



National Vacuum Equipment



607 CHALLENGER ROTARY VANE PUMP MAINTENANCE MANUAL

SAFETY INSTRUCTIONS



DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.










CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates a hazardous situation which can cause damage to machine, personal property, and/or the environment, or cause the equipment to operate improperly.

	<div>DANGER</div> <p>Lock out equipment before beginning any maintenance procedure. Rotating equipment can cause entanglement, injury and/or death.</p> <p>Allow all system components to cool below 100 °F before beginning any maintenance procedure. Severe burns are possible.</p> <p>Safely remove all pressure/vacuum from the system before beginning any maintenance procedure. Injury/death can occur.</p>
	<div>WARNING</div> <p>Ensure system is free of vacuum and pressure before beginning any maintenance.</p> <p>Allow blower and system components to cool below 100 °F before beginning any maintenance.</p>
	<div>WARNING</div> <p>Before performing inspection operators must wear PPE including, but not limited to, eye and hearing protection as noises levels can exceed 85 dB.</p>
	<div>NOTICE</div> <p>Only properly trained personnel should service systems containing NVE components.</p>

1. Make sure vacuum system is properly cleaned before starting inspection.
 2. Open drain and then unbolt lid and pull the filter out of the top of the oil catch muffler and clean with solvent and reinstall.
- Depending on model - some oil catch mufflers do not have a bolt on top.

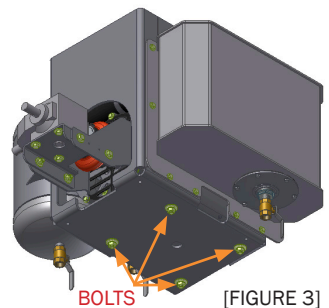
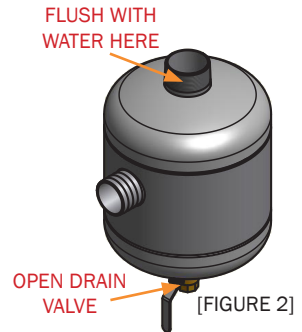
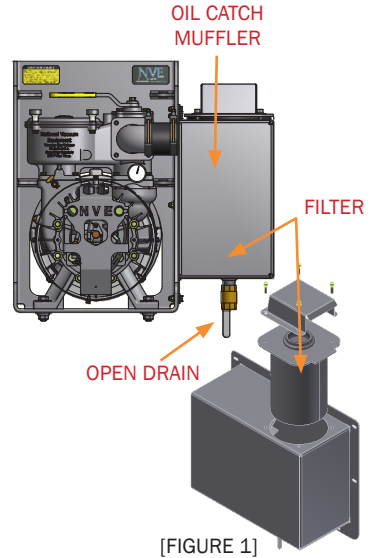
[SEE FIGURE 1]

- If muffler does not have a bolt on lid pressure wash the
- Inside of muffler if possible.
- Open the drain valve of muffler and drain.

[SEE FIGURE 2]


3. Inspect the mounting bolts on the vacuum pump for looseness and missing.

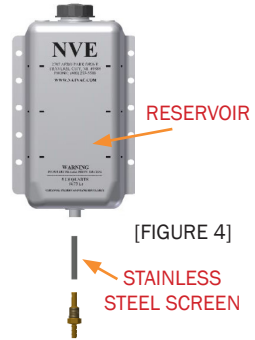
[SEE FIGURE 3]



4. Drain the vacuum pump oil reservoir and clean stainless steel screen filter at the bottom of the reservoir.

[SEE FIGURE 4]

	<p>NOTICE</p> <p>Dispose of used oil according to local and EPA regulations in an environmentally friendly manner.</p>
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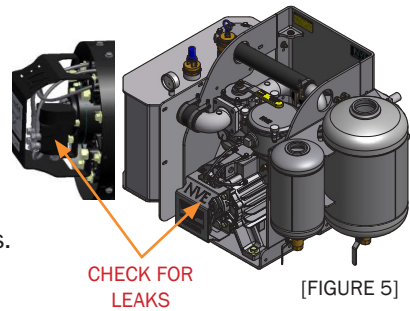


5. Fill the oil reservoir with maximum of 5 quarts of SAE 30W non-detergent oil.

[SEE FIGURE 4]

6. Inspect oil pump for leaks on the vacuum pump.
 - Connections and fittings of oil lines.

[SEE FIGURE 5]



7. Clean the vacuum pump air inlet filter.

[SEE FIGURE 6]

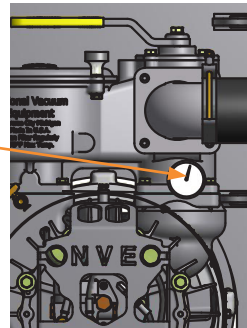


[FIGURE 6]

8. Check the temperature gauge for damage.
- Should be equal to ambient temperature.

[SEE FIGURE 7]

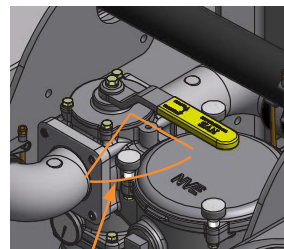
TEMPERATURE
GAUGE



[FIGURE 7]

