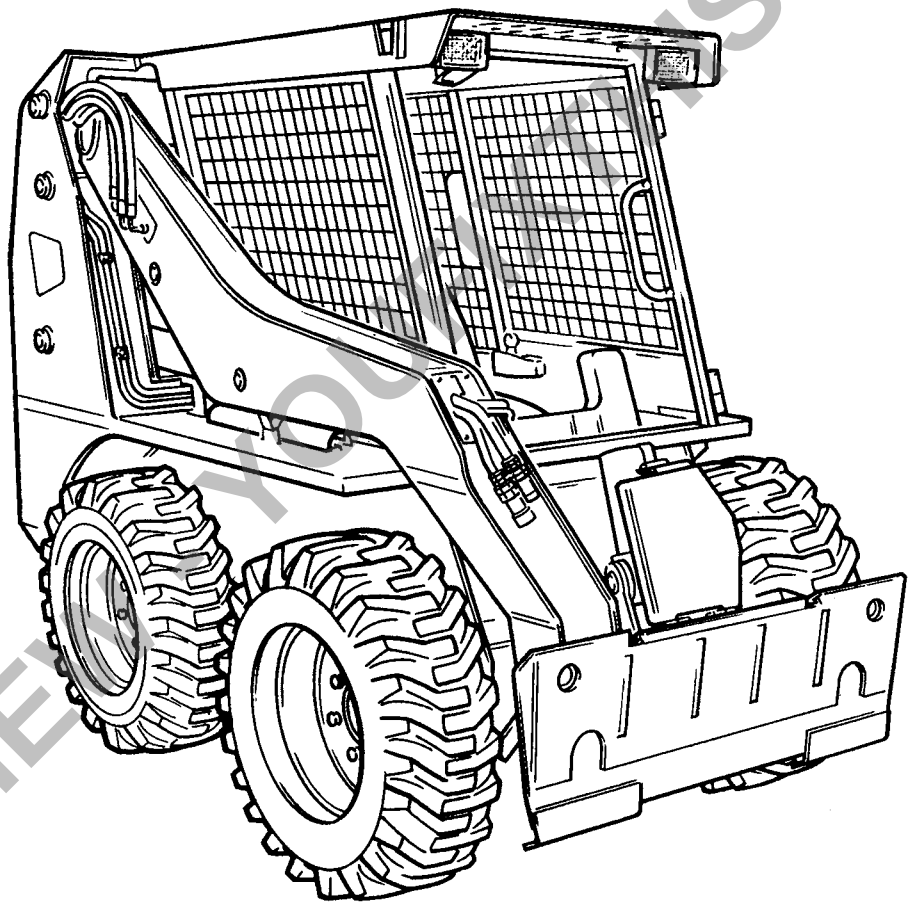
Operator Handbook

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ROBOT 150, 165

⚠ THIS HANDBOOK MUST BE KEPT IN THE MACHINE AT ALL TIMES ⚠

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In this handbook and on the machine there are safety notices. Each notice starts with a signal word. The meanings of the signal words are given below.

⚠ DANGER

Denotes an extreme hazard exists. If proper precautions are not taken, it is highly probable that the operator (or others) could be killed or seriously injured.
INT-1-2-1

⚠ WARNING

Denotes a hazard exists. If proper precautions are not taken, the operator (or others) could be killed or seriously injured.
INT-1-2-2

⚠ CAUTION

Denotes a reminder of safety practices. Failure to follow these safety practices could result in injury to the operator (or others) and possible damage to the machine.
INT-1-2-3

⚠ WARNING

Study This Handbook Before Starting The Machine

You must understand and follow the instructions in this handbook. You must observe all relevant laws and regulations. If you are unsure about anything, ask your JCB distributor or employer. **Do not guess**, you or others could be killed or seriously injured.
INT-1-1-1

⚠ CAUTION

Do not fit an attachment to this machine which is not JCB approved. Consult your JCB distributor before fitting any non approved attachment.
8-4-1-6

MACHINE SECURITY

Vandalism and theft of unattended machines is an ever increasing problem and JCB is doing everything possible to help combat this.

