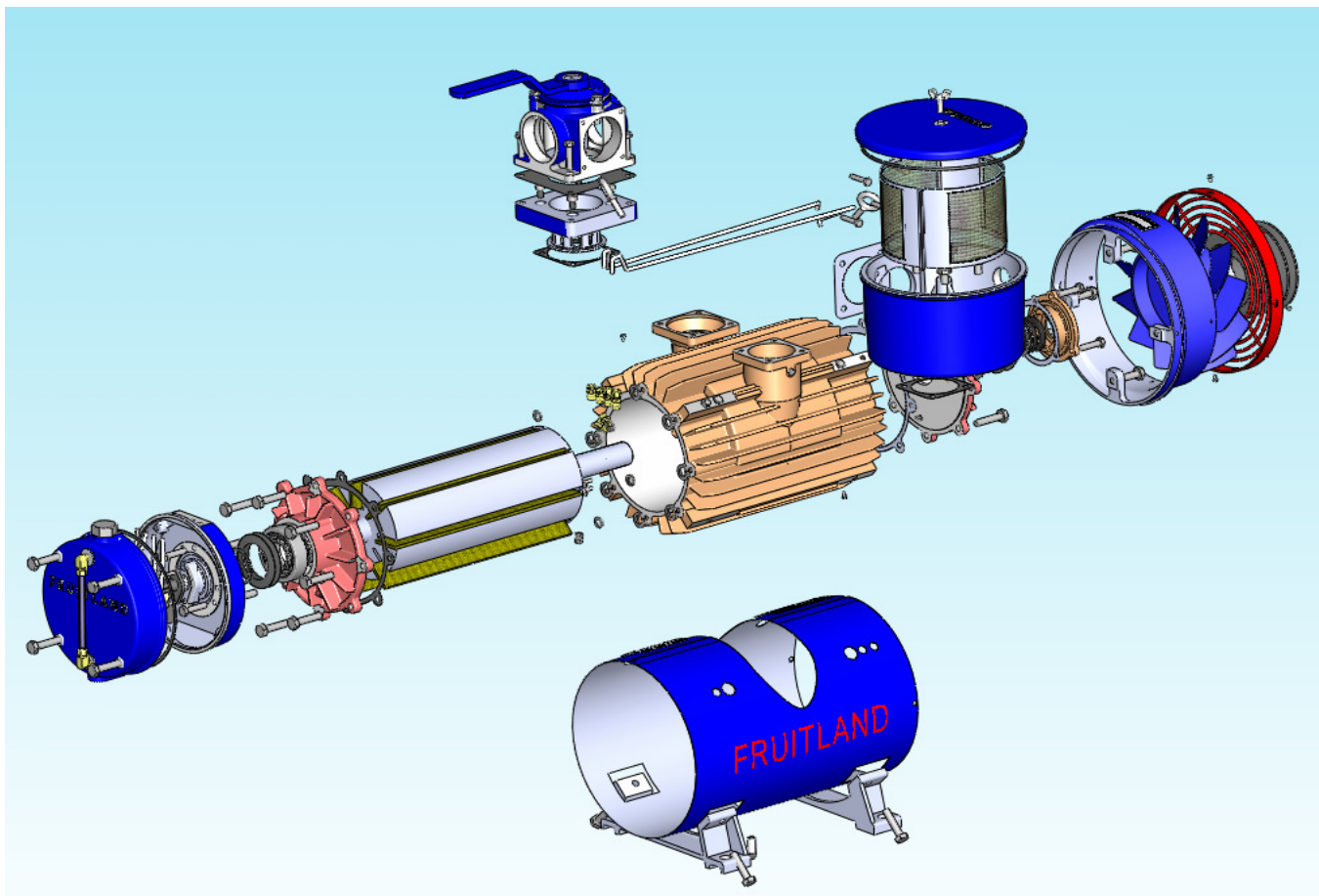
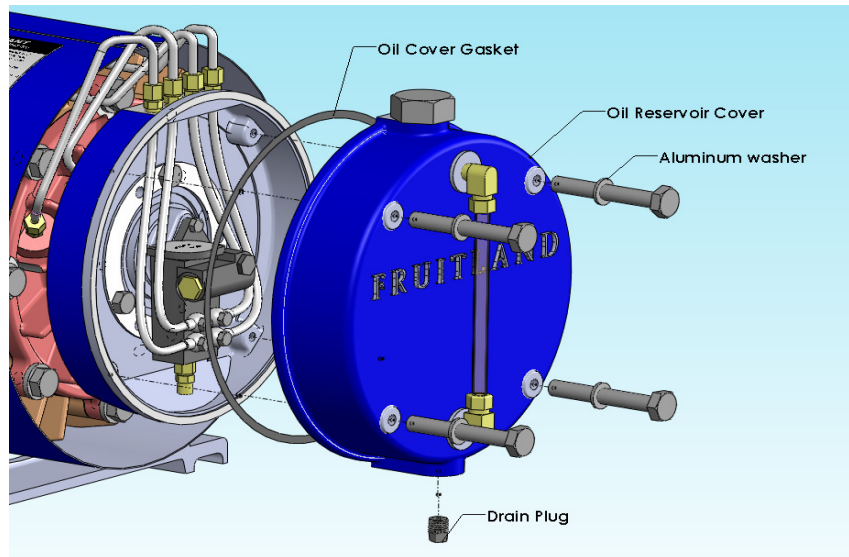


