350	147.5	55	
80	50	M42×P2	56	M42×P2	56	24	142			1	M33×P2.0	45	185	255	42	80	26	18	46	50	122	26	300	396	170.5
100	63	M48×P2	70	M48×P2	63	27	172	60	270			325	62	115	40	26	-	-	165	35	390	520	230	60	
125	80	M64×P3	90	M64×P3	85	31	215																		
140	90	M72×P3	100	M72×P3	90	31	255	11/4	M42×P2.0	75	325	390	77	135	48	33	-	-	181	35	425	570	254.5	61	
160	100	M80×P3	110	M80×P3	95	35	275			75	340	405	77	145	48	33	-	-	190	40	460	610	265.5	79	
180	110	M90×P3	125	M90×P3	105	40	315			85	390	465	87	165	60	40	-	-	205	45	500	660	287.5	85	
200	125	M100×P3	140	M100×P3	112	40	330			90	405	480	87	170	60	40	-	-	225	45	540	720	315	90	
250	160	M125×P4	180	M125×P4	125	42	412			11/2	M48×P2.0	100	520	620	112	215	76	52	-	-	260	55	640	845	360
320	200	M160×P4	220	M160×P4	160	48	500	2	M60×P2.0	120	620	740	152	260	112	62	-	-	310	90	750	970	425	120	



- ML7/14 square cylinders meet the spec. Which was defined by japan fluid power association.
- Two different rods can be choosen.
- Suitable for mill industry


Theoretical force

bore(mm)		40	50	63	80	100	125	140	160	180	200	224	250		
pressed piston area (cm <sup>2</sup> )	push	12.6	19.6	31.2	50.3	78.5	122.7	154	201	254	314	394	491		
	pull	rod bore	C	8.7	13.5	21.3	34.4	53.9	83.1	103.8	137.4	175.5	191.3	271.3	337
			B	6.4	9.7	15.3	25.7	38.9	59.1	75.5	102.5	131.3	160	193	237
output force (kg)	working pressure 70 kg/cm <sup>2</sup>	push	882	1372	2184	3521	5495	8589	10780	14070	17780	21980	27580	34370	
		rod bore	C	609	945	1491	2408	3773	5817	7266	9618	12285	13391	18991	23590
			B	448	679	1071	1799	2723	4137	5285	7175	9191	11200	13510	16590
	working pressure 140 kg/cm <sup>2</sup>	push	1764	2744	4368	7042	10990	17178	21560	28140	35560	43960	55160	68740	
		rod bore	C	1218	1890	2982	4816	7546	11634	14532	19236	24570	26782	37982	47180
			B	896	1358	2142	3598	5446	8274	10570	14350	18382	22400	27020	33180

Features

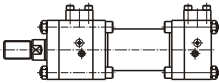
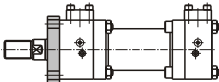
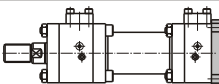
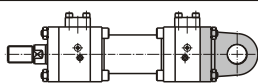
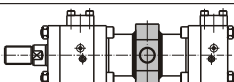
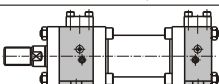
model		ML 7	ML 14	
working pressure		70kgf/cm <sup>2</sup> (7MPa)	140kgf/cm <sup>2</sup> (14MPa)	
test pressure		105kgf/cm <sup>2</sup> (10.5MPa)	210kgf/cm <sup>2</sup> (21MPa)	
temperature	regular	-10°~+80°C		
	vitonor FMP seal	-10°~+200°C		
stroke(mm)	stroke	tolerance	stroke	tolerance
	≤100	+0.8 0	631~1000	+1.4 0
	101~250	+1.0 0	1001~1600	+1.6 0
	251~630	+1.25 0	1601~2000	+1.8 0
cushion		1.note1.with a load, if the cylinder's speed is over 500mm/sec, cushion devices should be considered. 2.If the cylinder's speed is much higher than 500mm/sec, reducing valves or regulators should be added. cushion selection : N:(or space)no cushion · R : cushion on rod cover H : cushion on head cover · B : cushion on both covers		
oil & seal	mineraloil (eg. : R68)	PU ●	NBR ●	FPM ●
	water solution	×	●	●
	soluble	×	●	●
	phosphate ester	×	×	●

Type

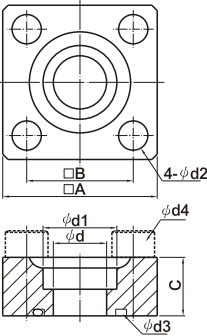
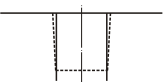
type	symbol	drawing	with bellow	heat proof	bore(mm)
double acting	ML7-A		ML7-AJ	ML7-AH	40.50.63.80
	ML14-A		ML14-AJ	ML14-AH	100.125.140 160.180.200 224.250

MILL TYPE cylinders

Installation

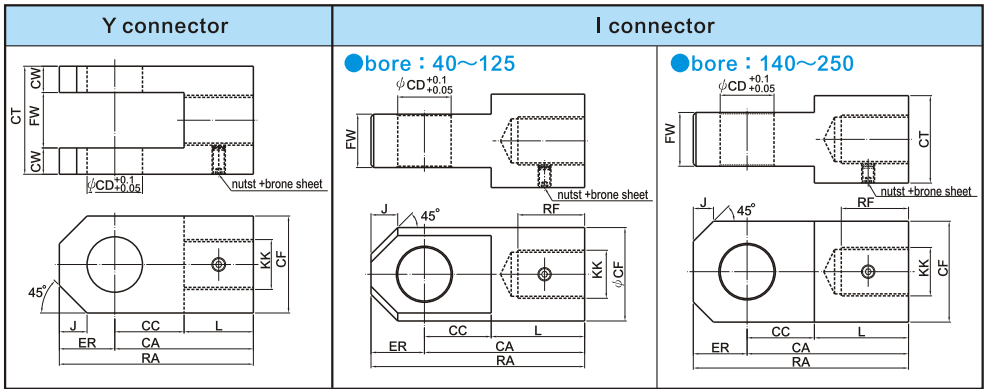
symbol	name	drawing	bore
SD	basic		40
FA	rod flange		50 63 80
FB	head flange		100 125 140
CA	clevis		160 180 200
TC	intermediate trunnion		224 250
LA	foot		

Inlet port

		bore												
		name	40	50	63	80	100	125	140	160	180	200	224	250
flange (F)	symbol	JIS	SSA15		SSA20		SSA25		SSA32		SSA40		SSA50	
	A	54		58		68		76		92		106		
	B	36		40		48		56		65		73		
	C	22		22		28		28		36		36		
	d	16		20		25		31.5		37.5		47.5		
	d <sub>1</sub>	22.2		27.7		34.5		43.2		49.1		61.1		
	d <sub>2</sub>	11		11		13		13		18		18		
	d <sub>3</sub>	G25		G30		G35		G40		G50		G60		
	d <sub>4</sub>	M10		M10		M12		M12		M16		M16		
	thread (RC)		RC1/2		RC3/4		RC1		RC1-1/4		RC1-1/2		RC2	