JCB PLANTGUARD is a comprehensive package available to help you safeguard your machine. It includes such devices as vandal proof covers, window etching, immobiliser, concealed serial number, battery isolator, Tracker security system and much more.

Remember that the fitting of any one of these security devices will help to minimise not only the damage or loss of your machine but also subsequent lost productivity. It could also result in reduced insurance premiums.

Your JCB Distributor or Dealer will be pleased to provide information on any of these sensible precautions. ACT NOW!
INT-1-2-4

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ENGINE, DRIVE AND OPERATIONAL CONTROLS, SWITCHES AND INSTRUMENTS (continued)

Controls (continued)

15 Horn Push
With the Starter Switch in the HS position, press the button on top of the Drive Control Lever to sound the horn.

16 Direction Indicator Switch (optional)
A 3-position rocker switch located on the mounting plate of the Loader Arm/Shovel Control joystick. From its central OFF position (**N**), press left (**L**) or right (**R**) to indicate the corresponding direction of turn. The switch is manually reset to its central (neutral) position.

17 Electrical Plugs Cover
Harness connection plugs.

18 Auxiliary Attachments Detent Switch
See ***Loader Controls.***

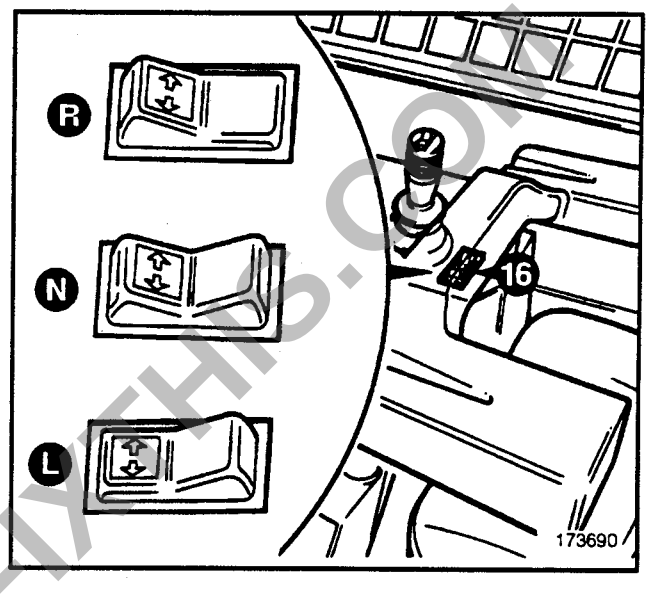
19 Operating Symbols
The operating symbols are moulded into the top centre portion of the safety restraint bar. With the operator in the correct position and the bar in locked back position; the movements of the drive control lever are shown on the left and the loader arm/shovel control lever on the right.

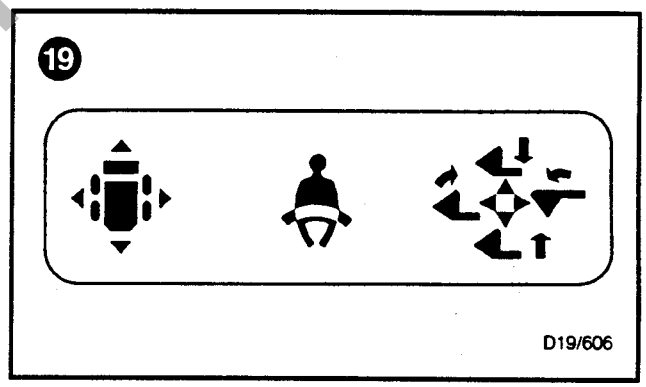
20 Hourmeter
The Hourmeter records the total running time of the engine. Use it to keep a check of running hours between maintenance intervals.

