

**MODEL CBA**

*Air or Hydraulically  
Actuated Combination  
Clutch-Brakes*

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## Air or Hydraulically Actuated Combination Clutch-Brakes

### Performance Characteristics

The Model CBA combination clutch-brake is an oil immersed unit utilizing a self-contained cooling oil-pumping system and capable of being actuated with either air or hydraulic pressure.

These units are capable of running at higher speeds and greater cyclic frequencies without exhibiting the wear magnitudes common to clutches and brakes operating dry under the same conditions.

Reliability and longevity are the most important features these units have to offer and find usage in those applications requiring the ultimate in clutch and brake performance.

Over fifteen years of field experience shows intervals between maintenance and machine up-time to increase from five to ten times when oil immersed units are used as direct replacements for those operating dry.

Industrial Clutch Products has designed the Model CBA unit to be compatible and complementary to their dry unit products. All of the desirable features found in our standard line of dry products were carefully evaluated for incorporation into the Model CBA combination clutch-brake. The user may expect the lowest possible driven inertia; fastest speed of response; and the same high quality ruggedness contained throughout our product line.

The Model CBA unit was designed and developed as part of our commitment to provide wide ranging and usefully products for the heavy industrial marketplace. As a result, the user has another level of performance from which to choose.

### Advantages

- Combination clutch-brake eliminates the possibility of clutch-brake fight
- Increase in lining life
- Increase in reliability
- Impervious to adverse operating environments
- Low driven inertia
- Fast speed of response
- High cyclic rates
- High operating speeds

### Usages

#### Original Equipment

Machinery which requires unusually high performance levels, operating speeds, or cyclic rates as well as precise stopping accuracy.

#### Conversions

Machinery which is being upgraded to increase production rates, reliability, or capacity.

## Model CBA Combination Clutch-Brake Description

### Model CBA

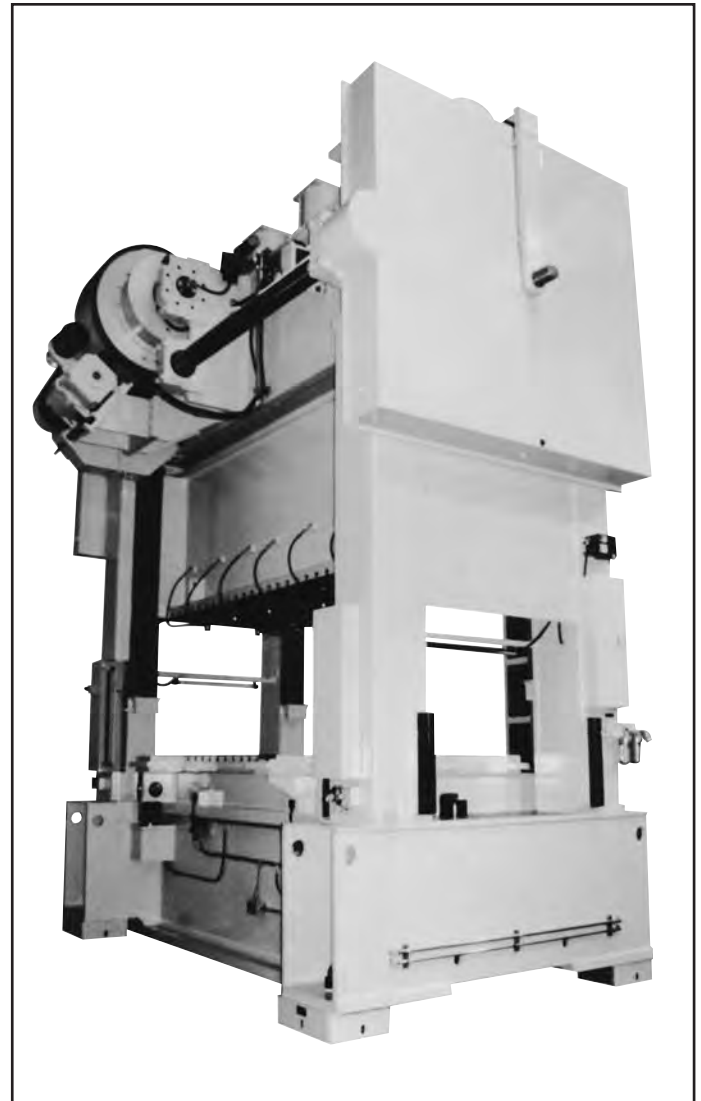
The Model CBA combination clutch-brake is arranged so that it may be mounted in an end of shaft or thru shaft configuration. The clutch driving members attach to the flywheel or input power source. The stationary brake members are attached to the machine frame by the use of a quill member which also provides a path for moving the cooling oil into and out of the unit if the application requires external cooling. Refer to Figure 1 and Figure 2 for a typical arrangement of an outboard (CBA) and thru-shaft (CBAT) mount respectively.

