LPP Series Service Manual

WARNING: This is a controlled document. It is your responsibility to deliver this information to the end user of the DESTACO CAMCO 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 1-800-645-5207.

LPP SERIES

Service Manual

DESTACO
a DOVER company

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INTRODUCTION

This service manual pertains to the disassembly and assembly of CAMCO's LPP Parts Handlers models 240LPP, 380LPP & 4120LPP.

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

Exploded views of the Parts Handlers are included in this manual. The procedures in this manual reference the item numbers of the exploded views.

Also included is a complete Bill of Materials for your convenience in identifying and ordering spare or replacement parts.

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

WARNINGS AND CAUTIONS

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

The only repair possible without disassembly of the parts handler 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

CAMCO offers a Spare Parts Kit for all CAMCO parts handler 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 parts handler.

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

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. GENERAL

   A. Remove all accessory equipment such as grippers, gear reducers, bevel gearboxes, cycle cams and limit switches, etc. If equipped with a bevel gearbox, be sure not to loose the spacer shims when removing the gear from the shaft. These shims will have to be reinstalled when reassembled in order to maintain proper gear meshing.

2. SIDE AND FRONT COVER REMOVAL

   A. Remove six screws (4) and side/front cover (3).

   B. Remove ten screws (2) and upper sheet cover (1) enclosing the cam compartment.

   C. At this time the entire unit should be flushed with a solvent to remove grease from the cam compartment and excess grease from the tracks (87 & 89) and guides (73 & 84).

3. REMOVAL OF LIFT AND TRANSLATOR ARMS

   A. Loosen clamping screw (45) on lift lever (44).

   B. Slide lever (44) off the end of output shaft (34), gently rocking the lever should binding occur.

   C. Remove key (35) from output shaft (34).

   D. Loosen clamping screw (68) on translator lever (67).

   E. Slide lever (67) off the end of output shaft (57), gently rocking the lever should binding occur.

   F. Remove key (58) from output shaft (57).

   G. Inspect lift lever follower (47) and translator lever follower (69) for damage or radial looseness. It should not exceed 0.001 inch. Do not confuse radial looseness with axial endplay. Endplay will be from 0.03 to 0.06 as a normal condition. If it exceeds these dimensions, it may require replacement. If follower replacement is necessary, refer to "Follower Removal" in this manual.

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

4. REMOVAL OF TRANSLATOR GUIDE

   A. UNITS EQUIPPED WITH OVERLOAD SPRING (93): Loosen jam nut (95) and unthread screw (91) from housing (97). Remove jam nut (95), screw (91), washer (92) and overload spring (93).

   B. Remove the four screws (83) and remove translator carriage plate (82) from lift carriage plate (75).

5. DISASSEMBLY OF TRANSLATOR GUIDE

   A. Remove eight screws (81) and remove translator carriage plate (82) from translator guide (84).

   B. Remove two screws (86) and fixture mounting block (85) from translator guide (84).

   C. Remove two screws (90), track plate (89), spacer block (88) and track plate (87) from translator guide (84)

   D. If equipped, remove two screws (96) and overload spring bracket (94) from translator carriage plate (82).

6. REMOVAL OF LIFT GUIDE

   A. Remove the eight screws (80) and remove lift carriage plate (75) from lift guide (73).

   B. Remove six screws (74) and remove from lift guide (73) from housing (97).

   C. If replacement is necessary, remove two screws (76) and lift plate (77) from lift carriage plate (75). If equipped, remove two screws (79) and lift block (78) from lift carriage plate (75).

7. INPUT SHAFT/CAM REMOVAL

   A. Rotate the input shaft (15) and inspect all parts for wear or damage. Endplay in the input shaft is not permissible.

   B. Remove four screws (5).

   C. Tap on the opposite end of the input shaft (15) to loosen bearing cartridge (6). Remove the cartridge and shims (7, 8, & 9).

      NOTE: Keep shims with bearing cartridge. You will be asked to reinstall or replace with the same shim thickness during assembly.

   D. Remove four screws (24).

   E. Tap on the opposite end of the input shaft (15) to loosen bearing cartridge (22). Remove the cartridge and shims (7, 8, & 9).

      NOTE: Keep shims with bearing cartridge. You will be asked to reinstall or replace with the same shim thickness during assembly.

   F. Remove input shaft (15) from housing (97).

8. INPUT SHAFT/CAM DISASSEMBLY

   A. Use a wheel puller to remove bearing cones (11 & 20) from input shaft (15).

   B. 380LPP AND 4120LPP: Remove bearing locknut (19).

   C. Using a spanner wrench, remove cam locknuts (12 & 18).

   D. Matchmark the lift and trans cams to the input shaft (15) to insure proper reassembly. The cams must not be turned around and the two cams are not interchangeable.

   E. Place the input shaft vertically on an arbor press. Block the upper cam and press the input shaft out of the cam. Turn the input shaft over and remove the remaining cam in the same manner.

      NOTE: This procedure can be accomplished by driving the input shaft out of the cams with a soft faced hammer if an arbor press is not available.

   F. Remove cam locknuts (13 & 14) from input shaft (15).

   G. Remove input bearing cups (10 & 21) from cartridges (6 & 22) with a pulley puller, by prying, or drilling and tapping for jack screws.

9. OUTPUT SHAFT/FOLLOWER WHEEL REMOVAL

   A. Rotate each output shaft/follower wheel (34 & 57) and inspect for wear or damage. Endplay in the shaft is not permissible.

   B. Matchmark cartridges (26, 41, 49, & 64) relative to the housing (97). These must be reinstalled in the same side and position since they are eccentric.

   C. Remove four screws (25).

   D. Tap on the opposite end of the output shaft (34) to loosen bearing cartridge (26). Remove the cartridge and shims (27, 28, & 29).

      NOTE: Keep shims with bearing cartridge. You will be asked to reinstall or replace with the same shim thickness during assembly.

   E. Remove four screws (42).

   F. Tap on the opposite end of the input shaft (34) to loosen bearing cartridge (41). Remove the cartridge and shims (38, 39, &40).

      NOTE: Keep shims with bearing cartridge. You will be asked to reinstall or replace with the same shim thickness during assembly.

   G. Remove output shaft (34) thru the upper opening of housing (97).

   H. Remove output shaft (57) in the same manner.

10. OUTPUT SHAFT/FOLLOWER WHEEL DISASSEMBLY

A. Use a wheel puller to remove bearing cones (31, 36, 54, & 59) from output shafts (34 & 57).

NOTE: This can also be done using a small diameter aluminum bar and a hammer. Place the bar against the protruding edge of the cone and tap with a hammer, working around the perimeter to prevent binding. Continue until the cone is free of the shaft.

