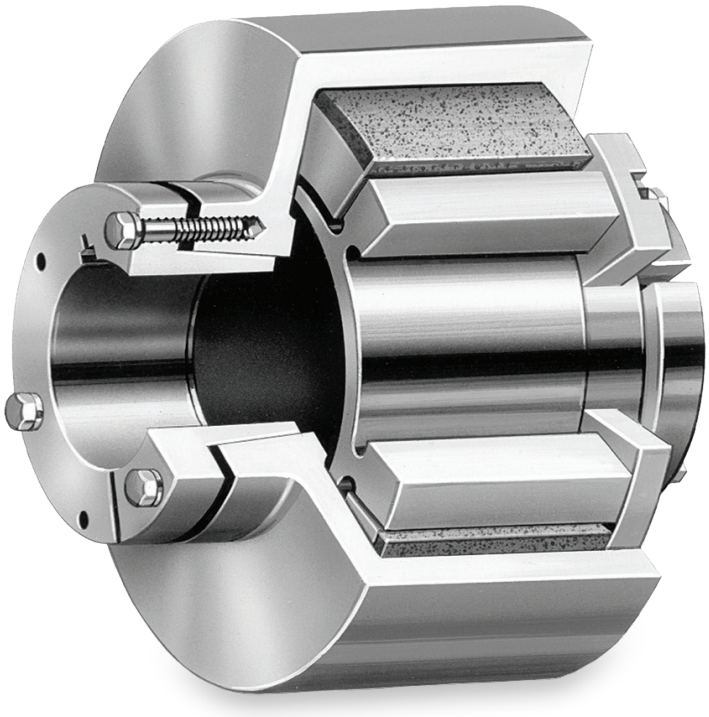
NLS®
(No Load Start) Centrifugal Clutch

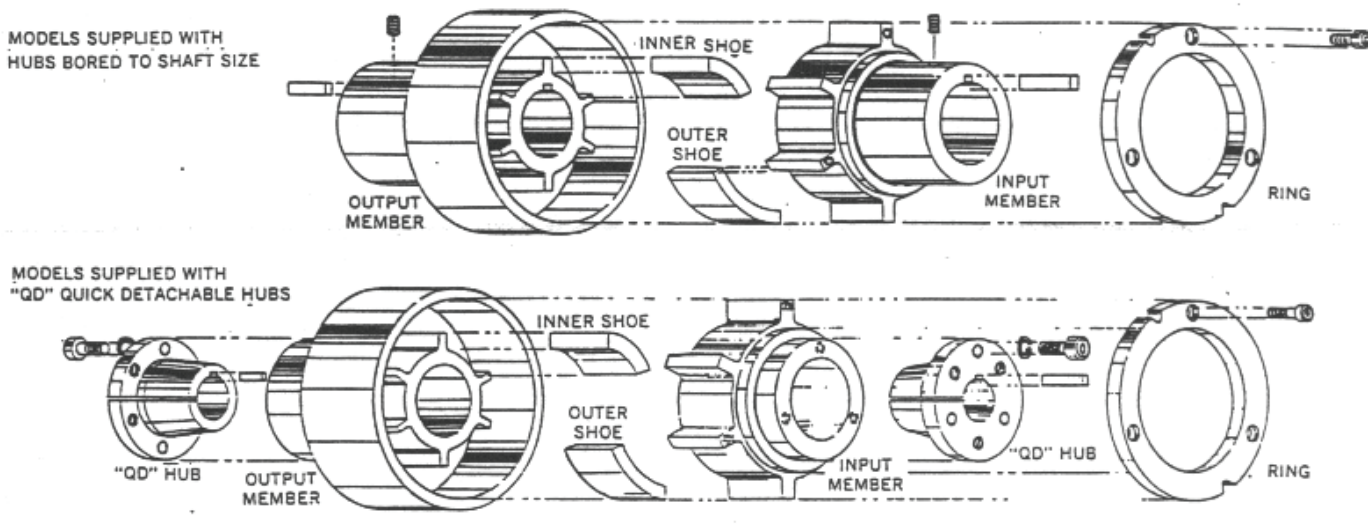
Installation Instructions

P-3058-BG

Models 10A – 25A

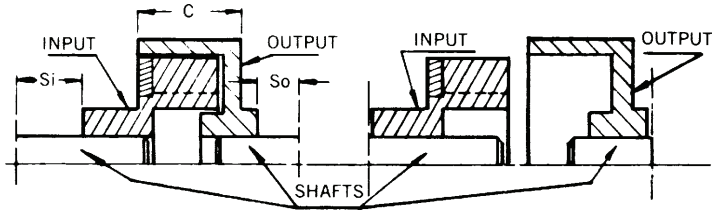


Boston Gear®
Altra Industrial Motion



Installing

For “GROUTED IN”, “STUD MOUNTED”, or other installations where the prime mover or driven equipment must be lifted vertically when removed, reference should be made to the drawing below.



