

Clutch Bearing Intro

NTN-BCA® offers the widest selection of high quality clutch release bearings available. In many cases our designs are supplied as original equipment for a variety of demanding applications. Usually, the original equipment equivalent design is available. Where design substitutions are made, the release bearing provided is often a part featuring one or more improvements offering longer life and quiet operation. Extensive use of Statistical Process Control (SPC) and sound testing at our facility prior to packaging insures that you receive a part made to the highest possible quality level.

Release bearings can be separated into two general categories; assemblies which include carriers and those sold as a bearing only. Assemblies save the technician inspection and installation time. When ordering the bearing only, the bore and fork actuation surfaces on the old carrier should be closely inspected for wear, since this could affect clutch operation. When installing a bearing on a new carrier or one in good condition, the bearing should be rotated while pressing to prevent damage to the raceways known as brinelling. This can be done by putting another release bearing face to face with it and turning while applying the pressure needed.

It is also recommended by NTN-BCA® and the Society of Automotive Engineers (SAE Practice J-1915) that other components be serviced whenever the bearing is replaced. New components or those supplied from a reputable rebuilders can be utilized. Replacement of the cover assembly (pressure plate), disc and pilot bearing are required. The flywheel should be replaced or resurfaced to a like-new condition. The transmission front bearing retainer, fork linkage and input shaft splines should also be in good condition or replaced. All bolts must be torqued to manufacturer's specification in a star pattern to prevent misalignment problems that would affect bearing life.

Bearing Only — Angular Contact

Angular contact bearings offer substantial improvements in bearing life over thrust bearings since they readily accept both thrust and radial loads. They also allow the design of constant contact systems that self adjust over the life of the clutch reducing the maintenance required. In addition, constant contact systems reduce the wear experienced by components of the clutch system which extends life. The vehicle operator experiences less noise and greater driving ease throughout the life of the clutch.

Bearing Only — Sealed Angular Contact

The addition of a seal to an angular contact bearing is another improvement provided by NTN-BCA® on many bearings. The seal does a better job of retaining lubricants in the bearing under all conditions, but is especially useful when operating temperatures are fairly high and the grease may soften. Seals also do a better job of excluding contaminants from the bearing. This can be extremely important in cases where semi-metallic or ceramic materials are used for the disc facings.

Assemblies — Angular Contact

Angular contact bearing assemblies offer the technician a convenient way to save time on inspection and installation. Please refer to the bearing only section for the features and precautions for angular contact type bearings.

Assemblies — Sealed Angular Contact

Sealed angular contact bearing assemblies offer the technician a convenient way to save time on inspection and installation. Please refer to the bearing only section for the features and precautions for sealed angular contact type bearings.

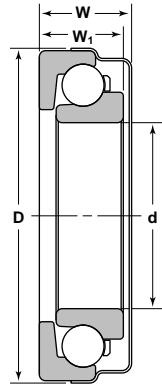
Assemblies — Sealed Self-Aligning

For truly outstanding performance in any application, old or new, NTN-BCA® offers a wide selection of sealed angular contact bearings featuring a self-aligning mechanism. This system allows the bearing to shift radially on the carrier upon initial engagement minimizing the effect of misalignment between the engine and transmission. Testing has shown up to a 400% improvement in life under misaligned conditions compared to bearings without this improvement.

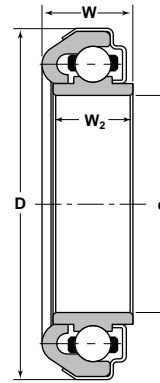
Clutch Pilot Bearings

NTN-BCA® Clutch Pilot Bearings are designed for both light and heavy duty applications. These bearings are available with or without seals and shields. For high temperature applications, NTN-BCA® offers a Viton seal (V suffix) with improved grease which can withstand temperatures up to 400°F. The Viton seals are especially popular for use in newer tractors and trucks where the air temperatures in the bell housing are greater due to the reduced airflow caused by aerodynamic styling and design changes to reduce weight and increase fuel economy.

