



A BOWER COMPANY

**Automation**  
**Robohand FERGUSON**  
**CAMCO**

## **SERVICE MANUAL RA SERIES INDEX DRIVES**

**MODELS 400RA, 401RA, 512RA, 662RA**

### **WARNING**

This is a controlled document. It is your responsibility to deliver this information to the end user of the CAMCO or FERGUSON product. Failure to deliver this could result in your liability for injury to the user or damage to the machine. For copies of this manual, call your Customer Service Representative at 800-645-5207

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## INTRODUCTION

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This service manual pertains to the disassembly and assembly of CAMCO's RA Series Index Drive MODELS 400RA, 401RA, 512RA, & 662RA.

The manual is to be used in conjunction with the General Service Manual which describes the lubrication and general maintenance of CAMCO Index Drives.

An exploded view of your specific Index Drive is included in this manual. Also included is a complete Bill of Materials for your convenience in identifying and ordering spare or replacement parts.

Some users of Index Drives have the facilities and trained personnel to accomplish service repair. You must determine the extent to which intricate servicing should be done in your own facility. When in doubt, CAMCO recommends that CAMCO trained servicemen make the repairs.

## WARNINGS AND CAUTIONS

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Statements in this manual preceded by the words *WARNING* or *CAUTION* and printed in italics are very important. We recommend you take special notice of these during service or repair.

### *WARNING*

Means there is the possibility of personal injury to yourself or others.

### *CAUTION*

Means there is the possibility of damage to the CAMCO unit.

## OIL SEAL REMOVAL

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The only repair possible without disassembly of the indexer is replacement of oil seals. To remove oil seals, drill a number of holes into the case of the seal. The seal may then be removed with a pointed tool. Be sure to remove all metallic chips created during the drilling of removal holes. A new seal may be installed as outlined in the "Oil Seal Installation Recommendations" section of the "General Service Manual".

## SPARE PARTS KIT

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CAMCO offers a Spare Parts Kit for all CAMCO index drive models CAMCO builds. These kits include oil seals, bearings, shims and cam followers. These are components that will most likely require replacement during repair of your index drive. CAMCO recommends a Spare Parts Kit be purchased and kept on hand prior to any disassembly of your CAMCO drive.

A complete list of components supplied in the Spare Parts Kit can be found in the parts list located in the rear of this manual. The asterisk behind the item number indicates those parts supplied with the Spare Parts Kit.

## BEFORE STARTING

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Before starting disassembly of your CAMCO unit you should read and review the following instructions. These provide important information on parts and procedures necessary to successfully complete your repair.

Comply with all *Warnings* and *Cautions*.

Read the "Trouble Shooting Guide" section of your "General Service Manual" before disassembling CAMCO units. CAMCO recommends returning defective equipment for inspection and repair whenever possible.

CAMCO uses Loctite™ to secure all screws and setscrews. If you encounter a fastener that is difficult to remove, apply heat to the screw and remove while still warm.

## DISASSEMBLY

1. Remove all accessory equipment such as clutches, reducers, sprockets, etc. If equipped with a CAMCO R200 OR R250 reducer see disassembly procedures pertaining to the appropriate reducer prior to removal from the unit.
2. Drain oil and flush unit with flushing solvent. Retain any chips or broken pieces you may find. These may aid in diagnosis.
3. Place index drive in dwell position.
4. REMOVAL OF OUTPUT SHAFT.

- A. Remove all socket head capscrews in the output cover. Gently pry output cover loose. Lift output shaft assembly from housing. Save all shims for later installation.



*Fig.1 Removing shaft from housing.*

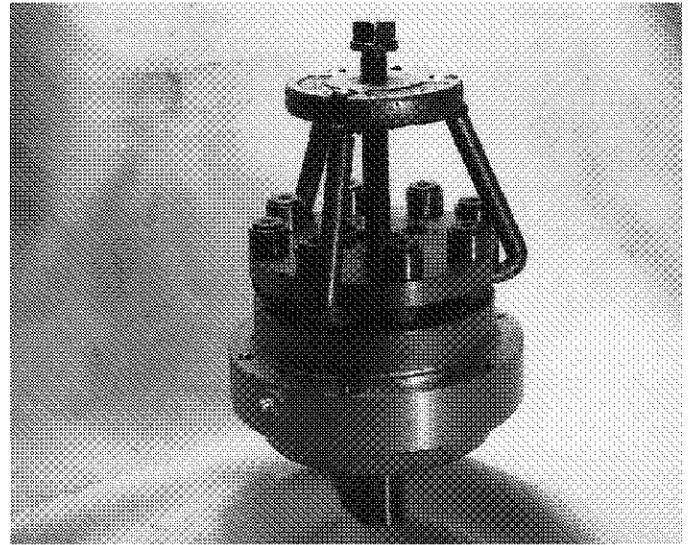
5. Inspect followers for damage or radial looseness. Looseness should not exceed .001 inch. Do not confuse radial looseness with axial endplay. Endplay will be from .03 to .06 inches as a normal condition. If endplay exceeds .06 the follower may require replacement.

NOTE: Generally, followers are replaced as added insurance against eventual failure.

6. Inspect output bearing for endplay. Endplay is not permissible on the input or output bearings.

### 7. REMOVING FOLLOWER WHEEL.

Remove the capscrews holding the follower wheel to the output shaft. The fit between the follower wheel and the shaft is a slip condition but since the wheel is doweled to the shaft a wheel puller will be required for removing the wheel. Remove the follower wheel and spacer for later installation.

