WARNING: Because of the possible danger to person(s) or property which may result from improper use of products, it is important that correct procedures be followed. Products must be used in accordance with the Engineering information specified in the catalog. Proper installation, operation and maintenance procedures must be observed. The instructions in the instruction manuals must be followed. Inspections should be made as necessary to assure safe operation under prevailing conditions. Proper guards and other suitable safety devices or procedures as may be desirable or as may be specified in safety codes should be provided, and are neither provided by Master Power Transmission nor are the responsibility of Master Power Transmission. This unit and its associated equipment must be installed, adjusted and maintained by qualified personnel who are familiar with the construction and operation of all the equipment in the system and the potential hazards involved. When risk to persons or property may be involved, a failsafe device must be an integral part of the driven equipment beyond the speed reducer output shaft.
GENERAL

DANGER
Only qualified personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, and/or service this equipment. Read and understand this manual in its entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

The REEVES MOTO DRIVE unit is a mechanical variable speed unit designed to provide infinitely variable speed through as much as 10:1 speed variation. This variation is accomplished by means of a manually adjusted hand control, an electrical remote control unit or an air operated device called “AIRTROL®.” By changing the position of the constant speed adjustable disc and with the opposite reaction of the spring loaded disc on the variable shaft, the relative pitch diameters of the discs are shifted thus varying the speed of the MOTO DRIVE unit output shaft. A specially designed belt is used.

IMPORTANT SAFETY REMINDERS

DANGER
1. To avoid electrical shock, disconnect electrical service prior to any maintenance on the unit. Failure to observe these precautions could result in severe bodily injury or loss of life.

2. Change speeds only when the unit is running.

3. MOTO DRIVE units should not be changed to a different assembly without factory approval.

4. Units with parallel reducers are shipped with reducers drained, and right angle reducers are shipped with oil. Do not operate unit before adding proper amount of lubricating oil.

5. REEVES reducers are effectively vented. Do not allow reducer vent to become clogged.

6. Check your power supply with motor nameplate rating before making electrical connections.

WARNING
Extreme care must be used in removing spring cartridge assembly. Cartridge can separate resulting in uncontrolled release of spring, resulting in severe personal injury or death. Keep all body parts and personnel clear of projection path should sudden release occur. See safety instructions for removal and disposal of spring cartridge.

INSTALLATION
1. A rigid base is essential for mounting the MOTO DRIVE unit.

2. Mount and fasten the unit into position so that the output (Variable Speed) shaft of the unit is in alignment with driven shaft of equipment. Use shims, when necessary, to obtain alignment. Shafts of the MOTO DRIVE unit should turn freely when it is secured to the mounting.

3. Connect the output shaft of the MOTO DRIVE unit to the driven shaft of the equipment by desired method. Accurate alignment of the shafts is very important when flexible couplings or gears are used. In addition to accurate shaft alignment, sprocket or pulley alignment on the shafts to chain or belt connections is imperative.

4. Connect electrical power to the unit.

DANGER
The user is responsible for conforming to the National Electrical Code and all other applicable local codes. Wiring practices, grounding, disconnects and overcurrent protection are of particular importance. Failure to observe these precautions could result in severe bodily injury or loss of life.

5. REEVES MOTO DRIVE units are set for the specified speed range and tested at the factory. Following proper electrical connections and lubrication, the drive is ready for immediate use.

OPERATION AND CARE
1. Keep belt contact surfaces of the disc clean.

2. When the MOTO DRIVE unit is not to be operated for a period of 30 days or more, before final stopping of the unit, shift into low speed position. (Spring pressure against the belt is at its minimum in this position.) See “Recommendations for Long-Term Storage” on page 4.

LUBRICATION INSTRUCTIONS

PARALLEL REDUCER LUBRICATION

CAUTION
NOTE: REEVES parallel reducers are shipped without oil and must be filled before use! Failure to fill the reducer will result in damage to the reducer and void the warranty!

Fill reducer with a good grade of non-detergent oil. Select the proper viscosity based on ambient temperature from the following chart:

<table>
<thead>
<tr>
<th>Ambient Temp. Degrees F</th>
<th>SAE Gear Oil Grade</th>
<th>ISO Viscosity Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 to 140</td>
<td>90</td>
<td>220</td>
</tr>
<tr>
<td>40 to 100</td>
<td>85W</td>
<td>150</td>
</tr>
<tr>
<td>0 to 40</td>
<td>80W</td>
<td>68</td>
</tr>
<tr>
<td>Below 0</td>
<td></td>
<td>Consult Factory</td>
</tr>
</tbody>
</table>

Oil level is indicated by red oil level plug. Remove red level plug and fill reducer slowly until oil runs out of level hole. Verify oil level every 60 days by removing red level plug. Refill as required.

All reducers are vented. Double and triple stage parallel reducers are shipped with a black plastic plug in the vent hole. Remove this plug and replace with vent plug attached to red lube tag. Single parallel reducers have pin vents installed in the gearhead. Ensure that all vents are free and clear.

Drain and refill gearbox with new oil every 6 months under normal factory environments. Hot, wet or dirty conditions may require more frequent changes.
RIGHT ANGLE REDUCER LUBRICATION

1. The gear case is shipped with a solid plug in the vent hole. This plug must be removed and the attached vented plug installed according to location described in diagrams on attached lubrication tag.

2. Lubricant should be drained and gearcase refilled after the first 250 hours of operation.

3. Lubricate right angle reducers with a type and grade of oil suitable for worm gear reducers as suggested by the chart below.

4. Lubricant should be drained and the gear case refilled every 1500 hours or six months thereafter. Group 63 lubricants must be changed every 300 hours of high temperature operations.

5. Bearings in these reducers which are above the operating oil level are provided with a plug. They should be lubricated with a good grade of ball bearing grease when changing gear lubricant. DO NOT OVER-LUBRICATE GREASE PACKED BEARINGS.

6. These reducers are shipped with oil in the unit.

DRIVE IDENTIFICATION

When inquiring about or ordering replacement parts for a REEVES MOTO DRIVE, always specify the drive ID number and other nameplate information.

NOTE: If the nameplate is unreadable or missing, the MOTO DRIVE unit's original ID number is stamped into the beltcase underneath one of the inspection plates.

PREVENTATIVE MAINTENANCE

Under normal conditions the X-V MOTO DRIVE unit requires little maintenance. However, the following suggestions will keep the drive at top efficiency.

1. Reducer lubrication should be maintained per instruction tags and service manuals.

2. The motor bearings should be relubricated (where applicable) in accordance with motor maintenance and service instructions. Plugs must be removed and lubrication fittings installed.

3. It is recommended the following inspections be performed annually:

   A. Check the general running condition of the unit. Listen for unusual noise or vibration. Check reducer (where applicable) for signs of possible leakage.

   B. Check the belt contact surface of the discs to see that they are dry and clean.

   C. Check the belt for signs of wear, such as frayed or torn edges, and major cracks in the bottom of the cogs.

   D. The XV bushings are designed as an easily replaceable wear element and require periodic replacement.

   Check the constant speed and variable speed sliding disc bushings and key for signs of excessive wear or abuse. If the rotational clearance between the bushing keyway and key exceeds \( \frac{1}{16} \)" (see Diagram 1), the bushings and key should be replaced. (See bushing replacement instructions for proper procedure.)

NOTE: Rotational clearance must be checked with sliding disc located on shaft in its normal operating location.

![Diagram No. 1]

CONSTANT END

VARIABLE END

DIAGRAM NO. 1
Bushing/key kits are available through your nearest REEVES Distributor.

E. If the bushing are in good condition, lubricate with a good grade of ball bearing or silicone grease.

NOTE: See "Prelubricating the Bushings" for proper protection.

F. Recheck torque on clamp collar screw. Proper torque should be 200 in. lbs. Access to the clamp collar screw (252) is through the inspection plate opening on the size 050 and 100. For the size 200 remove the small steel plate in the motor adapter. See drawing on page 6. Always use a wrench in new condition on the clamp collar screw.

NOTE: Access to the above mentioned parts can be obtained by following belt changing instructions.

RECOMMENDATIONS FOR LONG-TERM STORAGE

GENERAL

Consult Reliance Service Bulletin A-8013-3 ("Recommendations for Long-Term Storage of Gearmotors, MOTO DRIVES and Motors") for general storage instructions, and instructions specific to motors and gear reducers. Also see Service Bulletin B-8078-3 for additional information on motors.

Follow all general recommendations for motors and reducers in addition to the following instructions specific to REEVES MOTO DRIVE units.

MOTO DRIVE

1. Where long-term storage is expected, a MOTO DRIVE unit should be ordered with Chromalife discs.

2. For storage of all MOTO DRIVE units, remove the variable speed belt and store in a relaxed condition. Consult "Belt Replacement Instructions" section of appropriate service manual supplied with unit. This will prevent distortion and crushing of the belt from spring force. Recut disc faces and other exposed metals surfaces with corrosion resistant coating.

Tag unit to indicate belt must be reinstalled at startup.

3. Loosen screws on side inspection plates and insert 1/4" spacers to allow ventilation of bearings and seals during storage.

4. Prepare motor and reducer per referenced instructions.

5. Cover units and store, preferably in a heated and dry (non-condensing) area.

RETURN TO SERVICE:

1. Disassemble MOTO DRIVE unit, thoroughly clean all corrosion resistant coatings from disc faces and shafts. Inspect all parts (discs, bearings, control and linkages, etc.) for free movement.

2. Ensure that disc bushings are lubricated as detailed under "Prelubricating the Bushings."

3. Reinstall variable speed belt.

4. Drain and refill reducer with recommended lubricant. Clean vents.

5. After start-up, check bearing temperatures for indication of excessive heating indicating lubricant contamination or oxidation.

6. For detailed handling, installation and maintenance instructions, see manuals furnished with individual units.

BUSHING REPLACEMENT SLIDING DISC ASSEMBLIES

BUSHING REMOVAL

1. Remove constant speed and variable speed sliding discs by following all instructions in the sections of this manual.

2. On sliding constant disc, remove key.

3. Collapse each bushing with long nose pliers and remove from bore. See Diagram 2.

INSTALLING REPLACEMENT BUSHINGS

1. Parts must be free of dirt, paint, rust, metal chips and shavings and any other substances which would cause the bushings to have an interference fit.

REPLACEMENT BUSHING KITS

<table>
<thead>
<tr>
<th>SIZE</th>
<th>CONSTANT</th>
<th>VARIABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>050</td>
<td>415112-65WA</td>
<td>415112-65MF</td>
</tr>
<tr>
<td>100</td>
<td>415112-65WB</td>
<td>415112-65MG</td>
</tr>
<tr>
<td>200</td>
<td>415112-65WC</td>
<td>415112-65MH</td>
</tr>
</tbody>
</table>

2. Collapse bushing and insert flange end into bore of sliding disc. (Diagram No. 2, Fig. 1)

3. Push bushing carefully into the disc bore until bushing flange snaps into groove as shown. (Diagram No. 2, Fig. 2)

4. Seat the bushings by running your finger full circle inside the bushing I.D. using caution at the keyway and split portion of the bushing.

5. Turn disc around and repeat steps 2, 3 and 4. Each sliding disc will have two bushings inserted into the bore of the disc.

![Diagram 2]
6. The constant disc key must be inserted into the constant sliding disc with the tang on key pushed into the hole in disc. (See Diagram 3)

6. Pull upper loop of the belt over the end of the fixed disc hub. On some units additional spreading of the variable shaft discs may be necessary to gain enough belt slack for the belt to clear the fixed disc hub.

7. Remove variable shaft bearing plate (4) after belt is removed from fixed disc hub.

8. Free the belt from the variable discs (5) and remove from the case.

9. Place the new belt into the case, positioned loosely around the variable speed discs (5), and replace bearing plate (4).

10. Spread the variable speed discs (5) and position the belt between the discs deep enough to secure belt slack; then loop the belt over the fixed disc hub.

11. Replace sliding disc (3) with attached thrust bearing and housing onto fixed disc hub.

12. Replace control assembly (2). Prongs on the shifting yoke can be properly positioned in the plugs on the thrust bearing housing (11), only when the housing lugs are below the prongs. Except as noted below.

NOTE: (Size 100 Handwheel only). Shifting yoke is positioned properly when the prongs of the yoke are below the thrust bearing housing (11) lugs.

NOTE: At this time it is advisable to spin the disc by hand so that the belt can assume its normal position and tension.

13. Replace inspection plate (not shown).

NOTE: No additional adjustment is required for correct belt alignment.


**BELT REPLACEMENT**

REEVES MOTO DRIVE units are designed for easy servicing and replacement of belts.

Identify your MOTO DRIVE unit by style — “C” flow, Diagram No. 4, or “Z” flow, Diagram No. 5. Follow instructions given below that apply to your unit.

For the “C” FLOW STYLE and for alternate “Z” flow style units reference assembly numbers 100-A, 100-AL, 100-AR, 111-A and 112-A. Unit assembly number is on each unit nameplate. Refer to Diagram 4.

1. If the belt on the MOTO DRIVE unit is in operating condition, shift the unit, while running, to high speed position.

2. **Disconnect Electrical Service to Unit**

<table>
<thead>
<tr>
<th><strong>WARNING</strong></th>
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<tbody>
<tr>
<td>To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.</td>
</tr>
</tbody>
</table>

3. Remove side inspection plate (not shown).

4. Remove four cap screws holding control assembly (2), and remove control assembly from the unit.

5. Remove sliding disc (3), (thrust bearing and thrust bearing housing (11) is attached to (3)). Do not disturb position of the fixed disc on motor shaft.

