

# PUT SOME HEAT IN COLD STARTS

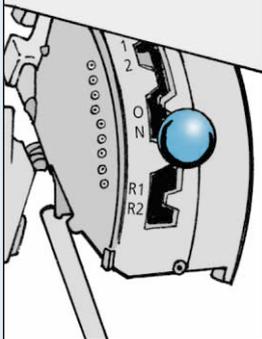


**D**rivers, if you don't start your M109 howitzer right during cold weather, it won't start at all.

## Before You Start

1. Turn off the personnel heater and shut off the COOLANT HEATER switch.
2. Make sure the battery indicator gauge is in the green range.

3. Set the parking brake and shift the transmission to neutral.



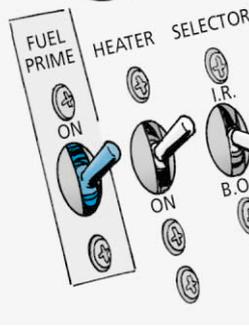
4. Turn the MASTER switch to ON. The indicator lamp should come on.

### BATTERY



MASTER

5. Turn the FUEL PRIME switch ON for 45 seconds, then release.

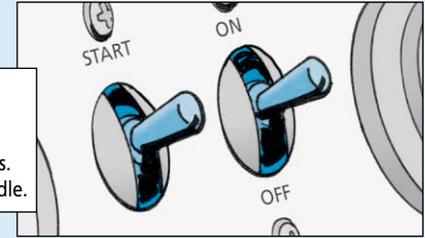


## Starting

Now you're ready to start the vehicle:

1. Pull out and hold the FUEL SHUTOFF handle.

2. Push the STARTER switch to START and the FLAME HEATER switch to ON at the same time. Crank the engine for 15 seconds. Release the FUEL SHUTOFF handle.



3. Keep cranking the engine while setting the FLAME HEATER switch to ON for one second and to OFF for one second until the tachometer reads at least 300 rpm.
4. Let go of the FLAME HEATER switch. Keep cranking until the tachometer reads at least 500 rpm. The hand throttle may be increased about 1/8 travel to help start the vehicle once 500 rpm is reached. Do not use the foot throttle or the engine will return to idle once it's released.
5. Stop cranking if the engine hasn't started after two minutes, or you can burn up the starter. Wait at least two minutes, then repeat steps 1 through 4. If the engine still won't start or doesn't reach 100 rpm or more after 15 seconds, tell your mechanic.
6. Release the starter switch after the engine starts and follow the engine warmup procedures in the -10 TMs.

## Before Shutdown

Just before shutdown, run the engine at idle and turn on the FLAME HEATER switch. If the heater is working OK, you'll see a slight decrease in engine speed and an increase in exhaust smoke. If not, call your mechanic.

Testing the flame heater also ensures that fuel is in the fuel supply line the next time you start your vehicle.

To increase the chances of an easy start the next time the thermometer takes a nose dive, have your mechanic install a cold start enhancement kit, NSN 2990-01-342-7944.

The kit maintains 1 1/2 psi of positive pressure in the fuel lines. That prevents loss of prime in the flame heater fuel supply line when the engine is not running.

You'll find the kit listed on Page 0063 005 in TM 9-2815-202-24P (Jun 03).

