

# CBC Clutch/Brake Combination

## Section F

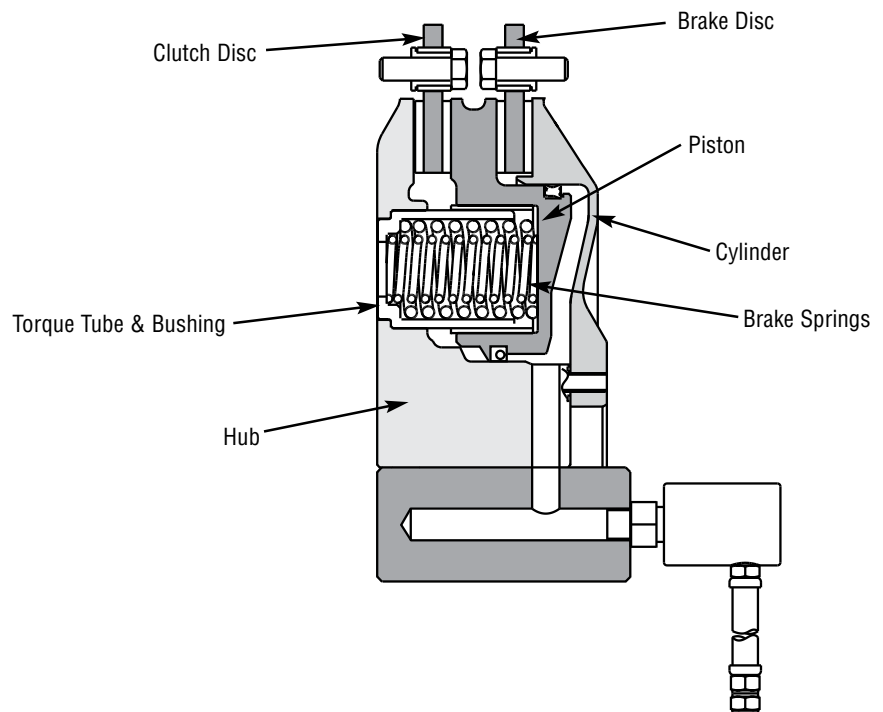
The Airflex® CBC clutch/brake combination consists of an air-actuated disc clutch and a spring-applied disc brake. Its compact design combined with its high thermal capacity and low air consumption makes it ideal for high speed, high cyclic, heavy-duty industrial applications.

The CBC hub is pressed on and keyed to the driven shaft. The clutch disc is fastened to the driving member (a flywheel in most applications). The brake disc is reacted to the machine. Three different means of disc attachment results in five possible mounting arrangements. Operation is simple. When the cylinder is pressurized, the piston clamps the clutch disc to the hub, which transmits torque to the shafts. When the cylinder exhausts, the springs move the piston shaft. Overlapping cannot occur between the clutching and braking. Efficient cooling permits a stable coefficient of friction resulting in reproducible torque control. Minimal torque loss combined with generous friction lining area results in low operating and maintenance costs.

CBC units are available in 6 standard sizes with clutch torque to 1,140,000 lb-in (129,000 N-m) and brake torque to 529,000 lb-in (60,000 N-m).

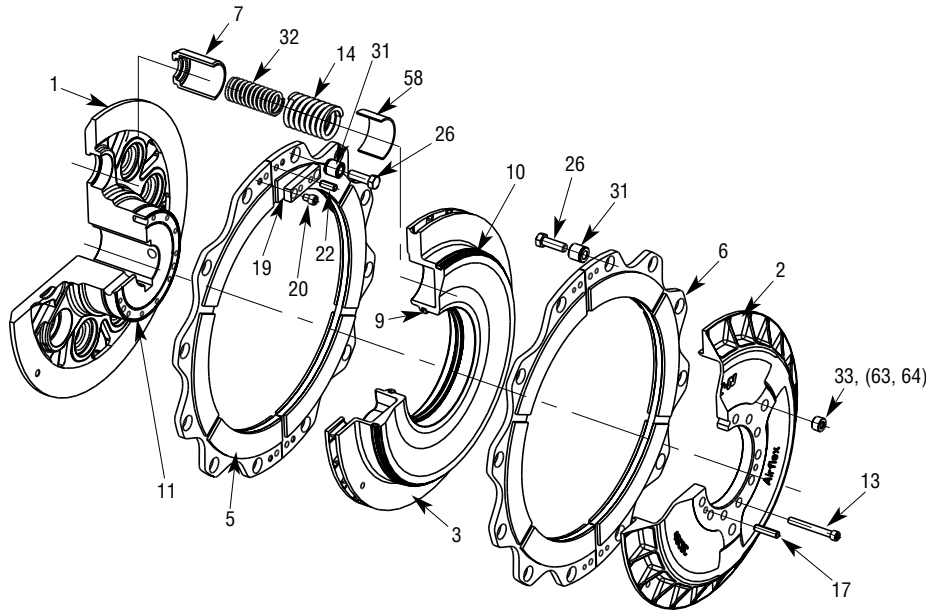
### Where used:

