SPECIFICATIONS

NOTE: *All specifications are given according to SAE standards or Recommended Practices where the specification applies.*

Engine

Make and model	Case 4-390
Make and model with turbocharger	Case 4T-390
Firing order	1-3-4-2
Bore and stroke	4.02 in. x 4.72 in. (102 x 120 mm)
Displacement	239 in^3 (3933 cc^3)
Compression ratio	17.0 to 1
Fuel	See page 93
Horsepower	
SAE gross	69 hp at 2200 rpm (51.4 kW at 2200 r/min)
SAE net	63 hp at 2200 rpm (46.9 kW at 2200 r/min)
Engine speeds:	
Full throttle, no load	2330 to 2370 rpm
Hydraulic stall (loader)	2260 rpm
Converter stall	2100 rpm
Combined stall	1625 to 1675 rpm
Idle speed	850 to 900 rpm
Valve clearance - engine cold	
Intake valves	.010 in (0.254 mm)
Exhaust valves	.020 in (0.508 mm)

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Engine Oil Recommendations

Case multi-grade engine oil is recommended for use in your Case engine. To select the correct grade of oil, determine the temperature during the next oil change interval and see the oil grade chart below.

If Case multi-grade engine oil is not available, Case single grade engine oil can be used.

API classifications

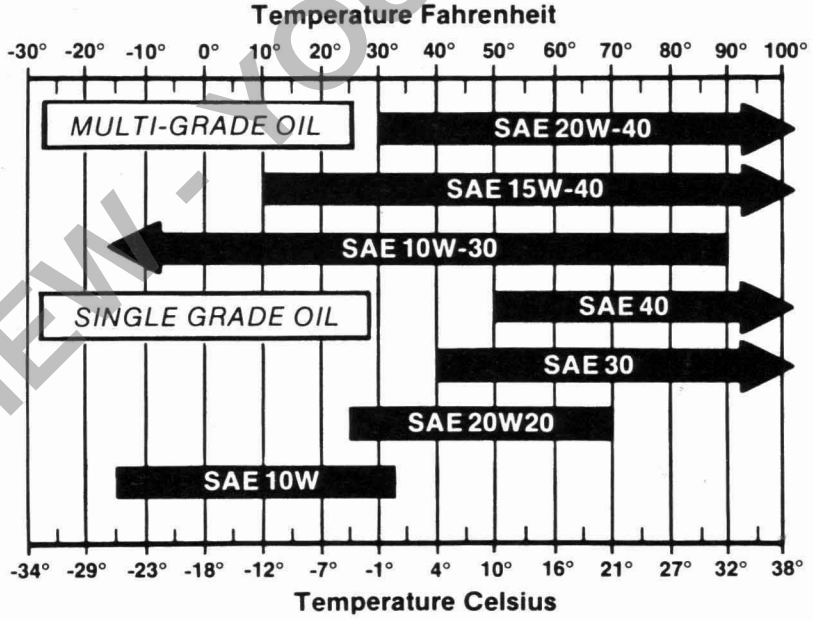
Engines with turbochargers use API CC/CD or CD oil.

Engines without turbochargers use API CC or CC/CD oil.

NOTE: *Do not put "Performance Additives" or other oil additive products in the engine crankcase. The oil change interval given in this manual is according to tests with Case lubricants. It is recommended that you use the Case lubricant analysis system. See page 91.*

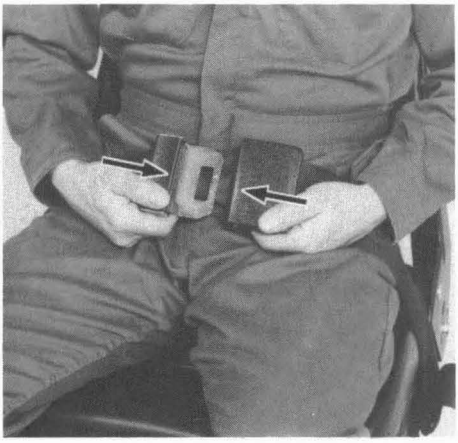
NOTE: *When the temperature is below -10° F (-25° C), use the optional oil pan heater and the optional engine coolant heater to increase the temperature of the engine before you start.*