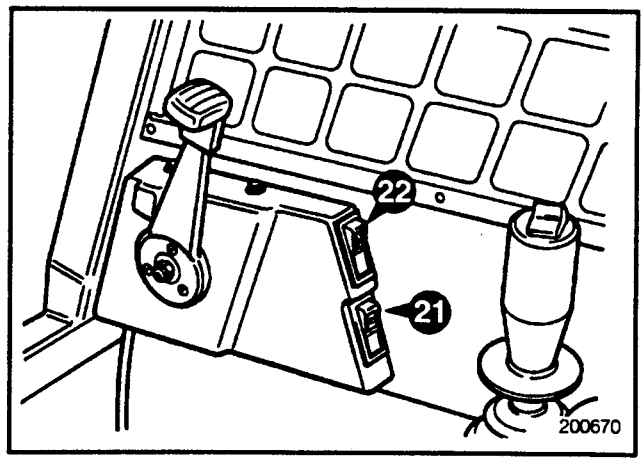
21 High-Flow Hydraulic Switch (optional)
Press switch down to select high hydraulic flow. High flow is required for efficient operation of certain attachments. Switch must always be in normal flow position unless a high flow attachment is fitted.

***Note:** High-Flow hydraulics will not operate if the engine speed is too low.*

22 Float/Hand Held Attachments Control Switch (optional)
See ***Loader Controls.***







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BEFORE STARTING THE ENGINE

Note: *Read* ***Operating in Low Temperatures*** *or* ***Operating in High Temperatures*** *if you will be using the machine in very cold or very hot climates.*

1 Make Safe the Loader Shovel

The loader shovel should already be resting on the ground. If it is not you should, if possible, install the safety strut provided (see ***Installing the Safety Strut*** *in MAINTENANCE section*). Alternatively block the shovel to prevent any chance of it falling.

2 Do a Pre-Start Inspection

For your own safety *(and others')* and for maximum service life of your machine, do a pre-start inspection before starting the engine.

a If you haven't already done it, do a walk round inspection of the outside of the machine (see ***Before Entering the Cab***).

b Remove dirt and rubbish from the cab interior, specially around the pedals and control levers (see ***Cleaning the Cab Interior*** *in MAINTENANCE section*).

⚠ WARNING

Keep the machine controls clean and dry. Your hands and feet could slide off slippery controls. If that happens you will lose control of the machine.
2-2-3-6

c Remove oil, grease and mud from the pedals and control levers.

d Make sure that your hands and shoes are clean and dry. (See ***WARNING*** *above.*)

⚠ CAUTION

Loose articles can fall and strike you or roll on the floor. You could be knocked unconscious, or the controls could get jammed. If that happens you will lose control of the machine.
2-2-3-7/1

e Remove or secure all loose articles in the cab - such as lunch boxes, tools etc.

f Inspect the ROPS/FOPS structure for damage. Get your JCB distributor to repair any damage.

g Check round the cab for loose or missing bolts, screws etc. Replace or tighten where necessary.

⚠ WARNING

Replace the seat belt with a new one if it is damaged, if the fabric is worn, or if the machine has been in an accident. Fit a new seat belt every three years regardless of condition.
2-3-1-8

h Inspect the seat belt and its mountings for damage and excessive wear.

i Check that the following (as applicable) are in working order:
Lights, warning lights, rotating beacon, indicator lights, all switches, windscreen washer and wipers.

Do the following after entering the machine.

3 Close and Latch the Door.

4 Pull back the Hydraulic Controls Safety Restraint Bar

Note: *Machines after serial number 0675358 are fitted with a sequence control unit. On these machines unless steps 3 and 4 are carried out in the correct sequence the machine can not be operated. The sequence unit is not fitted to machines manufactured after May 1996.*

5 Adjust the Seat

Adjust the seat (see ***Seat Adjustment***), so that you can comfortably reach all the operating controls.