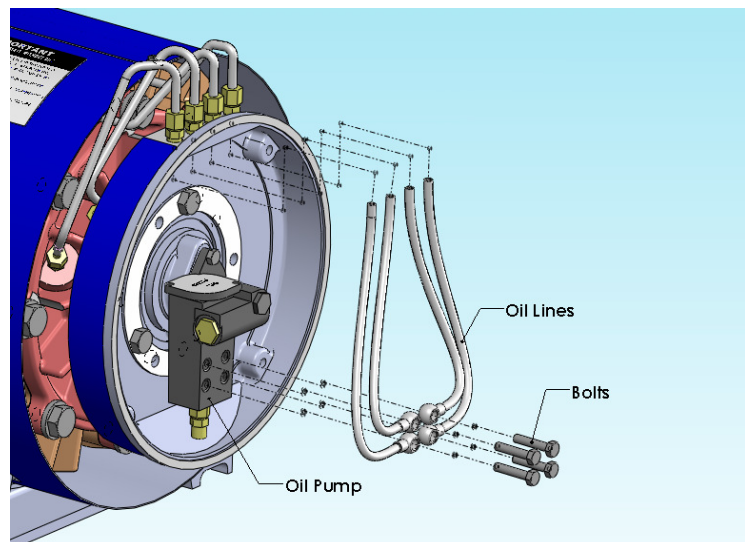
FRUITLAND 250, 370 AND 500 PUMP REBUILD PROCEDURE



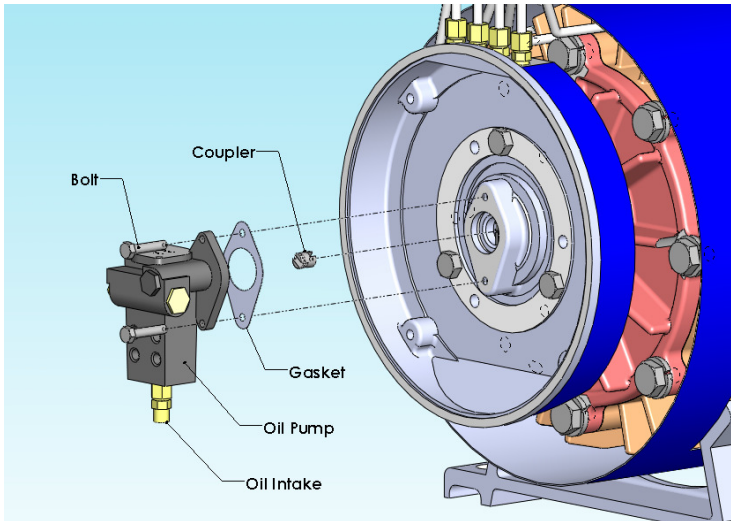
1. Drain oil by removing drain plug and check any contaminations in oil.
2. Remove the four bolts and aluminum sealing washers that connect the outer cover to the inner oil reservoir (large seal housing). When re-assembling pump replace sealing washers if damaged, and the cover gasket.



