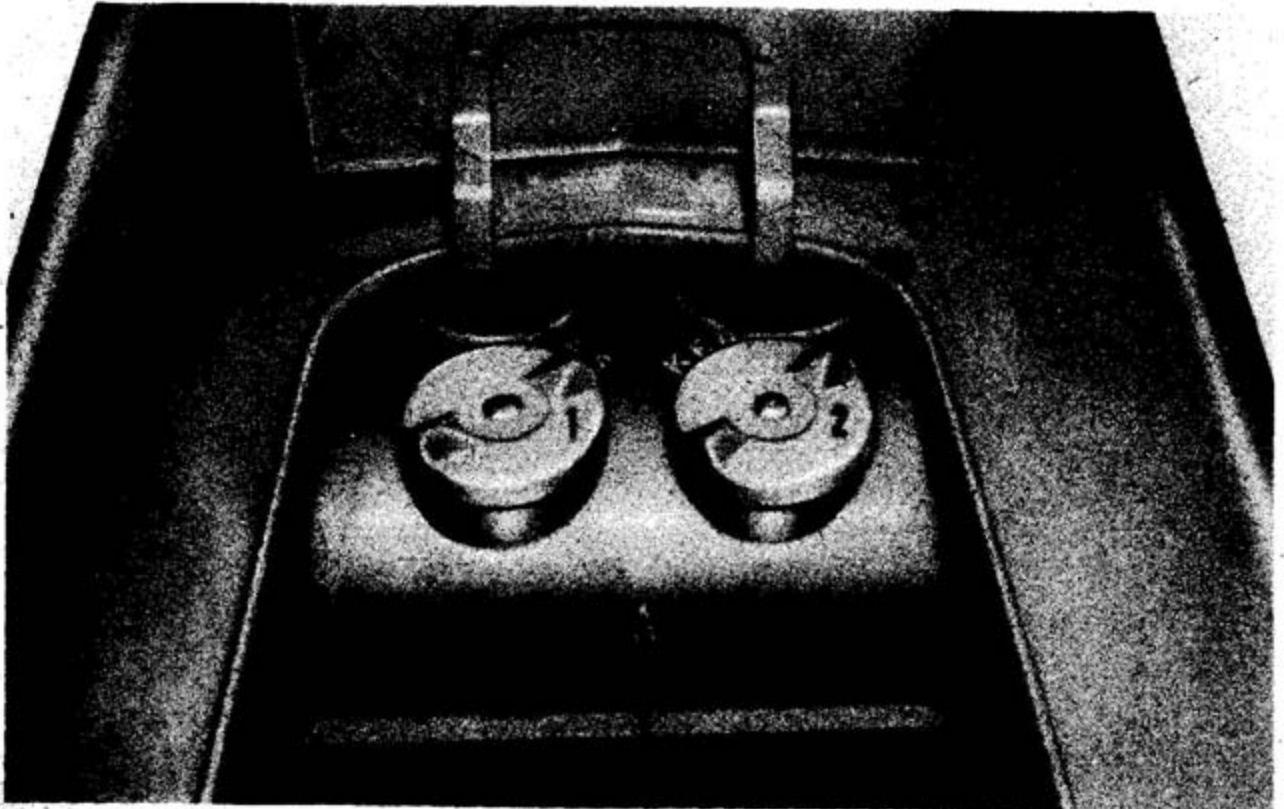


# OPERATING MODEL 8NAN FORD TRACTOR ON DISTILLATE FUEL

## DESCRIPTION

Model 8NAN Ford tractor is powered by a 4-cylinder, low compression, distillate engine. Mechanical features of 8N and 8NAN tractor are the same with the exception of engine compression ratio and fuel system. Operating your tractor on distillate type fuel requires a specially designed intake manifold incorporating a heat control valve because much more heat is required to vaporize heavy distillates than is required for gasoline.



