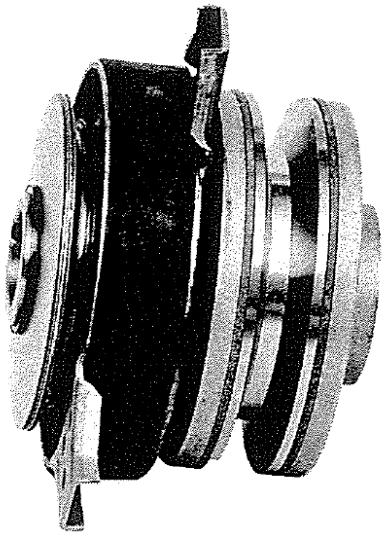
# Roto-Cam® Clutch
# C2 & C5 Series Sizes 30 thru 55

Installation & Maintenance Manual

**P-5056-TBW**
**Form 1356**



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 do so may contribute to severe injury should someone come in contact with the rotating parts or should the part fail.**

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

# Roto-Cam® Mechanical Clutches

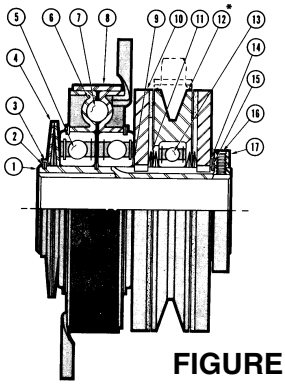


**FIGURE 1**

1. **Hub**
2. **Snap Ring**
3. **Snap Ring Retainer**
4. **Load Spring**
5. **Bearing (2)**
6. **Cam Assembly (2)**
7. **Cam Ball (3)**
8. **Cam Cover**
9. **Spacer**
10. **Pressure Plate Assembly**
11. **Separator Spring**
12. **Output Member***
13. **Bearing**
14. **Shim**
15. **Snap Ring**
16. **Set Screw**
17. **Collar**

## How Roto-Cam Clutches Operate

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 against the output member, transmitting torque from input (hub) to output. Separator springs (11) assure fast, positive release when clutch is disengaged.

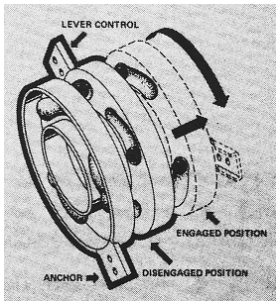



**FIGURE 2**

## *Output Member

TYPE 2 ROTO-CAM clutches are furnished with Pulley (12). Refer to ROTO-CAM Catalog MPS for Pulley dimensional data. Type 5 ROTO-CAM clutches are designed for use with a customer-furnished output member (sprocket, pulley or gear). To assure proper operation and long life for the pressure plate linings and the output bearing, the output member must be machined to the dimensions shown in table I.

| MODEL | A | B | C | D |
|---|---|---|---|---|
| C530 | 11/16 | 1.852<br>1.850 | 1-11/16 | .110<br>.100 |
| C540 | 7/8 | 2.443<br>2.441 | 2-7/32 | .167<br>.157 |
| C545 | 7/8 | 2.679<br>2.677 | 2-15/32 | .145<br>.135 |
| C555 | 7/8 | 3.1515<br>3.1495 | 2-29/32 | .130<br>.120 |

**TABLE 1**

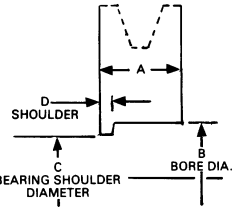



**FIGURE 3**

Output member must run true and maintain side clearance when clutch is disengaged. The surface of the output member must be square to the bore within .003" and have a surface finish of 30-60 RMS.

## Installation

- When installing or removing ROTO-CAM clutches, apply pressure on the *CLUTCH HUB* only. Do not pound or pry under any circumstances.
- Input and output members for "V" Belts or chain must be closely aligned along the power axis, to assure a perfectly straight drive. A misaligned drive can cause the clutch to drag, and hence, wear when disengaged, or can cause premature wear on the output bearing.
- 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:
  Models C230 & C530 21 lb-in
  Models C240, C540 & 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.