F. Remove bearing cups (30, 37, 53, & 60) from cartridges (26, 41, 49, & 64) with a pulley puller, by prying, or drilling and tapping for jack screws.

11. FOLLOWER REMOVAL

A. For translator lever follower (69) remove nut (71) and washer (70).

B. For followers (32, 47, and 55), apply heat to setscrew (33, 46 and 56) and remove the setscrew while still warm.

C. Threaded holes have been provided in the ends of the follower for ease of removal. Use a slide hammer or a simple self made pull tool. The self made pull tool consists of a short piece of round tubing large enough to clear the follower diameter and a small flat bar with a clearance hole large enough to insert a capscrew of equal thread size as the follower pull hole. Slip the tube over the follower, place the bar over the tube and thread the capscrew into the follower. Tightening the capscrew will remove the follower.

D. Check the follower holes for roundness. These holes may be elongated due to overloads and jams. The holes should be round within 0.0005 inch to permit reuse of lift lever (44), translator lever (67) or output shaft (34 or 57).

ASSEMBLY

1. PRIOR TO ASSEMBLY

   A. Clean and deburr all parts before reassembling.

   B. Follow tightening torque and loctitie recommendations as outlined in the "General Service Manual".

2. INPUT SHAFT/CAM REASSEMBLY

   A. Install cam locknuts (13 & 14) on the center of input shaft (15).

   B. Install key (16) on input shaft (15).

   C. Apply anti-seize lubricant to both input shaft (15) and the bores of the lift and trans cams.

   D. Preposition the lift cam on the shaft so that the keyway in the cam lines up with key (16). Be sure to position the cam in the correct orientation (as explained in the matchmark procedure during disassembly).

   E. Use an arbor press to press the shaft into the cam.

   F. Install cam locknut (12) and use a spanner wrench to center the cam on its respective shaft segment.

   G. Install key (17) on input shaft (15).

   H. Preposition the trans cam on the shaft so that the keyway in the cam lines up with key (17). Be sure to position the cam in the correct orientation (as explained in the matchmark procedure during disassembly).

   I. Use an arbor press to press the shaft into the cam.

   J. Install cam locknut (18) and use a spanner wrench to center the cam on its respective shaft segment.

   K. 380LPP AND 4120LPP: Install bearing locknut (19) on input shaft (15).

   L. Apply anti-seize lubricant to both input shaft (15) and the bores of bearing cones (11 & 20).

   M. Use an arbor to press bearing cones (11 & 20) onto input shaft (15).

      NOTE: CAMCO recommends heating the bearing cone with a heat gun, if available, prior to installation onto the shaft.

3. OUTPUT SHAFT/FOLLOWER WHEEL REASSEMBLY

   A. Align the notch on the stud of follower (32) with the tapped for setscrew (33). Press in the follower using an arbor press.

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

   B. Install set screw (33) using loctite thread locking liquid as recommended in the "General Service Manual``.

   C. Install the second follower (32) in the same manner.

   D. Apply anti-seize lubricant to both output shaft (34) and the bores of bearing cones (31 & 36).

   E. Use an arbor to press bearing cones (31 & 36) onto output shaft (34).

      NOTE: CAMCO recommends heating the bearing cone with a heat gun, if available, prior to installation onto the shaft.

   F. Assemble output shaft (57) in the same manner.

4. INSTALLING NEW BEARING CUPS

   A. Coat the outside of bearing cups (10, 21, 30, 37, 53, & 60) and the bores of cartridges (6, 22, 26, 41, 49, & 64) with an anti-seize lubricant.

   B. Use an arbor to press the bearing cups into the cartridges.

5. SETTING INPUT SHAFT/CAM BEARING PRELOAD

   A. Insert the keyed input extension of input shaft/cam (15) down thru the upper opening of housing (97) and into the opening for bearing cartridge (22). Rock the short end of the shaft downward and into the opening for bearing cartridge (6).

   B. Install cartridges (6 & 22) in the same position as disassembled. Be sure to install the same exact shims or equivalent thickness as was removed during disassembly.

   C. Install and tighten screws (5 & 24).

   D. Rotate the shaft and check preload. There should be no endplay and a small amount of drag should be felt from preloading the bearings. Add or remove shims as necessary to obtain this condition. In rare instances it may be necessary to remachine the cartridge if all shims have been removed and endplay still exists.

      NOTE: 380LPP and 4120LPP bearing prelad is adjusted with locknut (19).

   E. After the correct shim thickness is determined, remove cartridges (6 & 22) and input/cam shaft (15) so that the output/follower wheel bearing preload can be adjusted.

6. SETTING OUTPUT SHAFT/FOLLOWER WHEEL BEARING PRELOAD

   A. Insert the keyed output extension of output shaft/follower wheel (34) down thru the upper opening of housing (97) and into the opening for bearing cartridge (41). Rock the short end of the shaft downward and into the opening for bearing cartridge (31).

      NOTE: The end of shaft (34) is marked with an "L" representing "Lift".

   B. Install cartridges (26 & 41) in the same position as disassembled (See matchmark instructions of Output Shaft/ Follower Wheel Removal). Be sure to install the same exact shims or equivalent thickness as was removed during disassembly.

   C. Install and tighten screws (25 & 42).

   D. Rotate the shaft and check preload. There should be no endplay and a small amount of drag should be felt from preloading the bearings. Add or remove shims as necessary to obtain this condition. In rare instances it may be necessary to remachine the cartridge if all shims have been removed and endplay still exists.

   E. After the correct shim thickness is determined, loosen screws (25 & 42) and rotate the top of cartridges (26 & 41) toward the input end of the unit..

   F. Install and adjust output shaft/follower wheel (57) in the same manner.

      NOTE: The end of shaft (57) is marked with an "T" representing "Translator".

7. INPUT SHAFT/CAM INSTALLATION

   A. Insert the keyed input extension of input shaft/cam (15) down thru the upper opening of housing (97) and into the opening for bearing cartridge (22). Rock the short end of the shaft downward and into the opening for bearing cartridge (6).

      NOTE: During this rocking downward of shaft (15), be sure to hand rotate output shaft/follower wheels (34 & 57) so the followers engage both sides of the cam ribs.

