2840
Tractor

JOHN DEERE

TECHNICAL MANUAL

2840
Tractor

TM4336 (01MAY79) English

TM4336 (01MAY79)

LITHO IN U.S.A. (REVISED)
ENGLISH

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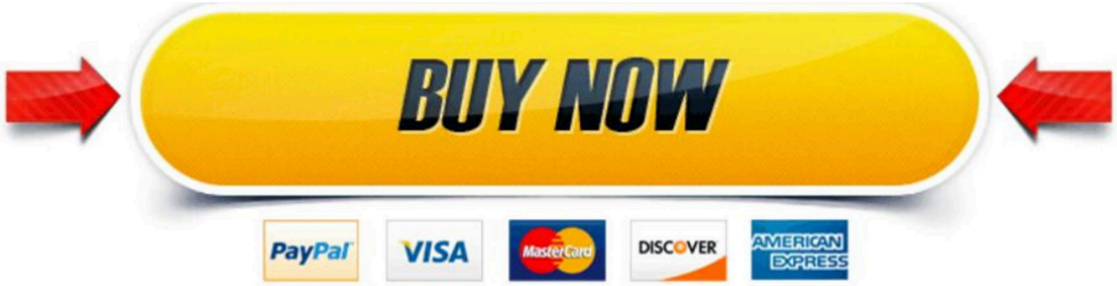
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2840 Tractor Technical Manual TM-4336 (NOV-76)

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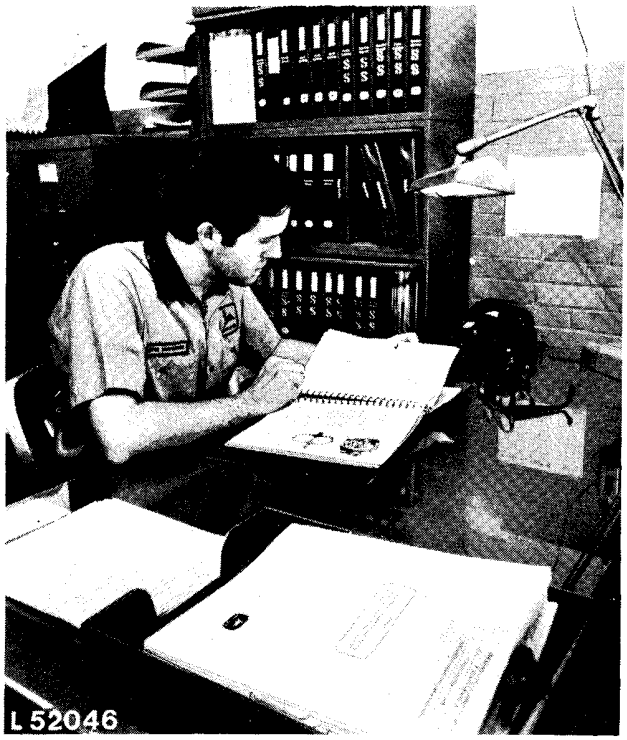
Introduction



Use FOS Manuals for Reference

This technical manual is part of a twin concept of service:

- **FOS Manuals – for reference**
- **Technical Manuals – for actual service**

The two kinds of manuals work as a team to give you both the general background and technical details of shop service.
Fundamentals of Service (FOS) Manuals cover *basic* theory of operation, *fundamentals* of trouble shooting, *general* maintenance, and *basic* types of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.
Technical Manuals are concise service guides for a *specific* machine. Technical Manuals are on-the-job guides containing only the vital information needed by an experienced technician.

IMPORTANT: Your technical manual contains the new SI metric measurements which have been standardized internationally.

Example:

New	Old
10 N (Newton)	1 kp
10 Nm (Newton-Meter)	1 mkp
1 bar	1 kp/cm2
1 kW	= 1.36 PS (1.34 HP)



Use Technical Manuals for Actual Service



When a technician should refer to a FOS Manual for more information, a FOS symbol like the one at the left is used in the TM to identify the reference.