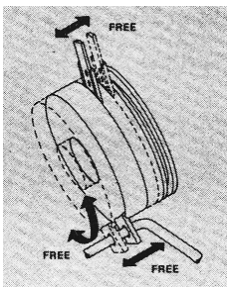



**FIGURE 4**

# Maintenance

- Load springs (4) automatically adjust to the clutch to compensate for wear of the friction lining on the pressure plate assemblies, once the proper clearance is established. *A total clearance of .020" to .030" should be maintained between the friction lining and the output when the clutch is disengaged.* This clearance can be adjusted with shims (14) as required.
- Ball bearings (5) and (13) are grease-packed for life and sealed to prevent entry of contaminants. No maintenance is required.
- 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.
- Kits to rebuild ROTO-CAM clutches in the field are available.

### 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 |
|---|---|
| C230, C530 | C230K |
| C240, C540 | C240K |
| C245, C545 | C245K |
| C255, C555 | C255K |

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) Loosen two set screws (16) and remove collar (17).
2) Compress separator springs by pressing on outboard pressure plate.
3) Remove snap ring (15) and shims (14).
4) Remove outboard pressure plate and separator springs, output bearing and output member, inboard separator springs, pressure plate from hub.

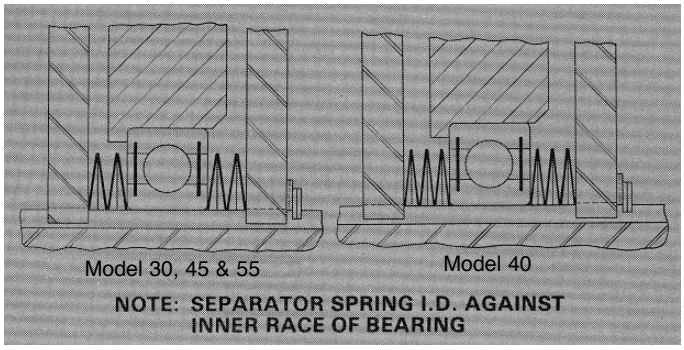



**FIGURE 5**

## Assembly

1) Install new inboard pressure plate on hub. Be sure pressure plate can slide freely on hub splines.
2) Install new separator springs, tip-to-tip, between pressure plate and clutch bearing, as shown in Figure 5.
3) Install original output member with bearing. Be sure bearing inner race can glide freely on the hub.

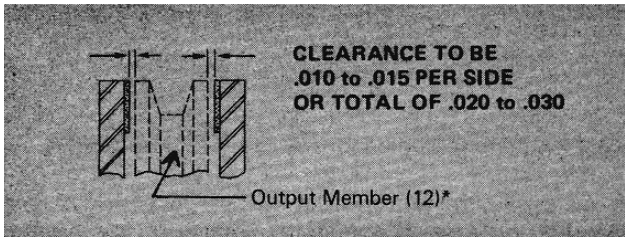



**FIGURE 6**

4) Install second set of new separator springs, tip-to-tip, as shown in Figure 5.
5) Install new outboard pressure plate.
6) Install snap ring and check clearance between pressure plates and output member sides with clutch disengaged. *Proper clearance is .020 to .030 total.* If clearance exceeds this value, reduce by adding shims (furnished) between snap ring and outboard pressure plate until proper clearance is obtained. See Figure 5 and 6 above.
7) Install collar, locate clutch on shaft and tighten set screws.

# Altra Industrial Motion

All Customer Service phone numbers shown in bold

## Belted Drives and Sheaves

**TB Wood's**

*Belted Drives*

Chambersburg, PA - USA
**1-888-829-6637** – Press #5

*For application assistance:*
*1-888-829-6637 – Press #7*

## Couplings

**Ameridrives**

*Mill Spindles, Ameriflex, Ameridisc*

Erie, PA - USA
**1-814-480-5000**

*Gear Couplings*

San Marcos, TX - USA
**1 -800-458-0887**

*Universal Joints, Drive Shafts, Mill Gear Couplings*

Erie, PA - USA
**1-920-593-2444**

**Bibby Turboflex**

*Disc, Gear, Grid Couplings, Overload Clutches*

Dewsbury, England
**+44 (0) 1924 460801**

Boksburg, South Africa
**+27(0) 11 918 4270**

**Guardian Couplings**

*Engineered Flywheel Couplings, Engine Housings and Pump Mounts, Flexible Shaft Couplings*

