

Parker HTG Transmission- Potential Failure Modes/ Analysis

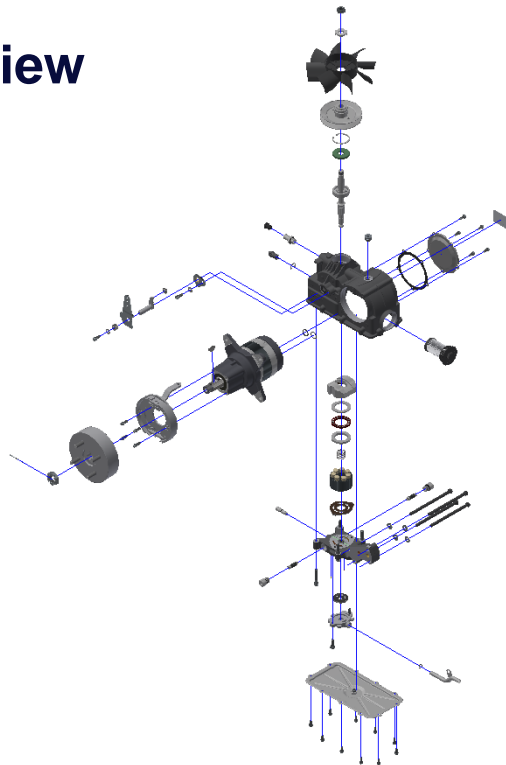


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HTG Transmission Overview



HTG Exploded View



HTG Oil Related Failures

Failure- Transmission Oil Overfilled

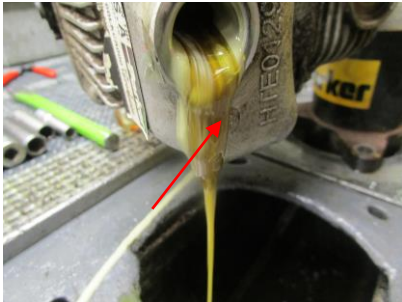
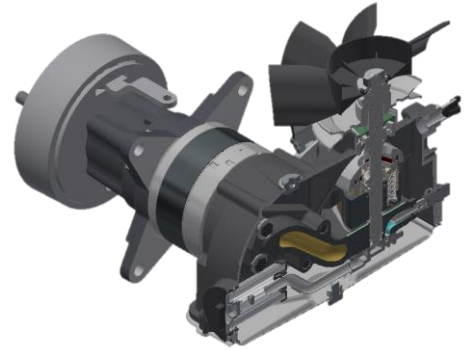
- **Cause-** During transmission service oil is overfilled
- **Result-** Oil leaks out of the expansion tank

Failure- Contaminated oil

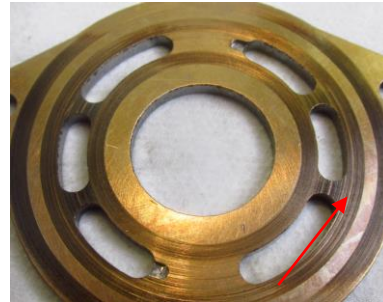
- **Cause-** Water in the oil
- **Result-** Milky colored oil, slow controls reaction (spongy feel), internal components can rust

Failure- Unapproved type of transmission oil

- **Cause-** Incorrect oil used during transmission service
- **Result-** Premature wear of transmission components significantly reducing the transmission life expectancy



Contaminated Oil



Component Wear

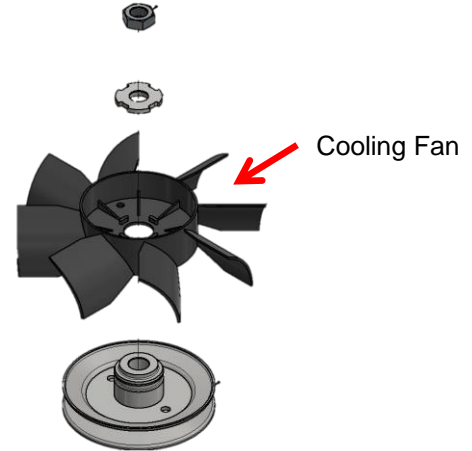
1. Pulley and Fan Failures

Failure- Cracked fan/ fan blades

- **Cause-** Sticks/ debris contacts and damages fan
- **Result-** Decreased cooling ability and increased transmission temperature

Failure- Top seal damage

- **Cause-** Debris (string/ wire) wraps around the shaft under the pulley
- **Result-** Compromised shaft seal resulting in a leak



Broken Fan Blades



Debris wrapped on shaft

2. Pump Section Failures

- **Failure-** Transmission Oil Leaks
 - **Cause-** Side cover gasket, bottom cover gasket, bypass valve gasket, top seal could fail
 - **Result-** Oil leaking from gaskets
- **Failure-** Cracked Transmission Filter Cap
 - **Cause-** Over tightening during service or blunt contact with sticks or debris
 - **Result-** Oil leaking from filter cap
- **Failure-** Port Plate Scoring
 - **Cause-** Internal contamination
 - **Result-** Scoring of the port plate- loss of performance, heat increases



