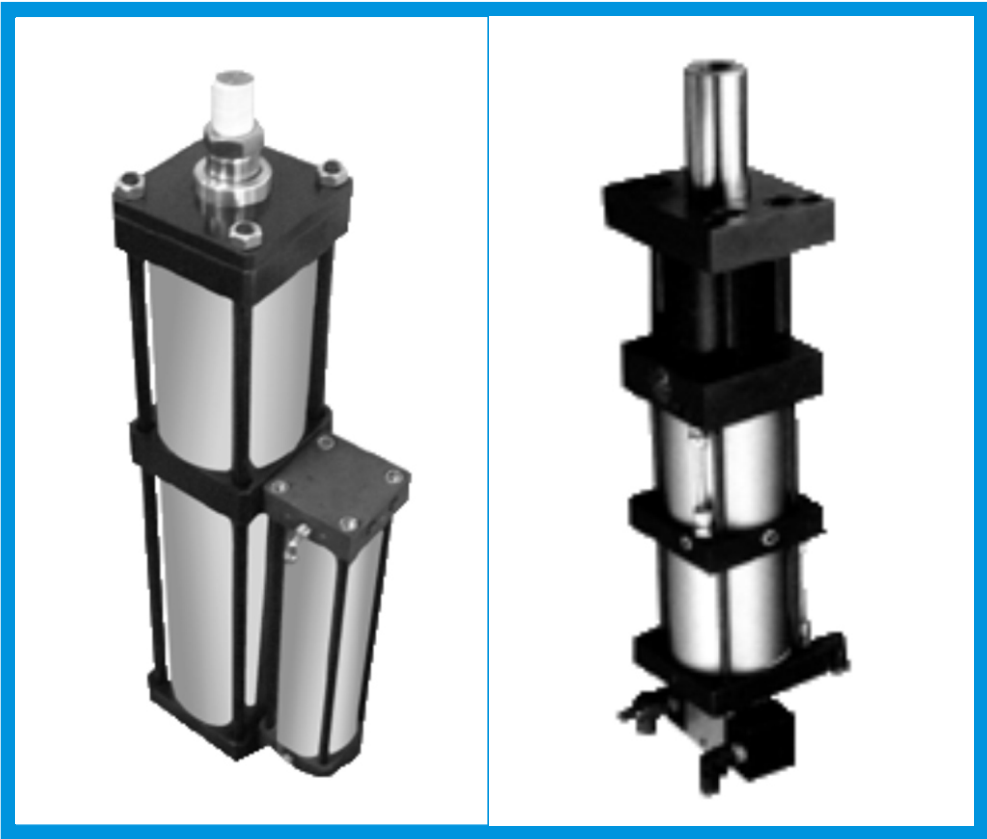


11 : BC power cylinders

tüv ISO-9001 : 2000 quality certified



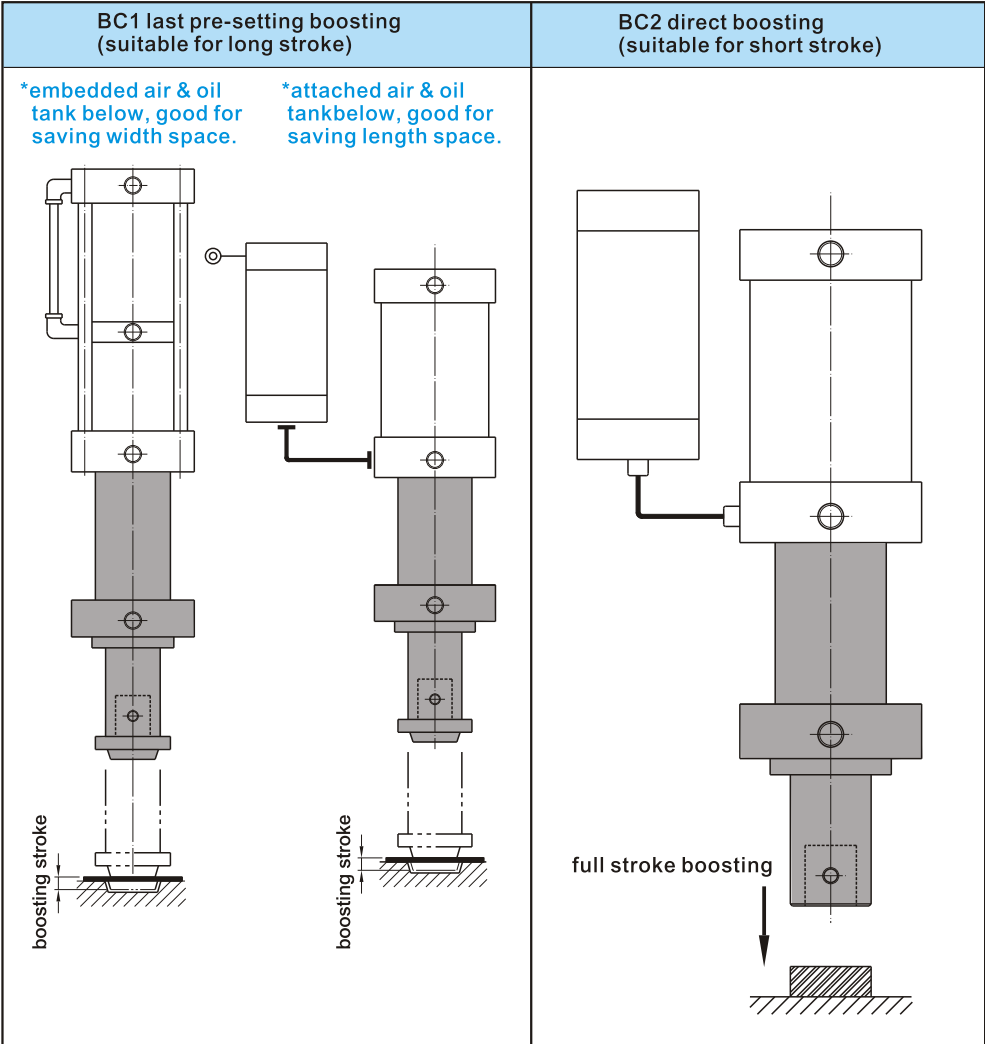
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BC power cylinders

BC Features

By utilizing the difference of area ratio between two sides of a piston, the air input to a cylinder pushes the piston to press the other side with full of oil that boosts up the pressure of oil. The pressed oil then pushes the hydraulic cylinder in front section to work on an application. This device is called "power cylinder". Power cylinders can be separated with two different product lines. One is pre-setting type and the other is direct type. Pre-setting type forwards a cylinder stroke to a certain position by air and then boosts the output force by oil with a short stroke. Direct type moves a cylinder stroke directly by oil.