9. Check pump handle to ensure it goes from vacuum to pressure.
- Pump handle should move a full 90 degrees.

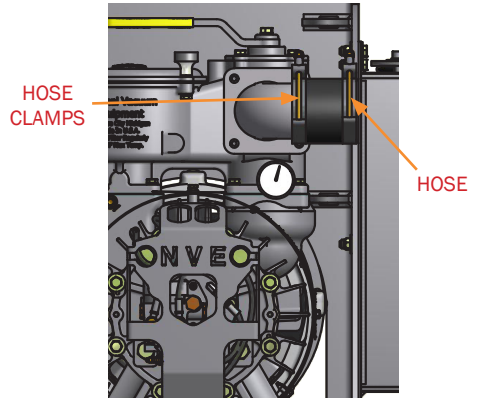
[SEE FIGURE 8]



PUMP HANDLE [FIGURE 8]

10. Inspect the hose and clamps going to the oil catch muffler.
 - Inspect for loose clamps.
 - Inspect for damaged hose.

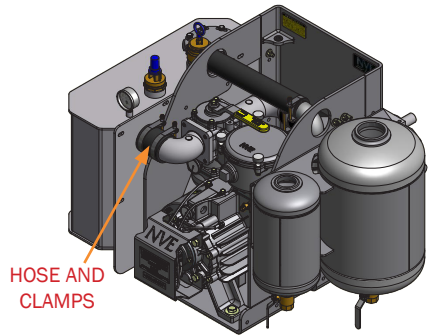
[SEE FIGURE 9]



[FIGURE 9]

11. Inspect the inlet hose and clamps going into the secondary shut off canister.
 - Inspect for loose clamps.
 - Inspect for damaged hose.

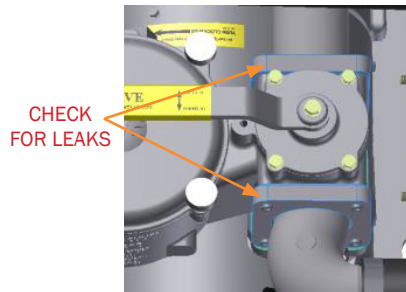
[SEE FIGURE 10]



[FIGURE 10]

12. Inspect 2/4 bolt flange for leaks at vacuum pump valve.
 - Check for tightness or missing bolts.

[SEE FIGURE 11]

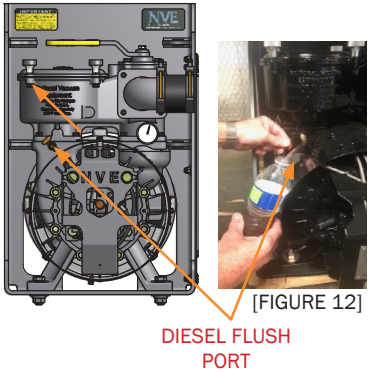



[FIGURE 11]

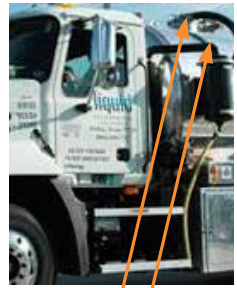
13. Start truck engine, engage the PTO and diesel flush the vacuum pump (not to exceed 6 oz. of diesel fuel)(Only pertains to the Challenger vacuum pump). Shutdown system when finished.

Procedure: Put 2-4 ounces of flushing fluid in a small container. Turn handle of vacuum pump to vacuum and insert the end of hose from the flush port valve into the container with flushing fluid. Open valve for 2-3 seconds and allow flushing fluid to enter pump. Turn pump handle to neutral position, let the pump run for a couple of minutes. Turn the pump handle to the vacuum position to expunge the diesel into the muffler. Repeat as necessary. Turn off truck engine after performing fluid flush.

[SEE FIGURE 12]



	<p>! WARNING</p> <p>Remove vacuum and/or pressure from the pump system before disengaging.</p> <p>Do NOT keep vacuum and/or pressure on the blower system while disengaged.</p>
	<p>! WARNING</p> <p>Lock-out / tag-out unit so it cannot be started/engaged during the maintenance procedure.</p>



INSPECT HOSE



[FIGURE 13]

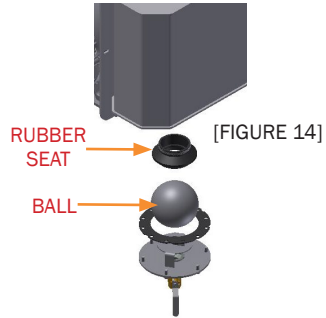
14. Inspect hose and connection from secondary shut off canister to the primary shut off on the tank.
- Inspect for kinks.
 - Defective hose.

[SEE FIGURE 13]

15. Drain secondary shutoff and then remove inspection plate on the bottom or side of the aluminum secondary shut off canister. Inspect overflow protection ball, for cracks or holes and inspect and clean rubber seat.

- Use 5 gallon bucket or drain pan to catch used oil.