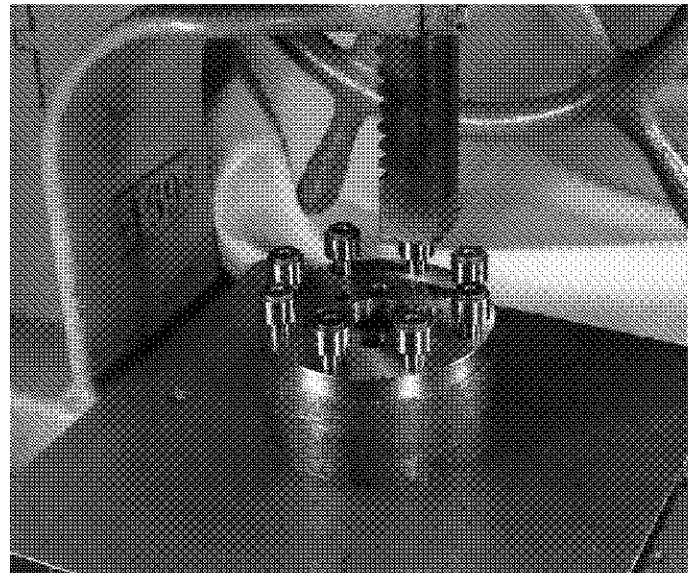


*Fig.2. Removing follower wheel.*

### 8. FOLLOWER REMOVAL.

Followers can be removed at this stage by removing the locknuts or setscrews (depending on date of manufacture) and pressing the followers out using an arbor. Install new followers per assembly Steps 4F and 4G.

9. Check the follower holes for roundness. These holes may be worn out due to overloads. The holes should be round within .0005 to permit reuse of the follower wheel.



*Fig.3. Pressing out followers.*

## 10. REMOVING SHAFT FROM OUTPUT ASSEMBLY.

To remove the output shaft from the cover it will be necessary to use an arbor press and push from the back side of the shaft using caution not to damage the parts.



*Fig. 4 Pressing out shaft.*

## 11. REMOVAL OF BEARINGS.

- A. Use a wheel puller to remove the cone portion of bearing from the shaft.
- B. Removal of the upper bearing cup from the output cover will require light tapping on the backside of the cup with a round aluminum bar and a hammer working around the perimeter as you tap to prevent binding. Continue this procedure until the cup is free of the cover.
- C. Removal of the lower output bearing cup from the output cover requires prying from the backside or drilling and tapping of jack screw holes or the use of a pulley puller.

## 12. INPUT SHAFT REMOVAL.

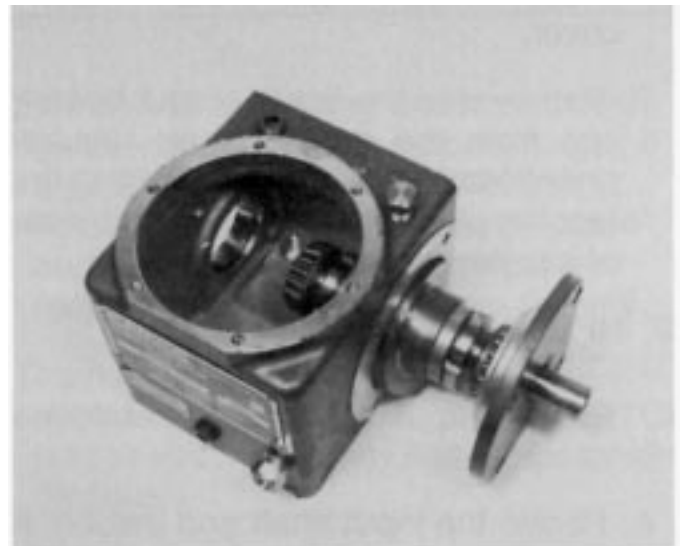
NOTE: The output shaft must be removed prior to input shaft removal

- A. Rotate the input shaft and inspect all parts for damage. Endplay in the output shaft is not permissible.
- B. Remove all input bearing cartridge capscrews.

- C. Tap on the end of the input shaft to drive the opposite cartridge from the housing. Then drive the shaft in the opposite direction for removal of other cartridges.

NOTE: Keep shims with their respective cartridges you will be asked to reinstall or replace with the same shim thickness during assembly.

- D. Remove the input shaft/cam assembly through the large cartridge hole (does not apply to 662RA see Step E).
- E. The 662RA requires removal of the cam locknuts while still in the housing and pressing the shaft through the hole previously occupied by the input cartridge and removed in Step C. This will automatically remove the bearing cone from one end of the input shaft. The use of an arbor press is recommended but this procedure can be accomplished by driving the shaft through with a soft faced hammer.

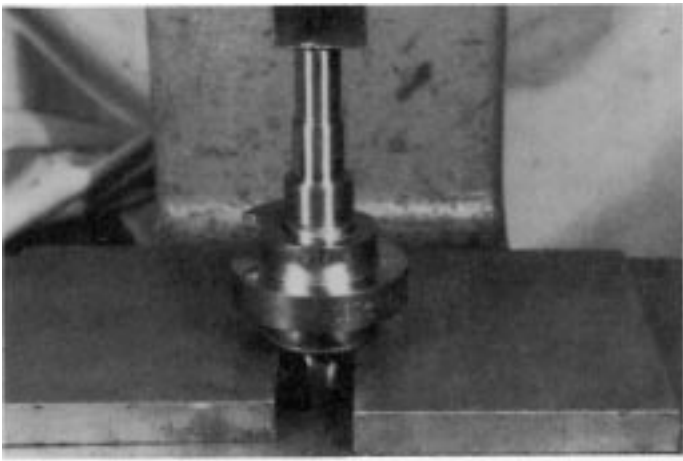


*Fig. 5 Removing input shaft.*

- F. Remove cam through the output opening.

## 13. REMOVAL OF CAM FROM OUTPUT SHAFT (400RA, 401RA AND 512RA)

- A. Use a wheel puller to remove the bearing cones from the input shaft.
- B. Using a spanner wrench remove the cam locknuts.
- C. Remove the spacers from the shaft.
- D. Use an arbor press to remove cam from shaft, using caution not to damage parts.



*Fig. 6. Pressing out camshaft.*

14. Remove the input bearing cups from the cartridges with a pulley puller, by prying or by drilling and tapping for jack screws.

