880D EXCAVATOR

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CASE CORPORATION

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Issued April 1985

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SAFETY RULES, SERVICE MANUAL INTRODUCTION, AND TORQUE SPECIFICATIONS

TABLE OF CONTENTS

Written In *Clear And Simple English*

CASE CORPORATION

8-42680

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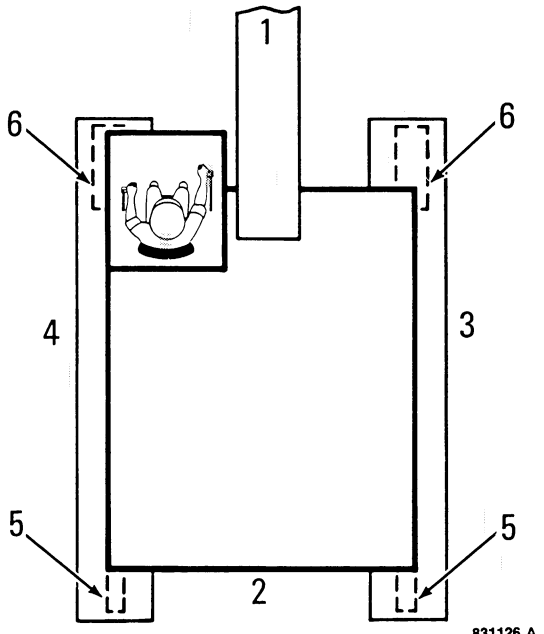
SERVICE MANUAL INTRODUCTION

This service manual has been prepared with the latest service information available. Troubleshooting, removal, disassembly, inspection and instal lation procedures, and complete specifications and tightening references can be found in most sections. Some sections have drawings but no written procedure because the job is so easily done. This service manual is one of the most important tools available to the service technician.

Right, Left, Front, and Rear

The terms right-hand and left-hand and front and rear as used in this manual indicate the right and left sides, and front and rear of the machine as seen from the operator's seat for correct operation of the machine or attachment.



1. *Front*
2. *Rear*
3. *Right Side*
4. *Left Side*
5. *Drive Sprocket*
6. *Idler Wheel*

Table of Contents

A Table of Contents is in the front of this manual. The Table of Contents shows the main divisions and the sections that are in each division. The individual sections, where necessary, also have a Table of Contents.

Page Numbers

All page numbers are made of two numbers separated by a dash, such as 4002-9. The number before the dash is the section number. The number following the dash is the page number in that section. Page numbers will be found at the upper right or left of each page.

Illustrations

Illustrations are put as near as possible to the text and are to be used as part of the text.

Clear and Simple English

This manual is written in C.A.S.E. (Clear and Simple English). C.A.S.E. is easier to read than "regular" English because C.A.S.E. uses a small number of common words and has special rules for writing.

All sections written in C.A.S.E. are indicated by the symbol below.

Written In ***C**lear*
***A**nd*
***S**imple*
***E**nglish*

Special Tools

Special tools are needed to remove and install, disassemble and assemble, check and adjust some component parts of this machine. Some special tools can be easily made locally and the necessary information to make the tool is in this service manual. Other special tools are more difficult to make locally and are available from Service Tools in the U.S. and from Jobborn Manufacturing in Canada. Use these tools according to the instructions in this service manual for your personal safety and to do the job correctly.

Order special tools from either of the following companies.

Service Tools
P.O. Box 314
Owatonna, Minnesota 55060

Jobborn Manufacturing Co.
97 Frid Street
Hamilton, Ontario L8P 4M3
Canada

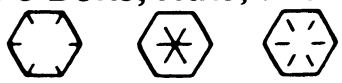
TORQUE SPECIFICATIONS - U.S. HARDWARE

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers, dry, or when lubricated with engine oil. Not applicable if special graphites, moly-disulfide greases, or other extreme pressure lubricants are used.

Grade 5 Bolts, Nuts, and Studs

Size	Pound-Feet	Newton metres	Kilogram metres
1/4 in 6.4 mm	9-11	12-15	1.2-1.5
5/16 in 7.9 mm	17-21	23-28	2.4-2.9
3/8 in 9.5 mm	35-42	48-57	4.8-5.8
7/16 in 11.1 mm	54-64	73-87	7.5-8.8
1/2 in 12.7 mm	80-96	109-130	11.1-13.3
9/16 in 14.3 mm	110-132	149-179	15.2-18.2
5/8 in 15.9 mm	150-180	203-244	20.8-24.9
3/4 in 19.0 mm	270-324	366-439	37.3-44.8
7/8 in 22.2 mm	400-480	542-651	55.3-66.4
1.0 in 25.4 mm	580-696	787-944	80.2-96.2
1-1/8 in 28.6 mm	800-880	1085-1193	111-122
1-1/4 in 31.8 mm	1120-1240	1519-1681	155-171
1-3/8 in 34.9 mm	1460-1680	1980-2278	202-232
1-1/2 in 38.1 mm	1940-2200	2631-2983	268-304

Grade 8 Bolts, Nuts, and Studs



Size	Pound-Feet	Newton metres	Kilogram metres
1/4 in 6.4 mm	12-15	16-20	1.7-2.1
5/16 in 7.9 mm	24-29	33-39	3.3-4.0
3/8 in 9.5 mm	45-54	61-73	6.2-7.5
7/16 in 11.1 mm	70-84	95-114	9.7-11.6
1/2 in 12.7 mm	110-132	149-179	15.2-18.2
9/16 in 14.3 mm	160-192	217-260	22.1-26.5
5/8 in 15.9 mm	220-264	298-358	30.4-36.5
3/4 in 19.0 mm	380-456	515-618	52.5-63.0
7/8 in 22.2 mm	600-720	814-976	83.0-99.5
1.0 in 25.4 mm	900-1080	1220-1465	124-149
1-1/8 in 28.6 mm	1280-1440	1736-1953	177-199
1-1/4 in 31.8 mm	1820-2000	2468-2712	252-277
1-3/8 in 34.9 mm	2380-2720	3227-3688	329-376
1-1/2 in 38.1 mm	3160-3560	4285-4827	437-492

TORQUE SPECIFICATIONS - METRIC HARDWARE

Use the following torques when special torques are not given.

These values apply to fasteners with coarse threads as received from supplier, plated or unplated, or when lubricated with engine oil. These values do not apply if graphite or moly-disulfide grease or oil is used.