**DIAGRAM NO. 4 “C” FLOW**

For the “Z” flow style MOTO DRIVE units (except as noted for alternate “Z” flow style assemblies shown under “C” flow style MOTO DRIVE unit instructions), refer to Diagram 5.

1. If the belt on the MOTO DRIVE unit is in operating condition, shift the unit, while running, to high speed position.

2. **Disconnect Electrical Service to Unit.**

<table>
<thead>
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</tr>
</tbody>
</table>

3. Remove side inspection plate (not shown).
4. Remove four cap screws holding control assembly (2), and remove control assembly from the unit.

5. Remove sliding disc (3). (Thrust bearing and thrust bearing housing (11) is attached to (3).) Do not disturb position of the fixed disc on motor shaft.

6. Pull upper loop of the belt over the end of the fixed disc hub. On some units additional spreading of the variable shaft discs may be necessary to gain enough belt slack for belt to clear the fixed disc hub.

7. Remove the variable shaft bearing plate (4) after belt is moved from fixed disc hub.

8. Remove the following parts from the variable shaft.
   (a) Bearings or collar bearing. (On lock collar bearings, note bearing position so it may be reinstalled in exactly the same location.)

   | WARNING |
   | Extreme care must be used in removing the spring cartridge assembly. Inspect for clearance between spring cartridge and retaining ring. If there is no clearance, DO NOT PROCEED. The spring cartridge may be ruptured. Do not attempt to remove the retaining ring. Reassemble unit and contact your distributor for repair information. Failure to observe these precautions could result in bodily injury. |

   (b) Retaining ring
   (c) Spring and cartridge assembly (Size 050 X-V only: spring and collar)
   (d) Sliding disc

9. Remove old belt from the case.

10. Place the new belt into the case, positioned loosely around the variable shaft and replace sliding disc (10), spring and cartridge assembly (9), retaining ring (8), collar and bearing (7), and bearing (7), and bearing plate (4).

11. Spread the variable speed discs (10) and position the belt between the discs, deep enough to secure slack; then loop the belt over the fixed disc hub.

12. Replace constant speed sliding disc (3) with thrust bearings and housing onto fixed disc hub.

13. Install control assembly (2). Prongs on the shifting yoke can be properly positioned in the lugs on the thrust bearing housing (11) only when the housing lugs are below the prongs, except as noted below.

   | NOTE: (Size 100 Handwheel only) Shifting yoke is positioned properly when the prongs of the yoke are below the thrust bearing housing (11) lugs. |

14. Replace inspection plate (1) (not shown).

   | NOTE: At this time it is advisable to spin the disc by hand so the belt can assume its normal position and tension. |

15. Reconnect electrical service.

   | DIAGRAM NO. 5 “Z” FLOW |

**CONSTANT DISC REMOVAL**

1. Follow Belt Replacement instructions Steps 1 through 6.

2. Loosen clamp screw in the clamp collar around the fixed disc hub. New units use a T-30 TORX socket head screw (suitable wrenches available at any automotive or industrial supply outlet, or use an APEX 49C - TX30). Older units use a 3/16 hex socket (Allen head) screw, for which a suitable wrench is an APEX SZ-12-A-6.

   | SIZE 050-100 |
   | SIZE -200 |

   ACCESS 252

   ACCESS TO CLAMP COLLAR SCREW IS THROUGH REEVES INSPECTION OPENING.

   ACCESS TO CLAMP COLLAR SCREW IS THROUGH MOTOR ADAPTOR INSPECTION COVER OPENING.

3. Remove fixed disc. This may be accomplished with the aid of a pulling device as shown in Diagram No. 6, Figure 2. Special disc pullers are available from our Parts Distributors, Part No. 605012-10A.
CONSTANT DISC INSTALLATION

1. Before installing new fixed disc, be sure motor shaft is free of burrs and corrosion. You may want to check motor shaft runout, which should not exceed .002 T.I.R. (Total Indicator Reading.)

   NOTE: No motor shaft key or disc plug is required.

2. To install fixed disc, slide on motor shaft until the proper "J" dimension for the respective size unit is met to within ± 1/32. (Note: "J" Dimension is measured from belt case (surface "Y") along the fixed disc extension to the flat portion of the disc face.) Tighten clamp collar screw to 200 In. Lbs. Diagram No. 6, Figure 3.

3. Place dial indicator 1/8 to 1/4 inch from end of fixed disc hub and indicate. Fixed disc hub runout should not exceed .004 T.I.R. Diagram No. 6, Figure 3.

4. If fixed disc hub runout does exceed .004 T.I.R., loosen clamp collar, remove fixed disc, rotate disc 90° and repeat steps 2 and 3 above.

   NOTE: It is very important that the proper "J" dimension and fixed disc shaft runout be maintained to ensure maximum belt and component life.

5. Follow steps 9 through 14 of Belt Replacement Instructions to complete this installation. (Steps 10 through 15 for Z Flow).

VARIABLE DISC REMOVAL

Refer to Parts List Pages 24 & 25

1. Follow belt replacement instructions steps 1 through 8. (Steps 1 through 9 for Z Flow).

2. Remove variable shaft bearing (78) (C Flow).

   WARNING

   Extreme care must be used in removing the spring cartridge assembly. Inspect for clearance between spring cartridge and retaining ring. If there is not clearance, DO NOT PROCEED. The spring cartridge may be ruptured. Do not attempt to remove the retaining ring. Reassemble and contact your distributor for repair information failure to observe these precautions could result in bodily injury.

3. Remove retaining ring (73) (C Flow).

4. Remove fixed disc (65) (C Flow).

5. Remove belt.

6. Remove sliding disc (66) (C Flow).

   NOTE: The spring cartridge may come off with the sliding disc. They can be separated as required later.

SAFETY INSTRUCTIONS

SPRING CARTRIDGE STORAGE AND DISPOSAL

   WARNING

   Cartridge contains spring under compression. When not installed in drive, handle with extreme care. Ensure that uncontrolled expansion will not result in bodily injury!

   STORAGE: Store with some method of axial retention to prevent uncontrolled expansion.

   DISPOSAL: Preferred method is to dispose of spring in free (uncompressed) state. However, do not attempt to remove compressed spring from cartridge without some method of controlling spring expansion, such as piloted press fixture or a long (5 times cartridge length minimum) threaded rod with oversize end plates and nuts. Use such fixture to carefully compress cartridge, then remove steel can and expand spring to free length.

   Alternatively, dispose of cartridge with chain or threaded rod fastened through center hole to prevent uncontrolled expansion of spring.

VARIABLE DISC INSTALLATION

C-Flow—Refer to Parts List Page 25

1. Check to see that the retaining ring (70) is properly seated in its groove on the variable shaft.

2. Install the spring cartridge (154) over the variable shaft. Small bore of the cartridge goes on the shaft first.
3. After lubricating (see “Prelubricating the Bushings”) install sliding disc (66) onto variable shaft. See that the spring cartridge is properly seated onto the extended hub portion of this disc.

4. Wipe any excess grease from the variable shaft and sliding disc face.

5. Install belt—position loosely around variable shaft.

6. Install the fixed disc (65).

7. Insert the retaining ring (73) into its groove in the variable shaft.

8. Install a new bearing (78) on the variable shaft. Be careful not to damage the bearing during installation. Press only on the inner face.

9. Install the bearing plate (75).

10. Refer to the belt replacement instructions 10 through 14 to complete this reassembly.

Z-Flow—Refer to Parts List Page 24

1. Check to be sure retaining ring (73) is in its proper position on variable shaft (60) and seated in the retaining ring groove.

2. After lubricating (see “Prelubricating the Bushings”) slide V/S fixed disc (65) over variable shaft and up against the retaining ring.

3. Place belt into belt case loosely around variable shaft.

4. Slide V/S sliding disc (66) over variable shaft and against the fixed disc.

5. Install spring cartridge (154) (see note 2), retaining ring (70), collar and/or bearing (78A) as required (see note 1).

NOTE 1: If unit is equipped with collar and bearing assembly, be sure to secure collar on eccentric part of bearing and secure with the setscrews. Eccentric collar goes on variable shaft first and then the bearing.

NOTE 2: The spring cartridge is properly installed when the large end is placed over the sliding disc hub, making contact with the shoulder on the disc. 050 size has separate spring (68) and spring collar (69).

6. Install bearing plate (77).

7. Place the belt between the two (2) discs and pull down toward the variable shaft. This is necessary so that sufficient belt slack is available to loop over the constant speed fixed disc hub.

8. Proceed as in steps 11 through 15 of the belt replacement instructions to complete this reassembly.

VARIABLE SHAFT REMOVAL NO REDUCER UNIT

Follow the variable disc removal instructions for “C” or “Z” flow units whichever applies.

Variable shaft may now be removed from the unit.
The variable shaft bearing (78) may be removed if required.

VARIABLE SHAFT INSTALLATION NO REDUCER UNIT

1. Press the wide variable shaft bearing (78) onto shaft (60).

NOTE: This bearing is a double shield bearing and requires no additional lubrication. It is properly installed when installed on the output end of the variable shaft and against the shoulder.

2. Install retaining ring (126) onto shaft thus locking bearing onto shaft.

3. Insert the variable shaft into the belt case and case housing support assembly.

NOTE: Make certain that variable shaft bearing is properly seated in the bearing bore.

4. Install retaining ring (127). This locks the shaft into the output bearing plate.

5. Follow steps for Variable Disc Installation. This will complete this installation.

MOTOR REPLACEMENT

1. Disconnect electric service to unit.

WARNING

To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.

2. Refer to Constant Disc Instructions for removal of control and constant disc assembly. Steps 1–3.

3. Remove motor—by removing four motor mounting screws from inside the case.

WARNING

Equipment being removed may be too heavy to control manually. Support it by external means. Failure to observe these precautions could result in bodily injury.

4. Place new motor into position and secure with four motor mounting screws to the MOTO DRIVE unit case.

5. On units where a motor adaptor is used be sure the adaptor is installed properly between the case and motor before securing motor.

Refer to Constant Disc Installation to complete replacement.
SCOOP MOUNTING

1. Disconnect electrical service to unit.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.</td>
</tr>
</tbody>
</table>

![Diagram of Scoop Mounting](image)

**FIGURE 2**

**DIAGRAM 6**  **FIGURE 4**

2. Refer to Constant Disc Instructions for removal of control and constant disc assembly (Steps 1–3).

3. Remove scoop by removing four mounting screws from inside the case.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment being removed may be too heavy to control manually. Support it by external means. Failure to observe these precautions could result in bodily injury.</td>
</tr>
</tbody>
</table>

4. Remove motor from scoop by removing four mounting screws from motor feet.

5. Place new motor on mounting pads of scoop. Secure motor to scoop with cap screws provided.

6. Place dial indicator on the motor shaft and indicate surfaces “X” (mounting rabbet on scoop) and “Y” (the face of mounting scoop). The total indicator reading in either case should not exceed .004 inches. Use shim stock under motor feet to align motor with mounting rabbet or scoop. The shim stock under the motor feet should not exceed .060 under any one foot. See Diagram 6, Figure 4.

7. When the motor has been aligned properly and secured in place, drill the two front feet and pin in place with taper pin.

8. Mount scoop and motor as a unit on the MOTO DRIVE unit case.

Refer to Constant Disc Installation to complete replacement.

---

HAND CONTROL ASSEMBLY

CHANGING HAND CONTROL LOCATION

STANDARD CONTROL

(DIAGRAM 7) (SIZE 050)

Should it become necessary to relocate the hand control assembly, it can be accomplished quickly and easily by:

1. Remove four screws (12) from control housing (2).

2. Rotate the control housing to the desired position without removing it from belt case and secure.

**NOTE:** Be sure that the shifting yoke is centered on the yoke pin and that the lugs are properly positioned into (not under) the ears of the thrust bearing housing.

**NOTE:** After relocating the hand control assembly, it may be found that the indicator now appears to read upside down. If this is undesirable, the following instructions should be followed.

![Diagram of Hand Control Assembly](image)

**DIAGRAM 7**

CHANGING INDICATOR POSITION

SIZE 050

STANDARD CONTROL (DIAGRAM 8)

1. Shift unit, while running, until low speed stop is reached and shut unit off.

2. Remove four screws (“A” in Diagram 13) and lift handwheel and indicator cover (101) from control.

3. Make a mark on the indicator dial and on the inside of the gear housing (100) for the purpose of synchronizing speed and dial setting when reassembled.

4. Remove screw “B” from center of gear (103) and remove gear and dial.

5. Remove four hex head screws located under gear (103).
6. Turn gear housing (100) to desired position and replace four hex head screws.

7. Replace gear (103) and indicator dial, being careful to properly position dial according to marks referred to in step 3 of this instruction.

Synchronizing indicator
a. Loosen screw “B” in center of indicator dial and turn dial until #1 comes to center of dial window.
b. Tighten screw “B” and replace handwheel and indicator cover.

![Diagram of synchronizing indicator](image)

### DIAGRAM 8

#### COMPLETE DISASSEMBLY

#### SIZE 050

#### STANDARD CONTROL (DIAGRAM 8)

1. If the MOTO DRIVE unit is in operation, shift the unit to low speed position while it is running.

2. Disconnect electrical power from unit.

### WARNING

To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.