The unit may be provided with either pneumatic or hydraulic actuation chambers as well as a variety of brake springs to accommodate the clutch and brake torque requirements. Due to the many types of machinery configurations, it is often more convenient to house the clutch-brake unit within a user provided mounting cavity.

The Model CBA contains its own circulating oil-pumping system which pumps oil through the disc packs from either direction of rotation anytime the input member rotates. Refer to Figure 3. If external cooling is required due to the speed and cyclic rate, the internal pump output is directed from the outer housing cavity through the quill/brake support member and external cooler where the engagement heat is removed. Cooled oil then returns through the quill/brake support member into the disk pack where engagement heat is transferred to the oil. This heated oil is then pumped back to the cooler for heat removal.

If external cooling is not required, the circulating pump simply moves the oil internally from the outer housing cavity through the disk packs and back to the housing cavity where the engagement heat is transferred through the rotating housing into the surrounding atmosphere.

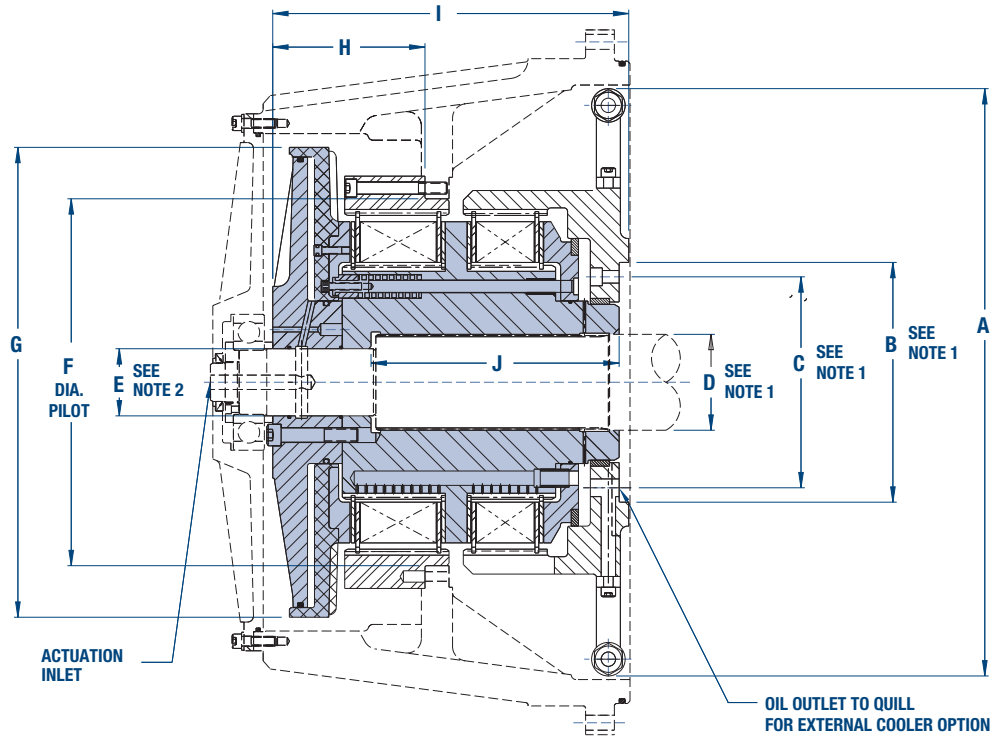
The ability of the CBA combination clutch-brake to continuously and effectively transfer large quantities of energy in this manner is the key factor to its longevity and reliability. In addition, the torque transmitting members, being lubricated by this same oil, are well suited to carry the heavy duty industrial type loads these models encounter.