Bearing only – Angular Contact



Angular Contact



Sealed Angular Contact

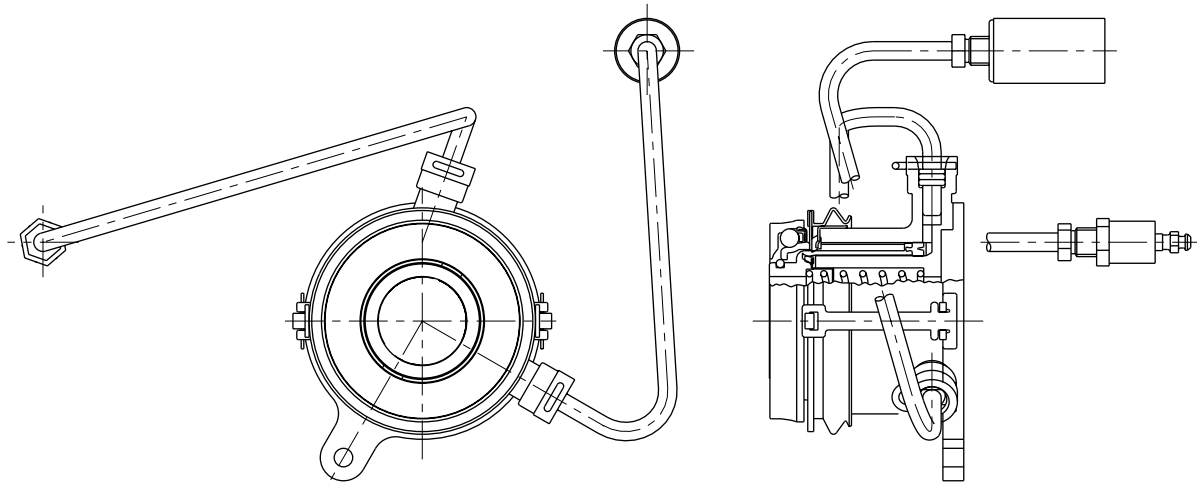
NTN-BCA® P/N	Bore	Outside Diameter	Mounting Seat Outside Diameter		Bearing Width	Overall Width
	d	D	Minimum	Maximum	W ₁	W
Inch						
01589	1.5890	2.7600	1.5920	1.5935	0.5350	0.5350
01599	1.5870	2.7000	1.5873	1.5888	0.3690	0.4460
01812	1.8122	3.0625	1.8125	1.8140	0.7500	0.8750
01876	1.8744	3.1250	1.9100	1.9115	0.6820	0.6820
* 02134	2.1350	3.4375	2.1355	2.1370	0.7500	*
02135	2.1350	3.5000	2.1355	2.1370	0.7500	0.9063
02251	2.2497	3.4375	0.2500	2.2515	0.7500	0.7550
02252	2.2497	3.5000	2.2500	2.2515	0.7500	0.9063
02255	2.2497	3.5000	2.2500	2.2515	0.7500	0.9063
02752	2.7494	4.0625	2.7500	2.7515	0.7970	1.0000
* 02754S	2.7497	4.0000	2.7500	2.7515	0.8130	*
02755S	2.2497	4.0625	2.2500	2.2515	0.8130	1.0000
02756A	2.7500	4.0620	2.7502	2.7517	0.8500	0.7650
02756B	2.7500	4.0620	2.7502	2.7517	0.8500	0.7560
WF02500	2.5000	4.0620	2.5002	2.5017	0.8100	0.8150

* Open Bearing, No Shield.