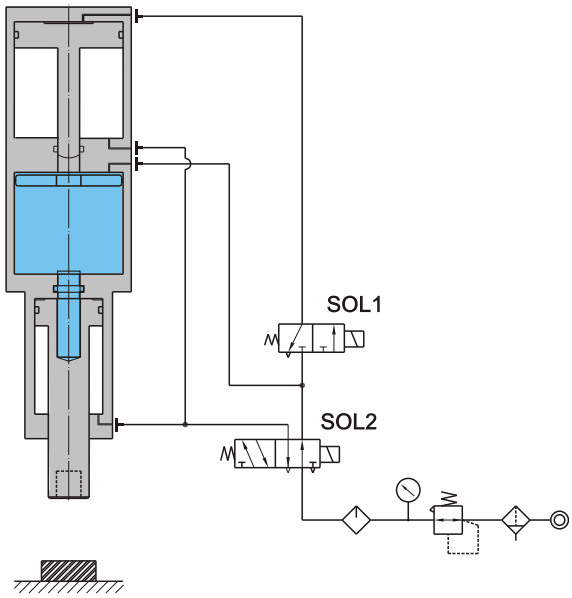


BC power cylinders

BC boosting theory

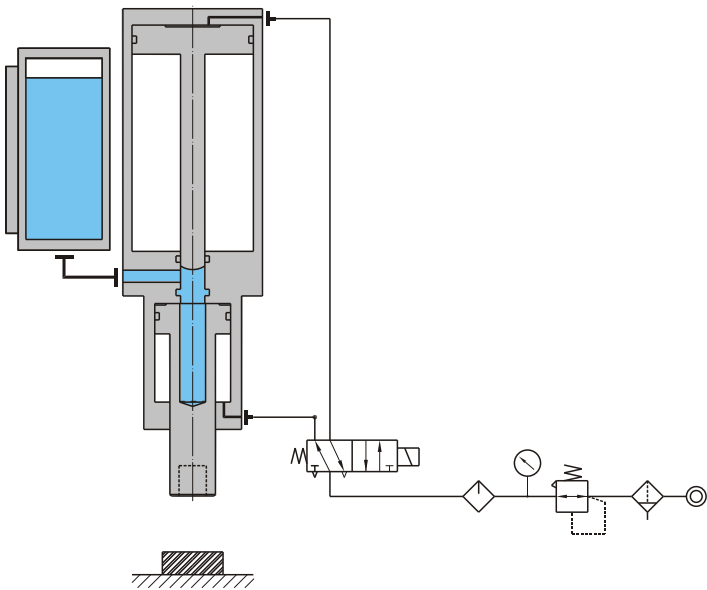
BC1 pre-setting boosting

*power cylinder outputs with force.



BC2 direct boosting

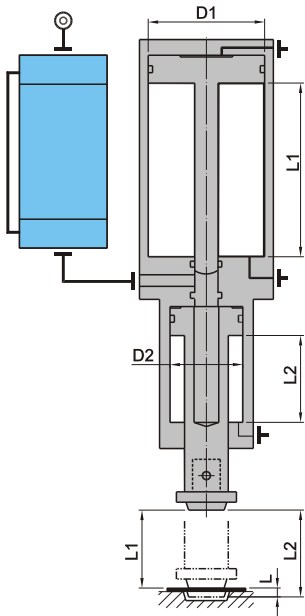
*power cylinder outputs with force.



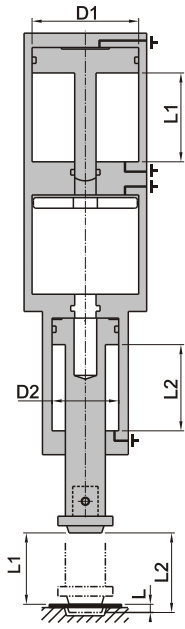
BC power cylinders

BC1 cylinder's stroke with two kinds of air & oil tanks

■ BC1-W
attached air & oil tank



■ BC1-L
embedded air & oil tank



boosting ratio= r
theoretical output force= $r \times A2 \times P$

- P : working pressure
- D1 : bore of air cylinder
- D2 : bore of oil cylinder
- A1 : piston area of air cylinder
- A2 : piston area of air cylinder

- L : boosting stroke
- L1 : forwarding stroke
- L2 : full stroke(L+L1)

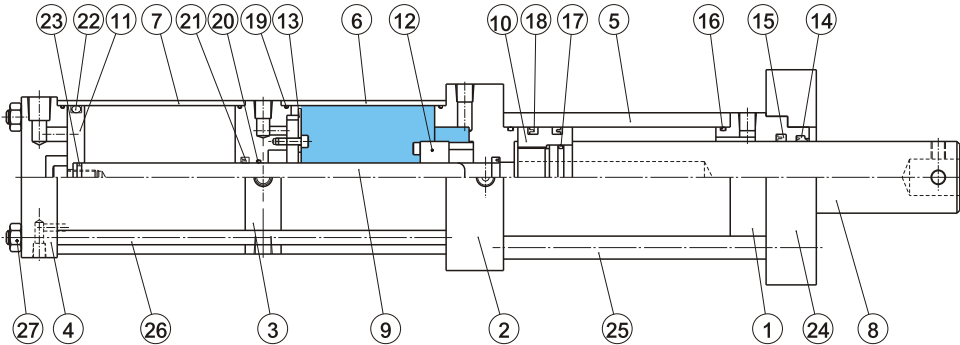
output force	full stroke (mm)	boosting stroke (mm)	ratio
2 tons	50	5, 10, 15, 25	11:1
	100	10, 20, 30	
	150	10, 30, 40	
5 tons	50	5, 10	25:1
	100	5, 10, 15	
	150	10, 20	
10 tons	50	3, 5	51:1
	100	3, 5	
	150	5, 10	
15 tons	50	3	79.7:1
	100	3, 5	
	150	3, 5	