## ASSEMBLY

### PRIOR TO REASSEMBLY.

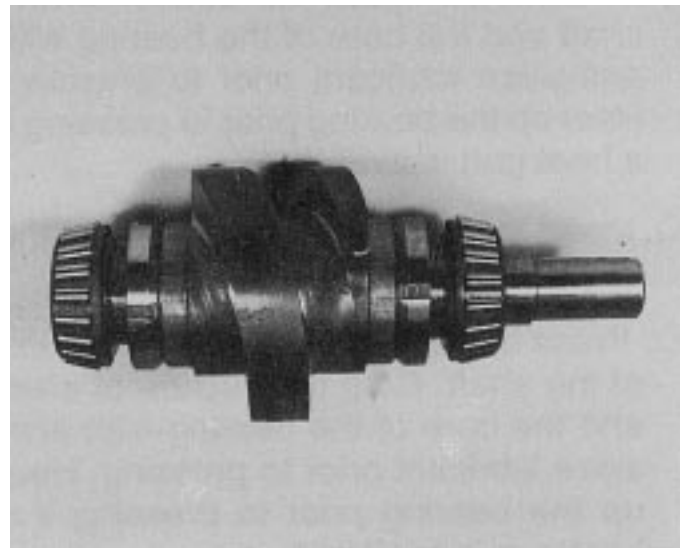
Clean and deburr all parts before reassembling.

Follow tightening torque and Loctite™ recommendations as outlined in the "General Service Manual".

1. Use an arbor to press the bearing cups into the cartridges. Coat the outside of the cup and the bore of the cartridge with an anti-seize lubricant prior to pressing. Fill cavity of cartridge with bearing grease recommended in the "General Service Manual".

### 2. ASSEMBLING INPUT SHAFT.

- A. Use an arbor to press the cam into shaft. Be sure key is installed into shaft first. Apply anti-seize lubricant to shaft and bore prior to pressing.
- B. Install spacers on both sides of the cam as removed in disassembly Step 13C.
- C. Use a spanner wrench to install the cam locknuts. Adjust nut to center cam on shaft.
- D. Use arbor to press bearing cones onto shaft. Coat shaft and bearing bore with anti-seize lubricant prior to pressing. The bore of the bearing should be heated prior to pressing if a heat gun is available.



*Fig. 7. Assembled camshaft.*

### 3. INSTALLING INPUT SHAFT INTO HOUSING.

(On the 662RA the prior assembly steps were done inside the housing).

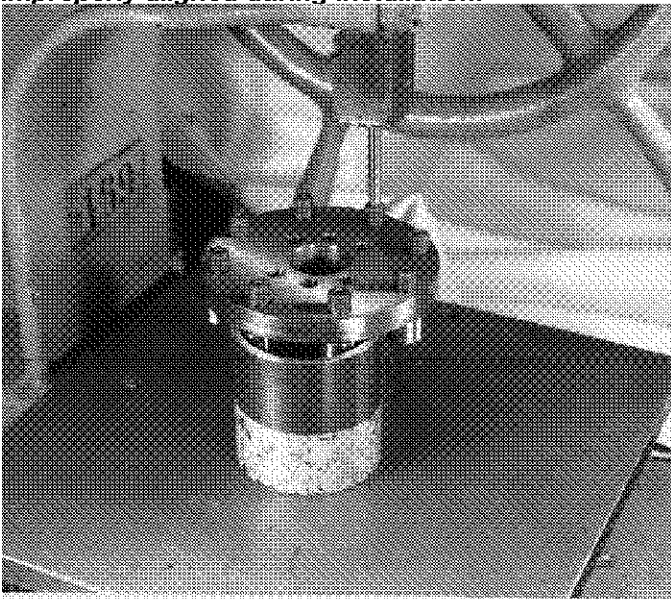
- A. Slip the input/cam shaft assembly through the large cartridge opening.
- B. Install the input cartridges. Be sure to install the same exact shims or equivalent height as was removed in disassembly Step 12C.
- C. Tighten cartridge mounting screws.
- D. If endplay exists remove an equal amount of shims from each side until there is a small amount of drag from the bearings. In rare instances it may be necessary to remachine the cartridges if all shims have been removed and endplay still exists.
- H. Loosen input cartridge screws and rotate the cartridge top to the most rearward position attainable within the slots provided in the cartridge.

### 4. ASSEMBLY OF OUTPUT SHAFT.

- A. Press bearing cups into cover. Coat the outside of the cup and the bore in the cover with an anti-seize lubricant prior to pressing.
- B. Press bearing cone on the output end of the shaft. Coat the outside of the shaft and the bore of the bearing with anti-seize lubricant prior to pressing. Heat up the bearing prior to pressing if a heat gun is available.

- C. Insert the shaft into the cover from the output side.
- D. Press bearing cone on the other end of the shaft. Coat the outside of the shaft and the bore of the bearing with anti-sieze lubricant prior to pressing. Heat up the bearing prior to pressing if a heat gun is available.
- E. Install shims removed during disassembly, or new shims with equivalent thickness, on the bottom bearing and install the spacer over the shims.
- F. Install new followers with an arbor press.

**CAUTION: Be sure to press the followers in straight as damage to the followers and wheel could occur if improperly aligned during installation.**



*Fig.8 Pressing in followers.*

- G. Install the locknuts or setscrews using the torque values listed in the "General Service Manual".
- H. Mount the follower wheel on end of shaft. Tighten capscrews and check for endplay. Endplay is not permissible in the output shaft assembly. If endplay exists remove shims under the spacer until a slight drag can be felt due to preloading the bearings.
- I. Dowel follower wheel to shaft. Remove capscrews and apply Loctite. Reinstall using torque values shown in the "General Service Manual".

