

AERMOTOR WINDMILL CARE & REPAIR

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Under normal conditions your Aermotor windmill should only require the oil to be changed once a year. To do so, remove the plug at the bottom of the gear case and drain the old oil out. Be sure to catch the oil so it doesn't get on the platform or tower which would make them slippery and dangerous. Flush the case with kerosene to remove dirt and debris. Also remove the plug from the hub and flush the passage with kerosene. Replace the plugs and refill the gear case with the proper amount of windmill oil, based on the size mill you are servicing. **BE SURE NO OIL GETS INTO YOUR WELL.**

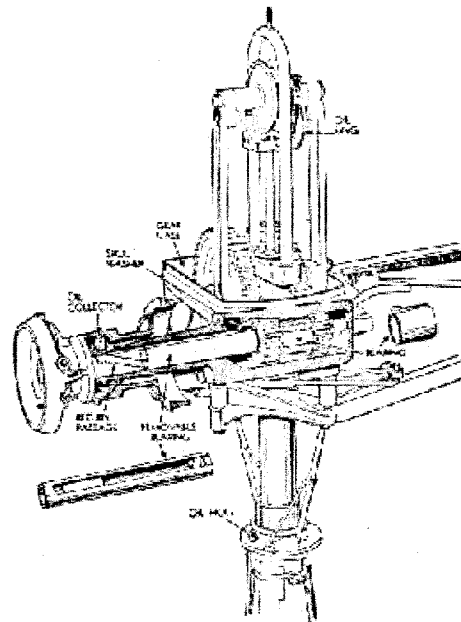
PROPER QUANTITY OF OIL

6' Aermotor = 1 Quart	8' Aermotor = 2
Quarts	
10' Aermotor = 2 Quarts	12' Aermotor = 4
Quarts	
14' Aermotor = 8 Quarts	16' Aermotor = 8
Quarts	

Using more than the above quantities is of no advantage. Too much oil may overflow at the wheel hub.

Do not use heavy oil as it may clog oil passages, causing extra wear on certain parts. The proper oil is non-detergent less than 10 weight.

When changing oil check to be sure the oil ring is rotating on the large gear when at the bottom of the stroke. The ring carries oil to the shaft for the pitman arms and guide wheel. Oil the turntable through hole at the top of the post where it comes through the crated motor case. Also oil the furl ring through the fitting on the ring. With this little bit of attention once a year, your Aermotor should last you many years.



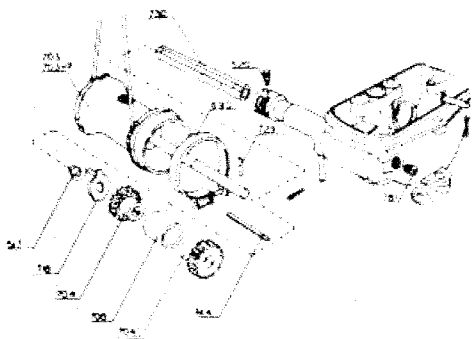
REPLACING THE #703 HUB & SHAFT

The hub and shaft are supplied as a unit, with the shaft welded into the hub for an assured tight fit. The shaft is not sold separately.

The wheel sections and wheel arms will need to be removed to change out the hub and shaft #703. This can be done at the top of the tower, or if you have the equipment, it will be easier if it is lowered from the tower to the ground to do the service.

Remove the pipe plug in the side of the hub.

With the hole for the pipe plug positioned straight up, insert a screw driver into the slot of the #520 oil collector and remove it. You must remove the #520 before you can remove the shaft.



Next, remove the pipe plug on the back side of the gear case. Remove the #522 shaft that goes through the guide wheel and remove the large gear assembly with the pitman arms from the gear case. This will make it easier to get to the small gears on the shaft.

Remove the pin #729, that holds the end pinion gear on the shaft and holds the #744 key that locks the positioning of the small gears, from the end of the shaft.

Be sure the keyway on the shaft is straight down. There is a notch in the #718 spout washer that will allow the #744 key to pass through it. If the key is not straight down, you will most likely break the #718 when the shaft is pushed out.

As you push the shaft out, you will remove the #704, the #708/808, the other #704, the #718, the #517 spring and the #730/830 shaft bearing from the shaft, along with the #744 key. Examine each piece for wear and if necessary replace the parts. The gears should always be replaced in pairs. This eliminates the possibility of uneven drive pressure that would cause binding or uneven wear in the remaining parts of the mill.

