300 SK
400 SK
Log Skidders

Service Manual

9-73832

CASE

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SPECIFICATIONS AND ENGINE MAINTENANCE ON MODEL 300 SKID KING

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INTRODUCTION

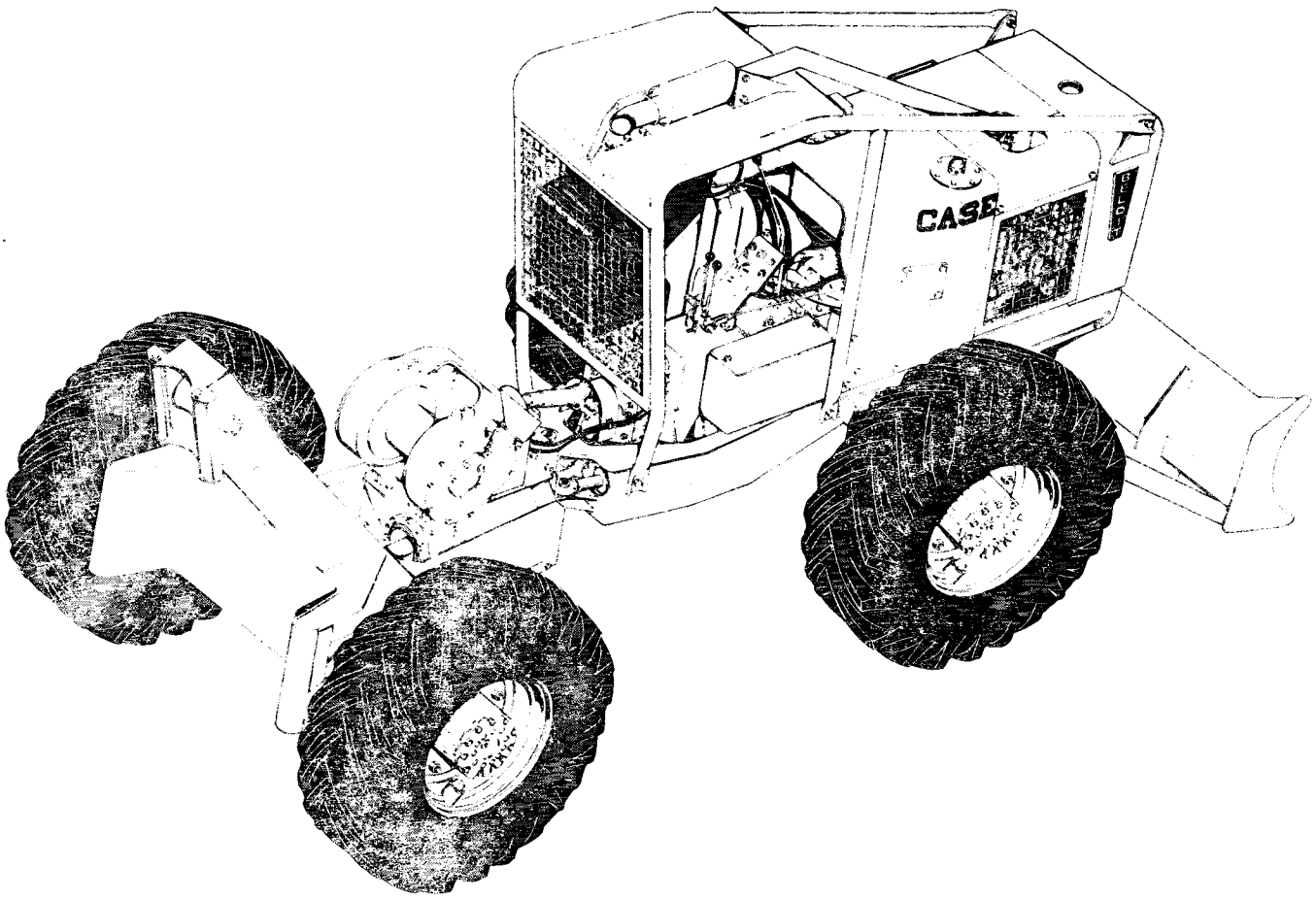


Figure 1

The illustrations, photos, and informative text in this manual will enable the mechanic to disassemble, service, and adjust the hydraulic and electric systems, power train, and frames.

IMPORTANT: This manual does not cover the Detroit Diesel engine, excepting routine maintenance items. Service problems relating to the engine should be referred to a Detroit Diesel service center.

The J. I. Case Company continually strives to improve the performance and dependability of its machines through better engineering and manufacturing methods. Therefore, the right is reserved to change specifications given in this manual without notice or without incurring any obligation relating to such changes.

DEFINITION OF "RIGHT HAND" AND "LEFT HAND"

The terms "right hand" and "left hand" are determined by standing at the rear of the unit and facing the direction of forward travel.

SPECIFICATIONS

DIMENSIONS (WITH STANDARD EQUIPMENT)

*Overall length with dozer blade	228"
without dozer blade	202-3/4"
*Overall width at tires	96"
*Overall height to top of canopy	98-1/2"
to top of muffler	105-1/2"
Height from center of fairlead to ground	72"
Vertical distance from center of fairlead to center of axle	45"
Horizontal distance from centerline of fairlead roller to centerline of axle	25-1/2"
*Ground clearance, at pivot joint	21"
at axle banjo	18"
*Turning clearance radius (to corner of blade)	219"
*Tread width	76-3/8"
*Wheel base	111"

BLADE DIMENSIONS AND SPECIFICATIONS

*Blade dimensions	84" x 23-1/2"
*Digging depth below ground	12-1/2"
*Lift height above ground	55"
Lifting force	7500 lbs.

STEERING AND ARTICULATION

Steering	Full hydraulic, wheel control
Steering angle, each direction from center	40°
*Turning clearance radius (to corner of blade)	219"
Frame oscillation, up or down	16°

TRAVEL SPEEDS (M.P.H.)

	LOW RANGE	HIGH RANGE
First	0 - 1.6	0 - 3.1
Second	0 - 2.9	0 - 5.7
Third	0 - 5.3	0 - 10.4
Fourth	0 - 9.2	0 - 18.1
Reverse	0 - 1.6	0 - 3.1

NOTE: Speeds established with 18.4 x 26 tires.

DOZER-STEERING HYDRAULIC SPECIFICATIONS

Refer to Section II, Steering-Dozer Hydraulic System.

APPROXIMATE CAPACITIES

Engine oil	12-1/2 quarts
Transmission	22 pints
Hydraulic reservoir	
Refill capacity	14 U.S. gallons
System capacity	18 U.S. gallons
Cooling system	6 U.S. gallons

Fuel tank	23 U.S. gallons
Winch	
Holt	12 quarts
Gearmatic	7-1/4 quarts
Torque converter	10 quarts
Wheel planetaries	7 pints each
Differentials	6-1/2 quarts each
Transfer case	7 pints

NOTE: For specific lubricants and fluids, refer to sections in this manual for each component.

TIRES

Standard	18.4 x 26, 10 ply-rating, "Loggers Special"
Optional	18.4 x 34, 10 ply-rating, "Loggers Special"
Description	Nylon carcass, shredded wire undertread and sidewalls, bead to bead
Recommended pressure	20 P.S.I.

WEIGHT DISTRIBUTION

Front axle	10,240 lbs.
Rear axle	4,120 lbs.
Total shipping weight	14,260 lbs.

WINCH SPECIFICATIONS

Refer to Section VIII, Winches.

ELECTRICAL SPECIFICATIONS

Refer to Section III, Electrical System.

ENGINE SPECIFICATIONS

NOTE: For detailed specifications, refer to Detroit Diesel service manual or operator's manual.

Make and model	Detroit Diesel 3-53
Maximum rated horsepower	
Gross (see note 1 below)	97 H.P. @ 2800 R.P.M.
S.A.E. net (see note 2 below)	81 H.P. @ 2500 R.P.M.
Fuel	No. 2 diesel fuel
Cylinders, number, valve-in-head	3
Bore and stroke	3-7/8" x 4-1/2"
Displacement	159 cu. inches
Starting	12-volt, neg. ground
Fuel induction	Injectors (3)
Fuel supply	Low pressure transfer pump
Ignition	Diesel cycle
Air cleaner	Dry type
Governor	Limiting speed with throttle control
Oil filter type	Renewable cartridge
Lubrication	Positive pressure

NOTE 1: Manufacturer's rating of maximum engine horsepower at flywheel without accessories. Fuel set at maximum quantity for this application. Corrected to sea level - 29.92" Hg. and 60° F. dry air.

NOTE 2: S.A.E. net flywheel horsepower of engine as applied to this vehicle when equipped with all accessories. Corrected to 500' altitude with .38" Hg. vapor pressure (29.38" Hg. observed barometer) and 85° F. air (per S.A.E. J816a).

COOLING SYSTEM

Type	HD tropical radiator, pressurized at 7 P.S.I.
Thermostat	Bypass type, 170° to 190°
Pump	Impeller type, lubricated bearing

NOTE: Specifications preceded by an asterisk (*) conform to I.E.M.C. definition. I.E.M.C. definitions are not established for specifications without an asterisk.

IMPORTANT: J. I. Case Company reserves the right to change these specifications without notice and without incurring any obligation relating to such changes.

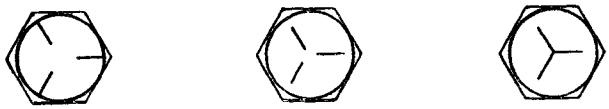
STANDARD TORQUES

Torque values listed are to be used under normal conditions.