3. Remove the control housing (10).

4. Remove hex head cap screws that secure the handwheel and cover assembly (101) to control and remove assembly. (Be careful not to damage the gasket (255).)

**NOTE:** Should it become necessary to further disassemble the handwheel and cover assembly, proceed with steps 5, 6 and 7.

5. Remove plug button (94).

6. Remove screw (215). This will further permit the removal of the washer (96), spring (97), handwheel (12), hub (98), friction washer (99), and the pinion (102).

**NOTE:** The pinion will have a retaining ring (104) pressed onto it. Also pinion collar (92) located on pinion collar is a slip fit.

7. The crystal indicator (32) may be removed if absolutely necessary; however, it is somewhat difficult due to it being glued into the cover (101). Care should be taken.

8. Remove the button head screw (B) from the shifting shaft (15).

9. Remove the washer, indicator dial (33), gear (103) and key (134), from shifting shaft (15).

**NOTE:** Shifting shaft (15) may at this point slip into the control housing. Don’t be alarmed as it will not fall out completely.

10. Remove hex head screws. Gear housing (100) may now be removed.

11. Remove yoke pin (130) and yoke (23).

**NOTE:** At this point, observe the position of the cam (105). Mark it in such a way that it can be reassembled exactly as it was removed, otherwise the control will function backwards.

At low speed position the point of the cam (105) will be to the right-hand side of the control (looking from the inside).

12. Remove retaining ring (106) from bottom of shifting shaft (15).

13. Remove cam (105) and key (107).

14. Loosen set screws in stop nuts (27) and remove stop nuts. Shifting shaft (15) may now be pushed up through the control housing and removed.
2. Disconnect electrical power from unit.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.</td>
</tr>
</tbody>
</table>

3. Remove control assembly from the belt case.

4. Remove the four screws from the handwheel and cover assembly and remove the cover assembly. Parts numbered (101) cover, (32) crystal, (12) handle, (13) friction catch and (104) retaining ring will make up the cover assembly. (Be careful not to damage the gasket (255).)

5. Remove the screw from the gear shaft (108). This will permit the removal of the washer (170), the indicator (33) and the gear (103).

6. Remove the gear shaft (108) by loosening the set screw located on the control housing.

7. Remove the yoke pin (130) and the yoke (23).

8. Remove the stop nut (27) from the end of the shifting screw (15) and remove shifting screw.

9. Should it be necessary to remove the adjustable stop (28), remove the set screw in the side of the control housing (10) and remove stop and adjusting screw (139). Guide pin (39) need not normally be removed.

REASSEMBLY
SIZE 050
FRONT CONTROL (DIAGRAM 9)

1. Reverse steps 2 through 8 of Disassembly Instructions.
   a. Apply light coat of lubricant to the shifting screw (15) and the gear (103) during reassembly.

   | NOTE: | Be sure shifting yoke is properly engaged in the lug of the thrust bearing housing. The yoke should go into the lugs from the top. |

2. Adjust the stop nut and adjustable stop in accordance with the speed setting instructions in this manual.
FRONT CONTROL ASSEMBLY
050

10 HOUSING CONTROL
11 COVER, STOP NUT
12 HANDLEWHEEL
13 PLUNGER, FRICTION
14 SPRING, FRICTION PLUNGER
15 SCREW, SHIFTING
23 YOKE, SHIFTING
27 NUT, STOP
28 STOP, ADJUSTABLE
32 CRYSTAL, INDICATOR
33 DIAL, INDICATOR
39 ROD, GUIDE
101 COVER, HOUSING, GEAR
103 GEAR, SHIFTING
104 RING, RETAINING
108 SHAFT, GEAR (INDICATOR)
109 RING, RETAINING
110 KEY
130 PIN, YOKE
139 SCREW, ADJUSTING (STOP)
169 GASKET, COVER STOP NUT
170 WASHER
243 GASKET, INDICATOR CRYSTAL
255 GASKET, COVER HOUSING GEAR
258 SCREW, INDICATOR DIAL

NOTE: ALL CAP SCREWS, ETC. NOT LISTED ARE STANDARD ITEMS.

NOTE: GIVE IDENT NUMBER & SIZE WHEN ORDERING PARTS FOR SERVICE AND REFER TO THIS DRAWING.

DIAGRAM 9
AVAILABE HANDWHEEL POSITIONS

<table>
<thead>
<tr>
<th>MOTO DRIVE MODELS</th>
<th>STANDARD POSITIONS</th>
<th>OPTIONAL POSITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERTICAL</td>
<td>W</td>
<td>NW, N, NE &amp; E</td>
</tr>
<tr>
<td>45° RIGHT</td>
<td>E</td>
<td>SE, NE, N &amp; NW</td>
</tr>
<tr>
<td>45° LEFT</td>
<td>W</td>
<td>SW, NW, N, &amp; NE</td>
</tr>
<tr>
<td>HORIZ. RIGHT</td>
<td>N</td>
<td>NW &amp; W</td>
</tr>
<tr>
<td>HORIZ. LEFT</td>
<td>N</td>
<td>NE &amp; E</td>
</tr>
</tbody>
</table>

**DIAGRAM 10**

**CHANGING HANDWHEEL LOCATION**

**SIZE 100 & 200**

**STANDARD CONTROL (DIAGRAM 10)**

Unless otherwise specified each MOTO DRIVE is shipped with the control assembly positioned so that the control handwheel is in the standard position according to the unit model.

Changing the control handwheel location is a simple procedure, if one of the optional positions is more suitable for your application.

1. Remove four cap screws (12), Diagram No. 10
2. Rotate the control housing (2), without separating the control assembly from the case, so that the handwheel is in the desired position.

**NOTE:** If the control housing becomes separated from the case, refer to item 12 on belt replacement instructions.

**DISASSEMBLY**

**SIZE 100-200 (DIAGRAM 11 & 12)**

**STANDARD RIGHT ANGLE & FRONT CONTROL**

1. If the MOTO DRIVE unit is in operation, shift the unit to low speed position while it is running.
2. Disconnect electrical power from unit.

3. Remove the complete control assembly from the belt case.

**NOTE:** At this point, refer to Diagram 11 or 12 depending on type of control and note items (13), (204) and (14).

Take care during the following procedures not to lose the items. They will fall out of the housing during the next step.

4. Remove set screw (168) from handwheel (12) hub. This will permit the removal of the complete handwheel and indicator sub-assembly.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
</table>

Take care not to bend or break the helix (135) as it protrudes from the indicator assembly.

**NOTE:** The above three steps result in our having two sub-assemblies, (1) handwheel and indicator sub-assembly and (2) the control sub-assembly.

For the purpose of these instructions we will treat each separately.

**HANDEWHEEL AND INDICATOR DISASSEMBLY**

1. Remove the four screws that secure the crystal indicator retainer (30) and remove the retainer (30), crystal (32) and gasket (131).
2. Remove the jam nut (146).
3. Holding onto the helix (135) from the bottom, remove indicator (33) by turning it counterclockwise. This is threaded onto the upper portion of the helix.
4. Remove a flat washer (170), two tension washers (137) and the other flat washer (170).
5. Remove the helix (135) from the handwheel. Note the thrust washer (136). Do not lose this item.

**HANDEWHEEL AND INDICATOR REASSEMBLY**

1. Install the thrust washer (136) over the threads of the helix (135).
2. Insert threaded end of helix up through the handwheel (12).
3. Install one flat washer (170), two tension washers (137) and the other flat washer (170) over the protruding threads of the helix.

**NOTE:** The spring washers should be positioned back to back for proper tension.
4. Holding the helix from beneath, thread the indicator (33) onto the helix. Tighten indicator down snugly, then back indicator off one full turn.
5. Install jam nut (146) and secure.
6. Install gasket (131), crystal (32) and crystal retainer (30).

**NOTE:** Do not tighten screws completely as the crystal indicator must be adjusted for low speed when complete control assembly is mounted on the unit. See speed adjustment procedures.
### Parts List — For Size 100 & 200 Reeves Vari-Speed Moto Drive

**Handwheel Control and Indicator**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Housing, Control</td>
</tr>
<tr>
<td>11</td>
<td>Plate, Cover</td>
</tr>
<tr>
<td>12</td>
<td>Handwheel</td>
</tr>
<tr>
<td>13</td>
<td>Catch, Friction</td>
</tr>
<tr>
<td>14</td>
<td>Spring, Compression</td>
</tr>
<tr>
<td>15</td>
<td>Assembly, Shifting Screw</td>
</tr>
<tr>
<td>16</td>
<td>Bearing, Shifting Screw</td>
</tr>
<tr>
<td>17</td>
<td>Sleeve, Bearing Retainer (200 Only)</td>
</tr>
<tr>
<td>18</td>
<td>Ring, Retaining (Bearing Sleeve - 200 Only)</td>
</tr>
<tr>
<td>20</td>
<td>Ring, Retaining (Shifting Screw Bearing)</td>
</tr>
<tr>
<td>21</td>
<td>Assembly, Shifting Yoke</td>
</tr>
<tr>
<td>27</td>
<td>Nut, Stop</td>
</tr>
<tr>
<td>28</td>
<td>Stop, High Speed</td>
</tr>
<tr>
<td>30</td>
<td>Retainer, Crystal (Indicator)</td>
</tr>
<tr>
<td>31</td>
<td>Crystal, Indicator</td>
</tr>
<tr>
<td>33</td>
<td>Dial, Indicator</td>
</tr>
<tr>
<td>130</td>
<td>Pin, Yoke</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>131</td>
<td>Gasket, Crystal</td>
</tr>
<tr>
<td>134</td>
<td>Key, Shifting Screw (100 Only)</td>
</tr>
<tr>
<td>135</td>
<td>Helix, Indicator</td>
</tr>
<tr>
<td>136</td>
<td>Washer, Thrust</td>
</tr>
<tr>
<td>137</td>
<td>Spring, Tension Washer</td>
</tr>
<tr>
<td>138</td>
<td>Plug, Button</td>
</tr>
<tr>
<td>143</td>
<td>Stop, Low Speed</td>
</tr>
<tr>
<td>146</td>
<td>Nut, Hex</td>
</tr>
<tr>
<td>155</td>
<td>Assembly, Handwheel Handle</td>
</tr>
<tr>
<td>167</td>
<td>Gasket, Plug Button (100 Only)</td>
</tr>
<tr>
<td>168</td>
<td>Plug Button (Handwheel Get Grew)</td>
</tr>
<tr>
<td>169</td>
<td>Gasket, Cover Stop Nut</td>
</tr>
<tr>
<td>170</td>
<td>Washer</td>
</tr>
<tr>
<td>185</td>
<td>Washer, Everlock</td>
</tr>
<tr>
<td>204</td>
<td>Pin, Spring</td>
</tr>
<tr>
<td>244</td>
<td>Gasket, Neoprene</td>
</tr>
<tr>
<td>245</td>
<td>Gasket, Mylar</td>
</tr>
<tr>
<td>256</td>
<td>Gasket, Retainer</td>
</tr>
</tbody>
</table>

**Handwheel Size 100 Only**

Ears of shifting yoke engage lugs of thrust bearing housing from below.

Others — ears engage lugs from above.

---

**Diagram 11**

---

**Front Control Assembly — 100-200**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Housing, Control</td>
</tr>
<tr>
<td>11</td>
<td>Cover, Control, Housing</td>
</tr>
<tr>
<td>12</td>
<td>Handwheel</td>
</tr>
<tr>
<td>13</td>
<td>Catch, Friction</td>
</tr>
<tr>
<td>14</td>
<td>Spring, Compression</td>
</tr>
<tr>
<td>15</td>
<td>Assembly, Shifting Screw</td>
</tr>
<tr>
<td>16</td>
<td>Bearing, Shifting Screw</td>
</tr>
<tr>
<td>17</td>
<td>Sleeve, Bearing Retainer (200 Only)</td>
</tr>
<tr>
<td>18</td>
<td>Ring, Retaining (Bearing Sleeve - 200 Only)</td>
</tr>
<tr>
<td>20</td>
<td>Ring, Retaining (Shifting Screw Bearing)</td>
</tr>
<tr>
<td>23</td>
<td>Assembly, Shifting Yoke</td>
</tr>
<tr>
<td>27</td>
<td>Nut, Stop</td>
</tr>
<tr>
<td>28</td>
<td>Stop, High Speed</td>
</tr>
<tr>
<td>30</td>
<td>Retainer, Crystal (Indicator)</td>
</tr>
<tr>
<td>31</td>
<td>Crystal, Indicator</td>
</tr>
<tr>
<td>33</td>
<td>Dial, Indicator</td>
</tr>
<tr>
<td>39</td>
<td>Rod, Guide</td>
</tr>
<tr>
<td>130</td>
<td>Pin, Yoke</td>
</tr>
<tr>
<td>131</td>
<td>Gasket, Crystal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>134</td>
<td>Key, Shifting Screw (100 Only)</td>
</tr>
<tr>
<td>135</td>
<td>Helix, Indicator</td>
</tr>
<tr>
<td>136</td>
<td>Washer, Thrust</td>
</tr>
<tr>
<td>137</td>
<td>Washer, Tension (Helix)</td>
</tr>
<tr>
<td>138</td>
<td>Plug, Button (100 Only)</td>
</tr>
<tr>
<td>139</td>
<td>Screw, Adjustable (High Speed Stop)</td>
</tr>
<tr>
<td>146</td>
<td>Nut, Hex (Cadmium Plated)</td>
</tr>
<tr>
<td>155</td>
<td>Handle, Pin &amp; Washers</td>
</tr>
<tr>
<td>167</td>
<td>Gasket, Plug Button (100 Only)</td>
</tr>
<tr>
<td>169</td>
<td>Gasket, Cover Stop Nut</td>
</tr>
<tr>
<td>170</td>
<td>Washer</td>
</tr>
<tr>
<td>204</td>
<td>Pin, Spring</td>
</tr>
<tr>
<td>244</td>
<td>Gasket, Neoprene</td>
</tr>
<tr>
<td>245</td>
<td>Gasket, Mylar</td>
</tr>
<tr>
<td>256</td>
<td>Gasket, Retainer</td>
</tr>
<tr>
<td>257</td>
<td>Plug Button (Handwheel)</td>
</tr>
</tbody>
</table>

Note: Give Ident. Number & Size When Ordering Parts for Service and Refer to This Drawing.

