



INSTRUCTIONS FOR INSTALLATION AND OPERATION OF JOHNSON *Redi-Torq* RIGHT ANGLE GEAR DRIVE

In general, there are two methods of installing and operating the Redi-Torq automatic gear drive. One arrangement is for static engagement in which the field coil of the gear drive clutch is connected directly to the engine ignition system. This will engage the clutch from the start of the cranking cycle.

The other arrangement is used when an idle speed period to warm up the engine is desired. This is the preferred method and requires one additional relay in the engine control system. The field coil must be energized through the relay just previous to the throttle advance, engaging the clutch at engine idle speed. A throttle control should be used to advance the throttle gradually after energizing of the clutch field coil.

**Engagement should never be made at full
load speed**

INSTRUCTIONS

First determine which of the following applications apply to your gear drive:

- A) Hollow shaft *Redi-Torq* Combination Drive with turbine pump using two-piece head shaft.
- B) Hollow shaft *Redi-Torq* Combination drive with turbine pump using thru pump shaft and auxiliary shaft for engine drive only.
- C) Hollow shaft *Redi-Torq* Engine Drive with turbine pump driven by engine only.
- D) Flexible Coupling *Redi-Torq* with centrifugal pump connected by flexible shafting or couplings. Both combination and engine drive applications.

A. INSTRUCTIONS

1. Set gear drive in place on pump discharge head and fill it with the turbine oil furnished. Follow applicable instructions in Operators manual.
2. If lower pump shaft is of uniform size, install from top of gear drive. Install gib key in rotor bushing (284). Gib key is in muslin bag furnished with gear drive.
3. Install gear drive adjusting nut leaving clearance between nut and rotor bushing (284) and lower half of pump shaft coupling.
4. Set motor in place and assemble pump shaft coupling and upper pump shaft. Install motor drive coupling and gib key.
5. Adjust pump bowls with adjusting nut at top of electric motor.
6. Turn down the adjusting nut on the gear drive no closer than 1/8 from the top of the rotor hub. Lock in place with the fillister head cap screw provided.

Note: The adjusting nut is only useful when electric motor is removed. When the motor is removed, it is used to set the pump bowls and carry the pump thrust.

7. Redi-Torq clutch on this unit is burnished in the factory and is ready to use. Burnishing instructions would apply only if replacement required at a future date.

B. INSTRUCTIONS

1. Set gear drive in place on pump discharge head and fill it with turbine furnished oil. Follow applicable instructions in Operators Manual.
2. If pump shaft is of uniform size, install from top of motor. Install gib key in rotor bushing (284).
3. Install motor drive coupling and gib key.
4. Adjust pump bowls with adjusting nut at top of electric motor.
5. Complete installation according to procedure outlined under General instructions.

C. INSTRUCTIONS

1. Set gear drive in place on pump discharge head and fill it with the turbine oil furnished. Follow applicable instructions in Operators manual.
2. Remove cover carefully and set to one side with field up. Shield to protect from damage.
3. Install pump shaft and key gib key in rotor bushing (284)
4. Adjust pump bowl with adjusting nut.
5. Replace cover and field assembly.
6. Complete installation according to fields assembly outlined under General Instructions.

D. INSTRUCTIONS

1. Set gear drive in place on pump discharge head and fill with the turbine oil furnished. Follow applicable instructions in the Operator's Manual.
2. Redi-Torqâ clutch on this unit is burnished at factory and is ready to use. Burnishing instructions would only apply if replacement required at some future
3. With pump inoperative, reach thru lower openings, raise and lower drive plate (207) with fingers. Hands should be spaced at 180° and should rise and fall evenly. Established a comfortable position for this operation.
4. Start electric motor and raise drive plate (207) with light pressure of fingers so that it skids against rotor (208). Allow skidding to continue for three to five seconds.
5. Repeat raising drive plate (207) as in Instruction #4 through 15 to 20 cycles, being careful not to allow excessive heating. Extending the time between engagements will allow cooling.

Note: As the latter applications of the burnishing cycle are approached, you will note a change in the sound of the skidding, from harsh scraping to a smooth sliding engagement. This indicates that a good uniform mating track has been established between motor and drive plate.

6. Check voltage supply against Redi-Torq nameplate voltage and check engine operation.

7. Complete wiring connecting Redi-Torq leads into control circuit as job specifications require.

8. Make complete check of operation sequence, simulating power failure, cranking cycle, and warm up period, but engine must be blocked out of full speed operation.