Leaking Gasket



Cracked Filter Cap



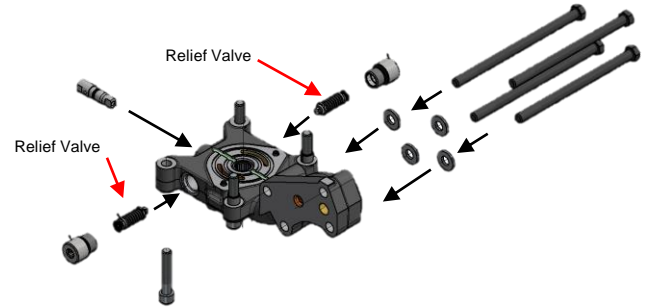
Port Plate Scoring



3. Endblock Failures

Failure- Relief Valve Fails (Not Very Common)

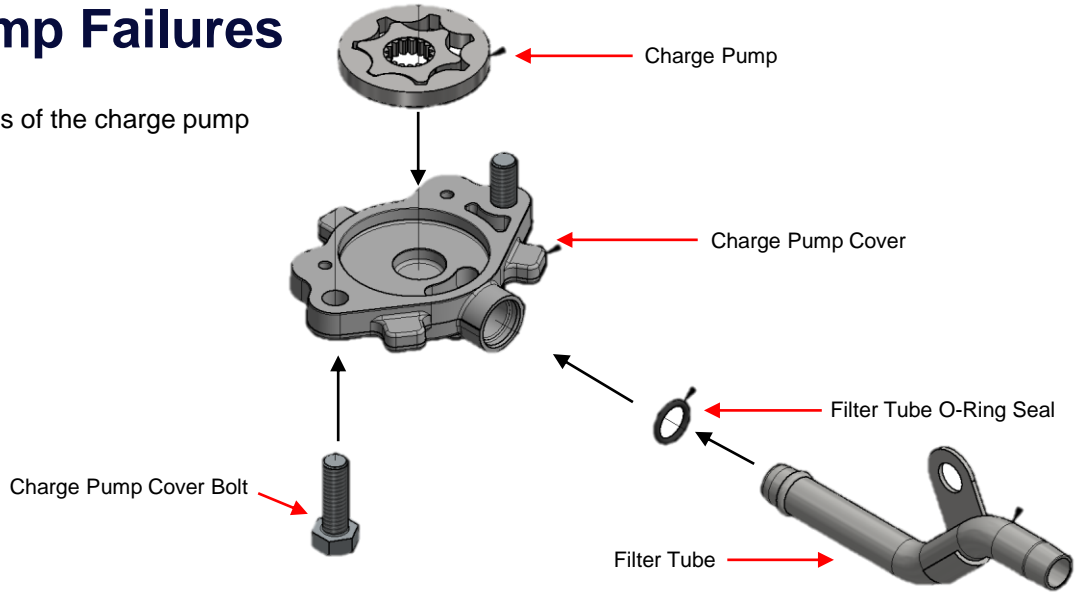
- **Cause-** Constant forward/reverse of valve can wear and the tip can break off
- **Result-** Erratic/ jerky movement of the machine, poor drivability