---

**Diagram 12**

---

**Shifting Screw Assembly for 200 Moto Drive Only**
CONTROL HOUSING DISASSEMBLY

1. Remove retaining ring (20).

2. Remove bearing retainer sleeve (17) and bearing (16).
   - 100 Size — This assembly is manufactured as a complete assembly and no additional disassembly is possible.
   - 200 Size — The sleeve and bearing are separate items on this size and may be disassembled by removing retaing rings (18).

3. Remove yoke pin (130) and yoke (23).

4. Remove set screw and washer (185) securing the adjustable high and low speed stop nuts (143 and 28) and remove from slots in control housing.

5. Remove set screw from stop nut (27) and remove nut from shifting screw (15).

6. The shifting screw (15) may now be removed by turning it counterclockwise. This is threaded into the control housing (10).

   **NOTE:** Size 100 only — A woodruff key is installed in the head of the shifting screw. Take care not to lose this as it must be in place during reassembly or the control will not function properly.

CONTROL HOUSING REASSEMBLY

1. Install shifting screw (15) into housing (10) by turning clockwise. Turn screw into housing approximately two thirds of the length of the threads.

   a. A light coat of lubricant on the shifting screw threads is recommended.

   **NOTE:** 100 Size only — Be sure woodruff key is in place on the head end of the shifting screw.

2. 200 Size only — Assemble bearing (16) to bearing retainer sleeve (17) and secure with retaining ring (18).

3. Install bearing and sleeve assembly into control housing.

   **NOTE:** 100 Size — Be sure the woodruff key and keyway engage each other.

   200 Size — Be sure hex head of shifting screw (15) properly engages with the sleeve (17).

4. Secure with retaining ring (20).

5. Screw the stop nut (27) onto the shifting screw until the threads just come through the nut. The lug on the stop nut (27) should be positioned opposite the handwheel on the standard control and toward the handwheel on the front control. Line up set screw hole with flat on shifting screw and secure. Further adjustment of this will be covered in the speed adjusting instruction.

6. Standard Control — Insert nuts (143 and 28) into slots in control housing and secure with screw and washer (185).
   - Front Control — Thread adjustment screw (139) into high speed stop (28). Ensure that guide hole in (28) is positioned over guide rod (39).

7. Install yoke (23) and yoke pin (130). Be sure hard steel rivet in yoke is positioned toward shifting screw.

HANDWHEEL & INDICATOR TO CONTROL HOUSING ASSEMBLY

1. Lay control housing with yoke side down.

2. Insert compression spring (14), spring pin (204) and friction catch (13) into hole provided. These must be held in place by hand temporarily.

3. Pick up the handwheel and indicator assembly. Note the square end of the helix (135); this must be aligned squarely with the square hole found in the end of the shifting screw (15).

   **NOTE:** The square hole in the shifting screw is provided by a nylon insert pressed into the shifting screw. This is referred to as the helix guide.

4. Insert helix (135) into helix guide squarely and push handwheel into position over the bearing retainer sleeve (17). Be sure friction catch does not fall out during this assembly procedure.

5. Keeping light pressure by the handwheel so as not to lose the friction catch, line up set screw hole in handwheel (12) with matching hole in bearing retainer sleeve (17) and secure with set screw.

6. Coat shifting screw threads and adjusting screw threads with light coat of clear grease.

   **NOTE:** 200 only — be sure the ears of the shifting yoke engage the lugs of the thrust bearing housing from the top.

   100 Handwheel only — Be sure the ears of the shifting yoke engage the lugs of the thrust bearing housing from below.

7. Install complete control assembly onto belt case. Insure shifting yoke properly engages ears on thrust bearing housing.

8. Final adjustment of the control assembly should be made in accordance with the speed setting instruction in the manual.
MINIMUM AND MAXIMUM SPEED SETTING

SIZE 050
STANDARD CONTROLS (DIAGRAM 13)

1. Remove stop nut cover (11) for access to speed control. Don’t lose or damage gasket.

2. Loosen set screws in stop nuts (27).

3. Start MOTO DRIVE unit and adjust to maximum output speed as indicated on the unit nameplate.

4. Rotate upper stop nut (27) until contact is made with built-in lug or long set screw in the housing. Contact will be on the left-hand side of lug facing the control.

5. Tighten set screws.

6. Adjust the MOTO DRIVE unit to minimum output speed as indicated on the nameplate.

7. Rotate lower stop nut (27) until contact is made with the built-in lug or long set screw in the housing. Contact will be on the right-hand side of the lug facing control.

8. Tighten setscrews.

9. Shut off the unit and check the indicator for correct position. The “#1” should be directly under the reference line on the crystal indicator. If not, proceed with the following.

10. Note and mark the location of the reference line on the indicator housing (100).

11. Remove the four screws (A) from the cover assembly (101) and remove.

12. Loosen screw (B) and rotate the indicator dial (103) until the “#1” is in line with the mark in step “10” above.

13. Tighten screw (B) and reinstall indicator cover and handwheel assembly (101).

14. Reinstall stop nut cover (11).

SIZE 100 and 200
STANDARD CONTROL (DIAGRAM 14)

1. Remove stop cover plate for access to speed control stops.

2. Loosen high and low speed stops; and spread the stops to maximum separation in the guide slot.

3. Inspect the stop nut location on the shifting screw. Re-position if necessary, so that approximately three full threads show at end of screw.

4. Start MOTO DRIVE and adjust to required maximum output speed.

5. Slide the high speed stop into the position where contact between the stop and stop nut occurs, and secure in place. Note two grooves, in the shifting screw, and two set screw holes in the stop nut, permit small position changes of the stop nut to give a more exact speed control setting.

6. Adjust MOTO DRIVE unit to required minimum output speed.

7. Slide the low speed stop into the position where contact with the stop nut occurs; and secure in place.

8. Be sure screws holding high and low speed stops and stop nuts are tight.

9. Replace stop cover plate.

DIAGRAM 14
SIZE 050 – 100-200
FRONT CONTROLS (DIAGRAM 15)

1. Remove control access covers.
2. Remove the setscrew in the stop nut (27).
3. Start the MOTO DRIVE unit and shift it to minimum speed as indicated on the nameplate.
4. Adjust the stop nut (27) until it makes contact with the built-in low speed stop (10).
5. Line up a setscrew hole in the stop nut with the flat on the shifting screw (15) and secure with setscrew.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not remove this set screw. Loosen only enough to permit free rotation of the adjusting screw (139).</td>
</tr>
</tbody>
</table>

7. Shift the MOTO DRIVE unit to maximum speed as indicated on the nameplate.

**NOTE:** Depending upon the previous setting of the high speed stop, it may be necessary to turn the adjusting screw (139) in a counterclockwise direction at the same time the unit is being shifted toward maximum speed.

8. After maximum speed is reached, adjust the high speed stop (28) so that the stop nut (27) will just strike the side of the stop (28) as the unit is advanced toward high speed.

**NOTE:** If too much contact between the stop and the stop nut exists, the unit will not return to low speed.

9. After the desired maximum speed has been adjusted and assurance has been made that the unit will return to low speed, tighten setscrew (6).

10. Recheck maximum speed setting and then return unit to minimum speed.

11. Shut off unit.

12. Adjust indicator dial.

A. 050 (See Diagram 9)
   1. Remove crystal indicator (32).
   2. Loosen screw securing indicator dial (33) and adjust dial so that “#1” will be directly under the reference mark on the crystal indicator.
   3. Tighten screw and reinstall crystal.

B. 100-200 (See Diagram 12).
   1. Loosen crystal indicator retainer (30) and position the reference line of the crystal (32) directly over the “#1” on the dial (33).
   2. Resecure the retainer.

**ELECTRIC REMOTE CONTROL**

**DISASSEMBLY**

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.</td>
</tr>
</tbody>
</table>

1. See Diagram 16, Page 20
2. Remove complete control assembly from MOTO DRIVE unit.
3. Remove four hex head machine screws and washers.
4. Remove gearmotor housing cover (E170.)
5. Remove the two limit switch cams (E98) from the cam shaft (E186).
6. Remove the socket head screws and washers from mounting plate (E95). The complete mounting plate assembly may now be removed.

**NOTE:** The motor (E1), capacitor (E92), limit switches (E82), terminal block (E100) are all attached to the mounting plate. These can be removed as required by simply removing the necessary hardware for the specific item.

7. Remove control pinion (E187) from gearmotor housing (E188).

**NOTE:** There is a washer on the control pinion. Do not lose this item.
8. Loosen hex nut and remove cam shaft (E186) and washer.
9. Remove shifting gear (103).
10. 050 only—Remove woodruff key (49).

**NOTE:** Before proceeding to step 11, note position of the cam (105). Mark the cam in such a way as to insure reassembly in exactly the same position. If the cam is installed upside down, the control will operate backwards.

11. Remove button head screw and washer from shifting shaft (15).

**NOTE:** On the 050 size only, screw and washer are replaced by a retaining ring, (106).
12. Remove cam (105).
13. 050 only—Remove woodruff key (50).
14. Remove collar (56). This will permit removal of the shifting shaft.
15. Remove yoke pin (130) and yoke (23) if required.

**REASSEMBLY**

**NOTE:** Apply a light coat of lubricant (NLGI No. 1) to the shifting shaft (15).
1. Insert shifting shaft (15) into control housing (10).
2. Install the collar (56) onto shifting shaft.
3. 050 only — Install woodruff key (50).
4. Install cam (105).

**NOTE:** Be sure cam is installed as indicated by markings in accordance with the note after step 10 of the disassembly instructions.

5. Secure cam with either the retaining ring (050 only) or the washer and screw.
6. If gearmotor housing (E188) was previously removed, reinstall at this time and secure with the screws and washers.
7. 050 only — insert woodruff key (49) into shifting shaft.
8. Install shifting gear (103) and secure with the cam shaft (E186), jam nut and washer.
   **NOTE:** When replacing shifting gear 103, replace pinion pilot bushing E196 (supplied) in order to maintain proper gear mesh alignment. Remove the old bushing, drive the new bushing in flush. Grease bushing and gear teeth. To remove old bushing on ERC's with bushing set in blind hole:
   Pry old bushing out with rivet head, hook or No. 6 screw head ground to 1/4" O.D. Insert through bushing bore and pry bushing out. it may be necessary to drop a No. 2 nut into hole to pry against. (See drawing)

9. With washer installed on control pinion, insert this assembly into the gearmotor housing (E188).
   **NOTE:** Apply light coat of clean grease to gear teeth.
10. If the component's motor (E1), capacitor (E92), terminal block (E100), and/or limit switches (E82) and the limit switch spacers (E81) were previously removed from the mounting plate (E95), reassemble at this time.
11. Reassemble the mounting plate assembly (E95) (complete) to the gearmotor housing (E188).
12. Install limit switch cams (E98).
13. Install yoke (23) and yoke pin (130).
   **NOTE:** Apply light coat of lubricant (NLGI No. 1) to cam surface.
14. Reinstall complete control assembly onto the MOTO DRIVE unit. Check position on yoke prongs.
15. Adjust limit switch cams in accordance with speed limit switch adjustment instructions.
16. Secure gearmotor housing cover (E170). Apply light coat of RTV between cover and housing.
   **NOTE:** See appropriate wiring diagram at the end of this manual for correct connections.

**LIMIT SWITCH ADJUSTMENT**
**HEAVY DUTY ELECTRIC REMOTE CONTROL SIZES 050-100-200**

Reference Diagram No. 16
1. Remove gearmotor housing cover (E170).
2. Limit switch cams (E98) can be positioned by rotating on shaft. (Slight interference fit).
3. Check data plate on the unit for minimum and maximum rpm.
   **NOTE:** Limit switches may be set for any speed within the limits as noted on the data plate.
4. Start unit and adjust the speed electrically to the minimum data plate rpm.

**NOTE:** Observe direction of cam shaft (E186) so that the cam may be adjusted on the correct side of the switch lever. The cam shaft should turn CCW for lower speed and CW for high speed.
5. Adjust the top limit switch cam (E98) so that the limit switch just actuates.
   **NOTE:** A very faint click may be heard that would indicate opening and closing of limit switch.

**CAUTION:**
Be sure cam is on correct side of switch arm for proper operation in direction selected. See note after step 4 above.