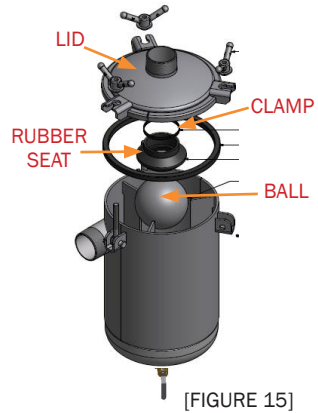
[SEE FIGURE 14]



	<p>NOTICE</p> <p>Dispose of used oil according to local and EPA regulations in an environmentally friendly manner.</p>
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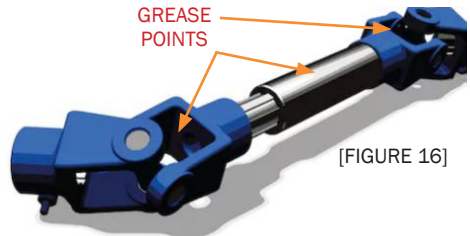
- If the unit has a secondary mounted on the vacuum tank remove the lid and inspect the protection ball, rubber seat and clamp.

[SEE FIGURE 15]



16. Inspect PTO shaft for the vacuum pump.
- Inspect u-joints and slip yoke for play.
- Grease u-joint and slip yoke.

[SEE FIGURE 16]

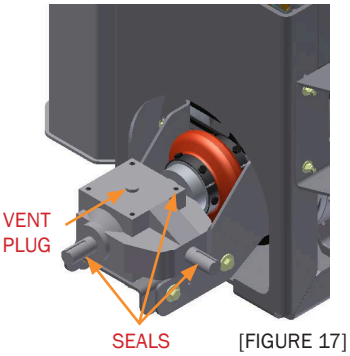


17. Inspect gear box seals for leaks and inspect vent plug in the top of the gearbox.


[SEE FIGURE 17]

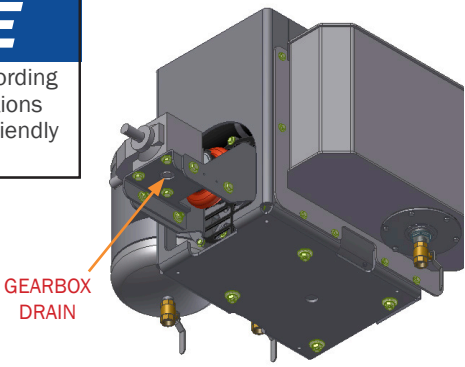
18. Drain and refill gear box (75W90 gear oil).
- Gearbox should be filled to the center of the shafts.

[SEE FIGURE 18]

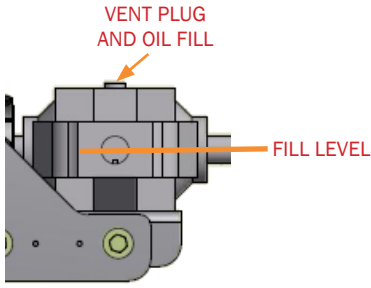


[FIGURE 17]

	<p>NOTICE</p> <p>Dispose of used oil according to local and EPA regulations in an environmentally friendly manner.</p>
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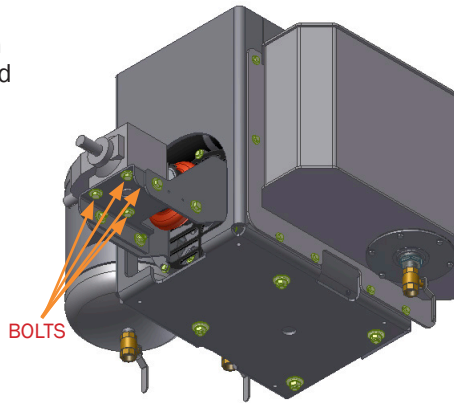


[FIGURE 18]



19. Inspect the mounting bolts on the gear box for looseness and missing.

[SEE FIGURE 19]



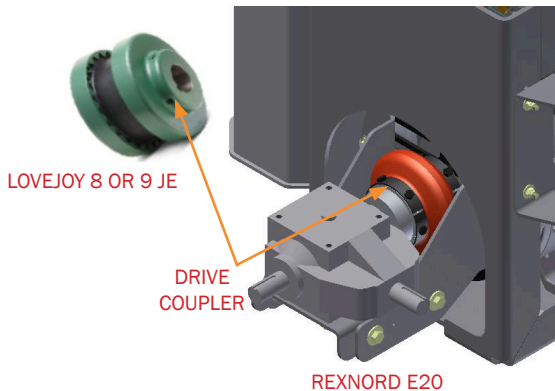
[FIGURE 19]

20. Inspect the drive coupler for wear or play.

2 different styles:

- Rexnord E20 orange coupling
- Lovejoy 8JE or 9JE black EPDM couplers

21. Install PM sticker.



[FIGURE 20]



National Vacuum Equipment

P.O. Box 685
Traverse City, MI 49685 USA

231.941.0215 Phone
231.941.2354 Fax

sales@natvac.com | www.natvac.com | 800.253.5500