



The Original Engine Cooling Pump Since 1921

## R Series Technical Guide

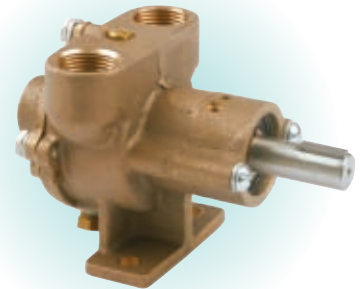
### Identification



**E35**



**R30G-1**



**R10870G**



**R30G**

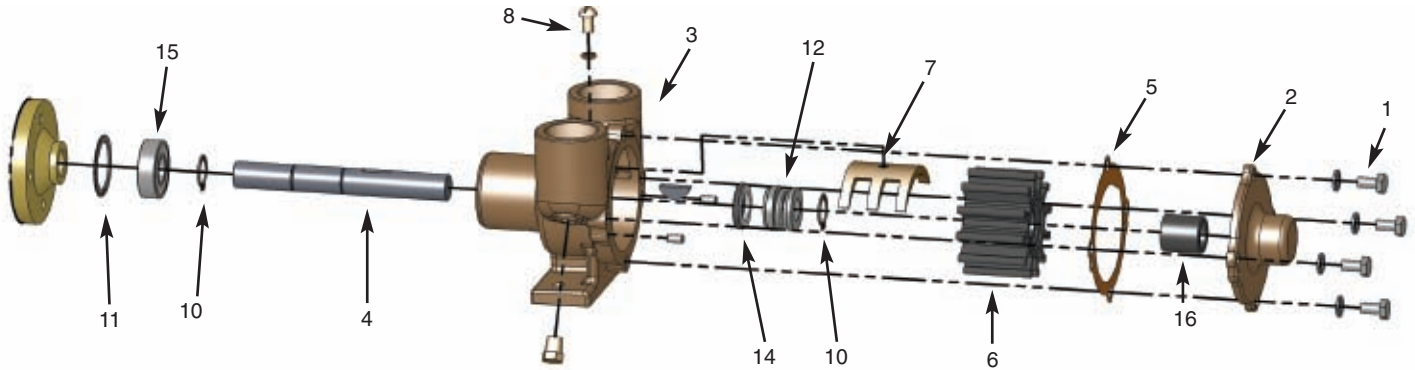


**R50G**



**R102**

# Assembly / Disassembly Instructions



*The following assembly/disassembly procedures apply to all R Series pumps. Deviations from pump to pump are primarily a result of different methods of drive and mounting. Pump numbers can be found on the tag or stamped on the pedestal base of the pump.*

## Disassembly:

- A. Remove the screws (1) and lockwashers that hold the cover to the body (3). Pull the cover and bushing assembly (2) off the drive shaft (4).
- B. Remove the vellum gasket (5). Sherwood recommends replacing the gasket each time the pump is assembled, however, if you plan to use the same gasket, it should be submerged in water until pump is reassembled. If gasket dries, it will shrink.
- C. The impeller (6) can now be removed by using pliers and grasping a vane on one side, then the other, alternating positions and gently pulling. Make sure you have a good grip on each vane so the pliers will not slip and damage the impeller.
- D. The cam (7) can be removed by removing the screw (8) that goes down through the top of the body between the intake and discharge ports.
- E. Remove the two screws (18) and lockwashers from the bearing housing (9) on the drive shaft end of the housing. This will allow you to remove the bearing housing, seal assembly, and shaft from the body.
- F. Remove the woodruff key from the shaft. If the shaft is to be used again and if it is put in a vise, always use lead over the jaws of the vise so that the shaft is not damaged.
- G. Remove the retaining ring (10) from the shaft at the seal end. The seal (12) can now be removed from the shaft. Note how the seal and seat assembly (14) are arranged so they can be properly reassembled.
- H. For the E35, support the hub and press the shaft and housing assembly off of the hub.
- I. By removing the large internal retaining ring (11) from the bearing housing, the bearing (15) and shaft can be pressed out of the bearing housing. Support the bearing housing, and press on the shaft from the impeller end.
- J. Pumps designed without separate bearing housings may require shaft removal from opposite end depending on housing design.
- K. The seat assembly (13) is pressed into the bearing housing and can be removed by pushing a tool through the bearing end and against the rubber or backside of the seat.