6. Adjust speed toward high speed slightly and then return control to low speed. This will check previous setting.
7. Adjust the speed of the unit to the desired high speed limit not exceeding data plate speed.
   **NOTE:** If the unit is being adjusted under a no load condition, multiply desired rpm by 1.05 and adjust to this figure. This will allow for pull down under load.
8. Adjust the lower limit switch cam as in steps 5 and 6.
   **NOTE:** When this cam is properly adjusted it should be approaching its respective limit switch from the opposite direction of that of the upper cam.
9. After rechecking both limits for proper adjustment, reinstall gearmotor housing cover (E170). Apply light coat of RTV between cover and housing.

**ERC WITH MASTER GEARMOTOR FOR 200 MOTO DRIVE UNIT INSTRUCTIONS FOR ADJUSTING FRICTION CLUTCH**

**DANGER**
Subsequent steps require rotating parts and/or electrical circuits to be exposed. Stay clear if unit must be running or disconnect and lockout or tag power source if contact must be made. Failure to observe these precautions could result in severe bodily injury or loss of life.

Refer to parts breakdowns on page 21
To adjust friction clutch:
1. Friction clutch may be adjusted by removing gear guard cover (E21).
2. Check friction washers (E11). Replace if worn.
3. To adjust, tighten spring nut (E13) until clutch will shift MOTO DRIVE unit running under no load. Turn (E13) clockwise to tighten clutch.
4. Tighten spring nut (E13) an additional 1/4 turn.
5. Tension is correct when clutch will not slip while shifting MOTO DRIVE unit under load, but slips when shifting screw hits high or low speed stops.
   **NOTE:** This is a dry clutch — do not fill housing (E20) with oil or grease! A small amount of grease should be applied to teeth of gears (E25) and (E27), but grease must be kept away from clutch.
DIGITAL INDICATOR CONNECTION DIAGRAM

LCD METER

CONNECTOR TO MAGNETIC PICKUP ON REEVES DRIVE

NOTE:
1. STANDARD CONNECTOR FOR NON-EXPLOSION PROOF PICKUPS SHOWN. AMPHENOL TYPE MS 3106A-10SL-4S.
2. EXPLOSION PROOF PICKUP HAS 3-18" WIRE LEADS AND 1/2" INTERNAL PIPE THREAD. WIRE PER CODE AND APPROVED XP WIRING PRACTICE. CONNECT WIRES: WHITE TO "INP," BLACK TO "GND," GREEN TO PROTECTIVE GROUND.
3. INDICATOR MEETS NEMA 4X/IP65 REQUIREMENTS WHEN PROPERLY INSTALLED WITH GASKET AND MOUNTING CLIP. SEE INSTRUCTIONS PACKED WITH INDICATOR.
4. INDICATOR SCALING: (DETAILED INSTRUCTIONS PACKED W/INDICATOR)
   BASIC SETTING: SET TIMEBASE INCREMENT (TBIT)
   TBIT = DR X DDP X 15360
   RPM X PPR
   WHERE: DR = DESIRED READING
   DDP = DECIMAL POINT
   RPM = DRIVE OUTPUT SPEED AT DR
   MULTIPLIED BY DRIVE REDUCER RATIO
   PPR = TEETH ON PULSE WHEEL
   (60 STD., 40 XP ONLY)

REF.: SD7100-10-G DIMENSION SHEET

LED METER

NOTE:
1. 6 FT. OF 3-WIRE POWER CORD AND 3-PRONG PLUG. FOLLOW PROPER GROUNDING PRACTICE. POWER CORD IS NOT PROVIDED ON INDICATORS FURNISHED IN NEMA 4X OR EXPLOSION PROOF HOUSINGS.
2. STANDARD CONNECTOR FOR NON-EXPLOSION PROOF PICKUPS SHOWN. AMPHENOL TYPE MS 3106A-10SL-4S.
3. EXPLOSION PROOF PICKUP HAS 3-18" WIRE LEADS AND 1/2" INTERNAL PIPE THREAD. WIRE PER CODE AND APPROVED XP WIRING PRACTICE. CONNECT WIRES: WHITE TO "SIGNAL," BLACK TO "COM," GREEN TO PROTECTIVE GROUND.

CAUTION:
DO NOT CONNECT ANY OTHER POWER SOURCE TO THE +5V SUPPLY TERMINAL.

REMOVE 2 SCREWS FROM FRONT OF LENS, REMOVE LENS TO EXPOSE TWO HIDDEN MOUNTING HOLES.

REF.: D42000-39-J INSTRUCTIONS & SD-7100-15-B DIMENSION SHEET.

19
PARTS LIST FOR ELECTRIC REMOTE CONTROL ON
REEVES MOTO DRIVE SIZES 050, 100, 200

E 1 MOTOR
10 HOUSING, CONTROL
11 COVER, STOP NUT
15 SHAFT, SHIFTING
23 YOKE, SHIFTING
49 KEY, WOODRUFF (050 ONLY)
50 KEY, WOODRUFF (050 ONLY)
56 COLLAR, SHAFT
E81 INSULATOR
E82 SWITCH, LIMIT
E90 COVER, CONNECTION
E91 GROMMET, RUBBER (100 ONLY)
E92 CAPACITOR, MOTOR
E95 PLATE, MOUNTING
E97 MARKER, STRIP
E98 CAM, LIMIT SWITCH
E100 BLOCK, TERMINAL
103 GEAR, SHIFTING
105 CAM, SHIFTING
106 RING, RETAINING (050 ONLY)
130 PIN, YOKE
169 GASKET, COVER STOP NUT
E170 COVER, GEARMOTOR
E186 SHAFT, CAM
E187 PINION, CONTROL
E188 HOUSING, GEARMOTOR
E190 GASKET, COVER, CONNECTION
E196 BUSHING, PINION PILOT

NOTE: GIVE IDENTIFICATION NUMBER & SIZE WHEN OR-DERING PARTS FOR SERVICE AND REFER TO THIS DRAWING.

NOTE: ALL HARDWARE, ETC. NOT LISTED ARE STANDARD ITEMS.

DIAGRAM NO. 16
Parts List for Electric Remote Control

For Reeves® Moto Drive® Size 200

(with Master® Gearmotor)

10 Housing, Control
11 Cover, Stop Nut
15 Screw, Shifting
16 Bearing, Hub
17 Hub, Clutch-Friction
18 Ring, Retaining
23 Yoke, Shifting (Assembly)
27 Nut, Stop
28 Stop, High Speed
130 Pin, Yoke
138 Plug, Button
143 Stop, Low Speed
185 Washer, Everlock
E11 Disc, Friction
E12 Spring, Tension Washer
E13 Nut & Washer, Lock
E20 Bracket, Motor
E21 Cover, Gear
E22 Plate, Pressure
E25 Gear, Bevel
E27 Pinion, Bevel
E37 Spring, Tension Washer

Note: Give serial number of Moto Drive when ordering replacement parts and refer to this drawing number.

Note: All hardware not listed are standard items.

When ordering Moto Drive replacement parts refer to this bulletin number and give serial number, assembly number, and unit size number.
PARTS LIST FOR MECHANICAL AUTOMATIC CONTROL FOR SIZE 100

<table>
<thead>
<tr>
<th>Moto Drive Unit Size</th>
<th>Fulcrum Screw Size</th>
<th>Recommended Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>1/4&quot; - 20</td>
<td>100-125 in. lbs.</td>
</tr>
</tbody>
</table>

1. Apply light coat of ball bearing grease to outside diameter of fulcrum screw and bushing.
2. Insert bushing and fulcrum screw into hole of shifting link and tighten as specified.

Note: (6) Six fulcrum screws & bushings are required for complete assembly.

Note: (4) Four fulcrum screws & bushings are required for complete assembly.

---

BUSHING AT THIS LOCATION MUST HAVE FLANGE BETWEEN EQUALIZING COLLAR AND THRUST BEARING HOUSING

FULCRUM SCREW

APPLY GREASE

BUSHING

SHIFTING YOKE

SHIFTING LINK

EQUALIZING COLLAR

5/32 HEX SOCKET

APPLY GREASE

BUSHING

SHIFTING LINK

FULCRUM SCREW (SIZE 100)
PARTS LIST FOR MECHANICAL AUTOMATIC CONTROL FOR SIZE 200

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>HOUSING, CONTROL</td>
</tr>
<tr>
<td>23</td>
<td>YOKE, SHIFTING</td>
</tr>
<tr>
<td>24</td>
<td>SCREW, FULLRUM</td>
</tr>
<tr>
<td>229</td>
<td>BUSHING</td>
</tr>
<tr>
<td>42</td>
<td>HOUSING, THRUST BEARING</td>
</tr>
<tr>
<td>138</td>
<td>PLUG, BUTTON</td>
</tr>
<tr>
<td>47</td>
<td>RING, RETAINING</td>
</tr>
<tr>
<td>167</td>
<td>GASKET, PLUG BUTTON</td>
</tr>
<tr>
<td>25</td>
<td>BUSHING, DISC (CONSTANT)</td>
</tr>
<tr>
<td>50</td>
<td>DISC, SLIDING (CONSTANT)</td>
</tr>
<tr>
<td>38</td>
<td>PLUG, BUTTON</td>
</tr>
<tr>
<td>147</td>
<td>RING, RETAINING</td>
</tr>
<tr>
<td>31</td>
<td>GASKET, PLUG BUTTON</td>
</tr>
<tr>
<td>33</td>
<td>KEY (HUB)</td>
</tr>
<tr>
<td>34</td>
<td>STOP</td>
</tr>
<tr>
<td>35</td>
<td>KEY (LOCK)</td>
</tr>
<tr>
<td>36</td>
<td>YOKE</td>
</tr>
<tr>
<td>37</td>
<td>SCREW, LOCKING</td>
</tr>
<tr>
<td>38</td>
<td>BUSHING, BEARING</td>
</tr>
<tr>
<td>39</td>
<td>BEARING, SPRING</td>
</tr>
<tr>
<td>40</td>
<td>RING, RETAINING</td>
</tr>
<tr>
<td>41</td>
<td>GASKET, PLUG BUTTON</td>
</tr>
</tbody>
</table>

Moto Drive Unit Size | Fulcrum Screw Size | Recommended Torque |
---------------------|--------------------|--------------------|
200                  | 1/2" - 13          | 250 - 300 in. lbs. |

1. Apply light coat of ball bearing grease to outside diameter of fulcrum screw and bushing.
2. Insert bushing and fulcrum screw into hole of shifting link and tighten as specified.

Note: (4) Four fulcrum screws & bushings are required for complete assembly.
PARTS LIST — FOR SIZES 050 - 100 - 200
"Z" Flow Style — Vertical, 45° and Horizontal Models

1 MOTOR
4 CASE, BELT
5 PLATE, INSPECTION
7 PLATE, SPECIFICATION (050 ONLY)
9 PLATE, NAME
42 HOUSING (THRUST BEARING)
43 BEARING, THRUST
50 DISC, SLIDING (CONSTANT)
51 KEY (CONSTANT DISC)
52 BELT
53 DISC, FIXED (CONSTANT)
60 SHAFT, VARIABLE
61 KEY, DISC
63 KEY, OUTPUT
65 DISC, FIXED (VARIABLE)
66 DISC, SLIDING (VARIABLE)
68 SPRING (DISC) (050 ONLY)
69 COLLAR (SPRING) (050 ONLY)
70 RING, RETAINING (SPRING COLLAR)
73 RING, RETAINING (FIXED DISC VARIABLE)
75 PLATE, BEARING
77 PLATE, BEARING
78 BEARING (050 & 100 2-REQ.) (200 1-REQ.)
124 GASKET, PLUG BUTTON (050 & 100 ONLY)
125 SUPPORT, CASE
126 RING, RETAINING (BEARING)
127 RING, RETAINING (BEARING)
128 PLUG, BUTTON (050 & 100 ONLY)
154 CARTRIDGE, SPRING ASS'Y. (100 & 200 ONLY)
172 SEAL, VARI-SHAFT (050 & 100 1-REQ.) (200 2-REQ.)
230 ADAPTOR, MOTOR (200 ONLY)
231 PLATE, COVER (200 ONLY)
251 BUSHING, DISC (CONSTANT)
252 COLLAR, CLAMP
253 BUSHING, DISC (VARIABLE)
254 GASKET, COVER (MOTOR ADAPTOR) (200 ONLY)
78A BEARING & COLLAR (200 1-REQ.)
3H BASE (100 HORIZONTAL ONLY)
140 ADAPTER, TRUNNION

NOTES:
(1.) ALL CAP SCREWS ETC., NOT LISTED, ARE STANDARD ITEMS.
(2.) GIVE IDENT. NO. & SIZE OF MOTO DRIVE WHEN ORDERING PARTS FOR SERVICE AND REFER TO THIS DRAWING.

When ordering Moto Drive unit replacement parts refer to this bulletin number and give serial number, assembly number, and unit size number.
PARTS LIST — FOR SIZES 050 - 100 - 200

"C" Flow Style — Vertical, 45° and Horizontal Models

NOTES:
(1.) ALL CAP SCREWS ETC. NOT LISTED ARE STANDARD ITEMS.
(2.) GIVE IDENT. NO. & SIZE OF MOTO DRIVE WHEN ORDERING.

PARTS FOR SERVICE AND REFER TO THIS DRAWING.

