SHERWOOD®

The Original Engine Cooling Pump Since 1921

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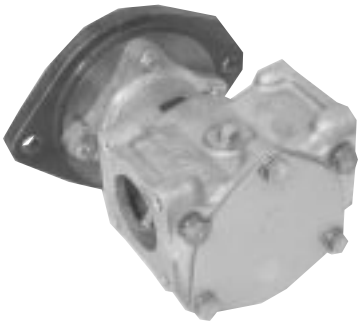
17000 Pump Series Technical Guide

Identification



P1710, P1726 & P1732

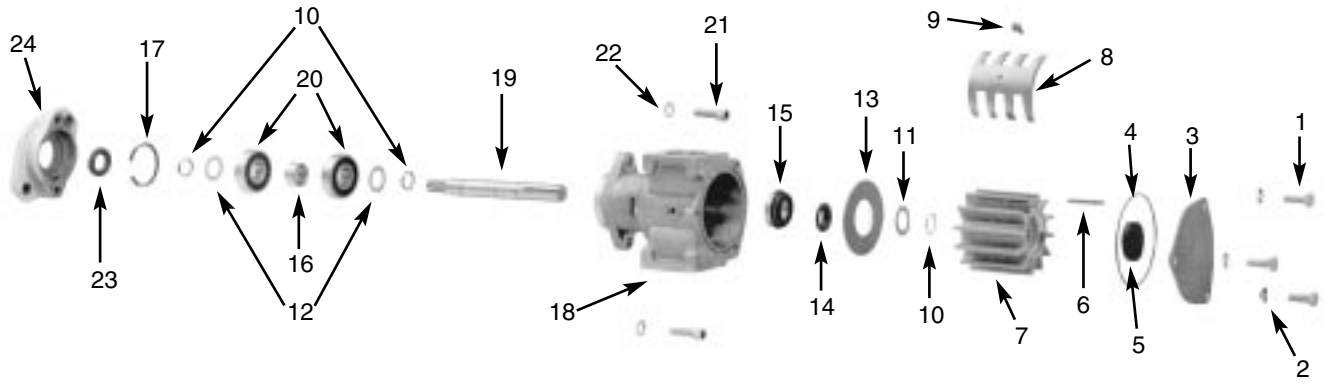
P1716, P1722 & P173

P1719

P1727, P1730 & P1731

P176

Assembly / Disassembly Instructions



The following assembly/disassembly procedures apply to all 17000 Series pumps. Deviations from pump to pump are primarily a result of different methods of drive and mounting. Pump model numbers can be found stamped into the cover plate of the pump.

Disassembly:

A. Remove the three bolts (1) and lock washers (2) from the pump cover (3). The cover and o-ring (4) are now free. The impeller end cap (5) can be pried off with a screwdriver. Normally, impellers (7) can be removed using two pair of pliers to grip two of the impeller's vanes on opposite sides of the impeller. A penetrating lubricant will help loosen a stuck impeller. Also, rotating the shaft by hand may help free the impeller. The 3/16" key (6) will also be removed at this time.

B. Remove any pulleys or drive gears (25) from the drive shaft. For tapered shaft models (all models except P173 & P1719), it is necessary to remove the shaft nut and pull the gear or pulley with a puller. For models with pressed on gears (P173), two threaded holes are provided in the gear. An appropriate puller may be attached to these two holes to remove the gear from the shaft.

C. Most models will be equipped with a flange adapter (24). The flange adapter is held to the pump body by two socket head cap screws (21), either 3/8" or 10mm, depending on the model. The screws are removed by using a hex socket wrench. More current models are mounted with four 8mm flange hex head bolts. The adapter is then removed. If the lip seal (23) in the adapter requires replacing, it can be pressed out at this time.

D. The cam (8) and cam screw (9) are removed. The internal wear plate (13) will drop out. The retaining ring (10), washer (11) and seal seat (14) are then removed. External snap ring pliers are required.