   B. Apply Mobilux EP 2 Grease to bearing cone (20).

   C. Apply Mobilux EP 2 Grease inside bearing cup (10).

   D. Position shims (7, 8, &9) on bearing cartridges (6 & 22).

   E. Apply a bead of silicone around the flange of bearing cartridges (6 & 22).

   F. Apply a dab of silicone to the holes in housing (97) for screws (5 & 24).

   G. Install cartridges (6 & 22) with the exact shims determined in Setting Input Shaft/ Cam Bearing Preload.

   H. Install and tighten screws (5 & 24).

   I. 380LPP AND 4120LPP: Tighten bearing locknut (19) to the position of proper bearing preload.

8. SETTING CAMS

CAUTION: This mechanism is designed to operate with adjacent followers in close contact along their entire width with the surface of the cam during dwell period (Period were no follower motion is observed). Unless this condition is achieved by proper installation, the mechanism will not transmit it's rated load, and furthermore, serious damage to the cam and output shaft will occur.

A. Place a dwell portion of the lift cam downwards (facing the follower wheel).

B. Rotate the tops of cartridges (26 & 41) toward the output end of the unit until followers (32) contact both sides of the cam rib. Tighten screws (25 & 42).

C. Apply "Prussian Blue" to the entire cam track.

IMPORTANT: The following procedure is very important and can be difficult if not performed by trained and experienced serviceman.

D. Rotate the input shaft/cam slowly with a small handcrank to ensure that:

1. Both followers (32) are in contact with the cam rib in dwell. Look for a uniform bluing pattern.

   If not, loosen screws (25 and 42) and rotate tops of cartridges (26 & 41) are in contact. Tighten screws (25 & 42).

2. You do not encounter unusual resistance in motion. The bluing pattern should be fairly uniform from side to side during motion.

   If a patch of bluing is worn off the outside of the cam rib on one side of the cam and not the other, use a spanner wrench to tighten or loosen the cam locknuts in order to shift the cam 0.002 to 0.005 inches in the direction of the worn side. Do not overshift the cam or knocking will occur.

3. There should be no looseness in any dwell.

   If there is, loosen screws (25 and 42) and rotate tops of cartridges (26 & 41) to slightly preload the loosest dwell. Tighten screws (25 & 42).

4. There should be even preload in different motions.

   If not, remove cartridges (26 & 41) and shift shims (27, 28, & 29) and shims (38, 39, & 40) to move the output shaft/follower wheel (34) to the front or back.

5. Temporary install lift lever (44) and check for backlash. Remove lift lever (44).

   If backlash exists, repeat adjustment procedure.

E. Matchmark cartridges (26 & 41) with housing (97) to retain proper adjustment.

F. Loosen screws (25 and 42) to free followers (32) from the lift cam.

G. Set the trans cam in the same manner as described above.

H. Final assemble cartridges (25, 41, 48, & 64) as follows:

1. Remove cartridge (25) and shims (27, 28, & 29).

2. Apply Mobilux EP 2 Grease in bearing cup (30).

3. Install shims (27, 28, & 29) on cartridge (25).

4. Apply a bead of silicone around the flange of bearing cartridge (25).

5. Apply a dab of silicone to the holes in housing (97) for screws (25).

6. Install cartridge (25), install screws (25), align matchmarks to obtain proper cam setting and tighten screws (25).

7. Remove cartridge (41) and shims (38, 39, & 40).

8. Apply Mobilux EP 2 Grease to bearing cone (36).

9. Install shims (38, 39, & 40) on cartridge (41).

10. Apply a bead of silicone around the flange of bearing cartridge (41).

11. Apply a dab of silicone to the holes in housing (97) for screws (42).

12. Install cartridge (41), install screws (42), align matchmarks to obtain proper cam setting and tighten screws (42).

13. Final assembly cartridges (49 & 64) in the same manner as described above.

9. LIFT GUIDE INSTALLATION

A. Remove the shipping stop from one end of lift guide (73) and remove the grease fitting from the bearing on the same side of lift guide (73).

CAUTION: Do not slide bearing off guide rail (bearings will fall out).

B. Position lift guide (73) in housing (97) with the modified end down.

C. Install and tighten six screws (74).

D. Position lift plate (77) on lift carriage plate (75) and secure with two screws (76).

E. If equipped, position lift block (78) on lift carriage plate (75) and secure with two screws (79).

F. Position lift carriage plate (75) on lift guide (73) and secure with the eight screw (80).

10. TRANSLATOR GUIDE REASSEMBLY

A. If equipped, position overload spring bracket (94) on translator carriage plate (82) and secure with two screws (96)

B. Remove shipping stops from end of trans guide assy.

CAUTION: Do not slide bearing off guide rail (bearings will fall out).

C. Position track plate (87), spacer block (88) and track plate (89) on the end of translator guide (84) and secure with two screws (90).

NOTE: Track plates (87 & 89) must be installed as shown in the exploded view.

D. Position fixture mounting block (85) on translator guide (84) and secure with two screw (86).

E. Position translator carriage plate (82) on translator guide (84) and secure with the eight screw (81).

11. TRANSLATOR GUIDE INSTALLATION

A. Position translator carriage plate (82) on lift carriage plate (75) and secure with the four screws (83).

B. UNITS EQUIPPED WITH OVERLOAD SPRING (93): Install washer (92) and overload spring (93) on screw (91). Insert screw (91) through bracket (94) and install jam nut (95) on screw (91). Thread screw (91) into housing (97) and tighten jam nut (95) against the housing.

12. LIFT AND TRANSLATOR ARM INSTALLATION

A. Press follower (69) into translation lever (67) using an arbor press.

NOTE: The translator arm contains a bend. The follower must be installed as shown in the exploded view.

CAUTION: Be sure to press the follower in straight as damage to the follower and lever could occur if imporperly aligned during installation.

B. Install washer (70) and nut (71).

C. Press follower (47) into lift arm (44) using an arbor press.

CAUTION: Be sure to press the follower in straight as damage to the follower and lever could occur if imporperly aligned during installation.

D. Install set screw (46) using loctite thread locking liquid as recommended in the "General Service Manual".

E. Install key (35 and 58) in output shafts (34 and 57).

F. Install levers (44 and 67) and clamp in place with screws (45 and 68).

NOTE: Levers (44 & 67) must be installed below the surface of housing (97) so cover (3) will not interfer with movement of levers.

13. TRANSLATOR GUIDE ADJUSTMENT

A. Set the unit on a level surface.

B. Rotate the input shaft (15) until the translator guide (84) is fully extended.

C. Using a dial indicator, measure the distance from the base surface to the top surface of the translator guide (84) at several points. Translator guide must be level.

If not loosen screws (83) and adjust translator guide (84). Tighten the screws and recheck.

D. Using a dial indicator, measure the stroke of translator guide (84). Loosen nut (71) and adjust follower (69) to obtain the desired stroke.