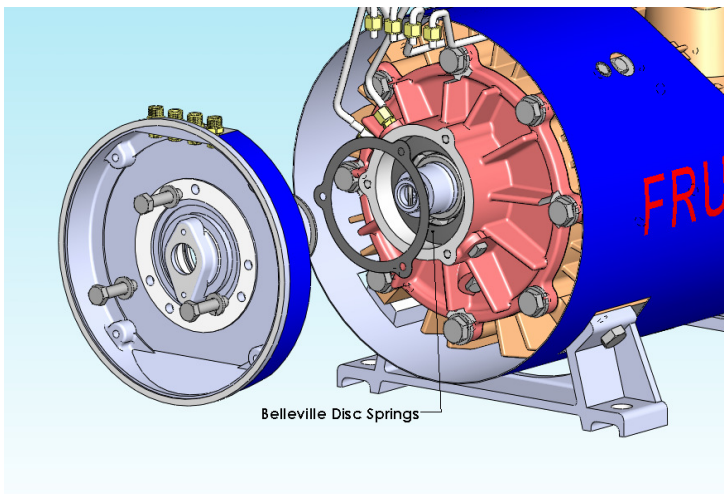
3. Remove the 4 inner oil lines connected to the oil pump and the top of the inner oil reservoir. This is done by removing the 4- 6mm hollow oil bolts that hold the oil lines to the oil pump, and un-doing the brass tube fittings at the top of the inner oil reservoir.



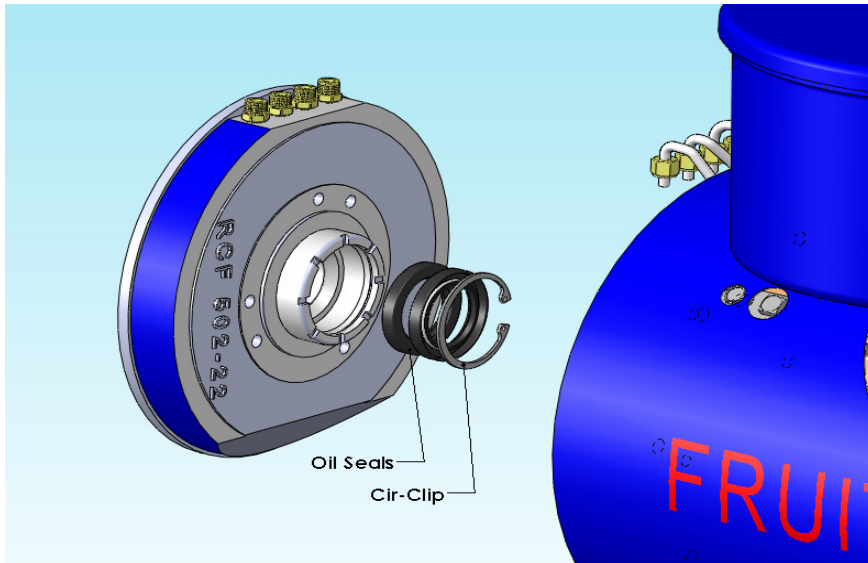
4. Remove the oil pump and gasket, by removing the two bolts holding it to the inner oil reservoir. A small coupler connects the oil pump to a pin in the end of the rotor shaft. **DO NOT LOOSE THE COUPLER.** It may fall off the end of the oil pump. If the coupler is damaged or broken, oil pump failure may result. The oil pump must be checked for proper operation before re-installation.