E. From the ball bearing end, the internal snap ring (17) must be removed on models P171 through P176. Later models have extended bearing assemblies and are held together by means of the flanged adapter. The bearing assembly (10,12,16,19 and 20) is pressed out of the body from the impeller end of the housing . The two external snap rings (10) are removed from the shaft (19) along with the bearing washers (12), permitting removal of bearings (20). The mechanical seal (15) may now be pressed from the bearing side of the housing (18).

Reassembly:

A. Press mechanical seal (15) into housing (18). A small amount of Permatex or other sealant should be used to insure against leakage.

B. Install external snap ring (10) on shaft (19). Next, place washer (12), bearing (20), bearing spacer (16), second bearing (20) and washer (12) and secure with the second external snap ring (10). The bearings will have to be pressed on from the pulley/gear end. Note that it is extremely important to properly align the bearings to the shaft prior to press, otherwise the possibility exists of galling the shaft in the area of the lip seal. This completes the bearing and shaft assembly.

C. Press the bearing and shaft assembly into the housing (18). On older models, replace the internal snap ring (17). On new model pumps, the bearings will be flush to the end of the housing and will be retained with the flange adapter (24).

Assembly / Disassembly Instructions (continued)

D. On all older model pumps with mounting adapters, the lip seal (23) will have to be replaced prior to replacing the flange adapter (24). Care should be taken to insure proper alignment of the lip seal to the adapter and that the lip seal is uniformly pressed to prevent distortion. The adapter (24) may be reassembled to the pump housing (18) at this time. The use of Loctite #262 or equivalent is recommended on the adapter bolts.

E. The ceramic seal and rubber cup (14) is now installed from the impeller end of the housing. Care must be taken to remove all burrs from the keyway to prevent cutting of the rubber cup. If possible, a half thickness key can be used to assist in assembly. In pressing the ceramic and boot, a pusher should be used with a diameter only slightly greater than the shaft diameter, (.80"). Soapy water or a lubricant from a seal manufacturer may be used in assembly. Oil or grease must not be used as it will prevent the rubber cup from properly gripping the shaft. The seat and cup are pressed just beyond the external/snap ring groove. The seat should be inspected to insure that the cup did not become partially dislodged during the press procedure. The washer (11) and external snap ring (10) are then installed.

F. The internal wear plate (13) is dropped in place, anti-rotation pin aligned with the cast slot in the bottom of the housing. The cam (8) is reinstalled and secured with the cam screw (9). Older model cam screws were sealed by means of a nylon washer requiring Permatex or other sealant to seal the cam screw. The cam screw should be inspected to insure that it does not protrude below the cam. This condition is possible if the nylon seal is badly deformed or if a substitute screw is used. Should the screw protrude beneath the cam, replace it with a new screw, or grind flush. Failure to do so will result in immediate impeller damage.

G. At this time, if applicable, press on any gears (25) or pulleys. The shaft (19) must be securely supported from the impeller end and in line with the press. Failure to do so will result in either damaged bearings and/or a canted gear with excessive run out.

H. Install the impeller (7) using a non-petroleum based lubricant such as silicon or soapy water. (The use of oils or grease will result in a damaged impeller). The impeller is installed using a twisting motion. Insure the impeller blades are bent in the same direction as upon removal. Once installed, rotate the shaft to align keyway and slide the key (6) in place. Then cover end with the rubber end plug (5).