BC power cylinders

BC1 internal structure & part names

BC1 pre-setting boosting

BC1-L embedded air & oil tank



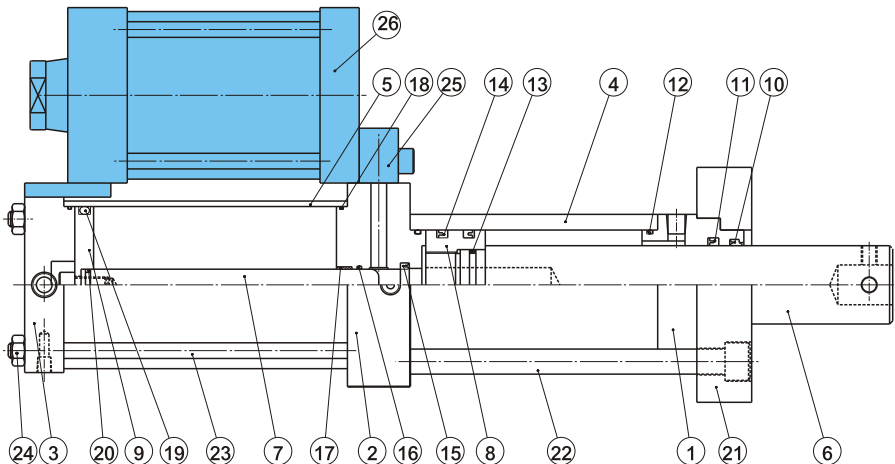
symbol	name	q'ty	symbol	name	q'ty
①	rod cover	1	⑮	rod packing	1
②	cylinder holder	1	⑯	o-ring	2
③	tank holder	1	⑰	o-ring	1
④	head cover	1	⑱	piston packing	2
⑤	oil cylinder tube	1	⑲	o-ring	4
⑥	tank body	1	⑳	o-ring	1
⑦	air cylinder tube	1	㉑	tank packing	1
⑧	rod	1	㉒	piston packing	1
⑨	inner rod	1	㉓	o-ring	1
⑩	oil piston	1	㉔	fa flange	1
⑪	air piston	1	㉕	hex. nut	4
⑫	blocking plate	1	㉖	tie-rod	4
⑬	blocking sheet	1	㉗	tie-rod nut	4
⑭	dust seal	1			

BC power cylinders

BC1 internal structure & part names

BC1 pre-setting boosting

BC1-W attached air & oil tank



symbol	name	q'ty	symbol	name	q'ty
①	rod cover	1	⑭	piston packing	2
②	cylinder holder	1	⑮	packing	1
③	head cover	1	⑯	o-ring	1
④	oil cylinder tube	1	⑰	du(or bushing)	1
⑤	air cylinder tube	1	⑱	o-ring	2
⑥	rod	1	⑲	tank packing	1
⑦	inner rod	1	⑳	o-ring	1
⑧	oil piston	1	㉑	fa flange	1
⑨	air piston	1	㉒	hex. nut	4
⑩	dust seal	1	㉓	tie-rod	4
⑪	rod packing	1	㉔	tie-rod nut	4
⑫	o-ring	2	㉕	connector	1
⑬	o-ring	1	㉖	tank	1

