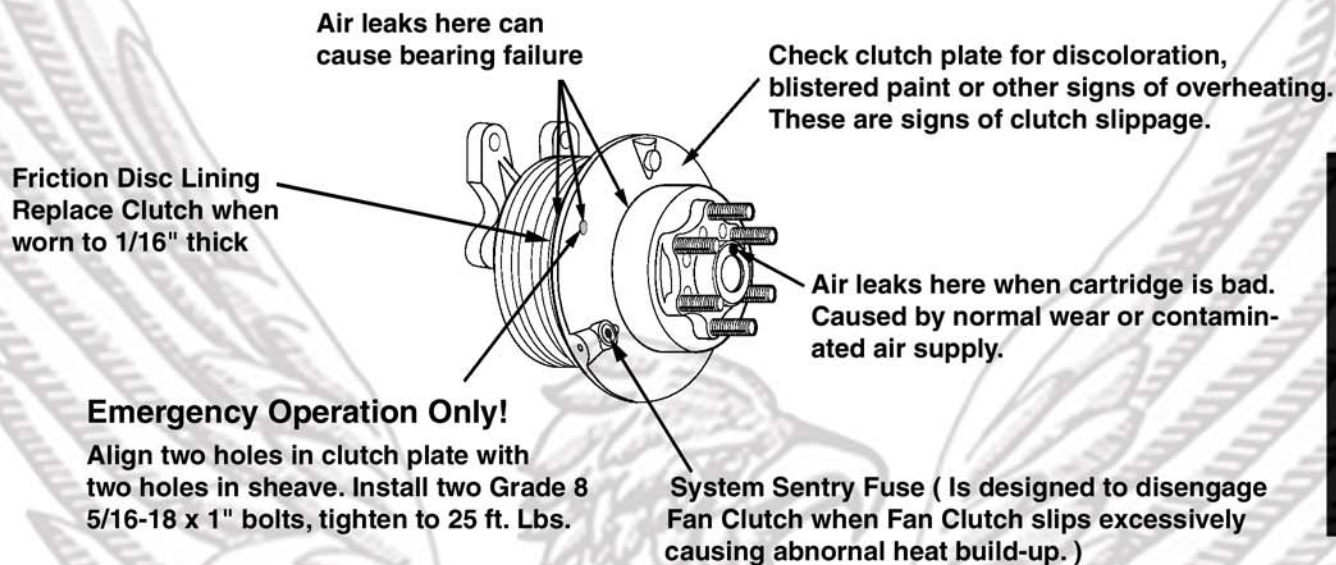


! WARNING

Before Replacing a Horton Fan Clutch **Determine The Cause Of Previous Fan Clutch Failure**



English

| Problem | Result | Check and Correct |
|------------------------------------|---|--|
| System Sentry® fuse open | Air leaks out Sentry fuse. | See: Step 1 A ; Step 2 A-D ; Step 3 A-G |
| 1. Obstructed fan, | Noise under hood, engine over heats. | A. Loose shroud, bent fan, torn engine mounts. |
| 2. Low air pressure to fan clutch. | Cause fan clutch to slip excessively resulting in abnormal heat, causing seals, bearings and clutch friction disc to glaze over and / or deteriorate, and abnormal clutch plate wear. Under these circumstances could cause Sentry fuse to open. | Note: 90 PSI of constant air pressure minimum at fan clutch is required. If air pressure is lower at fan clutch, than indicated on dash gauge, Check for; B. Restricted air line. C. Restricted air valve. Supply and Exhaust . D. Low system air pressure, check for leaks. |
| 3. Excessive fan clutch cycling. | Causes fan clutch to create excessive heat to clutch plate and friction disc. This heat is transferred to the seals making them hard, brittle and lose their sealing capacity. This heat is also transferred to the bearing causing the grease to turn into a liquid and evacuates all lubrication from the bearing. Both cause premature fan clutch failure and / or Sentry fuse to open. | Note: Thermal switch setting should engage the fan clutch 10 degrees higher than the full open temperature of the thermostat. A. Check A/C freon for overcharge. B. Check A/C pressure switch setting to low. C. Check switches for proper ground and other electrical connections for current. D. Replace faulty or incorrect thermal switch. E. Check for proper shutter operation if equipped or other restrictions in front of radiator. F. Replace the air temperature switch. G. Repalce faulty air soleniod valve. |
| 4. Fan clutch fails to engage | Engine over heats. | Note: Check thermal switch *N/O or *N/C application, should be opposite of solenoid valve. A. Check fitting and air lines for breaks, leaks, pinching, or restrictions. Check fan clutch for air leaks at Sentry fuse . B. Check electrical connections, and wiring according to diagram. C. Test or replace air solenoid and thermal valve. E. If parts are not available you can lock the fan clutch into its engaged position temporarily by following the emergency operation only procedure. Plug air line going to clutch and check for air leaks. Repair As Soon As Possible. |