Bearing only – Sealed Angular Contact

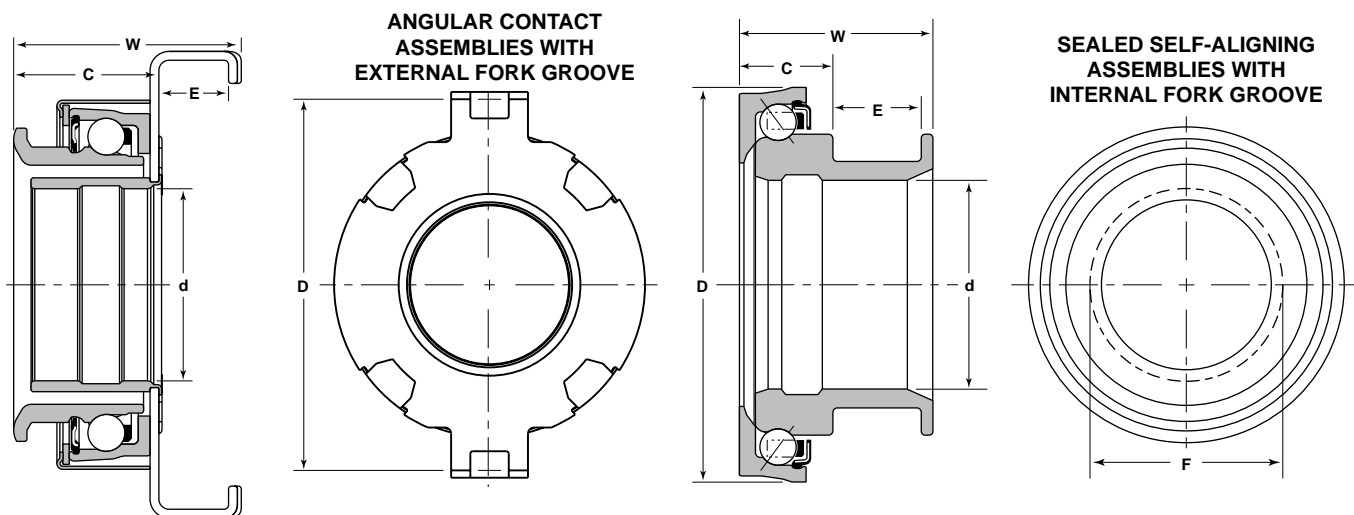
NTN-BCA® P/N	Bore	Outside Diameter	Mounting Seat Outside Diameter		Bearing Width	Overall Width
	d	D	Minimum	Maximum	W ₂	W
Inch						
JB01296	1.2990	2.3000	1.2992	1.3007	0.6000	0.6050
J01296	1.2990	2.3000	1.2992	1.3007	0.6990	0.6750
H01378	1.3780	2.5030	1.3782	1.3797	0.5510	0.7126
H01378A	1.3780	2.5030	1.3782	1.3797	0.6811	0.7220
S01378	1.3780	2.2800	1.3782	1.3797	0.5510	0.5560
J01496	1.4994	2.5310	1.4996	1.5011	0.6440	0.6490
J01576	1.5748	2.5130	1.5748	1.5763	0.7880	0.7930
JB01576	1.5744	2.5310	1.5746	1.5761	0.6300	0.6350
JC01576	1.5744	2.8900	1.5746	1.5761	0.7470	0.7250
JD01576	1.5744	2.5300	1.5746	1.5761	0.7170	0.7220
JD01576	1.5746	2.5300	—	—	—	0.7170
T02063	2.0627	3.4370	2.0630	2.0645	1.0236	1.0336
02256A	2.2498	3.7360	2.2500	2.2515	0.7500	0.7550
F-02500	2.5002	4.0620	—	—	0.6360	0.8100

Hydra Clutch®



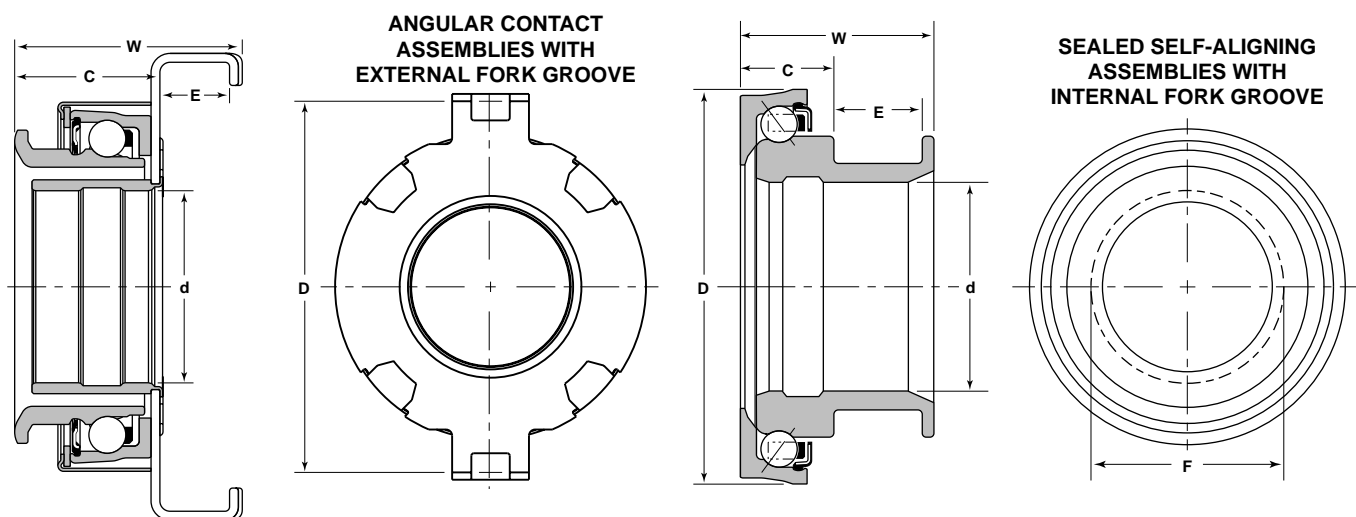
NTN-BCA® P/N	Bore	Outside Diameter	Overall Width
	d	D	W
		Inch	
HC1941D	1.2000	3.2300	2.6760
HC1941E	1.2000	3.2300	2.6760
HC1942H	1.2000	3.2300	2.6760
HC1942E	1.2000	3.2300	2.6760
HC1942F	1.2000	3.2300	2.6760
HC1942G	1.2000	3.2300	2.6760
HC247T	1.0800	2.9430	1.7910
HC248	1.0800	2.9430	1.7910