Allow sufficient shaft length (“Si” + “So”) to allow both clutch halves to move a total distance equal to or greater than the drum length (“C”). Moving the clutch halves in this manner will allow either or both prime mover input and driven equipment output to be lifted vertically without internal interference in the NLS Clutch.

1. Mount input member with key in place and ring in assembled position on driving shaft so that ends of hub and shaft are flush. The key must be of proper dimension to seat in the keyway. Tighten set screws.

   NOTE: Models dynamically balanced for high speed operation are balanced with a key the full length of the bore keyway in place. If installed on shorter length shafts, adjustments must be made accordingly to key lengths to preserve balance. If clutch is to be installed with “QD” bushings, refer to “Installing Bushings on page 3. Shoe installation on page 3.

2. Mount output member with key in place on driven shaft so that ends of hub and shaft are flush. Tighten set screws.

3. Place inner shoes in proper pockets. Tie string or cord or put masking tape around input member to hold shoes in place. See “Shoe Installation” for shoe arrangement.

4. Bring clutch halves together. Remove string or cord holding inner shoes when halves are partially together. Shim supporting equipment as necessary so that input may rotate freely within the output member. See page 3, ALIGNMENT.

5. Position clutch halves. Make outer face of ring flush with edge of the output drum.

   NOTE: With Electric Motor drives, pull motor shaft outward to the end of allowable float when aligning ring face and drum edge. This will assure that minimum required gap between clutch halves will be maintained if motor shaft floats in its bearings during start up and operation.

6. Remove ring screw and slip ring back over hub.

Shaft Fits
A clearance fit is recommended for NLS Centrifugal Clutches supplied with bored to size hubs.

End Float Clips and Buttons
End Float Clips are sometimes installed in the face of the output to control the axial movement of the input. End float buttons sometimes are used at the inner face of the input. When setting up the input and output members, the gap between the clip and the input (and the gap between the button and drum) should be established at approx. 3/16".

Installing Bushings

1. Wipe tapered surface of bushing and mating hub of clutch with a clean cloth.
2. Slide bushing on shaft, flange end first.
3. Insert key and position bushing and key. Bushing and shaft ends may be flush or shaft may protrude through hub. Be sure to maintain a minimum of 1/8 inch between shaft ends.
4. Place clutch half on the bushing aligning the tapped holes of the clutch half with the through holes of the bushing.
5. Loosely install capscrews and lockwashers.
6. **Use a Torque Wrench.** Tighten all capscrews evenly and progressively in rotation to the torque value listed in the table. **Excessive wrench torque, closing the gap between the bushing and the mating hub, or use of lubricants will break the mating hub.**

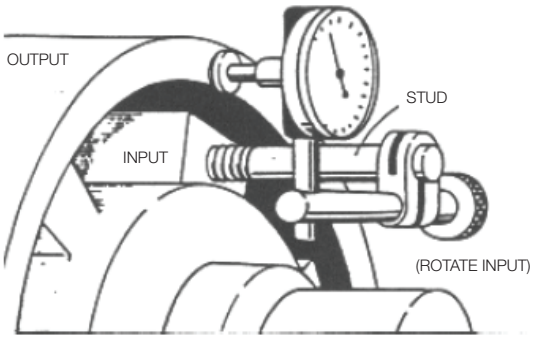
NLS Size	Bushing	Size & Thread of Capscrew	Ft Lbs to Apply with Torque Wrench
10A	E	1/2 - 13	40
12A & 14AD	F	9/16 - 12	50
16A	J	5/8 - 11	75

NOTE: Capscrew torques used on NLS clutches are less than those shown on bushing instruction sheets. To prevent damage to clutch body use above torque values.

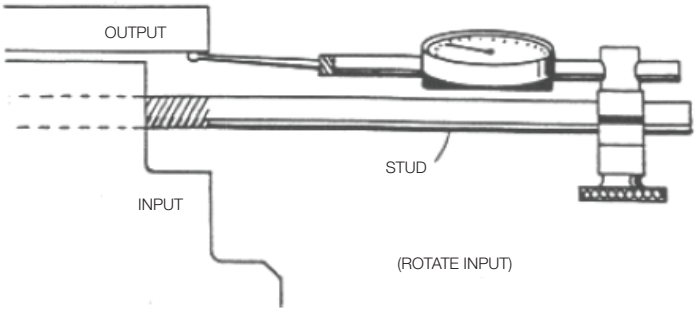
Removing Bushings

1. Loosen and remove all capscrews.
2. Thread capscrews into the tapped holes in the bushing flange to jack against the mating hub. Tighten bolts evenly and progressively in rotation to separate the two components.
3. Loosen setscrew to slide bushing from shaft.

ANGULAR ALIGNMENT



PARALLEL ALIGNMENT



Alignment

Mount a dial indicator on the input member. The tapped holes for ring attaching screws are convenient for this.

Set angular alignment. Place dial indicator point against unpainted edge of drum. Hold output member still and rotate input so that the dial sweeps around drum edge. Check (Total Indicator Reading) T.I.R. against the alignment chart below.

