

DRIVING INSTRUCTIONS-DOBLE E-24

1. Check & fill water tank.
2. Check fuel level. Fuel mix 1 part diesel, 2 parts unleaded gasoline.
3. Turn on main battery switch-on firewall right side, under dash.
4. Unlock & turn on ignition switch on ignition light cluster. Be sure the burner switch, next to the indicator light is off. (pushed in)
5. Turn on the two water pump gyp switches (pull down) located under dash panel right side. This energizes the water pump solenoids so the pump will work. This is indicated by the yellow and green indicator lamps on the dash panel.
6. Pull up on the water pump motorizing lever, on floor, left side, in front of seat. Hold up against the spring pressure until the pumps start to run and hold it up as long as needed. The speedometer will indicate about 3 m.p.h. and the ammeter 30-40 amp. drain. Observe the boiler pressure gauge and continue pumping water until the gauge needle lifts off the pin. When this happens, the coils are full of water and the boiler is ready to fire up. Be sure to re-engage the dog clutch in the auxiliary unit by pressing the water pump motorizing lever all the way back to the floor. If it does not go, pull the lever up again enough just to jog the pump a little and push the lever down again. Repeat this action as needed until the lever goes all the way to the floor. If it is not re-engaged, the auxiliary unit and water pumps will not run when the engine does and no water will be supplied to the steam generator. This could result in a ruptured boiler coil ! When the lever is all the way to the floor, turn off (push up) the two gyp switches to de-energize the pump solenoids, and the indicator lights will go out.
7. Open the right side of the hood and observe the fuel level window on the side of the carburetor float bowl. If there is no fuel showing, reach in the right side door and press the chrome push button under the dash next to the water pump gyp switches. This energizes the electric priming fuel pump and will fill the carburetor fuel bowl with white gasoline. When the fuel level reaches a little over 1/2 way up the glass, release the push button and the carburetor burner is ready to fire off. Note the time it takes to fill the bowl as this operation can be done without opening the hood when you are more familiar with the car.
8. While the hood is open, remove the cover from the top side of the damper solenoid and push down on the operator arm inside to make sure it is operating freely. Replace the cover and close the hood.

9. Take your place in the drivers seat and turn on (pull out) the main burner switch next to the indicator lights. The burner will start with a dull roar. If the burner motor does not start, check ignition and battery switches. If the burner motor runs but there is no combustion, check the damper operation, ignition spark and ignitor, and if need be the fuel supply. If the burner ignites but exhausts billows of black smoke, shut off the burner and check the carburetor float for sticking open and flooding the carburetor. Check by removing the small knurled knob on the top of the float bowl and moving the needle valve with your fingernails. Also check the damper. If the needle valve moves freely, replace the knob and re-start the burner. The burner will continue to smoke until the fuel level comes down to just above 1/2 the glass window. The burner should exhaust with a clean flue gas, no smoke. With a normal fire established, watch the steam pressure gauge as the needle will rise almost immediately. Pull the hand brake on and tap the throttle to remove the hydraulic pressure. When the needle rises again tap the throttle again. Continue to do so until the needle does not drop back to zero and steam is being generated as indicated by the superheat temperature gauge and the pyrometer. When the pressure builds to 40-60 atmospheres, release the hand brake, feed a little steam to the engine and rock the reverse pedal from reverse to forward a few times to clear water from the engine cylinders. After this is done, start driving the car gently for the first two or three blocks. By this time the engine and exhaust steam turbines and piping should be clear of water. The temperatures stabilize at about 575°f on the pyrometer and 700°f to 750°f on the superheated steam temperature gauge (top gauge next to the burner switch). The lower gauge next to the burner switch indicates boiler flue gas outlet temperature. The burner will cut off when the pressure gauge reaches 80 atmospheres (1250 lbs. psi) or when the steam temperature exceeds 800°f. The indicator lights are as follows: RED-burner on, YELLOW-2 pumps on, GREEN-2 more pumps and normalizer on. When the burner (red light) comes on, the first two pumps (yellow light) will come on with it. When the steam temperature exceeds 725°f the second two pumps and the normalizer (green light) will come on. If the steam temperature exceeds 800°f or overheat condition, the burner will go off and the four pumps will continue to run (indicator lights-green and yellow on, red off). When the steam temperature drops below 800°f the burner will come on again if the pressure is below 80 atmospheres and the steam conditions will return to the normal set points.

10. In driving the car the use of the forward/reverse pedal is as follows: by pushing the button on the pedal, the pedal will spring out to its fully extended position. When starting from a dead stop the pedal should be in this position. As the car picks up speed the pedal should be depressed to the first lock point, and by the time the car has reached 25 m.p.h. the pedal should be further depressed to the second lock point and driven in this position until re-starting from a dead stop again. When pulling up a steep hill at low speeds, the pedal should be released by the push button to the second or full out position depending on the speed and steepness of the hill. Doing so gives the engine more power and a smoother power stroke.

Starting the car into motion with the pedal in the hooked up or second lock point position will not hurt the engine but it does not have the longer power stroke needed to develop the higher torque required to start the car properly. To reverse the direction of the car, press the release button and depress the reverse pedal fully and hold it in position while backing up or it will not lock into reverse. Be careful as the car has just as much speed and power in reverse as forward.

11. The speed and power of a steam automobile are dependant on two factors, the steam generator pressure and the exhaust steam back pressure. So in driving the car be alert as to what is happening on either side of the engine. If the steam generator pressure or temperature is low, take it easy on the car for a mile or two and it will soon catch up to its set points. If you are working the car over the capacity of the condenser, the condenser pressure will rise excessively and put an excess back pressure against the exhaust steam turbines and the engine, causing a great drop in system efficiency and power output and also a great decrease in water mileage. The condenser pressure should not be allowed to go over 6 psi and an effort should be made to keep it about 2 or 4 lbs. This will give greater mileage with the current poor condenser. So be observant of steam and exhaust conditions and drive accordingly, after all, the car is 60 years old!
12. Stopping and standing. If a stop is to be made for only a short time, 10-15 minutes, nothing will have to be done to the steam generator. If the car is to be parked for 1 hour or more, including overnight, the two water pump gyp switches should be turned on three or four blocks before the destination and extra water pumped into the steam generator before the shut down. This will greatly reduce the time needed to pump up the coils with extra water before re-firing. If the gyp switches are left on too long before stopping, a snapping sound will come from the engine and the superheat temperature will be low. Turn off the pumps immediately when this condition is noticed as the water could damage the engine and in any case will wash the oil film off the moving parts, causing excess wear.
13. Putting the car away. Add some extra water to the steam generator coils before putting the car in the garage. Also fill or note that the water tank is sufficiently full (over 1/2). When the boiler cools the steam in the coils will condense and create a vacuum in the coils and will suck water from the tank, through the pumps and check valves to almost refill the coils. If the tank is low, cylinder oil, floating on top of the water could be drawn into the pumps and the coils and cause valve or carbon problems. After parking the car in the garage, turn off the main burner switch, ignition switch, and the main battery switch and set the hand brake. After the car has cooled, usually overnight, use the hand lever and pump more water into the boiler coils until pressure shows on the gauge. Let some water out with the throttle valve. Then pump in some more and do it again. This will move the condensate from the steam out of the end of the coil and stop the condensate corrosion in that end of the coil. If the car is to be stored for a lengthy period of time, the steam system should be put away with high pressure nitrogen gas as described in the F-30