Many capscrews, bolts, nuts etc. require tightening to a special torque for proper installation. These torques are shown in the servicing instructions and illustrations for each component.

Grade 5 Capscrews, Nuts, Studs

S.A.E. Grade 5 Bolts (A.S.T.M. A325 and A.S.T.M. A449) are made from quenched and tempered medium carbon steel - Grade 5 bolts are identified by three (3) equally spaced radial lines embossed on the head of the bolt.



Coarse Thread (N.C.) Fine Thread (N.F.)

	Torque (ft. lbs.)		Torque (ft. lbs.)
1/4" - 20 N.C.	5-10	9/16" - 12 N.C.	100-120
1/4" - 28 N.F.	10-15	9/16" - 18 N.F.	110-130
5/16" - 18 N.C.	15-20	5/8" - 11 N.C.	135-165
5/16" - 24 N.F.	15-20	5/8" - 18 N.F.	160-200
3/8" - 16 N.C.	25-35	3/4" - 10 N.C.	235-285
3/8" - 24 N.F.	30-40	3/4" - 16 N.F.	270-330
7/16" - 14 N.C.	45-55	7/8" - 9 N.C.	360-440
7/16" - 20 N.F.	50-60	7/8" - 14 N.F.	395-490
1/2" - 13 N.C.	65-85	1" - 8 N.C.	520-640
1/2" - 20 N.F.	80-100	1" - 12 N.F.	575-705

Grade 8 Capscrews, Nuts, Studs

S.A.E. Grade 8 Bolts (A.S.T.M. A354, Grade BD), are made from quenched and tempered medium carbon alloy steel. Grade 8 Bolts are identified by six (6) equally spaced radial lines embossed on the head of the bolt.

Coarse Thread (N.C.) Fine Thread (N.F.)

	Torque (ft. lbs.)		Torque (ft. lbs.)
1/4" - 20 N.C.	10-15	9/16" - 12 N.C.	135-165
1/4" - 28 N.F.	15-20	9/16" - 18 N.F.	155-190
5/16" - 18 N.C.	20-30	5/8" - 11 N.C.	200-240
5/16" - 24 N.F.	25-30	5/8" - 18 N.F.	215-265
3/8" - 16 N.C.	40-50	3/4" - 10 N.C.	340-420
3/8" - 24 N.F.	45-55	3/4" - 16 N.F.	380-460
7/16" - 14 N.C.	60-80	7/8" - 9 N.C.	540-660
7/16" - 20 N.F.	70-90	7/8" - 14 N.F.	595-725
1/2" - 13 N.C.	100-120	1" - 8 N.C.	810-990
1/2" - 20 N.F.	110-130	1" - 12 N.F.	900-1100

REMOVING ENGINE

1. Remove the engine hood and side panels. Drain the engine oil.

2. Remove the canopy and exhaust tubing. Refer to "Canopy and Exhaust System", Section VII, Frames.

3. Remove the three front frame underpan attaching bolts, lockwashers, and nuts, allowing the front portion of the underpan to drop.

4. Drain the engine coolant and remove the radiator housing and grille as an assembly. Refer to "Removing Radiator" in this section.

5. Drain the hydraulic tank and remove the dozer-steering pump from the rear of the engine. Refer to "Steering-Dozer Hydraulic Pump", Section II, Hydraulic System.

6. Close fuel shut off valve. Disconnect fuel lines. Remove or disconnect all other items from engine such as torque converter cooler hoses, electric wires, etc. Close all hydraulic and fuel line openings with clean caplugs. Tag wires, lines, and hoses to aid in reassembly.

7. Provide suitable support under the torque converter or transmission (dry clutch models) to prevent stresses against the power train when the engine is separated from the torque converter or transmission.

8. On torque converter models, remove eight flywheel-to-flex plate bolts:

   a. Remove plug shown in Figure 2.

   b. Turn the flywheel with a 1-1/8" wrench applied to the crankshaft pulley bolt at the front of the engine until the bolts come in view through the plug hole. Turn flywheel and remove bolts until all eight have been removed.

NOTE: For additional working room, if desired, the engine oil filter near the plug may be removed.

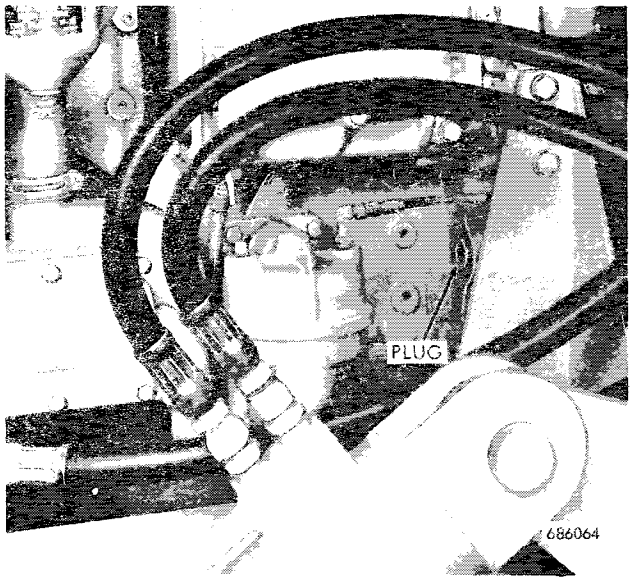


Figure 2

9. On dry clutch models, remove the access plate on top of the transmission. Through this access, remove the bolts and lockwashers which attach the clutch assembly to the flywheel.

10. Remove the twelve engine flywheel housing to torque converter or transmission mounting bolts and lockwashers.

11. Remove the two front engine mounting bolts, lockwashers, and nuts.

12. Remove the eight (four each side) side engine mounting bolts and lockwashers. Remove the engine mount bracket from each side.

13. Attach a suitable hoist to the two engine lifting lugs provided on the engine.

14. Make certain everything is disconnected, then carefully raise the engine from the tractor.

IMPORTANT: Engine overhaul and repairs other than routine maintenance (oil changes, filter service, etc.) should be done at an authorized Detroit Diesel service center.

INSTALLING ENGINE

1. The engine should be installed in the reverse order of the instructions under "Removing Engine" above.

2. In addition, the following illustrations will be helpful during the installation:

Electrical wiring . . Figure 1, Section III
Pump installation Figures 12 & 14, Section II
Fuel lines installation . Figure 7, Section I
Radiator installation . . Figure 4, Section I
Canopy and exhaust Figure 4 or 5, Section VII

NOTE: On torque converter models, torque the eight flywheel-to-flex plate mounting bolts to 41-49 foot pounds.

3. Install oil, fuel, and engine coolant as follows:

   a. Replace engine oil filter. Add 12-1/2 quarts of oil.
   b. Fill fuel tank with 23 gallons No. 2 diesel fuel.
   c. Fill radiator with 6 gallons of coolant—1/2 water, 1/2 anti-freeze.
   d. Fill hydraulic reservoir with 14 U.S. gallons Case Hi-Lo TCH oil.

AIR CLEANER

DESCRIPTION

The heavy duty, dry type air cleaner consists of a removable wire screen cover attached to the air cleaner body which contains a replaceable filter cartridge. The cartridge incorporates an individual tube design which presents a large filtration area to the incoming air.

Air entering the air cleaner is given a precleaning while passing through the multiple wire screen cover. The air then passes through the tubes of the paper filter cartridge into the engine.

The cartridge should be replaced and their air cleaner serviced at least every two months; more often in dusty conditions.

SERVICING

1. Loosen the four wing nuts and remove the wire cover assembly.

2. Pull the paper cartridge from the filter housing and discard it.

3. Thoroughly clean the filter housing and wire mesh cover.

NOTE: Take care to prevent dirt from falling into blower intake.

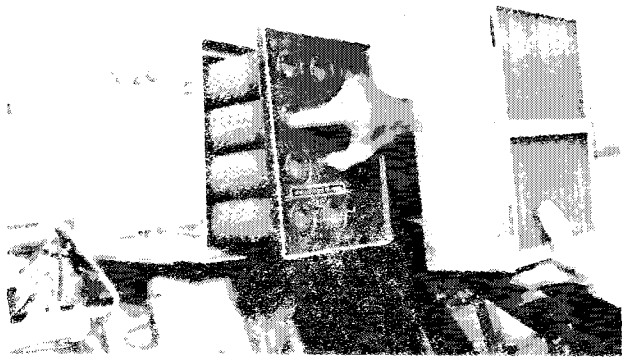


Figure 3

4. Reassemble the air cleaner with a new filter cartridge. NEVER attempt to wash or clean a plugged filter cartridge. Do not reuse a filter cartridge.

COOLING SYSTEM

CAPACITY

The capacity of the basic engine cooling system (cylinder block, head, thermostat housing, and oil cooler is 8 quarts.

The complete cooling system capacity including the engine and radiator is 6 U.S. gallons.

DRAIN COCKS

Drain cocks are located on the right hand side of the engine block and the lower rear of the radiator. There is an additional drain cock located on the bottom of the oil cooler housing.

FLUSHING

The cooling system should be flushed each Spring and Fall.

1. Drain the engine and radiator.
2. Refill the cooling system with soft, clean water. If the engine is hot, fill SLOWLY.
3. Start the engine and run for 15 minutes.
4. Drain the system.
5. Refill the system with approximately 6 U.S. gallons of coolant—1/2 water, 1/2 permanent type anti-freeze.