BC power cylinders

BC1 order form

BC1 — L — 5 × 100 × 20
 ① ② ③ ④

BC1 : Power cylinders with pre-setting boosting

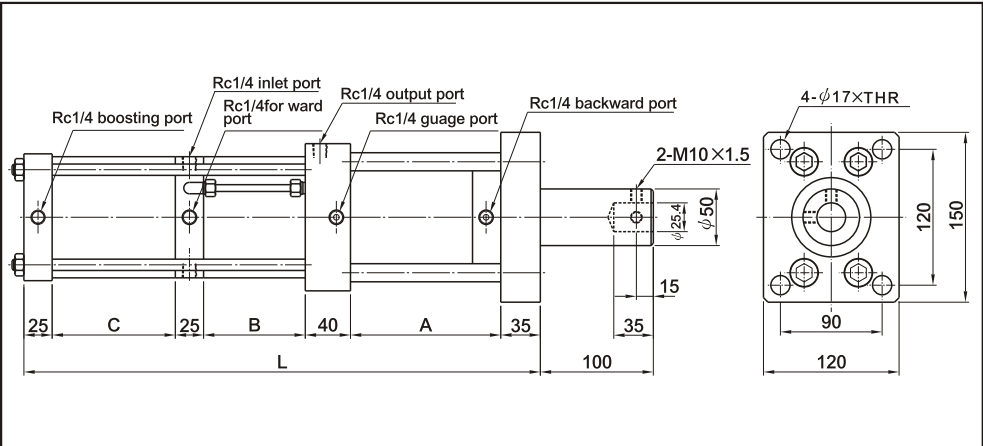
①	tank location	L : embedded W : attached											
②	output force (tons)	2 (ton)			5 (ton)			10(ton)			15(ton)		
③	full stroke (mm)	50	100	150	50	100	150	50	100	150	50	100	150
④	boosting stroke(mm)	5	10	10	5	5	10	3	3	5	3	3	3
		10	20	30	10	10	20	5	5	10	-	5	5
		15	30	40	-	15	-	-	-	-	-	-	-
		25	-	-	-	-	-	-	-	-	-	-	-

BC power cylinders

※boosting stroke is included in full stroke.

External dimensions

BC1-L embedded tank

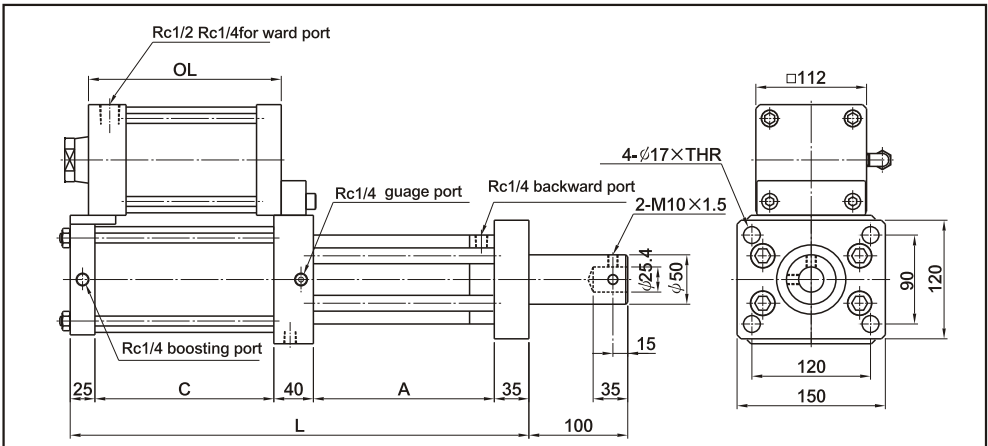


force (ton)	full stroke × boosting stroke	dimension(mm)				corresponding output(kg)			ratio
		L	A	B	C	5kg/cm ²	6kg/cm ²	7kg/cm ²	
2(ton)	50×5	423	133	90	75	2135	2561	2988	11.1:1
	50×10	450	133	90	102				
	50×15	478	133	90	130				
	50×25	532	133	90	184				
	100×10	525	183	115	102				
	100×20	580	183	115	157				
	100×30	634	183	115	211				
	150×10	600	233	140	102				
	150×30	709	233	140	211				
150×40	764	233	140	266					
5(ton)	50×5	457	133	90	109	4808	5769	6731	25:1
	50×10	518	133	90	170				
	100×5	532	183	115	109				
	100×10	593	183	115	170				
	100×15	654	183	115	231				
	150×10	668	233	140	170				
150×20	791	233	140	293					
10(ton)	50×3	471	133	90	123	9808	11770	13732	51:1
	50×5	521	133	90	173				
	100×3	546	183	115	123				
	100×5	596	183	115	173				
	150×5	671	233	140	173				
150×10	796	233	140	298					
15(ton)	50×3	515	133	90	167	15328	18394	21459	79.7:1
	100×3	590	183	115	167				
	100×5	668	183	115	245				
	150×3	665	233	140	167				
	150×5	743	233	140	245				