1 MOTOR
2 CASE, BELT
3 PLATE, INSPECTION
4 PLATE, SPECIFICATION (050 ONLY)
5 PLATE, NAME
6 HOUSING (THRUST BEARING)
7 BEARING, THRUST
8 RING, RETAINING (SPRING COLLAR)
9 RING, RETAINING (FIXED DISC VARIABLE)
10 PLATE, BEARING
11 PLATE, BEARING
12 RING, RETAINING (BEARING)
13 RING, RETAINING (BEARING)
14 GASKET, PLUG BUTTON (050 & 100 ONLY)
15 SUPPORT, CASE
16 RING, RETAINING (BEARING)
17 RING, RETAINING (BEARING)
18 GASKET, PLUG BUTTON (050 & 100 ONLY)
19 SEAL, VARI-SHAFT (050 & 100 1 REQ.) (200 2 REQ.)
20 ADAPTOR, MOTOR (200 ONLY)
21 PLATE, COVER (200 ONLY)
22 BUSHING, DISC (CONSTANT)
23 BUSHING, DISC (CONSTANT)
24 BUSHING, DISC (VARIABLE)
25 GASKET, COVER IMOTOR ADAPTOR) (200 ONLY)
26 BASE (100 HORIZONTAL ONLY)
27 ADAPTER, TRUNION

When ordering Moto Drive unit replacement parts refer to this bulletin number and give serial number, assembly number, and unit size number.
PARTS LIST — FOR SINGLE REDUCTION REDUCER — SIZE 111

60 SHAFT, VARIABLE
R1 PLUG, VENT
R2 SLINGER, OIL
*R4 BEARING, HIGH SPEED
R7 RING, RETAINING, HIGH SPEED BEARING
R9 HEAD
*R10 GASKET, HEAD
*R11 BEARING—OUTER, LOW SPEED
R12 PINION, HIGH SPEED
R13 SHAFT, OUTPUT
R14 GEAR, LOW SPEED
R15 KEY, LOW SPEED GEAR
*R16 BEARING—INNER, LOW SPEED
R19 ADAPTOR, RING (TRUNNION TYPE ONLY, REDUCER ON MOTOR SIDE)
R20 HOUSING
R21 NUT, HIGH SPEED SHAFT
R22 KEY, HIGH SPEED PINION
*R49 SEAL, OIL, LOW SPEED
*R50 SEAL, OIL, HIGH SPEED
R69 PLUG, DRAIN (MAGNETIC)
R70 PLATE, RATIO & LUBRICATION
R72 PLUG, OIL LEVEL
R73 RING, RETAINING, HIGH SPEED BEARING
R74 RING, RETAINING, HIGH SPEED BEARING
R78 KEY, OUTPUT SHAFT
141 ADAPTOR TRUNNION

*Recommended spares
NOTE: All cap screws, etc. not shown are standard items.
NOTE: The Moto Drive unit size is a numerical prefix to the size reducer such as size 051, 111, 221, etc.

Always include unit size, serial number and assembly number from a nameplate when ordering parts.
PARTS LIST— FOR SINGLE REDUCTION REDUCER —
SIZES 051, 121, 221

60 SHAFT, VARIABLE
R1 PIN, VENT
R2 SLINGER, OIL (OUTPUT SHAFT UP
ON ALL REDUCERS)
*R4 BEARING, HIGH SPEED
R7 RING, RETAINING, HIGH SPEED BEARING
R9 HEAD, GEARBOX
*R10 GASKET, HEAD
*R11 BEARING—OUTER, (LOW SPEED)
R12 PINION, HIGH SPEED
R13 SHAFT, OUTPUT
R14 GEAR, LOW SPEED
R15 KEY, LOW SPEED GEAR
*R16 BEARING—INNER, (LOW SPEED)
R19 ADAPTOR, RING (USE FOR MOTO DRIVE
WITH RED. M.S.—TRUN. TYPE ONLY)

R20 HOUSING, GEAR
R21 NUT, HIGH SPEED SHAFT
R22 KEY, HIGH SPEED PINION
*R49 SEAL, OIL, (LOW SPEED)
*R60 SEAL, OIL, (HIGH SPEED)
R69 PLUG, DRAIN (MAGNETIC)
R70 PLATE, RATIO & LUBRICATION
R72 PLUG, OIL LEVEL
R73 RING, RETAINING, (HIGH SPEED BEARING)
R74 RING, RETAINING, (HIGH SPEED BEARING)
R78 KEY, OUTPUT SHAFT
R82 GUARD, SPLASH
R86 PIN, PLUG

NOTE: VENT PIN WILL BE LOCATED AT EITHER ‘X’ OR
‘Y’ DEPENDING ON ASSEMBLY OF UNIT.

*Recommended spares
NOTE: All cap screws, etc. not shown are standard items.
NOTE: The Moto Drive unit size is a numerical prefix to the size reducer such as size 051, 111, 221, etc.

Always include unit size, serial number and assembly number from a nameplate when ordering parts.
PARTS LIST — DOUBLE REDUCTION REDUCER — SIZE 052

60 SHAFT, VARIABLE
R1 PLUG, VENT
R2 SLINGER, OIL
R3 PIN, DOWEL
*R4 BEARING, HIGH SPEED
R7 RING, RETAINING, HIGH SPEED BEARING
R9 HEAD, GEARBOX
*R10 GASKET, HEAD
*R11 BEARING—OUTER, LOW SPEED
R12 PINION
R13 SHAFT, OUTPUT
R14 GEAR, LOW SPEED
R15 KEY, LOW SPEED GEAR

*R16 BEARING—INNER, LOW SPEED
R20 HOUSING
R21 NUT, HIGH SPEED PINION
R22 KEY, HIGH SPEED PINION
*R29 BEARING, OUTER, LOW SPEED PINION
R30 PINION, LOW SPEED
R31 CENTERPIECE
*R33 BEARING, INNER, LOW SPEED PINION
R34 GEAR, HIGH SPEED
R35 NUT, LOW SPEED PINION
R49 SEAL, OIL, LOW SPEED
*R50 SEAL, OIL, HIGH SPEED
R52 KEY, HIGH SPEED GEAR

R55 RETAINER, HIGH SPEED BEARING
*R56 GASKET, BEARING RETAINER
R69 PLUG, DRAIN (MAGNETIC)
R70 PLATE, RATIO & LUBRICATION
R72 PLUG, OIL LEVEL
R73 RING, RETAINING, HIGH SPEED BEARING
R74 RING, RETAINING, HIGH SPEED BEARING
R75 KEY, OUTPUT SHAFT
R79 PLUG, OIL FILLER
R81 RING, RETAINING (CENTERPIECE INNER BEARING)
R45 RING, RETAINING (OUTER PINION BEARING)

*Recommended spares

NOTE: All cap screws, etc. not shown are standard items.

NOTE: The Moto Drive unit size is a numerical prefix to the size reducer such as size 052, 112, etc.

Always include unit size, serial number and assembly number from a nameplate when ordering parts.
PARTS LIST — FOR DOUBLE REDUCTION REDUCER — SIZE 112

60 SHAFT, VARIABLE
R1 PLUG, VENT
R3 PIN, DOWEL
*R4 BEARING, HIGH SPEED
R9 HEAD, GEARBOX
*R10 GASKET, HEAD & CENTERPIECE
*R11 BEARING—OUTER, LOW SPEED
R12 PINION, HIGH SPEED
R13 SHAFT, OUTPUT
R14 GEAR, LOW SPEED
R15 KEY, LOW SPEED GEAR
*R16 BEARING—INNER, LOW SPEED
R20 HOUSING—CASE SUPPORT
R21 NUT, HIGH SPEED PINION
R22 KEY, HIGH SPEED PINION
*R28 BEARING—OUTER, LOW SPEED PINION
R30 PINION, LOW SPEED
R31 CENTERPIECE

*R33 BEARING, INNER, LOW SPEED PINION
R34 GEAR, HIGH SPEED
R35 NUT, LOW SPEED PINION
R46 RING, RETAINING, LOW SPEED PINION, INNER
*R49 SEAL, OIL, LOW SPEED
*R50 SEAL, OIL, HIGH SPEED
R52 KEY, HIGH SPEED GEAR
R55 RETAINER, HIGH SPEED BEARING
*R56 GASKET, BEARING RETAINER
R69 PLUG, DRAIN (MAGNETIC)
R70 PLATE, RATIO & LUBRICATION
R72 PLUG, OIL LEVEL
R73 RING, RETAINING, HIGH SPEED BEARING, INNER
R74 RING, RETAINING, HIGH SPEED BEARING, OUTER
R75 RING, RETAINING, LOW SPEED PINION BEARING
R78 KEY, OUTPUT SHAFT
R82 GUARD, SPLASH
R86 RING, RETAINING OUTER LOW SPEED PINION

*Recommended spares

NOTE: All cap screws, etc. not shown are standard items.

NOTE: Assemblies A, B and C are for reference only. The parts are not sold as an assembly.

NOTE: Size 112 and 113 Reducers cannot be ceiling (upside down) mounted.

Always include unit size, serial number and assembly number from a nameplate when ordering parts.
PARTS LIST — FOR DOUBLE REDUCTION REDUCER —
SIZES 122, 222, 232

60 SHAFT, VARIABLE
R1 PLUG, VENT
R2 SLINGER, OIL (CEILING MTD UNITS ONLY)
R3 PIN, DOWEL
*R4 BEARING, HIGH SPEED
R7 RING, RETAINING, HIGH SPEED BEARING
R9 HEAD, GEARBOX
*R10 GASKET, HEAD
*R11-A BEARING, OUTER, LOW SPEED
R12 PINION, HIGH SPEED
R13 SHAFT, OUTPUT
R14 GEAR, LOW SPEED
R15 KEY, LOW SPEED GEAR
*R16-A BEARING, INNER, LOW SPEED
R18 ADAPTOR, RING
R20 HOUSING, CASE SUPPORT
R21 NUT, HIGH SPEED PINION
R22 KEY, HIGH SPEED PINION
*R29-A BEARING, OUTER, LOW SPEED PINION
R30 PINION, LOW SPEED
R31 CENTERPIECE, GEAR
*R33 BEARING, INNER, LOW SPEED PINION
R34 GEAR, HIGH SPEED
R35 NUT, LOW SPEED PINION
R45 RING, RETAINING
R46 RING, RETAINING
*R49 SEAL, OIL, LOW SPEED
*R50 SEAL, OIL, HIGH SPEED
R52 KEY, HIGH SPEED GEAR
R55 PLATE, BEARING (INTERNAL)
*R56 GASKET, BEARING PLATE (INTERNAL)
R69 PLUG, DRAIN (MAGNETIC)
R70 PLATE, RATIO & LUBRICATION
R72 PLUG, OIL LEVEL
R73 RING, RETAINING, INNER HIGH SPEED BEARING
R74 RING, RETAINING, OUTER HIGH SPEED BEARING
R75 RING, RETAINING, OUTER LOW SPEED PINION BEARING
R78 KEY, OUTPUT SHAFT
R80 PLUG, BUTTON (HOUSING, CASE SUPPORT)
R81 RING, RETAINING INNER LOW SPEED PINION BEARING

*Recommended spares
NOTE: All cap screws, etc. not shown are standard items.
NOTE: The Moto Drive unit size is a numerical prefix to the size reducer such as size 122, 222, 232 etc.
NOTE: Assemblies A, B and C are for reference only. The parts are not sold as an assembly.

Always include unit size, serial number and assembly number from a nameplate when ordering parts.
PARTS LIST — FOR TRIPLE REDUCTION REDUCER — 053

60 SHAFT, VARIABLE
R1 PLUG, VENT
R2 SNUKER, OIL
R3 PIN, DOWEL
*R4 BEARING, HIGH SPEED
R7 RING, RETAINING
R9 HEAD, GEARBOX
*R10 GASKET, HEAD
*R11 BEARING-OUTER, LOW SPEED
R12 PINION, HIGH SPEED
R13 SHAFT, OUTPUT
R14 GEAR, LOW SPEED
R15 KEY, LOW SPEED
*R16 BEARING—INNER, LOW SPEED
R20 HOUSING
R21 NUT, HIGH SPEED PINION
R22 KEY, HIGH SPEED PINION
*R29 BEARING, OUTER LOW SPEED PINION
R30 PINION, LOW SPEED
R31 CENTERPIECE
*R33 BEARING, INNER LOW SPEED PINION
R34 GEAR, HIGH SPEED
R35 NUT, LOW SPEED PINION
*R38 BEARING, OUTER INTERMEDIATE
R41 PINION, INTERMEDIATE
*R44 BEARING, INNER INTERMEDIATE
R45 RING, RETAINING, LOW SPEED PINION
R47 GEAR, INTERMEDIATE
*R49 SEAL, OIL, LOW SPEED
*R50 SEAL, OIL, HIGH SPEED
R52 KEY, HIGH SPEED GEAR
R53 KEY, INTERMEDIATE GEAR
R55 PLATE, BEARING (INTERNAL)
*R56 GASKET, BEARING PLATE (INTERNAL)
R57 RING, RETAINING, INTERMEDIATE PINION
R69 PLUG, DRAIN (MAGNETIC)
R70 PLATE, RATIO AND LUBRICATION
R72 PLUG, OIL LEVEL
R78 KEY, OUTPUT SHAFT
R81 RING, RETAINING INNER LOW SPEED PINION BEARING
R83 NUT, HIGH SPEED INTERMEDIATE GEAR
R84 RING, RETAINING, INNER INTERMEDIATE PINION BEARING
R73 RING, RETAINING, HIGH SPEED BEARING
R74 RING, RETAINING, HIGH SPEED BEARING

*Recommended spares

NOTE: All cap screws, etc. not shown are standard items.