Recommended Engine Oil Grades



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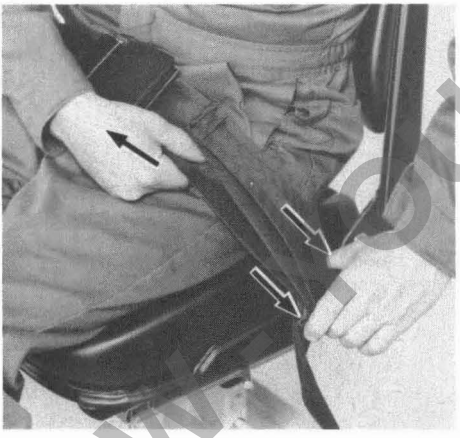
Belt Number Three



Fasten



Release



Tighten



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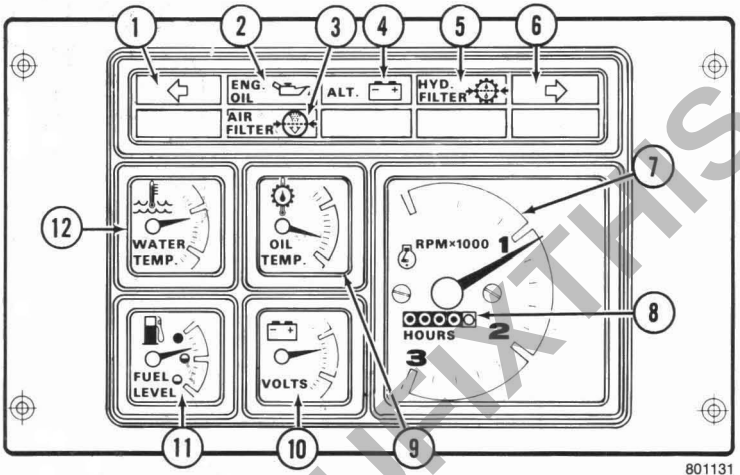
Loosen

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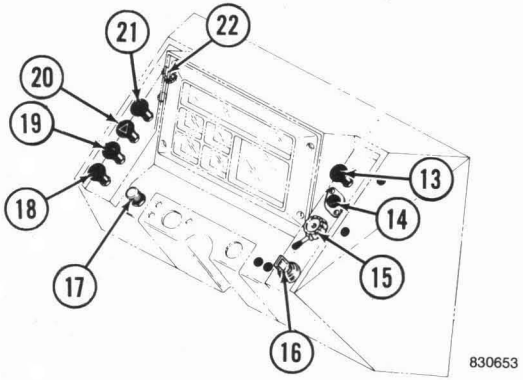
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OPERATING INSTRUCTIONS
INSTRUMENTS AND CONTROLS

Pages 24 thru 28 list all of the instruments and controls on the machine. See pages 29 thru 47 for detailed description and instructions. Instructions for operation of the machine begin on page 48.