## 5. SETTING CAM.

- A. Position cam in approximate center position by adjusting the locknuts.
- B. Apply "Prussian Blue" to the entire track.
- C. Rotate the cam until dwell is on top (facing the output).
- D. Bolt the output shaft assembly in place.
- E. Turn the input shaft with a small handwheel. If you encounter resistance, remove the output shaft assembly and adjust the cam axially to a more suitable position.
- F. Repeat the process until the unit performs smoothly and the bluing pattern is quite uniform and there is no looseness in any dwell position.

**CAUTION: Improper cam alignment may result in cam or follower wheel damage.**

**CAUTION: There should be no looseness in any dwell position of the output.**

- G. Tighten the locknuts and secure with Loctite #242 as specified in the "General Service Manual".
- H. Reinstall the cover using Permatex on all sealing surfaces. If a gasket was removed reinstall along with the Permatex. Some units will not have an output gasket. It is relative to the mounting position.
- I. Tighten capscrews using torque and Loctite recommendations as stated in the "General Service Manual".

- 6. Install new oil seals as described in the "General Service Manual".
- 7. Fill the index drive with the recommended oil to level indicator, see "General Service Manual". Too high an oil level will cause no damage, too low a level may result in unit failure.
- 8. Lubricate all fittings with recommended grease specified in the "General Service Manual".

## **HOW TO ORDER PARTS**

Please refer to parts list shown in this manual. This parts list is for a standard Index Drive. If you feel your drive is nonstandard or you are in doubt you should contact CAMCO Customer Service at (847) 459-5200 and request a Bill of Material for your specific unit based on serial number. CAMCO maintains records on all units for a period of ten years.

You may order parts per the standard Bill of Material even if your unit is nonstandard. CAMCO's order entry people will review the closed order file based on the following information and supply you with the correct part.

### **REQUIRED INFORMATION**

1. Original purchase order number (if available)
2. Customer name (original purchaser of drive)
3. Model number (located on name plate)
4. Serial number (located on name plate)
5. Approximate date of purchase.

**TO ORDER PARTS** contact CAMCO "Order Entry Department" Wheeling, Illinois

Phone (847) 459-5200 or Fax (847) 459-3064

- A. Describe the parts required and the 14 digit part number as listed in the Standard Bill of Materials or a Special Bill of Materials pertaining to your unit. State if you are using a Standard or Special bill of material.
- B. Give as much of the above required information as possible.

### **ON WARRANTY**

Replacement parts CAMCO will send freight prepaid via most practical means.

CAMCO will issue a "Returned Material Authorization Number" (RMA#) for the return of defective parts for inspection. CAMCO will bill customer for repair parts. When inspection of returned parts has been completed and determined to be a warranty problem, CAMCO will issue a credit to the customer for the repair parts and freight charges.

### **ON NON-WARRANTY**

Replacement or spare parts, with approved credit, are F.O.B. our plant Wheeling, Illinois.

In 2001 the cam followers for Right Angle index drives were redesigned. "Old Style" cam followers have a threaded end and mount with a nut. "New Style" cam followers use a set screw perpendicular to the stud. Right Angle indexers with "Old Style" cam followers should be retrofitted to accept the "New Style" cam follower. Contact IMC for instructions.

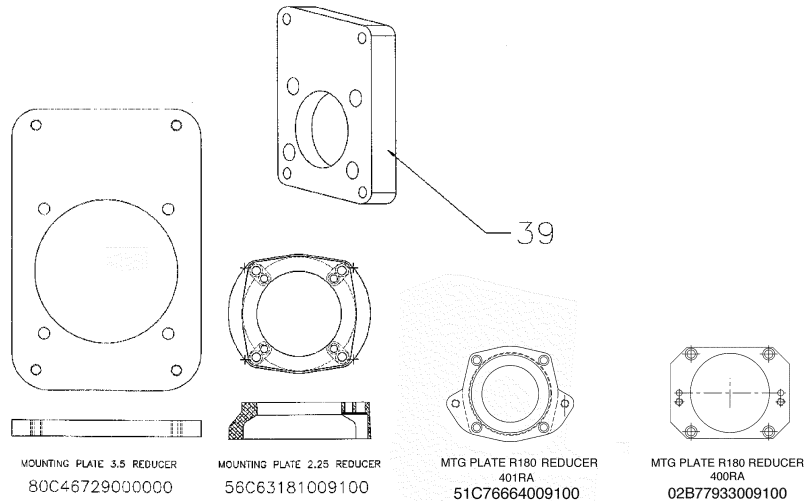
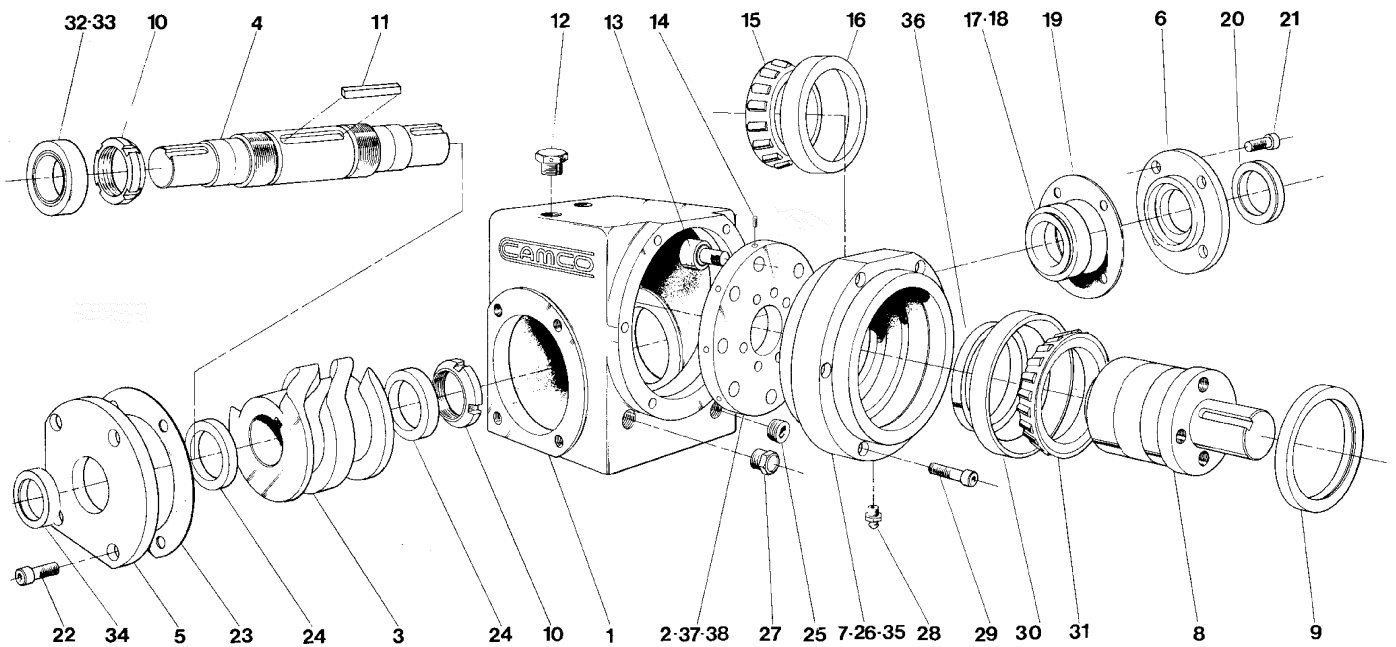
"Old Style" cam followers are available as a commercial grade follower.