FAN BELT TENSION

Proper fan and alternator belt tension is illustrated in Figure 4.

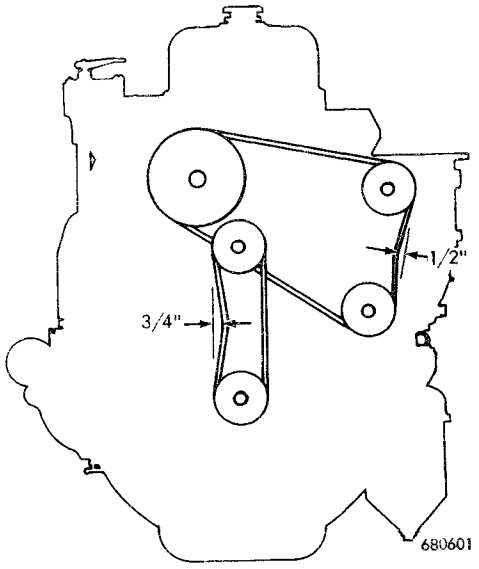


Figure 4

ENGINE OIL FILTER

REPLACING ELEMENT

The oil filter element should be changed every time the oil is changed.

1. The filter shell, element, and stud may be detached as an assembly after removing the center stud unscrewing it from the bottom of the shell. Discard the gasket.
2. Discard the used element. Clean the filter shell and all parts. Install a new element.
3. Place a new gasket in the filter base, position the shell and element assembly on the gasket and tighten the center stud carefully to prevent damaging the gasket or center stud.
4. Start the engine, and check for leaks.

RADIATOR AND GRILLE

REMOVAL

Refer to Figure 5. The radiator and grille should be removed as an assembly.

1. Remove the hood and side panels.

2. Drain the radiator and engine block. Open the drain plug at the bottom rear of the radiator, the drain cock on the bottom of the oil cooler on the left hand side of the engine, and the drain cock on the right hand side of the engine block.

3. Unbolt the canopy arms from the grille. To remove the canopy and exhaust, refer to "Canopy and Exhaust System", Section VII, Frames.

4. Remove the upper and lower radiator hoses.

5. Remove the six lower grille mounting bolts and lockwashers.

6. Attach a hoist to the grille assembly and take up the slack.

7. Remove the grille-to-front frame mounting bolts, lockwashers, and nuts (one each side).

8. Carry and guide the grille forward very carefully until it clears the fan blades. Lower to the ground and remove the radiator from the grille by removing attaching bolts, washers, and lockwashers.

INSTALLATION

1. Installation of the radiator and grille is the reverse of the removal instructions above.

2. Fill the cooling system with approximately six gallons of fresh coolant (50% permanent anti-freeze, 50% water).

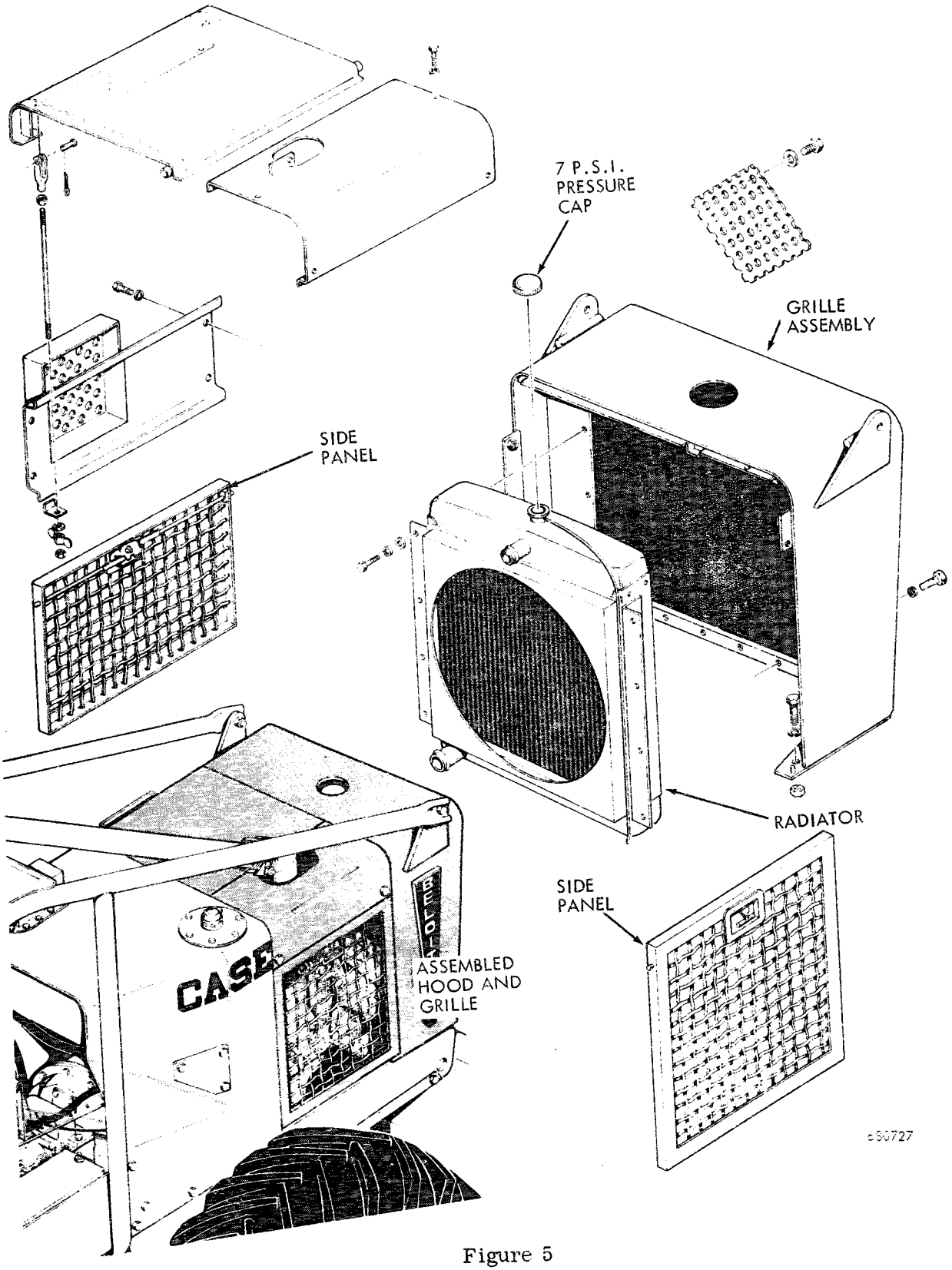

7 P.S.I.
PRESSURE
CAP
GRILLE
ASSEMBLY
SIDE
PANEL
RADIATOR
SIDE
PANEL
ASSEMBLED
HOOD AND
GRILLE
CASE
e30727

Figure 5

FUEL SYSTEM

PRIMING FUEL SYSTEM

Refer to Figure 7.

After running out of fuel or changing elements in the fuel strainer and fuel filter, it may be necessary to "prime" the fuel system as follows:

1. Fill the fuel tank and open the fuel shutoff valve.

2. Remove the small plug on top of the fuel strainer and fuel filter bodies and fill with fuel. Replace the plugs.

3. Start the engine and operate at a reduced speed until the fuel system is bled.

REMOVING FUEL TANK

Refer to "Hydraulic Oil and Diesel Fuel Tank", Section II, Hydraulic System.

REPLACING FILTER ELEMENTS

The fuel strainer and fuel filter elements should be changed every 80 hours of operation. The fuel strainer is located on the right side of the engine; the fuel filter on the left side.

Procedure for changing elements is the same for both strainer and filter. Refer to Figure 6.

1. With the engine stopped, place a drain pan under the strainer or filter and open the drain cock. Loosen the cover nut just enough to allow the fuel to drain out freely. Close drain cock.

2. When completely drained, unscrew the cover nut and remove the shell and element.

3. Discard the filter element. Wash the shell thoroughly with clean fuel and blow it dry with compressed air.

4. Remove the old cover shell gasket.

5. Install a new element in the shell. Fill shell about two-thirds full of clean fuel.

6. Using a new gasket between shell and cover, assemble shell and element to cover and secure with the cover nut.

Figure 6

7. Prime the system as described under "Priming Fuel System" above.

Engine Shut Off Controls

REMOVING ENGINE SHUTOFF

Refer to Figure 8.

1. The engine shutoff control stops all fuel flow to the engine when pulled out completely. It should be replaced if kinked or damaged.

2. Remove the jam nut and lockwasher from the underside of the instrument panel.

3. Loosen the set screw on the cable anchor and remove cable clamp, Figure 8. Retract the entire cable and lever mechanism through the instrument panel.