## Assembly:

- A. When replacing the carbon bushing (16) in the cover, care should be taken not to crack the bushing. A tool that pilots on the inside diameter and presses uniformly against the end of the bushing is recommended.
- B. When assembling the cam (7), put Permatex #1 on back side of cam and the screw (8) that retains the cam. Wipe off any Permatex that gets into the impeller cavity.
- C. Assemble a retaining ring (10) on the shaft into the second groove from the drive shaft end. Push the ball bearing (15) over the shaft (4). Press on the inner race of the bearing. Push the bearing up against the retaining ring. Assemble the second snap ring (10) over the shaft and up against the ball bearing, from the flat shaft end.
- D. Push the bearing and shaft assembly into the bearing housing (9) using care not to cock the bearing. A tool is recommended that will give you uniform pressure on the bearing outer race. Lock the bearing in place with the large internal retaining ring.
- E. For pumps without a bearing housing, assemble the seat (13) into the counter bore in the housing (3) with the ceramic facing the impeller. Push the shaft and bearing assembly into the housing. Lock the bearings in place with retaining ring (11). While supporting the shaft, press the hub onto the shaft.
- F. From the opposite end (woodruff key end of the shaft), assemble the seat (13) over the shaft, rubber side first. Push it into the counter bore in the bearing housing. Do not damage (scratch) the white ceramic surface on the seat, or the seal and seat assembly might leak.
- G. Push the seal assembly (12) over the shaft and down against the seat. Do not damage the black carbon washer that rides against the ceramic.

- H. Assemble the third retaining ring (10) on the shaft. It will be necessary to compress the seal assembly to allow the retaining ring to enter the groove on the shaft.
- I. Press the woodruff key into the keyway in the shaft.
- J. Assemble the small gasket (17) over the pilot on the bearing housing and assemble the complete shaft, bearing, seal assembly, to the body. Use the two long screws (18) for fastening the bearing housing to the body. Torque the screws to 50 in. lbs. for the R30G and R30G-1 or 84 in. lbs. for the R10870G and R50G.
- K. Assemble the impeller (6) over the shaft (4). Line up the key in the shaft with the keyway in the impeller, and push the impeller into the body (3).
- L. Push the gasket (5) and cover (2) over the dowel pins, and attach the cover with the screws (1) and lockwashers. Torque the screws (1) to 50 in. lbs. for the R30G and R30G-1 or 84 in. lbs. for the pump model numbers R10870G, R50G, R102, and E35.
- M. Inspect the pump seal, body, housing, and cam areas for leaks after installation.

| Sherwood #              |                      |     | R30G  | R30G-1 | R10870G | R50G  | R102  | E35        |
|-------------------------|----------------------|-----|-------|--------|---------|-------|-------|------------|
| Port Size (NPT)         |                      |     | 1/2"  | 1/2"   | 3/4"    | 3/4"  | 1"    | 1"         |
| Shaft Drive Description |                      |     | Flat  | Keyed  | Keyed   | Flat  | Keyed | Pulley Hub |
| ITEM                    |                      | QTY |       |        |         |       |       |            |
| 1                       | Screw                | 4/6 | 12686 | 18999  | 01482   | 01482 | 01483 | 01483      |
| 2                       | Cover Assy           | 1   | 10281 | 10281  | 10096   | 10096 | 10183 | 10183      |
| 3                       | Body Assy            | 1   | 10597 | 10597  | 10177   | 10177 | 18503 | 11246      |
| 4                       | Shaft                | 1   | 10289 | 11854  | 10852   | 10175 | 18502 | 11744      |
| 5                       | Gasket, Cover        | 1   | 10286 | 10286  | 10103   | 10103 | 10931 | 10931      |
| 6                       | Impeller             | 1   | 10077 | 10077  | 09959   | 09959 | 10615 | 10615      |
| 7                       | Cam                  | 1   | 10285 | 10285  | 10072   | 10072 | 10929 | 10929      |
| 8                       | Cam Screw            | 1   | 10195 | 10195  | 09919   | 09919 | 10515 | 10515      |
| 9                       | Bearing/Housing Assy | 1   | 10198 | 10198  | 10172   | 10172 |       |            |
| 10                      | Retaining Ring (Ext) | 3   | 04304 | 04304  | 04258   | 04258 | 04258 | 04258      |
| 11                      | Retaining Ring (Int) | 1   | 04303 | 04303  | 04259   | 04259 | 04259 | 04259      |
| 12                      | Seal                 | 1   | 10522 | 10522  | 18743   | 18743 | 18743 | 18743      |
| 13                      | Seat                 | 1   | 11361 | 11361  | 10926   | 10926 | 10926 | 10926      |
| 14                      | Seal/Seat Assy       | 1   | 11367 | 11367  | 10927   | 10927 | 10927 | 10927      |
| 15                      | Ball Bearing         | 1   | 04306 | 04306  | 04257   | 04257 | 04257 | 04257      |
| 16                      | Bushing              | 1   | 02075 | 02075  | 06333   | 06333 | 06333 | 06333      |
| 17                      | Gasket, Housing      | 1   | 10197 | 10197  | 10171   | 10171 |       |            |
| 18                      | Screws               | 2   | 05437 | 05437  | 04265   | 04265 |       |            |
|                         | Key                  | 1   | 10093 | 10093  | 04432   | 04432 | 04432 | 04432      |
|                         | Dowel Pin            | 2   | 01311 | 01311  | 01311   | 01311 | 01311 | 01311      |
|                         | Plug                 | 1/2 | 00336 | 00336  | 00336   | 00336 | 00336 | 00336      |
|                         | Hub                  | 1   |       |        |         |       |       | 97176      |
|                         | Minor Repair Kit     |     | 10996 | 10996  | 10997   | 10997 | 10999 | 10999      |
|                         | Major Repair Kit     |     | 24025 | 24025  | 12937   | 12937 | 11068 | 11068      |