Grade 8.8 Bolts, Nuts, and Studs

Size	Pound-Feet	Newton metres	Kilogram metres
M4 0.15 in	2-3	3-4	0.3-0.4
M5 0.19 in	5-6	6.5-8	0.7-0.8
M6 0.23 in	8-9	10.5-12	1.1-1.2
M8 0.31 in	19-23	26-31	2.6-3.2
M10 0.39 in	38-45	52-61	5.3-6.2
M12 0.46 in	66-79	90-107	9.1-10.9
M14 0.55 in	106-127	144-172	14.7-17.6
M16 0.62 in	160-200	217-271	22.1-27.7
M20 0.78 in	320-380	434-515	44.2-52.5
M24 0.94 in	500-600	675-815	69.1-83.0
M30 1.17 in	920-1100	1250-1500	127-152
M36 1.40 in	1600-1950	2175-2600	221-270

Grade 10.9 Bolts, Nuts, and Studs

Size	Pound-Feet	Newton metres	Kilogram metres
M4 0.15 in	3-4	4-5	0.4-0.5
M5 0.19 in	7-8	9.5-11	1.0-1.1
M6 0.23 in	11-13	15-17.5	1.5-1.8
M8 0.31 in	27-32	37-43	3.7-4.4
M10 0.39 in	54-64	73-87	7.5-8.8
M12 0.46 in	93-112	125-150	12.9-15.5
M14 0.55 in	149-179	200-245	20.6-24.7
M16 0.62 in	230-280	310-380	31.8-38.7
M20 0.78 in	450-540	610-730	62.2-74.7
M24 0.94 in	780-940	1050-1275	108-130
M30 1.17 in	1470-1770	2000-2400	203-245
M36 1.40 in	2580-3090	3500-4200	357-427

Grade 12.9 Bolts, Nuts, and Studs

Usually the torque values specified for grade 10.9 fasteners can be used satisfactorily on grade 12.9 fasteners.

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

Tube OD Hose ID	Thread Size	Pound-Feet	Newton metres	Kilogram metres
37 Degree Flare Fittings				
1/4 in 6.4 mm	7/16-20	6-12	8-16	0.8-1.7
5/16 in 7.9 mm	1/2-20	8-16	11-21	1.1-2.2
3/8 in 9.5 mm	9/16-18	10-25	14-33	1.4-3.5
1/2 in 12.7 mm	3/4-16	15-42	20-56	2.1-5.8
5/8 in 15.9 mm	7/8-14	25-58	34-78	3.5-8.0
3/4 in 19.0 mm	1-1/16-12	40-80	54-108	5.5-11.1
7/8 in 22.2 mm	1-3/16-12	60-100	81-135	8.3-13.9
1.0 in 25.4 mm	1-5/16-12	75-117	102-158	10.4-16.2
1-1/4 in 31.8 mm	1-5/8-12	125-165	169-223	17.3-22.8
1-1/2 in 38.1 mm	1-7/8-12	210-250	285-338	29.0-34.6

Tube OD Hose ID	Thread Size	Pound-Feet	Newton metres	Kilogram metres
Straight Threads with O-ring				
1/4 in 6.4 mm	7/16-20	12-19	16-25	1.7-2.6
5/16 in 7.9 mm	1/2-20	16-25	22-33	2.2-3.5
3/8 in 9.5 mm	9/16-18	25-40	34-54	3.5-5.5
1/2 in 12.7 mm	3/4-16	42-67	57-90	5.8-9.3
5/8 in 15.9 mm	7/8-14	58-92	79-124	8.0-12.7
3/4 in 19.0 mm	1-1/16-12	80-128	108-174	11.1-17.8
7/8 in 22.2 mm	1-3/16-12	100-160	136-216	13.8-22.1
1.0 in 25.4 mm	1-5/16-12	117-187	159-253	16.2-25.9
1-1/4 in 31.8 mm	1-5/8-12	165-264	224-357	22.8-36.5
1-1/2 in 38.1 mm	1-7/8-12	250-400	339-542	34.6-55.3

Split Flange Mounting Bolts			
Size	Pound-Feet	Newton metres	Kilogram metres
5/16-18	15-20	20-27	2.1-2.8
3/8-16	20-25	26-33	2.8-3.5
7/16-14	35-45	47-61	4.7-6.2
1/2-13	55-65	74-88	7.6-9.0
5/8-11	140-150	190-203	19.4-20.7

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ENGINE AND RADIATOR REMOVAL AND INSTALLATION

TABLE OF CONTENTS

Written In *Clear And Simple English*

8-42240

CASE CORPORATION

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ENGINE

Removal

1. Park the machine on a level surface.

2. Lower the boom until the bucket is flat on the floor.

3. Stop the engine.

4. Move the drive brake switch to the ON position.

5. Move the battery disconnect switch to the OFF position or disconnect the battery cable from the negative terminal of the battery.

6. Remove the muffler.

7. Remove the engine top covers.

8. Remove the radiator cap.

9. Find the drain valve at the bottom of the radiator. Drain the coolant from the radiator.

10. Find the drain plug for the engine block at the water pump. Drain the coolant from the engine block.

11. Disconnect the air cleaner hose from the inlet of the turbocharger. Loosen the clamps on the hose as necessary to move the hose out of the way. Use tape to cover the inlet of the turbocharger to keep dirt out of the turbocharger.

12. Remove all clamps and tie straps as necessary for engine removal.

13. Disconnect the fuel lines from the fuel injection pump.

14. Disconnect the radiator hoses from the engine.

15. Disconnect the throttle cable from the fuel injection pump. Move the throttle cable out of the way.

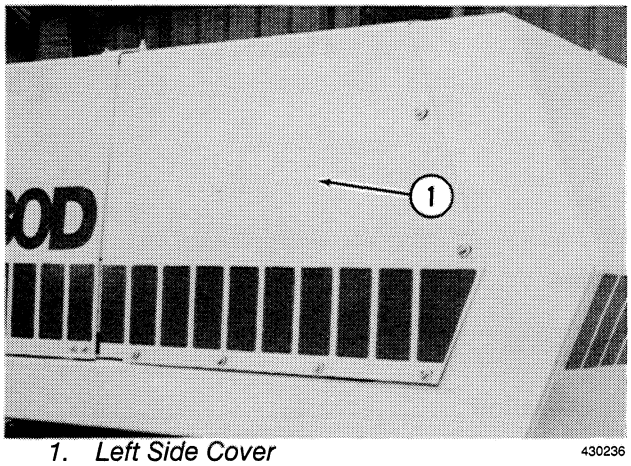
16. Disconnect the thermostat for the ether injection system from the engine.

17. Disconnect the tube from the ether injection cylinder at the valve fitting. Use a tie strap to fasten the tube to the front of the engine.

18. Disconnect the heater hoses from the tubes at the engine. Move the heater hoses out of the way.

19. Disconnect the engine wiring harness from the cab wiring harness.

20. Remove the side cover from the left side of the machine.



1. Left Side Cover 430236

21. Connect lifting equipment to the hydraulic pump. The weight of the hydraulic pump is approximately 83 pounds (36 kg).

