

Tsurumi C-Series

Maintenance & Inspection



TSURUMI PUMP®
BUILT FOR WORK®

Tsurumi C-Series

Maintenance & Inspection

150C41.5

In the following slides we will be showing an inspection and tear-down of a 2hp Tsurumi cutter pump. This procedure will show everything needed for routine maintenance of this Tsurumi pump.



Cable Inspection

Measure and inspect the pump cable. Note total length of cable. If there are any cuts or other deformities to the cable, the cable should be replaced.



TERRAMOUNT PUMP		Sprocket Pump	
No.	152215-C9	Part No.	152
Model	152215-C9	Part No.	152
Material	4130	Part No.	152
Finish	Black	Part No.	152
Weight	1.1	Part No.	152
Length	1.1	Part No.	152
Width	1.1	Part No.	152
Height	1.1	Part No.	152
Volume	1.1	Part No.	152
Area	1.1	Part No.	152
Perimeter	1.1	Part No.	152
Surface Area	1.1	Part No.	152
Volume	1.1	Part No.	152
Weight	1.1	Part No.	152

Megger Test motor

Set Megger Tester to 500V, and megger test the pump WITH cable attached to get insulation resistance of the stator winding AND the cable. Measure and record reading from L1-ground, L2 to ground, and L3 to ground.

Resistance values should be AT MINIMUM 1 megohm after 1 minute. If any reading is less than 1 megohm, test motor and cable separately to determine where the fault is. If MOTOR resistance is less than 1 megohm, it is likely the motor is wet, and the motor should not be started. Motor should be disassembled and tested by an EASA motor repair facility.



Prepare pump for disassembly

We have created a cradle from 2x4s to set the pump in and keep it from rolling while we are working on it.



Remove stand

With the stand removed, check the impeller to suction cover clearance. This should be .012" to 0.20". A clearance greater than this will produce lower flow, and a greater chance of material getting caught between the cutter plate and impeller cutter tip.



Remove Cutter Plate

Inspect the impeller and suction cover for unusual wear or damage to the carbide cutting tip. Also check for clogging in the pump casing, or ragging around and behind the impeller.



Remove Impeller

With an impact driver, remove the acorn nut and lock washer securing the impeller. If an impeller puller is available for your model, screw it onto the impeller, and press the impeller off of the shaft. Otherwise, the impeller should be able to be pulled off by hand.

Inspect the back side of the impeller for any damage to the oil seal and pump casing.



Remove air lock valve

Check to make sure this is not clogged with debris. If the ball is not allowed to seat properly, water will spray from here.