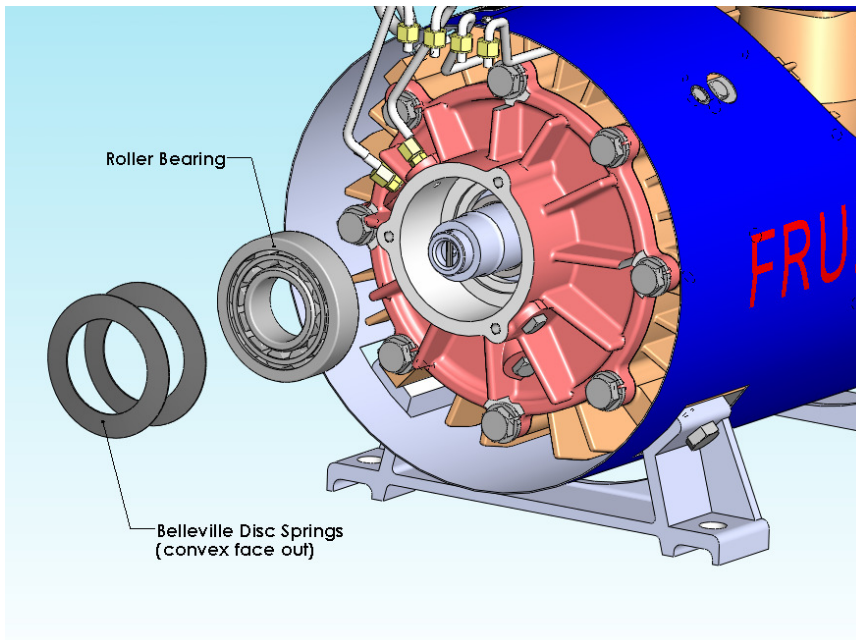
5. To check the oil pump, connect oil pump drive to a hand drilling machine that will turn the oil pump the same direction as your vacuum pump. Immerse the oil pump pickup in a small container of clean oil. Turn the oil pump through drill for at least a couple minutes, and check if any oil is coming out the 4 oil line outlets. At 1400 RPM the oil pump, pumps 1 US quart of oil approximately every 4 hours. You will only see a drip come out of each port approximately every 15 seconds. If no oil is coming out, the oil pump needs to be replaced.
6. Disconnect the 4- oil lines at the top of the inner oil reservoir, and move gently out of the way.
7. Remove the inner oil reservoir (large seal housing) by removing the 3 bolts and lock washers that connect it to the main housing end cap. Use a rubber mallet to gently tap on the reservoir to break the gasket free.



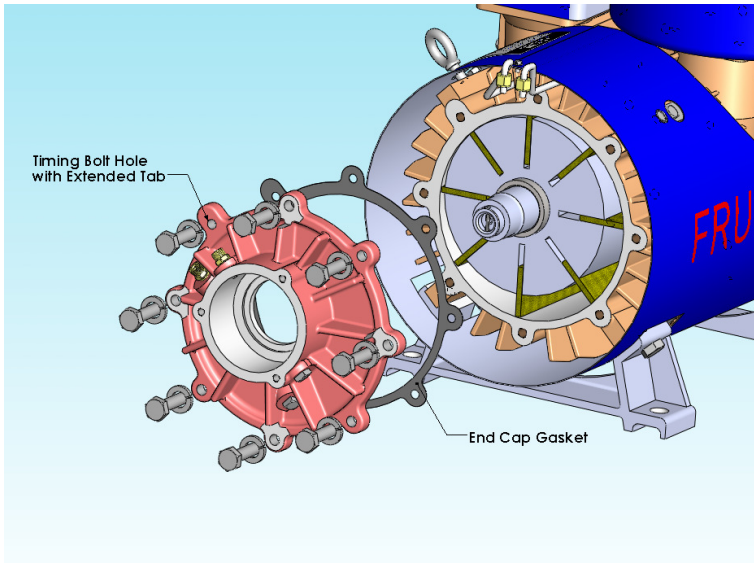
8. The large seal housing contains 2 oil seals that are installed back to back. They are held in place with a cir-clip. If the seals are damaged or hardened, then they must be replaced. If the sealing lip on the seals has hardened and is cracking, this indicates that the vacuum pump has been over heated for an extended period of time.