22. Loosen and remove the cap screws and lock washers that fasten the hydraulic pump to the engine.

23. Pull the hydraulic pump away from the engine. Use a piece of wire to fasten the hydraulic pump to the outside frame of the turntable.

24. Disconnect the ground strap from the engine.

25. Disconnect the battery ground cable from the right-hand side of the engine block.

26. Disconnect the other battery cable from the terminal on the starter solenoid.

27. Loosen and remove the machine screws that fasten the fan shroud to the radiator.

28. Fasten the fan shroud to the engine fan.

29. Fasten lifting equipment to the engine.

30. Loosen and remove the self-locking nuts, flat washers, and bolts that fasten the engine to the turntable.

31. Raise the engine. Make sure that all the wires and hoses are disconnected and out of the way.

32. Remove the engine from the machine.

Installation

1. Connect lifting equipment to the engine.

2. Raise the engine into alignment with the machine. Lower the engine into the machine.

3. Align the engine mounts with the turntable. Install the bolts, flat washers, and self-locking nuts. Tighten to 130 pound-feet (176 N m, 18 kg/m).

4. Disconnect the lifting equipment from the engine.

5. Install the fan shroud on the radiator. Make sure that the clearance between the fan and the fan shroud is equal all the way around the fan shroud.

6. Connect the battery cable clamps to the engine.

7. Connect the positive battery cable to the starter solenoid.

8. Connect the negative battery cable to the right-hand side of the engine block.

9. Connect the ground strap to the engine.

10. Connect lifting equipment to the hydraulic pump. Move the hydraulic pump into position. Rotate the drive shaft of the hydraulic pump to align the splines of the drive shaft with the drive plate on the engine.

11. Push the hydraulic pump against the engine. Install the cap screws and lock washers.

12. Tighten the cap screws to 165 pound-feet (224 N m, 22 kg/m).

13. Connect the engine wiring harness to the cab wiring harness.

14. Connect the heater hoses to the tubes at the engine.

15. Connect the tube for the ether injection cylinder to the valve fitting.

16. Connect the thermostat for the ether injection system to the engine.

17. Connect the throttle cable to the fuel injection pump. Fasten the throttle cable to the mounting bracket.

18. Connect the radiator hoses to the engine.

19. Connect the fuel lines to the fuel injection pump.

20. Connect the air cleaner hose to the inlet of the turbocharger. Tighten the clamps on the hose.

21. See Section 1050 for the correct amount and type of coolant. Fill the radiator with coolant.

22. Move the battery disconnect switch to the ON position or connect the negative battery cable to the negative terminal of the battery.

23. Start and run the engine at idle.

24. Check for coolant and oil leakage.

25. Operate the engine until the coolant is at operating temperature. Fill the radiator with coolant. Install the radiator cap.

26. Stop the engine.

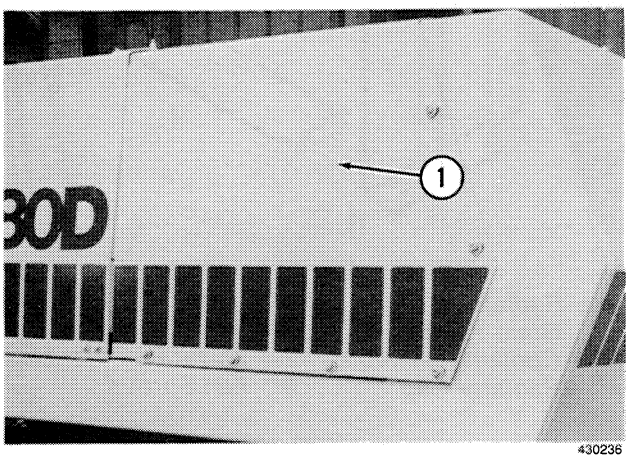
27. Install the tie straps to fasten the heater hoses to the wiring harness.

28. Install tie straps to fasten the throttle cable in position.

29. Install the engine top covers.

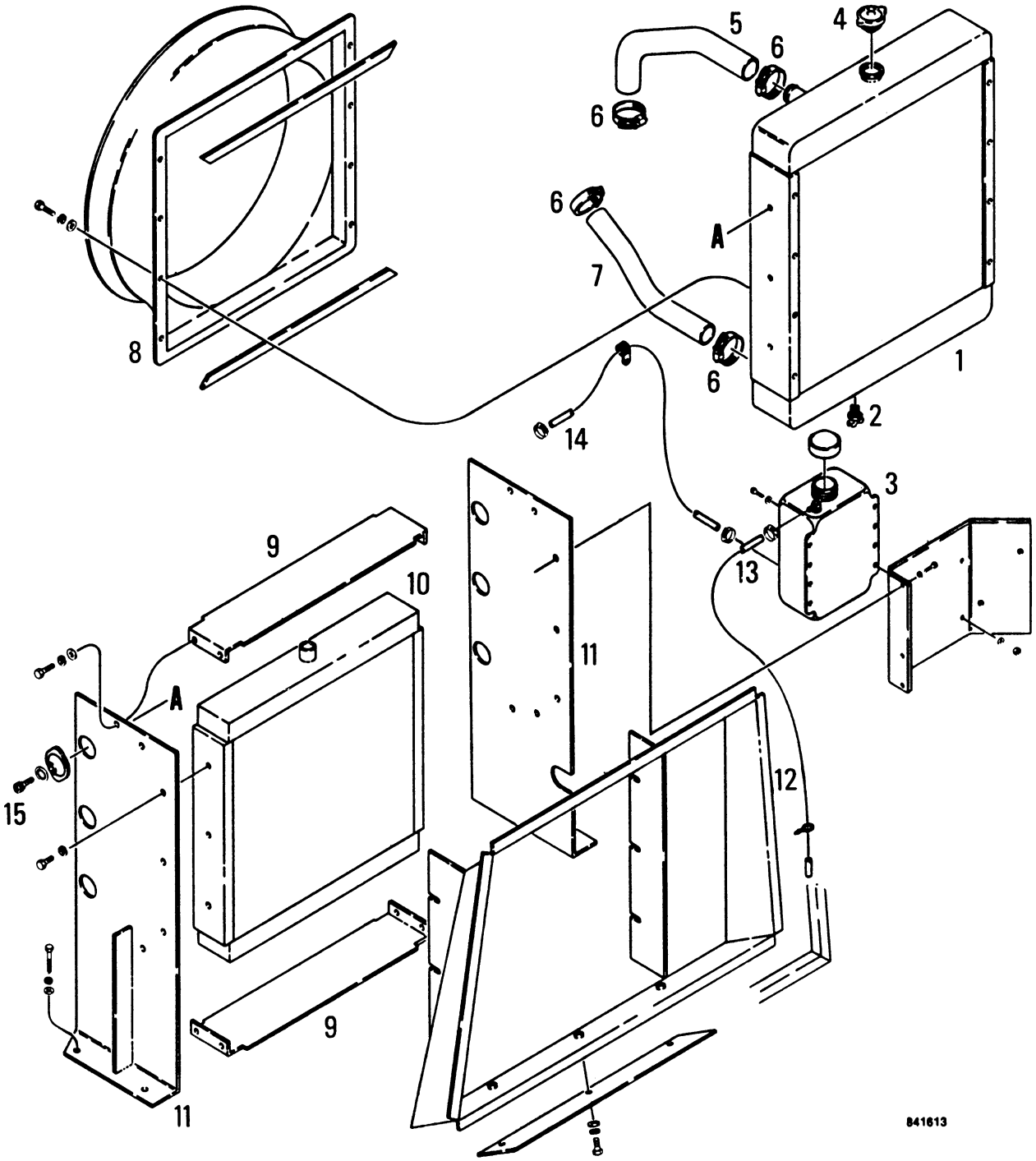
30. Install the muffler.