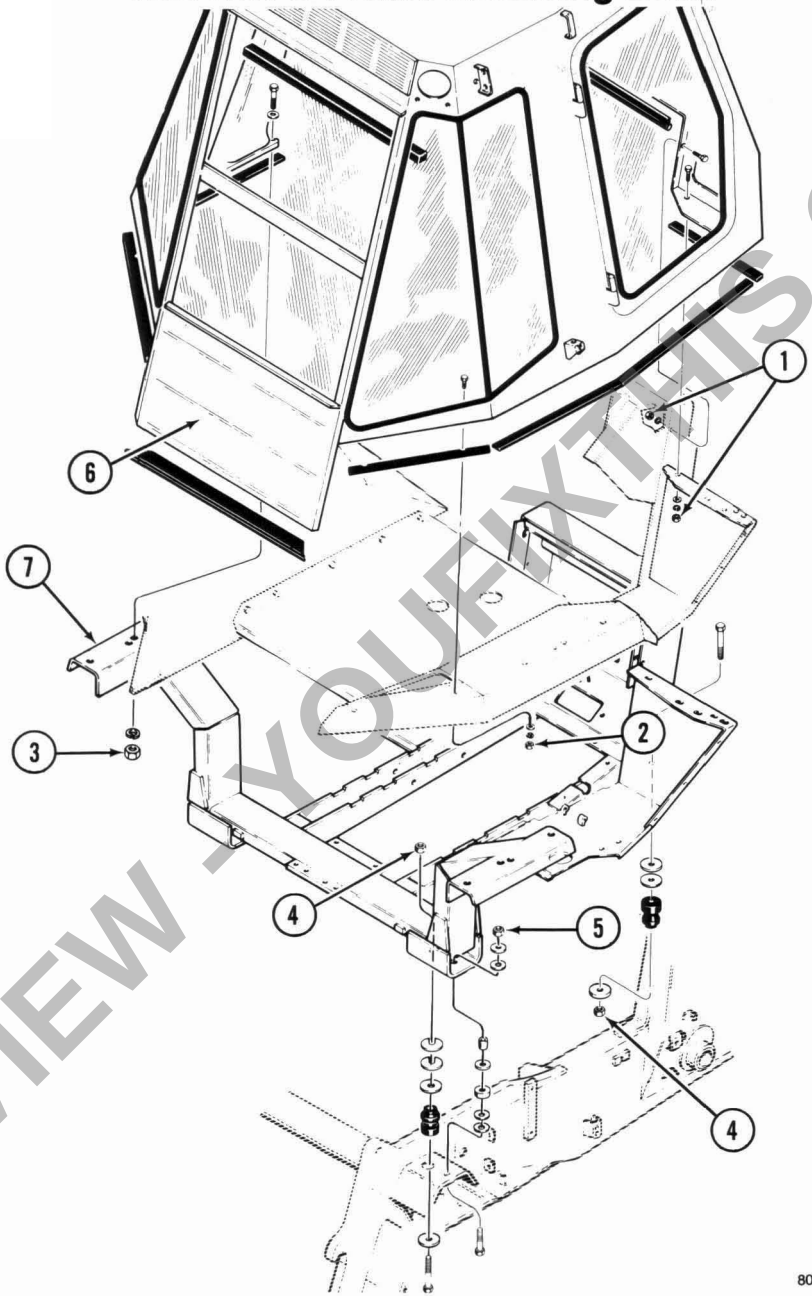
1. *Indicator Lamp for Left Turn*
2. *Warning Lamp for Engine Oil Pressure*
3. *Warning Lamp for Air Filter Restriction*
4. *Warning Lamp for Alternator*
5. *Warning Lamp for Hydraulic Filter*
6. *Indicator Lamp for Right Turn*
7. *Tachometer*
8. *Engine Hourmeter*
9. *Transmission Oil Temperature Gauge*
10. *Voltmeter Gauge*
11. *Fuel Level Gauge*
12. *Water Temperature Gauge*
    Warning Buzzer for Parking Brake (Not Shown)



13. *Dipper Lamp Switch*
14. *Horn*
15. *Turn Signal*
16. *Key Switch*
17. *Cold Start Button*
18. *Switch for Transport Lamps*
19. *Switch for Rear Working Lamps*
20. *Switch for Flasher Lamps*
21. *Switch for Rotating Beacon*
22. *Switch for Warning Lamps (Air Filter and Hydraulic Filter)*

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Torque Specifications for ROPS Cab and ROPS Frame Mounting Bolts