Please Note: Commercial grade followers have greater internal clearance between the follower stud, rollers and shell than the original design resulting in a less preload than the either the "New Style" followers or the original "Old Style" followers.

These commercial followers offer better performance than worn cam followers but will be looser than a brand-new unit with "New Style" followers. We have found that commercial grade followers are acceptable in most applications as an aftermarket item. Contact IMC for ordering information on these followers.



# 400RA, 401RA, 512RA, & 662RA



## **PARTS LIST FOR 400RA INDEX DRIVE (STANDARD CONFIGURATION)**

<b><u>ITEM NO.</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	02D05405001002	HOUSING B
2 .....	02B01651014006	FOLLOWER WHEEL 6 HOLE FOR 3/4 FOLLOWER
2 .....	02B01651024008	FOLLOWER WHEEL 8 HOLE FOR 3/4 FOLLOWER
2 .....	02B01651034012	FOLLOWER WHEEL 12 HOLE FOR 5/8 FOLLOWER
2 .....	02B01651044008	FOLLOWER WHEEL 8 HOLE FOR 5/8 FOLLOWER
2 .....	02K10893014010	FOLLOWER WHEEL 10 HOLE FOR 5/8 FOLLOWER
2 .....	02K10893024010	FOLLOWER WHEEL 10 HOLE FOR 3/4 FOLLOWER
2 .....	02K26682004009	FOLLOWER WHEEL 9 HOLE FOR 3/4 FOLLOWER
3 .....	C/F CALL: 800/645-5207	"CAM, SPECIFY NUMBER OF STOPS & INDEX TIME"
4 .....	02B01219007002	SHAFT INP SE 400RA DBL EXT. (W/O REDUCER)
4 .....	02B34456007001	SHAFT INP SE 400RA SGL EXT. (W/O REDUCER)
4 .....	02C63763007002	INPUT SHAFT DBL EXT (R225 RED SIDE1)
4 .....	02C63764007002	INPUT SHAFT DBL EXT (R225 RED SIDE2)
4 .....	C/F CALL: 800/645-5207	INPUT SHAFT SGL EXT (R225 RED SIDE1)
4 .....	C/F CALL: 800/645-5207	INPUT SHAFT SGL EXT (R225 RED SIDE2)
4 .....	02C49430007002	INPUT SHAFT DBL EXT (R180)
5 .....	02B05366003021	CART OPEN INPUT B
6 .....	02B01293003502	CAP OPEN INPUT B
7 .....	02C02337002002	COVER B
7 .....	02K02551012012	COVER B FINISHED
8 .....	02B02336008001	SHAFT OUTPUT B
9* .....	84D07329520000	OIL SEAL C/R 28116
10 .....	95A26009070000	LOCKNUT PN-07
11 .....	031K187	KEY .3125 SQ. X 1.87 F.S.
12 .....	95A33000010000	AIR VENT 3/8-18 NPT AV53 F.S.
13 .....	82C3315011003	CAM FLWR 5/8 DIA (H20)
13 .....	82C33150120003	CAM FLWR 3/4 DIA (H24)
14 .....	95A26012060000	SET SCREW
14 .....	95A26005280000	SET SCREW
15 .....	86D07328530021	BEARING CONE L610549 CLASS 2
16 .....	86D07328530022	BEARING CUP L610510 CLASS 2
17* .....	86D07328190022	BEARING CUP 15520 CLASS 2
18* .....	86D07328190021	BEARING CONE 15578
19* .....	02B01264018800	SHIM .002 THK -INPUT
19* .....	02B01264028800	SHIM .005 THK -INPUT
19* .....	02B01264038800	SHIM .010 THK -INPUT
20 .....	84D07329130000	OIL SEAL C/R 9838
21 .....	95A26000380000	S.H.C.S. 1/4-20 X 1/2 *FS
22 .....	95A26000520000	S.H.C.S. 5/16-18 X 1/2 *FS
23* .....	02A02378008800	SHIM OUTP B F.S.
24 .....	02B01269009000	SPACER CAM B
25 .....	95A33003010000	MAGNETIC PLUG LISLE#5032041*FS
26 .....	N/A	NOT USED ON THE 400RA
27 .....	95A33004010000	SIGHT PLUG 3/8-18 N.P.T. *FS
28 .....	95A26000430000	GREASE FITTING #B-1610 *FS
29 .....	95A26000430000	S.H.C.S. 1/4-20 X 1 1/4 *FS
30 .....	86D07328530022	BEARING CUP L610510 CLASS 2
31* .....	86D07328530021	BEARING CONE L610549 CLASS 2
32* .....	86D07328190022	BEARING CUP 15520 CLASS 2
33* .....	86D07328190021	BEARING CONE 15578 CLASS 2
34 .....	84D07329130000	OIL SEAL C/R 9838

