Technical Service Information

TSI–05–12–31

Date: September, 2005

Subject File: ENGINE

Subject: Horton Fan Drive Diagnostics for All Truck Models Built Starting January, 1990 to Present

Vendor: Horton

DESCRIPTION

When diagnosing a Horton HTS or Horton DriveMaster fan drive it is important to use the following Troubleshooting Guides to properly diagnose the failure. It is important to understand the root cause of the failure to insure that the same failure does not reoccur on the replacement fan drive.

Notice

The information supplied herein has been furnished by the manufacturer and/or the supplier for use with its product. International Truck and Engine Corporation reprints this information based on representations made to the Company. While users are urged to carefully follow the instructions accompanying the product, International cannot accept any responsibility for user errors, or mishaps resulting from such errors, or from any misuse of the product.

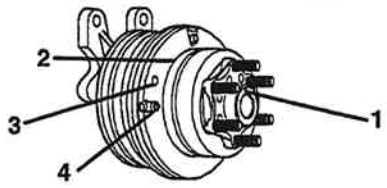
SERVICE PROCEDURE

WARNING – To avoid property damage, personal injury, or death, park the vehicle on a flat level surface, set the parking brake, turn the engine off, and chock the wheels.

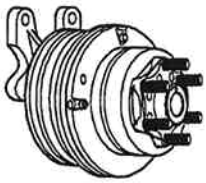
HORTON

HORTON FAN CLUTCH WITH SYSTEM SENTRY®
TROUBLESHOOTING GUIDE

FORM NO. L-22459-B-0597

PROBLEM	PROBABLE CAUSE	SOLUTION
I. Air leaking from fan clutch		
1. Bleed hole. 2. Air chamber. 3. Come home holes. 4. "System Sentry" (if equipped).	1. Bad face seal or air cartridge. 2. Bad O-ring seals. 3. Bad O-ring seals. 4. See Section II.	1. Install seal kit. 2. Install seal kit. 3. Install seal kit. 4. See Section II.
II. System Sentry® Release: System Sentry will release clutch when clutch slips excessively causing abnormal head build-up.		
1. Obstructed fan.	1. Loose shroud, bent fan, torn engine mounts, etc.	1. Find and remove obstruction, repair or replace damaged parts. Install seal kit.
2. Low air pressure to clutch.	2. A. Restricted air line. B. Restricted Solenoid. C. Low system air pressure.	2. A. Replace air line. B. Replace Solenoid. C. Determine cause and repair. Install seal kit.
3. Excessive cycling.	3. A. A/C freon overcharge. B. A/C pressure setting too low. C. Poor ground or wire connection. D. Improper temperature control setting. E. Faulty Thermal Switch. F. Restriction in front of radiator blocking air flow.	3. A. Check and adjust to specifications. B. Check A/C switch. C. Check electrical connection. D. Check temperature setting of all controls. Thermal Switch setting should engage the clutch 10 F higher than full open temperature of the thermostat. E. Replace Thermal Switch. F. Check for proper shutter operation, winter front or other restriction in or in front of radiator.
III. Fan clutch fails to engage.	**Electrical Problem**	
	1. Broken circuit (Normally Open System) 2. Improperly wired. 3. Thermal Switch incorrect for application or defective. 4. Bad Solenoid Valve.	1. Check electrical connections. 2. Check wiring according to diagram. 3. Check Thermal Switch (N.O. or N.C.) application. Replace if wrong or defective. 4. Replace Solenoid Valve.
	Air Problem	
	1. Clutch leaking. See Section I. 2. Air supply to clutch restricted. 3. Solenoid Valve defective.	1. See Section 1. 2. Check fittings and air lines for leaks or pinching. 3. Replace Solenoid Valve.

CONTINUED ON OTHER SIDE

PROBLEM	PROBABLE CAUSE	SOLUTION
IV. Fan clutch fails to disengage.		
	Electrical Problem	
	1. Broken current (Normally Closed System). 2. Improperly wired. 3. Thermal Switch incorrect (for application) or defective.	1. Check electrical connections. 2. Check wiring according to diagram. 3. Check Thermal Switch (N.O. or N.C. application. Replace if wrong or defective.
	Air Problem	
	1. Air line restricted, not allowing air to be released from Fan Clutch. 2. Solenoid Valve not exhausting.	1. check for pinching or plugging of air line between clutch and valve. 2. Check for plugged exhaust port. Clean port or replace valve.
	Piston Friction Disc will not turn	
	1. Possibly seized due to contamination or dry O-rings.	1. Clean air supply and install Super Kit.
V. Fan clutch cycles frequently	**Electrical Problem**	
	1. Poor ground or wire connection. 2. Improper temperature control settings. 3. A/C Pressure Switch. 4. Restriction in front of radiator, blocking air flow. 5. Faulty Thermal Switch.	1. Check electrical connections. 2. Check temperature settings of all controls. Thermal Switch setting should engage Fan Clutch 10 F higher than the shutter sensor. 3. Check A/C Pressure Switch. Use higher switch. 4. Check shutter operation, winter fronts, or obstructions in front of radiator. 5. Replace Thermal Switch.
VI. Fan clutch engaged, engine running hot.	1. Restriction in front of radiator. 2. Fan capacity not large enough. 3. Problem in cooling system.	1. Make sure nothing is obstructing the air flow through radiator. 2. Refer to manufacturer's specs. 3. Refer to engine manual.