801117

1. *25 to 35 Pound-Feet (34 to 47 N m) (3.5 to 4.8 kg/m)*
2. *15 to 20 Pound-Feet (20 to 27 N m) (2.1 to 2.8 kg/m)*
3. *340 to 420 Pound-Feet (461 to 569 N m) (47 to 58 kg/m)*
4. *200 to 240 Pound-Feet (271 to 325 N m) (27.7 to 33.2 kg/m)*
5. *135 to 165 Pound-Feet (183 to 224 N m) (25 to 30.9 kg/m)*
6. *ROPS Cab*
7. *ROPS Frame*

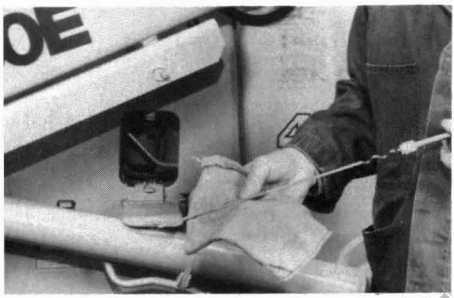
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ENGINE LUBRICATION SYSTEM

Oil Level

After every 10 hours of operation or before you start the engine each day, check the oil level in the engine. Always check the oil level when the engine is stopped and when the machine is on level ground. Push the dipstick completely down before you check the oil level.



855361

Dipstick for Engine Oil

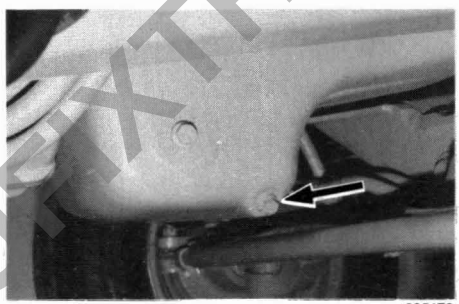
If the oil level is below the Add mark, add oil to raise the oil level up to the Full mark. Do not raise the oil level above the Full mark. See pages 93 and 94.

Oil Change and Filter Replacement

Change the engine oil and replace the filter after every 250 hours of operation. See the topic Systemgard Lubricant Analysis Service on page 91.

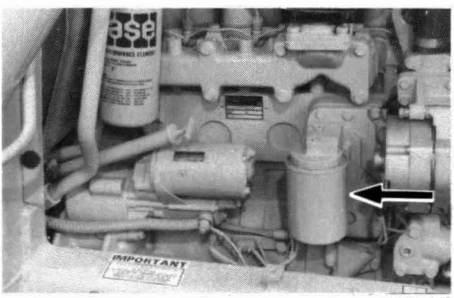
Change the engine oil more frequently when the engine operating conditions are severe (frequent stopping and starting and high or low engine temperatures).

NOTE: *For more complete removal of foreign material, change the engine oil while the engine is still warm from operation.*



835179

Engine Oil Drain Plug



A845242

Engine Oil Filter

1. Remove the engine oil drain plug.

2. Turn the oil filter counterclockwise to remove. Discard the oil filter.

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Cooling System

Radiator cap	15 psi (103 kPa)
Thermostat	180° F (82° C)
Opening range	175° to 182° F (80° to 85° C)
Fully open	202° F (94° ° C)

Electrical System

Type of system	12 volt, negative ground
Battery	(1) 12 volt
Optional cold start batteries	(2) 12 volt, connected in parallel
Alternator	12 volt, 42 ampere

Replacement Bulbs and Lamps

Front driving and rear flood lamps	Case Part No. F45230
Stop and tail lamps	1157
Directional and flasher	1156
Tail lamp (models without stop lamps)	97
Instrument panel cluster	
Instrument lamps (lower)	194
Warning lamps (upper)	168
Backhoe dipper lamp	4406
Rotating beacon	4416

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RUN-IN PERIOD

During the first 20 hours of operation for a new machine, or a machine with a rebuilt engine, make sure you do the following:

1. Operate the machine with normal bucket loads for the first 8 hours.

2. Keep the engine at normal operating temperatures.

3. Do not run the engine at idle speeds for long periods of time.

4. See the Run-In Maintenance Chart on this page for additional information.

5. After the first 20 hours of machine operation, have your Case dealer do the After Delivery Check at the back of this manual.