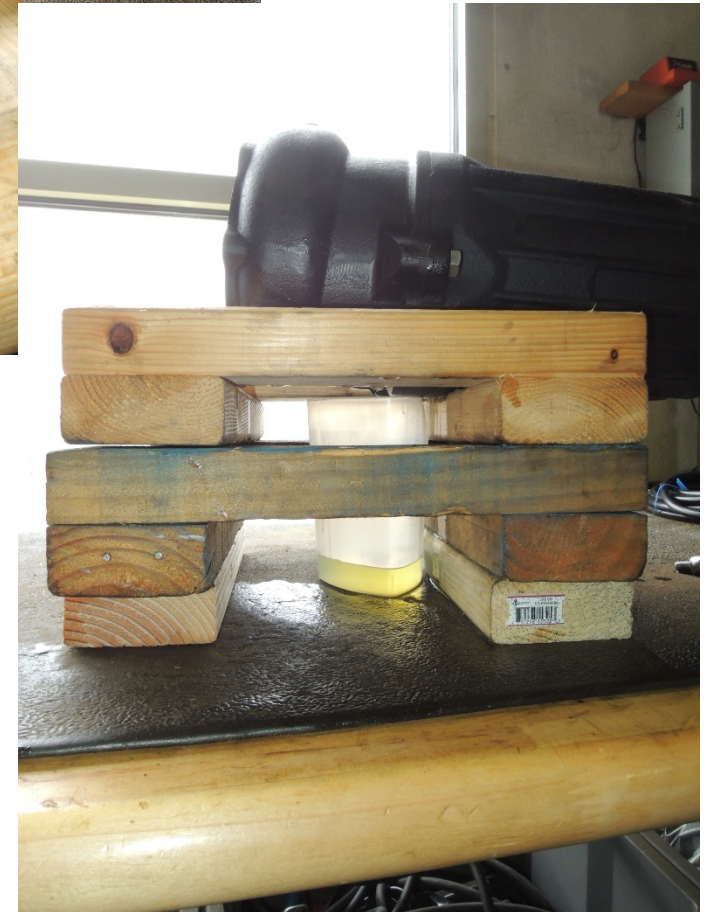
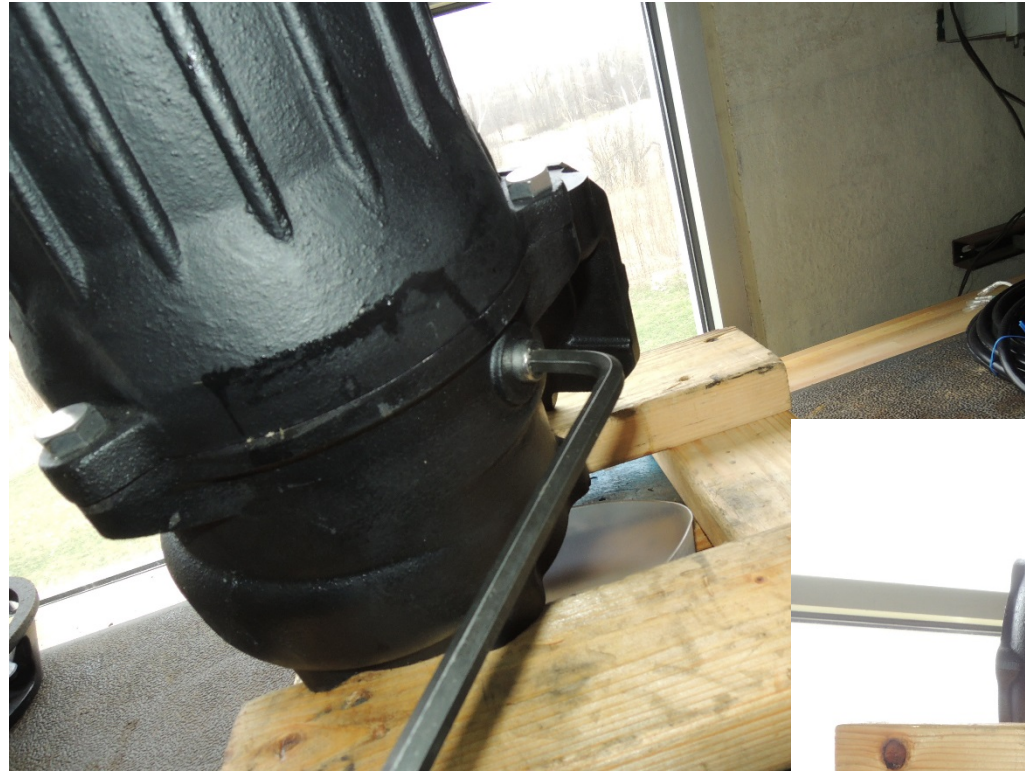
Drain and Inspect Oil

Oil casing may be under pressure, so be sure to wear eye protection, and shield the oil from spraying everywhere.

Drain the oil into a clear, graduated container.

Inspect oil and record volume. Water or foreign debris in the oil indicate that the mechanical seal has leaked and needs to be replaced.

To replace the mechanical seal, separating pump casing from the motor casing is necessary.



Remove Pump Casing

If there is evidence that mechanical seal is leaking (water or debris in the oil or motor has failed the Megger test), it will be necessary to remove the pump casing/oil casing from the motor.

Mark both sections with a paint pen so that they can be oriented properly upon re-installation.

On this particular pump, pump casing and oil casing are integral. Once these are separated, oil WILL leak out.



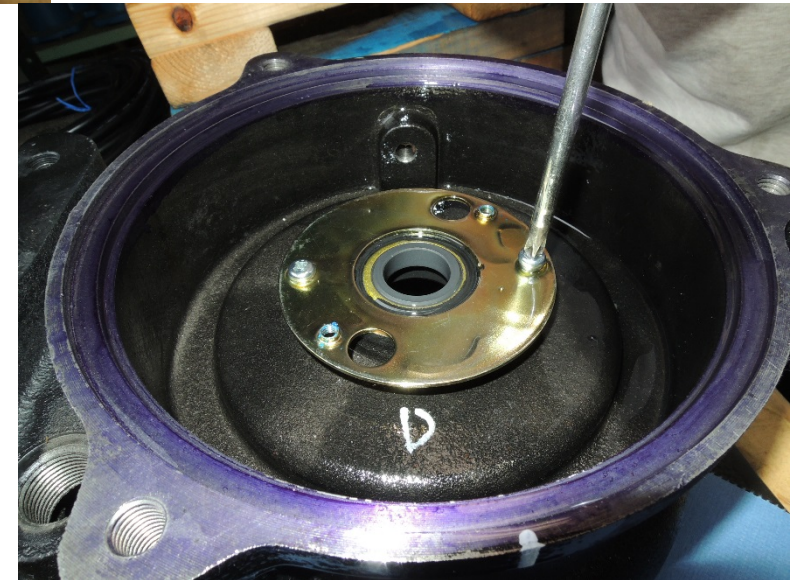
Inspect oil casing, O-ring, oil lifter, and mechanical seal.