Some features of this technical manual:

- *Table of contents at front of whole Manual*
- *Contents at front of each Section*
- *Exploded views showing parts relationship*
- *Photos showing service techniques*
- *Specifications at end of each Group*
- *Special tools at end of each Group*

This technical manual was planned and written for you — an experienced technician. Keep it in a permanent binder in the shop where it is handy. Refer to it whenever in doubt about correct service procedures or specifications.
Using the technical manual as a guide will reduce error and costly delay. It will also assure you the best in finished service work.

This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

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General 10

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Group 5

10 Specifications

SERIAL NUMBERS

The engine serial number is stamped into the name plate located on the lower front right-hand side of the cylinder block.

NOTE: If ordering engine parts, indicate all digits of the serial number on the name plate.

The name plate showing the tractor serial number is located on the right-hand side of the front support.

NOTE: If ordering tractor parts (excluding engine parts), indicate all digits of the serial number on the name plate.

MODEL NUMBERS

The injection pump, injection nozzles, alternator, starting motor and hydraulic pump have model numbers to facilitate identification of different makes of a given unit.

ENGINE

Number of cylinders 6

Cylinder liner bore . . . . . 102 mm (4.02 in.)

Stroke . . . . . 110 mm (4.33 in.)

Displacement . . . . . .5390 cm3 (329 cu. in.)

Compression ratio . . . . . 16.8 : 1

Maximum torque at
1300 rpm . . . . . .320 Nm (235 ft-lb)

Firing order . . . . . .1 - 5 - 3 - 6 - 2 - 4

Valve clearance (engine hot or cold)
Intake valve . . . . . 0.35 mm (0.014 in.)
Exhaust valve . . . . 0.45 mm (0.018 in.)

Fast idle . . . . . 2660 rpm

Slow idle . . . . . 650 rpm

Working speed range . . . . . 1300 to 2500 rpm

PTO horsepower* . . . . . .60 kW (80 HP)
(at 2500 rpm engine speed)

ENGINE CLUTCH

Single dry disk clutch with torsion damper (isolator), foot-operated.

ELECTRICAL SYSTEM

Batteries . . . . . 2 x 12 volts, 88 ampere-hours

Starting motor . . . . . .12 volt, 3 kW (4 HP)

Alternator . . . . . 14 volts, 28 amps.

Battery terminal grounded . . . . . negative

TRANSMISSION

Collar shaft transmission with helical cut gears.

The tractor has 6 forward gears and three reverse gears, park lock included. However, by shifting the Hi-Lo shift unit, 12 forward and 6 reverse speeds may be selected.

HI-LO SHIFT UNIT

Hydraulically controlled reduction gear which can be shifted under load, with "wet" multiple disk clutch and "wet" multiple disk brake. Allows reduction of the individual gear speeds by 21 %.

* With the engine run in (above 100 hours of operation) and having reached operating temperature (engine and transmission); measured by means of a dynamometer. Permissible variation ± 5 %.

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DIFFERENTIAL AND FINAL DRIVES

Planetary reduction gear and differential with spiral bevel gears.

DIFFERENTIAL LOCK

Hand or foot operated; spring-loaded out of engagement.

POWER TAKE-OFF (PTO)

Independent of transmission, can be engaged and disengaged under load.

The independent PTO is engaged by a hydraulically operated disk clutch. Disengaging the PTO is achieved by operating the hydraulically actuated disk brake.

Changing PTO shaft speed from 540 rpm to 1000 rpm or vice-versa is effected by changing the PTO stub shaft.

PTO Speeds (in rpm)

Engine speed in rpm	540 rpm shaft	1000 rpm shaft
650	160	300
2175	540	1000
2500	620	1150
2660	660	1225

HYDRAULIC SYSTEM

Closed center, constant pressure system; also includes rockshaft, power steering and selective control valves.

System pressure . . . . . 155 bar (2250 psi)

Pump . . . . . 8-piston pump driven by the engine

POWER STEERING

The steering system is a "closed center" type incorporated in the hydraulic system and supplied with oil by the hydraulic pump. It is connected to the front wheels by means of a steering linkage.