9. If check proves OK and clutch engages at end of warm up period and prior to throttle advance, unit is ready for testing under standard operating conditions.

CAUTION: On turbine pump installations, when necessary to reset pump bowls do not overlook instruction A6.

NON-REVERSE

All Ready-Torq gear units are supplied with a non reverse mechanism which in Type A, B and D is deactivated under normal operation. Should the electric motor be removed and the non reverse function be required back off the screws (Z) which keep the ratchet pins inactive.

ROTOR REPLACEMENT

In the event that replacement parts are needed for the Redi-Torq assembly, write factory prior to disassembly. Advise model, serial and ratio as stamped on nameplate and applicable instructions and parts list will be furnished.

Replacement of Clutch or Steady Bearing in Johnson Redi-Torq gear Drive

Read the instructions carefully and study the assembly drawing on (p.5) for location of parts detailed below.

DISMANTLE CLUTCH AS FOLLOWS:

- A) Disconnect engine and control wires to clutch. Remove electric motor.
- B) Remove 203 capscrews and carefully lift 201 upper motor stand with 209 stationary field attached. Place on one side with field pointing up to prevent damage.
- C) Remove 286 snap ring. Using spacer to protect 284 rotor bushing, pull off 285 rotor hub & 208 rotor together, using tapped holes in top of rotor hub. NOTE: A flat piece of bar stock with spacers and capscrews may be used if suitable puller is not available.
- D) Remove 283 snap ring. The 284 rotor bushing and 282 steady bearing can now be removed together.
- E) To replace steady bearing remove 289/289W snap ring & washer from 284 rotor bushing and replace 282 bearing.
- F) Before starting reassemble, clean all parts, and remove any burrs & rust. Do not forget to check pump shaft & make sure 284 rotor bushing is a snug sliding fit over shaft.

ASSEMBLY PROCEDURE

USE THE REVERSE ORDER WITH THE FOLLOWING PRECAUTIONS:

- 1) To assist assembly, lubrication of 285 rotor hub and 284 rotor bushing with a dry graphite lubricant is suggested. Do not use oil since it may get on your clutch.
- 2) The fit between the 284 rotor bushing and aluminum 285 rotor hub is a light push fit only & should not be forced.
- 3) When the 285 rotor hub is in place check gap between 208 rotor and 207 drive plate which should be approximately 3/32. NOTE: Assembly drawings show clutch energized.
- 4) Prior to mounting upper motor stand & field assembly check to make sure everything turns freely and make sure drive plate is free to move up and down without binding. When de-energized the drive plate should fall freely down and rest squarely on top of 290 lower coupling. If drive plate binds check 206 drive pins & 204 bushings.
- 5) After upper motor stand is in place, repeat (4) to ensure everything is free to rotate & drive plate is free to move up and down.
- 6) Install electric motor, reconnect engine and clutch control. (When necessary burnish clutch per instruction RT-5).