31. Install the side cover on the left side of the machine.



1. Left Side Cover

RADIATOR



1. *Radiator*
2. *Drain Valve*
3. *Coolant Reservoir*
4. *Radiator Cap*
5. *Upper Radiator Hose*
6. *Hose Clamp*
7. *Lower Radiator Hose*
8. *Fan Shroud*
9. *Bracket*
10. *Oil Cooler*
11. *Mounting Bracket*
12. *Shroud*
13. *Drain Tube*
14. *Coolant Reservoir Hose*
15. *Allen Head Screw*

Removal

1. Park the machine on a level surface.

2. Lower the boom until the bucket is flat on the floor.

3. Stop the engine.

4. Remove the cover above the radiator.

5. Remove the radiator cap.

6. Find the drain valve for the radiator. Drain the coolant from the radiator.

7. Find the drain valve for the engine block at the water pump. Drain the coolant from the engine block.

8. Disconnect the radiator hoses from the radiator.

9. Disconnect the coolant reservoir hose from the radiator. Remove the hose.

10. Loosen and remove the cap screws, lock washers, and flat washers that fasten the bracket at the top of the radiator. Remove the bracket.

11. Loosen and remove the machine screws that fasten the fan shroud to the radiator.

12. Use a piece of wire to fasten the fan shroud to the fan.

13. Connect lifting equipment to the radiator.

14. Loosen and remove the Allen head screws that fasten the radiator to the mounting brackets.

15. Lift the radiator out of the top of the machine.

Installation

1. Connect the lifting equipment to the radiator. Carefully lower the radiator between the fan of the engine and the oil cooler.

2. Align the holes in the radiator with the holes in the mounting brackets. Install the Allen head screws to fasten the radiator in place.

3. Remove the lifting equipment.

4. Install the fan shroud on the radiator. Make sure that the clearance between the fan and the fan shroud is equal all the way around the fan shroud.

5. Install the bracket at the top of the radiator.

6. Install the upper and lower radiator hoses. Tighten the clamps.

7. Install the coolant reservoir hose to the radiator.

8. Close the drain valve on the radiator, and install the plug in the water pump inlet block.

9. See Section 1002 and fill the radiator with coolant.

10. Start and run the engine at idle.

11. Check for coolant leakage.

12. Operate the engine until the coolant is at operating temperature. Check the coolant level in coolant reservoir; add coolant as required.

13. Stop the engine.

14. Install the cover above the radiator.

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ENGINE ACCESSORIES

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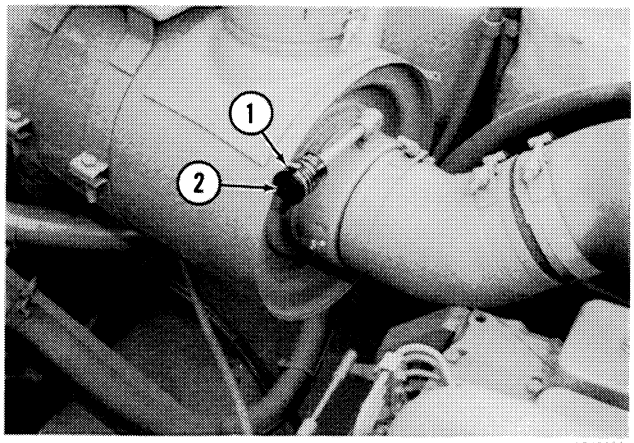
CASE CORPORATION

AIR CLEANER

Restriction Indicator

Check the restriction indicator every 10 hours of operation or each day, whichever occurs first.



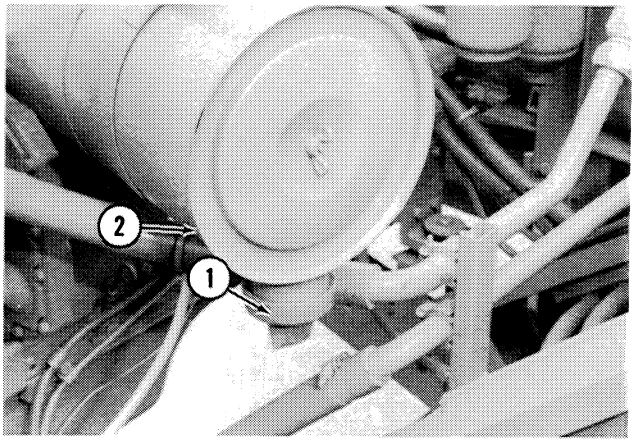
A846290

1. *Restriction Indicator*
2. *Button*

If the red band in the restriction indicator is in full view, clean or replace the air cleaner elements. Do not run the engine when the red band is in full view.

Dust Valve

Remove and clean the dust valve after every 50 hours of operation.



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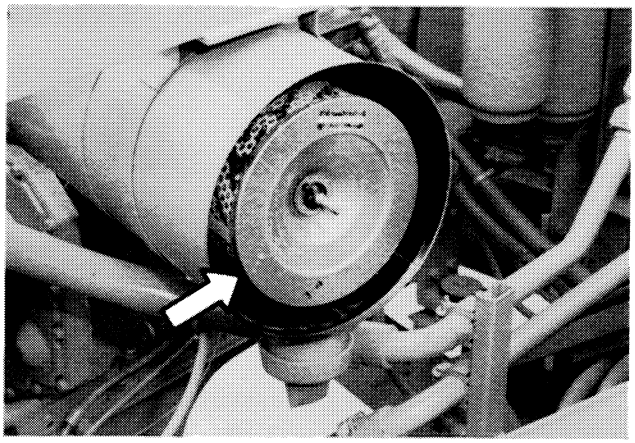
1. *Dust Valve*
2. *Cover*

Replacing Elements

1. Remove the air cleaner cover.

2. Remove and clean the primary element. See Cleaning Primary Element on page 2001-3. Replace the primary element after cleaning six times.