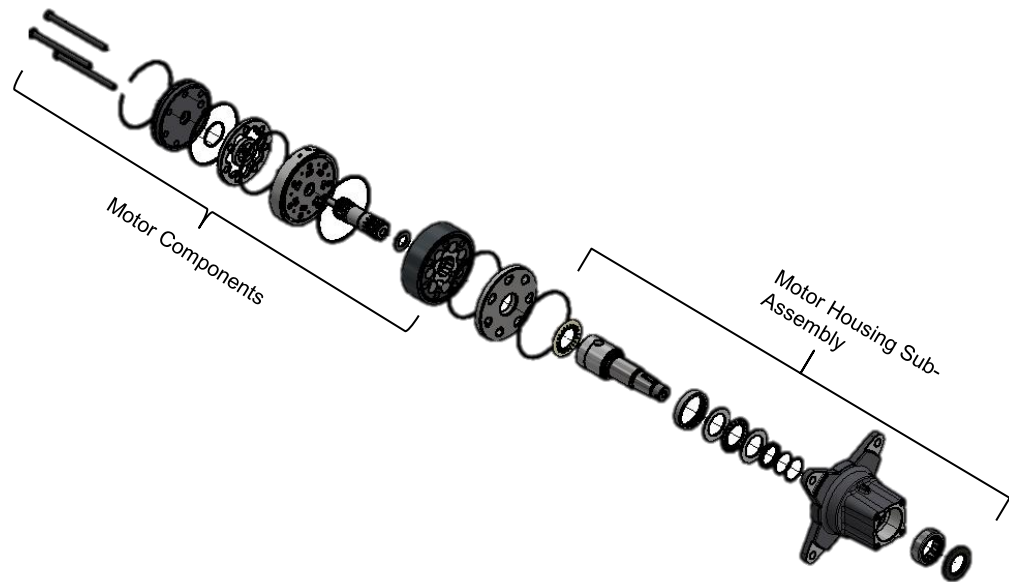
Broken Relief Valves

4. Charge Pump Failures

Failure- No common failures of the charge pump



5. Motor Failures



5. Motor Component Failures

Failure- Leaks

- **Cause-** Section seal failure
- **Result-** Wetting around damaged seal

Failure- Drive Link/ Rotor Set Damage

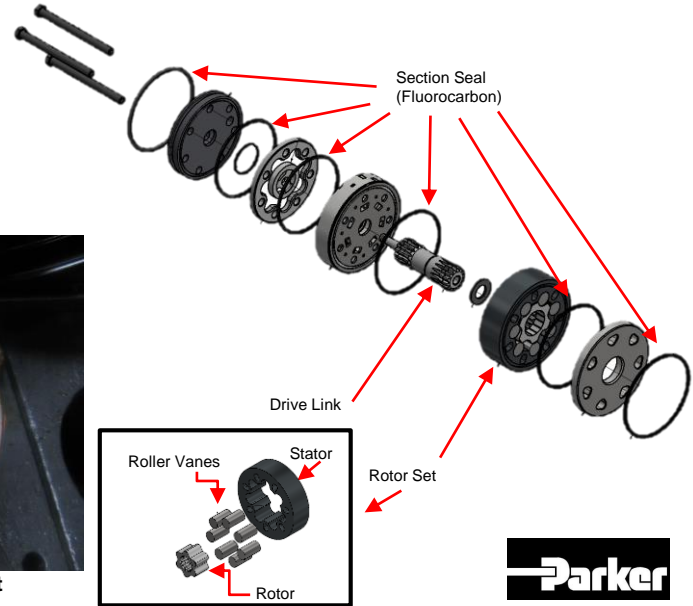
- **Cause-** Fan damage, oil breakdown causing transmission overheating
- **Result-** Premature wear to drive link/ rotor set



Section Seal Leak



Thermal Failure to Rotor Set



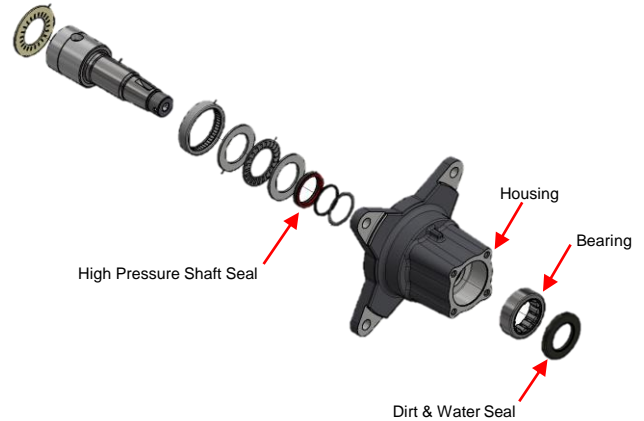
5. Motor Housing Failures

Failure- Leak

- **Cause-** High pressure shaft seal fails
- **Result-** Allows fluid to leak into the motor housing chamber (where bearing is located) causing leaking out of the dirt and water seal



Leaking Seal



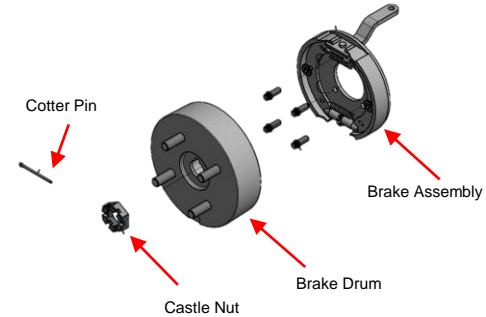
6. Brake Assembly

Failure- Loose Castle Nut

- **Cause-** Cotter pin removed during service/ Cotter pin broken or lost/ nut not re-torqued after service
- **Result-** Taper lock lost hub/ wheel comes loose/ Shaft damage/ Shaft breaks
- **Note:** In the event of hub removal, hub must be installed dry and torqued to proper torque using no lubricant

Failure- Improper Brake Adjustment

- **Cause-** End user/ technician adjustment or linkage damage
- **Result-** Brake drag, steering mis-match (pulling to one side)
- **Note:** Brakes are at proper adjustment when installed during transmission assembly. Rarely do they need further adjustment during the life of the transmission



Loose Castle Nut Damage



Pre- Mature Brake Wear

Questions?