6 Fasten and Adjust the Seat Belt

7 Ensure the Drive Control Lever is in Neutral

If the engine is started with the drive control lever deflected to either the forward or reverse position the machine will lurch forward or backwards. The lever is spring loaded to return to its neutral position, but ensure that nothing has caused it to be deflected.

8 Parking Brake Light

Ensure that the Restraint Bar is in the correct position and locked, and that the door is fully closed. Both of these functions are wired into the parking brake light. Unless the parking light extinguishes when the brake is switched off NO hydraulic pressure will be available even though the engine is running.

9 Ensure the Auxiliary Attachments Detent Switch is off.

The engine will not start if the Auxiliary Attachments Detent Switch is on.

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CLEANING THE CAB INTERIOR

Because the machine body base is of solid steel construction special provision is made for cleaning out the cab. The cab floor profile incorporates two gutters, one on each side. At the rear end of each gutter is a blanking plate **A** which is secured by two bolts.

1 Lower the loader arm to its lowest position with a shovel installed.

2 Operate the Loader Arm/Shovel control lever (see ***Loader Controls***) as if to tip the shovel for unloading. This action will raise the front of the machine off the ground.

3 Stop the engine and remove the starter key.

4 If necessary, remove the floor plate in front of the operator's seat by unscrewing the four bolts securing it to the chassis.

5 Loosen the blanking plates **A** from the ends of the chassis gutters - slacken off one bolt and the plate will swing away.

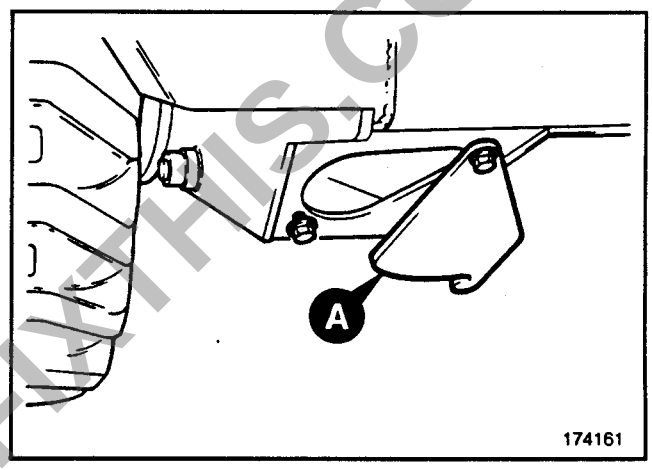
6 Hose out the machine floor taking care not to get water into the electrical circuits.

Note: *Hose pressure should not be too high.*

7 Take whatever steps are necessary to get rid of any dirt and debris. Get rid of as much water as possible by giving the gutters time to drain and by drying out with cloths.

8 Once the cab gutters are dry, re-secure the gutter blanking plates and refit the floor plate.

9 Start the engine and crowd the shovel to lower the machine to the ground.



Note: *The illustration shows the left gutter blanking plate. A similar plate is fitted to the right side gutter.*

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DRIVE CHAIN LUBRICATION

The final drive to the wheels is by chains. A chain casing on each side of the machine houses two chains, one to the front wheel and one to the rear wheel. The chains run in an oil bath.

Checking the Oil Levels

1 Park the machine on level ground.

2 Stop the engine.

3 On the left side of the machine, remove inspection plug **A** and check that the oil level is up to the bottom of the aperture.

4 If necessary, top up through the aperture using the recommended oil. (See ***Fluids, Capacities and Lubricants***.) Wipe up any oil spillage.

