

1982 Exhaust Emission Systems

FORD ALL-ELECTRIC & ELECTRIC ASSIST CHOKES

DESCRIPTION

NOTE: If the choke housing has no inlet air connection, either from the external heat stove or from the thermactor air system, the vehicle is equipped with an all-electric choke. However, if the housing has an air inlet connection, it can still include an all-electric or electric assist choke.

ALL-ELECTRIC CHOKE

12-Volt System

This 12-volt choke system is controlled by an engine "RUN" signal from a 3-terminal oil pressure switch. Vehicles without all-electric choke systems have a 1-terminal oil pressure switch or sender.

The 3-terminal switch has 2 sets of contacts. The 2 outside terminals are for the ungrounded, normally open contacts, which actuate the choke. These contacts complete the circuit to ground when they are closed. This permits the choke heater to operate, when the ignition switch is in the "RUN" position.

The center terminal is for the case-grounded, normally closed contacts, which actuate the oil pressure or engine light.

7.2-Volt System

This choke system operates in much the same manner, but receives its power from the stator terminal (center tap) of the alternator.

ELECTRIC ASSIST CHOKE

Many Light Duty emission models use a hot air choke with electric assist. An electrically-heated choke

thermostat spring housing acts as an aid to fast choke release.

The heater receives its voltage either from the stator terminal on the alternator or from the battery through the oil sensor switch. The heater only operates when the engine is actually running.

The electric assist choke system consists of a choke cap, thermostatic spring, a bimetal temperature sensing disc and a positive temperature coefficient (PTC) ceramic heater. See Fig. 1.

OPERATION

ELECTRIC ASSIST CHOKE

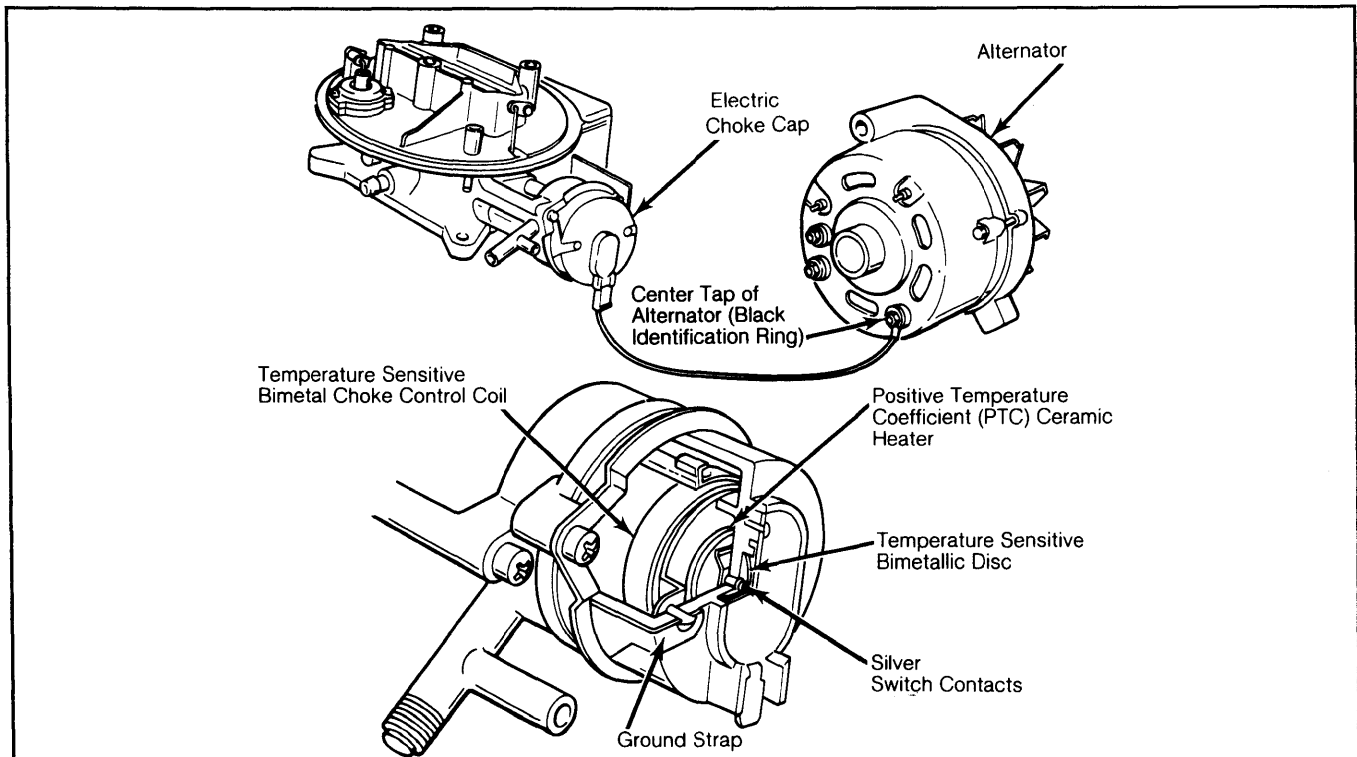
Current is constantly supplied to the temperature sensing switch. The system is grounded through a ground strap connected to the carburetor body. At temperatures below about 54°F (12°C), the switch is open. No current is supplied to the ceramic heater located within the thermostatic spring, allowing normal choking action to occur.