- Automatic Punching Machines
- Press Brakes
- Printing Machines
- Shears
- Stamping and Forming Presses
- Woodworking Machines



# CBC Clutch/Brake Combination Component Parts

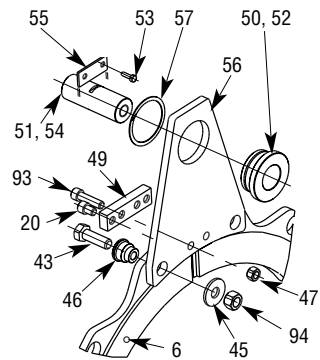
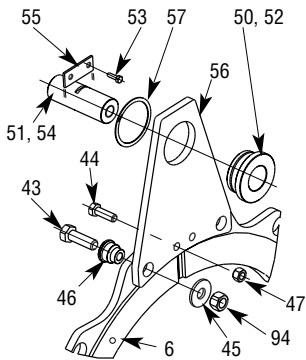
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### Long Arm Components

Sizes 5-25

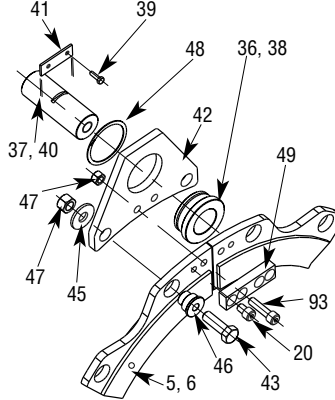
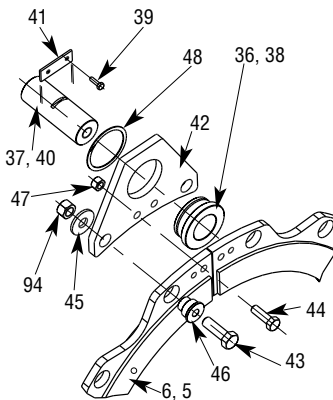
Sizes 30-72



### Short Arm Components

Sizes 5-25

Sizes 30-72



Item	Description
1	Hub
2	Cylinder
3	Piston
5	Clutch Friction Disc
6	Brake Friction Disc
7	Torque Tube
9	Piston Seal (ID)
10	Piston Seal (OD)
11	Face Seal
13	Socket Head Screw
14	Outer Spring
17	Spring Pin
19	Strap
20	Socket Head Screw
22	Spring Pin
26	Hex Head Screw

Item	Description
31	Bushing
32	Inner Spring
33	Plug
36	Short Arm Bushing (round)
37	Short Arm Reaction Pin (round)
38	Short Arm Bushing (rectangular)
39	Hex Head Screw
40	Short Arm Reaction Pin (square)
41	Retaining Plate
42	Short Reaction Arm
43	Hex Head Screw
44	Hex Head Screw
45	Washer
46	Bushing
47	Nut
48	Retaining Ring

Item	Description
49	Strap (sizes 30-72)
50	Long Arm Bushing (round)
51	Long Arm Reaction Pin (round)
52	Long Arm Bushing (rectangular)
53	Hex Head Screw
54	Long Arm Reaction Pin (square)
55	Retaining Plate
56	Long Arm Reaction Arm
57	Retaining Ring
58	Torque Tube Bushing
63	Quick release Valve (not shown)
64	Manual Release Screw (not shown)
93	Socket Head Screw
94	Nut