HYDRAULIC BRAKES

The disk brakes run in an oil bath and are hydraulically controlled.

CAPACITIES

	Liters	US.gals.
Fuel tank	106.0	28.0
Cooling system	19.0	5.0
Engine crankcase incl. filter	11.5	3.0
Transmission-hydraulic system		
Dry system	57.0	15.0
At service intervals.	49.0	12.9

TRAVEL SPEEDS

See Operator's Manual.

FRONT AND REAR WHEELS

For tire sizes, treads, inflation pressure and weights see Operator's Manual.

DIMENSIONS

See Operator's Manual.

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Group 10

Predelivery, Delivery and After-Sales Inspections

10

PREDELIVERY INSPECTION

Every new JOHN DEERE tractor leaves the factory in such a condition that it can be delivered to the customer after a minimum of service.

To promote complete customer satisfaction, proper predelivery service including mending of possible shipping damage and giving the finishing touches to the tractor, are of prime importance to the dealer.

A tag pointing out the factory-recommended procedure for predelivery service is attached to every new tractor before it leaves the factory. The reverse side of this tag is filled in by the factory after the tractor has undergone a thorough inspection prior to shipping.

After completing the factory-recommended dealer checks and services listed on the predelivery tag, remove the tag from the tractor and file it with the shop order for the job. The tag will then serve as a basis for certifying that the tractor has received the proper predelivery service.

Temporary Tractor Storage

Service	Specifications	Reference
Check radiator for coolant loss and antifreeze protection (gravity of antifreeze and rust inhibitor mixture)	Coolant level should be midway between radiator core and bottom edge of filler neck	Operator's manual
If the tractor is to be operated for a short time without battery (using a slave battery for starting), do not, under any circumstances, interrupt the circuit by switching off the key switch before stopping the engine by means of fuel pump shut off cable. Use additional current (lights) whilst engine is running. Insulate terminal of battery cable before starting by means of slave battery. If this advice is disregarded, damage to alternator and regulator may result.	. . . . .	Section 40, group 10
Remove batteries. Drain electrolyte and store batteries	Store at room temperature	. . . . .
Reduce shipping pressure of tires	. . . . .	Operator's manual
Cover tractor and tires for protection and cleanliness	. . . . .	. . . . .

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PREDELIVERY INSPECTION (Contd.)

10

Service	Specifications	Reference
COOLING SYSTEM		
Check radiator for coolant loss	Coolant level should be midway between radiator core and bottom edge of filler neck.	Operator's manual
Check gravity of antifreeze and rust inhibitor mixture	. . . . .	Operator's manual
ELECTRICAL SYSTEM		
If the tractor is to be operated for a short time without battery (using a slave battery for starting), do not, under any circumstances, interrupt the circuit by switching off the key switch before stopping the engine by means of fuel pump shut off cable. Use additional current (lights) whilst engine is running. Insulate terminal of battery cable before starting the engine by means of slave battery. **If this advice is disregarded, damage to alternator and regulator may result.**	. . . . .	Section 40, group 10
If the batteries are to be installed, connect them in the proper polarity (negative to ground). If they are improperly connected, the rectifier diodes will be immediately destroyed.	. . . . .	Section 40, group 10
First connect positive (+) cable and then ground (-) strap of each battery. Only then start tractor engine.	. . . . .	Section 40, group 10

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PREDELIVERY INSPECTION (Contd.)