NOTE: Assemblies A, B, C and D are for reference only. The parts are not sold as an assembly.

Always include unit size, serial number and assembly number from a nameplate when ordering parts.
PARTS LIST — FOR TRIPLE REDUCTION REDUCER — SIZE 113

NOTE: Parts N60 & R2 MUST BE ORDERED TOGETHER

60 SHAFT, VARIABLE
R1 PLUG, VENT
R2 SLINGER, OIL
R3 PIN, DOWEL
*R4 BEARING, HIGH SPEED
R7 RING, RETAINING, HIGH SPEED BEARING
R9 HEAD
*R10 GASKET, HEAD & CENTERPIECE
*R11 BEARING—OUTER, LOW SPEED
R12 PINION, HIGH SPEED
R13 SHAFT, OUTPUT
R14 GEAR, LOW SPEED
R15 KEY, LOW SPEED GEAR
*R16 BEARING—INNER, LOW SPEED
R20 HOUSING—CASE SUPPORT
*R21 NUT, HIGH SPEED
*R29 BEARING, OUTER, LOW SPEED PINION
R30 PINION, LOW SPEED
R31 CENTERPIECE
*R33 BEARING—INNER, LOW SPEED PINION
R34 GEAR, HIGH SPEED
R35 NUT, LOW SPEED PINION
*R38 BEARING—OUTER, INTERMEDIATE
R41 PINION, INTERMEDIATE
R43 PLATE, THRUST, INTERMEDIATE BEARING
*R44 BEARING—INNER, INTERMEDIATE
R46 RING, RETAINING, LOW SPEED PINION, INNER
R47 GEAR, INTERMEDIATE
*R49 SEAL, OIL, LOW SPEED
*R50 SEAL, OIL, HIGH SPEED
R52 KEY, HIGH SPEED GEAR
R53 KEY, INTERMEDIATE GEAR
R57 RING, RETAINING, INTERMEDIATE BEARINGS
R69 PLUG, DRAIN (MAGNETIC)
R70 PLATE, RATIO & LUBRICATION
R72 PLUG, OIL LEVEL
R73 RING, RETAINING, HIGH SPEED BEARING, INNER
R74 RING, RETAINING, HIGH SPEED BEARING, OUTER
R75 RING, RETAINING, LOW SPEED PINION BEARING
R78 KEY, OUTPUT SHAFT
R82 GUARD, SPLASH
R86 RING, RETAINING OUTER, LOW SPEED PINION

*Recommended spares
NOTE: All cap screws, etc. not shown are standard items.
NOTE: Assemblies A, B, C and D are for reference only. The parts are not sold as an assembly.
NOTE: Size 112 and 113 Reducers cannot be ceiling (upside down) mounted.
Always include unit size, serial number and assembly number from a nameplate when ordering parts.
PARTS LIST — FOR TRIPLE REDUCTION REDUCER
—SIZES 123, 223, 133, 233, 243

60 SHAFT, VARIABLE
R11 PLUG, VENT (ON TOP OF CASE SUPPORT HOUSING)
R3 PIN, DOWEL
* R4 BEARING, HIGH SPEED
R7 RING, RETAINING, HIGH SPEED BEARING
R9 HEAD, GEARBOX
* R10 GASKET, HEAD
* R11A BEARING—OUTER LOW SPEED
R12 PINION, HIGH SPEED
R13 SHAFT, OUTPUT
R14 GEAR, LOW SPEED
R15 KEY, LOW SPEED GEAR
* R16A BEARING—INNER LOW SPEED
R18 ADAPTOR RING
R20 HOUSING, CASE SUPPORT
* R29A BEARING, OUTER, LOW SPEED PINION
(33 REDUCER ONLY)
* R29B BEARING, OUTER LOW SPEED PINION
(33 REDUCER ONLY)
R30 PINION, LOW SPEED
R31 CENTERPIECE, GEAR
* R33 BEARING, INNER, LOW SPEED PINION
R34 GEAR, HIGH SPEED
R35 NUT, LOW SPEED PINION
* R38 BEARING, OUTER, INTERMEDIATE
R41 PINION, INTERMEDIATE
* R44 BEARING, INNER, INTERMEDIATE
R45 RING, RETAINING, LOW SPEED PINION (23, RED.)
R47 GEAR, INTERMEDIATE
* R49 SEAL OIL, LOW SPEED
* R50 SEAL OIL, HIGH SPEED
R52 KEY, HIGH SPEED GEAR
R53 KEY, INTERMEDIATE GEAR
R55 PLATE, BEARING (INTERNAL)
* R56 GASKET, BEARING PLATE (INTERNAL)
R57 RING, RETAINING, INTERNAL PINION, OUTER
R69 PLUG, DRAIN (MAGNETIC)
R70 PLATE, RATIO & LUBRICATION
R72 PLUG, OIL LEVEL
R73 RING, RETAINING, INNER HIGH SPEED BEARING
R74 RING, RETAINING, OUTER HIGH SPEED BEARING
R75 RING, RETAINING, OUTER LOW SPEED PINION BEARING OUTER
(RED. ONLY)
R78 KEY, OUTPUT SHAFT
R80 PLUG, BUTTON (HOUSING, CASE SUPPORT)
R81 RING, RETAINING INNER LOW SPEED PINION BEARING
R83 NUT, HIGH SPEED INTERMEDIATE GEAR

*Recommended spares
NOTE: All cap screws, etc. not shown are standard items.
NOTE: Assemblies A, B, C and D are for reference only. The parts are not sold as an assembly.

Always include unit size, serial number and assembly number from a nameplate when ordering parts.
PARTS LIST — FOR RIGHT ANGLE REDUCERS
— SIZES W12-W16-W21-W28

222 COUPLING ASSEMBLY
RA7 WORM
RA11 HOUSING, GEAR
RA16 PLATE, BEARING (OPEN)
RA17 SHIM, LOW SPEED
*RA18 SEAL, OIL
RA19 BEARING, WORM GEAR (OUTER)
RA20 SPACER, WORM GEAR
RA21 GEAR, WORM
RA22 KEY, OUTPUT
RA23 SHAFT, OUTPUT
RA24 KEY, WORM GEAR
RA25 PLATE, BEARING (CLOSED)
RA30 PLUG, VENT

*RA33 SLEEVE, SHAFT
*RA37 BEARING, WORM (INNER)
RA41 PLUG, LEVEL
RA42 PLATE, NAME
*RA43 BEARING, WORM (OUTER)
*RA44 BEARING, WORM GEAR (INNER)
RA45 RETAINER, GREASE (BRG. OUTER) VERTICAL OUTPUT SHAFT
RA46 RETAINER, GREASE (BRG. INNER) VERTICAL OUTPUT SHAFT
RA47 PLUG, PIPE
RA58 RING, LOCK
RA59 CLAMP, BEARING
*RA73 OIL SEAL, ASSM. HIGH SPEED
RA50 GASKET, BEARING HOUSING (2)

*Recommended spares
NOTE All cap screws, etc. not listed are standard items

When ordering parts always supply complete nameplate data.
### PARTS LIST — FOR RIGHT ANGLE COMBINATION REDUCER — SIZES C12-C16-C21-C28-C40

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA07</td>
<td>COUPLING ASSEMBLY</td>
</tr>
<tr>
<td>RA11</td>
<td>HOUSING, GEAR</td>
</tr>
<tr>
<td>RA13</td>
<td>Shim, High Speed</td>
</tr>
<tr>
<td>RA16</td>
<td>Plate, Bearing (Open)</td>
</tr>
<tr>
<td>RA17</td>
<td>Shim, Low Speed</td>
</tr>
<tr>
<td>RA18</td>
<td>Seal, Oil</td>
</tr>
<tr>
<td>RA19</td>
<td>Bearing, (Output Shaft)</td>
</tr>
<tr>
<td>RA20</td>
<td>Spacer, Worm Gear</td>
</tr>
<tr>
<td>RA21</td>
<td>Gear, Worm</td>
</tr>
<tr>
<td>RA22</td>
<td>Key, Output Shaft</td>
</tr>
<tr>
<td>RA23</td>
<td>Shaft, Output</td>
</tr>
<tr>
<td>RA24</td>
<td>Key, Worm Gear</td>
</tr>
<tr>
<td>RA25</td>
<td>Plate, Bearing (Closed)</td>
</tr>
<tr>
<td>RA30</td>
<td>Plug, Vent</td>
</tr>
<tr>
<td>RA33</td>
<td>Sleeve, Shaft</td>
</tr>
<tr>
<td>RA37</td>
<td>Bearing, Worm (Inner)</td>
</tr>
<tr>
<td>RA41</td>
<td>Plug, Level, Sq. Head</td>
</tr>
<tr>
<td>RA42</td>
<td>Plate, Name</td>
</tr>
<tr>
<td>RA43</td>
<td>Bearing, Worm (Outer)</td>
</tr>
<tr>
<td>RA44</td>
<td>Bearing, (Output Shaft)</td>
</tr>
<tr>
<td>RA45</td>
<td>Retainer, Grease Bearing Outer Vertical Output Shaft</td>
</tr>
<tr>
<td>RA46</td>
<td>Retainer, Grease Bearing Inner Vertical Output Shaft</td>
</tr>
<tr>
<td>RA47</td>
<td>Plug, Pipe Sq. Head</td>
</tr>
<tr>
<td>RA48</td>
<td>Pin, Dowel</td>
</tr>
<tr>
<td>RA49</td>
<td>Gasket, Bearing Housing</td>
</tr>
<tr>
<td>RA50</td>
<td>Ring, Lock</td>
</tr>
<tr>
<td>RA51</td>
<td>Clamp, Bearing</td>
</tr>
<tr>
<td>RA52</td>
<td>Bearing, Intermediate Gear</td>
</tr>
<tr>
<td>RA53</td>
<td>Grease Seal Bearing (Intermediate Gear) Vertical Output Shaft</td>
</tr>
<tr>
<td>RA54</td>
<td>Collar, Spacing</td>
</tr>
<tr>
<td>RA55</td>
<td>Gear, Low Speed (Output Shaft)</td>
</tr>
<tr>
<td>RA56</td>
<td>Shaft (Intermediate)</td>
</tr>
<tr>
<td>RA57</td>
<td>Key, Gear Low Speed</td>
</tr>
<tr>
<td>RA57</td>
<td>Oil Seal Assy., High Speed</td>
</tr>
</tbody>
</table>

*Recommended spares

1. RA18 and RA33 sold only as a set.

NOTE: All cap screws, etc. not listed are standard items.

2. Includes items RA18, RA33, RA50 & RA73

When ordering parts always supply complete nameplate data.
# TROUBLESHOOTING

## CONTROL ASSEMBLY
### HAND CONTROL

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
</table>
| Standard Control Size 050  
1. Handle turns but unit fails to respond.  
2. Breakover mechanism breaks over before reaching the limits of range.  
3. Dial indicator inaccurate  
4. Control operates backwards. | Internal gearing stripped  
Incorrect stop adjustment  
Shifting shaft binding  
Disc binding  
Incorrectly set  
Dial loose on gear  
Cam installed upside down | Replace damaged parts  
Readjust stops  
Free up and lubricate  
Replace bushings, clean up hub  
Readjust  
Readjust and tighten  
Reinstall cam correctly |

| Standard Control Sizes 100-200  
1. Indicator fails to operate | Jam nut loose  
Threads stripped in dial  
Adjustment incorrect  
Helix broken  
Helix guide stripped | Readjust mechanism, tighten  
Replace indicator dial  
Readjust  
Replace helix and adjust  
Replace shifting screw |

| Front Control 050 Size  
1. Indicator fails to operate  
2. Control creeps toward low speed | Gear teeth stripped  
Set screw too tight on indicator gear shaft  
Friction catch worn or missing | Replace gear and/or pinion  
Loosen set screw  
Replace handwheel and cover assembly |

| Front Control Sizes 100-200 (Front Only)  
1. Indicator fails to operate | Jam nut loose  
Threads stripped in dial  
Adjustment incorrect  
Helix broken  
Helix guide stripped | Readjust mechanism, tighten  
Replace indicator dial  
Readjust  
Replace helix and adjust  
Replace shifting screw |

## ELECTRIC REMOTE CONTROL
### Sizes 050-100-200 Sizes

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
</table>
| 1. Control Completely Inoperative | Wired incorrectly  
Failed motor  
Failed capacitor/broken wire  
Failed limit switches | Check wiring diagram  
Replace  
Replace  
Replace |

| 2. Control Operates Backwards | Wired incorrectly.  
Cam installed upside down | Check wiring diagram  
Reverse cam |

| 3. Motor runs but MOTO DRIVE doesn’t shift | Pinion and/or gear stripped  
Failed gearmotor | Replace defective parts  
Replace |
WIRING DIAGRAM ELECTRIC REMOTE CONTROL

CONNECTION DIAGRAM  SIZES 050-100-200  115V - 1 PH

TO POLYPHASE POWER SUPPLY

TO 115 VOLTS

NOTE: CONNECT E.R.C. IN PARALLEL WITH 115 VOLT COIL IN DRIVE MOTOR STARTER AS SHOWN OR THROUGH AUXILIARY CONTACTS ON DRIVE MOTOR STARTER TO 115 VOLT SUPPLY AS SHOWN BY DASHED LINES.

DRIVE MOTOR STARTER FURNISHED BY USER.