# CBC Clutch/Brake Combination – Dimensional Data: BB Arrangement

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English		Dimensions in inches											
30CBC	2.76	4.06	21.06	7.30	18.248	0.562	1.26	1.03	1.66	19.685	4.921	4.213	0.197
35CBC	3.07	4.06	22.44	7.84	19.606	0.719	1.48	1.07	1.86	21.102	5.512	4.724	0.197
40CBC	3.11	4.25	24.41	8.55	21.378	0.719	1.496	1.05	1.93	22.992	5.710	4.880	0.182
45CBC	3.50	4.57	26.77	9.34	23.346	0.750	1.673	1.20	2.25	25.197	6.300	5.300	0.243
50CBC	4.02	5.63	30.51	10.68	26.700	0.813	1.890	1.40	2.52	28.543	7.280	6.180	0.170
55CBC	4.45	6.30	34.06	11.94	29.850	0.813	2.165	1.63	2.91	31.890	8.070	6.970	0.305
Size	Dmin	Dmax <sup>Ø</sup>	Da	D1	D2	d	G	G1	G2	K <sup>Ø</sup>	L	M	S
30CBC	70	103	536	185	463	14	32	26	42	500	125	107	5
35CBC	78	103	570	199	498	18	37,5	27	48	536	140	120	5
40CBC	79	108	620	217	543	18	38	27	49	584	145	124	5
45CBC	89	116	680	237	593	19	42,5	31	57	640	160	135	6
50CBC	102	143	775	271	678	21	48	35	64	725	185	157	4
55CBC	113	160	865	303	758	21	55	41	74	810	205	177	8
SI	Dimensions in millimeters												

\* Dimensions shown are for reference only. Consult factory for specific installation information.

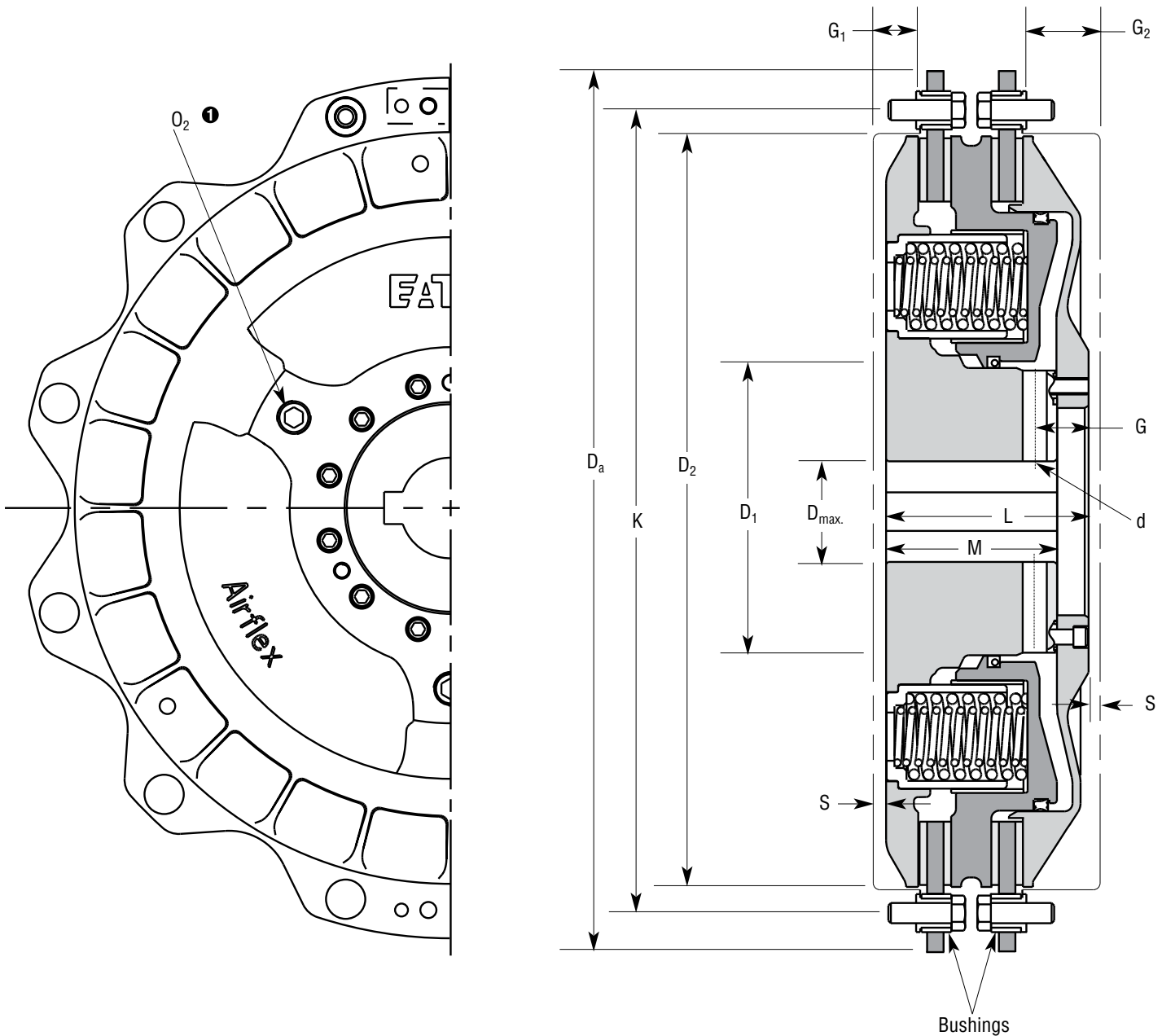
Kit Description	Alpha Designation	CBC Size	Basic Part Number	Basic Kit Part Number
Bushing Kit	AA	30	108033	146487
Short Arm Kit	BB	35	108034	146488
Long Arm Kit	CC	40	108035	146489
Lining Kit	DD	45	108036	146490
Piston Seal Kit	FF	50	108037	146491
		55	108038	146492