FUEL TANK

OM-615

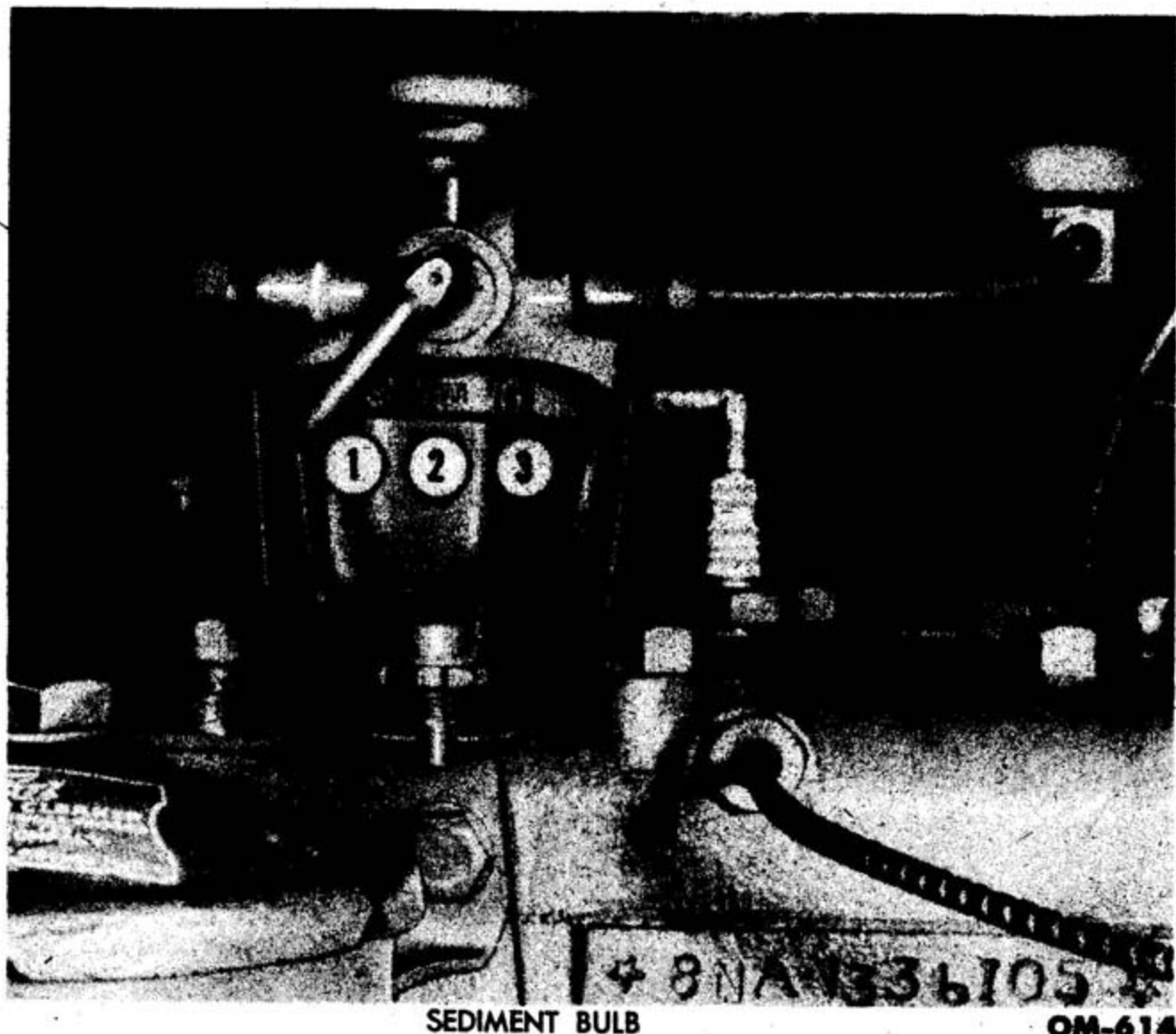
*Fig. 1. Illustrates Model 8NAN Gasoline (1) and Kerosene (2) Fuel Inlet Ports.*

## FUEL SYSTEM

Fuel tank on Model 8NAN Tractor is divided into a small and large section. The small section is for Gasoline and the large for Kerosene. Each section is plainly lettered adjacent to fuel filler cap to minimize the possibility of mixing fuel.