ADJUSTING ENGINE SHUTOFF

1. Loosen the set screw on the cable anchor, Figure 8, allowing the wire

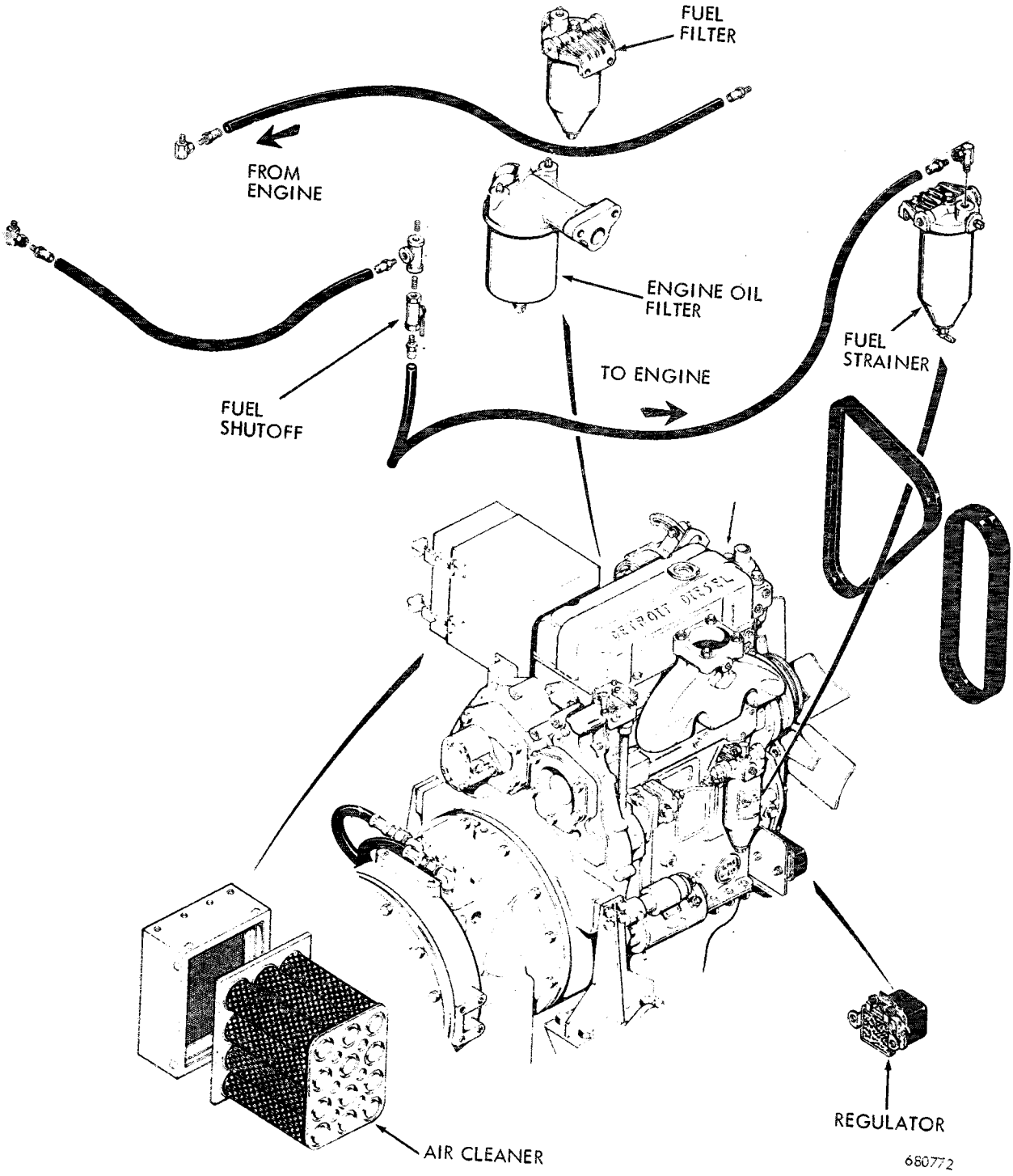

FUEL
FILTER
FROM
ENGINE
ENGINE OIL
FILTER
FUEL
STRAINER
FUEL
SHUTOFF
TO ENGINE
REGULATOR
AIR CLEANER
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Figure 7

to slide freely within it.

2. Move the shutoff lever forward completely. Tighten the set screw.

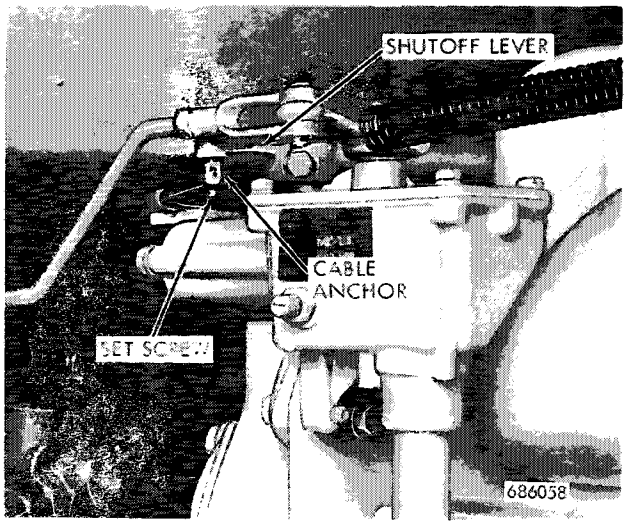

Figure 8

ADJUSTING EMERGENCY ENGINE SHUTOFF

1. Loosen the set screw on the cable anchor, Figure 9, allowing the wire to slide freely within it.

2. Push the emergency control lever completely forward. Have the linkage reset lever on the engine in the down position.

3. Tighten the set screw.

NOTE: For description and operation of the shutoff controls, refer to "Instrument Panel", Section III, Electrical System and Instruments.