5 Check that the washer on plug **A** is undamaged. Renew if necessary.

6 Clean plug **A** and its aperture before refitting. Do not overtighten or you could strip the threads in the housing.

7 Repeat steps 3 to 6 on the right side of the machine.

Changing the Oil

1 Park the machine on level ground.

2 Stop the engine.

3 On the left side of the machine, remove inspection plug **A**.

4 Place a suitable receptacle under plug **B** to collect the oil.

5 Remove plug **B** and completely drain the chain casing.

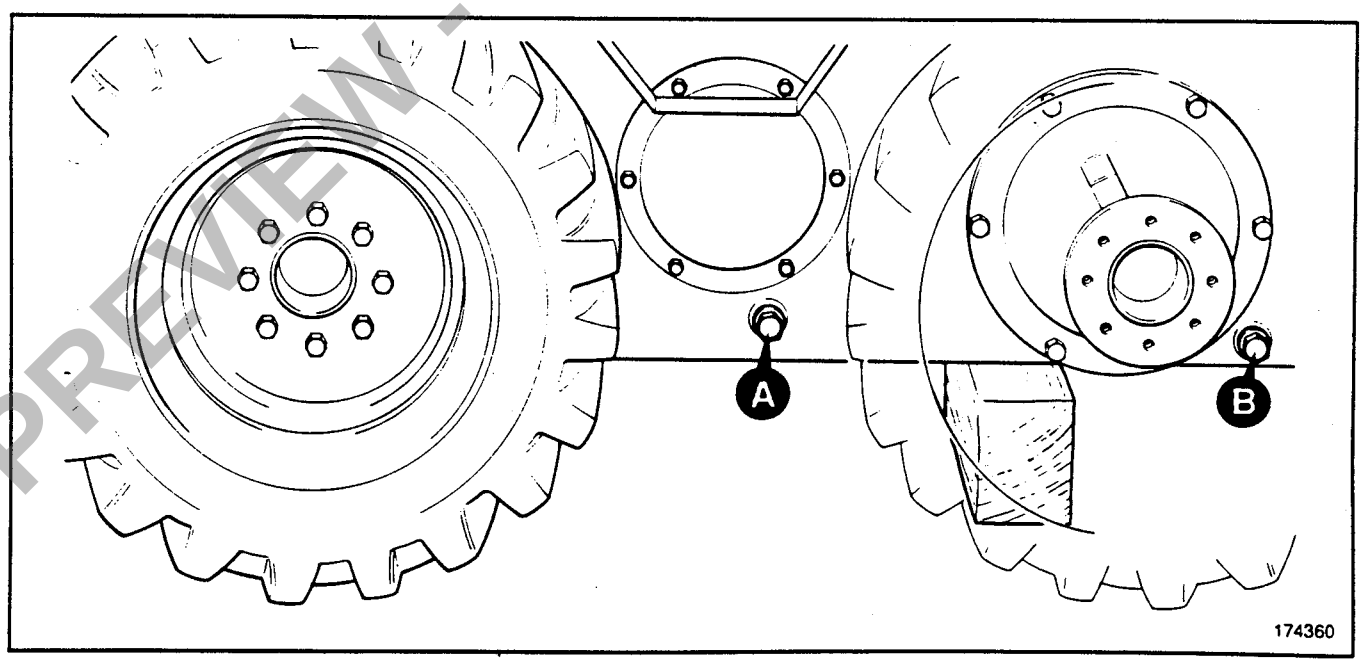
6 Clean both plugs and their apertures. Renew the sealing washers if necessary.

7 Refit plug **B**.

8 Using the recommended oil (see ***Fluids, Capacities and Lubricants***), fill the chain casing via plug **A** aperture until the oil is level with the bottom of the aperture. Wipe up any oil spillage.

9 Refit plug **A**. **Do not** overtighten or you could strip the threads in the housing.

10 Repeat steps 3 to 9 for the right side chain casing.



***Note**: This diagram shows the location of the chain casing plugs on the left side of the machine. The right side casing is a mirror image of the left side casing. The rear wheel is shown removed for clarity.*

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ELECTRICAL SYSTEM (continued)

Changing the Light Bulbs (continued)