RUN-IN MAINTENANCE CHART

The items listed in the run-in section are performed during the first period of operation with a new machine, or a machine with a rebuilt engine.

—EVERY TWO HOURS OF OPERATION UNTIL BOLTS REMAIN TIGHT—

Check the tightness of the wheel bolts (or nuts) ..... See page 130

——AFTER FIRST 10, 20, 50, 100, AND 200 HOURS OF OPERATION——

Tighten the two tension rod nuts of the backhoe mounting parts ..... See page 88

Check the tightness of the lower swing pivot pin nut of the backhoe ..... See page 155

——————AFTER FIRST 20 HOURS OF OPERATION——————

Do all checks and services listed in the After Delivery Check ..... See page 175

——————AFTER FIRST 100 HOURS OF OPERATION——————

Check the foot brake adjustment ..... See page 141

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ENGINE OPERATION

Walk-Around Inspection

Do the following items each day before you start the engine.

1. Check for leaks under the machine.

2. Check the tires for damage.

3. Check the loader and backhoe buckets for wear, damage or missing teeth.

4. Check the machine for broken, missing, or loose parts.

5. Clean any debris from the machine. Make sure the radiator area is clean.

6. Clean or replace any safety or instructional decals that cannot be read.

7. Clean the steps, hand rails, and operators compartment.

8. See the Maintenance Chart on page 96 and do the items under Every 10 Hours of operation or Each Day Whichever Occurs First.

NOTE: *If this is a new machine, or a machine with a rebuilt engine, see Run-In Period on page 95 for additional information.*

Starting the Engine

1. Make sure the parking brake is engaged, the transmission shuttle control and the transaxle control levers are in the Neutral position, and the hand throttle is in the idle position.

2. Turn the seat forward and fasten the seat belt and adjust the seat.

3. Turn the key switch to the ON position and check the engine oil pressure and alternator warning lamps. These two lamps must illuminate. Push the warning lamp switch to the right and check the two filter warning lamps. These two lamps must also illuminate.

NOTE: *If the weather is cold, see page 50 for methods to help start the engine.*

4. Push the foot throttle 1/4 down and turn the key switch to the START position to engage the starter motor.

5. If the engine starts and stops, do not engage the starter motor again until the starter motor stops turning.

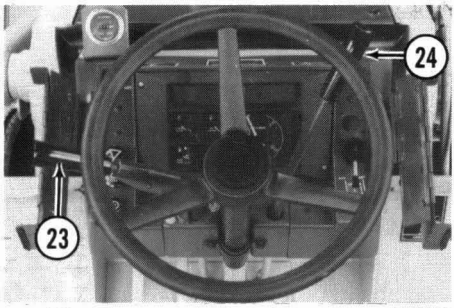
NOTE: *Do not operate the starter motor more than 30 seconds at one time. Let the starter motor cool for three minutes before you engage the starter motor again. While the starter motor is engaged, white or black smoke must be seen at the exhaust pipe. If no smoke is seen, check the fuel supply.*

6. After the engine starts, check the instruments to make sure the gauge indications are correct. Run the engine at 1000 rpm until the coolant temperature is warm.