Service	Specifications	Reference
TIRES AND WHEELS		
Check tire inflation pressure	. . . . .	Operator's manual
Retighten wheel bolts	. . . . .	Section 80, group 10 and Operator's manual
LUBRICATION		
Check crankcase oil level	Top mark on dip stick	Operator's manual
Check transmission-hydraulic system oil level	. . . . .	Operator's manual
Lubricate all lubrication points on the tractor	. . . . .	Operator's manual
ENGINE		
Check dry type air cleaner	. . . . .	Operator's manual
Fill fuel tank and start engine	Fuel tank capacity: 106.0 liters (28.0 U.S. gal.)	Operator's manual
Check lighting system, indicator lights and instruments for proper operation	. . . . .	Operator's manual
Check if speed control linkage moves easily	. . . . .	Section 20, group 40
Check engine idle speeds	. . . . .	Section 20, group 40
Check injection timing	. . . . .	Section 30, group 15
OPERATION		
Check clutch pedal adjustment	Approx. 25 mm (1 in.) clutch pedal free travel	Section 50, group 5
Check operation of Hi-Lo shift unit	. . . . .	Section 50, group 10
Shift transmission through all gears	. . . . .	Operator's manual
Check differential lock operation	. . . . .	Operator's manual
Check PTO operation	. . . . .	Operator's manual
Check 3-point hitch operation	. . . . .	Operator's manual
Check hydraulic system operation	. . . . .	Section 70, group 5
Check brake operation	. . . . .	Section 60, group 15

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PREDELIVERY INSPECTION (Contd.)

Service	Specifications	Reference
Check steering operation	. . . . .	Section 60, group 10
Check seat adjustment	. . . . .	Operator's manual
Check operation of remote hydraulic cylinder (if equipped)	. . . . .	Section 70, group 5
GENERAL		
Tighten accessible nuts and attaching screws	. . . . .	Section 10, group 20
Attach roll guard	. . . . .	Section 80, group 15
Clean tractor and touch up paint	. . . . .	. . . . .

DELIVERY INSPECTION

A thorough discussion of the operation and service of the tractor at the time of its delivery helps to assure complete customer satifaction.

Proper delivery should be an important phase of the dealer's program.

It is a well-known fact that many complaints have arisen simply because the owner was not shown how to operate and service his new tractor properly. Therefore, enough time should be devoted, at the customer's convenience, to introducing him to this new tractor and explaining to him how to operate and service it.

Using the tractor operator's manual as a guide, be sure that the owner understands the following points properly:

1. Adjusting the seat
2. Operation of control levers and instruments
3. Starting and shutting off the engine
4. The importance of the tractor break-in period
5. Use of counterweights and proper tire inflation pressure as well as filling of tires with water and calcium chloride, if required
6. All functions of the hydraulic system
7. Operating the PTO
8. The importance of the safety rules
9. The importance of lubrication and periodic service

AFTER-SALES INSPECTION

In the interest of the purchaser and the dealer an after-sales inspection should be carried out by the dealer after the first 100 hours of using a new John Deere tractor.

The purpose of this inspection is to make sure that the customer is receiving satisfactory performance from his tractor. At the same time, the inspection should reveal whether or not the tractor is being operated, lubricated and serviced properly.

Through this inspection a needless volume of service work can be eliminated by preventing minor difficultes from developing into serious problems later on. It also will promote stronger dealer -customer relations and give the customer an opportunity to ask questions that may have arisen during the first few days of use.

Thereby the dealer has the further opportunity of promoting the possible sale of other new equipment.

The following inspection program is recommended:

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AFTER-SALES INSPECTION (Contd.)

Service	Specifications	Reference
COOLING SYSTEM		
Check coolant level	Coolant level should be midway between radiator core and bottom edge of filler neck	Operator's manual
Clean exterior of radiator	. . . . .	. . . . .
Check hose connections	. . . . .	. . . . .
FUEL SYSTEM		
Check fuel filter housing for water or sediment deposits and clean transfer pump screen	. . . . .	Operator's manual
Check line connections	. . . . .	. . . . .
ELECTRICAL SYSTEM		
Check gravity of battery electrolyte	Gravity should be 1.260 at an electrolyte temperature of 27° C (80°F)	
Check electrolyte level of batteries	To bottom of filler neck in each cell	Operator's manual
Check tension of fan belt	19 mm (3/4 in.) deflection with a 90 N (20 lb) force	Operator's manual and section 20, group 35
Start engine and check operation of lights, indicator lamps and instruments	. . . . .	Operator's manual
LUBRICATION		
Check crankcase oil level	Top mark on dip stick	Operator's manual
Check transmission oil level	. . . . .	Operator's manual
Lubricate 3-point hitch	. . . . .	Operator's manual

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AFTER-SALES INSPECTION (Contd.)