## FUEL SELECTOR VALVE

1. Fuel selector valve on Model 8NAN tractors is located on the left side as viewed from operator's seat. This valve has three positions; namely, **KEROSENE (1)**, **OFF (2)** and **GAS (3)**.



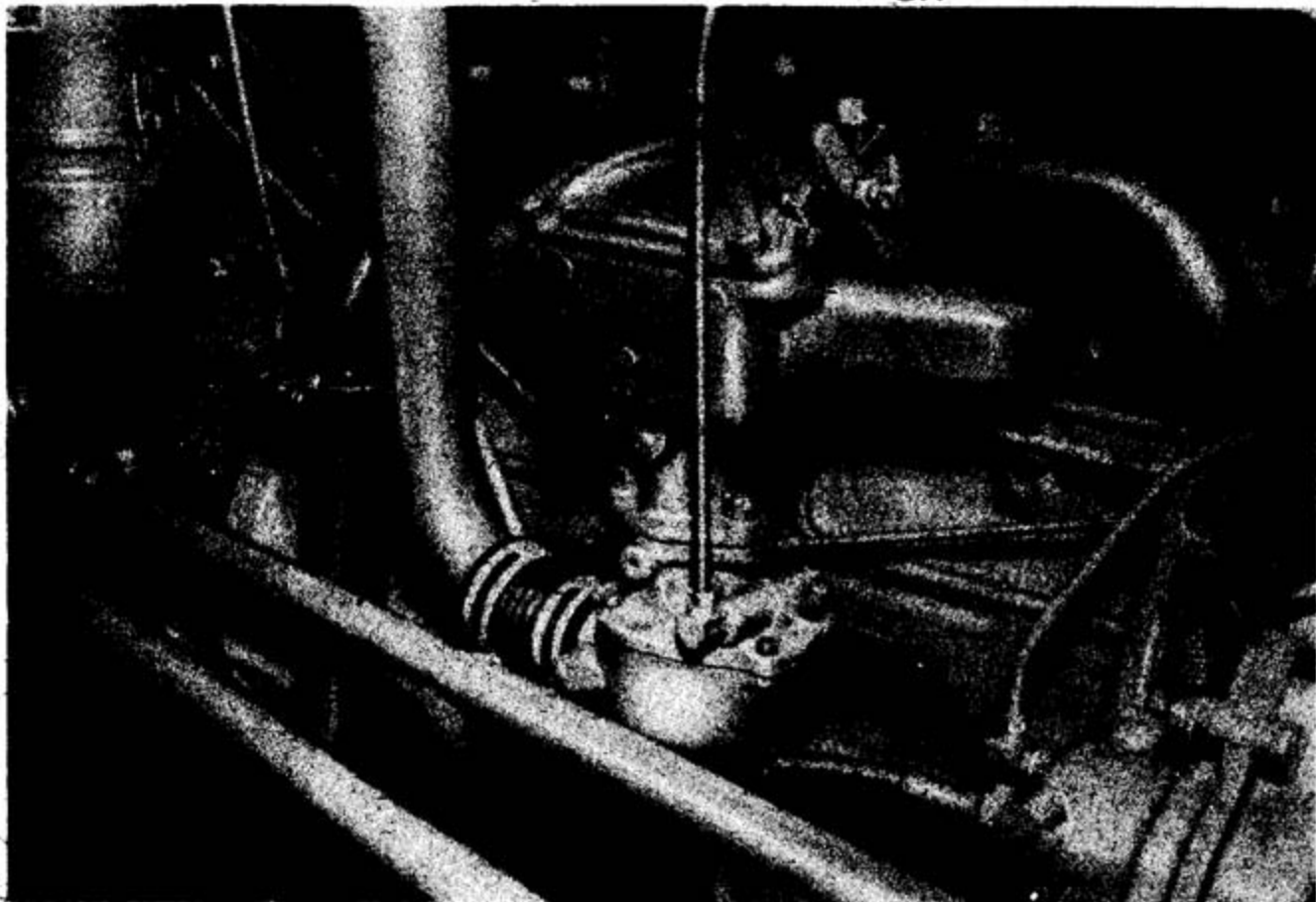
**Fig. 2. Model 8NAN Fuel Selector Valve.**