### Note:

- ❶ Tolerance: +0.004/-0.004 in.  
+0.10/-0.10 mm
- ❷ Maximum bores are based on two flat English keys. Consult factory for other arrangements.

# CBC Clutch/Brake Combination – Dimensional Data: BB Arrangement

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## BB Arrangement

The standard CBC mounting arrangement utilizes 12 bushings (shown above) to guide each friction disc. The clutch friction disc bushings attach to the driving component. The brake friction disc bushings attach to a stationary reaction member. Optional mounting arrangements using arms and bushings are shown, as well as their mounting dimensions, on the following pages.

Size	Airflex Rotorseal Size
30 thru 45 CBC	1RH
50 & 55 CBC 1	1/4 RH

### Note:

- ① Consult factory for dimensional data.

# CBC Clutch/Brake Combination – Optional Mounting Arrangements\*

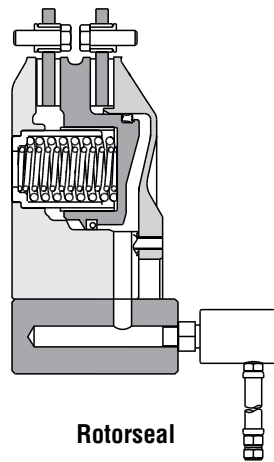
## Section F

English	Dimensions in inches									
30CBC	24.016	31.102	27.36	33.66	19.685	5.16	2.598	4.85	1.25	0.51
35CBC	25.394	32.677	28.74	35.24	21.102	5.50	2.953	5.19	1.57	0.51
40CBC	27.362	34.843	30.71	37.40	22.992	5.98	3.228	5.57	1.77	0.59
45CBC	30.315	38.976	34.25	42.32	25.197	6.40	3.268	6.05	1.72	0.59
50CBC	34.646	44.685	39.37	48.62	28.543	7.28	3.858	6.86	2.04	0.59
55CBC	38.189	48.622	42.91	52.56	31.890	7.92	4.331	7.64	2.42	0.59
Size	A	A <sub>1</sub>	B	B <sub>1</sub>	K	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	O
30CBC	610	790	695	855	500	131	66	123	32	13
35CBC	645	830	730	895	536	140	75	132	40	13
40CBC	695	885	780	950	584	152	82	142	45	15
45CBC	770	990	870	1,075	640	162	83	154	44	15
50CBC	880	1,135	1,100	1,235	725	185	98	174	52	15
55CBC	970	1,235	1,090	1,335	810	201	110	194	61	15

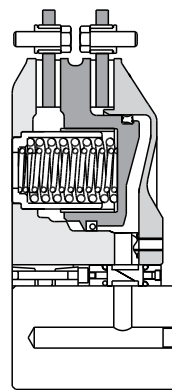
### SI Dimensions in millimeters

\* Dimensions shown are for reference only. Consult factory for specific installation information.