CAUTION: *Always fasten seat belt securely before starting engine.*

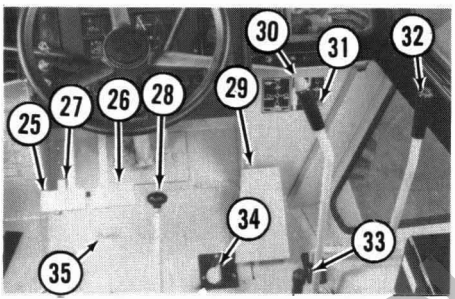
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23. Transmission Shuttle Control
24. Hand Throttle



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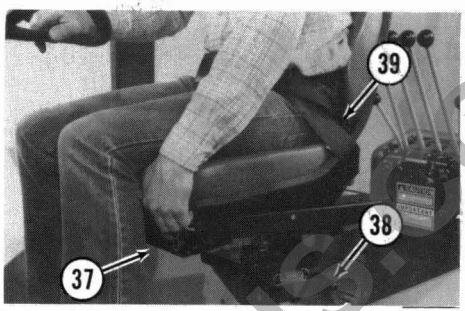
25. Left Wheel Brake Pedal
26. Right Wheel Brake Pedal
27. Brake Pedal Lock
28. Transaxle Control Lever (Four Speed)
29. Foot Throttle
30. Fast Cycle Switch
31. Control Lever for Loader Arm and Bucket
32. Control for 4-In-1 Bucket Clam
33. Parking Brake
34. Pedal for Differential Lock
35. Pedal for Clutch Cutout



835138

36. Front Drive Axle Control

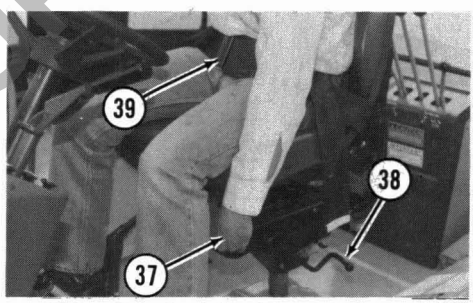
Standard Seat and Seat Belt



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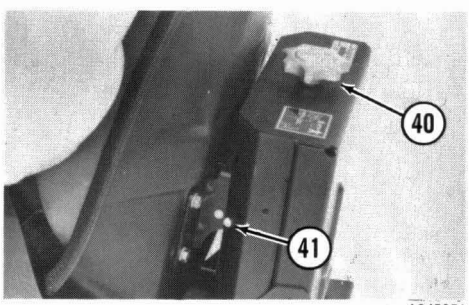
37. Control for Forward, Rearward and Turning
38. Control for Seat Height
39. Seat Belt