REMOVAL

1. Follow same procedure as outlined under removing engine shutoff above.

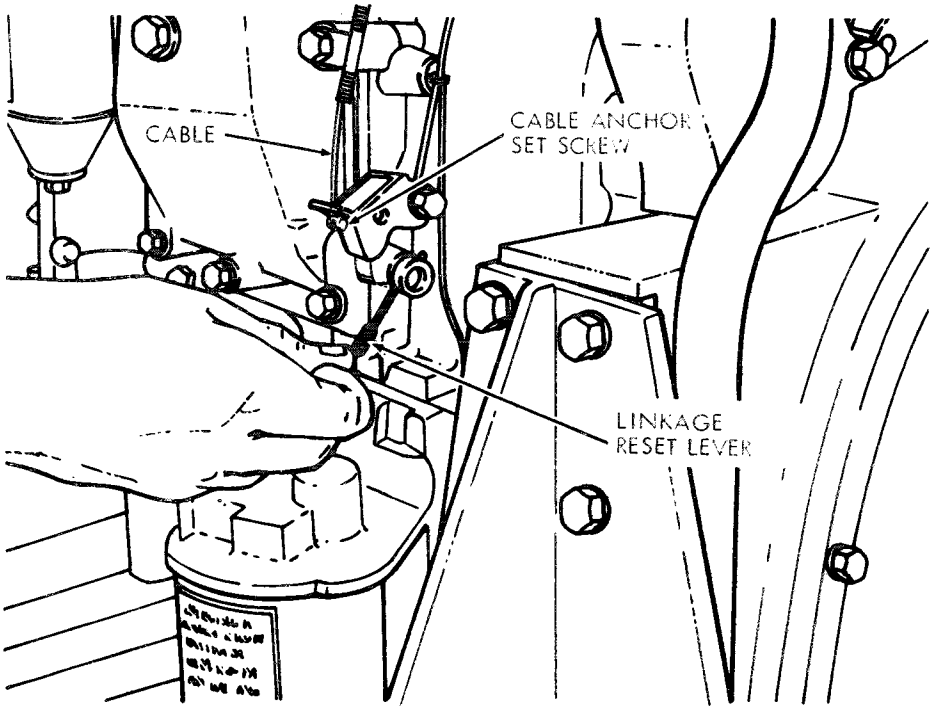

Figure 9

Throttle Control Linkage, Exploded View

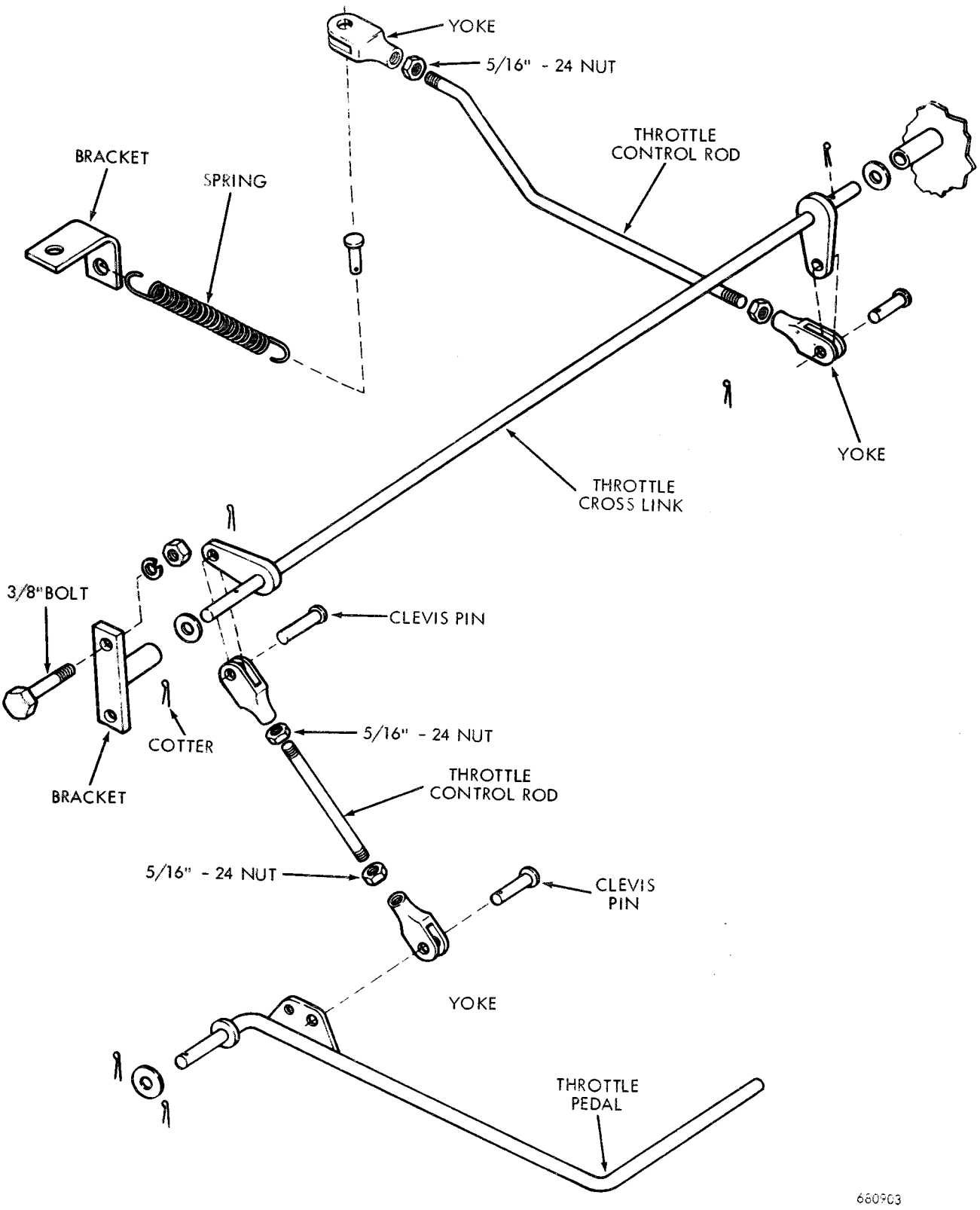

Figure 10

SPECIFICATIONS AND ENGINE MAINTENANCE ON MODEL 400 SKID KING

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INTRODUCTION

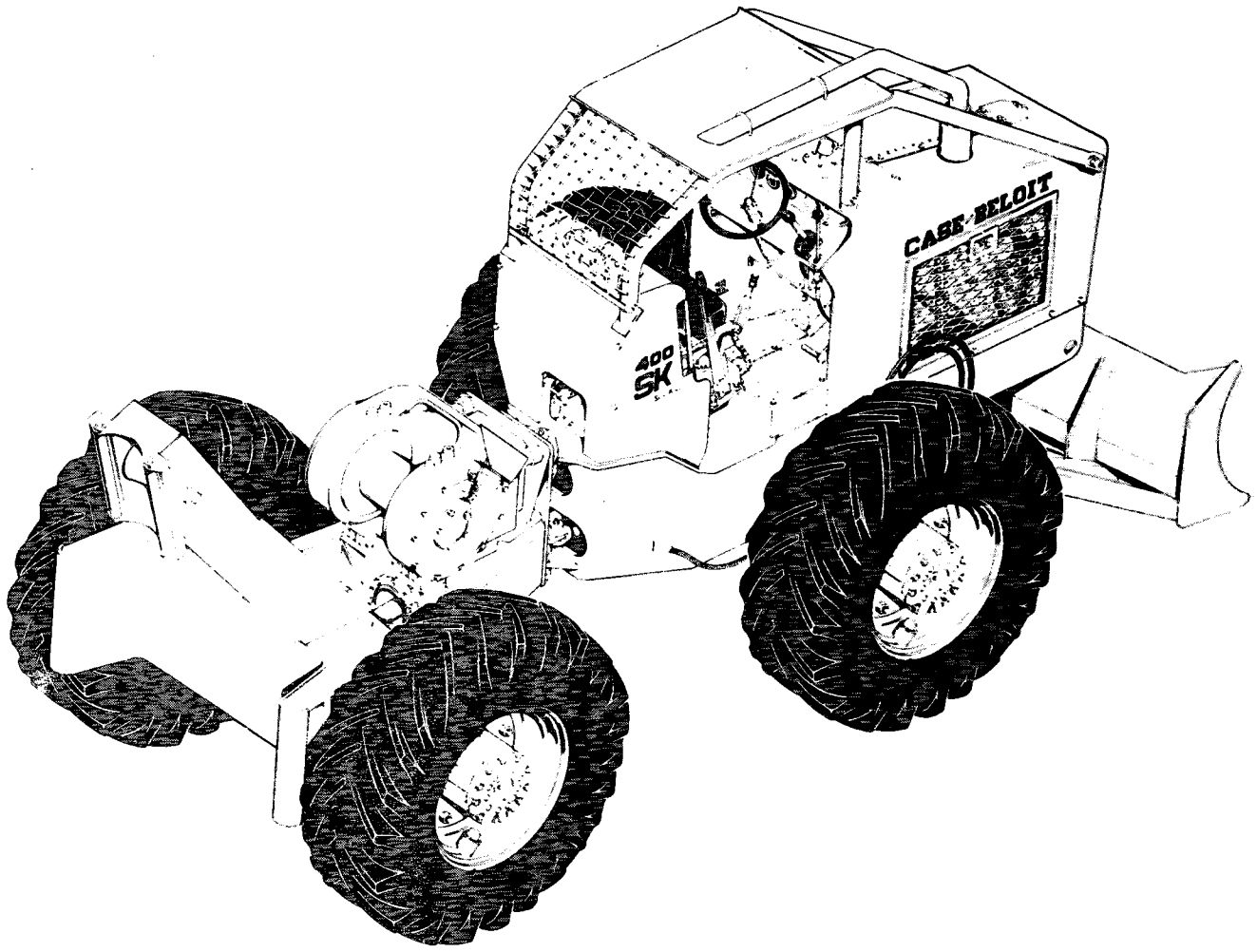

Figure 1

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DEFINITION OF "RIGHT HAND" AND "LEFT HAND"

The terms "right hand" and "left hand" are determined by standing at the rear of the unit and facing the direction of forward travel.

SPECIFICATIONS

DIMENSIONS (WITH STANDARD EQUIPMENT)

Overall length with dozer blade	228"
without dozer blade	202-3/4"
Overall width at tires	96"
Overall height to top of canopy	98-1/2"
to top of exhaust pipe	121"
Height from center of fairlead to ground	76-3/4"
Vertical distance from center of fairlead to center of axle	45"
Horizontal distance from centerline of fairlead roller to center line of axle	25-1/2"
Ground clearance, minimum	28"
Turning clearance radius (to corner of blade)	222"
Tread width	76-3/8"
Wheel base	111"

BLADE DIMENSIONS AND SPECIFICATIONS

Blade dimensions	84" x 23-1/2"
Digging depth below ground	8"
Lift height above ground	58-5/8"
Lifting force	7500 lbs.

STEERING AND ARTICULATION

Steering	Full hydraulic, wheel control
Steering angle, each direction from center	40°
Turning clearance radius, to corner of blade	222"
Frame oscillation, up or down	14°

TRAVEL SPEEDS* (M.P.H.)

Forward, low range (1st turbine)	0 - 3.93
(2nd turbine)	3.93 - 6.70
Forward, high range (1st turbine)	0 - 10.8
(2nd turbine)	10.8 - 21.7
Reverse, low range (1st turbine)	0 - 5.8
(2nd turbine)	5.8 - 9.8

*NOTE: Operator cannot select 1st or 2nd turbine. Refer to operation of transmission, Section V, Power Delivery System.

NOTE: Speeds established with 18.4 x 34 tires.

DOZER-STEERING HYDRAULIC SPECIFICATIONS

Refer to Section II, Hydraulic System.

APPROXIMATE CAPACITIES

Engine oil	15 quarts with filter change
Transmission	36 quarts
Hydraulic reservoir	
Refill capacity	18-1/2 gallons
System capacity	22-1/2 gallons
Cooling system	6-1/4 gallons
Fuel tank	33-1/2 gallons
Winch	7-1/4 quarts
Wheel planetaries	7 pints each
Differentials	6-1/2 quarts each

NOTE: For specific lubricants and fluids, refer to sections in this manual for each component.

TIRES AND WHEELS

Standard	18.4 x 34, 10 PR, LS
Optional	18.4 x 26, 10 PR, LS 23.1 x 26, 10 PR, LS
Description	"Logger Special" tires with nylon carcass, shredded wire undertread and walls, bead to bead. Heavy undertread and sidewall construction.
Air pressure	20 P.S.I.
Rims	Heavy duty, reinforced

WEIGHT DISTRIBUTION

Front axle	10,644 lbs.
Rear axle	4,714 lbs.
Total shipping weight	15,358 lbs.

WINCH SPECIFICATIONS

Refer to Section VII, Winches.

ELECTRICAL SPECIFICATIONS

Refer to Section III, Electrical System and Instruments.

ENGINE SPECIFICATIONS

NOTE: For detailed specifications, refer to Detroit Diesel service manual or operator's manual for Series 53 engines.