14. LUBRICATION

A. Lubricate outside of follower (47 & 69) with Mobilux EP 2 grease.

B. Fill the cam chamber of housing (97) (level with the sidewalls) with Mobilux EP 2 grease.

15. OIL SEAL INSTALLATION

A. Install new oil seals as described in the "General Service Manual".

16. COVER INSTALLATION

A. Reinstall upper sheet cover (1) using "General Electric Silicone Rubber RTV-6" to seal all surfaces contacting housing (97).

B. Reinstall side/front cover (3). ("RTV-6" not required for this cover.)

HOW TO ORDER PARTS

Please refer to parts list shown in this manual. This parts list is for a standard Parts Handler. If you feel your unit is nonstandard or you are in doubt, you should contact CAMCO Customer Service at (312) 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 (312) 459-5200 or FAX #312-459-3064

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

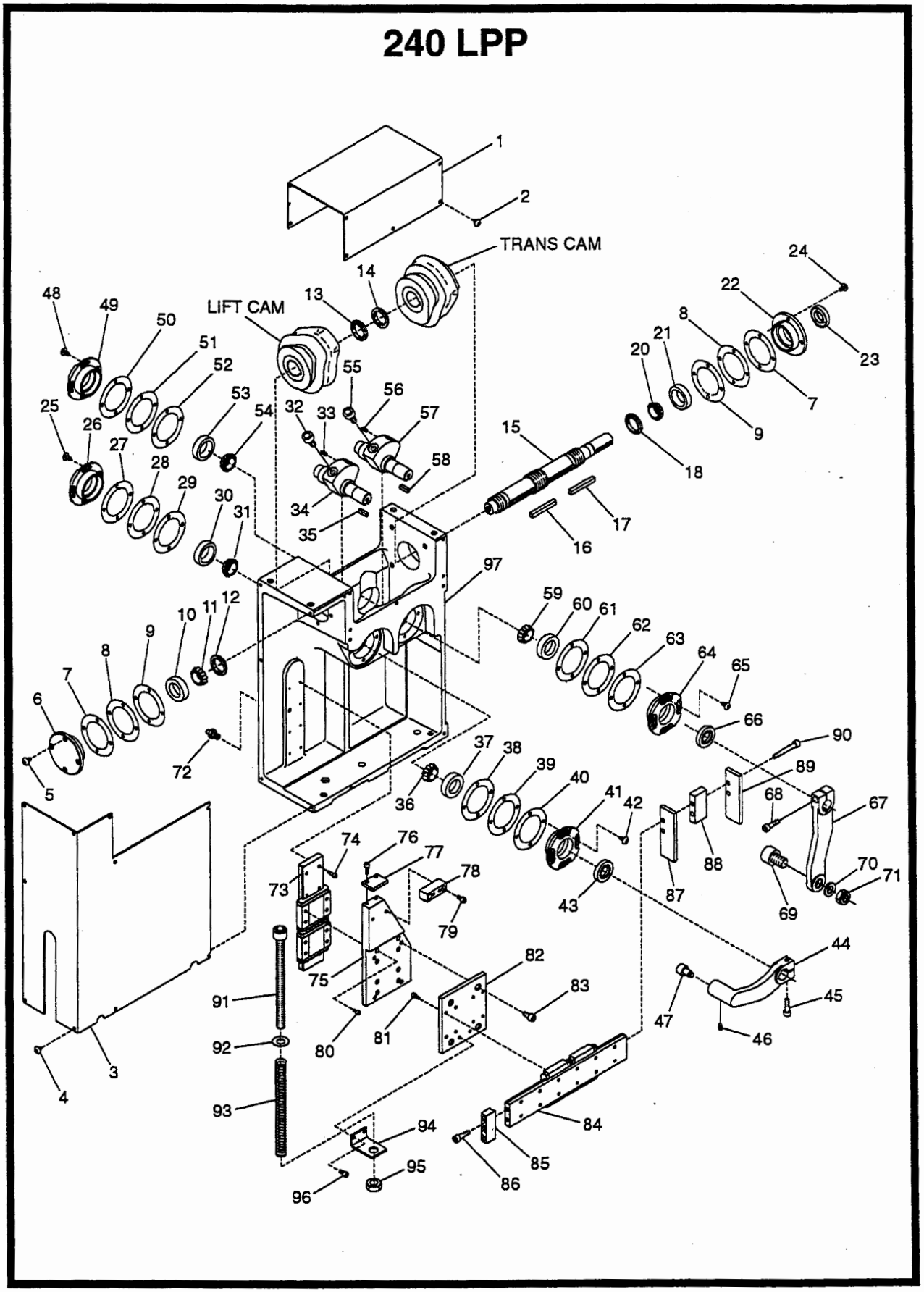
Replacement parts CAMCO will send freight prepaid via practical means.

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 sent F.O.B. our plant Wheeling, Illinois.

240 LPP



PARTS LIST FOR 240LPP CAMBOT (STANDARD CONFIGURATION)

ITEM NO.	PART NUMBER	DESCRIPTION
1	45C56266000000	COVER 240 LPP TOP
2	95A26003130000	BHCS 10-24 X 1/4
3	45D62418002002	COVER FRONT SIDE 240LPP
4	95A26003130000	BHCS 10-24 X 1/4
5	95A26003210000	BHCS 10-32 X 3/8
6	45B54887003002	CART CLOSED INPM
7	24A17961038800	SHIM INP .010 THK
8	24A17961028800	SHIM INP .005 THK
9	24A17961018800	SHIM INP .002 THK
10	86D07328070022	BRG CUP
11	86D07328070021	BRG CONE
12	95A26009060000	LOCKNUT
13	95A26009050000	LOCKNUT
14	95A26009060000	LOCKNUT
15	45C55906007001	SHAFT INP
16	025K200	KEY .250 SQ X 2.00
17	025K200	KEY .250 SQ X 2.00
18	95A26009050000	LOCKNUT
20	86D07328070021	BRG CONE
21	86D07328070022	BRG CUP
22	45B54886003002	CART OPEN INP
23	84D07329080000	OIL SEAL
24	95A26003210000	BHCS 10-32 X 3/8
25	95A26003210000	BHCS 10-32 X 3/8
26	24B17670003112	CART CLOSED
27	24A17961038800	SHIM INP .010 THK
28	24A17961028800	SHIM INP .005 THK
29	24A17961018800	SHIM INP .002 THK
30	86D07328070022	BRG CUP
31	86D07328070021	BRG CONE
32	82C33150010003	CAM FLWR
33	95A26012070000	SSS OVAL PT 10-24 X 3/8
34	45B55905004002	FOLL WHEEL TRANS
35	018K062	KEY .1875 SQ X 0.625
36	86D07328070021	BRG CONE
37	86D07328070022	BRG CUP
38	24A17961018800	SHIM INP .002 THK
39	24A17961028800	SHIM INP .005 THK
40	24A17961038800	SHIM INP .010 THK
41	24B17958003122	CART OPEN
42	95A26003210000	BHCS 10-32 X 3/8
43	84D07329080000	OIL SEAL
44	45C64316000000	LEVER MACH LIFT 240LPP
45	95A26000410000	SHCS 1/4-20 X 7/8
46	95A26005300000	SSS .190-.24 X .25 CUP