REASSEMBLE the HUB & SHAFT by inserting the #708/808 bearing into the main casting, with the #704 small gears in it. Put the #730/830 sleeve bearing into place. Oil the bearing and the shaft and insert the shaft through to the inner edge of the case. Place the 517 spring and the 718 spout washer over the end of the small gears and bearing group and slide the shaft through the grouping. When the shaft is all the way through, rotate the #704 small gears so the slot for the key is down, along with the slot in the hub shaft. Insert the key and then the retainer pin #729 in the end of the shaft. Install a new #520 oil collector through the plug hole in the hub and tighten. **IT IS IMPORTANT TO SEAT THE OIL COLLECTOR BY SLOWLY TURNING THE WHEEL. IT MUST RUB THE INSIDE OF THE HUB IN ORDER TO PICK UP OIL AND RETURN IT TO THE GEAR CASE.**

Now put the large gear assembly back into place and secure it with the #751 bearing bar. Reconnect the pitman arms #686 to the outer boss on the gears and secure them with the #622 bolt. Place the 522 shaft through the #608 yoke and the #523 guide wheel. Place the outer most hole of the pitman arms on the 522 shaft and secure it with the cotter pins. Reinstall the plugs in the hub and the back side of the case.

Replacing the #752/852 Bearing between the large gears. Remove the large gear assembly from the case. Remove the pitman arms, the 721 pin from the 720 shaft. Remove one of the #705 large gears and slide off the bearing. Examine the 720 shaft for wear and replace if necessary.

Reassemble by putting the bearing onto the 720 shaft followed by the large gear. Be sure the pitman boss on the gear is in the same position as on the other gear. If it is not it will cause binding or breakage.

Replacing the #523 Guide Wheel. Remove the large gear assembly. Mark the #508 pitman guide so it gets put back in correctly. Otherwise the 588 stud will be out of location and the 560 helmet will not fit correctly. Remove the 508R pins from the bottom of the 508, that secure it to the case. Replace the #523 guide wheel in the same direction as the one you remove. Be sure to examine the 507 oil ring to see that it is not bent or damaged.

PROBLEMS - CAUSE - REMEDY

Mill furls out, but wheel continues to turn slowly.

Cause 1: Excess wear in upper furl lever connections.

Remedy is to change #528 to #528 1/2 or #528 3/4 which are extra long to compensate for wear.

Cause 2: #690 brake band.

The 690 has no lining on the band. It depends on metal contact to work. Replace if worn

with new 690 brake band.

Cause 3: Furl linkage worn in rivets and connections of #609

Replace the #609 Furl Lever.

Mill jerks while operating.

Cause 1: Cylinder leathers may have swelled and are binding in cylinder barrel.

Replace your leathers.

Cause 2: Cylinder barrel may have been crushed or distorted by using pipe wrench.

Never use pipe wrench on brass cylinder. Replace if damaged.

Cause 3: Pump rod couplings may be catching at pipe joints.

Find problem connection and correct it.

Cause 4: Stuffing box nut may be too tight.

Loosen and repack the stuffing box. If rod is scored or pitted, replace it.

Mill knocks at bottom of stroke.

Cause 1: #608 yoke is hitting top of mast pipe nut #578.

Motor position needs raised. Add some #521 split washers to post.

Cause 2: Turntable washers may be worn. Replace #521 split washers and grease them at turntable of mastpipe.

Cause 3: Plunger in cylinder hitting lower check valve in cylinder bottom.

Adjust your rod. Shorten the rod. Sometimes rod will stretch after installation in deep set wells.

Cause 4: Stuffing box may be too tight.

Loosen nut and repack gland.

Cause 5: Pitman arms may be worn excessively.

Replace the pair of pitman arms. Never replace just one.

Pitman arms keep breaking.

Cause 1: Large gears misaligned. Cause pitman arms to operate in bind.

Remove a #705 large gear and realign the boss on it with the one on the other 705.

Cause 2: #752/852 bearing between large gears is worn.

Replace the #752/852 bearing and if necessary the #720 shaft.

Cause 3: You replaced only one #705 or one #686 in the field.

Always replace large gears and pitman arms in pairs so load is distributed evenly.

Cause 4: Mill may be overloaded.

Check table for recommended cylinder size and depth. Setting mill to short stroke may eliminate the problem.

Cause 5: Mill may be loaded too heavy on down stroke, due to stuffing box too tight.

Check stuffing box and repack it if necessary.

Oil leaking down mast pipe.

Cause 1: Too much oil in gear case and it runs into turntable oiling hole.

Use specified amount of oil for your mill size. Do not overfill. Check helmet for bullet holes which could allow rain in, causing the floating of the oil. This will also leave your mill running in water and subject to wear.

Cause 2: Lockwasher #579 may be offset to one side, causing it to rub the large gears and pick up oil.

Oil leaking around hub and onto the wheel.

Cause 1: Oil collector #520 may be plugged, preventing it from picking up oil from

oil pocket inside the hub.

Cause 2: Using oil that is too heavy and will not flow or plugs passages.

Drain and flush case with kerosene and refill with windmill oil.

Cause 3: #730/830 shaft bearing may be worn excessively.

Replace the bearing if necessary.

Cause 4: May be using detergent type oil.

Refill with non-detergent oil. Windmill oil is non-detergent.

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