NOTE: *The date of manufacture is on the end cap of the primary element. Do not install a primary element that is more than two years old.*



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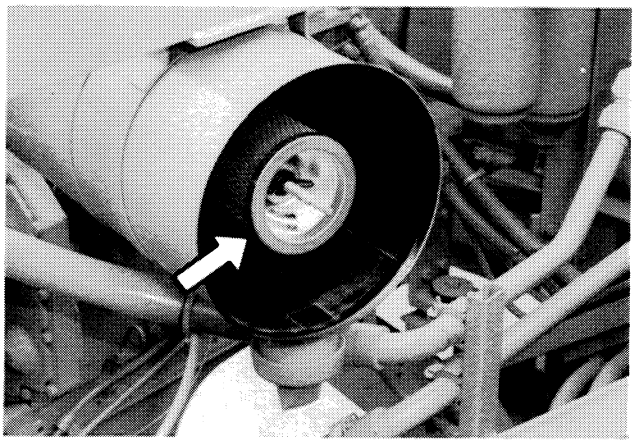
Primary Element

3. Replace the secondary element if you are servicing the primary element for the third time, if the date of manufacture on the end cap shows the secondary element is two years old, or if the secondary element is damaged.



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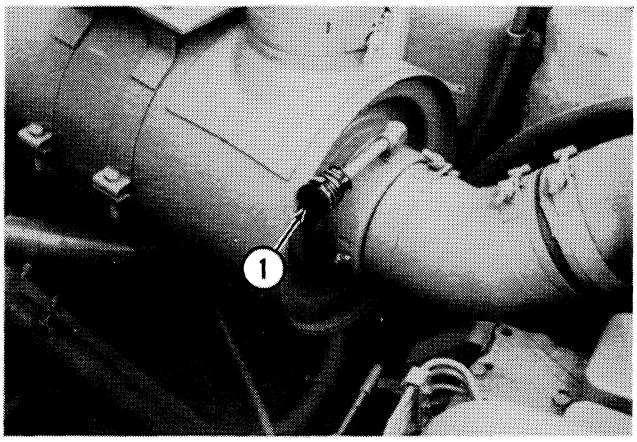
Secondary Element

4. After the primary element is clean and dry, use a lamp to inspect the primary element for damage. Look for holes, wear, bent end covers, etc. Discard the primary element if damaged.

5. Install the primary element.

6. Install the air cleaner cover.

7. Push the button on the top of the restriction indicator to remove the red band from view.



A846290

1. Button

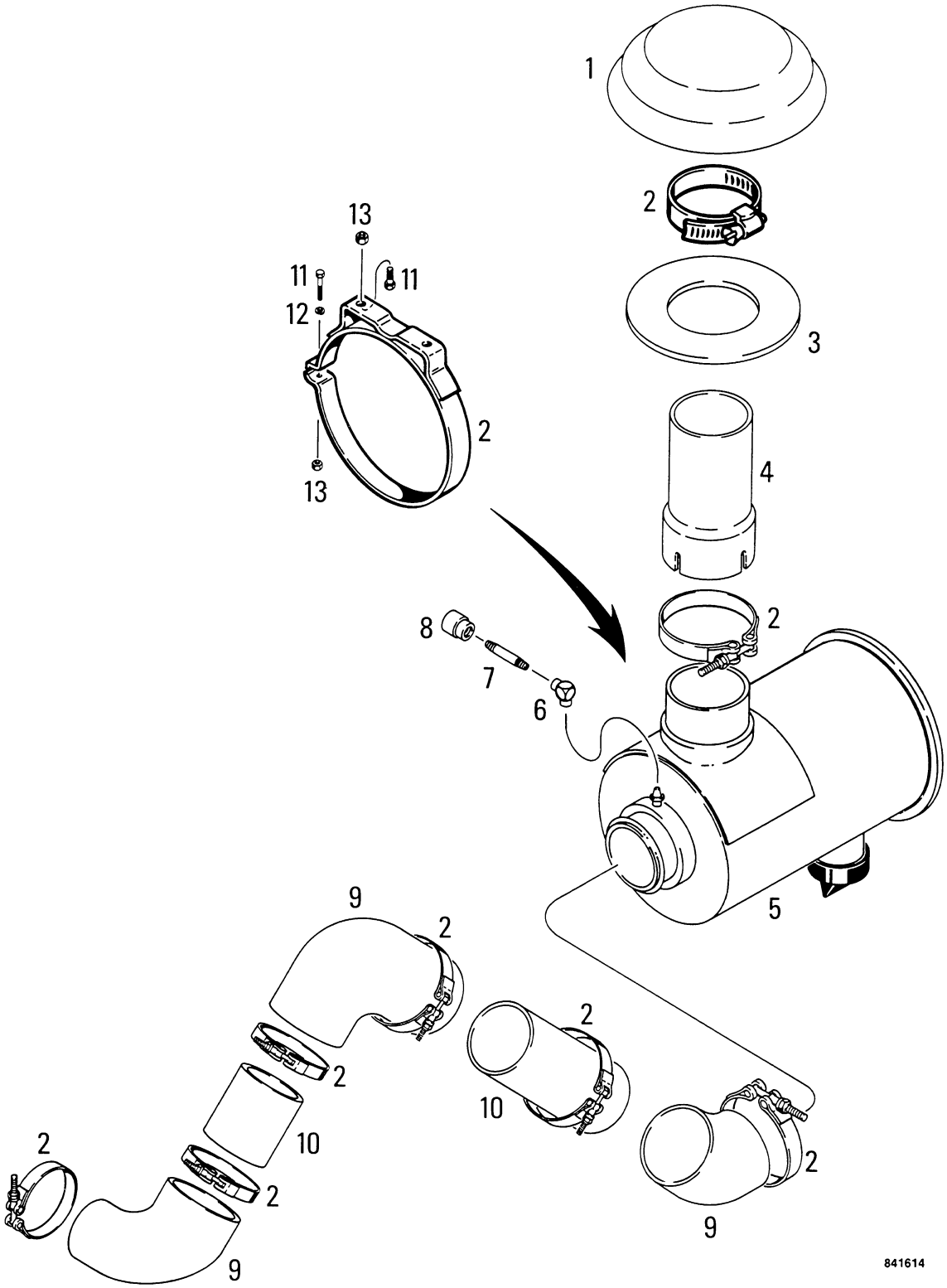
8. Start the engine. If the red band shows in the restriction indicator, replace the secondary element.