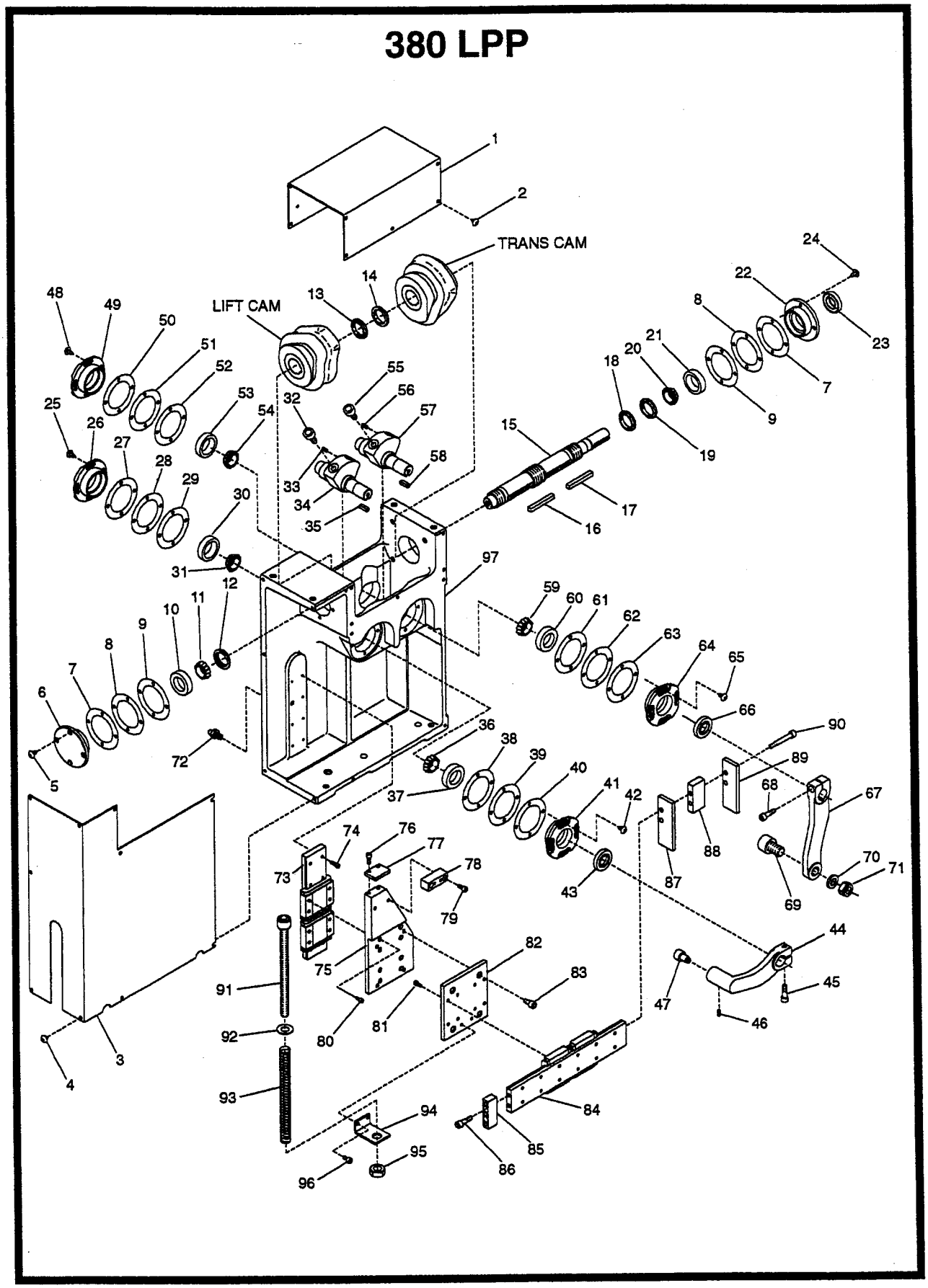
PARTS LIST FOR 240LPP CONTINUED

ITEM NO.	PART NUMBER	DESCRIPTION
47	82A54588000000	FOLL
48	95A26003210000	BHCS 10-32 X 3/8
49	24B17670003112	CART CLOSED
50	24A17961038800	SHIM INP .010 THK
51	025K200	KEY .250 SQ X 2.00
52	24A17961018800	SHIM INP .002 THK
53	86D07328070022	BRG CUP
54	86D07328070021	BRG CONE
55	82C33150010003	CAM FLWR
56	95A26012070000	SSS OVAL PT 10-24 X 3/8
57	45B55904004002	FOLL WHEEL LIFT
58	018K062	KEY .1875 SQ X 0.625
59	86D07328070021	BRG CONE
60	86D07328070022	BRG CUP
61	24A17961018800	SHIM INP .002 THK
62	24A17961028800	SHIM INP .005 THK
63	24A17961038800	SHIM INP .010 THK
64	24B17958003122	CART OPEN
65	95A26003210000	BHCS 10-32 X 3/8
66	84D07329080000	OIL SEAL
67	45C55893000000	LEVER MACH TRANS 240LPP
68	95A26000410000	SHCS 1/4-20 X 7/8
69	82A64314000000	CAM FLWR
70	95A26021080000	WASHER FLAT 7/16 SAE
71	95A26008150000	ESNA LOCKNUT TYPE ZINE
72	95A62408000000	GREASE FITTING THK
73	99B61784000000	LIFT GUIDE 240LLP
74	95A51910310000	SHCS M4X12
75	45C64322000000	PLATE TRANS CARRIAGE 240LPP
76	95A26016100000	SHCS 10-32 X 1/2
77	45A62414000000	PLATE LIFT 240LPP
78	45A62415000000	BLOCK 240LPP LIFT
79	95A26016100000	SHCS 10-32 X 1/2
80	95A51910290000	SHCS M4X8
81	95A51910290000	SHCS M4X8
82	45B64323000000	PLATE LIFT CARRIAGE 240LPP
83	5A26000380000	SHCS 1/4-20 X 1/2
84	99B61783000000	TRANS GUIDE 240LPP MODIFIED
85	45A61756000000	BLOCK FIXTURE MTG 240LPP
86	95A26000410000	SHCS 1/4-20 X 7/8
87	45A61839000000	PLATE TRANS TRACK 240LPP
88	45A61838000000	BLOCK TRANS SPACER 140LPP
89	45A61840000000	PLATE TRANS TRACK 240LPP
90	95A26000450000	SHCS 1/4-20 X 1 3/4
91	95A26001210000	SHCS 1/2-13 X 6 1/2