| Problem | Result | Check and Correct |
|----------------------------------|---|--|
| 5. Fan clutch fails to disengage | Fan clutch engaged continuously causes more fuel consumption, engine temperature below OEM specifications resulting in loss of power. Can cause fan clutch failure if solenoid valve is not exhausting. | <p>A. Check for pinched or plugged air line between fan clutch and air solenoid.</p> <p>B. Check for plugged exhaust port on air solenoid valve. No air pressure should be present at fan clutch in the disengaged mode.</p> <p>C. Check electrical connections.</p> <p>D. Check wiring according to diagram.</p> <p>E. Clutch plate will not retract from friction disc due to air contamination or dry o-rings. Clean air supply and replace fan clutch.</p> |

With engine temperature below the thermal switch setting, start engine and build up air pressure

Remove either wire from the thermal switch to engage the fan drive, **OR**

Flip the Manual override switch to engage drive.

Reconnect the wire to terminal of thermal switch to exhaust air and disengage the fan drive.

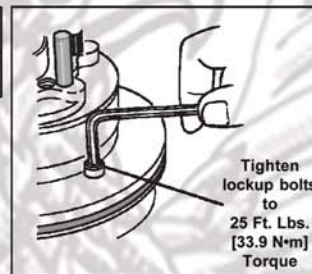
In the event of a malfunction, turn engine off. Align two holes in clutch plate with two holes in sheave. Install Grade 8 lockup bolts and tighten to 25 Ft. Lbs. [33.9 N m] (See diagram)

Cap Screw Specifications

| Size | Qty |
|---------------------------|-----|
| Grade 8, 5/16 - 18NC x 1" | 2 |

CAUTION

The lock-up bolt installation procedure is only a temporary solution. The air source or electrical malfunction must be corrected as soon as possible.