10

Service	Specifications	Reference
ENGINE		
Check dry-type air cleaner	. . . . .	Operator's manual
Check valve clearance	Intake valve: 0.35 mm (0.014 in.) Exhaust valve: 0.45 mm (0.018 in.)	Section 20, group 10
Check engine speed under load as well as fast and slow idle speed	. . . . .	Section 20, group 40
Check engine performance	. . . . .	Section 10, group 20
GENERAL		
Check clutch pedal adjustment	Approx. 25 mm (1 in.) free travel	Section 50, group 5
Check operation of Hi-Lo shift unit	. . . . .	Section 50, group 10
Shift transmission through all gears	. . . . .	Operator's manual
Check operation of PTO	. . . . .	Operator's manual
Check differential lock	. . . . .	Operator's manual
Check operation of hydraulic system	. . . . .	Section 70, group 5
Check steering system	. . . . .	Section 60, group 10
Check brakes	. . . . .	Section 60, group 15
Tighten accessible nuts and cap screws	. . . . .	Section 10, group 20
Tighten roll guard attaching cap screws and nuts	. . . . .	Section 80, group 15
Tighten accessible hydraulic lines	. . . . .	. . . . .
Visual inspection of tractor	Damaged paint, loose connections, proper positioning of hoses and lines, leaks, operation of all mechanical parts	. . . . .

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Group 15
Lubrication

10

GENERAL INFORMATION

Carefully written and illustrated lubrication instructions are included in the operator's manual furnished with your customer's machine. Remind him to follow these instructions.

For your convenience, the following chart shows capacities and types of lubricants for the tractor components and systems. Specifications for lubricants follow the chart.

Item	Capacity	Type of Lubricant	Interval of Service
Engine crankcase	11.5 l (3 U.S. gal.) (including filter)	See page 15-2	10 Hours — Check 100 Hours — Drain and refill 200 Hours — Change filter
Transmission and hydraulic system	49.0 l (13 U.S. gal.)	John Deere Hy-GARD Transmission and Hydraulic Oil or its equivalent.	50 Hours — Check 50 Hours — Change filter 500 Hours — Change filter 1000 Hours — Drain and refill. Clean intake screen
Grease fittings	. . . . .	John Deere Multi-Purpose Lubricant or its equivalent.	See Operator's manual

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Lubricants

10

Effective use of lubricating oils and greases is perhaps the most important step towards low upkeep cost, long tractor life, and satisfactory service. Use only lubricants specified in this section. Apply them at intervals and according to the instructions in the lubrication and periodic service section.

ENGINE LUBRICATING OILS



L 10456

We recommend John Deere Torq-Gard Supreme Engine Oil for use in the engine crankcase. These Torq-Gard oils are compounded specifically for use in John Deere engines and provide superior lubrication under all conditions. NEVER PUT ADDITIVES IN THE CRANKCASE. Torq-Gard oil was formulated to provide all the protection your engine needs. Additives could reduce this protection rather than help it.

If oil other than Torq-Gard or Torq-Gard Supreme is used, it must conform to one of the following specifications:

Single Viscosity Oils

API Service CD/SD
MIL-L-2104 C
Series 3*

Multi-Viscosity Oils

API Service CC/SE, CC/SD, or SD
MIL-L-46152

** As further assurance of quality, the oil should also be identified as suitable for API service designation SD.*

Depending on the expected atmospheric temperature at start for the fill period, use oil of viscosity as shown in the following chart.

Air Temperature	John Deere Torq-Gard Oil	Other Oils: Single Viscosity Oil	Other Oils: Multi-Viscosity Oil
Above 0° C (32° F)	SAE 30	SAE 30	Not recommended.
-23° C(-10° F) to 0° C(32° F)**	SAE 10W-20	SAE 10W	SAE 10W-30
Below -23° C(-10° F)	SAE 5W-20	SAE 5W	SAE 5W-20

*** If ambient temperature at start is below -12° C (10° F), use an engine heater. SAE 5W-20 oil may also be used if required. This will insure optimum lubrication of the engine when starting, particularly if the engine is subjected to -23° C (-10° F) or lower for several hours.*

Some increase in oil consumption may be expected when SAE 5W-20 or SAE 5W oils are used. Check oil level more frequently.

