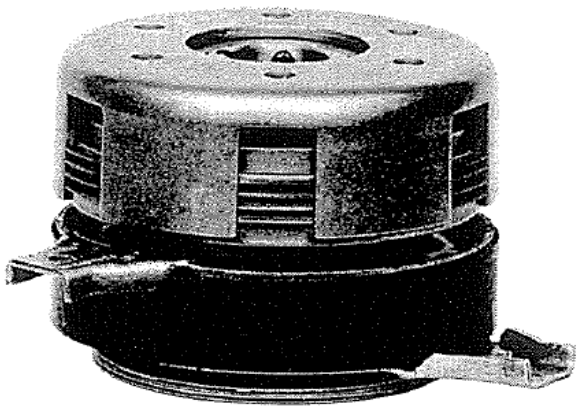
Roto-Cam® Clutch
C4 Series Sizes 30 thru 55

Installation & Maintenance Manual

P-5053-TBW
Form 1358



TB Wood's®
Altra Industrial Motion

⚠ WARNING: Rotating equipment must be properly guarded. It is the responsibility of the user to properly guard all rotating equipment to comply with OSHA or any applicable regulations. Failure to properly guard may contribute to severe injury should someone come in contact with the rotating parts or should the rotating part fail.

⚠ WARNING: DO NOT use TB Wood's products on any primary aircraft drive or any other drive which could endanger human life should a drive component fail.

⚠ WARNING: Cancer - www.P65Warnings.ca.gov

Roto-Cam® Mechanical Clutches

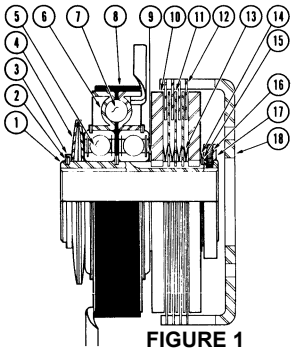


FIGURE 1

(1) hub
(2) snap ring
(3) snap ring retainer
(4) load spring (2)
(5) bearing*
(6) cam assembly (2)
(7) cam ball (3)
(8) cam cover**
(9) spacer
(10) press, plate (2)
(11) separator disc (3)
(12) friction disc (4)
(13) separator spring
(14) shim (as needed)
(15) snap ring
(16) set screw (2)
(17) collar
(18) drive cup

*Model C4 DRY – sealed bearings; Model C4 WET – open bearings

**Models C4 DRY – omitted on C4 WET models

How Roto-Cam® Clutches Operate

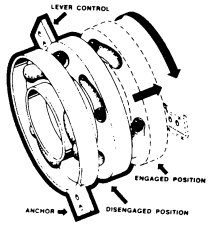


FIGURE 2

Three hardened steel balls (7), rolling in tear-drop shaped tracks in the steel cams (6) convert rotary engaging effort into axial thrust on ball bearings (5). As hand lever control is moved toward the engage position, steel balls roll toward narrow end of their respective cam tracks. Axial motion generated compresses load springs (4) and forces pressure plate (10), which is driven by the hub (1), forward. The disc pack (11 & 12) between the two pressure plates is compressed, transmitting torque from input (pressure plates and separator discs) to output (friction discs). External lugs on the friction discs in turn transmit torque to drive cup and load through matching slots in the cup. Separator springs (13) assure fast, positive release when clutch is disengaged.

Installation

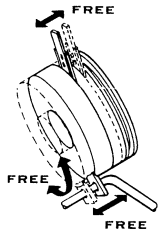


FIGURE 3

- When installing or removing ROTO-CAM clutches, apply pressure on the *CLUTCH HUB* only. Do not pound or pry under any circumstances.
- The ROTO-CAM clutch hub is driven from the shaft through a square key (not furnished). The clutch is located on, and secured to the shaft by two set screws (16). Recommended torque on these screws is:

Model C430	21 lb-in
Model C440 & Larger	65 lb-in

- When installing ROTO-CAM clutches, the actuating cleat which is anchored must be free to float on its restrain, both axially and radially. This will prevent eccentric loads from being imposed on the cam bearings. Since the cams move apart during actuation, both cleats must float axially to avoid binding or cocking.
- To provide long life for friction disc lugs and drive cup slots, be sure clutch and drive cups are accurately aligned. *Maximum allowable for both angular and parallel, or offset, misalignment is .005 inches T.I.R.*
- Drive cup must not be supported on the friction discs. Be sure load attached to drive cup is bearing supported and properly aligned, as shown in drawings.