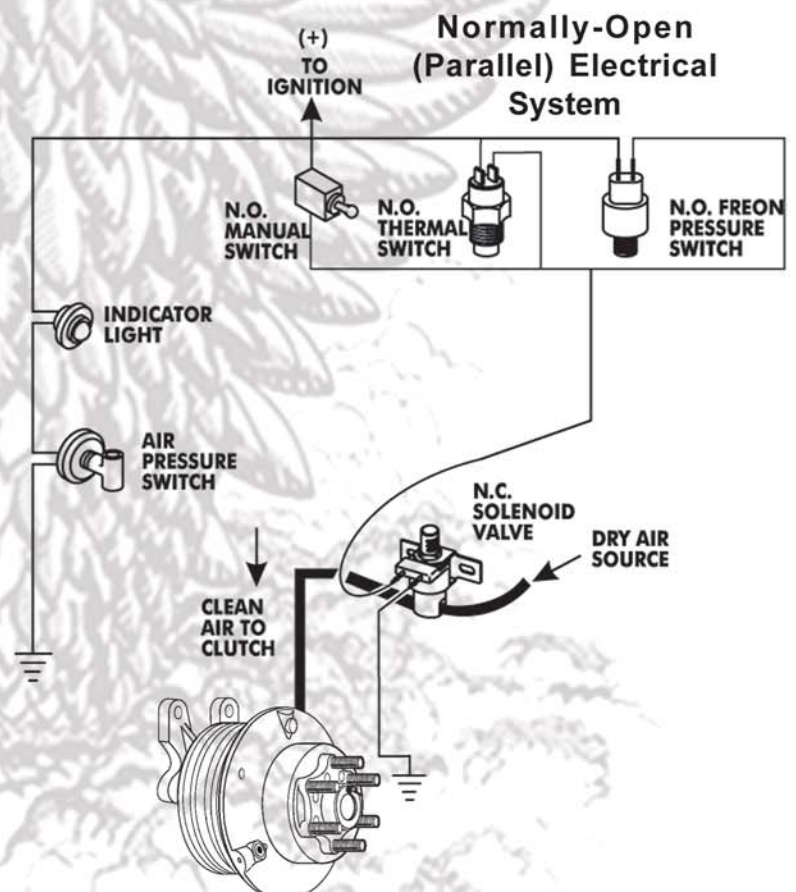
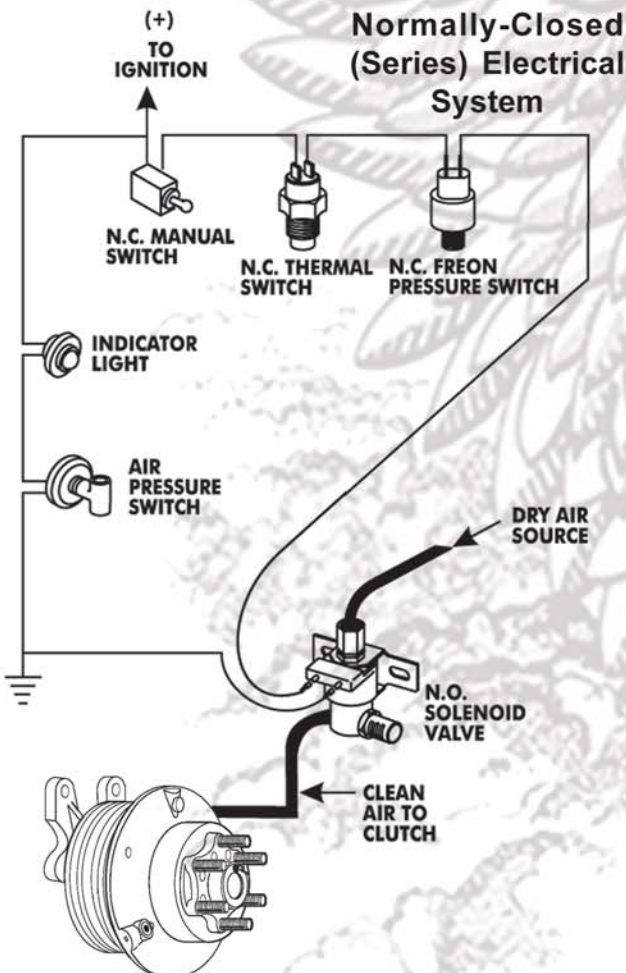


With engine temperature below the thermal switch setting, start engine and build up air pressure.

Install jumper wire between terminals of thermal switch to engage fan drive, **OR**

Flip the Manual override switch to engage drive.

Remove jumper wire to exhaust air and disengage fan drive.



PHOENIX FAN DRIVE CORE EXCHANGE PROGRAM

The following guidelines are designed to help customers accurately identify and inspect all models of the Horton fan drives offered for acceptance in the Phoenix Core Exchange Program.

Horton fan drive cores are divided into (3) three categories for exchange credit.

- | | |
|-----------------------|---|
| Full Credit | • Fan Drive is identified in the Phoenix Reman Program and meets all the guidelines. |
| Partial Credit | • Fan Drive is identified in the Phoenix Reman Program, but has one damaged main casting or cannot turn. |
| Zero Credit | • Fan Drive is not in the Phoenix Reman Program or • Fan drive is identified in the Phoenix Reman Program, but has more than one damaged main casting or • Fan drive is identified in the Phoenix Reman Program, has one damaged main casting and doesn't turn. |