Assemblies—Angular Contact & Sealed Self Aligning



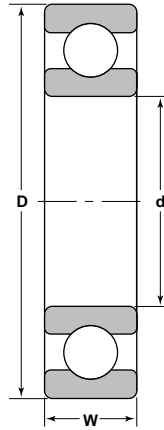
NTN-BCA® P/N	Bore	Outside Diameter	Overall Width	Fork to Face	Fork Groove	
	d	D	W	C	Width E	Diameter F
Inch						
JA00986C	0.9860	2.8900	2.0310	1.7510	—	1.3670
J00986C	0.9860	2.8900	1.8540	1.5740	—	1.3670
JO1106C	1.1050	2.3010	1.4080	1.0540	—	1.4200
H01142C	1.1417	2.2441	1.2205	0.8268	—	1.8504
J01146C	1.1420	2.3000	1.3437	0.8330	—	1.4080
CEO1186CB	1.1870	2.6400	1.1500	0.7420	—	1.8660
CFO1186CC	1.1870	2.7740	1.1880	0.7340	—	2.2640
CGO1186C	1.1900	2.7600	1.1880	0.7340	—	2.2640
HAO1222C	1.2222	2.5130	1.4060	0.9060	—	2.0930
CAO1250CA	1.2500	2.6500	1.5640	1.2600	—	1.8091
CBO1250CB	1.2510	2.7750	1.3320	0.8300	—	2.3670
CC01186CA	1.2510	2.6400	2.0080	1.6250	—	—
CD01186CA	1.2510	2.7600	2.0040	1.6250	—	—
GAO1250CA	1.2520	3.0500	0.9690	0.6840	—	2.1930
CD01186C	1.2525	3.0600	2.0450	1.6250	—	1.9335
DAO1302C	1.3010	3.5430	0.9060	0.5120	—	2.6770
NDO1302C	1.3010	3.5430	1.1810	0.7870	—	2.6770
FAO1302C	1.3020	3.1740	1.5850	0.9840	0.4720	3.0430
NDO1302C	1.3024	3.5430	1.1950	0.7874	—	2.6733
NCO1302C	1.3024	3.5430	0.9060	0.5118	—	2.6733
NEO1302C	1.3024	3.5430	1.1160	0.7087	—	2.6733
JAO1306C	1.3030	2.8900	1.7210	1.3010	—	1.6500
JBO1306C	1.3030	2.8900	2.1140	1.6940	—	1.6500
JCO1306C	1.3030	2.8900	2.2700	1.8500	—	1.6500
JDO1306C	1.3030	2.5350	1.6910	1.2700	—	1.6500
JO1306C	1.3060	2.8500	1.5630	1.2130	—	1.7400
WFCO1337CB	1.3298	2.7600	1.3620	0.6800	0.6000	1.6750
WFBO1338C	1.3300	3.2200	1.4580	0.9450	—	2.9856
WFCO1338C	1.3300	3.2200	1.2700	0.7680	—	2.9856
GO1697CA	1.3750	2.6400	1.8990	1.2500	0.5050	1.6250
CAO1377CA	1.3775	2.7600	1.2520	0.6600	0.5040	1.6250
CBO1377CA	1.3775	2.7600	1.2460	0.6600	0.5040	1.6250
CDO1377CC	1.3775	2.7900	1.2350	0.6500	0.4760	1.6250
CEO1377CD	1.3775	2.7250	1.2160	0.6500	0.4760	1.6250
GAO1377CA	1.3775	2.7600	1.0880	0.6350	0.3800	1.6250
JAO1386C	1.3840	2.8500	1.6850	1.3350	—	1.7400
JBO1386C	1.3840	2.5230	1.9500	1.5200	—	1.7350

