

NVE



Challenger Series

VACUUM PUMPS



FLEET MANAGER PREVENTATIVE MAINTENANCE CHECKLIST

Weekly:

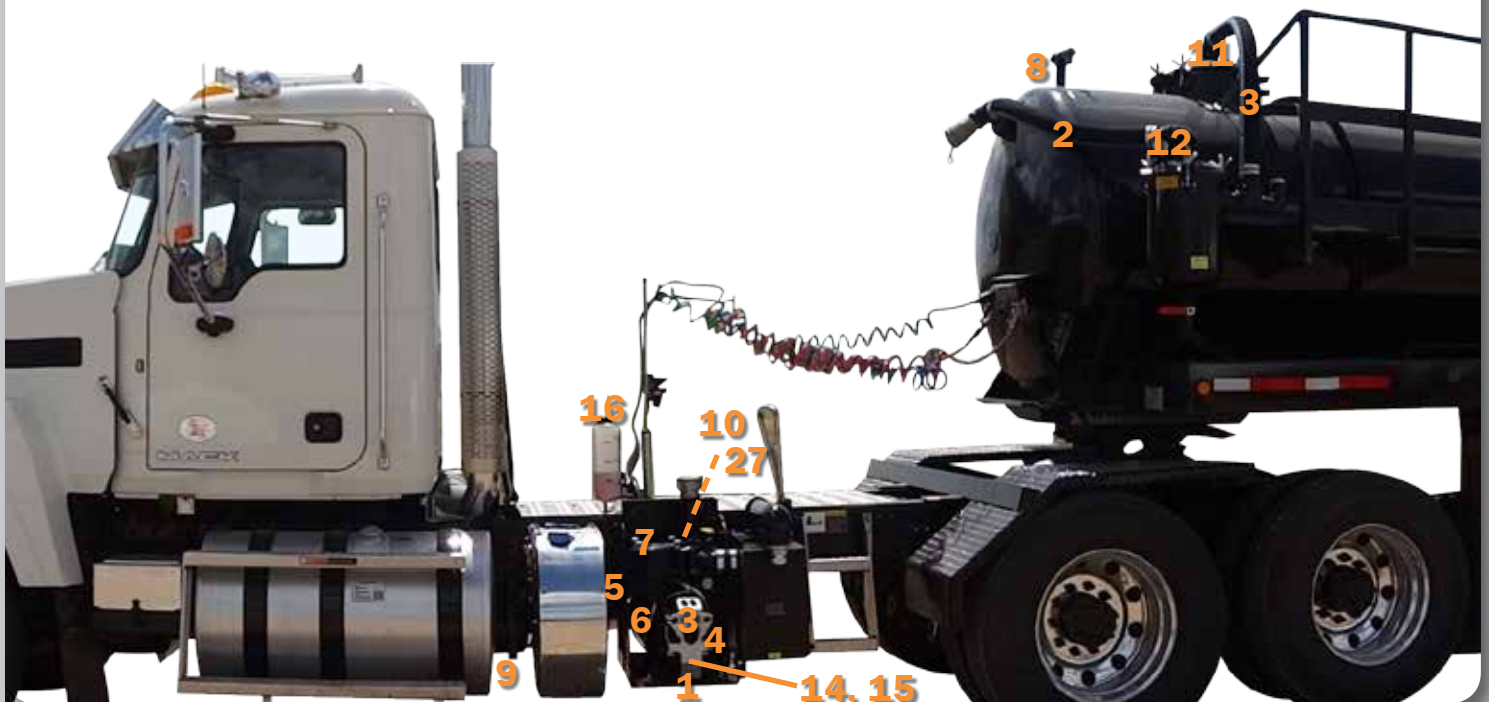
1. Ensure vacuum pump is clean - wash mud and dirt off
2. Ensure vacuum hoses are not leaking, kinked or collapsed
3. Make sure the oil lines on the vacuum pump are not leaking
4. Make sure the oil pump is working on the vacuum pump
Always mark the level of oil in reservoir. Run the pump and ensure level decreases
5. Inspect the condition of the drive coupler
6. Diesel flush the vacuum pump
7. Inspect and clean the inlet filter on the vacuum pump
8. Make sure the vacuum and pressure reliefs are set not to exceed manufacturers specifications
9. Inspect the drive line and grease if necessary

Monthly:

10. Oil level in the 3-shaft gearbox is correct - oil level should be to center of the shaft
11. Inspect and clean the primary and secondary shut-offs
12. Inspect the condition of the rubber seat, SS ball, ball cage, and gasket in the primary and secondary shut-offs

Yearly:

13. Repeat monthly checklist
14. Inspect vacuum pump for vane wear
15. Remove the pump end-plate and inspect vane and cylinder wear
16. Drain oil reservoir and clean
17. Drain and refill the 3-shaft gearbox with 90 weight gear oil
18. Notify maintenance or refer to maintenance guides(s) for any operation changes in your vacuum pump or system performance



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Three Major Causes of Pump Failure

- 1. Overheating**
 - a. Excessive R.P.M.
 - b. Operating beyond manufacturer's design criteria while in vacuum or pressure mode
 - c. Operating vacuum pump with the exhaust temperature exceeding 375° F
 - d. Oil related (lack of oil or wrong type of oil)
 - e. Secondary shutoff prematurely shutting off
 - f. Inlet filter is clogged
- 2. Contaminates Entering the Vacuum Pump**
 - a. Inlet filter is clogged or missing
 - b. Lack of proper primary and secondary shut offs, or oil catch mufflers
 - c. Improperly designed primary and secondary shutoffs or oil catch mufflers
 - d. Improperly maintained primary and secondary shutoffs or oil catch mufflers
- 3. Lack of, or Improper Lubrication**
 - a. Insufficient oil flow
 - i. Ran out of oil
 - ii. Failed oil pump
 - iii. Oil line is kinked or broken
 - b. Wrong types of lubricants
 - i. Use only manufactures recommended lubricants
 - ii. We recommend a turbine oil, ISO 68 or ISO 150 for optimum pump performance.

Troubleshooting

Problems do occur from time to time in vacuum systems. Below is a general guide that will help you locate the problem.

Pump overheats

- Prolonged operation at high vacuum or pressure
- RPM of the vacuum pump is too fast
- Pump exhaust temperature exceeding 375 F
- Inlet filter is clogged
- No oil in the oil reservoir
- Oil adjustment on the oil pump is set too lean
- Defective components
- Leaks in tank or fittings
- Check valve clogged
- Pump not turning fast enough
- Vacuum pump is turning the wrong direction

Too much oil use

- Vacuum remaining in the vacuum tank while transporting
- Oil pump adjustment is set too rich

Pump doesn't turn

- Broken vane
- Rotor has grown into the end plate
- Faulty PTO or drive setup
- Bent rotor
- Broken drive coupler
- Inside of pump is frozen

No vacuum or pressure in tank

- Suction valve in neutral
- Suction hose collapsed
- Defective seals or vanes
- Defective components
- Leaks in tank or fittings
- Check valve clogged
- Pump not turning fast enough
- Vacuum pump is turning the wrong direction



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