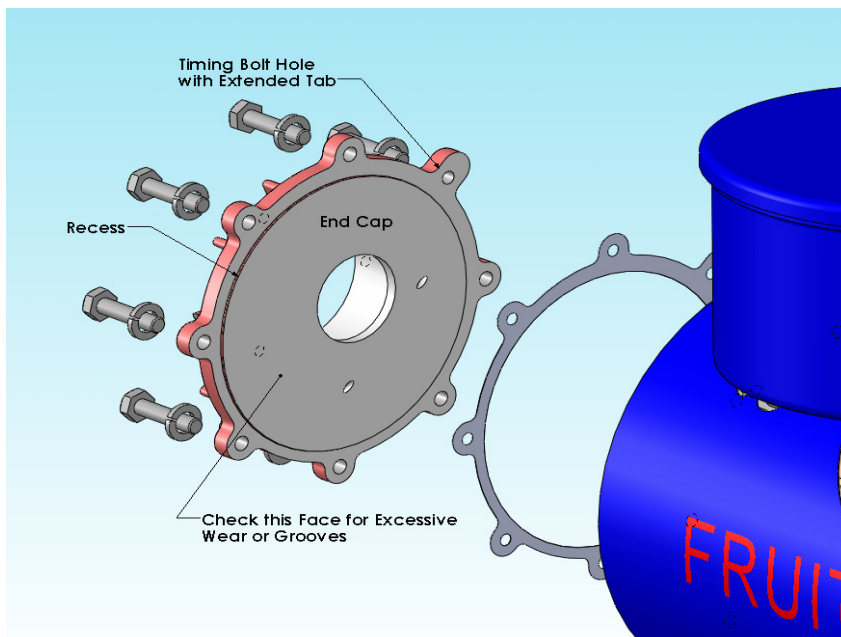
9. A main roller bearing and 2 disc springs are located in the main housing end cap. Make a note of the direction of the 2 disc springs. They are conical in shape and go back in the same direction (Pointing out). If unsure, call the toll free number for clarification. Improperly installed disc springs may cause overheating and rotor and end plates damage.



10. Remove the 8 bolts and washers holding the housing end cap to the main pump housing. Make a reference marking on the housing and the end cap for re-installing. There is also a timing bolt hole, with an extended ear on the end cap and a more pronounced machining mark on the housing gasket surface area, to locate properly if you loose or forget to mark. This is shown in the Fig 7. Tap on the end cap to break gasket free. The end cap is now removable.