## Inspection

***The #1 reason for premature engine wear is overheating. To maintain engine performance, insist upon genuine Sherwood impellers and service kits.***

### Recommended inspection to be performed at any service interval:

Impeller . . . . . Inspect for cracks or tears. Also inspect for excessive abrasion of vane ends.  
Replace annually, or if any of the conditions exist as in the picture below.\*

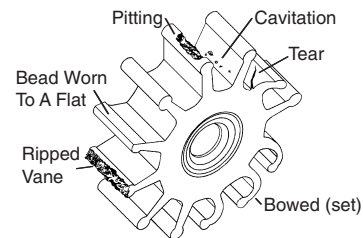
Cam . . . . . Replace at major pump rebuild or if pitting/wear is evident.

Cover . . . . . Replace if wear exists, to maintain pump flow and suction performance.

Mechanical Seal . . . . . Replace at minor and major pump rebuild or if leaking.

Shaft . . . . . Inspect for wear in area of the rubber impeller. Heavy fretting of the impeller end shaft will require shaft replacement.

Bearing . . . . . Inspect for loss of grease, corrosion or rough rotation. Replace at major pump rebuild or if in doubt.



\* See maintenance schedule on page 3

# Preventative Maintenance

| Maintenance Schedule | Pleasure Boating<br>(Low Hours) |                                         | Commercial/Fishing Use<br>(High Hours) |                                         |
|----------------------|---------------------------------|-----------------------------------------|----------------------------------------|-----------------------------------------|
|                      | Light Duty                      | Severe Duty<br>(High RPM, Silt or Sand) | Heavy Duty                             | Severe Duty<br>(High RPM, Silt or Sand) |
| Impeller Kit         | Every year                      | 6 months                                | 6 months                               | 3 months                                |
| Minor Kit            | 2 years                         | Every year                              | Every year                             | 6 months                                |
| Major Kit            | 4 years                         | 2 years                                 | 2 years                                | Every year                              |

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|         | Impeller Kit           | Minor Kit 10996                                                                                               | Minor Kit 10997                                                                                               | Minor Kit 10999                                                                             | Major Kit 24025                                                                                                                                                                         | Major Kit 12937                                                                                                                                                                         | Major Kit 11068                                                                                                                                                       |
|---------|------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | 1-Impeller<br>1-Gasket | 1-10077 Impeller<br>1-10197 Gasket<br>1-10286 Gasket<br>1-11367 Seal Assy<br>1-04304 Snap Ring<br>1-10093 Key | 1-09959 Impeller<br>1-10103 Gasket<br>1-10171 Gasket<br>1-10927 Seal Assy<br>1-04258 Snap Ring<br>1-04432 Key | 1-10615 Impeller<br>1-10931 Gasket<br>1-10927 Seal Assy<br>1-04258 Snap Ring<br>1-04432 Key | 1-10077 Impeller<br>1-10197 Gasket<br>1-10197 Gasket<br>1-11367 Seal Assy<br>3-04304 Snap Ring<br>1-02075 Bushing<br>1-04306 Bearing<br>1-10285 Cam<br>1-04304 Snap Ring<br>1-10093 Key | 1-09959 Impeller<br>1-10103 Gasket<br>1-10171 Gasket<br>1-10927 Seal Assy<br>3-04258 Snap Ring<br>1-06333 Bushing<br>1-04257 Bearing<br>1-10072 Cam<br>1-04259 Snap Ring<br>1-04432 Key | 1-10615 Impeller<br>1-10931 Gasket<br>1-10927 Seal Assy<br>2-04258 Snap Ring<br>1-04257 Bearing<br>1-04259 Snap Ring<br>1-04432 Key<br>1-06333 Bushing<br>1-10929 Cam |
| R30G    | 10077K                 | X                                                                                                             |                                                                                                               |                                                                                             | X                                                                                                                                                                                       |                                                                                                                                                                                         |                                                                                                                                                                       |
| R30G-1  | 10077K                 | X                                                                                                             |                                                                                                               |                                                                                             | X                                                                                                                                                                                       |                                                                                                                                                                                         |                                                                                                                                                                       |
| R10870G | 09959K                 |                                                                                                               | X                                                                                                             |                                                                                             |                                                                                                                                                                                         | X                                                                                                                                                                                       |                                                                                                                                                                       |
| R50G    | 09959K                 |                                                                                                               | X                                                                                                             |                                                                                             |                                                                                                                                                                                         | X                                                                                                                                                                                       |                                                                                                                                                                       |
| R102    | 10615K                 |                                                                                                               |                                                                                                               | X                                                                                           |                                                                                                                                                                                         |                                                                                                                                                                                         | X                                                                                                                                                                     |
| E35     | 10615K                 |                                                                                                               |                                                                                                               | X                                                                                           |                                                                                                                                                                                         |                                                                                                                                                                                         | X                                                                                                                                                                     |