At temperatures from 54-74°F (12-24°C), depending on engine requirements, switch will remain open or will close to supply current to the ceramic heater. The switch will always be closed at temperatures above 74°F (24°C). As the heater warms, it causes the thermostatic spring to pull the choke plate open within 1 to 1.5 minutes.

ALL-ELECTRIC CHOKES

Although several different all-electric chokes are used on Ford Light Duty trucks, they operate similarly to the electric assist chokes. Temperature ranges may

Fig. 1: Hookup and Components of Ford Electric Assist Choke Assembly



All-electric chokes are similar to the Electric Assist Chokes illustrated here.

FORD ALL-ELECTRIC & ELECTRIC ASSIST CHOKES (Cont.)

vary, however, between models. A ceramic heater is used to act upon the bimetal thermostatic spring, which opens and closes the choke.

TESTING

Remove air cleaner, check choke plate and choke linkage for free operation. Remove hot air supply tube at choke housing, and install a suitable choke tester (LRE34618 or equivalent). Perform hot and cold choke function per instructions contained in tester kit.

CHOKE CAP CONTINUITY

Alternator-Powered Choke

1) Disconnect electrical lead from choke cap. Turn ignition switch "OFF". Connect one test lamp lead to positive battery terminal. Attach other lead to choke cap terminal. Using a jumper wire, connect one end to choke clamp shroud and other end to battery negative terminal.

2) Test lamp should glow. If not, connect jumper wire directly to choke cap ground pin; if lamp glows, correct poor connections between choke clamp shroud and choke cap ground pin. If lamp does not glow, replace choke cap.

3) Leave test lamp connected and remove jumper wire. Test lamp should glow. If not, locate and repair open in ground circuit. Reconnect electrical lead to choke cap.

4) Connect test lamp between choke cap shroud and battery negative terminal. Start engine. Test lamp should glow. If not, locate and repair open circuit between choke cap and alternator stator terminal. If no open circuit is found, check alternator output and service as required. Stop engine and remove test equipment.

Battery-Powered Choke

1) Turn ignition switch "OFF". Disconnect electrical connection from oil pressure switch and install jumper wire in electrical harness. Connect test lamp between battery negative terminal and choke cap terminal.

2) Turn ignition "ON" but do not start engine. Test lamp should glow. If not, locate and repair open circuit (fuse, fuse link, electrical connector, etc.). Turn ignition switch "OFF".

3) Remove jumper wire and reconnect electrical connector to oil pressure switch. Turn ignition "ON", but do not start engine. Test lamp should not glow. If lamp glows, replace oil pressure switch.

4) With test lamp still connected, start engine. Test lamp should glow. If not, replace oil pressure switch.

CHOKE CAP RESISTANCE

1) Disconnect electrical connector from choke cap terminal. Connect an ohmmeter between choke cap terminal and choke cap ground.

2) Ensure metal-to-metal contact, not metal oxide-to-metal contact. Ohmmeter reading should be under 30 ohms; but more than 0 ohms. If not to specifications, repeat test. If specifications are not met after second test, replace choke cap.

3) On 7200 VV carburetors, disconnect ohmmeter and reconnect choke cap terminal connector. Remove air cleaner and plug vacuum hoses. Start engine and run it for 3 minutes. If engine was warm prior to start, cold enrichment rod (CER) should remain seated. If engine was cold prior to start, CER should slowly lower to seat. Turn engine off.

4) If CER does not operate as described, make a note and continue test. Replace air cleaner and reconnect vacuum lines. Choke cap should be quite warm. Reconnect ohmmeter as described in step 1).

5) On all models, use a choke tester and cool the cap by directing cold air towards oval insulator (not case) around cap terminal. Ohmmeter reading should gradually vary and then register a sudden increase. Stop cooling.

6) The sudden increase should occur within 10 minutes after cooling began (choke tester used at maximum capacity and held close to cap). If sudden increase does not occur within 10 minutes, replace choke cap. If changes does occur, warm oval insulator with choke tester.

7) Ohmmeter reading should again vary and then register a sudden decrease. Stop warming cap. Sudden decrease should occur within 10 minutes after warming began (choke tester used at maximum capacity and held close to cap).

8) If sudden decrease does not occur within 10 minutes, replace choke cap. If change occurs, choke cap is operating properly. If CER did not operate as described in step 3), check linkage and correct the problem.