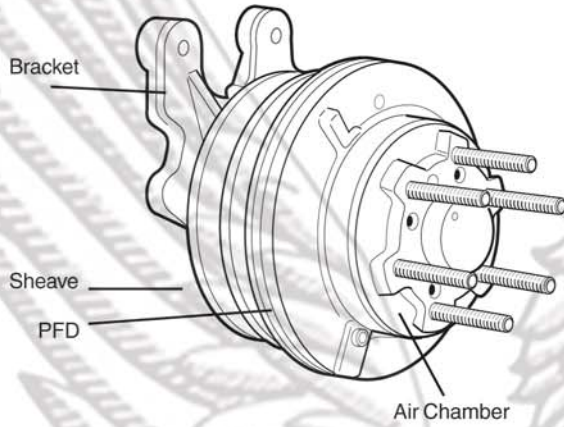
PHOENIX FAN DRIVE CORE EXCHANGE GUIDELINES

1. The core must match one of the fan drives offered in the reman program.
2. The core must be complete. DriveMaster cores must contain a bracket, clutch pack, and a sheave. All other cores must include a bracket, a sheave, a piston friction disc (PFD) and an air chamber. Parts descriptions are shown in the exchange core identification section below. The core is acceptable with or without fan mounting studs of any length and if the studs are bent or broken.
3. Main castings such as mounting brackets, sheaves, friction discs, and air chambers must not be visibly cracked, broken, galled, or welded.
4. For DriveMaster, Advantage; "S" / "HTS" cores: The sheave must turn, and must not be frozen to the mounting bracket shaft. To check to see if it will turn, hold the mounting bracket with one hand and turn the sheave with the other hand. You must be able to turn sheave independently of the mounting bracket. No mechanical device can be used. The rotation of the sheave must occur with the core at room temperature.
5. For all other cores: the sheave and PFD/air chamber must turn; they must not be frozen to the mounting bracket shaft. To check to see if they will turn, hold the mounting bracket with one hand and turn the sheave and PFD/air chamber with the other hand. You must be able to turn the sheave and PFD/air chamber independently of the mounting bracket. No mechanical devices can be used. The rotation of these parts must occur with the core at room temperature. The sheave and PFD/air chamber can be turned independently of one another or together at the same time.
6. The core must not be damaged by non-operational causes such as rust or rough handling. **If a core is damaged during shipment, the core will be considered for partial or zero credit as defined above.** For this reason, the return packaging must protect the core from damage while shipping.

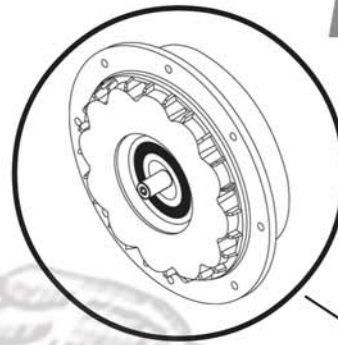


Component Parts

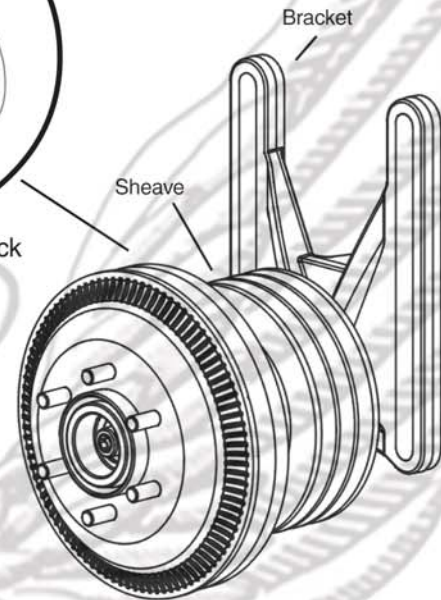
S & HT/S Fan Drive



DriveMaster®



Internal Clutch Pack



CREDIT CODES

- 1 Full Credit (meets all standards)
- 2 Partial Credit (any one of G,H,I, J, or K)
- 3 Zero Credit (A, B,C,D,E, F or M) or (any two of G, H, I, J, K or L)

DEFECT CODES

- A A Competitors Drive (Not in Reman Program)
- B Core not in Horton Reman Program
- C Core Missing Air Chamber
- D Core Missing PFD
- E Core Missing Sheave
- F Core Missing Bracket
- G Sheave Damaged
- H Bracket Damaged
- I PFD Damaged
- J Air Chamber Damaged
- K Core will not turn by hand
- L Clutch Pack Damaged
- M Core Missing Clutch Pack



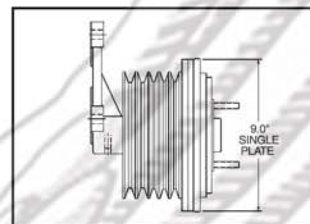
Heavy-Duty Fan Drives

With more than 50 years of industry experience, Horton is a premier world-wide provider of the highest quality truck components. Horton supplies several different models of heavy-duty fan drives.