Mounting type

Y. I connector



Yconnector

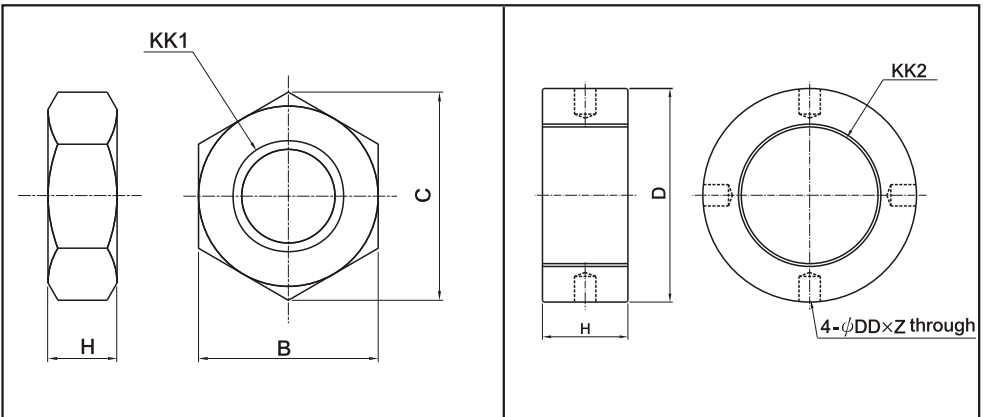
symbol bore	CA		CC	CD	CF	CT	CW	ER	FW	J	KK		L		RA	
	B	C									B	C	B	C	B	C
$\phi 40$	65	60	30	$\phi 20H10$	40	70	16	25	$38_{+0.1}^{+1.0}$	8	M24×1.5	M20×1.5	35	30	90	85
$\phi 50$	80	70	35	$\phi 25H10$	50	75	17.5	30	$40_{+0.1}^{+1.0}$	15	M30×1.5	M24×1.5	45	35	110	100
$\phi 63$	100	85	40	$\phi 31.5H10$	70	85	20	35	$45_{+0.1}^{+1.0}$	15	M39×1.5	M30×1.5	60	45	135	120
$\phi 80$	125	110	50	$\phi 40H10$	80	105	25	40	$55_{+0.1}^{+2.0}$	15	M48×1.5	M39×1.5	75	60	165	150
$\phi 100$	160	145	65	$\phi 50H10$	100	130	30	50	$70_{+0.1}^{+2.0}$	20	M64×2.0	M48×1.5	95	80	210	195
$\phi 125$	200	175	80	$\phi 63H10$	130	170	40	65	$90_{+0.1}^{+2.0}$	25	M80×2.0	M64×2.0	120	95	265	240
$\phi 140$	230	200	90	$\phi 71H10$	150	170	40	75	$90_{+0.1}^{+2.0}$	30	M95×2.0	M72×2.0	140	110	305	275
$\phi 160$	250	220	100	$\phi 80H10$	160	210	50	80	$110_{+0.1}^{+2.0}$	30	M100×2.0	M80×2.0	150	120	330	300
$\phi 180$	295	255	115	$\phi 90H10$	180	260	62.5	90	$135_{+0.1}^{+3.0}$	40	M120×2.0	M95×2.0	180	140	385	345
$\phi 200$	320	275	125	$\phi 100H10$	200	260	62.5	100	$135_{+0.1}^{+3.0}$	40	M130×2.0	M100×2.0	195	150	420	375
$\phi 224$	365	320	140	$\phi 112H10$	230	290	70	115	$150_{+0.1}^{+3.0}$	50	M150×2.0	M120×2.0	225	180	480	435
$\phi 250$	415	355	160	$\phi 125H10$	250	330	80	125	$170_{+0.1}^{+4.0}$	60	M170×3.0	M130×2.0	255	195	540	480

I connector

symbol bore	CA		CC	CD	CF	CT		ER	FW	J	KK		L		RA		RF	
	B	C				B	C				B	C	B	C	B	C	B	C
$\phi 40$	70	70	28	$\phi 20H10$	$\phi 49$	-	-	25	$31.5_{-0.4}^{-0.1}$	10	M24×1.5	M20×1.5	42	42	95	95	37	32
$\phi 50$	95	95	35	$\phi 25H10$	$\phi 49$	-	-	30	$35.5_{-0.4}^{-0.1}$	15	M30×1.5	M24×1.5	60	60	125	125	47	37
$\phi 63$	115	115	43	$\phi 31.5H10$	$\phi 62$	-	-	35	$40_{-0.4}^{-0.1}$	15	M39×1.5	M30×1.5	72	72	150	150	62	47
$\phi 80$	145	145	55	$\phi 40H10$	$\phi 79$	-	-	40	$50_{-0.4}^{-0.1}$	20	M48×1.5	M39×1.5	90	90	185	185	77	62
$\phi 100$	180	180	65	$\phi 50H10$	$\phi 100$	-	-	50	$63_{-0.4}^{-0.1}$	30	M64×2.0	M48×1.5	115	115	230	230	97	77
$\phi 125$	220	195	80	$\phi 63H10$	120	110	90	70	$80_{-0.6}^{-0.1}$	30	M80×2.0	M64×2.0	140	115	290	265	125	100
$\phi 140$	255	220	90	$\phi 71H10$	140	130	100	80	$80_{-0.6}^{-0.1}$	30	M95×2.0	M72×2.0	165	130	335	300	145	115
$\phi 160$	275	245	100	$\phi 80H10$	160	140	110	90	$100_{-0.6}^{-0.1}$	40	M100×2.0	M80×2.0	175	145	365	335	155	125
$\phi 180$	325	285	115	$\phi 90H10$	180	170	130	105	$125_{-0.6}^{-0.1}$	40	M120×2.0	M95×2.0	210	170	430	390	185	145
$\phi 200$	355	310	125	$\phi 100H10$	200	180	140	115	$125_{-0.6}^{-0.1}$	40	M130×2.0	M100×2.0	230	185	470	425	200	155
$\phi 224$	405	360	140	$\phi 112H10$	220	210	170	125	$140_{-0.6}^{-0.1}$	50	M150×2.0	M120×2.0	265	220	530	485	230	185
$\phi 250$	455	395	160	$\phi 125H10$	250	240	180	140	$160_{-0.6}^{-0.1}$	60	M170×3.0	M130×2.0	295	235	595	535	260	200

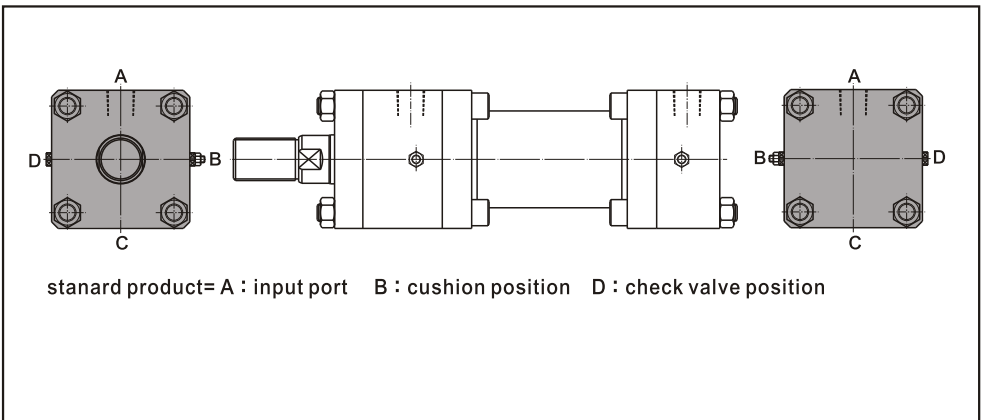
MILL TYPE cylinders

Rod nuts



KK1	B	C	H	KK1	B	C	H	KK2	D	DD	H	Z
M20×1.5	30	34.6	16	M64×2.0	95	110	51	M100×2.0	150	15	80	18
M24×1.5	36	41.6	19	M72×2.0	105	121	64	M120×2.0	180	15	96	18
M30×1.5	46	53.1	24	M80×2.0	115	133	64	M130×2.0	200	20	104	25
M39×1.5	60	69.3	31	M95×2.0	135	156	76	M150×2.0	230	20	120	25
M48×1.5	75	86.5	38					M170×2.0	260	20	136	25