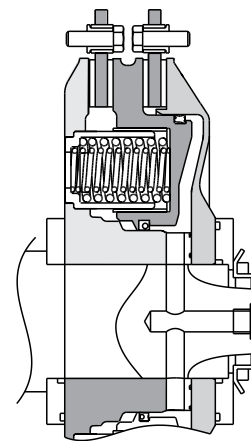
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Piston Seal Kit	FF	50	108037	146491
		55	108038	146492



**Rotorseal**



**Locking Assembly and Seal**

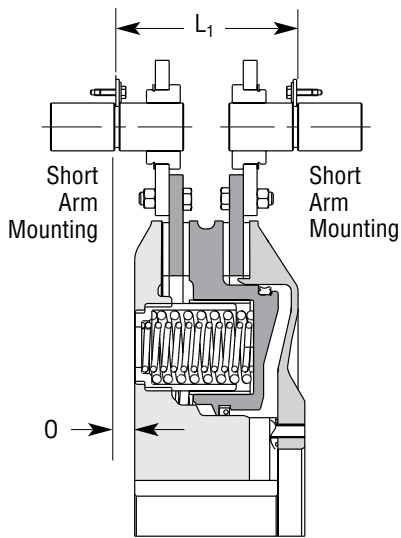


**Face Seal**

Alternate methods of sealing air supply between the clutch/brake housing and shaft.

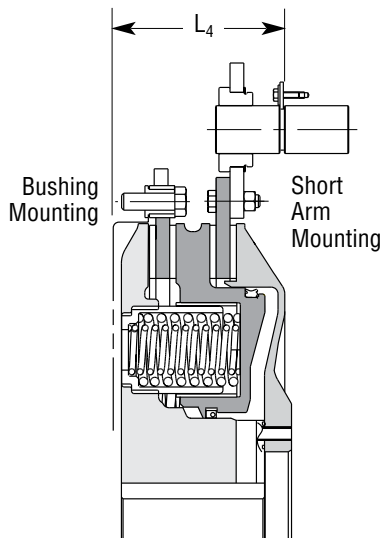
# CBC Clutch/Brake Combination – Optional Mounting Arrangements

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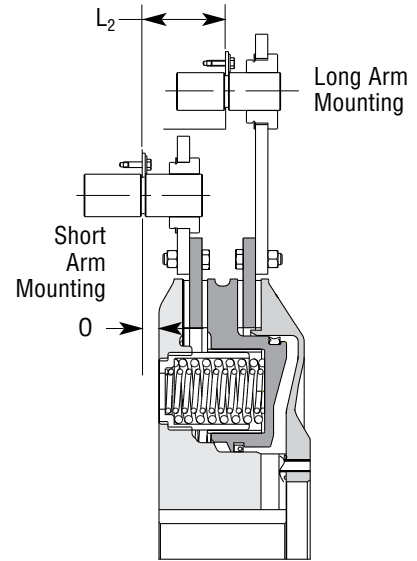
### SS Arrangement

The clutch and brake frictions discs each use two short arms for mounting. The arms are located 180° apart and are pin reacted.



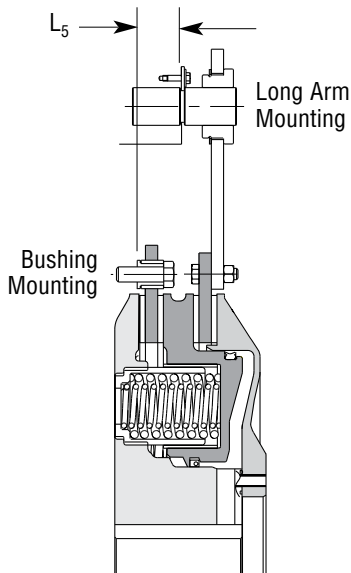
### BS Arrangement

In this arrangement, twelve bushings are used for clutch friction disc mounting. Two short arms are used for mounting and reacting the brake friction disc.