Suspension Seat and Seat Belt



835265

37. Control for Forward, Rearward and Turning
38. Control for Seat Height
39. Seat Belt

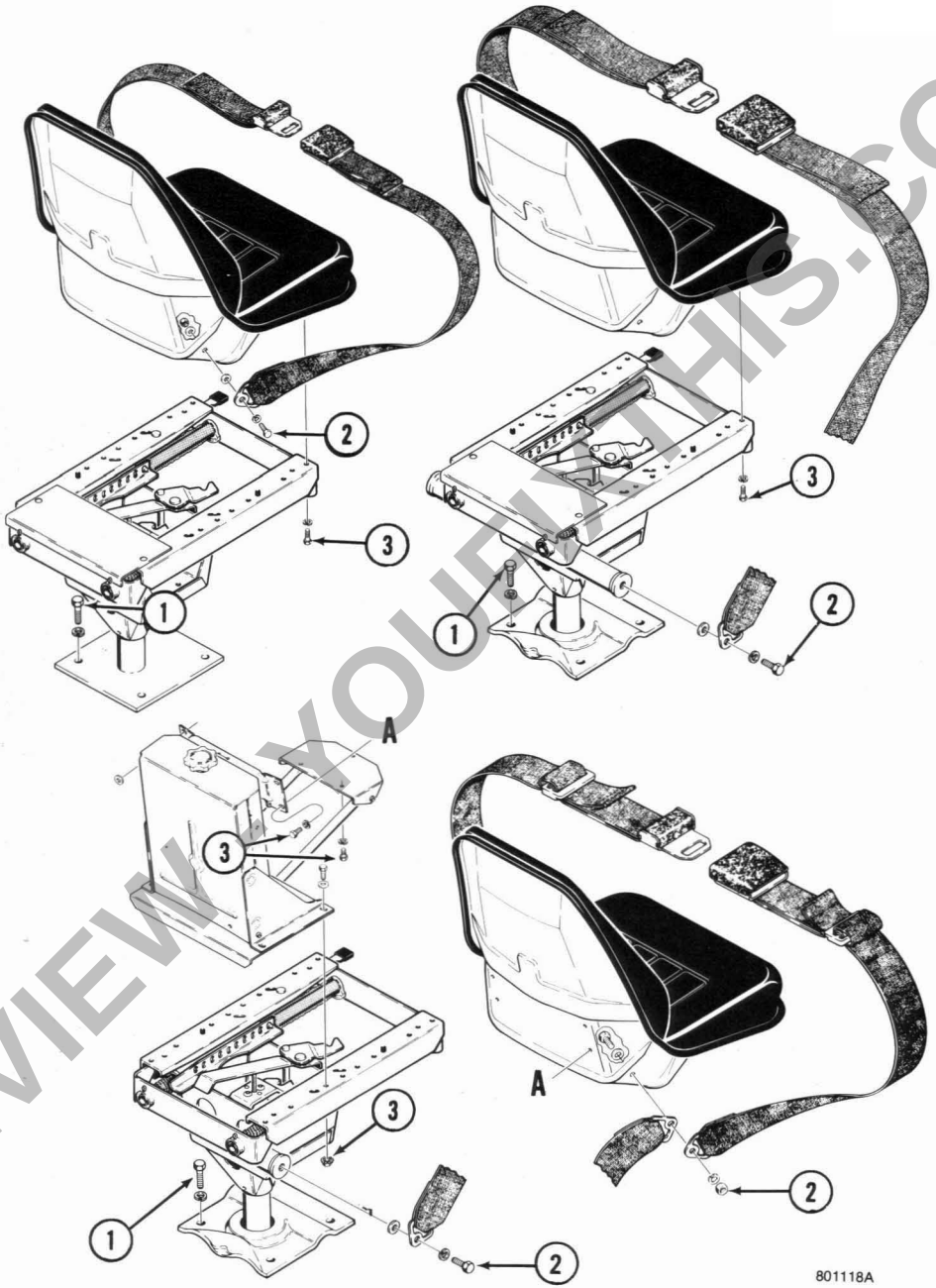


A845251

40. Control for Operator Weight
41. Indicators for Weight Adjustment

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Torque Specifications for Seat and Seat Belts Mounting Bolts



1. *65 to 85 Pound-Feet (88 to 115 N m) (9 to 11.8 kg/m)*
2. *50 to 60 Pound-Feet (68 to 81 N m) (6.9 to 8.3 kg/m)*
3. *15 to 20 Pound-Feet (20 to 27 N m) (2.1 to 2.8 kg/m)*

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3. Apply a thin layer of clean grease or oil to the gasket of the new oil filter.

4. Turn the new oil filter onto the base until the gasket makes contact with the base. Continue to tighten the filter for 3/4 of a turn with your hand.

IMPORTANT: *Do not use a filter wrench to install the oil filter. An oil leak can occur if the filter is dented by the filter wrench.*

5. Install the drain plug for the engine oil and put new oil into the engine. See page 88 for the correct engine oil.

6. Start the engine and run at 1000 rpm (r/min) for two minutes. Check for oil leaks at the oil filter. After two minutes, stop the engine and check the oil level.

Systemgard™ Lubricant Analysis Service

The normal engine oil change interval is every 250 hours of operation. Operating conditions, quality of the engine oil and sulphur content of the fuel can change this interval. It is recommended to use the Systemgard lubricant analysis service. See your Case Dealer.

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