Michigan City, IN - USA
**1-219-874-5248**

**Huco**

*Precision Couplings and Air Motors*

Hertford, England
**+44 (0) 1992 501900**

Chambersburg, PA - USA
**1-888-829-6637**

**Lamiflex Couplings**

*Flexible Couplings, Bearing Isolators, and Coupling Guards*

Cotia, SP - Brasil
**+55 (11) 4615-6300**

## Couplings Cont.

**TB Wood's**

*Elastomeric Couplings*

Chambersburg, PA - USA
**1-888-829-6637**– Press #5

*For application assistance:*
*1-888-829-6637 – Press #7*

*General Purpose Disc Couplings*

San Marcos, TX - USA
**1-888-449-9439**

## Electromagnetic Clutches and Brakes

**Inertia Dynamics**

*Spring Set Brakes; Power On and Wrap Spring Clutch/Brakes*

New Hartford, CT - USA
**1-800-800-6445**

**Matrix**

*Electromagnetic Clutches and Brakes, Pressure Operated Clutches and Brakes*

Brechin, Scotland
**+44 (0) 1356 602000**

New Hartford, CT - USA
**1-800-825-6544**

**Warner Electric**

*Electromagnetic Clutches and Brakes*

New Hartford, CT - USA
**1-800-825-6544**

*For application assistance:*
*1-800-825-9050*

Saint Barthélémy d'Anjou, France
**+33 (0)2 41 21 24 24**

*Precision Electric Coils and Electromagnetic Clutches and Brakes*

Columbia City, IN - USA
**1-260-244-6183**

## Engineered Bearing Assemblies

**Kilian**

*Engineered Bearing Assemblies*

Syracuse, NY - USA
**1-315-432-0700**

## Gearing

**Bauer Gear Motor**

*Geared Motors*

Esslingen, Germany
**+49 (711) 3518-0**

Middlesex, NJ - USA
**1-732-469-8770**

**Boston Gear**

*Enclosed and Open Gearing, Electrical and Mechanical P.T. Components*

Charlotte, NC - USA
**1-800-825-6544**

*For application assistance:*
*1-800-816-5608*

**Nuttall Gear and Delroyd Worm Gear**

*Worm Gear and Helical Speed Reducers*

Niagara Falls, NY - USA
**1-716-298-4100**

## Heavy Duty Clutches and Brakes

**Industrial Clutch**

*Pneumatic and Oil Immersed Clutches and Brakes*

Waukesha, WI - USA
**1-262-547-3357**

**Svendborg Brakes**

*Industrial Brakes and Brake Systems*

Vejstrup, Denmark
**+45 63 255 255**

**Twiflex**

*Caliper Brakes and Thrusters*

Wichita Falls, TX - USA
**1-844-723-3483**

Twickenham, England
**+44 (0) 20 8894 1161**

**Wichita Clutch**

*Pneumatic Clutches and Brakes*

Wichita Falls, TX - USA
**1-800-964-3262**

Bedford, England
**+44 (0) 1234 350311**

## Linear Products

**Warner Linear**

*Linear Actuators*

New Hartford, CT - USA
**1-800-825-6544**

*For application assistance:*
*1-800-825-9050*

Saint Barthélémy d'Anjou, France
**+33 (0)2 41 21 24 24**

## Overrunning Clutches

**Formsprag Clutch**

*Overrunning Clutches and Holdbacks*

Warren, MI - USA
**1-800-348-0881**– Press #1

*For application assistance:*
*1-800-348-0881 – Press #2*

**Marland Clutch**

*Roller Ramp and Sprag Type Overrunning Clutches and Backstops*

Warren, MI - USA
**1-800-216-3515**

**Stieber Clutch**

*Overrunning Clutches and Holdbacks*

Heidelberg, Germany
**+49 (0) 6221-30470**

For information concerning our sales offices in Asia Pacific check our website www.altramotion.com.cn

TB Wood's®
Altra Industrial Motion

**www.tbwoods.com**

2000 Clovis Barker Road
San Marcos, TX 78666
512-353-4000

P-5056-TBW Form 1356 10/17