**Model CBAT-32580 Combination Clutch-Brake installed on a PTC 600-ton 144 x 60 transfer press.**

Photo courtesy of Press Technology Corp.

# Model CBA



## DIMENSIONAL DATA

All dimensions in inches

CBA Model	A	B	C	D	E	F	G	H	I	J
CBA-3008	16.88	5.906	5.250	3.625	2.000	11.50	13.75	3.83	9.58	5.68
CBA-4512	16.88	5.906	5.250	3.625	2.000	11.50	13.75	5.21	10.96	7.00
CBA-6015	16.88	5.906	5.250	3.625	2.000	11.50	13.75	6.58	12.33	8.31
CBA-10025	21.63	8.661	7.625	5.000	3.000	15.250	18.25	5.51	12.90	7.65
CBA-14035	21.63	8.661	7.625	5.000	3.000	15.250	18.25	6.20	14.31	9.06
CBA-18045	21.63	8.661	7.625	5.000	3.000	15.250	18.25	6.90	15.72	10.47
CBA-24060	30.63	13.750	12.250	7.000	3.500	19.125	24.50	5.45	14.82	9.37
CBA-32580	30.63	13.750	12.250	7.000	3.500	19.125	24.50	6.06	16.69	11.24
CBA-400100	30.63	13.750	12.250	7.000	3.500	19.125	24.50	7.94	18.56	12.86
CBA-550150	34.13	13.500	12.000	9.250	5.625	34.750	30.50	8.87	22.88	16.01
CBA-650175	34.13	13.500	12.000	9.250	5.625	34.750	30.50	8.87	25.48	18.61
CBA-800200	34.13	13.500	12.000	9.250	5.625	34.750	30.50	8.87	28.08	21.21

NOTES: 1.) Industrial Clutch Prod. will supply shaft end detail and quill support drilling and machining details. Dimensions may be modified to suit customer requirements.  
2.) End of shaft only. For thru-shaft designs, consult engineering.

3.) Use certified drawing dimensions only for final layouts.  
4.) DXF and IGES files available upon request.  
5.) Dimensions subject to change without notice.

## OPERATIONAL DATA

CBA Model	Static Clutch Torque (lb.-in.)	Dynamic Brake Torque (lb.-in.)	Actuation Volume (in. <sup>3</sup> )	Weight Outer (lbs.)	Weight Inner (lbs.)	Weight Stationary (lbs.)	WR <sup>2</sup> Outer (lb.-ft. <sup>2</sup> )	WR <sup>2</sup> Inner (lb.-ft. <sup>2</sup> )	Maximum Speed (RPM)
CBA-3008	30,000	8,000	24	30	103	43	6.5	9.5	1,200
CBA-4512	45,000	12,000	29	41	118	46	8.3	10.6	1,200
CBA-6015	60,000	15,000	33	48	132	52	9.5	11.6	1,200
CBA-10025	100,000	25,000	100	56	253	137	21	44	1,000
CBA-14035	140,000	35,000	100	70	288	151	26	49	1,000
CBA-18045	180,000	45,000	100	101	322	166	39	54	1,000
CBA-24060	240,000	60,000	175	101	635	248	55	204	800
CBA-32580	325,000	80,000	175	148	699	272	83	219	800
CBA-400100	400,000	100,000	175	212	763	296	123	235	800
CBA-550150	550,000	150,000	415	494	978	445	648	495	800
CBA-650175	650,000	175,000	444	549	1093	500	688	537	800
CBA-800200	800,000	200,000	473	604	1208	555	728	697	800

NOTES: 1.) Operating pressure: 80 PSIG air.