Switches and Warning Lights

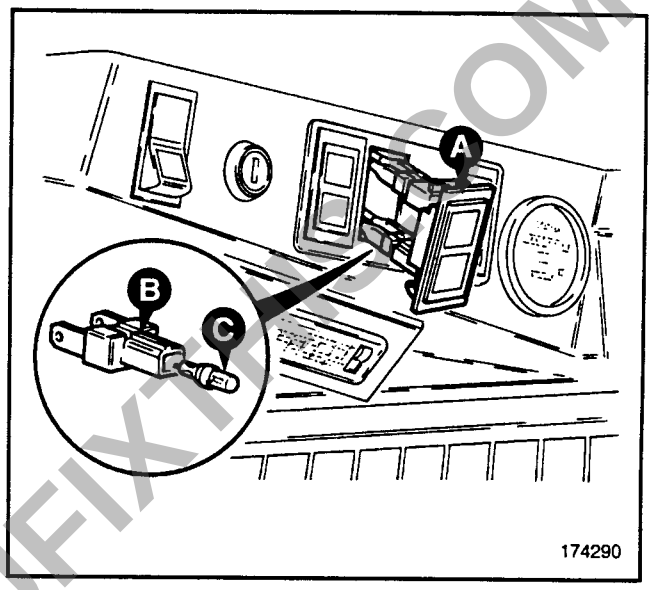
1 With a fine screwdriver ease the Switch/Warning Lights **A** from their sockets in the control panel.

2 The bulb holders **B** can then be pulled from the back of the Switch/Warning Lights and the bulbs will come with them.

3 The bulbs **C** are a straight pull from the holder.

4 Fit the new bulbs.

5 Re-assemble the Switch/Warning Light in the reverse order.

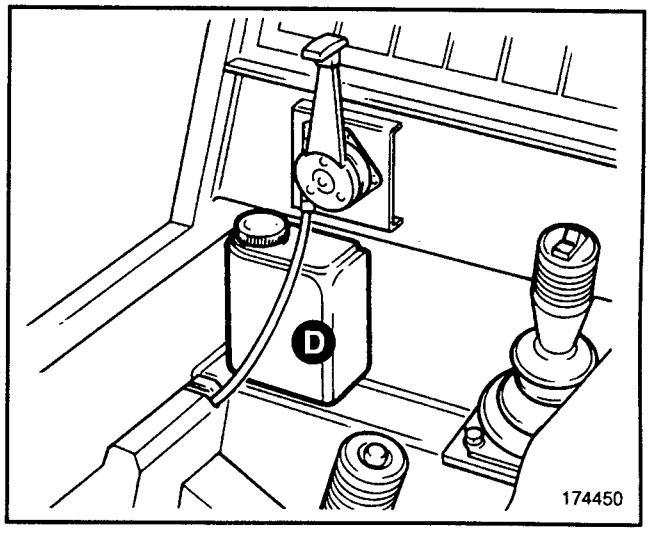


Light Bulbs

Work lights	55 W	Interior lights	10 W
Beacon	70 W	Indicator lights	21 W
Side lights	4 W	Warning lights	1.2 W
Headlights			
Tungsten type	40/45W		
Halogen type	50/55W		

WINDSCREEN WASHER (OPTIONAL)

Fill the windscreen washer bottle **D** with a suitable liquid. The liquid should contain a de-icing fluid to prevent it freezing. **Do not use engine coolant antifreeze.**



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FUEL SYSTEM

Types of Fuel

Use good quality diesel fuel to get the correct power and performance from your engine. The recommended fuel specification for JCB engines is given below.

Cetane Number:	45 (minimum)
Viscosity:	2.5/4.5 Centistokes at 40°C (104°F)
Density:	0.835/0.855 kg/litre (0.872/0.904 lb/pint)
Sulphur:	0.5% of mass (maximum)
Distillation:	85% at 350 °C (662 °F)

Cetane Number

Indicates ignition performance. Fuel with a low cetane number can cause cold start problems and affect combustion.

Viscosity

Is the resistance to flow. If this is outside limits, the engine performance can be affected.

Density

Lower density will reduce engine power. Higher density will increase both engine power and exhaust smoke.