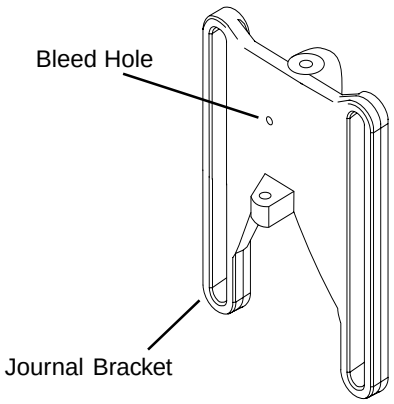
DriveMaster®

Troubleshooting Guide

Engine **Cooling Solutions** Worldwide™

HORTON®

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
I. Air leaking from Fan Drive bleed hole	1. Bad seals or air cartridge.  	1. Install Repair Kit.
II. Premature Friction Lining failure		
1. Obstructed fan.	1. Loose shroud, bent fan, torn engine mounts, etc.	1. Find and remove obstruction, repair or replace damaged parts. Install Repair Kit.
2. Low air pressure to Fan Drive.	2 a. Restricted air line. b. Restricted Solenoid Valve. c. Low system air pressure. d. System air leak.	2. a. Replace air line. Install Repair Kit. b. Replace Solenoid Valve. Install Repair Kit. c. Repair system. Install Repair Kit. d. Repair leak. Install Repair Kit.
3. Excessive cycling.	3. a. A/C freon overcharge. b. A/C pressure switch setting too low. c. Poor ground or wire connection. d. Improper temperature control setting. e. Faulty ECM.	3. a. Check and adjust to specifications. b. Check A/C pressure switch. c. Check electrical connections. d. Check temperature setting of all controls. Thermal Switch setting should engage the Fan Drive 10°F higher than the full open temperature of the thermostat. e. Check ECM.

PROBLEM	PROBABLE CAUSE	SOLUTION
II. Premature Friction Lining failure Excessive cycling (continued)	f. Faulty Thermal Switch. g. Restriction in front of radiator blocking air flow. h. Faulty Air-Temp Switch. **Air Problem** 1. Solenoid Valve not exhausting or engaging properly.	f. Replace the Thermal Switch. g. Check for proper shutter operation, winter front or other restriction in or in front of the radiator. h. Replace the Air-Temp Switch. 1. Check for plugged exhaust/ intake port on the Solenoid Valve. Clean or replace the Solenoid Valve.
III. Fan Drive fails to engage/disengage	**Electrical Problem** 1. Open/shorted circuit. 2. Improperly wired. 3. Thermal Switch incorrect for application. 4. Failed Solenoid Valve. **Air Problem** 1. Air line restricted. 2. Solenoid Valve defective. **Piston will not actuate** 1. Piston seized due to contamination or dry seals.	1. Check electrical connections. 2. Check wiring according to diagram. 3. Check Thermal Switch application. Replace if wrong or defective. 4. Replace the Solenoid Valve. 1. Check air line from solenoid to Fan Drive for kinks or obstructions. 2. Replace the Solenoid Valve. Check to see if air exhaust is restricted. 1. Clean the air supply and install a repair kit.

PROBLEM	PROBABLE CAUSE	SOLUTION
IV. Fan Drive cycles frequently	**Electrical Problem** 1. Poor ground wire connection. 2. Improper temperature control settings.	1. Check electrical connections. 2. Check temperature setting of all controls. Thermal Switch should engage the Fan Drive 10° F higher than the full open temperature of the thermostat. 3. Check A/C Pressure Switch. Use higher switch. 4. Check shutter operation, winter fronts, or obstruction in front of radiator. 5. Replace the Thermal Switch. 6. Replace the Air-Temp Switch. 7. Fill to manufacturer's recommended level.
V. Fan Drive engaged, engine running hot.	1. Restriction in front of radiator. 2. Fan capacity not large enough. 3. Problem in cooling system.	1. Make sure nothing is obstructing the air flow through the radiator. 2. Refer to specifications. 3. Refer to engine manual.

Horton, Inc.
2565 Walnut St.
Roseville, MN 55113
1-800-621-1320
www.hortoninc.com

22797-A-0502

Engine Cooling Solutions Worldwide™

HORTON