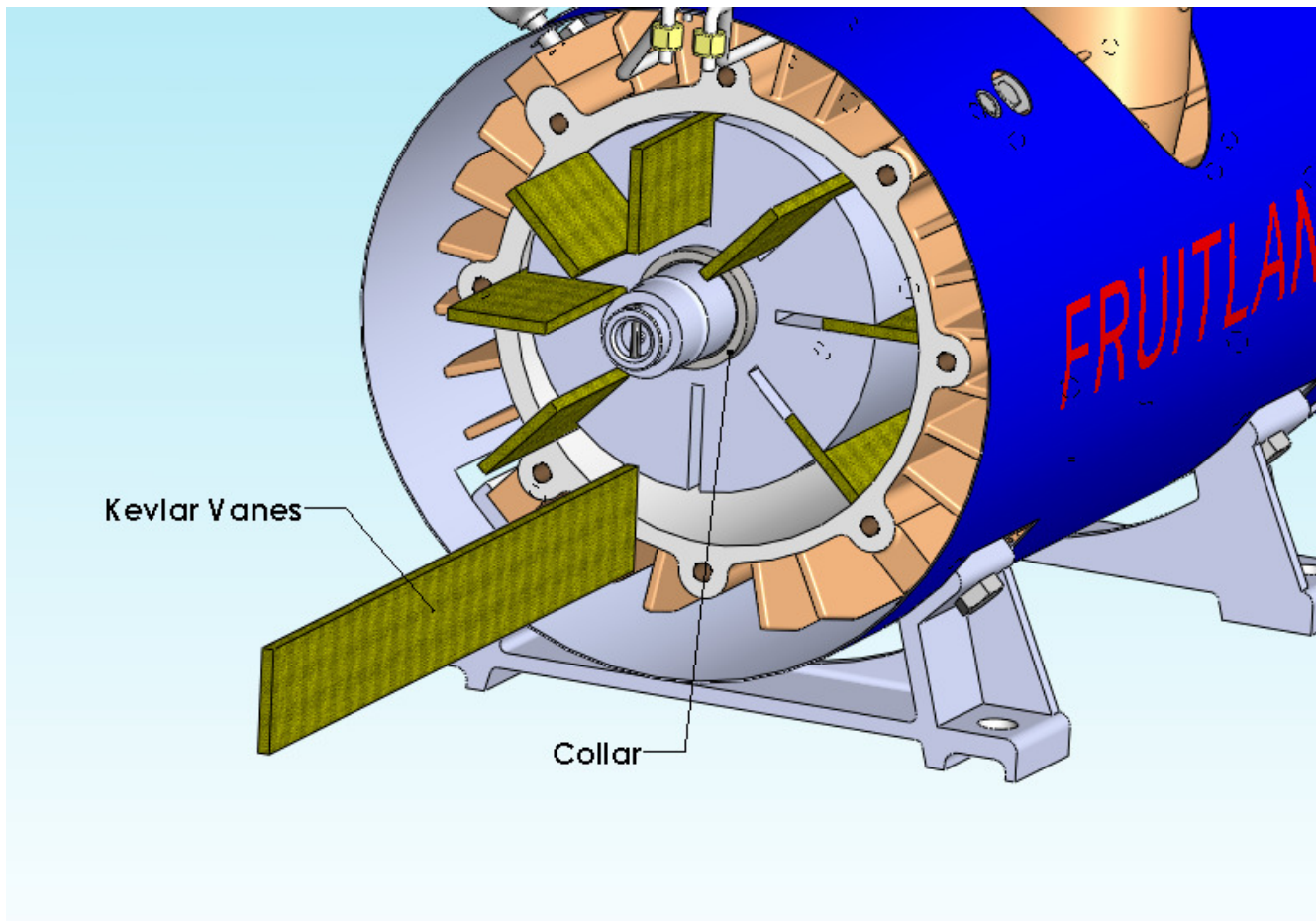


- Inspect end cap face for any wear, if there are any grooves present from the rotor touching the end cap then the end cap has to be replaced. This damage can be caused by a severely overheated pump, incorrectly installed or missing disc springs or by a load on the rotor forcing the rotor to be jammed into the end plate. If the pump is driven with a hydraulic motor or angle gear box with a coupler, the clearance in the coupler must be sufficient enough to allow the rotor to stay in center while expanding and contracting during normal operating.



- The gasket fits on a recess in end cap. While re-installing end cap, the recess has to sit inside the housing bore, before you tighten the bolts. IF YOU DO NOT do this, you will most likely damage the housing end cap.

13. When the housing end cap is removed, the rotor will drop approximately 3/16" due to the weight of the rotor not being supported. When re-installing the end cap, the rotor will have to be lifted that amount to relocate end cap recess back into housing bore.
14. After removing end cap. Remove vanes and check the condition of vanes, vane slots, and housing bore.



15. The rotor should be removed from the pump, if the vanes are difficult to remove, if the bearing or the rotor is damaged, or if there is contamination in the pump. This also allows inspection of the bearing on the drive end. If a bearing has to be replaced, the inner bearing race will have to be removed from the rotor shaft with a puller, as it is a press fit on the rotor shaft. The collar between the bearing race and rotor end face can be re-used if not damaged.
16. Check condition of the housing bore. If pump was disassembled because of a broken or damaged vane, check for housing cracks. Housing must be replaced if a crack is detected.
17. If housing bore is in good shape, assembly procedure can start. New well oiled vanes should slide in and out of the rotor slots easily.
18. Re- install parts in reverse order from disassemble