BC power cylinders

External dimensions

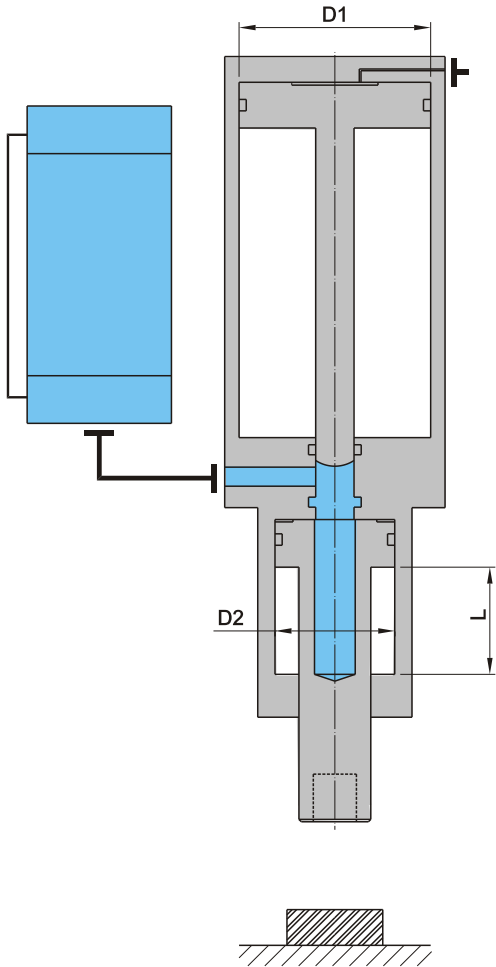
■ BC1-W attached tank



force (ton)	full stroke × boosting stroke	dimension(mm)				corresponding output(kg)			ratio
		L	A	C	OL	5kg/cm ²	6kg/cm ²	7kg/cm ²	
2(ton)	50×5	308	133	75	160	2135	2561	2988	11.1:1
	50×10	335	133	102	160				
	50×15	363	133	130	160				
	50×25	417	133	184	160				
	100×10	385	183	102	190				
	100×20	440	183	157	190				
	100×30	494	183	211	190				
	150×10	435	233	102	220				
5(ton)	50×5	342	133	109	160	4808	5769	6731	25:1
	50×10	403	133	170	160				
	100×5	392	183	109	190				
	100×10	453	183	170	190				
	100×15	514	183	231	190				
	150×10	503	233	170	220				
10(ton)	50×3	356	133	123	160	9808	11770	13732	51:1
	50×5	406	133	173	160				
	100×3	406	183	123	190				
	100×5	456	183	173	190				
	150×5	506	233	173	220				
15(ton)	50×3	631	233	298	220	15328	18394	21459	79.7:1
	50×5	400	133	167	160				
	100×3	450	183	167	190				
	100×5	528	183	245	190				
	150×3	500	233	167	220				
	150×5	578	233	245	220				

BC power cylinders

BC2 Cylinder's stroke



output force	full boosting stroke(mm)	ratio
1(ton)	10	10.24:1
	20	
	30	
2(tons)	10	20:1
	20	
	30	
3(tons)	10	30.8:1
	20	
	30	
5(tons)	5	51:1
	10	
	15	
	20	

boosting ratio= r
 theoretical output force= r×A2×P

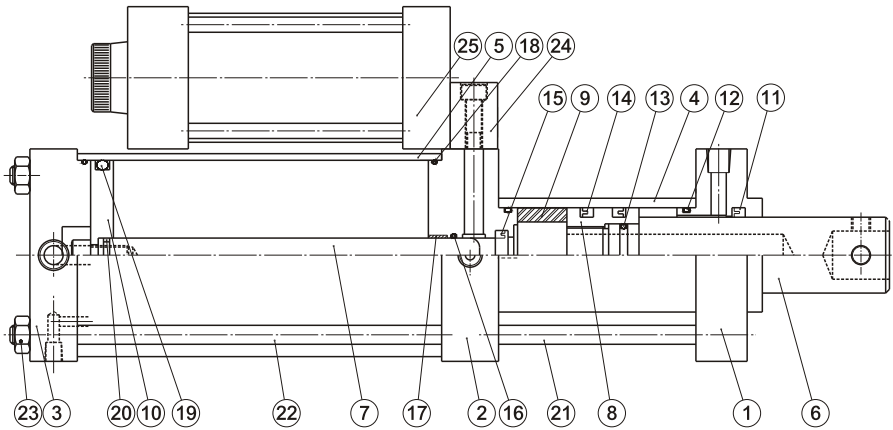
- P : working pressure
- D1 : bore of air cylinder
- D2 : bore of oil cylinder
- A1 : piston area of air cylinder
- A2 : piston area of oil cylinder