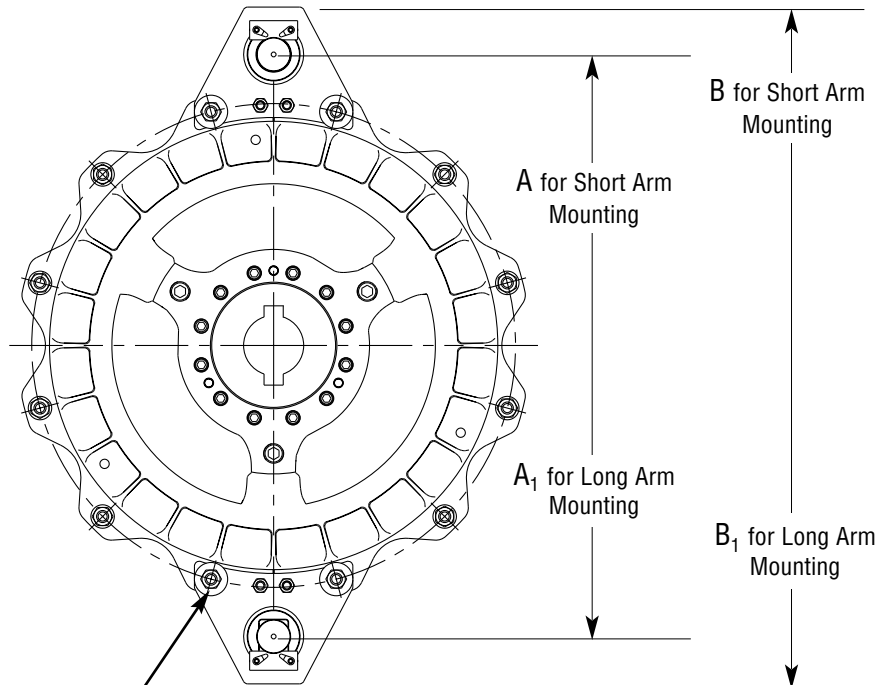
### SL Arrangement

In this arrangement, a short pair of arms are used for mounting the clutch friction disc. A longer pair of arms are used for mounting and reacting the brake friction disc.



### BL Arrangement

This arrangement uses twelve bushings for clutch friction disc mounting and two long arms for mounting and reacting the brake friction disc.

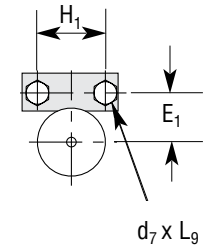
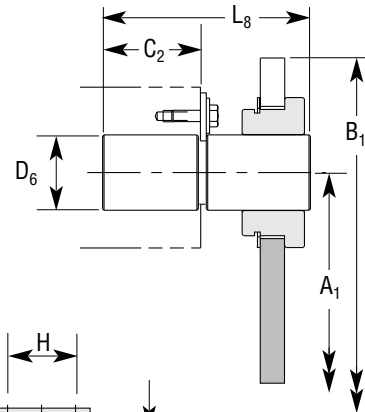
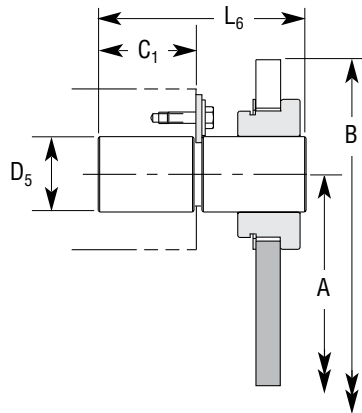
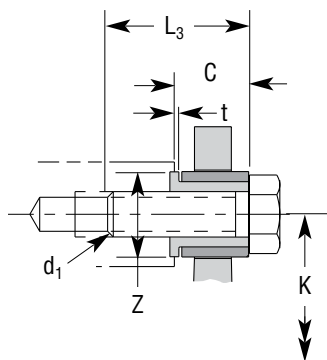


K Bolt Circle for  
12 Bushing Mounting

# CBC Clutch/Brake Combination – Bushing and Arm Mounting Dimensions\*

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### Bushing Mounting Dimensions



**Long Arm Reaction Pin Mounting Dimensions**

**Short Arm Reaction Pin Mounting Dimensions**

English	Dimensions in inches					
30	0.87	M14	1.58	0.12	19.68	0.99
35 & 40	1.06	M14	1.77	0.12	22.99	0.99
45	1.10	M16	1.97	0.20	25.20	1.19
50	1.38	M20	2.36	0.20	28.54	1.39
55	1.42	M24	2.76	0.20	31.89	1.61
Size	C	d1Ø	L3	t	K	z
30	22	M14	40	3	500	25
35 & 40	27	M14	45	3	584	25
45	28	M16	50	5	640	30
50	35	M20	60	5	725	35
55	36	M24	70	5	810	41