NOTE: *Do not clean the secondary element. Always replace the secondary element.*

Cleaning Primary Element

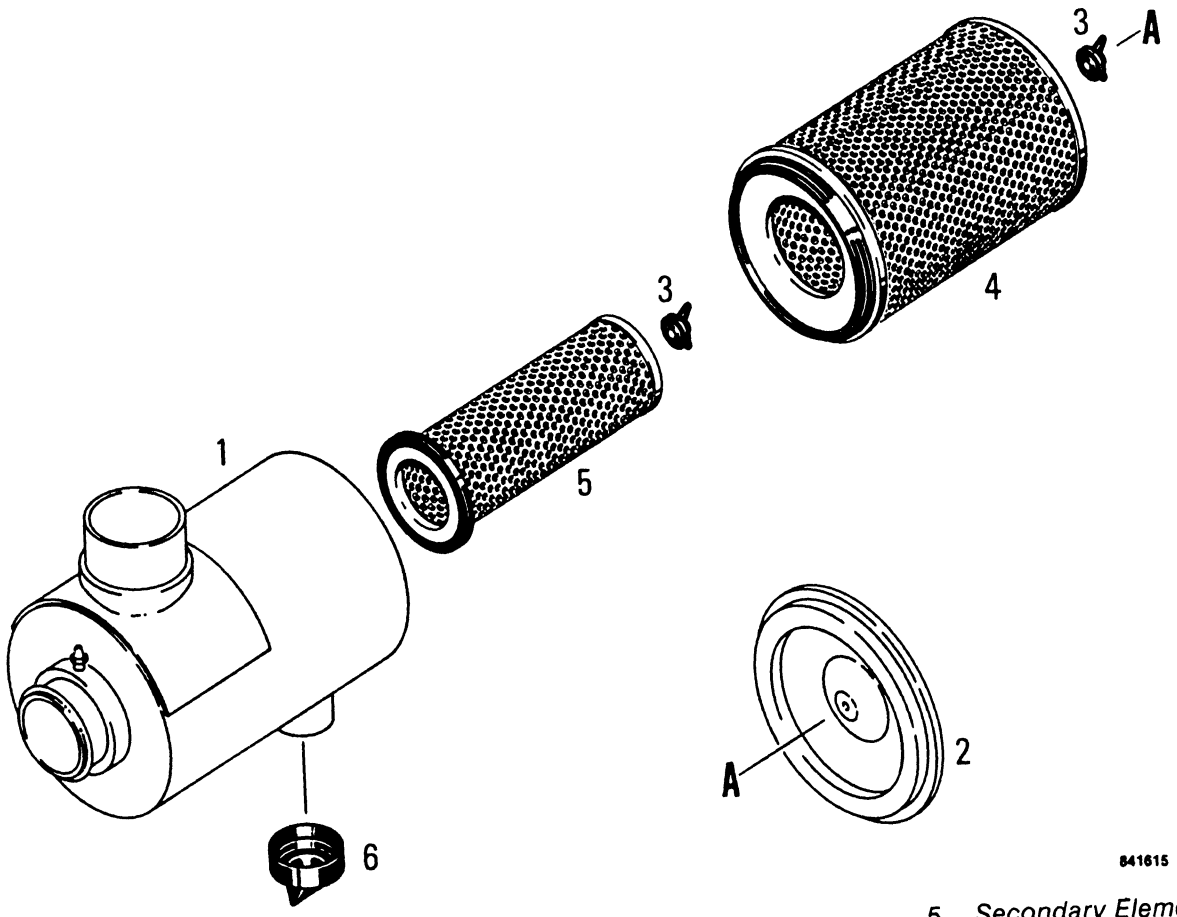
WASHING: Washing is the best method for cleaning the primary element. Wash the primary element with D-1400 detergent (Case part number A40910). The primary element must be dry before installation in the air cleaner. Do not use compressed air to dry the primary element.

COMPRESSED AIR: Use compressed air that is less than 30 psi (206 kPa, 2.1 kg/cm^3) at the nozzle. Use the compressed air inside the primary element and 1 inch (25 mm) or more in distance from the primary element. Cleaning the primary element with compressed air will not remove carbon or soot.



1. *Cap*
2. *Clamp*
3. *Collar*
4. *Adapter*
5. *Air Cleaner*
6. *Elbow*
7. *Nipple*
8. *Restriction Indicator*
9. *Rubber Elbow*
10. *Tube*
11. *Bolt*
12. *Washer*
13. *Nut*

Air Cleaner Installation



1. *Body*
2. *Cover*
3. *Wing Nut*
4. *Primary Element*
5. *Secondary Element*
6. *Dust Valve*

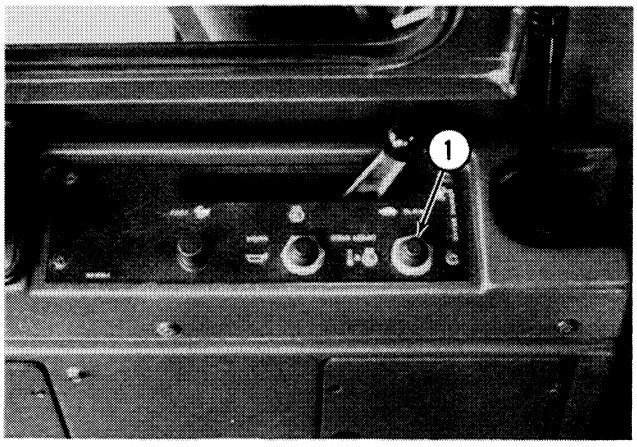
Air Cleaner

ETHER INJECTION SYSTEM

WARNING: *An explosion can occur if sparks or flame make contact with the starting fluid in the starting fluid container or if you keep the starting fluid container in an area with a temperature above 120° F (49° C). Read the following information.*

1. *Know the correct method for operating the ether injection system.*
2. *Always remove the starting fluid container from the machine before you weld, grind, or use a cutting torch on the machine. Use compressed air to remove any starting fluid fumes from the area.*
3. *Do not breathe the starting fluid fumes or let the starting fluid make contact with your skin.*
4. *Keep the starting fluid container out of the reach of children.*
5. *Never make a hole in the starting fluid container.*
6. *Do not put the starting fluid container in a fire.*

Failure to follow the above instructions can cause a severe injury. 48-20



A846326

1. *Cold Start Button*

The optional cold start system is an aid to help start the engine in cold weather. The cold start system operates only when the engine is cold. The cold start system injects a measured amount of ether into the intake manifold each time you push the cold start button.