REMOTE PUSH BUTTON STATION

GEARMOTOR HAS BUILT IN BRAKE AND THERMAL PROTECTION. 115V., 1 PH., 50/60 HZ.

1 BLACK
2 GREY SLS
3 YELLOW CAMS
FLS CAP

COMMON

DRIVE MOTOR ON REEVES MOTO DRIVE.

CONNECTION DIAGRAM  SIZES 050-100-200  115V - 1 PH/WITH TRANSFORMER

TO POWER SUPPLY

DRIVE MOTOR STARTER FURNISHED BY USER.

E.R.C. CONTROL TRANSFORMER.

REMOTE PUSH BUTTON STATION

GEARMOTOR HAS BUILT IN BRAKE AND THERMAL PROTECTION. 115V., 1 PH., 50/60 HZ.

1 BLACK
2 GREY SLS
3 YELLOW CAMS
FLS CAP

COMMON

PRI. VOLTS  CONNECT  LINE LEADS
230  H₁, H₂, H₃, H₄  H₁, H₂
460  H₁, H₂  H₁, H₃
575  H₁, H₂, H₃  H₁, H₃, H₄

MOTO DRIVE SIZE

F.L. AMPS: 050 100 200
L.R. AMPS: .19 .19 .7

ELECTRIC REMOTE CONTROL UNIT ON REEVES MOTO DRIVE.
ERG WIRING DIAGRAMS

Size 200 ERG with MASTER Motor Wiring

- Connect E.R.C. in parallel with 115 volt coil in drive motor starter as shown or through auxiliary contacts on drive motor starter to 115 volt supply as shown by dashed lines.
- Disconnect switch with thermal overload. (Not furnished with explosion proof gearmotors)
- Remote push-button station
- Connect additional stations as shown by dashed lines.
- Caution: Do not press any two push-buttons at the same time.
- Note: If E.R.C. operation is not as shown on push-buttons, reverse leads T5 and T8.
- E.R.C. gearmotor on Reeves Moto Drive. 115 Volts, 1PH, 50/60 Hz.
  F.L. Amps: 2.8
  L.R. Amps: 6.2
  5 minute duty.

Note: E.R.C. has built-in friction safety clutch.

Size 200 ERG with MASTER Motor and Transformer

- Connect electric remote control in parallel with one phase of driving motor.
- Drive motor on Reeves Moto Drive.
- E.R.C. control transformer Nema 1 enclosure only.
- Transformer schematic

<table>
<thead>
<tr>
<th>Pri. Volts</th>
<th>Connect Line Leads</th>
</tr>
</thead>
<tbody>
<tr>
<td>230</td>
<td>H1 H2 H3 H4 H5 H5</td>
</tr>
<tr>
<td>460</td>
<td>H1 H2 H3 H4 H5 H5</td>
</tr>
<tr>
<td>575</td>
<td>H1 H2 H3 H4 H5 H5</td>
</tr>
</tbody>
</table>
- Insulate H1 when not in use:
  - H1 H2 H3 H4 H5
  - 115V
  - X1 X2

Note: E.R.C. has built-in friction safety clutch.
RAC CONTROL SYSTEM WIRING DIAGRAM

NOTES:
1. CONTROL.Requires 105-120V AC 1ph 60Hz supply.
2. METHOD NO. 1. (PREFERRED) CONNECT 115V 1ph 60Hz THROUGH DRIVE MOTOR STARTER AUXILIARY N.O. CONTACTS.
3. METHOD NO. 2 CONNECT RAC ACROSS 115V 1ph 60Hz STARTER CONTROL LINES.
4. METHOD NO. 3 OBTAIN 115V 1ph 60Hz THROUGH ERIC CONTROL TRANSFORMER. VERIFY OUTPUT VOLTAGE BEFORE CONNECTING TO RAC. SEE TRANSFORMER SCHEMATIC BELOW.

CAUTION: RAC MUST BE INTERLOCKED WITH DRIVE MOTOR. OPERATING RAC WHILE MOTO DRIVE IS NOT RUNNING WILL RESULT IN SHIFTING MOTOR DAMAGE.

PARTS LIST FOR 100/200 MOTO DRIVE® RAC SHIFTING MOTOR

E1 MOTOR
10 HOUSING, CONTROL
11 COVER, STOP NUT
23 YOKE, SHIFTING
E99 PLATE, BASE
E81 INSULATOR
E82 SWITCH, LIMIT
E90 CAPACITOR, MOTOR
E95 PLATE, MOUNTING
E97 MARKER, STRIP
E98 CAM, LIMIT SWITCH
E100 BLOCK, TERMINAL
105 CAM, SHIFTING
107 PIN, YOKE
E131 GASKET, COVER
169 GASKET, COVER, STOP NUT
E170 COVER, GEAR
E191 BRACKET, TORQUE ARM
E192 SPACER, BRACKET, TORQUE ARM
E193 SPACER, MOTOR
E194 PLATE, ADAPTER (100 MOTO DRIVE ONLY)
E91 GROMMET, RUBBER

NOTE: GIVE IDENT., NUMBER AND SIZE WHEN ORDERING PARTS FOR SERVICE AND REFER TO THIS DRAWING.

NOTE: ALL HARDWARE, ETC. NOT LISTED ARE STANDARD ITEMS.
REDUCER BEARING KITS

FOR USE WITH REEVES MOTO DRIVES WITH REEVES PARALLEL REDUCERS

Each kit includes all reducer bearings for size listed.

<table>
<thead>
<tr>
<th>MOTO DRIVE SIZE</th>
<th>RATIO</th>
<th>KIT PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>051</td>
<td>ALL</td>
<td>41511244FA</td>
</tr>
<tr>
<td>052</td>
<td>ALL</td>
<td>41511244FB</td>
</tr>
<tr>
<td>052</td>
<td>ALL</td>
<td>41511244FC</td>
</tr>
<tr>
<td>111</td>
<td>ALL</td>
<td>41511244FD</td>
</tr>
<tr>
<td>112</td>
<td>ALL</td>
<td>41511244FE</td>
</tr>
<tr>
<td>113</td>
<td>ALL</td>
<td>41511244FF</td>
</tr>
<tr>
<td>121</td>
<td>ALL</td>
<td>41511244FG</td>
</tr>
<tr>
<td>122, 222</td>
<td>ALL</td>
<td>41511244FJ</td>
</tr>
<tr>
<td>123, 223</td>
<td>ALL</td>
<td>41511244FK</td>
</tr>
<tr>
<td>133</td>
<td>ALL</td>
<td>41511244FP</td>
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<tr>
<td>221</td>
<td>ALL</td>
<td>41511244FH</td>
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<tr>
<td>231</td>
<td>ALL</td>
<td>41511244FM</td>
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<tr>
<td>232</td>
<td>ALL</td>
<td>41511244FN</td>
</tr>
<tr>
<td>233</td>
<td>ALL</td>
<td>41511244FP</td>
</tr>
<tr>
<td>243</td>
<td>38.4-86.5</td>
<td>41511244FV</td>
</tr>
<tr>
<td>243</td>
<td>106-195</td>
<td>41511244FW</td>
</tr>
</tbody>
</table>

REDUCER SEAL AND GASKET KITS

Each kit contains Ref. #R49 Output Seal, Ref. #R50 Input Seal and all necessary gaskets.

<table>
<thead>
<tr>
<th>MOTO DRIVE SIZE</th>
<th>KIT PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>051</td>
<td>41511244A</td>
</tr>
<tr>
<td>052, 053</td>
<td>41511244B</td>
</tr>
<tr>
<td>111</td>
<td>41511244C</td>
</tr>
<tr>
<td>112</td>
<td>41511244D</td>
</tr>
<tr>
<td>113</td>
<td>41511244E</td>
</tr>
<tr>
<td>121</td>
<td>41511244F</td>
</tr>
<tr>
<td>122,123, 222, 223</td>
<td>41511244G</td>
</tr>
<tr>
<td>221</td>
<td>41511244H</td>
</tr>
<tr>
<td>231</td>
<td>41511244J</td>
</tr>
<tr>
<td>232</td>
<td>41511244K</td>
</tr>
<tr>
<td>133, 233</td>
<td>41511244K</td>
</tr>
<tr>
<td>243</td>
<td>41511244M</td>
</tr>
</tbody>
</table>
CONSTANT DISC KITS

MOTOR SHAFT MOUNTING

Kit contains Ref. #43 Thrust Bearing, Ref. #50 Sliding Disc, Ref. #51 Key, Ref. #53 Fixed Disc, Ref. #251 Bushings and Ref. #252 Clamp Collar.

<table>
<thead>
<tr>
<th>MOTO DRIVE SIZE</th>
<th>DISC BORE/ MOTOR FRAME</th>
<th>STANDARD KIT</th>
<th>CHROMALIFE KIT (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B050</td>
<td>5/8&quot;-56C</td>
<td>41511265TD</td>
<td>41511265TE</td>
</tr>
<tr>
<td>B100</td>
<td>7/8&quot;-56CZ/140TC</td>
<td>41511265TJ</td>
<td>41511265TK</td>
</tr>
<tr>
<td>B200</td>
<td>7/8&quot;-56CZ/140TC 1 1/8&quot;-180TC</td>
<td>41511265TL</td>
<td>41511265TM</td>
</tr>
</tbody>
</table>

(1) Disc faces are chrome plated for use in environments with excessive moisture or extremely corrosive elements.

VARIABLE DISC KITS

VARIABLE SHAFT MOUNTING

Variable discs are available individually or as a kit containing both discs. When purchased as a kit, each kit contains Ref. #61 Shaft Key, Ref. #65 Fixed Disc, Ref. #66 Sliding Disc, Ref. #70 Retaining Ring and Ref. #253 Bushings.

<table>
<thead>
<tr>
<th>SIZE</th>
<th>STANDARD DISK KIT</th>
<th>REF. #65 DISC</th>
<th>REF. #66 DISC (1)</th>
<th>CHROMALIFE DISK KIT</th>
<th>REF. #65 DISC</th>
<th>REF. #66 DISC (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B050</td>
<td>41511244EA</td>
<td>60500707R</td>
<td>41511265TR</td>
<td>41511244ES</td>
<td>60500707S</td>
<td>41511265TS</td>
</tr>
<tr>
<td>B100</td>
<td>41511244EB</td>
<td>60500707T</td>
<td>41511265TT</td>
<td>41511244ER</td>
<td>60500707V</td>
<td>41511265TV</td>
</tr>
<tr>
<td>B200</td>
<td>41511244EC</td>
<td>70280701C</td>
<td>41511265TW</td>
<td>41511244EP</td>
<td>70280701D</td>
<td>41511265TX</td>
</tr>
</tbody>
</table>

(1) Ref. #66 is a kit containing Ref. #61 Shaft Key, Ref. #66 Sliding Disc, Ref. #70 Retaining Ring and Ref. #253 Bushings.

REPLACEMENT SPRING ASSEMBLIES

<table>
<thead>
<tr>
<th>SIZE</th>
<th>REF. #154 CARTRIDGE</th>
<th>REF. #68 SPRING</th>
<th>REF. #69 COLLAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>B050</td>
<td>- - - - - - - - - -</td>
<td>S9285104</td>
<td>D3160003</td>
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<tr>
<td>B100</td>
<td>605003 51M</td>
<td>- - - - - - - - -</td>
<td>- - - - - - -</td>
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<tr>
<td>B200</td>
<td>D1380042</td>
<td>- - - - - - - - -</td>
<td>- - - - - - -</td>
</tr>
</tbody>
</table>
# STANDARD RIGHT ANGLE HANDWHEEL CONTROL
## PART NUMBER LISTING

### SIZE 050 REPLACEMENT PARTS

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>Qty</th>
<th>Size 050</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Housing</td>
<td>1</td>
<td>70281506B</td>
</tr>
<tr>
<td>11</td>
<td>Cover</td>
<td>1</td>
<td>60502202A</td>
</tr>
<tr>
<td>12</td>
<td>Handwheel</td>
<td>1</td>
<td>60501401A</td>
</tr>
<tr>
<td>15</td>
<td>Shift Shaft</td>
<td>1</td>
<td>99500083</td>
</tr>
<tr>
<td>23</td>
<td>Yoke</td>
<td>1</td>
<td>99500067</td>
</tr>
<tr>
<td>27</td>
<td>Stop Nut</td>
<td>2</td>
<td>6395027</td>
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<tr>
<td>32</td>
<td>Crystal</td>
<td>1</td>
<td>41511201A</td>
</tr>
<tr>
<td>33</td>
<td>Dial</td>
<td>1</td>
<td>D3800065</td>
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<tr>
<td>92</td>
<td>Pinion Collar</td>
<td>1</td>
<td>41510108A</td>
</tr>
<tr>
<td>94</td>
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## REEVES MOTO DRIVE REBUILD KITS

### MOTO DRIVES WITH MASTER XL REDUCERS

Note: For complete rebuild, both kits listed must be ordered.

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(1) Kit includes belt, disc bushings and beltcase bearings. Also order reducer rebuild kit to obtain complete MOTO DRIVE overhaul kit.

(2) Kit includes all reducer bearings, seal and gasket kit, bearing shim kits and gear lube.
# REEVES MOTO DRIVE REBUILD KITS

## REEVES MOTO DRIVE WITH PARALLEL REDUCERS

Kit includes beltcase bearings, reducer bearings, belt disc bushings (where applicable), shims (where applicable), and reducer seals and gaskets.

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