SI	Dimensions in millimeters					
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English	Dimensions in inches						
30-40	1.97	M6	1.57	1.06	1.38	4.33	0.79
45	2.36	M6	1.77	1.16	1.38	4.92	0.79
50 & 55	2.76	M8	2.17	1.52	1.77	5.51	0.98
Size	C1	d4Ø	D5	E	H	L6	L7
30-40	50	M6	40	27	35	110	20
45	60	M6	45	29,5	35	125	20
50 & 55	70	M8	55	38,5	45	140	25

SI	Dimensions in millimeters						
English	Dimensions in inches						
45	1.97	M6	1.58	1.06	1.38	4.33	0.79
50 & 55	2.36	M6	1.77	1.16	1.38	4.92	0.79
60 & 66	2.76	M8	2.17	1.52	1.77	5.51	0.98
72	3.54	M8	2.56	1.75	1.77	7.68	0.98
Size	C2	d7Ø	D6	E1	H1	L8	L9
5 & 10	20	M4	14	11	20	45	12
15 & 20	20	M4	14	11	20	45	12
25	35	M5	22	16	25	72	16
30-40	45	M5	30	20	25	90	16
45	50	M6	40	27	35	110	20
50 & 55	60	M6	45	30	35	125	20

SI	Dimensions in millimeters						
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\* Dimensions shown are for reference only. Consult factory for specific installation information.

**Note:**  
**1** Metric Bolts

# CBC Clutch/Brake Combination – Technical Data

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English	Housing All Types	Clutch Disc BB, BS, BL	SS, SL	rpm	BB	SS	SL	BS	BL
30CBC	30.2	15	29	1200	165	195	196	180	183
35CBC	46	22	38	1100	210	240	245	225	230
40CBC	62	30	50	1000	255	290	290	270	275
45CBC	104	51	83	900	355	395	405	375	385
50CBC	191	95	173	800	530	605	620	570	585
55CBC	332	179	281	700	750	860	875	805	820

Size		Wk2 lb-ft2 J kg-m2		Max. Speed <sup>①</sup>			Weight lb Mass kg		
30CBC	1,3	0,625	1,225	1200	75	88	89	82	83
35CBC	2,0	0,925	1,60	1100	95	109	111	102	104
40CBC	2,75	1,25	2,08	1000	115	130	132	123	125
45CBC	4,63	2,13	3,50	900	160	179	183	170	174
50CBC	8,75	4,0	7,25	800	240	275	282	258	265
55CBC	15,0	7,5	11,8	700	340	390	397	365	372

\* Dimensions shown are for reference only. Consult factory for specific installation information.

### Note:

- ① Maximum speed for non-cyclic operation.  
Maximum speed for single stroke operation is dependent upon clutch and brake thermal requirements.