Make and model	Detroit Diesel 4-53
Recommended fuel	No. 2 diesel fuel
Maximum rated horsepower	
Gross (See Note 1 below)	130 H.P. @ 2800 R.P.M.
S.A.E. net (See Note 2 below)	112 H.P. @ 2500 R.P.M.
Torque, maximum, lbs. ft. (S.A.E. net)	254 @ 1500 R.P.M.
Cylinders, number, valve in head	4
Bore and stroke	3-7/8" x 4-1/2"
Displacement	212 cu. inches
Starting	12 volt, neg. ground
Fuel induction	Injectors (4)

Fuel supply	Low pressure transfer pump
Ignition	Diesel cycle
Air cleaner	Dry type
Oil filter type	Renewable cartridge
Governor	Limiting speed with throttle control
Lubrication	Positive pressure

NOTE 1: Manufacturer's rating of maximum engine horsepower at flywheel without accessories. Fuel set at maximum quantity for this application. Corrected to sea level - 29.92" Hg. and 60° F. dry air.

NOTE 2: S.A.E. net flywheel horsepower of engine as applied to this vehicle when equipped with all accessories. Corrected to 500' altitude with .38" Hg. vapor pressure (29.38" Hg. observed barometer) and 85° F. air (per S.A.E. J816a).

COOLING SYSTEM

Type	HD tropical radiator, pressurized at 7 P.S.I.
Thermostat	Bypass type, 170° to 190°
Pump	Impeller type, lubricated bearing

IMPORTANT: J. I. Case Co. reserves the right to change these specifications without notice and without incurring any obligation relating to such changes.

REMOVING ENGINE

1. Remove the engine side panels, rear pump access plate, and floorboards.

2. Remove the canopy and exhaust tubing. Refer to "Canopy and Exhaust System", Section VII, Frames.

3. Remove the three front frame underpan attaching bolts, lockwashers, and nuts, allowing the front portion of the underpan to drop.

4. Drain the engine oil.

5. Drain the engine coolant.

6. Remove the radiator:

   a. Remove the grille.

   b. Disconnect the upper and lower radiator hoses.

   c. Remove eight (four each side) radiator mounting bolts and lockwashers.

   d. Remove radiator by carrying the radiator straight forward until it is clear of the fan blades.

7. Disconnect the hydraulic pump:

   a. Drain the hydraulic oil tank.

   b. Disconnect or remove the suction hose and outlet tube.

8. Disconnect the following items so the hood and hydraulic tank assembly can be removed:

   a. Wiring harness at pressure switch (wires marked 1 and 5) on left hand side of engine.

   b. Brake line tube at bottom of relief valve.

   c. Transmission shift control cable.

   d. Engine shutoff cable (right hand rear of engine at governor).

   e. Emergency engine shutoff cable (left hand side of engine).

   f. Disconnect wires and cable at starter solenoid.

   g. Disconnect engine-to-tranmission driveshaft.

   h. Engine oil and water temperature control cable.

   i. Tubes and hoses to steering cylinders and dozer cylinders.

   j. Transmission clutch pressure and oil temperature cables at instrument panel.

   k. Muffler.

9. Attach a hoist to the hood and tank assembly. Remove all bolts, lockwashers, and nuts which mount the hood and tank assembly to the frame. Carry the hood and tank assembly away with the hoist and set it on the floor.

10. Two lift lugs are provided on the engine. Attach the hoist to the lift lugs.

11. Remove the engine air cleaner. Remove the two front engine mounting bolts, washers, and nuts. Remove eight (four each side) engine rear mounting bolts and lockwashers.

12. Make certain that everything is disconnected, then carefully raise the engine from the tractor.

    IMPORTANT: Engine overhaul and repairs other than routine maintenance (oil changes, filter service, etc.) should be done at an authorized Detroit Diesel service center.

INSTALLING ENGINE

1. The engine should be installed in the reverse order of the instructions under "Removing Engine" above.

2. In addition, the following illustrations

will be helpful during the installation:

Electrical wiring . Figure 4, Section III

Pump installation . Fig. 9 or 9a, Sect. II

Fuel lines installation . Figure 6, this Section

Radiator installation . . . Figure 4, this Section

Canopy and exhaust Fig. II, Section VII

3. Install oil, fuel, and engine coolant as follows:

   a. Replace engine oil filter. Add 15 quarts of oil.

   b. Fill fuel tank with 33-1/2 gallons No. 2 diesel fuel.

   c. Fill radiator with 6-1/4 gallons of coolant—1/2 water, 1/2 anti-freeze.

   d. Fill hydraulic reservoir with 18-1/2 U.S. gallons Case Hi-Lo TCH oil.

AIR CLEANER

SERVICING THE ELEMENT

1. The air cleaner element must be serviced every 40 hours - more often in excessive dust conditions. The element can be cleaned either by washing or by compressed air. Replace the element after six washings or 1000 hours, whichever occurs first.

2. To remove the element, raise the access cover on the hood, release the three cover retaining clips and lift off cover. See Figure 2.

CLEANING THE ELEMENT

1. To wash the filter element, use Case Filter Element Cleaner Part No. A40910. Mix two ounces of cleaner to one gallon of water (temperature 70° to 100° F.). Soak the element in this solution for 15 minutes. Rinse thoroughly. Do not use water pressure over 40 P.S.I. at the nozzle. Let the element air dry completely before installing. DO NOT use air pressure to dry the element. Overnight drying is usually sufficient.

2. The element can also be cleaned with compressed air (maximum pressure 100 P.S.I. at nozzle). Keep the air nozzle a reasonable distance from the filter element. Use of compressed air is not recommended because it will not remove carbon and soot - washing will. Never attempt to clean the element by rapping it. Rapping the element will dent the metal covering. The inner paper element will in turn rub this dent, causing the element to puncture.

Figure 2

3. Inspect the element after it has dried. Pass a bright light through the center. If any holes appear, replace the element. Also inspect the rubber gasket for damage.

COOLING SYSTEM

CAPACITY

The capacity of the basic engine cooling system (cylinder block, head, thermostat housing and oil cooler) is 9 quarts.

The complete cooling system capacity including the engine and radiator is 6-1/4 U.S. gallons.

DRAIN COCKS

Drain cocks are located on the right hand side of the engine block above the starter and the lower rear of the radiator. There is and additional drain cock located on the bottom of the oil cooler housing.

FLUSHING

The cooling system should be flushed each Spring and Fall.

1. Drain the engine and radiator.
2. Refill the cooling system with soft, clean water. If the engine is hot, fill SLOWLY.
3. Start the engine and run for 15 minutes.
4. Drain the system.

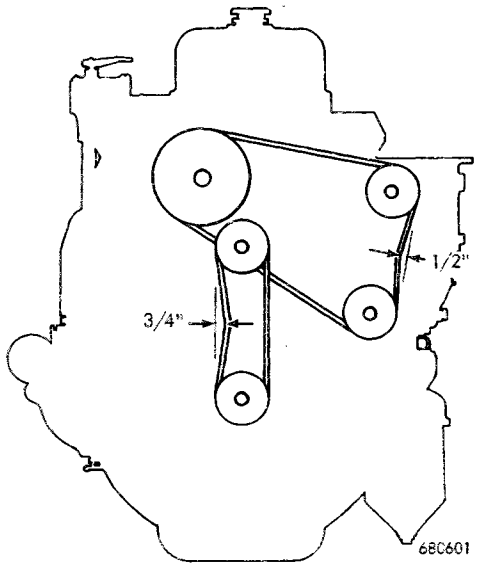

Figure 3

5. Refill the system with approximately 6-1/4 U.S. gallons of coolant--1/2 water, 1/2 permanent type anti-freeze.

FAN BELT TENSION

Proper fan and alternator belt tension is as illustrated in Figure 3.

REMOVING RADIATOR

Refer to Figure 4.

1. Remove the engine side panels.
2. Drain the radiator and engine block. To completely drain the system three drain cocks must be opened: (1) at bottom rear of radiator, (2) at bottom of oil cooler on left hand side of engine, and (3) on right hand side of engine block above starter.
3. Remove eight grille mounting bolts and lockwashers. Remove the grille.
4. Disconnect the upper and lower radiator hoses.
5. Remove eight (four each side) radiator mounting bolts and lockwashers. Pull radiator straight forward, taking care not to damage the fan blades.

INSTALLATION

1. Installation of the radiator and grille is the reverse of the removal instructions above.
2. Fill the cooling system with approximately 6-1/4 gallons of fresh coolant (50% permanent anti-freeze, 50% water).