Port and cushion positions



Order form

ML7/14 - 
 J - 
 C - 
 Cr - 
 SD - 
 63 × 
 200 - 
 B - 
 A - 
 B - 
 F - 
 PU - 
 Y

ML7/14 : MILL TYPE square cylinders

①	working pressure (kgf/cm <sup>2</sup> )	(1)ML7 : working pressure 70kgf/cm <sup>2</sup> (2)ML14 : working pressure 140kgf/cm <sup>2</sup>										
②	options	(1)J : with heat/erosion proof (2)H : with bellow (3)space : no need										
③	rod size	(1)C : small(standard ML7 with C class rod) (2)B : large(standard ML14 with B class rod)										
④	rod treatment	(1)space : S45C+Cr plating (2)H : SCM440+anench and temper (3)N : S45C+Ni plating + Cr plating										
⑤	mounting type	(1)SD (refer to P12.13) (2)FA (3)FB (4)CA (5)TC (6)LA										
⑥	bore(mm)	40,50,63,80,100,125,140,160,180,200,224,250										
⑦	stroke(mm)	based on customer's request										
⑧	cushion	(1)space : no cushion      (2)B : cushions on both ends (3)R : cushion on rod cover    (4)H : cushion on head cover										
		<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="text-align: left;">bore(mm)</td> <td>40,50,63</td> <td>80,100,125,140,160</td> <td>180,200,224</td> <td>250</td> </tr> <tr> <td style="text-align: left;">cushion length</td> <td>20</td> <td>25</td> <td>30</td> <td>35</td> </tr> </table>	bore(mm)	40,50,63	80,100,125,140,160	180,200,224	250	cushion length	20	25	30	35
bore(mm)	40,50,63	80,100,125,140,160	180,200,224	250								
cushion length	20	25	30	35								
⑨	inlet position	A , B , C , D (see P12.15)										
⑩	cushion position	A , B , C , D (see P12.15)										
⑪	port position	(1)F    (2)RC : thread (see P12.13)										
⑫	seal material	(1)PU (2)NBR (3)FPM										
⑬	rod end connectors	(1)Y : Yconnector    (2)I : Iconnector (see P12.14)										

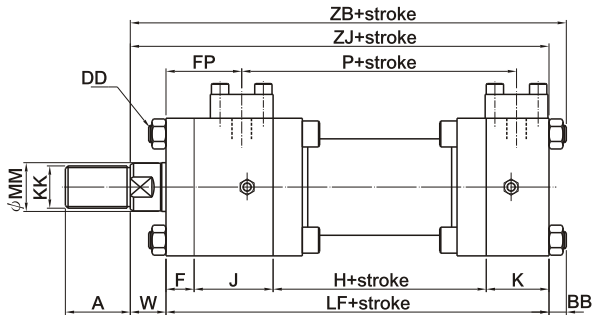
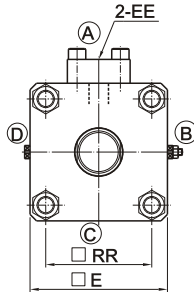
MILL TYPE cylinders



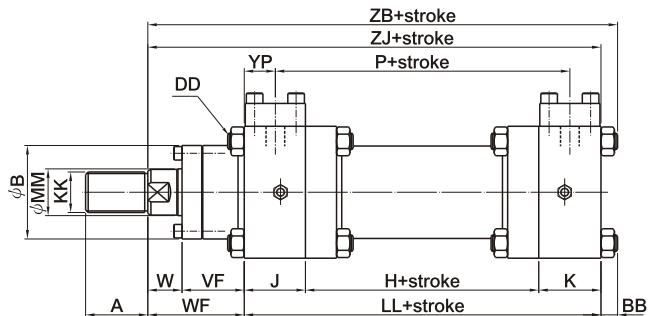
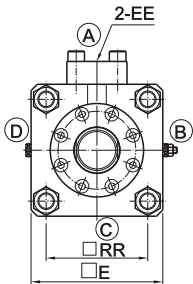
External dimensions

SD

■ bore :  $\phi 40 \sim \phi 140$

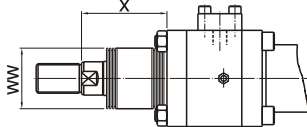


■ bore :  $\phi 160 \sim \phi 250$

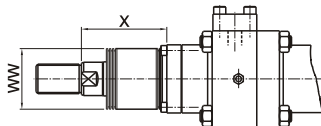


ML7/14-H with bellows

bore :  $\phi 40 \sim \phi 140$

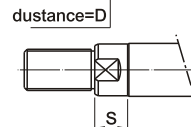
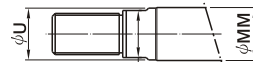