It is recommended to use only new packing/o-ring kit upon re-assembly, so o-ring will NOT be re-used. Check for debris, or grit in the oil chamber, and make sure oil lifter is not cracked or otherwise damaged. This chamber will need to be flushed and thoroughly cleaned if water or debris is present.



Remove oil lifter and
Seal Stopper to expose
stationary seal.

This will allow removal of the stationary
portion of the mechanical seal.



Carefully remove stationary seal from pump casing.

Using a punch the same size as the seal, carefully tap it out of the casing onto a soft surface. The seal will not be re-used, but we will want to inspect it, therefore we don't want to crack it or damage it in any way.



Remove rotary seals

After removing the impeller key, with two flat blade screwdrivers, CAREFULLY pry the upper portion of the rotary mechanical seal up and remove this face along with the spring. Finally pry off the lower seal face as shown. Take care not to damage the rotor shaft with the screwdrivers.



Disassemble Motor Assembly

Attach two sets of vice grip pliers to opposite sides of the bearing housing as shown, and pull back and forth to separate from motor housing. Bearing housing and rotor should come out together.



From here, stator, motor protector, and bearings can be inspected and replaced if necessary. If there is water or debris in here, motor will need to be cleaned with compressed air and mineral spirits, and baked dry and additional motor testing should be performed by an EASA motor repair facility.

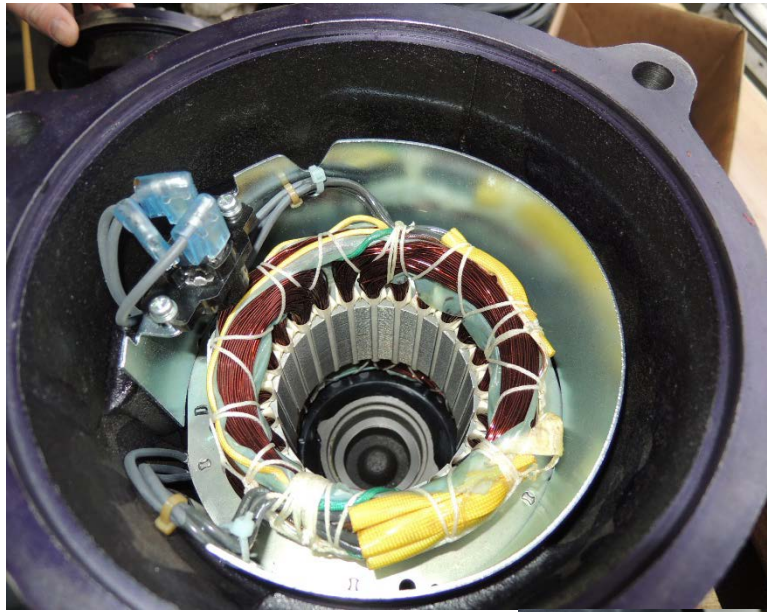


Re-Assemble Motor

New O-Rings and packing materials are available as a kit, and should always be used upon re-assembly.

With motor frame upside down, carefully place the wave washer under the bearing race and place rotor on the wave washer.

Orient bearing housing on top and tap down with a plastic hammer.



Assemble Mechanical Seal

Coat all Mechanical Seal components with oil. Place upper stationary seal in bearing housing, and lower stationary seal in pump casing. Re-assemble seal stopper and oil lifter. Coat rotor shaft with oil and carefully press upper rotary seal onto shaft until it touches the upper stationary seal. Place spring against rotary seal, and press lower rotary seal on the shaft. Rotary seals will quickly compress on shaft, so run them back and forth on the shaft until pump casing is ready to be placed onto motor housing.

Tighten bolts fastening pump casing to motor housing, and turn pump on it's side.



Re-assemble wet end

Press oil seal into bottom of pump casing, and place impeller shim on rotor shaft before assembling impeller key and impeller onto rotor shaft. Place spring washer and fasten with acorn nut.

Place suction cover packing, and suction cover. Tighten bolts. Now using a feeler gauge, check impeller to suction cover clearance. Adjust to 0.012-0.020" clearance by adding or removing impeller shims and/or suction cover packings.

Finally re-assemble pump stand to suction cover.



Re-assemble cable

Connect bullet connectors of cable assembly to leads from motor housing. Assemble



Vacuum test oil casing



Perform Run Test

Connect pump cable to three phase power. Pump is running in the correct direction if the pump 'kicks' in a counter-clockwise direction when it is connected to power. If the pump is running in reverse, simply switch two of the three phase leads.



Tools required for