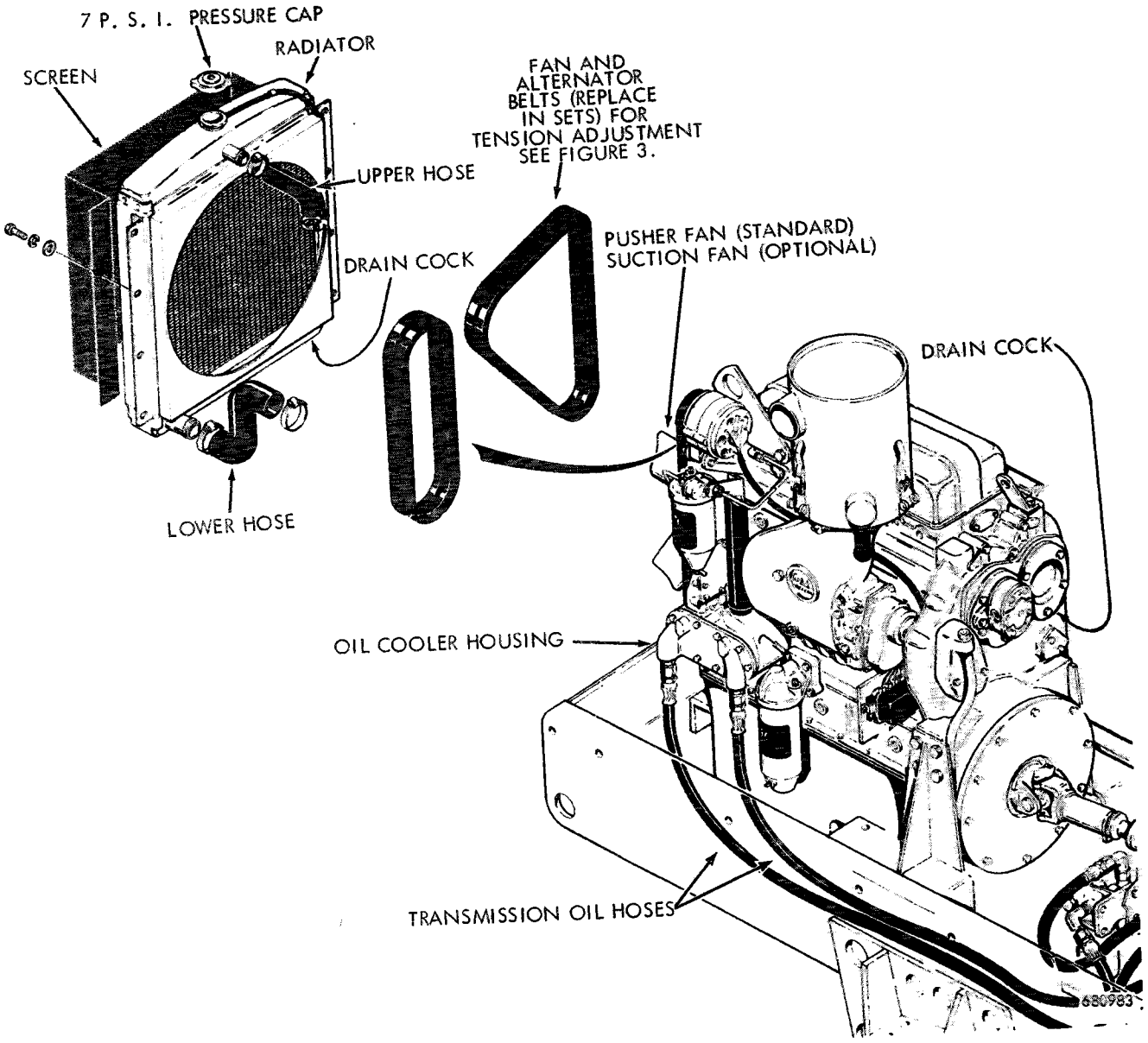
7 P. S. I. PRESSURE CAP
RADIATOR
SCREEN
FAN AND ALTERNATOR BELTS (REPLACE IN SETS) FOR TENSION ADJUSTMENT SEE FIGURE 3.
UPPER HOSE
PUSHER FAN (STANDARD) SUCTION FAN (OPTIONAL)
DRAIN COCK
DRAIN COCK
OIL COOLER HOUSING
LOWER HOSE
TRANSMISSION OIL HOSES
680983

Figure 4

FUEL SYSTEM

PRIMING FUEL SYSTEM

Refer to Figure 5.

After running out of fuel or changing elements in the fuel strainer and fuel filter, it may be necessary to "prime" the fuel system as follows:

1. Fill the fuel tank and open the fuel shutoff valve.

2. Remove the small plug on top of the fuel strainer and fuel filter bodies and fill with fuel. Replace the plugs.

3. Start the engine and operate at a reduced speed until the fuel system is bled.

REPLACING FILTER ELEMENTS

The fuel strainer and fuel filter elements should be changed every 80 hours of operation. The fuel strainer is located on the right side of the engine; the fuel filter on the left side.

Procedure for changing elements is the same for both strainer and filter.

1. With the engine stopped, place a drain pan under the strainer or filter and open the draincock. Loosen the cover nut just enough to allow the fuel to drain out freely. Close drain cock.

2. When completely drained, unscrew the cover nut and remove the shell and element.

3. Discard the filter element. Wash the shell thoroughly with clean fuel and blow it dry with compressed air.

4. Remove the old cover shell gasket.

5. Install a new element in the shell. Fill shell about two-thirds full of clean fuel.

6. Using a new gasket between shell and cover, assemble shell and element to cover and secure with the cover nut.

7. Prime the system as described under "Priming Fuel System" above.

Engine Shut Off Controls

REMOVING ENGINE SHUTOFF

Refer to Figure 6.

1. The engine shutoff control stops all fuel flow to the engine when pulled out completely. It should be replaced if kinked or damaged.

2. Remove the jam nut and lockwasher from the underside of the instrument panel.

3. Loosen the set screw on the cable anchor and remove cable clamp. Figure 6. Retract the entire cable and lever mechanism through the instrument panel.

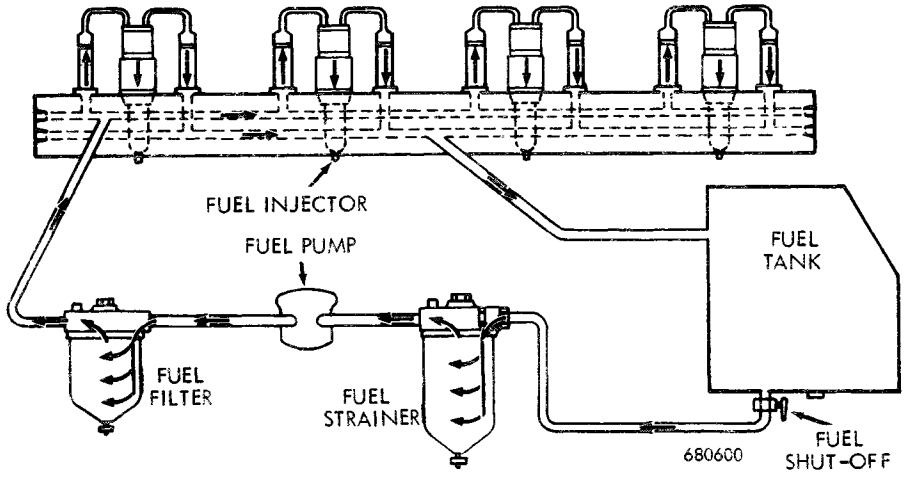

Figure 5

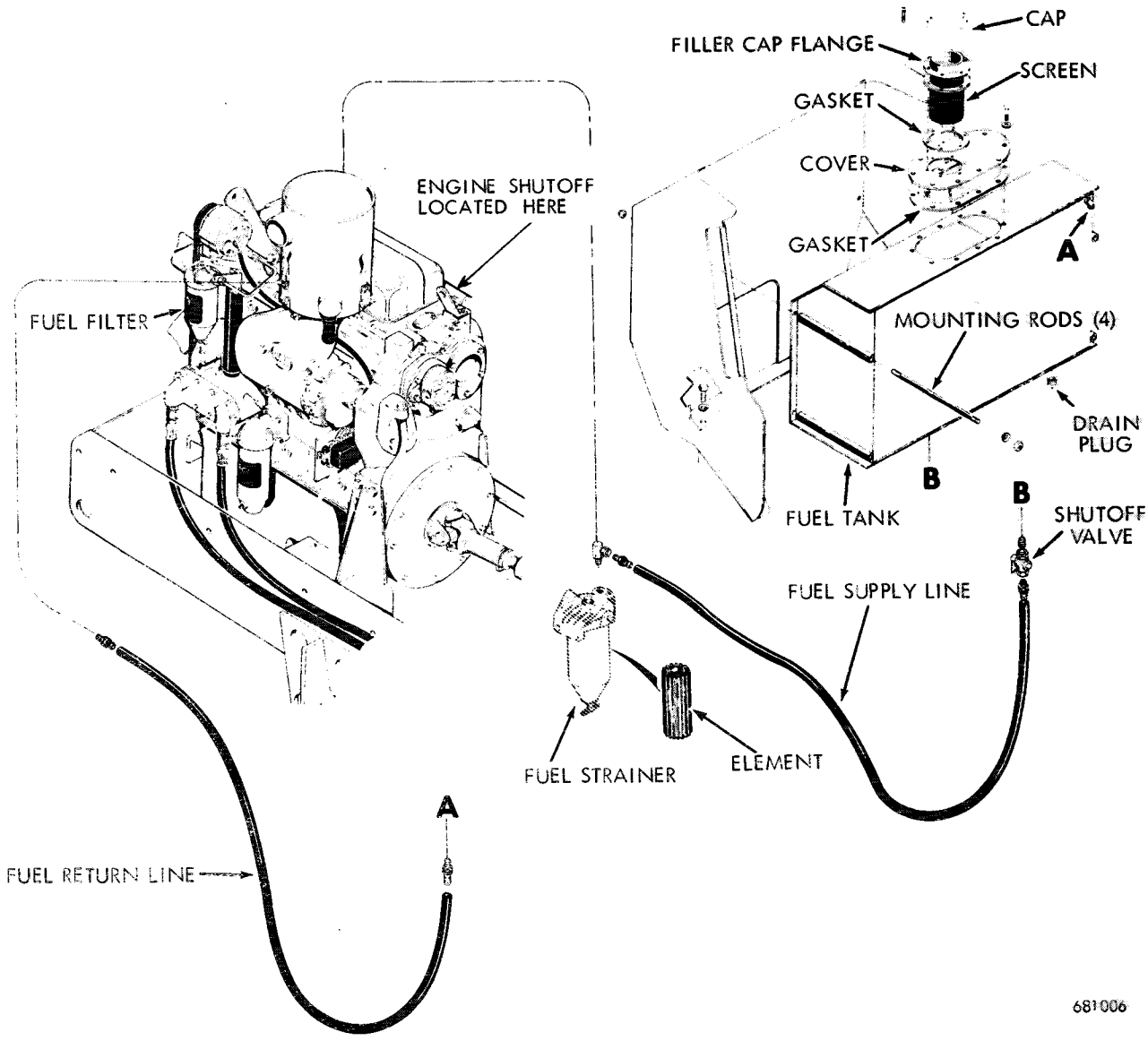
CAP
FILLER CAP FLANGE
SCREEN
GASKET
COVER
GASKET
A
ENGINE SHUTOFF
LOCATED HERE
FUEL FILTER
MOUNTING RODS (4)
DRAIN
PLUG
B
B
FUEL TANK
SHUTOFF
VALVE
FUEL SUPPLY LINE
FUEL STRAINER
ELEMENT
A
FUEL RETURN LINE
681006