PARTS LIST FOR 240LPP CONTINUED

ITEM NO.	PART NUMBER	DESCRIPTION
92	95A26021090000	WASHER FLAT 1/2 SAE
93	94A62406000000	SPRING COMP.
94	45A62413009400	BRACKET O'LOAD SPRING 240LPP
95	95A26024050000	JAM NUT 1/2-13
96	95A26016090000	SHCS 10-32 X 3/8
97	5G61917001002	HOUSING

380 LPP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PARTS LIST FOR 380LPP CAMBOT (STANDARD CONFIGURATION)

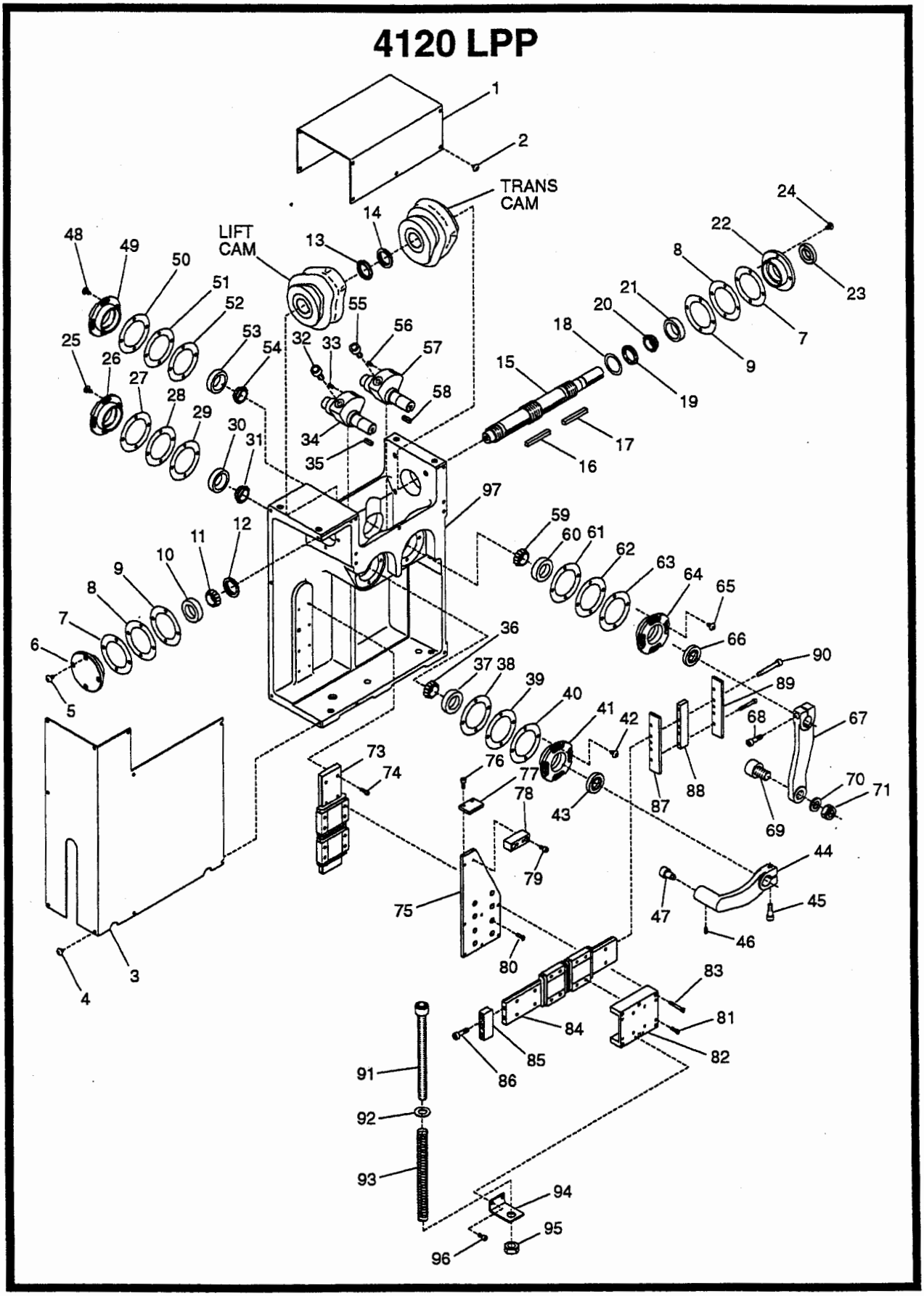
ITEM NO.	PART NUMBER	DESCRIPTION
1	46D56760000000	COVER TOP
2	95A26003130000	BHCS 10-24 X 1/4
3	46D62526002002	COV-PUR FRONT SIDE 380LPP
4	95A26003130000	BHCS 10-24 X 1/4
5	95A26000390000	SHCS 1/4-20 X 5/8
6	26B01553003111	CART CLOSED OUTP
7	26B01052038800	SHIM INP .010 THK
8	26B01052028800	SHIM INP .005 THK
9	26B01052018800	SHIM INP .002 THK
10	36D07328170022	BRG CUP
11	86A47381000000	BRG CONE
12	95A26009080000	LOCKNUT
13	95A26009090000	LOCKNUT
14	95A26009090000	LOCKNUT
15	46A56534007001	"SHAFT, INPUT
16	037K218	KEY .375 SQ X 2.18
17	037K300	KEY .375 SQ X 3.00
18	95A26009080000	LOCKNUT
19	95A26009070000	LOCKNUT
20	86A55312000022	BRG CUP
21	86A55312000021	BRG CONE
22	03B22858003121	CART OPEN CON
23	84D07329190000	OIL SEAL
24	95A26000390000	SHCS 1/4-20 X 5/8
25	95A08089000000	SPECIAL LARGE HD SOCKET SCR
26	26B01054003112	CART CLOSED
27	26B01052038800	SHIM INP .010 THK
28	26B01052028800	SHIM INP .005 THK
29	26B01052018800	SHIM INP .002 THK
30	36D07328170022	BRG CUP
31	86D07328170021	BRG CONE
32	82C33150020003	CAM FLWR
33	95A26012130000	SSS OVAL PT 1/4-20 X 3/8
34	46B56526004002	FOLL WHEEL TRANS
35	025K088	KEY .250SQ X .88LG
36	86D07328170021	BRG CONE
37	36D07328170022	BRG CUP
38	26B01052018800	SHIM INP .002 THK
39	26B01052028800	SHIM INP .005 THK
40	26B01052038800	SHIM INP .010 THK
41	26B01048003122	CART OPEN ECC
42	95A08089000000	SPECIAL LARGE HD SOCKET SCR
43	84D07329130000	OIL SEAL
44	46C62528000000	LEVER MACH 380LPP LIFT
45	95A26000450000	SHCS 1/4-20 X 1 3/4