WARRANTY

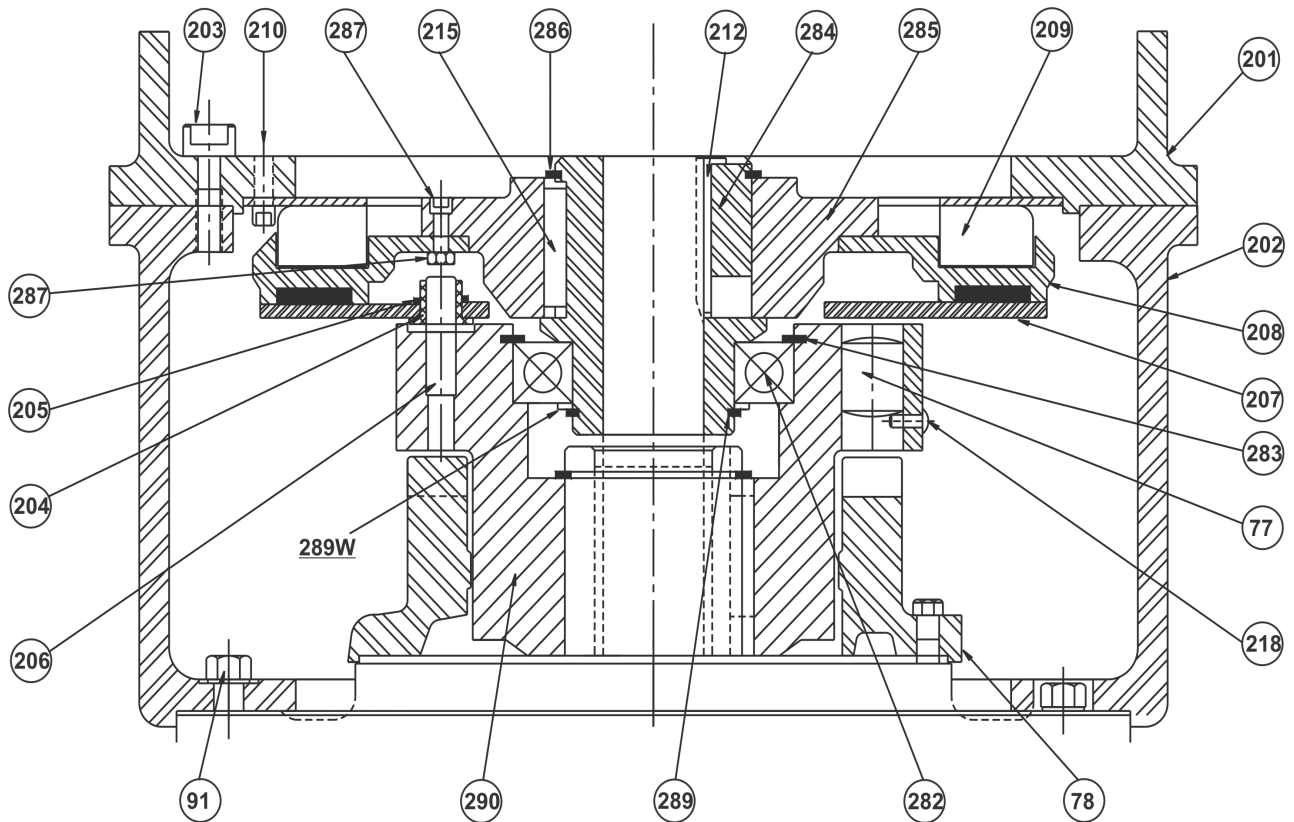
1. The Johnson Right Angle Gear Drive is warranted to be free from defects in material and workmanship under normal use and service for a period of one year from the date of factory shipment by us for the original purchaser and then only when operated within the rated capacity for which it was sold and in accordance with recognized usage and practice. Our obligation under this warranty is limited to the replacement of any part or parts which shall be returned to us with transportation charges prepaid, within one year after shipment for the original purchaser; and, which it is determined by the company, to have proven defective under normal and proper use. This warranty shall not apply to any drive which shall have been altered or repaired outside our factory without our written consent and approval, nor any drive which has been subject to misuse, neglect, accident, improper oiling or mounted on foundations which are not vibration proof.

2. We make no warranty of any kind whatever, express or implied, in regard to bearings, trade accessories, machinery, or other articles of merchandise not manufactured by us. The bearings which we have selected for the thrust position will cover most installations, but there are many cases which will require special treatment.

3. No warranty or guarantee is binding upon the company and no asserted breach thereof can be claimed against the company unless the company has been notified in detail and in writing of any alleged defect within seven (7) days after the discovery thereof.

4. The express warranties and guarantee contained herein are exclusive and are made in lieu of any other representation by the company or its agents, and any implied warranty of Merchantability or Fitness for a Particular Purpose are hereby expressly disclaimed. It is agreed that the language contained herein shall be the final and exclusive expression of the agreement with respect to sale of equipment by the company.

REDI-TORQUE SUB ASSEMBLY



*Drive Plate (207) Shown Engaged - Gap Should Approximately be 3/32 When Disengaged

REDI-TORQ SUB ASSEMBLY

N o .	Part Name	N o .	Part Name
77	Ratchet Pins	212	Gib Key
78	Thrust Bearing Cover	215	Rotor Hub Key
91	Capscrew	218	Fil. Hd. Screws
201	Upper Motor Stand	282	Steady Bearing
202	Lower Motor Stand	283	Snap Ring
203	Socket Head Capscrew	284	Rotor Bushing
204	Drive Pin Bushings	285	Rotor Hub
205	Retainer Rings	286	Snap Ring
206	Drive Pins	287	Socket Head Capscrew
207	Drive Plate	287N	Flexloc Nuts
208	Rotor	289	Snap Ring
209	Field	289W	Snap Ring Washer
210	Socket Head Capscrew	290	Lower Coupling



1333 East 44th Street
Lubbock, Texas 79404

Toll Free (877) 967-6400 Tel (806) 749-6400 Fax (806) 749-6477
Visit our website @ www.johnsongear.com