TRANSMISSION-HYDRAULIC SYSTEM OILS

Use only John Deere Hy-GARD Transmission and Hydraulic Oil or its equivalent in the transmission hydraulic system. Other types of oil will not give satisfactory service and may result in eventual damage. This special oil, available from your John Deere dealer, may be used in all weather conditions.

GREASES

Use John Deere Multi-Purpose Lubricant or an equivalent SAE multipurpose-type grease for all grease fittings. Application of grease as instructed in the lubrication section will provide proper lubrication and will prevent bearing contamination.

STORING LUBRICANTS

Your tractor can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contamination.

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Group 20
Engine and Tractor Tune-Up

10

GENERAL INFORMATION

Before tuning up the engine, determine whether a tune-up will restore operating efficiency. If there is doubt, the following preliminary tests will help to determine if the engine can be tuned up.

PRELIMINARY ENGINE TESTING

Service	Specifications	Reference
Checking air intake system by means of vacuum gauge	355 to 635 mm (14 to 25 in.) water head: engine running at fast idle speed	FOS "Fundamentals of Service, Engine" manual under "Diagnosis and Testing"
Check radiator for air bubbles or oil film	. . . . .	. . . . .
Measure blow-by at crankcase vent tube*	3.5 m^3 (123 cu.ft./h.)	. . . . .
Check compression (min. reading)	21 bar (300 psi)	FOS "Fundamentals of Service, Engine" manual under "Diagnosis and Testing"
Measure engine horsepower at powershaft (using a dynamometer)	Record measured performance and compare with performance measured after carrying out "Engine Tune-up"	. . . . .

* *Measure with a standard gas gauge, placing hose over end of crankcase vent tube. The engine must be tested at 2500 rpm and full load, normal running temperature and should be run in (at least 100 hours). Measure over a period of 5 minutes and multiply measured value by 12 (for hourly rate). Compare with values quoted above.*

There is no undue wear on piston rings and cylinder liners if the measured value is lower than that quoted above. Should a further test be desired, carry out a compresssion test. If the "blow-by" reading is more than that quoted above, the decline in performance is due to excessive wear and the engine should be overhauled.

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ENGINE TUNE-UP

Service	Specifications	Reference
AIR INTAKE SYSTEM		
Service air cleaner and dust unloading valve, check system for leaks	. . . . .	Operator's manual and "Fundamentals of Service, Engine" manual.
Check crankcase vent tube for foreign particles (restriction)	. . . . .	. . . . .
CYLINDER HEAD		
Re-tighten cylinder head cap screws	150 Nm (110 ft-lb)	Section 20, group 10
Check and adjust valve clearance	Intake valve: 0.35 mm (0.014 in.) Exhaust valve: 0.45 mm (0.018 in.)	Section 20, group 10
BATTERIES		
Thoroughly clean cables, connections and batteries	. . . . .	. . . . .
Tighten cable clamp screws	. . . . .	. . . . .
Liberally coat battery terminals and cable connectors with petroleum jelly	. . . . .	. . . . .
Check electrolyte level of battery	. . . . .	Operator's manual
Check specific gravity of electrolyte	. . . . .	Operator's manual
ALTERNATOR		
Check fan belt tension	19 mm (3/4 in.) deflection with 90 N (20 lb) force	Section 20, group 35
FUEL SYSTEM		
Check fuel tank and lines for leaks or restriction	. . . . .	. . . . .
Clean screen of fuel transfer pump	. . . . .	Operator's manual
Check fuel filter element and replace, if necessary	. . . . .	Section 30, group 10 and Operator's manual
Check injection timing and adjust, if necessary	. . . . .	Section 30, group 15
Bleed fuel system	. . . . .	Section 30, group 15
Check engine speeds and adjust speed control linkage, if necessary	. . . . .	Section 20, group 40

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