2. When valve lever is straight down, it is in **OFF (2)** position. This allows no fuel from either tank to flow into carburetor.
3. When selector valve lever is turned to **GAS (3)** position, fuel (gasoline) for starting your engine flows from the starting tank to carburetor.
4. When selector valve lever is in **KEROSENE (1)** position, fuel (distillate) flows from the main tank to carburetor.

## **MANIFOLD HEAT CONTROL VALVE**

1. Located on the manifold is a heat control valve. Before starting your engine, this valve must be set for prevailing seasonal temperature as indicated by the three positions **OFF**, **HEAT** and **ON**.
2. Position heat control lever at **ON** position, as shown in fig. 3, to operate your tractor on tractor fuels or distillates. When operating your tractor on distillate fuels in temperature of  $100^{\circ}$  F. or more and detonation is experienced, it may become necessary to adjust the heat control valve toward **HEAT-OFF** position for proper atomization of fuel before satisfactory operation of your engine is obtained.

ON HEAT OFF



OM-616

**Fig. 3. Manifold Heat Control Valve.**

## **STARTING AND STOPPING YOUR ENGINE**

1. Before attempting to start your engine, make certain the fuel in carburetor is gasoline. This is done by turning the fuel selector valve to OFF (2) position, then opening the carburetor drain cock with permits fuel in carburetor to run out.

2. After carburetor is drained, turn fuel selector valve to GAS (3) position then allow a small amount of gasoline to run out before closing the drain cock. Your engine is now supplied with the correct fuel for starting.

3. The starter button incorporates a safety feature that makes it impossible to start your engine when the shift lever is in gear position.

4. Place the shift lever in neutral position, then turn ignition switch on and partially open the throttle. Hold clutch pedal in released position (down), then press starter button. If your engine does not start immediately, pull out choke button for several engine revolutions. Never use choke longer than necessary because raw gasoline entering combustion chamber washes lubricant from cylinder walls. Let your engine run on gasoline until it is thoroughly warmed up. The normal operating temperature range on the temperature gauge is colored green, and your engine should not be run on distillate fuels unless the pointer registers within this range.

After your engine is warmed up, switch the fuel selector valve lever to position marked **KEROSENE (1)** (distillate).

5. To facilitate easier starting, your engine should be stopped by turning the fuel selector valve off, then allowing your engine to run until it stops. Be sure ignition switch is turned to **OFF** position when engine stops.

## INSTRUMENTS

### WATER TEMPERATURE GAUGE

1. Model 8NAN distillate tractors are equipped with a water temperature gauge for the purpose of determining the engine operating temperature at all times. If the pointer on your engine temperature gauge points to the red section on the dial, it should be stopped immediately and the cause for overheating determined.

### THERMOSTAT

1. Thermostat can be checked by removing and submerging it in hot water. It should start to open at 180° to 185° Fahrenheit and be fully opened at 210° to 212° Fahrenheit. If thermostat is defective, it must be replaced. If the engine fails to reach normal operating temperature, the thermostat should be checked to make certain it is closing at 180° Fahrenheit.

### SELECTOR VALVE MAINTENANCE

1. Periodically remove fuel selector valve sediment bowl and clean the screen in bowl. Remove fuel inlet elbow from carburetor and clean the screen.