Set parallel alignment. Place dial indicator point against inside surface of drum. Hold output member still and rotate input so dial sweeps around drum. Check T.I.R. against table below.

Maximum T.I.R.

Sizes	Inches
10A through 12A	.020
14A through 25A	.024

T. I. R. represents two times the actual misalignment

Properly shim and secure driver and driven equipment to maintain proper alignment.
Closer alignment will result in better service life.

Shoe Installation

For information on idle speeds and adjustment of the shoe clearance, refer to Form 1187.

When ring is installed, install it to facilitate convenient inspection of the shoe lining during service. Be sure to install shoes in pockets so at least one shoe is opposite the inspection port in the retaining ring.

Shoe Inspection

1. Replace shoes when lining is wore to the base metal and/or slippage occurs at full load operation.
2. Inner shoes are not subject to excessive slippage and do not require inspection. The wear on the inner shoes is about 1/3 that of the outer shoe and should be replaced every third time the outer shoes are replaced.

No. of Shoe Pockets	No. of Shoes	Shoe Arrangment
6	6	Fill all pockets
	4	Leave two opposite pockets empty
	3	Fill every second pocket
	2	Fill two opposite pockets
8	8	Fill all pockets
	6	Leave two opposite pockets empty
	4	Fill every second pocket
	2	Fill two opposite pockets
For model 24AD outer shoes, use 2 shoes per pocket as follows:		
8	16	Fill all pockets
	12	Leave two opposite pockets empty
	8	Fill every second pocket
	4	Fill two opposite pockets

DO NOT LUBRICATE - NLS clutches do not require lubrication.

Replacement Shoes

Description	Clutch Product Number	Outer Shoe Product Number	Qty. Per Clutch	Inner Shoe Product Number	Qty. Per Clutch
10A-1	N010-1	N010-1033	4	N010-1026-I	4
10A-2	N010-2	N010-1042	4	N010-1026-I	4
10A-3	N010-3	N010-1033	6	N010-1026-I	6
10A-4	N010-4	N010-1042	6	N010-1026-I	6
12A-1	N012-1	N012-1275	3	N012-1256-I	3
12A-2	N012-2	N012-1275	4	N012-1256-I	3
12A-3	N012-3	N012-1260	6	N012-1256-I	6
12A-4	N012-4	N012-1275	6	N012-1256-I	6
14A-1	N014-1	N014-1453	6	N014-1468-I	3
14A-2	N014-2	N014-1470	6	N014-1468-I	4
14A-3	N014-3	N014-1470	8	N014-1468-I	6
16A-1	N016-1	N016-16110	4	N016-16100-I	3
16A-2	N016-2	N016-1685	6	N016-16100-I	4
16A-3	N016-3	N016-16110	6	N016-16100-I	4
16A-4	N016-4	N016-16110	8	N016-16100-I	6
19A-1	N019-1	N019-19150	6	N019-19100-I	6
19A-2	N019-2	N019-19150	8	N019-19100-I	8
24A-1	N024-1	N024-24140	8	N024-24180-I	4
24A-2	N024-2	N024-24200	8	N024-24180-I	6
24A-3	N024-3	N024-24200	12	N024-24180-I	8
24A-4	N024-4	N024-24200	16	N024-24220-I	8
25A-1	N025-1	N024-24200	18	N024-24180-I	8
25A-2	N025-2	N024-24200	21	N024-24220-I	12
25A-3	N025-3	N024-24200	24	N024-24180-I	12

General Operation

1. During normal operation the clutch may become hot, DO NOT touch the clutch or allow material to come in contact with it. Smoke and a “clunk-type” sound may occur during start-up. This is a normal result of clutch engagement.

2. NLS clutches require a break-in period before regular use. This break-in period is necessary to obtain a uniform mating surface between the shoes and the output. A break-in period of five starts with little or no load is recommended. These five starts should be at least 30 minutes apart to give the clutch time to cool off between starts.

3. If the maximum acceleration time as specified in the catalog selection is exceeded heat cracks may appear on the inside diameter of the output. Clutches with heat cracks should be replaced immediately.

WARNING:
ALL ROTATING EQUIPMENT SHOULD BE PROPERLY GUARDED.

Warranty

Boston Gear warrants that products manufactured or sold by it shall be free from defects in material and workmanship. Any products which shall within two (2) years of delivery, be proved to the Company's satisfaction to have been defective at the time of delivery in these respects will be replaced or repaired by the Company at its option. Freight is the responsibility of the customer. The Company's liability under this limited warranty is limited to such replacement or repair and it shall not be held liable in any form of action for direct or consequential damages to property or person. THE FOREGOING LIMITED WARRANTY IS EXPRESSLY MADE IN LIEU OF ALL OTHER WARRANTIES WHATSOEVER, EXPRESS, IMPLIED AND STATUTORY AND INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS.

No employee, agent, distributor, or other person is authorized to give additional warranties on behalf of Boston Gear, nor to assume for Boston Gear any other liability in connection with any of its products, except an officer of Boston Gear by a signed writing.

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