bore :  $\phi 160 \sim \phi 250$

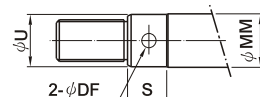


rod end

bore  $\leq \phi 90$



bore  $\leq \phi 100$

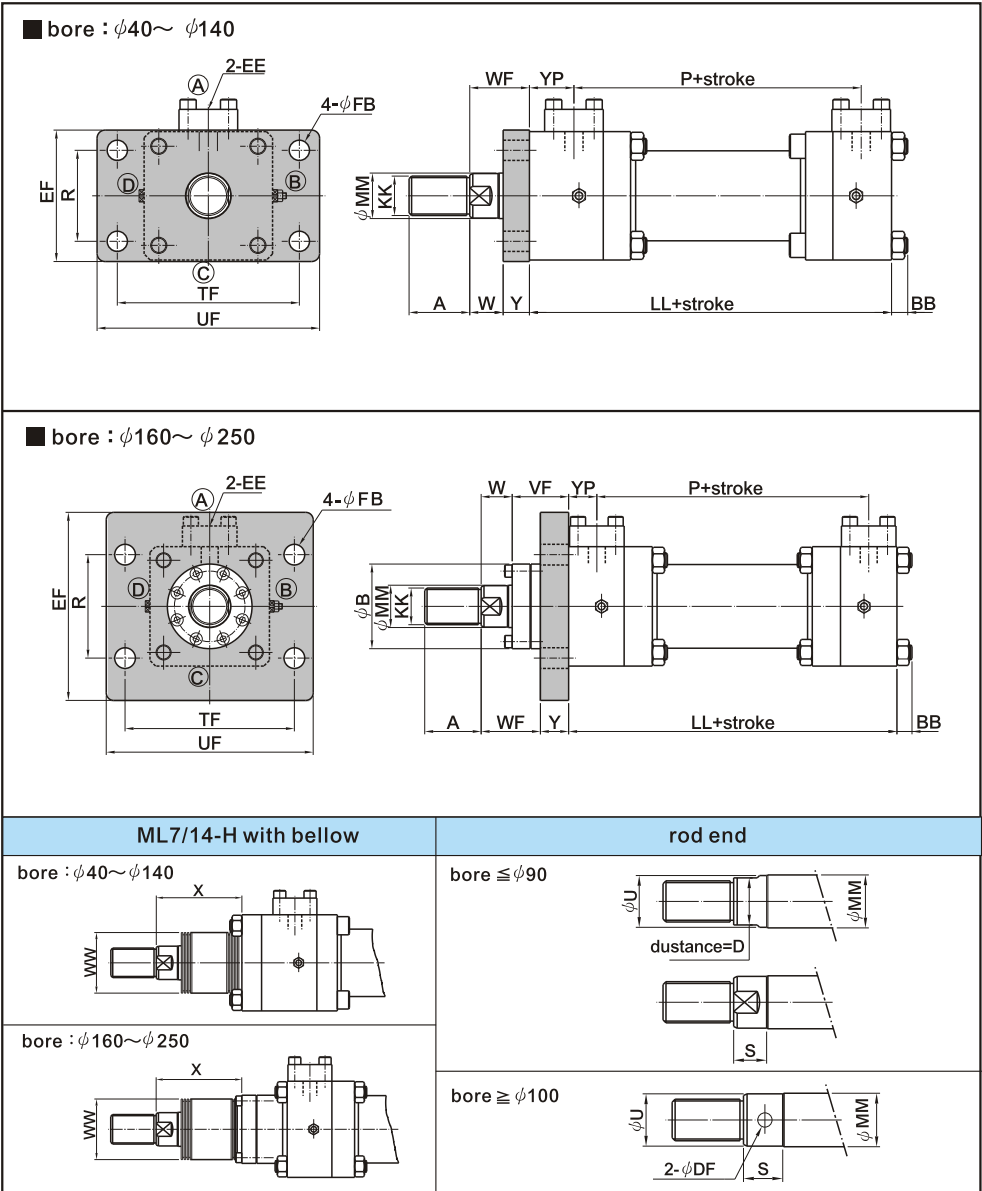


ML7/14 square cylinders

Symbol bore	bore B class									BB	DD		E	
	A	B	D	DF	KK	MM	S	U	WW					
φ 40	55	-	24	-	M24×1.5	φ 28	-	-	φ 63	11	M10×1.5	80		
φ 50	65	-	30	-	M30×1.5	φ 35.5	-	-	φ 71	13	M12×1.75	90		
φ 63	85	-	41	-	M39×1.5	φ 45	25	φ 44	φ 80	14	M14×2.0	110		
φ 80	105	-	50	-	M48×1.5	φ 56	28	φ 55	φ 100	16	M16×2.0	127		
φ 100	140	-	65	-	M64×2.0	φ 71	34	φ 70	φ 125	19	M20×2.5	154		
φ 125	175	-	85	-	M80×2.0	φ 90	39	φ 89	φ 140	22	M24×2.0	188		
φ 140	210	-	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	26	M27×2.0	212		
φ 160	220	φ 191	-	φ 15	M100×2.0	φ 112	30	φ 111	φ 180	28	M30×2.0	238		
φ 180	265	φ 208	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	30	M33×2.0	272		
φ 200	285	φ 229	-	φ 15	M130×2.0	φ 140	33	φ 139	φ 200	33	M36×2.0	298		
φ 224	330	φ 253	-	φ 15	M150×2.0	φ 160	35	φ 159	φ 220	35	M39×2.0	328		
φ 250	375	φ 280	-	φ 15	M170×3.0	φ 180	35	φ 179	φ 240	38	M42×2.0	362		
Symbol bore	bore C class									EE		F	FP	
	A	B	D	DF	KK	MM	S	U	WW	F	RC			
φ 40	45	-	19	-	M20×1.5	φ 22.4	-	-	φ 50	SSA15	1/2	18	47	
φ 50	55	-	24	-	M24×1.5	φ 28	-	-	φ 63	SSA15		18	47	
φ 63	65	-	30	-	M30×1.5	φ 35.5	25	φ 34.5	φ 71	SSA15	3/4	20	61	
φ 80	85	-	41	-	M39×1.5	φ 45	28	φ 44	φ 80	SSA20		26	70	
φ 100	105	-	50	-	M48×1.5	φ 56	34	φ 55	φ 100	SSA20	1	31	87	
φ 125	140	-	65	-	M64×2.0	φ 71	39	φ 70	φ 125	SSA25		36	105	
φ 140	160	-	75	-	M72×2.0	φ 80	40	φ 79	φ 125	SSA25	11/4	36	105	
φ 160	175	φ 162	85	-	M80×2.0	φ 90	30	φ 89	φ 140	SSA25		-	-	
φ 180	210	φ 172	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	SSA32	11/2	-	-	
φ 200	220	φ 191	-	φ 15	M100×2.0	φ 112	33	φ 111	φ 180	SSA40		-	-	
φ 224	265	φ 208	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	SSA40	2	-	-	
φ 250	285	φ 229	-	φ 15	M130×2.0	φ 140	35	φ 139	φ 200	SSA50		-	-	
Symbol bore	H	J	K	LF	LL	P	RR	VF	W	WF	X	YP	ZB	ZJ
	φ 40	64	56	54	192	-	118	60	-	29	-	1/3.5×stroke+42	-	232
φ 50	68	56	54	196	-	122	68	-	29	-	1/3.5×stroke+57	-	238	225
φ 63	87	68	54	229	-	141	80	-	40	-	1/4×stroke+60	-	283	269
φ 80	97	73	58	254	-	155	98	-	33	-	1/4×stroke+53	-	303	287
φ 100	96	85	58	270	-	154	120	-	39	-	1/4×stroke+64	-	328	309
φ 125	106	103	68	313	-	174	144	-	44	-	1/5×stroke+64	-	379	357
φ 140	116	103	68	323	-	184	162	-	49	-	1/5×stroke+69	-	398	372
φ 160	132	74	72	-	278	204	184	92	35	127	1/5×stroke+60	38	433	405
φ 180	142	84	82	-	308	224	214	92	40	132	1/5×stroke+80	43	470	440
φ 200	152	102	102	-	356	254	232	102	38	140	1/5×stroke+78	51	529	496
φ 224	162	102	102	-	366	264	256	112	42	154	1/6×stroke+82	51	555	520
φ 250	172	111	102	-	385	274	286	127	48	175	1/6×stroke+78	60	598	560

External dimensions

FA



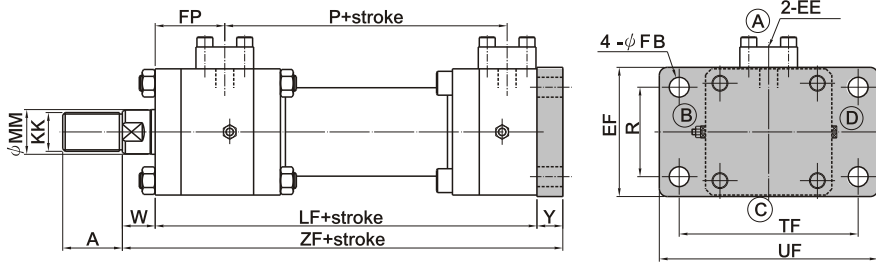
ML7/14 square cylinders

symbol bore	bore B class									BB	EE	
	A	B	D	DF	KK	MM	S	U	WW		F	RC
φ 40	55	-	24	-	M24×1.5	φ 28	-	-	φ 63	11	SSA15	1/2
φ 50	65	-	30	-	M30×1.5	φ 35.5	-	-	φ 71	13	SSA15	
φ 63	85	-	41	-	M39×1.5	φ 45	25	φ 44	φ 80	14	SSA15	
φ 80	105	-	50	-	M48×1.5	φ 56	28	φ 55	φ 100	16	SSA20	3/4
φ 100	140	-	65	-	M64×2.0	φ 71	34	φ 70	φ 125	19	SSA20	
φ 125	175	-	85	-	M80×2.0	φ 90	39	φ 89	φ 140	22	SSA25	1
φ 140	210	-	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	26	SSA25	
φ 160	220	φ 191	-	φ 15	M100×2.0	φ 112	30	φ 111	φ 180	28	SSA25	
φ 180	265	φ 208	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	30	SSA32	11/4
φ 200	285	φ 229	-	φ 15	M130×2.0	φ 140	33	φ 139	φ 200	33	SSA40	11/2
φ 224	330	φ 253	-	φ 15	M150×2.0	φ 160	35	φ 159	φ 220	35	SSA40	
φ 250	375	φ 280	-	φ 15	M170×3.0	φ 180	35	φ 179	φ 240	38	SSA50	
symbol bore	bore C class									EF	FB	LL
	A	B	D	DF	KK	MM	S	U	WW			
φ 40	45	-	19	-	M20×1.5	φ 22.4	-	-	φ 50	85	φ 14	174
φ 50	55	-	24	-	M24×1.5	φ 28	-	-	φ 63	95	φ 16	178
φ 63	65	-	30	-	M30×1.5	φ 35.5	25	φ 34.5	φ 71	110	φ 18	209
φ 80	85	-	41	-	M39×1.5	φ 45	28	φ 44	φ 80	130	φ 20	228
φ 100	105	-	50	-	M48×1.5	φ 56	34	φ 55	φ 100	160	φ 24	239
φ 125	140	-	65	-	M64×2.0	φ 71	39	φ 70	φ 125	200	φ 30	277
φ 140	160	-	75	-	M72×2.0	φ 80	40	φ 79	φ 125	220	φ 33	287
φ 160	175	φ 162	85	-	M80×2.0	φ 90	30	φ 89	φ 140	330	φ 36	278
φ 180	210	φ 172	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	340	φ 39	308
φ 200	220	φ 191	-	φ 15	M100×2.0	φ 112	33	φ 111	φ 180	380	φ 42	356
φ 224	265	φ 208	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	430	φ 48	366
φ 250	285	φ 229	-	φ 15	M130×2.0	φ 140	35	φ 139	φ 200	465	φ 52	385
symbol bore	P	R	TF	UF	VF	W	WF	X	Y	YP		
φ 40	118	55±0.3	125±0.5	155	-	32	47	1/3.5×stroke+45	15	29		
φ 50	122	60±0.3	140±0.5	175	-	27	47	1/3.5×stroke+55	20	29		
φ 63	141	75±0.5	155±0.5	190	-	35	60	1/4×stroke+55	25	41		
φ 80	155	90±0.5	180±0.5	220	-	34	59	1/4×stroke+65	25	44		
φ 100	154	115±0.5	220±0.5	265	-	40	70	1/4×stroke+65	30	56		
φ 125	174	145±0.5	275±0.8	330	-	45	80	1/5×stroke+65	35	69		
φ 140	184	160±0.5	305±0.8	365	-	45	85	1/5×stroke+65	40	69		
φ 160	204	185±0.5	340±0.8	405	92	35	127	1/5×stroke+60	45	38		
φ 180	224	210±0.5	375±0.8	445	92	40	132	1/5×stroke+80	50	43		
φ 200	254	230±0.5	410±0.8	485	102	38	140	1/5×stroke+78	55	51		
φ 224	264	255±0.8	460±0.8	545	112	42	154	1/6×stroke+82	60	51		
φ 250	274	285±0.8	500±0.8	590	127	48	175	1/6×stroke+78	65	60		