Figure 6

ADJUSTING ENGINE SHUTOFF

1. Loosen the set screw on the cable anchor, Figure 6, allowing the wire to slide freely within it.

2. Move the shutoff lever forward completely. Tighten the set screw.

ADJUSTING EMERGENCY ENGINE SHUTOFF

1. Loosen the set screw on the cable anchor, Figure 7, allowing the wire to slide freely within it.

2. Push the emergency control lever completely forward. Have the linkage reset lever on the engine in the down position.

3. Tighten the set screw.

NOTE: For description and operation of the shutoff controls, refer to "Instrument Panel", Section III, Electrical System and Instruments.

REMOVAL

1. Follow same procedure as outlined under removing fuel shutoff above.

Removing Fuel Tank

Refer to Figure 6.

1. Remove the operator's seat.

2. Drain out the fuel into a spotlessly clean container by removing the plug on the left hand side.

3. Remove hoses from the bottom and left hand front of the tank. Close openings with clean caplugs.

4. Remove the fuel shutoff valve from the bottom of the tank.

5. Remove four mounting dome bolts, lockwashers, and nuts.

6. Carefully carry the tank free of the shield assembly.

CAUTION: Take care not to damage the parking brake cable or winch hoses when removing the fuel tank. If necessary, free the parking brake cable from its bracket on the right hand side of the transmission and lower the cable out of the way.

If the tank is to be reused, take care in

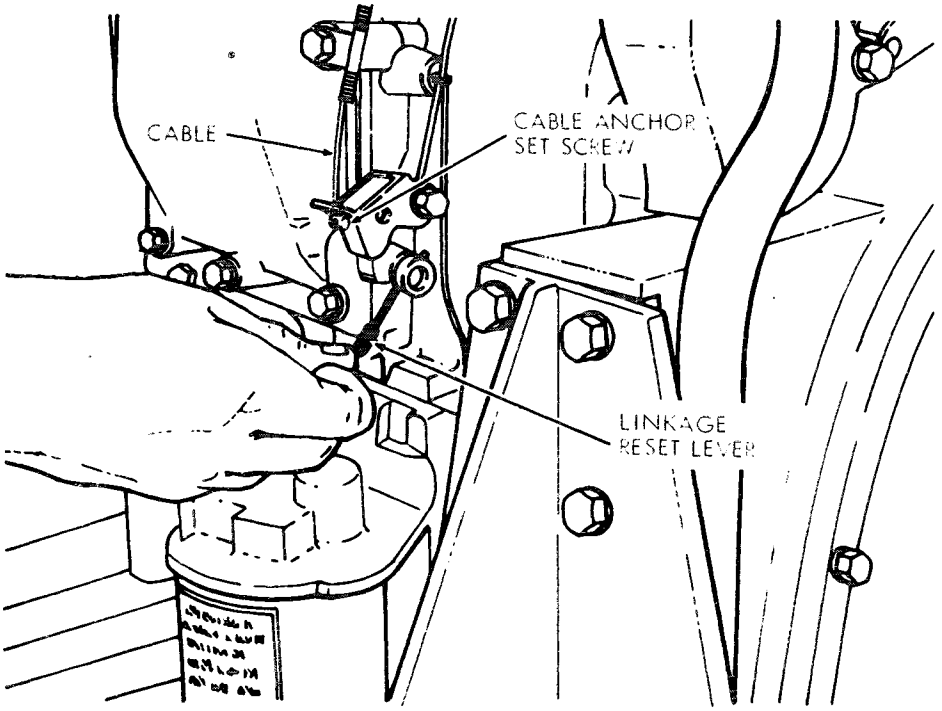

Figure 7

setting it down so the drain and fuel outlets on the bottom of the tank are not damaged. The best way is to set the tank on blocks or boards.

Throttle Control Linkage, Exploded View

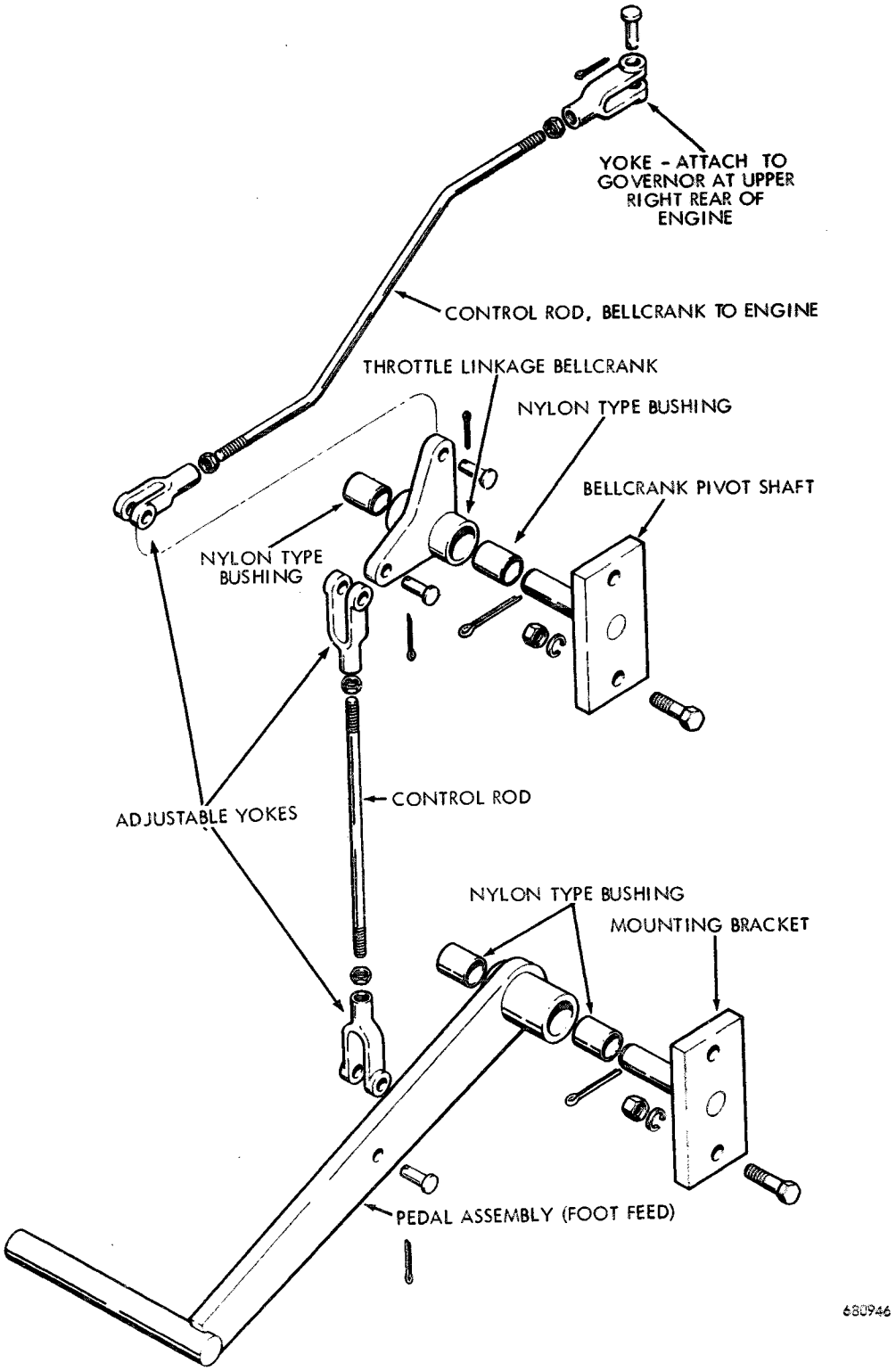

Figure 8

ENGINE OIL FILTER

REPLACING ELEMENT

The oil filter element should be changed every time the oil is changed.

1. The filter shell, element, and stud may be detached as an assembly after removing the center stud unscrewing it from the bottom of the shell. Discard the gasket.
2. Discard the used element. Clean the filter shell and all parts. Install a new element.
3. Place a new gasket in the filter base. Position the shell and element assembly on the gasket and tighten the center stud carefully to prevent damaging the gasket or center stud.
4. Start the engine, and check for leaks.

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SECTION

II

HYDRAULIC SYSTEM ON MODELS 300 AND 400 SKID KING

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