## ***PARTS LIST FOR 400RA INDEX DRIVE (STANDARD CONFIGURATION CONT.)***

35 .....	02A02341009000	GASKET COVER B	*FS
36 .....	02A63794010000	SPACER OUTP B	
37* .....	02A02378018800	SHIM .002 THK	
37* .....	02A02378028800	SHIM .003THK	
37* .....	02A02378038800	SHIM .005 THK	
37* .....	02A02378048800	SHIM .010 THK	
38 .....	95A26016320000	S.H.C.S. 5/16-24 X 3/4	*FS
39 .....	80C39246009100	REDUCER MTG PLATE MACH	
39 .....	02B77933009100	MTG PLATE 400RA/R180	
39 .....	56C63181009100	MTG PLATE MACH R225	

\* ..... Indicates parts supplied with Spare Parts Kit # 400 RA SPK

## **PARTS LIST FOR 401RA INDEX DRIVE (STANDARD CONFIGURATION)**

<b><u>ITEM NO.</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	04D05408021002	HOUSING C
2 .....	02B01651014006	FOLLOWER WHEEL 6 HOLE FOR 3/4 FOLLOWER
2 .....	02B01651024008	FOLLOWER WHEEL 8 HOLE FOR 3/4 FOLLOWER
2 .....	02B01651024012	FOLLOWER WHEEL 12 HOLE FOR 3/4 FOLLOWER
2 .....	02B01651024008	FOLLOWER WHEEL 8 HOLE FOR 3/4 FOLLOWER
3 .....	C/F CALL: 800/645-5207	"CAM, SPECIFY NUMBER OF STOPS & INDEX TIME"
4 .....	04C01026007002	SHAFT INPUT DOUBLE EXTENDED C
4 .....	04C34491007001	SHAFT INPUT SINGLE EXTENDED 401RA CUT OFF
4 .....	04C63643007002	SHAFT INPUT DOUBLE EXTENDED 401RA/R225 SIDE 1
4 .....	04C63644007002	SHAFT INPUT DOUBLE EXTENDED 401RA/R225 SIDE 2
4 .....	04C49416007002	SHAFT INPUT DBL EXT R180 RED SIDE 1 & 2
5 .....	04B05406003021	CART OPEN INPUT C
5 .....	04B77938003002	CART OPEN INPUT R180 RED
6 .....	04B01034003502	CAP OPEN INPUT C
6 .....	04B77937003002	CAP OPEN INPUT R180 RED
7 .....	04C02346002002	COVER 401RA
7 .....	04L03000002012	COVER FINISHED 401RA
8 .....	02B02336008001	SHAFT OUTPUT B
9* .....	84D07329520000	OIL SEAL C/R 28116
10 .....	95A26009080000	LOCKNUT PN-08
11 .....	025K175	KEY .250 SQ. X 1.75 F.S.
11 .....	037K250	KEY .375 SQ X 2.50 F.S.
12 .....	95A33000010000	AIR VENT 3/8-18 NPT AV53 F.S.
13 .....	82C33150110003	CAM FLWR 5/8 DIA (H20)
13 .....	82C33150120003	CAM FLWR 3/4 DIA (H24)
14 .....	95A26012060000	SET SCREW FOR 5/8" FLWR
14 .....	95A26005280000	SET SCREW FOR 3/4" FLWR
15 .....	86D07328530021	BEARING CONE L610549 CLASS 2
16 .....	86D07328530022	BEARING CUP L610510 CLASS 2
17* .....	86D07328210022	BEARING CUP 17244 CLASS 2
18* .....	86D07328210021	BEARING CONE 17119 CLASS 2
19* .....	04B03524018800	SHIM .002 THK INPUT 401RA *FS
19* .....	04B03524028800	SHIM .005 THK INPUT 401RA *FS
19* .....	04B03524038800	SHIM .010 THK INPUT 401RA *FS
20* .....	84D07329180000	OIL SEAL C/R11878
21 .....	95A26000400000	S.H.C.S. 1/4-20 X 3/4 *FS
22 .....	95A26000400000	S.H.C.S. 1/4-20 X 3/4 *FS
23* .....	04B01035018800	SHIM .002 THK INPUT 401RA *FS
23* .....	04B01035028800	SHIM .005 THK INPUT 401RA *FS
23* .....	04B01035038800	SHIM .010 THK INPUT 401RA *FS
24 .....	04A14082009000	"SPACER CAM C 4, 8, 12 & 24 STOP MODELS"
24 .....	04A01133009000	SPACER CAM C 6 STOP.
25 .....	95A33003010000	MAGNETIC PLUG LISLE#5032041*FS
26 .....	N/A	NOT USED ON THE 401RA
26 .....	02A02378038800	OUTPUT RISER (REQUIRED ON 90 AND SOME 120 DEGREE MOTION UNITS)
27 .....	95A33001010000	SIGHT PLUG 3/8-18 N.P.T. *FS
28 .....	95A33004010000	GREASE FITTING #B-1610 *FS
28 .....	95A26016320000	S.H.C.S. 5/16-24 X 3/4 *FS
29 .....	95A26000570000	S.H.C.S. 5/16-18 X 1 1/4 *FS
29 .....	56C63181009100	MOUNTING PLATE MACH R225
30 .....	86D07328530022	BEARING CUP L610510 CLASS 2
31 .....	86D07328530021	BEARING CONE L610549 CLASS 2