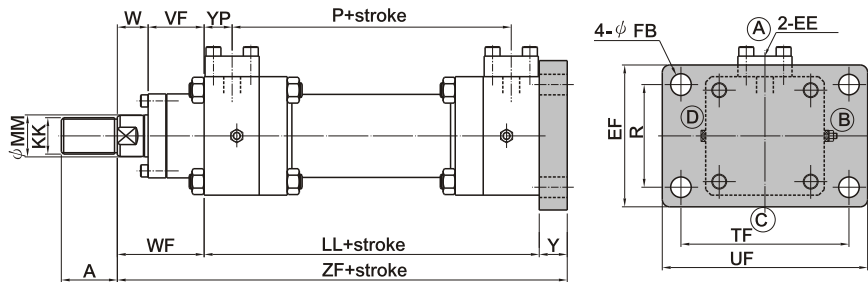
External dimensions

FB

■ bore :  $\phi 40 \sim \phi 140$

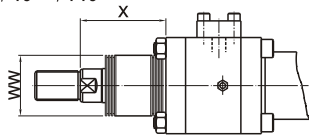


■ bore :  $\phi 160 \sim \phi 250$

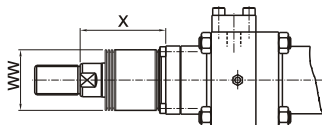


ML7/14-H with bellow

bore :  $\phi 40 \sim \phi 140$

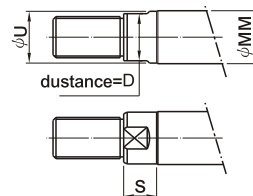


bore :  $\phi 160 \sim \phi 250$

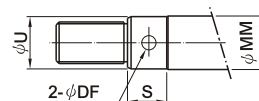


rod end

bore  $\leq \phi 90$



bore  $\leq \phi 100$



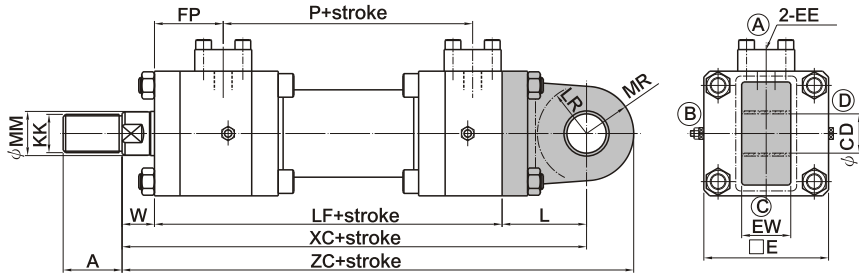
ML7/14 square cylinders

symbol bore	bore B class								EE		EF	FB
	A	D	DF	KK	MM	S	U	WW	F	RC		
φ 40	55	24	-	M24×1.5	φ 28	-	-	φ 63	SSA15	1/2	85	φ 14
φ 50	65	30	-	M30×1.5	φ 35.5	-	-	φ 71	SSA15		95	φ 16
φ 63	85	41	-	M39×1.5	φ 45	25	φ 44	φ 80	SSA15		110	φ 18
φ 80	105	50	-	M48×1.5	φ 56	28	φ 55	φ 100	SSA20	3/4	130	φ 20
φ 100	140	65	-	M64×2.0	φ 71	34	φ 70	φ 125	SSA20		160	φ 24
φ 125	175	85	-	M80×2.0	φ 90	39	φ 89	φ 140	SSA25	1	200	φ 30
φ 140	210	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	SSA25		220	φ 33
φ 160	220	-	φ 15	M100×2.0	φ 112	30	φ 111	φ 180	SSA25		250	φ 36
φ 180	265	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	SSA32	1 1/4	280	φ 39
φ 200	285	-	φ 15	M130×2.0	φ 140	33	φ 139	φ 200	SSA40		305	φ 42
φ 224	330	-	φ 15	M150×2.0	φ 160	35	φ 159	φ 220	SSA40	1 1/2	345	φ 48
φ 250	375	-	φ 15	M170×3.0	φ 180	35	φ 179	φ 240	SSA50		2	380
symbol bore	bore C class								FP	LF	LL	P
	A	D	DF	KK	MM	S	U	WW				
φ 40	45	19	-	M20×1.5	φ 22.4	-	-	φ 50	47	192	-	118
φ 50	55	24	-	M24×1.5	φ 28	-	-	φ 63	47	196	-	122
φ 63	65	30	-	M30×1.5	φ 35.5	25	φ 34.5	φ 71	61	229	-	141
φ 80	85	41	-	M39×1.5	φ 45	28	φ 44	φ 80	70	254	-	155
φ 100	105	50	-	M48×1.5	φ 56	34	φ 55	φ 100	87	270	-	154
φ 125	140	65	-	M64×2.0	φ 71	39	φ 70	φ 125	105	313	-	174
φ 140	160	75	-	M72×2.0	φ 80	40	φ 79	φ 125	105	323	-	184
φ 160	175	85	-	M80×2.0	φ 90	30	φ 89	φ 140	-	-	278	204
φ 180	210	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	-	-	308	224
φ 200	220	-	φ 15	M100×2.0	φ 112	33	φ 111	φ 180	-	-	356	254
φ 224	265	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	-	-	366	264
φ 250	285	-	φ 15	M130×2.0	φ 140	35	φ 139	φ 200	-	-	385	274
symbol bore	R	TF	UF	VF	W	WF	X	Y	YP	ZF		
φ 40	55±0.3	125±0.5	155	-	26	-	1/3.5×stroke+39	15	-	233		
φ 50	60±0.3	140±0.5	175	-	27	-	1/3.5×stroke+55	20	-	243		
φ 63	75±0.5	155±0.5	190	-	45	-	1/4×stroke+65	25	-	299		
φ 80	90±0.5	180±0.5	220	-	34	-	1/4×stroke+55	25	-	313		
φ 100	115±0.5	220±0.5	265	-	39	-	1/4×stroke+64	30	-	339		
φ 125	145±0.5	275±0.8	330	-	44	-	1/5×stroke+64	35	-	392		
φ 140	160±0.5	305±0.8	365	-	49	-	1/5×stroke+69	40	-	412		
φ 160	185±0.5	340±0.8	405	92	41	133	1/5×stroke+66	45	38	456		
φ 180	210±0.5	375±0.8	445	92	46	138	1/5×stroke+86	50	43	496		
φ 200	230±0.5	410±0.8	485	102	42	144	1/5×stroke+82	55	51	555		
φ 224	255±0.8	460±0.8	545	112	46	158	1/6×stroke+86	60	51	584		
φ 250	285±0.8	500±0.8	590	127	61	188	1/6×stroke+91	65	60	638		