	Sherwood #		P176	P1710	P1716	P1719	P1722	P1726	P1727	P1730	P1731	P1732
ITEM		QTY										
1	Cap Screw	3	16029	19626	19626	19626	19626	19626	19626	19626	19626	19626
2	Lockwasher	3	15944	15944	15944	15944	15944	15944	21573	21573	21573	15944
3	Cover Plate	1	18742	18742	18742	18742	18742	18742	18742	18742	18742	18742
4	O-ring	1	15945	15945	15945	15945	15945	15945	15945	15945	15945	15945
5	Impeller Cap	1	19210	19210	19210	19210	19210	19210	19210	19210	19210	19210
6	Key	1	19667	19667	19667	19667	19667	19667	19667	19667	19667	19667
7	Impeller	1	17000	17000	17000	17000	17000	17000	17000	17000	17000	17000
8	Cam	1	18271	18271	18271	18271	18271	18271	18271	18271	18271	21318
9	Cam Screw	1	10515	19714	19714	19714	19714	19714	19714	19714	19714	19714
10	Retaining Ring (Ext)	3	15952	15952	15952	15952	15952	15952	15952	15952	15952	15952
11	Washer	1	15959	15959	15959	15959	15959	15959	15959	15959	15959	15959
12	Washer	2	19614	19614	19614	19614	19614	19614	19614	19614	19614	19614
13	Wear Plate-Pin Assy	1	18441	18441	18441	18441	18441	18441	18441	18441	18441	18441
14/15	Water Seal/Seat Assy	1	15955	15955	15955	15955	15955	15955	15955	15955	15955	23799
16	Spacer	1	15940	19707	19615	19615	19615	19707	19615	19615	19615	19707
17	Retaining Ring (Int)	1	15942	15942				15942				15942
18	Housing	1	19015	19683	19630	19732	19630	19683	21523	21523	21523	19683
19	Shaft	1	19620	19706	23866	19345	23866	19706	23866	23866	23866	19706
20	Ball Bearing	2	15951	15951	15951	15951	15951	15951	15951	15951	15951	15951
21	Adapter Bolts	4		19708	19708	19708	19708	19708	19708	19708	19708	19708
23	Oil Lip Seal	1		21776	19674	19674	19674	21776	19674	19674	19674	21776
24	Adapter	1		19699	19727	19700	19955	19699	21205	21985	21985	19699
	Gear Assy	1			19885		19885		19885	22495		
	Cam Screw O-ring	1		19712	19712	19712	19712	19712	19712	19712	19712	19712
	Gear Nut	1			19730		19730		19730	19730	19730	
	Adapter Gasket	1			21570		21570		21570	21570		
	Flanged Port O-rings	2							21525	21525		
	Flanged Port Bolts	8								21484		
	Minor Repair Kit		23973	23973	23972	23972	23972	23973	23972	23972	23972	23973
	Major Repair Kit		23975	23975	23974	23974	23974	23975	23974	23974	23974	23975

Preventative Maintenance

Maintenance Schedule	Pleasure Boating (Low Hours)		Commercial/Fishing Use (High Hours)	
	Light Duty	Severe Duty (High RPM, Silt or Sand)	Heavy Duty	Severe Duty (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

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

	Impeller Kit 17000K	Minor Kit 23972	Minor Kit 23973	Major Kit 23974	Major Kit 23975
	1-17000C Impeller 1-15945 O-Ring 1-19210 Rubber Cap	1-17000 Impeller 1-15945 O-Ring **1-23799 Seal** 1-15952 Snap Ring 1-19667 Key 1-19674 Lip Seal 1-18441 Wear Plate	1-17000 Impeller 1-15945 O-Ring **1-23799 Seal** 1-15952 Snap Ring 1-19667 Key 1-21776 Lip Seal 1-18441 Wear Plate	1-17000 Impeller 1-15945 O-Ring **1-23799 Seal** 3-15952 Snap Ring 1-19667 Key 1-19674 Lip Seal 2-15951 Bearings 1-18441 Wear Plate 1-18742 Cover 1-18271 Cam 2-19614 Washer 1-15959 Washer 1-19712 Cam O-ring	1-17000 Impeller 1-15945 O-Ring **1-23799 Seal** 3-15952 Snap Ring 1-19667 Key 1-21776 Lip Seal 2-15951 Bearings 1-18441 Wear Plate 1-18742 Cover 1-18271 Cam 2-19614 Washer 1-15959 Washer 1-19996 Cam Washer 1-19712 Cam O-ring
P176	X		X		X
P1710	X		X		X
P1716	X	X		X	
P1719	X	X		X	
P1722	X	X		X	
P1726	X		X		X
P1727	X	X		X	
P1730	X	X		X	
P1731	X	X		X	
P1732	X		X		X

New 23799 Silicon Carbide mechanical seal *- superior abrasion resistance and longer life. Standard in kits shown above. The 23799 is a direct upgrade of the 15955 mechanical seal.*

TRIM LINE - DO NOT PRINT

Impeller Types

The **17000C Impeller** with thru key insert allows for ease of installation in **hard-to-reach applications**. This impeller is of the same dependable Sherwood design that has been used since the 17000 series impeller was developed.