L : boosting stroke =full stroke

BC power cylinders

BC2 Internal structure & part names

BC2 direct boosting



symbol	name	q'ty	symbol	name	q'ty
①	rod cover	1	⑭	piston packing	2
②	cylinder holder	1	⑮	o-ring	1
③	head cover	1	⑯	o-ring	1
④	oil cylinder tube	1	⑰	du(or bushing)	1
⑤	air cylinder tube	1	⑱	o-ring	2
⑥	rod	1	⑲	piston packing	1
⑦	inner rod	1	⑳	o-ring	1
⑧	oil piston	1	㉑	hex.nut	4
⑨	housing	1	㉒	tie-rod	4
⑩	air piston	1	㉓	tie-rod nut	4
⑪	rod packing	1	㉔	connector	1
⑫	o-ring	2	㉕	tank	1
⑬	o-ring	1			

BC power cylinders

BC2 Order form

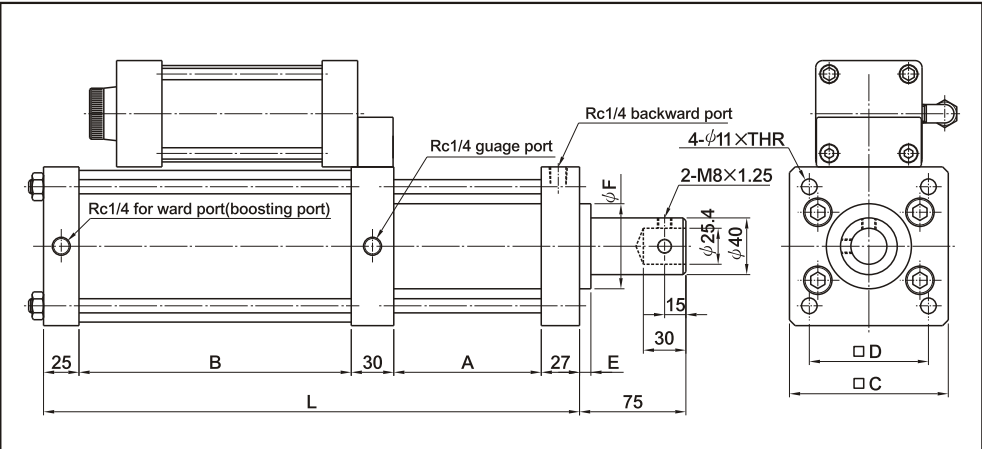
BC2 — **B** — **2** × **20**
 ① ② ③

BC2 : Power cylinders with direct boosting						
①	air cylinder spec.	A : bore : ϕ 80mm				
		B : bore : ϕ 100mm				
②	output force (tons)	BC2-A(ϕ 80)		BC2-B(ϕ 100)		
		1(ton)	2(ton)	2(ton)	3(ton)	5(ton)
③	full stroke (mm)	10	10	10	10	5
		20	15	20	20	10
		30	20	30	30	15
		-	-	-	-	20

BC power cylinders

External dimensions

BC2 direct boosting



spec.	force (ton)	full stroke boosting stroke	dimension(mm)							corresponding output(kg)			ratio	
			L	A	B	C	D	E	F	5kg/cm ²	6kg/cm ²	7kg/cm ²		
BC2-A (φ80)	1(ton)	10	223	64	77	90	70	—	—	1004	1205	1406	10.24 : 1	
		20	273	74	117									
		30	323	84	157									
	2(ton)	10	260	64	114					1938	2325	2713		19.75 : 1
		15	304	69	153									
		20	378	104	192									
BC2-B (φ100)	2(ton)	10	233	64	87	112	84	8	60	1955	2346	2737	19.93 : 1	
		20	293	74	137									
		30	358	89	187									
	3(ton)	10	261	64	115					3028	3634	4239	30.86 : 1	
		20	378	104	192									
		30	521	170	269									
	5(ton)	5	240	57	101					5006	6007	7008	51.02 : 1	
		10	333	86	165									
		15	456	145	229									
		20	577	203	292									

BC power cylinders