PARTS LIST FOR 380LPP CONTINUED

ITEM NO.	PART NUMBER	DESCRIPTION
46	82A54588000000	FOLL
46	95A26005300000	SSS .190-.24 X .25 CUP
48	95A08089000000	SPECIAL LARGE HD SOCKET SCR
49	26B01054003112	CART CLOSED
50	26B01052038800	SHIM INP .010 THK
51	26B01052028800	SHIM INP .005 THK
52	26B01052018800	SHIM INP .002 THK
53	36D07328170022	BRG CUP
54	86D07328170021	BRG CONE
55	82C33150040003	CAM FLWR
56	95A26012070000	SSS OVAL PT 10-24 X 3/8
57	46B56527004002	FOLL WHEEL LIFT
58	025K088	KEY .250SQ X .88LG
59	86D07328170021	BRG CONE
60	36D07328170022	BRG CUP
61	26B01052018800	SHIM INP .002 THK
62	26B01052028800	SHIM INP .005 THK
63	26B01052038800	SHIM INP .010 THK
64	26B01048003122	CART OPEN
65	95A08089000000	SPECIAL LARGE HD SOCKET SCR
66	84D07329130000	OIL SEAL
67	46C64317000000	LEVER TRANS MACH 380LPP
68	95A26000450000	SHCS 1/4-20 X 1 3/4
69	82A64314000000	CAM FLWR
70	95A26021080000	WASHER FLAT 7/16 SAE
71	95A26008150000	ESNA LOCKNUT TYPE ZINE
72	95A62408000000	GREASE FITTING THK
73	99B61786000000	LIFT GUIDE 380 LPP
74	95A51910310000	SHCS M4X12
75	46C64325000000	PLATE LIFT CARRIAGE 380LPP
76	95A26016100000	SHCS 10-32 X 1/2
77	45A62414000000	PLATE LIFT 240LPP
78	45A62415000000	BLOCK 240LPP LIFT
79	95A26016100000	SHCS 10-32 X 1/2
80	95A51910290000	SHCS M4X8
81	95A51910290000	SHCS M4X8
82	46B64324000000	PLATE TRANS CARRIAGE 380LPP
83	95A26000390000	SHCS 1/4-20 X 5/8
84	99B61785000000	TRANS GUIDE 380 LPP
85	45A61756000000	BLOCK FIXTURE MTG 240LPP
86	95A26000410000	SHCS 1/4-20 X 7/8
87	46B61841000000	PLATE TRANS TRACK 380LPP
88	46A61842000000	BLOCK TRACK SPACER 380LPP
89	46B61843000000	PLATE TRANS TRACK 380LPP
90	95A26000450000	SHCS 1/4-20 X 1 3/4

PARTS LIST FOR 380LPP CONTINUED

ITEM NO.	PART NUMBER	DESCRIPTION
91	95A26001260000	SHCS 5/8-11 X 1 1/2
92	95A26021090000	WASHER FLAT 1/2 SAE
93	94A62406000000	SPRING COMP 240LPP OVERLOAD
94	45A62413009400	BRACKET O'LOAD SPRING 240LPP
95	95A26024050000	JAM NUT 1/2-13
96	95A26016090000	SHCS 10-32 X 3/8
97	46G61918001002	HOUSING


4120 LPP
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PARTS LIST FOR 4120LPP (STANDARD CONFIGURATION)

ITEM NO.	PART NUMBER	DESCRIPTION
1	47D57569000000	COVER TOP 4120LPP
2	95A26003130000	BHCS 10-24 X 1/4
3	47D64173002002	COVER FRONT SIDE 4120LPP
4	95A26003130000	BHCS 10-24 X 1/4
5	95A26000380000	SHCS 1/4-20 X 1/2
6	26B01553003111	CART CLOSED OUTP
7	26B01052038800	SHIM INP .010 THK
8	26B01052028800	SHIM INP .005 THK
9	26B01052018800	SHIM INP .002 THK
10	86D07328170022	BRG CUP
11	86A47381000000	BRG CONE
12	95A26009080000	LOCKNUT
13	95A26009090000	LOCKNUT
14	95A26009090000	LOCKNUT
15	47D57606007001	SHAFT INP
16	037K400	KEY .375 X 4
17	037K400	KEY .375 X 4
18	95A26009080000	LOCKNUT
19	95A26009070000	LOCKNUT
20	86A55312000021	BRG CONE
21	86A55312000022	BRG CUP
22	03B22858003121	CART OPEN CON
23	84D07329190000	OIL SEAL C/R
24	95A26000380000	SHCS 1/4-20 X 1/2
25	95A08089000000	SPECIAL LRG HD SOC SCR
26	26B01054003112	CART CLOSED
27	26B01052018800	SHIM INP .002 THK
27	26B01052038800	SHIM INP .010 THK
28	26B01052028800	SHIM INP .005 THK
29	26B01052018800	SHIM INP .002 THK
30	86D07328170022	BRG CUP
31	86D07328170021	BRG CONE
33	95A26012130000	SSS OVAL PT 1/4-20 X 3/8
34	47B57475004002	FLWR WHEEL LIFT
35	025K088	KEY .250 X .88LG
36	86D07328170021	BRG CONE
37	86D07328170022	BRG CUP
38	26B01052018800	SHIM INP .002 THK
39	26B01052028800	SHIM INP .005 THK
40	26B01052038800	SHIM INP .010 THK
41	26B01048003122	CART OPEN
42	95A08089000000	SPECIAL LRG HD SOC SCR
43	84D07329130000	OIL SEAL
44	47C62738000000	LEVER MACH LIFT 4120LPP
45	95A26000730000	SHCS 3/8-16 X 1 1/2