# CBC Clutch/Brake Combination – Torque Ratings (English Units)

## Section F

CBC Size	No. of PS	No. of SS	Dynamic Brake Torque lb-in <sup>⓪</sup>	Brake Release Pressure psi	Static Clutch Torques (lb-in) at Various Pressures (psi) <sup>⓪</sup>						
					85 <sup>⓪</sup>	80	75	70	65	60	55
30	9	6	29,300	33	55,700	50,200	44,800	39,400	34,000	28,600	23,200
	9	9	32,900	37	51,100	45,700	40,300	34,900	29,500	24,100	18,700
	9	0	21,900	25	64,700	59,300	53,900	48,500	43,100	37,700	32,300
	0	9	10,900	12	78,300	72,900	67,500	62,100	56,700	51,300	45,900
35	9	6	37,500	33	70,500	63,600	56,700	49,900	43,000	36,100	29,200
	9	9	42,100	38	64,700	57,800	50,900	44,100	37,200	30,300	23,400
	9	0	28,100	25	82,100	75,200	68,300	61,500	54,600	47,700	40,800
	0	9	14,000	13	99,500	92,600	85,700	78,900	72,000	65,100	58,200
40	9	6	46,000	33	79,800	72,100	64,300	56,500	48,800	41,000	33,300
	9	9	51,800	37	73,300	65,600	57,800	50,100	42,300	34,600	26,800
	9	0	34,600	25	92,800	85,000	77,300	69,500	61,700	54,000	46,200
	0	9	17,200	12	112,400	104,700	96,900	89,100	81,400	73,600	65,900
45	9	6	66,600	33	115,000	104,000	93,000	81,000	70,000	59,000	48,000
	9	9	75,000	37	106,000	94,000	83,000	72,000	61,000	50,000	38,000
	9	0	50,000	25	134,000	123,000	111,000	100,000	89,000	78,000	66,000
	0	9	25,000	12	162,000	151,000	139,000	128,000	117,000	106,000	95,000
50	9	6	90,000	34	151,000	136,000	121,000	106,000	92,000	77,000	62,000
	9	9	101,300	38	138,000	124,000	109,000	94,000	79,000	64,000	50,000
	9	0	67,600	25	176,000	161,000	146,000	131,000	117,000	102,000	87,000
	0	9	33,600	13	213,000	199,000	184,000	169,000	154,000	140,000	125,000
55	9	6	120,000	33	206,000	186,000	166,000	146,000	126,000	106,000	86,000
	9	9	135,000	38	189,000	169,000	149,000	129,000	109,000	89,000	69,000
	9	0	90,000	25	240,000	220,000	200,000	180,000	160,000	139,000	119,000
	0	9	45,000	13	290,000	270,000	250,000	230,000	210,000	190,000	170,000

⓪ Ratings are with new linings. Reduce clutch torque by 10% and brake torque by 15% for fully worn linings. ⓪ Maximum allowable pressure 100 psi.

# CBC Clutch/Brake Combination – Torque Ratings (Metric Units)

## Section F

CBC Size	No. of PS	No. of SS	Dynamic Brake Torque N-m <sup>ⓐ</sup>	Brake Release Pressure bar	Static Clutch Torques (N-m) at Various Pressures (bar) <sup>ⓐ</sup>						
					6,0	5,5	4	4,5	4	3,5	3
30	9	6	3310	2,29	6293	5672	5062	4451	3841	3231	2621
	9	9	3717	2,58	5773	5163	4553	3943	3333	3723	2113
	9	0	2474	1,72	7310	6700	6090	5480	4870	4259	3649
	0	9	1231	0,86	8846	8236	7626	7016	6406	5796	5186
35	9	6	4237	2,30	7965	7186	6406	5638	4858	4079	3299
	9	9	4757	2,59	7310	6530	5751	4982	4203	3423	2644
	9	0	3175	1,73	9276	8496	7717	6948	6169	5389	4610
	0	9	1582	0,86	11242	10462	9683	8914	8135	7355	6576
40	9	6	5197	2,28	9016	8146	7265	6383	5514	4632	3762
	9	9	5852	2,56	8282	7412	6530	5660	4779	3909	2028
	9	0	3909	1,71	10485	9603	8733	7852	6971	6101	5220
	0	9	1943	0,85	12699	11829	10948	10067	9197	8315	7445
45	9	6	7525	2,28	12993	11750	10507	9152	7909	6666	5423
	9	9	8474	2,56	11976	10620	9377	8135	6892	5649	4293
	9	0	5649	1,71	15140	13897	12541	11298	10055	8813	7457
	0	9	2825	0,85	18303	17060	15704	14462	13219	11976	10733
50	9	6	10168	2,33	17060	15365	13671	11976	10394	8700	7005
	9	9	11445	2,63	15559	14010	12315	10620	8926	7231	5649
	9	0	7638	1,75	19885	18190	16495	14801	13219	11524	9829
	0	9	3796	0,87	24065	22483	20789	19094	17399	15817	14123
55	9	6	13558	2,31	23274	21015	18755	16495	14236	11976	9716
	9	9	15253	2,60	21354	19094	16834	14575	12315	10055	7796
	9	0	10168	1,73	27116	24856	22596	20337	18077	15704	13445
	0	9	5084	0,87	32765	30505	28245	25986	23726	21467	19207

ⓐ Ratings are with new linings. Reduce clutch torque by 10% and brake torque by 15% for fully worn linings. ⓑ Maximum allowable pressure 6.9 psi.