**WARNING:** *When operating your tractor in temperatures below 50°F., engine side panels should be fitted to your tractor if maximum operating performance is to be expected.*

*Permanent type anti-freeze solution must always be used in tractors using distillate fuels, when operating in temperatures below 32°F.*

## MODEL 8NAN FORD TRACTOR SPECIFICATIONS

### General.

Type .....	4-wheel, general purpose
Wheelbase .....	70 in. at 48 in. tread width
Over-all length, front to drawbar .....	115 in.
Over-all height .....	54½ in.
Over-all width, normal tread .....	64¾ in.

**Tire size:**

Front—standard .....	4—19 4-ply
Rear—standard .....	10—28 4-ply
Front tread .....	48 to 76 inches in 4-inch steps
Rear tread .....	48 to 76 inches in 4-inch steps

**Ground clearance:**

Front axle .....	21 in.
Rear Axle .....	21 in.
Center .....	13 in.

**Turning circle radius (with use of brakes):**

Made by outer front wheel .....	8 ft.
Made by centerline of tractor at rear axle .....	3½ ft.
Shipping weight (including gasoline, oil, water, tires filled with air, operator not included) .....	2,410 lbs.
Drawbar height .....	8½ to 34¼ in., 18 in. standard setting

Gear Ratio	Final Gear Reduction	Speeds in M.P.H.		
		1500 R.P.M.	1750 R.P.M.	2000 R.P.M.
1 Low (first)	73.33 to 1	2.77	3.23	3.69
2 Plowing (second)	57.04 to 1	3.56	4.16	4.75
3 Cultivating (third)	41.45 to 1	4.90	5.72	6.54
4 High (fourth)	19.86 to 1	10.23	11.93	13.64
5 Reverse	44.64 to 1	4.55	5.31	6.07

**NOTE:** 1500 R.P.M. is recommended for power take-off tools. 1750 R.P.M. is recommended when power take-off tools are not used.

**Capacities—U.S. Measure.**

Fuel tank .....	9 gals. Distillate 1 gal. Gasoline 10 gals. total
Engine oil pan (less filter absorption) .....	5 qts.
Transmission, hydraulic lift, and differential .....	5 gals.
Cooling system .....	12 qts.
Oil bath air cleaner .....	1 pint—Fill to indicated level
Belt pulley .....	5/8 pint
Tire pressure:	
10—28 4-ply .....	12 lbs.
4—19 4-ply .....	26 lbs.

**Engine.**

Type .....	4-cylinder "L" head
Rated speeds .....	1500, 1750, and 2000 R.P.M.

Idle speed .....	400 R.P.M.
Cylinder bore .....	3.188 in.
Stroke .....	3.75 in.
Piston displacement .....	119.7 cu. in.
Torque .....	80 lbs. ft. at 1400 R.P.M.
Compression ratio .....	488 to 1
Sleeves .....	Dry type
Piston .....	Aluminum
<b>Rings:</b>	
Compression .....	2
Oil .....	1
Piston pin .....	Full floating
Rod bearings .....	Replaceable shell-type
Main bearings .....	Replaceable shell-type
Crankshaft .....	Cast steel, static and dynamic balanced
Compression pressure at cranking speed (sea level) —	90 lbs. minimum

### Ignition System.

Type .....	Battery
<b>Distributor:</b>	
Firing order .....	1-2-4-3
Drive .....	Spiral gear off camshaft
Automatic spark advance .....	Centrifugal governor
Initial timing (degrees of crankshaft) .....	Top dead center
Maximum advance (degrees of crankshaft) .....	18°
Distributor breaker cam .....	4 lobe
Breaker contacts .....	1 set
Breaker contact spacing .....	0.015 in.
<b>Spark plugs:</b>	
Type .....	Marked J-11
Size .....	14 mm
Gap .....	0.025 to 0.028 in.