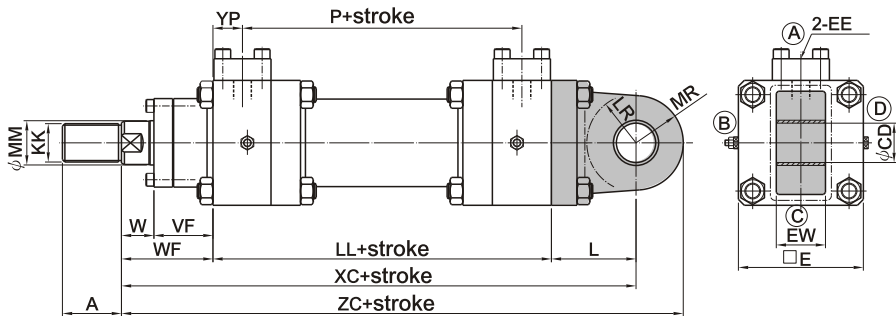
External dimensions

CA

■ bore :  $\phi 40 \sim \phi 140$

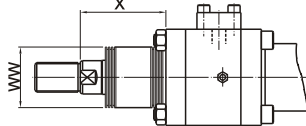


■ bore :  $\phi 160 \sim \phi 250$

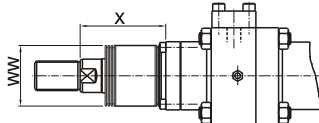


ML7/14-H with bellows

bore :  $\phi 40 \sim \phi 140$

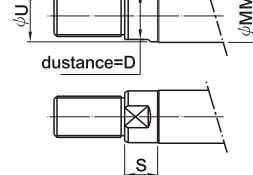


bore :  $\phi 160 \sim \phi 250$

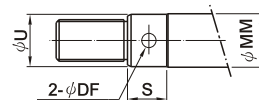


rod end

bore  $\text{III} \phi 90$



bore  $\text{IV} \phi 100$



ML7/14 square cylinders

Symbol bore	bore B class								CD	E	EE		
	A	D	DF	KK	MM	S	U	WW			F	RC	
φ 40	55	24	-	M24×1.5	φ 28	-	-	φ 63	φ 20H10	80	SSA15	1/2	
φ 50	65	30	-	M30×1.5	φ 35.5	-	-	φ 71	φ 25H10	90	SSA15		
φ 63	85	41	-	M39×1.5	φ 45	25	φ 44	φ 80	φ 31.5H10	110	SSA15		
φ 80	105	50	-	M48×1.5	φ 56	28	φ 55	φ 100	φ 40H10	127	SSA20	3/4	
φ 100	140	65	-	M64×2.0	φ 71	34	φ 70	φ 125	φ 50H10	154	SSA20		
φ 125	175	85	-	M80×2.0	φ 90	39	φ 89	φ 140	φ 63H10	188	SSA25	1	
φ 140	210	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	φ 71H10	212	SSA25		
φ 160	220	-	φ 15	M100×2.0	φ 112	30	φ 111	φ 180	φ 80H10	238	SSA25		
φ 180	265	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	φ 90H10	272	SSA32	11/4	
φ 200	285	-	φ 15	M130×2.0	φ 140	33	φ 139	φ 200	φ 100H10	298	SSA40	11/2	
φ 224	330	-	φ 15	M150×2.0	φ 160	35	φ 159	φ 220	φ 112H10	328	SSA40		
φ 250	375	-	φ 15	M170×3.0	φ 180	35	φ 179	φ 240	φ 125H10	362	SSA50	2	
Symbol bore	bore C class								EW	FP	L	LF	LL
	A	D	DF	KK	MM	S	U	WW					
φ 40	45	19	-	M20×1.5	φ 22.4	-	-	φ 50	31.5 <sup>-0.1</sup> <sub>-0.4</sub>	47	56	192	-
φ 50	55	24	-	M24×1.5	φ 28	-	-	φ 63	35.5 <sup>-0.1</sup> <sub>-0.4</sub>	47	66	196	-
φ 63	65	30	-	M30×1.5	φ 35.5	25	φ 34.5	φ 71	40 <sup>-0.1</sup> <sub>-0.4</sub>	61	72	229	-
φ 80	85	41	-	M39×1.5	φ 45	28	φ 44	φ 80	50 <sup>-0.1</sup> <sub>-0.4</sub>	70	86	254	-
φ 100	105	50	-	M48×1.5	φ 56	34	φ 55	φ 100	63 <sup>-0.1</sup> <sub>-0.4</sub>	87	105	270	-
φ 125	140	65	-	M64×2.0	φ 71	39	φ 70	φ 125	80 <sup>-0.1</sup> <sub>-0.6</sub>	105	129	313	-
φ 140	160	75	-	M72×2.0	φ 80	40	φ 79	φ 125	80 <sup>-0.1</sup> <sub>-0.6</sub>	105	147	323	-
φ 160	175	85	-	M80×2.0	φ 90	30	φ 89	φ 140	100 <sup>-0.1</sup> <sub>-0.6</sub>	-	162	-	278
φ 180	210	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	125 <sup>-0.1</sup> <sub>-0.6</sub>	-	183	-	308
φ 200	220	-	φ 15	M100×2.0	φ 112	33	φ 111	φ 180	125 <sup>-0.1</sup> <sub>-0.6</sub>	-	189	-	356
φ 224	265	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	140 <sup>-0.1</sup> <sub>-0.6</sub>	-	214	-	366
φ 250	285	-	φ 15	M130×2.0	φ 140	35	φ 139	φ 200	160	-	240	-	385
Symbol bore	LR	MR	P	VF	W	WF	X		XC	YP	ZC		
φ 40	R30	R24	118	-	29	-	1/3.5×stroke+42		277	-	301		
φ 50	R40	R30	122	-	29	-	1/3.5×stroke+57		291	-	321		
φ 63	R43	R38	141	-	40	-	1/4×stroke+60		341	-	379		
φ 80	R50	R48	155	-	33	-	1/4×stroke+53		373	-	421		
φ 100	R65	R60	154	-	39	-	1/4×stroke+64		414	-	474		
φ 125	R82	R75	174	-	44	-	1/5×stroke+64		486	-	561		
φ 140	R93	R85	184	-	49	-	1/5×stroke+69		519	-	604		
φ 160	R105	R96	204	92	35	127	1/5×stroke+60		567	38	663		
φ 180	R120	R108	224	92	40	132	1/5×stroke+80		623	43	731		
φ 200	R125	R120	254	102	38	140	1/5×stroke+78		685	51	805		
φ 224	R145	R135	264	112	42	154	1/6×stroke+82		734	51	869		
φ 250	R160	R150	274	127	48	175	1/6×stroke+78		800	60	950		

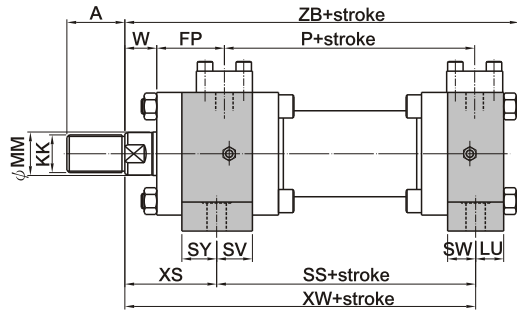
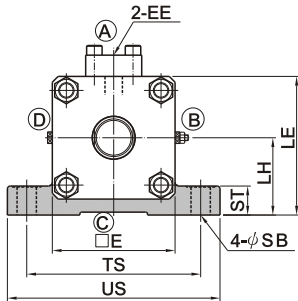
MILL TYPE cylinders