9 " [22.86 cm] single plate fan drives are painted gray.

9 " Single Plate

The 9" [22.86 cm] single plate is an older style fan drive (rarely supplied on new trucks) with a larger air chamber than other Horton fan drives.



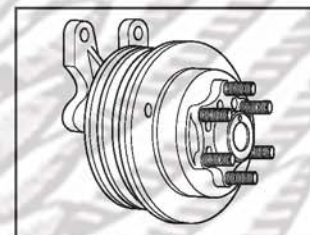
S and HT/S fan Drives are painted blue and may be upgraded by installing an Advantage Super Kit.

S and HT/S Advantage fan drives are painted gun-metal blue.

Advantage Reman fan drives are painted maroon.

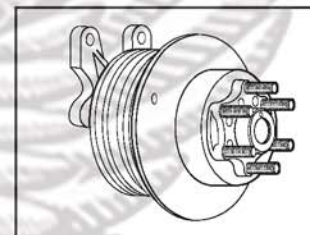
Original S

The S model fan drive has a drive plate that is 7.5 " [19.05 cm] in diameter. An original S model fan drive has a smooth Piston Friction Disc (PFD), whereas the newer model with System Sentry® has three large bosses on the PFD.



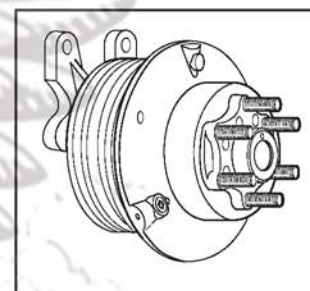
Original HT/S

The HT/S model fan drive has a drive plate that is 9.5" [24.13 cm] in diameter. The original HT/S model fan drive has a smooth PFD while an Advantage model with System Sentry has three large bosses on the PFD.



S and HT/S Advantage

The S and HT/S Advantage are heavy duty fan drives, equipped to handle the frequent on/off cycles common in severe-duty trucking applications. Both fan drives include the System Sentry feature along with a plastic air cartridge and improved hub assembly.



System Sentry® Feature

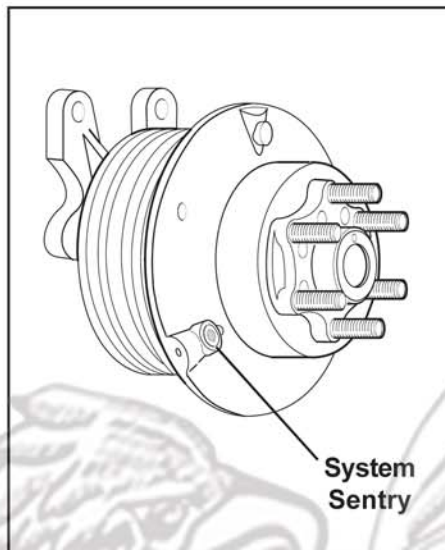
In 1994, Horton added the patented System Sentry® feature to the S and HT/S designs. System Sentry equipped fan drives have three large bosses on the PFD, one of which contains a System Sentry to protect the fan drive from overheating.

The material in the **left-hand threaded** System Sentry has a melting point of approximately 600° F [316° C]. If a fan drive should start to slip and overheat, the fuse material will melt and open a passage to release the air pressure, disengaging the fan drive.

Replacement Fuses are available in all of the Horton fan drive repair kits.

If a fuse has blown, carefully examine the entire cooling system to determine the cause. Replacing a fuse without examining the system may result in a repeated blown fuse and possible damage to the fan drive.

The S and HT/S Advantage fan drives also utilize a new air cartridge design, improving reliability and reducing the possibility of an air leak inside the air chamber.



The System Sentry feature disengages the fan drive when excessive temperatures occur.