## ***PARTS LIST FOR 401RA INDEX DRIVE (STANDARD CONFIGURATION CONT.)***

32 .....	86D07328210022	BEARING CUP 17244 CLASS 2
33 .....	86D07328210021	BEARING CONE 17119 CLASS 2
34 .....	84D07329180000	OIL SEAL C/R11878
35 .....	04A01808008700	GASKET COVER C      F.S.
36 .....	02A02341009000	SPACER OUTP B
37 .....	02A02378048800	SHIM .010 THK INPUT 401RA   *FS
37 .....	02A02378018800	SHIM .002 THK INPUT 401RA   *FS
37 .....	02A02378028800	SHIM .003 THK INPUT 401RA   *FS
37 .....	02A02378038800	SHIM .005 THK INPUT 401RA   *FS
37 .....	02A02378048800	SHIM .010 THK INPUT 401RA   *FS
38 .....	95A26016320000	S.H.C.S. 5/16-24 X 3/4   *FS
39 .....	51C76664009100	MTG PLATE MACH R180
39 .....	80C39246009100	REDUCER MOUNTING PLATE MACH 180 SM
39 .....	56C63181009100	MOUNTING PLATE MACH R225/902RDM
* .....	Indicates parts supplied with Spare Parts Kit # 401RA SPK	

## **PARTS LIST FOR 512RA INDEX DRIVE (STANDARD CONFIGURATION)**

<b><u>ITEM NO.</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	06D05418001002	HOUSING CC
2 .....	06B01610044012	"FOLLOWER PLATE 6H CC 1"" FOLLOWER"
2 .....	06B01610024006	"FOLLOWER PLATE 8H CC 3/4"" FOLLOWER"
2 .....	06B01610074012	"FOLLOWER PLATE 8H CC 1"" FOLLOWER"
2 .....	06B01610074008	"FOLLOWER PLATE 9H CC 1"" FOLLOWER"
2 .....	06B01610084008	"FOLLOWER PLATE 12H CC 3/4"" FOLLOWER"
2 .....	06B01610094009	"FOLLOWER PLATE 12H CC 7/8"" FOLLOWER"
3 .....	C/F CALL: 800/645-5207	"CAM, SPECIFY NUMBER OF STOPS & INDEX TIME"
4 .....	06C01022007002	SHAFT INPUTUT DOUBLE EXTENDED CC
4 .....	06C34526007001	SHAFT INPUTUT SINGLE EXTENDED 512RA
4 .....	06C52108007002	SHAFT DOUBLE EXTENDED 512RA/R260
4 .....	06C52296007001	SHAFT SI 512RA/R260
4 .....	06C63431007001	SHAFT INPUT SINGLE EXTENDED 512RA/R225 SIDE 2
4 .....	06C63432007002	SHAFT INPUT DOUBLE EXTENDED 512RA/R225 SIDE 2
4 .....	06C63462007002	SHAFT INPUT DOUBLE EXTENDED 512RA/R225 SIDE1
4 .....	06C63463007001	SHAFT INPUT SINGLE EXTENDED 512RA/R225 SIDE 1
4 .....	80L01853007002	SHAFT INPUT CC RED
5 .....	83C05427003031	CARTRIGE OPEN CC R260
5 .....	06C05425003021	CARTRIGE OPEN INPUT CC
6 .....	06B01006003502	CAP OPEN INPUT CC
7 .....	06C02580002002	COVER CC (Standard)
7 .....	06L03326002012	COVER CC (Finished)
8 .....	06B02581008001	SHAFT OUTP CC
8 .....	06K10693008001	SHAFT OUTP CC/6.0 OLC
9* .....	84D07329610000	OIL SINGLE EXTENDED AL C/R 35083
10 .....	95A26009100000	LOCKNUT PN-10
11 .....	050K243	KEY .500 SQ. X 2.43 F.S.
12 .....	95A33000010000	AIR VENT 3/8-18 NPT AV53 F.S.
13 .....	82C33150140003	CAM FLWR 1 DIA (H32)
13 .....	82C33150130003	CAM FLWR 7/8 DIA (H28)
13 .....	82C33150120003	CAM FLWR 3/4 DIA (H24)
14 .....	95A26012060000	SET SCREW FOR 1" FLWR
14 .....	95A26012060000	SET SCREW FOR 7/8" FLWR
14 .....	95A26012060000	SET SCREW FOR 3/4" FLWR
15 .....	86D07328640021	BEARING CONE 34300 CLASS 2
16 .....	86D07328640022	BEARING CUP 34478 CLASS 2
17 .....	86D07328300022	BEARING CUP 13621 CLASS 2
18* .....	86D07328300021	BEARING CONE 13687 CLASS 2
19* .....	06B01011018800	"SHIM, .002 THK"
19* .....	06B01011028800	"SHIM, .005 THK"
19* .....	06B01011038800	"SHIM, .010 THK"
20* .....	84D07329240000	OIL SINGLE EXTENDEDAL C/R/ 14262
21 .....	95A26000540000	S.H.C.S. 5/16-18 X 3/4 *FS
22 .....	95A26000540000	S.H.C.S. 5/16-19 X 3/4 *FS
23* .....	06B05415018800	"SHIM, .002 THK"
23* .....	06B05415028800	"SHIM, .005 THK"
23* .....	06B05415038800	"SHIM, .010 THK"
24 .....	06A15110009000	SPACER CAM 512RA 12 STOP MODELS
24 .....	06A01210009000	SPACER CAM 512RA 3 STOP MODELS
24 .....	06A01200009000	"SPACER CAM 512RA 4, 6 AND 8 STOP MODELS"
25 .....	95A33003010000	MAGNETIC PLUG LISLE#5032041*FS