1. See Starting the Engine in the operators manual to learn the correct steps in starting the engine.

2. Turn the key to the START position and push the cold start button two times. Release the key as soon as the engine starts to run.

NOTE: *If the engine runs for a short time and then stops, repeat step 2. If the engine will not start, see Starting Fluid Can on this page and check to make sure the starting fluid can is not empty.*

Starting Fluid Can

IMPORTANT: *Read the information and warnings on the starting fluid can.*

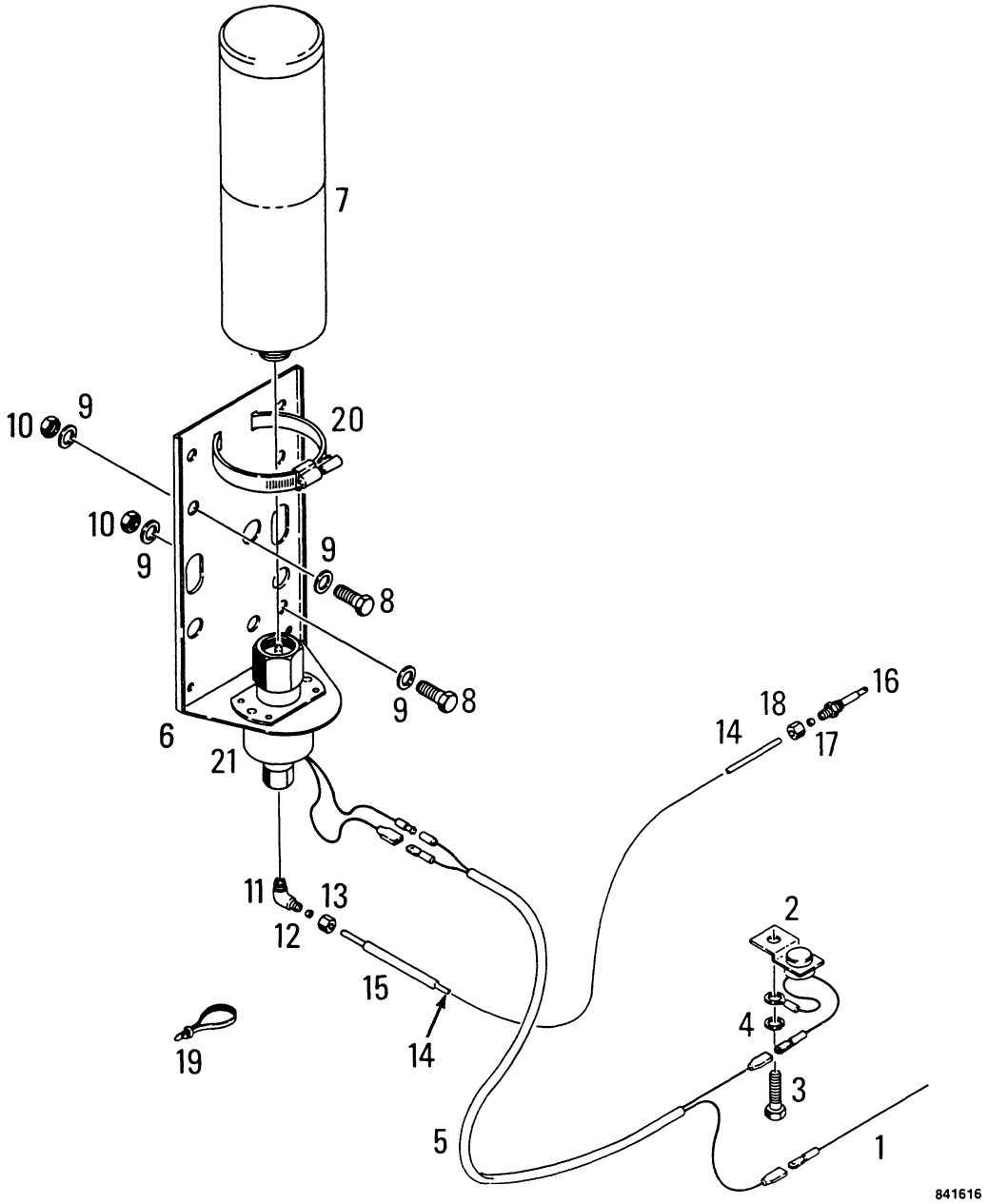
1. Loosen the mounting clamp.

2. Turn the starting fluid can counterclockwise and remove the starting fluid can from the solenoid valve.

3. Install a new starting fluid can. Tighten the starting fluid can hand tight.

4. Tighten the mounting clamp.

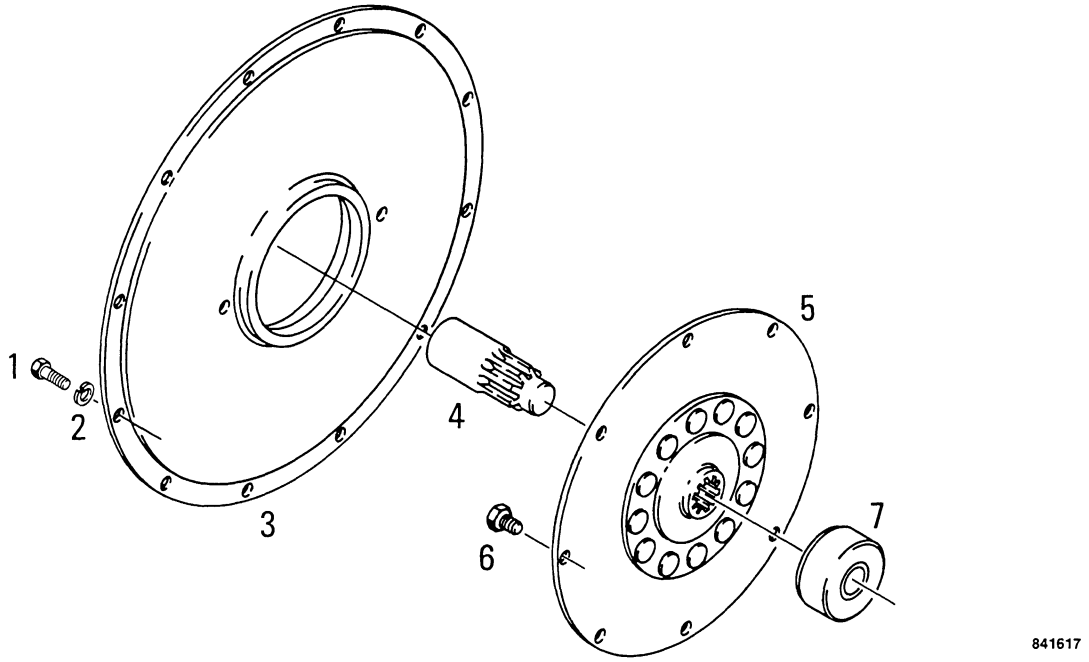
NOTE: *The painted punch marks on the nozzle (item 16) must be installed in a horizontal position in the engine manifold. There is a notch on the external hex shoulder of the nozzle to aid in the correct alignment of the nozzle in the engine manifold.*