2.) Torque capacities can be modified. Higher torques may be obtained using hydraulic actuation. Consult engineering.

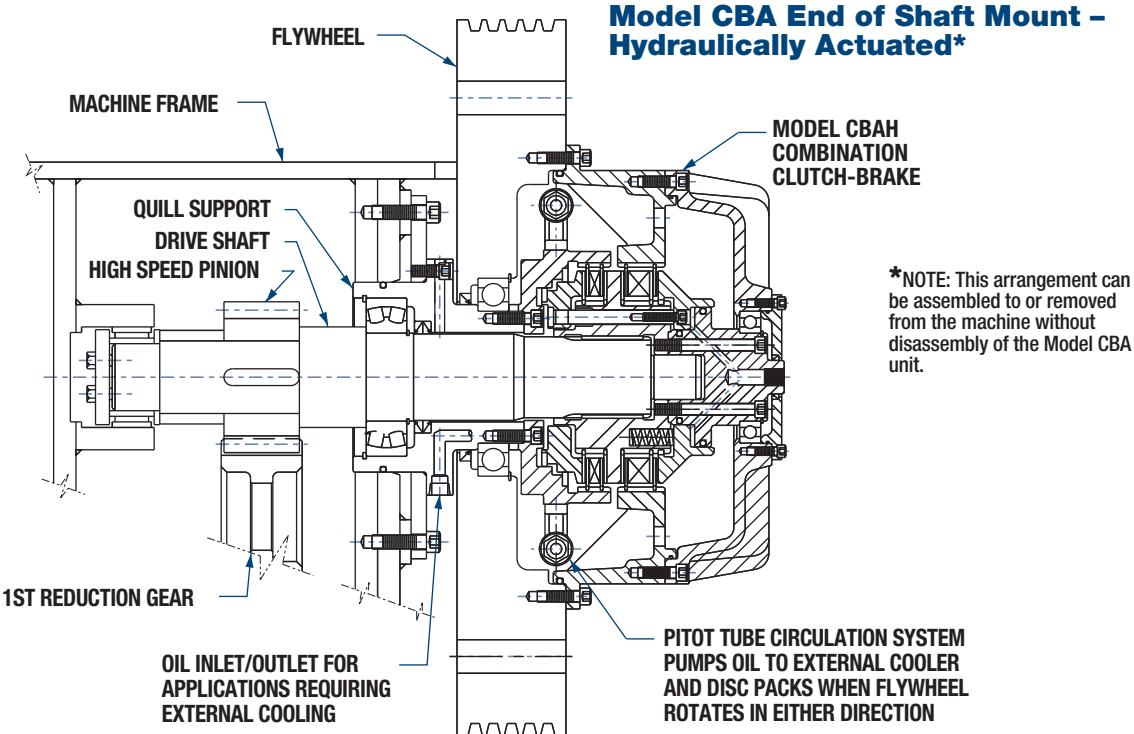


Figure 1

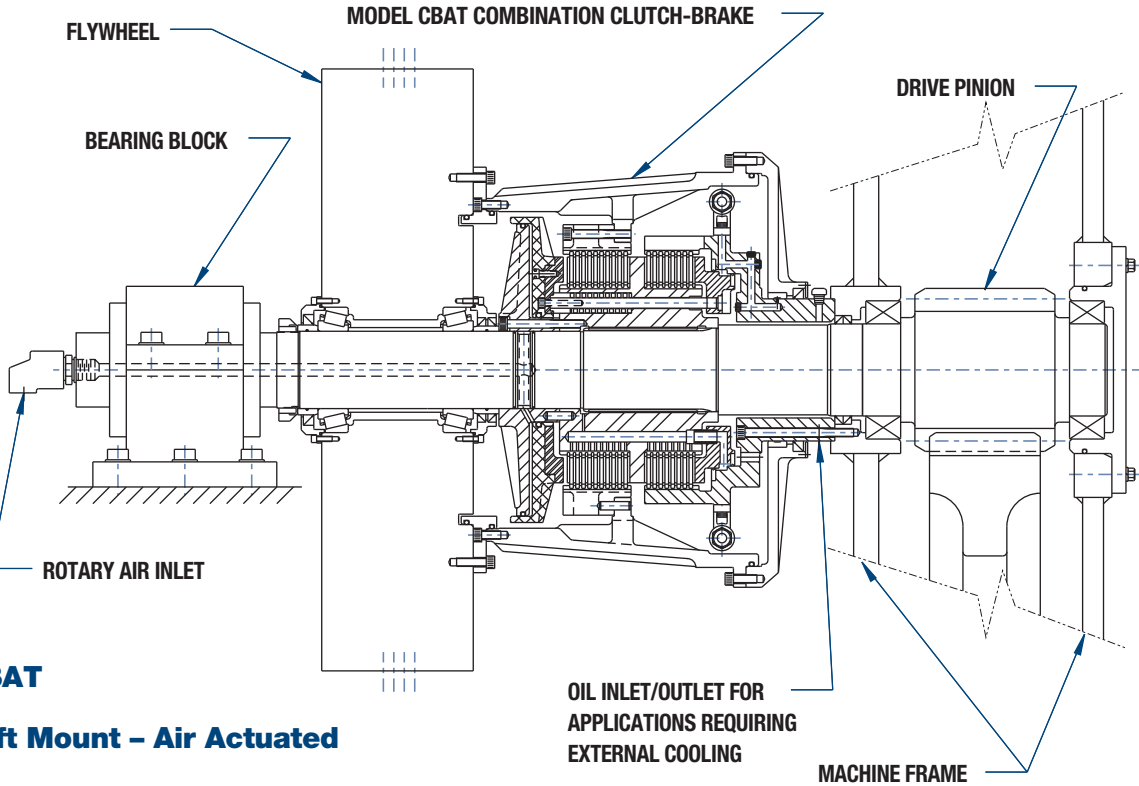


Figure 2

# Model CBA

## MODEL CBA COMBINATION CLUTCH-BRAKE

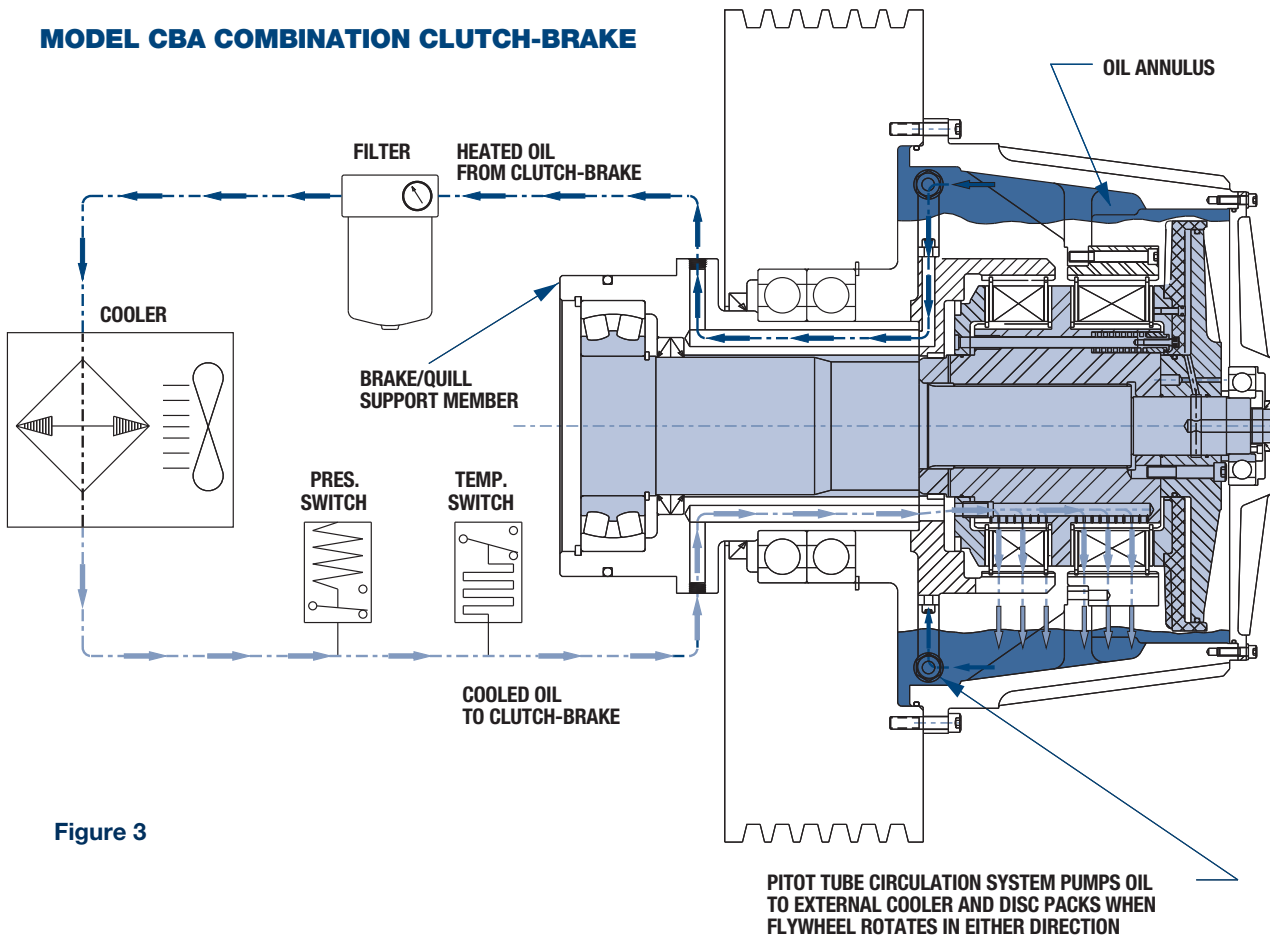


Figure 3

## EXTERNAL COOLING DESCRIPTION

For those applications requiring external cooling, the pitot tubes scoop the oil from the rotating column of oil within the Model CBA's housing. This oil contains the engagement heat. The oil is then pumped through passages drilled in the quill support member to an external cooler where the engagement heat is removed.

Cooled oil returns through a different set of passages drilled in the quill support member and is introduced through a series of orifices directly into the center of the clutch and brake disc packs. This oil provides the cooling for the disc packs and removes the heat of engagement. It then returns to the rotating column of oil where it is again removed by the pitot tube pumping system and delivered to the cooler to repeat the cycle.

The pitot tube pumping system is bi-directional and will pump oil from either direction of rotation. Being a centrifugal type pumping system, its output is related to the speed of rotation. This closely matches the cooling oil requirements of the disc packs since engagement energy is also related to the speed of rotation in the same manner.

This system is completely self-contained and requires no additional energy source other than housing rotation. If the housing rotates, oil is delivered in the correct quantity to the disc packs.

Low pressure switches, (indicating low oil level), as well as hi-temperature switches, and a filter are normally included as shown to complete the cooling lube system.