Removal

- Remove the cover.
- Twist and pull the impeller out of the pump.

Installation

- Apply a non-petroleum based lubricant to impeller (i.e. silicon or soapy water).
- Install the impeller with a twisting motion onto the shaft.
- After the impeller is all the way on the shaft and into the housing, rotate the impeller to align the keyway of the shaft to the key slot on the shaft.
- Slide the impeller key into the keyway and place the rubber cap over the key opening to prevent possible damage to the cover.
- Then use a small amount of non-petroleum based lubricant to help hold the o-ring in place while replacing the cover.

17000C Impeller

The **17000K Impeller Kit** is packed with everything needed to replace the impeller using genuine Sherwood parts. Contains thru key insert that allows for ease of installation in **hard-to-reach applications**.

Contains

- **17000C** Impeller with thru key insert
- O-ring
- Rubber cap

17000K Impeller Kit

New **17000PK Impeller Kit**

Contains

- 17000 Impeller with **patented threaded insert**
- Impeller puller (#23631)
- O-ring

Removal

- Remove the cover.
- Insert the SHERWOOD puller (#23631) into the threaded insert.
- Screw the puller against the shaft lifting the impeller until loose.
- Twist and pull the impeller out of the pump.

Installation

- Apply a non-petroleum based lubricant to impeller (i.e. silicon or soapy water).
- Install the impeller with a twisting motion onto the shaft.
- For instances when the twisting of the impeller onto the shaft is causing the key to become dislodged, a small amount of glue can be applied to the key to hold the key in shaft's key slot.
- Then use a small amount of non-petroleum based lubricant to help hold the o-ring in place while replacing the cover. The rubber cap used on the older style impeller is not needed with the new 17000.

17000PK Impeller Kit with Puller

TRIM LINE - DO NOT PRINT

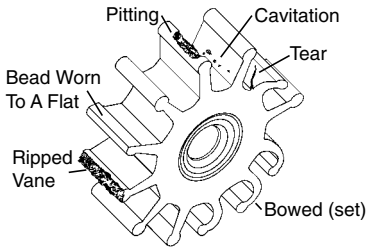
Inspection

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.*

Wear Plate . . . . . Inspect for wear, flatness, and pin for fatigue. Replace at minor and major pump rebuild or if wear is evident to maintain pump flow and suction performance.



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

Cover . . . . . Replace at major pump rebuild or if wear exists to maintain pump flow and suction performance.

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

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

Shaft . . . . . Inspect for wear in area of lip seal and rubber impeller. Grooving of lip seal area or 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.

Genuine Sherwood Tech Tips

To maintain best engine performance and to prolong engine life - replace your impeller annually.* Three tips to help you install your new impeller:

- Use a non-petroleum based lubricant (silicon or soapy water) to help slide the impeller into the housing.
- Install the impeller with a twisting motion onto the shaft. Never force an impeller onto the shaft. The impeller must be able to move freely on the shaft to properly prime and function.
- Use a small amount of non-petroleum based lubricant to help hold the o-ring when replacing the cover.

Proper storage of the impellers during a prolonged lay-up can help maintain the life of the impeller. Remove the impeller from the housing and store it a cool dark place. This will avoid the following:

- Copper bonding of the impeller to the housing
- Vanes "setting" into position as stored in the housing
- Ultraviolet deterioration

* *See Maintenance Schedule on page 2*

SHERWOOD®

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