## PARTS LIST FOR 512RA INDEX DRIVE (STANDARD CONFIGURATION CONT.)

26 .....	06C01055009300	OUTPUT RISINGLE EXTENDED (REQUIRED ON 90 AND SOME 120 DEGREE MOTION UNITS)
27 .....	95A33001010000	SIGHT PLUG 3/8-18 N.P.T. *FS
28 .....	95A33004010000	GREASINGLE EXTENDED FITTING #B-1610 *FS
29 .....	95A26000600000	S.H.C.S. 5/16-18 X 2 *FS
30 .....	86D07328640021	BEARING CONE 34300 CLASS 2
31 .....	86D07328640022	BEARING CUP 34478 CLASS 2
32* .....	86D07328300022	BEARING CUP 13621 CLASS 2
33* .....	86D07328300021	BEARING CONE 13687 CLASS 2
34 .....	84D07329240000	OIL SINGLE EXTENDEDAL C/R 14262
35 .....	06B01809008700	GASKET COVER CC *FS
36 .....	06A02638009000	"SPACER, OUTPUT-CC"
37 .....	06A02663018800	"SHIM, .002 THK"
37 .....	06A02663028800	"SHIM, .003 THK"
38 .....	95A26016450000	SHCS 3/8-16 X 3/4
39 .....	80C64329009100	MTG PLATE ALT R225
39 .....	80L07456009100	"MTG PLATE, SSV-7300C REDUCER"
39 .....	80L07457009100	MOUNT PLATE 7300 CONE REDUCER

## **PARTS LIST FOR 662RA INDEX DRIVE (STANDARD CONFIGURATION)**

<b><u>ITEM NO.</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	08D01167001002	HOUSING 662RA
1 .....	80A04418011002	Housing Reducer MOUNTING TO SIDE 1
1 .....	80A04418021002	Housing Reducer MOUNTING TO SIDE 2
2 .....	08B01589014006	FOLLOWER PLATE 6H CCM
2 .....	08B01589024008	FOLLOWER PLATE 8H CCM
2 .....	08B01589034012	FOLLOWER PLATE 12H CCM
2 .....	08B01589044008	FOLLOWER PLATE 8H CCM
3 .....	C/F CALL: 800/645-5207	"CAM, SPECIFY NUMBER OF STOPS & INDEX TIME"
4 .....	08C01169007002	SHAFT INP DE CCM
4 .....	80D03604007002	SHAFT INP CCM RED
4 .....	08C34527007001	SHAFT INP SINGLE EXTENDED 662RA
5 .....	08B01171003502	CAP OPEN INP CCM
6 .....	08B01171003502	CAP OPEN INP CCM
7 .....	08L03006002012	COVER FINISH 662RA
7 .....	08C02575002002	COVER 662RA
8 .....	08C02576008001	SHAFT OUTP SINGLE EXTENDED CCM/662RA
8 .....	08L12793008001	SHAFT OUTP 662RA W/11F/FC OLC
9 .....	84D07329700000	OIL SINGLE EXTENDEDAL C/R 46324
10 .....	95A26009140000	LOCKNUT PN-14
11 .....	062K412	KEY .625 SQ. X 4.12 *FS
12 .....	95A33000010000	AIR VENT 3/8-18 NPT AV53 F.S.
13 .....	82C33150140003	CAM FLWR 1 DIA (H32)
13 .....	82C10457050003	CAM FLWR 1.25 DIA (H40)
14 .....	95A26012120000	SET SCREW FOR 1.25" FLWR
14 .....	95A26012060000	SET SCREW FOR 1" FLWR
15 .....	86D07328740021	BEARING CONE 52400 CLASS 2
16 .....	86D07328740022	BEARING CUP 52618 CLASS 2
17* .....	86D07328400022	BEARING CUP 4536 CLASS 2
18* .....	86D07328400021	BEARING CONE 4580 CLASS 2
19* .....	08A01325018800	SHIM .002 THK
19* .....	08A01325028800	SHIM .005 THK
19* .....	08A01325038800	SHIM .010 THK
20* .....	84D07329320000	OIL SINGLE EXTENDEDAL C/R 19400
21 .....	95A26000700000	SHCS 3/8-16 X 7/8
22 .....	95A26000700000	SHCS 3/8-16 X 7/8
23 .....	08A01325018800	SHIM .002 THK
23 .....	08A01325028800	SHIM .005 THK
23 .....	08A01325038800	SHIM .010 THK
24 .....	08A0123009000	CAM SPACER (REQUIRED ON 4 AND 8 STOP MODELS)
24 .....	08A0123009000	CAM SPACER (REQUIRED ON 3 AND 6 STOP MODELS)
24 .....	08A16373009000	CAM SPACER (REQUIRED ON 12 STOP MODELS)
25 .....	95A33003010000	MAGNETIC PLUG LISLE#5032041*FS
26 .....	08C01810008700	OUTPUT RISINGLE EXTENDED (REQUIRED ON 90 AND SOME 120 DEGREE MOTION UNITS)
27 .....	08C01309009300	SIGHT GLASS
28 .....	95A33004010000	GREASINGLE EXTENDED FITTING #B-1610 *FS
29 .....	95A26001120000	S.H.C.S. 1/2-13 X 2 3/4 *FS
30 .....	86D07328740022	BEARING CUP 52618 CLASS 2
31 .....	86D07328740021	BEARING CONE 52400 CLASS 2
32 .....	86D07328400022	BEARING CUP 4536 CLASS 2
33 .....	86D07328400021	BEARING CONE 4580 CLASS 2



PARTS LIST FOR 662RA INDEX DRIVE (STANDARD CONFIGURATION CONT.)

<u>ITEM NO.</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
34 .....	84D07329320000	OIL SINGLE EXTENDEDAL C/R 19400
35 .....	08C01810008700	GASKET COVER CCM       *FS
36 .....	08B02624009000	SPACER OUTP CCM
37* .....	08A01325018800	SHIM .002 THK
37* .....	08A026710298800	SHIM .003 THK
37* .....	08A01325028800	SHIM .005 THK
37* .....	08A01325038800	SHIM .010 THK
38 .....	95A26016470000	SHCS 3/8-24 X 1
39 .....	80C01938009100	MOUNTING PLATE 7300 REDUCER
39 .....	80C02238009100	MOUNTING PLATE 7350 REDUCER

\* ..... Indicates parts supplied with Spare Parts Kit # 662RA SPK



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