1. *Wire From Switch*
2. *Engine Thermostat*
3. *Bolt*
4. *Lock Washer*
5. *Wire From Thermostat To Valve*
6. *Mounting Plate*
7. *Starting Fluid Can*
8. *Bolt*
9. *Washer*
10. *Self-Locking Nut*
11. *Street Elbow*
12. *Sleeve*
13. *Nut*
14. *Tube*
15. *Loom*
16. *Nozzle*
17. *Sleeve*
18. *Nut*
19. *Tie Strap*
20. *Mounting Clamp*
21. *Solenoid Valve*

Ether Injection System

PUMP DRIVE PLATE



1. *Cap Screw*
2. *Lock Washer*
3. *Mounting Plate*
4. *Coupling*
5. *Pump Drive Plate*
6. *Self-Locking Cap Screw*
7. *Adapter*

Removal

1. See Section 8200. Remove the hydraulic pump.

2. Loosen the cap screws that fasten the mounting plate to the flywheel housing.

3. Hold the mounting plate in position and remove the cap screws and lock washers.

4. Remove the mounting plate.

5. Remove the coupling from the drive plate.

6. Loosen the self-locking cap screws that fasten the drive plate to the flywheel.

7. Hold the drive plate in place and remove the self-locking cap screws.

8. Remove the drive plate.

Inspection

1. Inspect the splines of the coupling, drive plate, and the hydraulic pump shaft. If the splines are worn or damaged, use new parts.

2. Check the drive plate for distortion. Use a new drive plate as necessary.

Installation

1. Hold the drive plate against the flywheel. Make sure that the pilot side of the drive plate is toward the engine.

2. Install the self-locking cap screws. Tighten the self-locking cap screws to 50 pound-feet (68 N m, 7 kg/m).

3. Install the coupling in the drive plate.

4. Hold the mounting plate against the flywheel housing.

5. Apply oil to the threads on the cap screws. Install the cap screws and lock washers. Tighten the cap screws to 32 pound-feet (43 N m, 4 kg/m).

6. See Section 8200. Install the hydraulic pump.

Suggest:

If the above button click is invalid.

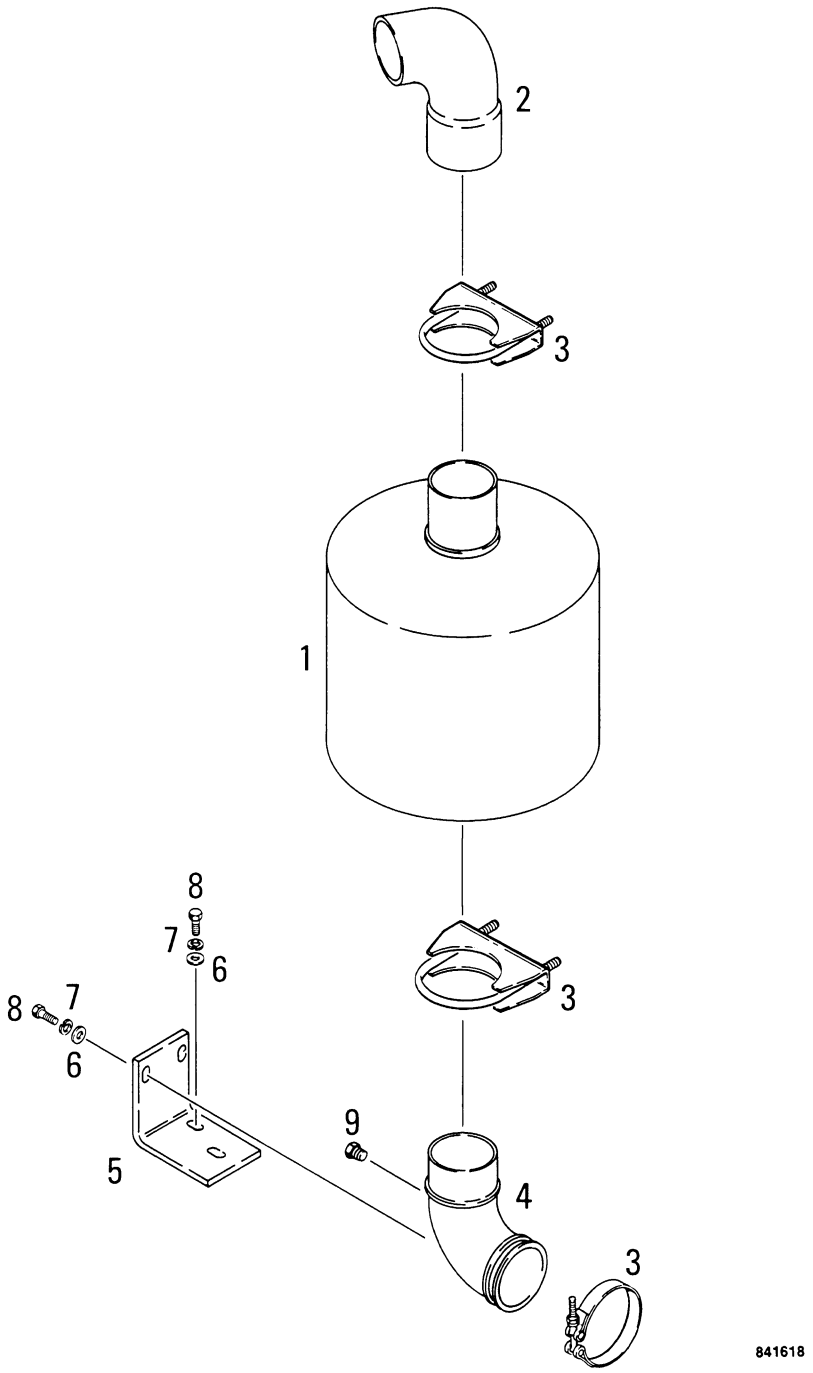
Please download this document

first, and then click the above link

to download the complete manual.

Thank you so much for reading

MUFFLER AND EXHAUST SYSTEM



1. *Muffler*
2. *Extension Pipe*
3. *Clamp*
4. *Elbow*
5. *Bracket*
6. *Washer*
7. *Lock Washer*
8. *Bolt*
9. *Plug*