Maintenance

- No mechanical adjustments are required during the life of the lining. Load springs (4) automatically adjust the ROTO-CAM clutch to compensate for wear of the friction lining on the pressure plate assembly.
- Type 4 ROTO-CAM clutches may be used in dry or wet (in-oil) applications. For *dry* applications (Model C4 DRY), ball bearings (5) are grease packed for life and sealed to prevent entry of contaminants. No maintenance is required. In dry applications, the area between the cams and bearings is protected from contamination by flexible cam cover (8). However, since the cam bearings must slide on the hub, excessive contamination must be avoided to prevent build-up which would keep the bearings from moving freely.
- For wet applications (Model C4 WET), ball bearings (5) are open and neoprene cam cover (8) is omitted to permit free flow of lubricant through the clutch. Clutch lubrication must be supplied by the transmission lubricant.
- Kits to rebuild ROTO-CAM clutches in the field are available. Ordering and installation instructions are listed below.

How to Select and Order the ROTO-CAM Rebuild Kits:

ROTO-CAM Rebuild Kits can be easily ordered by specifying the proper kit number.

CLUTCH	KIT PART NUMBER
C430	C430K
C440	C440K
C445	C445K
C455	C455K

Note: Rebuild Kits may be obtained from your local Wood's distributor. Kits include the pressure plates (10), separator springs (11), shims (14), and snap ring (15). If other parts are required, a new clutch should be purchased, as rebuilding becomes impractical.

Rebuilding

Disassembly

1) After removing drive cup (18), loosen two set screws (16) and remove collar (17).
2) Compress disc pack slightly and remove snap ring (15) and shims (14).
3) Remove outboard pressure plate (10), discs (11 & 12), separator springs (13) and inboard pressure plate (10) from clutch hub.

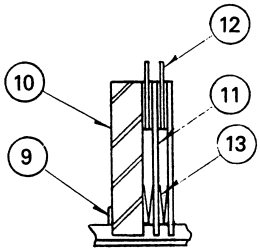


FIGURE 6
MODEL 30, 45 & 55

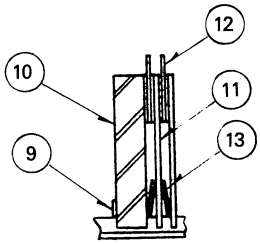


FIGURE 7
MODEL 40 ONLY

Assembly

1) Reinstall inboard pressure plate.
2) Install new friction disc (12) and two separator springs (13) as shown in Figure 6 or 7.
3) Install separator disc (11) against separator springs.
4) Repeat steps 2 & 3 above until all new discs and springs are installed. Be sure pressure plate and all separator discs can slide freely on hub splines.
5) After last friction disc and two separator springs are assembled, install outboard pressure plate.
6) Compress disc pack and install snap ring.

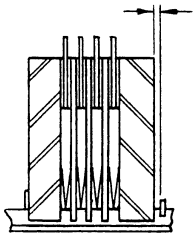


FIGURE 8
MODEL 30, 45 & 55

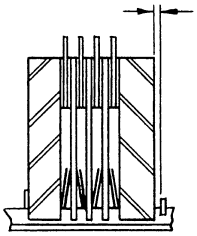
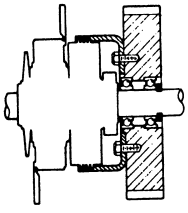
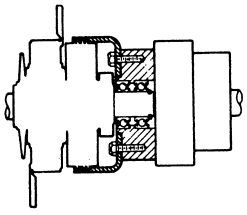


FIGURE 9
MODEL 40 ONLY


Parallel Shaft App.
FIGURE 4


Flexible Coupling
FIGURE 5

7) With disc pack compressed solid, measure distance between outboard pressure plate and snap ring with a feeler gauge. *Proper clearance is .040 to .050.* If clearance exceeds this value, reduce by adding shims (furnished) between snap ring and pressure plate until proper clearance is obtained. All friction discs must move freely in a properly adjusted assembly. Figure 8 or 9.
8) Install collar (17), locate clutch on shaft and torque set screws (16).

TB Wood's Facilities

North America

USA

440 North Fifth Avenue
Chambersburg, PA 17201 - USA
888-829-6637 * 717-264-7161
Belted Drives and Elastomeric Couplings

Customer Service
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For Application Support
1-888-829-6637 (Press #7)

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775-857-1800

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