PARTS LIST FOR 4120LPP CONTINUED

ITEM NO.	PART NUMBER	DESCRIPTION
46	95A26005310000	SSS CUP PT 10 - 24 X 5/16
47	82A54588000000	FOLL
48	95A08089000000	SPECIAL LRG HD SOC SCR
49	26B01054003112	CART CLOSED
50	26B01052038800	SHIM INP .010 THK
51	26B01052028800	SHIM INP .005 THK
52	26B01052018800	SHIM INP .002 THK
53	86D07328170022	BRG CUP
54	86D07328170021	BRG CONE
55	82C10457050003	CAM FOLLOWE5R
56	95A26012130000	SSS OVAL PT 1/4-20 X 3/8
57	47B57476004002	FLWR WHEEL TRNS
58	025K088	KEY .250 X .88LG
59	86D07328170021	BRG CONE
60	86D07328170022	BRG CUP
61	26B01052018800	SHIM INP .002 THK
62	26B01052028800	SHIM INP .005 THK
63	26B01052038800	SHIM INP .010 THK
64	26B01048003122	CART OPEN
65	95A08089000000	SPECIAL LRG HD SOC SCR
66	84D07329130000	OIL SEAL
67	47C64318000000	LEVER MACH TRNS 4120LPP
68	95A26000730000	SHCS 3/8-16 X 1 1/2
69	82C64317000000	CAM FLWR
70	95A26021080000	WASHER FLAT 7/16 SAE
71	95A26008150000	ESNA LOCKNUT ZINE
73	99B63852000000	GUIDE LIFT 4120LPP
74	95A33040190000	SHCS M6 X 20
75	47D63850000000	PLATE LIFT CARRIAGE 4120LPP
76	95A26000390000	SHCS 1/4-20 X 5/8
77	47A62734000000	PLATE LIFT 4120 LPP
78	95A60075000000	"BLOCK, LIFT 4120LPP"
79	95A26000400000	SHCS 1/4-20 X 3/4
80	95A26000390000	SHCS 1/4-20 X 5/8
81	59A33040330000	SHCS M 8X 16
82	47C63845000000	BLOCK TRANS CARRIAGE 4120LPP
83	95A26000590000	SHCS 5/16-18 X 1 3/4
84	99B63851000000	GUIDE TRANS 4120LPP 9 MOD
85	47B62752500000	BLOCK FIXTURE
87	47B57489000000	PLATE TRNS TRACK INNER
88	47B55466000000	BLOCK TRACK SPACER
89	47B57488000000	PLATE TRNS TRACK OUTER
90	95A26000440000	SHCS 1/4-20 X 1 1/2
91	95B62792010000	SHCS 5/8-11 X 9
93	94A62743000000	SPRING COMP 4120LPP

PARTS LIST FOR 4120LPP CONTINUED

ITEM NO.	PART NUMBER	DESCRIPTION
94	47A64169009400	BRACKET O'LOAD SPRG 4120LPP
95	95A26024070000	5/8-11 JAM NUTS
96	95A26000380000	SHCS 1/4-20 X 1/2
97	47G62684001002	HOUSING

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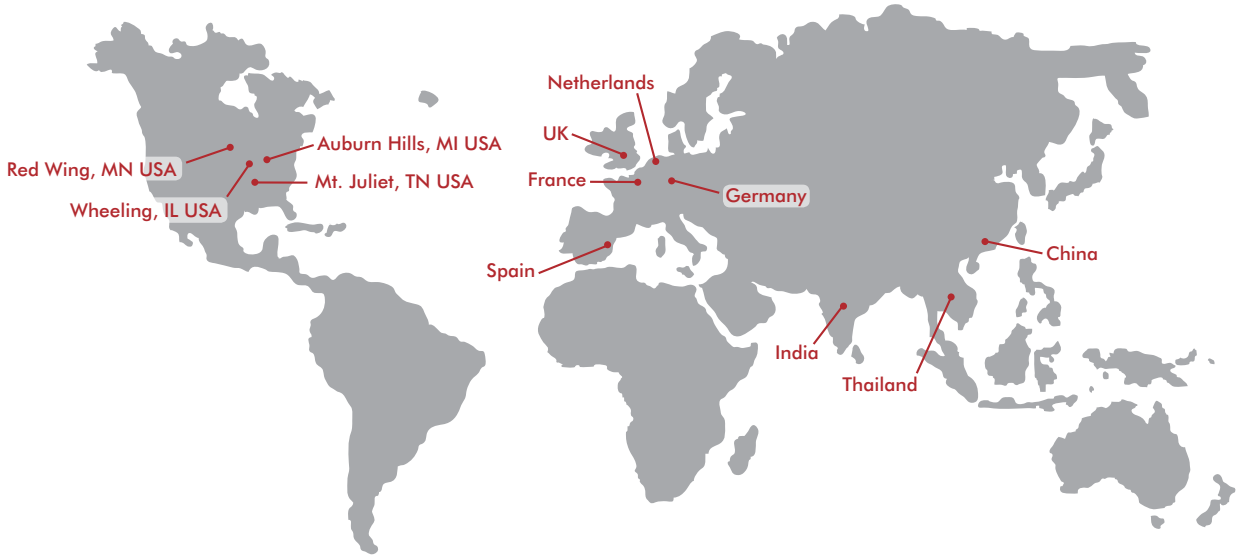

GLOBAL LOCATIONS

NORTH AMERICA

Corporate Headquarters
Auburn Hills, Michigan
Toll Free: 1.888.DESTACO
Marketing: marketing@destaco.com

Global Technology Center
Auburn Hills, Michigan
Tel: 1.248.836.6700
Customer Service: customerservice@destaco.com

Mt. Juliet, Tennessee
Tel: 1.888.DESTACO
Customer Service: customerservice@destaco.com

Wheeling, Illinois
Tel: 1.800.645.5207
Customer Service: camco@destaco.com

Red Wing, Minnesota (Central Research Laboratories)
Tel: 651.385.2142
Customer Service: sales@centres.com

ASIA

Bangkok, Thailand
Tel: +66-2-326-0812
Customer Service: info@destaco.com

Shanghai, China
Tel: +86-21-6081-2888
Customer Service: china@destaco.com

Bangalore, India
Tel: +91-80-41123421-426
Customer Service: india@destaco.com

EUROPE

Oberursel, Germany
Tel: +49-6171-705-0
Customer Service: europe@destaco.com

Sainte Florine, France
Tel: +33-4-73545001
Customer Service: france@destaco.com

Wolverhampton, United Kingdom
Tel: +44-1902-797980
Customer Service: uk@destaco.com

Sant Boi de LLobregat, Spain
Tel: +34-936361680
Customer Service: spain@destaco.com

Uithoorn, Netherlands
Tel: +31-297285332
Customer Service: benelux@destaco.com