Assemblies—Angular Contact & Sealed Self Aligning Continued



NTN-BCA® P/N	Bore	Outside Diameter	Overall Width	Fork to Face	Fork Groove	
	d	D	W	C	Width E	Diameter F
Inch						
H01142C	1.1440	—	—	0.8270	—	1.8550
HA01222C	1.2220	2.5020	1.3780	0.9060	—	2.0930
I02135C	1.8770	3.5000	3.5300	2.2500	0.8750	—
J01106C	1.1430	2.3200	1.3440	0.8330	—	—
CD01186CA	1.2525	2.7600	2.0080	1.6250	—	1.9340
CC01377CB	1.3770	2.7600	1.2100	0.6500	0.4760	1.6250
RB01658CA	1.4150	2.7600	1.9430	1.4400	0.3770	1.6950
JCO1386C	1.3840	2.5230	1.6300	1.2150	—	1.7350
JEO1386C	1.3060	2.5600	1.8710	1.5210	—	1.7400
JO1386C	1.3840	2.8500	1.4410	1.0760	—	1.7400
FO1421C	1.4200	3.0300	1.5400	0.9750	0.4820	3.0500
JO1421C	1.4215	3.2070	1.6680	1.0630	0.4720	3.0430
CO1437C	1.4350	3.0600	2.0080	1.6250	—	1.9370
FAO1447CA	1.4350	2.7600	1.0310	—	—	—
WFCO1437CB	1.4380	2.7600	1.3600	0.6800	0.6000	1.6750
WFAO1447CA	1.4375	2.9000	1.4390	0.9770	—	2.3800
CO1447C	1.4375	2.9000	1.4390	0.9770	—	2.3800
FBO1747CA	1.7350	3.4370	1.8200	0.9030	0.6950	2.2120
WFBO1747CA	1.7354	3.4420	1.7320	0.9120	0.7050	2.2070
FO1750C	1.7485	3.4650	1.8780	1.2290	0.5200	2.3400
CO1749C	1.7495	3.5000	1.8400	1.4370	—	1.9335
FO1757CA	1.7498	3.4400	1.9900	1.3660	0.5200	2.0800
FAO1757CA	1.7498	3.4400	1.9300	1.3060	0.5200	2.0800
FO1945C	1.9435	3.7410	3.7850	3.1370	0.5200	2.3400
FO2256CA	1.9445	3.7410	2.6900	2.0000	0.5200	2.3400
FAO2256CA	1.9445	5.7500	4.1000	3.4500	—	3.3740
FBO2256CA	1.9445	5.7500	3.0300	2.3800	—	3.3740
FDO2256CA	1.9445	3.7410	2.6900	1.5000	0.5206	2.3400
DO2256CA	1.9470	3.7360	4.2110	3.7810	—	—
FGO2256CA	1.8155	3.7500	3.1540	2.5060	0.5040	2.0620
DO2256CB	1.8780	3.7360	—	1.5840	—	—
WHCP177A	1.4470	3.1075	2.3976	—	—	—
WHCP177B	1.4470	3.2283	2.3346	—	—	—

Clutch Pilot Bearings



Bearing Number	Bore d	Outside Diameter D	Width W
	Inch/mm		
105-SS1	.9843 25	1.8504 47	.7087 18
204-F	.7874 20	1.8504 47	.5512 14
204-S	.7874 20	1.8504 47	.5512 14
204-SS	.7874 20	1.8504 47	.5512 14
205-FF	.9843 25	2.0472 52	.5906 15
205-S	.9843 25	2.0472 52	.5906 15
205-SS	.9843 25	2.0472 52	.5906 15
206-FF	1.1811 30	2.4409 62	.6299 16
206-S	1.1811 30	2.4409 62	.6299 16
206-SS	1.1811 30	2.4409 62	.6299 16
209-SS	1.7717 45	3.3465 85	.7480 19

Bearing Number	Bore d	Outside Diameter D	Width W
	Inch/mm		
305-DD	.9843 25	2.4409 62	.6693 17
305-S	.9843 25	2.4409 62	.6693 17
305-SS	.9843 25	2.4409 62	.6693 17
306	1.1811 30	2.8346 72	.7480 19
306-F	1.1811 30	2.8346 72	.7480 19
306-FF	1.1811 30	2.8346 72	.7480 19
306-FFLE	1.1811 30	2.8346 72	.7480 19
306-S	1.1811 30	2.8346 72	.7480 19
8505	.9843 25	2.0472 52	.6594 —
88505	.9843 25	2.0472 52	.6250 —