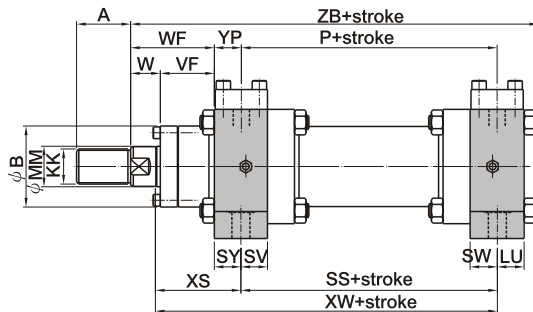
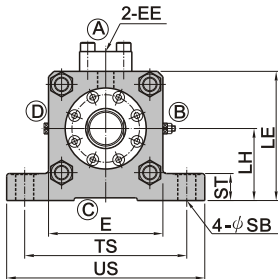
External dimensions

LA

■ bore :  $\phi 40 \sim \phi 140$

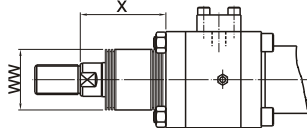


■ bore :  $\phi 160 \sim \phi 250$

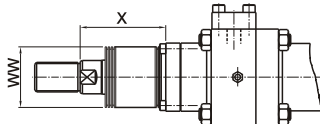


ML7/14-H with bellows

bore :  $\phi 40 \sim \phi 140$

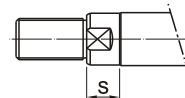
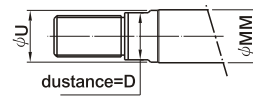