### Carburetor.

Type .....	Single up-draft
Idle fuel adjustment .....	1 screw
Main fuel jet .....	1 screw
Idle speed .....	1 screw

### Governor.

Type .....	Variable speed, mechanically operated, centrifugal type
Governed speed range .....	800 to 2200 R.P.M.
Maximum governed speed adjustment .....	1 screw

## Cooling System.

### Radiator cap (pressure type):

Pressure valve opens at ..... 3 $\frac{1}{4}$  to 4 $\frac{1}{4}$  lbs. per sq. in.  
Vacuum valve opens at .....  $\frac{1}{2}$  to 1 lb. per sq. in.  
Capacity ..... 12 quarts

### Water pump:

Type ..... Centrifugal  
Drive ..... V-belt

### Fan:

Type ..... 4-blade pull  
Drive ..... V-belt

### Thermostat:

Location ..... Cylinder head outlet hose  
Starts to open ..... 180-185°F.  
Fully open ..... 210-212°F.

## Electrical System.

### Generator:

Type ..... 2-brush  
Drive ..... V-belt

### Rating:

1650 Engine R.P.M. .... 18 Amps  
Maximum output ..... 18 Amps

Capacity ..... 126 watts

### Generator regulator:

Cutout closing voltage ..... 6.15 to 6.45 volts

Cutout opening voltage ..... 5.0 amps. max.

Voltage regulation ..... 7.1 to 7.5 volts

7.1 to 7.3 at 5 ampere load

6.7 volts at 20 ampere load

### Battery:

Type ..... 6-volt

Number of plates (per cell) ..... 13

Capacity in ampere hours ..... 80

Terminal grounded ..... +

### Starting motor:

Type ..... 6-volt

Drive ..... Automatic engagement

## Transmission.

Type ..... Constant mesh

Number of speeds forward ..... 4

## Clutch.

Type .....	Single plate
Release bearing (pre-lubricated) .....	Ball bearing
Pedal free travel .....	3/4 in.

## Rear Axle.

Type .....	Semi-floating
Ratio .....	6.66 to 1

## Brakes.

Type .....	Internal expanding
Control .....	Individual, mechanical
Adjustment at each wheel .....	1 screw
Brake pedal free play .....	3/4 in.
Thickness of lining .....	0.187 in.
Width of lining .....	2.000 in.
Length of lining .....	12.910 in.
Total brake lining area (two wheels) .....	103.3 sq. in.

## Steering Gear.

Type .....	Automotive ball nut
Ratio, turns of steering wheel for total travel of pitman arms, at 48 in. wheel tread .....	2.25
Steering wheel diameter .....	18 in.

## Hydraulic Control.

Type .....	Internal
Maximum pressure .....	1500-1700 lbs. per sq. in.

### Pump:

Type .....	Scotch Yoke piston
Drive .....	Direct power take-off shaft

### Capacity:

2000 engine R.P.M. ....	2.85 gals. per min.
1500 engine R.P.M. ....	2.15 gals. per min.

Control .....	Manual and automatic
Oil supply .....	Transmission and differential

## Power Take-off Adapter.

Spline .....	1 3/8
Speed (1500 engine R.P.M.) .....	545 R.P.M.

## Belt Pulley.

Pulley speed (2000 engine R.P.M.) .....	1358 R.P.M.
Belt speed (2000 engine R.P.M.) .....	3199 ft. per min.
Pulley size (standard) .....	9 in.



### **Tractor Performance.\***

<b>Maximum Belt Horsepower at 2000 R.P.M. ....</b>	<b>22.95</b>
<b>Rated Belt Horsepower (85% of Max.) ....</b>	<b>19.51</b>
<b>Maximum Drawbar Horsepower 2nd Gear ....</b>	<b>19.77</b>
<b>Rated Drawbar Horsepower 2nd Gear (75% of Max.) ....</b>	<b>14.83</b>

**\*These results obtained from Nebraska Tractor Test No. 444.**

**FOR THE ABOVE TEST 35 OCTANE FUEL WAS USED,  
LOWER OCTANE FUELS ARE NOT RECOMMENDED.**