bore :  $\phi 160 \sim \phi 250$

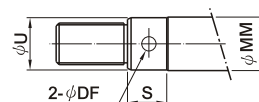


rod end

bore  $\text{III} \phi 90$



bore  $\text{IV} \phi 100$



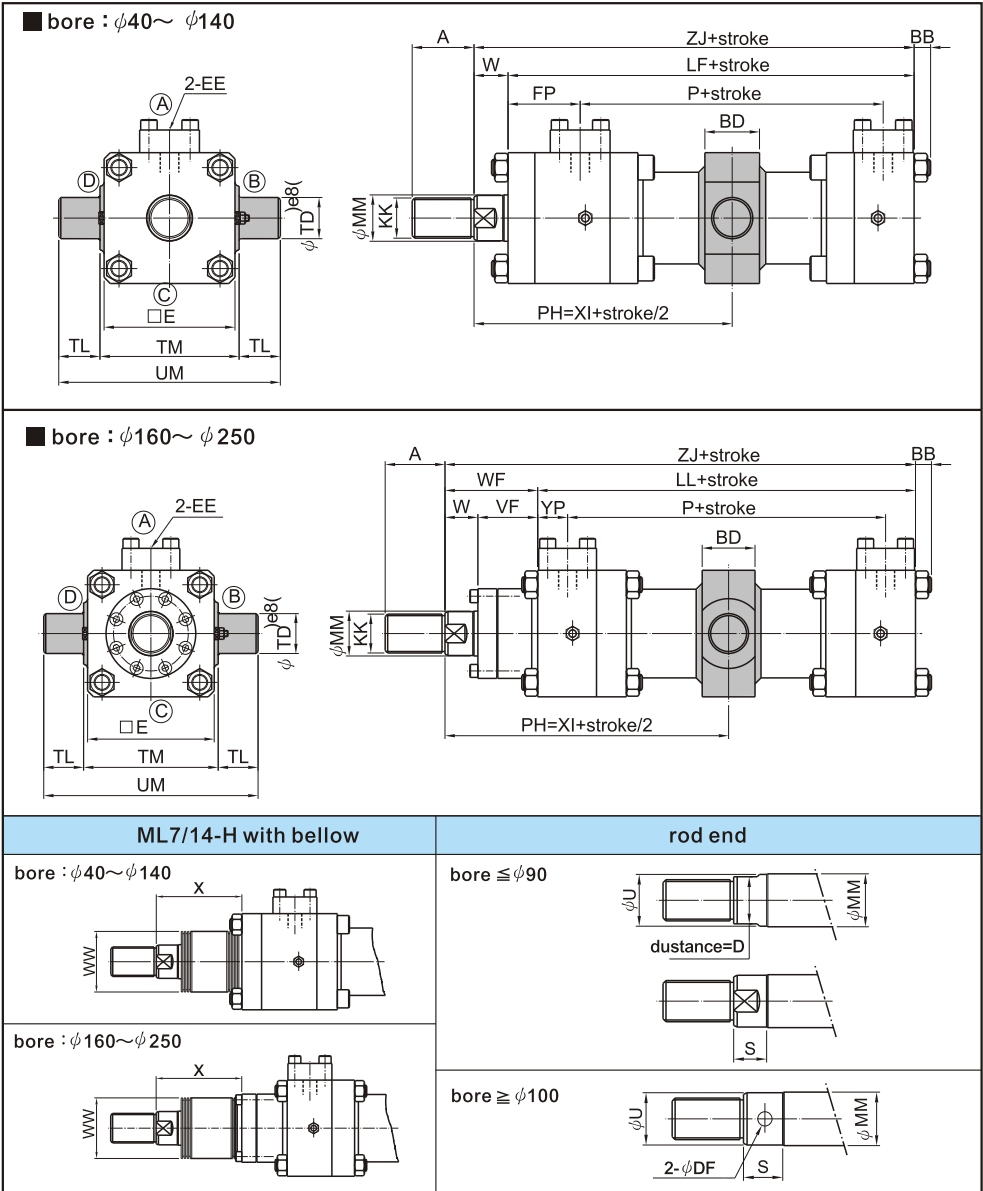
ML7/14 square cylinders

symbol bore	bore B class									E	EE		FP			
	A	D	DF	KK	MM	S	U	WW	F		RC					
φ 40	55	24	-	M24×1.5	φ 28	-	-	φ 63	80	SSA15	1/2	47				
φ 50	65	30	-	M30×1.5	φ 35.5	-	-	φ 71	90	SSA15		47				
φ 63	85	41	-	M39×1.5	φ 45	25	φ 44	φ 80	110	SSA15	3/4	61				
φ 80	105	50	-	M48×1.5	φ 56	28	φ 55	φ 100	127	SSA20		70				
φ 100	140	65	-	M64×2.0	φ 71	34	φ 70	φ 125	154	SSA20	1	87				
φ 125	175	85	-	M80×2.0	φ 90	39	φ 89	φ 140	188	SSA25		105				
φ 140	210	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	212	SSA25	11/4	105				
φ 160	220	-	φ 15	M100×2.0	φ 112	30	φ 111	φ 180	238	SSA25		-				
φ 180	265	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	272	SSA32	11/2	-				
φ 200	285	-	φ 15	M130×2.0	φ 140	33	φ 139	φ 200	298	SSA40		-				
φ 224	330	-	φ 15	M150×2.0	φ 160	35	φ 159	φ 220	328	SSA40	2	-				
φ 250	375	-	φ 15	M170×3.0	φ 180	35	φ 179	φ 240	362	SSA50		-				
symbol bore	bore C class									LE	LH	LU	P			
	A	D	DF	KK	MM	S	U	WW								
φ 40	45	19	-	M20×1.5	φ 22.4	-	-	φ 50	100	60±0.15	26	118				
φ 50	55	24	-	M24×1.5	φ 28	-	-	φ 63	110	65±0.15	30	122				
φ 63	65	30	-	M30×1.5	φ 35.5	25	φ 34.5	φ 71	125	70±0.15	24	141				
φ 80	85	41	-	M39×1.5	φ 45	28	φ 44	φ 80	143.5	80±0.25	27	155				
φ 100	105	50	-	M48×1.5	φ 56	34	φ 55	φ 100	172	95±0.25	29	154				
φ 125	140	65	-	M64×2.0	φ 71	39	φ 70	φ 125	209	115±0.25	32	174				
φ 140	160	75	-	M72×2.0	φ 80	40	φ 79	φ 125	231	125±0.25	37	184				
φ 160	175	85	-	M80×2.0	φ 90	30	φ 89	φ 140	264	145±0.25	34	204				
φ 180	210	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	296	160±0.25	40	224				
φ 200	220	-	φ 15	M100×2.0	φ 112	33	φ 111	φ 180	324	175±0.25	51	254				
φ 224	265	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	359	195±0.25	50	264				
φ 250	285	-	φ 15	M130×2.0	φ 140	35	φ 139	φ 200	396	215±0.25	48	274				
symbol bore	SB	SS	ST	SV	SW	SY	TS	US	VF	W	WF	X	XS	XW	YP	ZB
φ 40	φ 14	120	20	28	28	28	125±0.5	155	-	29	-	1/3.5×stroke+42	75	195	-	232
φ 50	φ 16	120	20	28	24	28	140±0.5	175	-	29	-	1/3.5×stroke+57	75	195	-	238
φ 63	φ 18	150	25	33	30	35	155±0.5	190	-	40	-	1/4×stroke+60	95	245	-	283
φ 80	φ 20	165	30	37	31	36	180±0.5	220	-	33	-	1/4×stroke+53	95	260	-	303
φ 100	φ 24	165	35	40	29	45	220±0.5	265	-	39	-	1/4×stroke+64	115	280	-	328
φ 125	φ 30	195	40	53	36	50	275±0.8	330	-	44	-	1/5×stroke+64	130	325	-	379
φ 140	φ 33	200	45	53	31	50	305±0.8	365	-	49	-	1/5×stroke+69	135	335	-	398
φ 160	φ 36	206	55	36	38	38	340±0.8	405	92	35	127	1/5×stroke+60	165	371	38	433
φ 180	φ 39	225	60	41	42	43	375±0.8	445	92	40	132	1/5×stroke+80	175	400	43	470
φ 200	φ 42	250	65	47	51	55	410±0.8	485	102	38	140	1/5×stroke+78	195	445	51	529
φ 224	φ 48	265	70	51	52	51	460±0.8	545	112	42	154	1/6×stroke+82	205	470	51	555
φ 250	φ 52	282	75	56	54	55	500±0.8	590	127	48	175	1/6×stroke+78	230	512	60	598

MILL TYPE cylinders

External dimensions

TC



ML7/14 square cylinders

Symbol bore	bore B class								BB	BD	E	EE	
	A	D	DF	KK	MM	S	U	WW				F	RC
φ 40	55	24	-	M24×1.5	φ 28	-	-	φ 63	11	33	80	SSA15	1/2
φ 50	65	30	-	M30×1.5	φ 35.5	-	-	φ 71	13	33	90	SSA15	
φ 63	85	41	-	M39×1.5	φ 45	25	φ 44	φ 80	14	43	110	SSA15	
φ 80	105	50	-	M48×1.5	φ 56	28	φ 55	φ 100	16	53	127	SSA20	3/4
φ 100	140	65	-	M64×2.0	φ 71	34	φ 70	φ 125	19	63	154	SSA20	
φ 125	175	85	-	M80×2.0	φ 90	39	φ 89	φ 140	22	78	188	SSA25	1
φ 140	210	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	26	88	212	SSA25	
φ 160	220	-	φ 15	M100×2.0	φ 112	30	φ 111	φ 180	28	98	238	SSA25	
φ 180	265	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	30	108	272	SSA32	11/4
φ 200	285	-	φ 15	M130×2.0	φ 140	33	φ 139	φ 200	33	118	298	SSA40	11/2
φ 224	330	-	φ 15	M150×2.0	φ 160	35	φ 159	φ 220	35	137	328	SSA40	
φ 250	375	-	φ 15	M170×3.0	φ 180	35	φ 179	φ 240	38	147	362	SSA50	
Symbol bore	bore C class								FP	LF	LL	P	min. stroke
	A	D	DF	KK	MM	S	U	WW					
φ 40	45	19	-	M20×1.5	φ 22.4	-	-	φ 50	47	192	-	118	101
φ 50	55	24	-	M24×1.5	φ 28	-	-	φ 63	47	196	-	122	101
φ 63	65	30	-	M30×1.5	φ 35.5	25	φ 34.5	φ 71	61	229	-	141	101
φ 80	85	41	-	M39×1.5	φ 45	28	φ 44	φ 80	70	254	-	155	101
φ 100	105	50	-	M48×1.5	φ 56	34	φ 55	φ 100	87	270	-	154	151
φ 125	140	65	-	M64×2.0	φ 71	39	φ 70	φ 125	105	313	-	174	151
φ 140	160	75	-	M72×2.0	φ 80	40	φ 79	φ 125	105	323	-	184	201
φ 160	175	85	-	M80×2.0	φ 90	30	φ 89	φ 140	-	-	278	204	201
φ 180	210	-	φ 12	M95×2.0	φ 100	35	φ 99	φ 160	-	-	308	224	201
φ 200	220	-	φ 15	M100×2.0	φ 112	33	φ 111	φ 180	-	-	356	254	201
φ 224	265	-	φ 15	M120×2.0	φ 125	35	φ 124	φ 180	-	-	366	264	251
φ 250	285	-	φ 15	M130×2.0	φ 140	35	φ 139	φ 200	-	-	385	274	251
Symbol bore	min. PH	TD	TL	TM	TR	UM	VF	W	WF	X	XI	YP	ZJ
φ 40	166	φ 25e8	25	90 <sup>-0.1</sup> <sub>-0.5</sub>	R2.5	140	-	29	-	1/3.5×stroke+42	135	-	221
φ 50	169	φ 25e8	25	100 <sup>-0.1</sup> <sub>-0.5</sub>	R2.5	150	-	29	-	1/3.5×stroke+57	137	-	225
φ 63	202	φ 31.5e8	31.5	115 <sup>-0.1</sup> <sub>-0.5</sub>	R2.5	178	-	40	-	1/4×stroke+60	171.5	-	269
φ 80	227	φ 40e8	40	135 <sup>-0.1</sup> <sub>-0.5</sub>	R3	215	-	33	-	1/4×stroke+53	180.5	-	287
φ 100	260	φ 50e8	50	165 <sup>-0.1</sup> <sub>-0.5</sub>	R3	265	-	39	-	1/4×stroke+64	203	-	309
φ 125	300	φ 63e8	63	205 <sup>-0.1</sup> <sub>-0.5</sub>	R4	331	-	44	-	1/5×stroke+64	236	-	357
φ 140	315	φ 71e8	71	225 <sup>-0.1</sup> <sub>-0.5</sub>	R4	367	-	49	-	1/5×stroke+69	246	-	372
φ 160	338	φ 80e8	80	255 <sup>-0.1</sup> <sub>-0.5</sub>	R4	415	92	35	127	1/5×stroke+60	267	38	405
φ 180	363	φ 90e8	90	285 <sup>-0.1</sup> <sub>-0.8</sub>	R5	465	92	40	132	1/5×stroke+80	287	43	440
φ 200	404	φ 100e8	100	310 <sup>-0.1</sup> <sub>-0.8</sub>	R5	510	102	38	140	1/5×stroke+78	318	51	496
φ 224	433	φ 112e8	112	350 <sup>-0.1</sup> <sub>-0.8</sub>	R5	574	112	42	154	1/6×stroke+82	337	51	520
φ 250	478	φ 125e8	125	385 <sup>-0.1</sup> <sub>-0.8</sub>	R5	635	127	48	175	1/6×stroke+78	372	60	560

MILL TYPE cylinders