Sulphur

High sulphur content can cause engine wear. (High sulphur fuel is not normally found in North America, Europe or Australia.) If you have to use high sulphur fuel you must also use a highly alkaline engine lubricating oil; or change the normal oil more frequently.

Low sulphur fuels are commonly used throughout the world. These fuels contain fewer lubrication additives. The fuel injection pump is lubricated by the fuel; therefore using low sulphur fuel may, in the long term, affect the pump.

If you have to use low sulphur fuel you are advised to use a lubrication additive as recommended by your fuel supplier.

Distillation

This indicates the mixture of different hydrocarbons in the fuel. A high ratio of lightweight hydrocarbons can affect the combustion characteristics.

Fuel Standards

Consult your fuel supplier or JCB distributor about the suitability of any fuel you are unsure of.

Low Temperature Fuels

Special winter fuels may be available for engine operation at temperatures below 0 °C (32 °F). These fuels have a lower viscosity. They also limit wax formation in the fuel at low temperatures. (Wax forming in the fuel can stop the fuel flowing through the filter).

Flow improvers may also be available. These can be added to the fuel to reduce wax formation.

Petrol

⚠ WARNING

Do not use petrol in this engine. Do not mix petrol with the diesel fuel. In storage tanks the petrol could rise to the top and form flammable vapours.
INT-3-1-6

Advice

If you have to use non-standard fuels, contact your JCB distributor for advice on engine adjustments and oil change periods.

Filling the Tank

⚠ WARNING

Diesel fuel is flammable; keep naked flames away from the machine. Do not smoke while refuelling the machine or working on the engine. Do not refuel with the engine running. There could be a fire and injury if you do not follow these precautions.
INT-3-2-2

At the end of every working day, fill the tank with the correct type of fuel.

This will prevent condensation from developing in the fuel tank overnight.

We recommend that, if possible, you lock the fuel cap to prevent theft and tampering.

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QUICKHITCH CONTROL

Engaging the Shovel/Attachments

To engage a shovel or other attachment on the Quickhitch, do the following:

⚠ WARNING

If two people are doing this job, make sure that the person working the controls is a competent operator. If the wrong control lever is moved, or if the controls are moved violently, the other person could be killed or injured.

2-2-6-5

1 Align the machine square to the shovel/attachment.

2 Lower the loader arm fully to bring the hitch plate **A** below the level of the lips on the shovel/attachment. Make sure levers **X** are moved fully out beyond the sides of the hitch plate.

3 Drive the machine slowly forward. Stop when the hitch plate **A** just touches the shovel/attachment.

4 Raise the loader arm and engage the hitch plate **A** in the lips on the shovel/attachment. Stop the movement as soon as the plate is engaged.

5 Move the Loader Arm/Shovel Control Lever to the left as if to fully roll back the shovel.

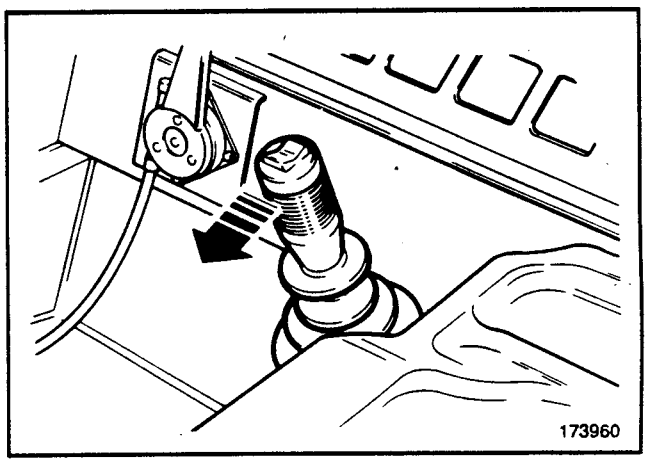
6 Push forward the Hydraulic Controls Safety Restraint Bar. Dismount from the machine or ask a second person to help.

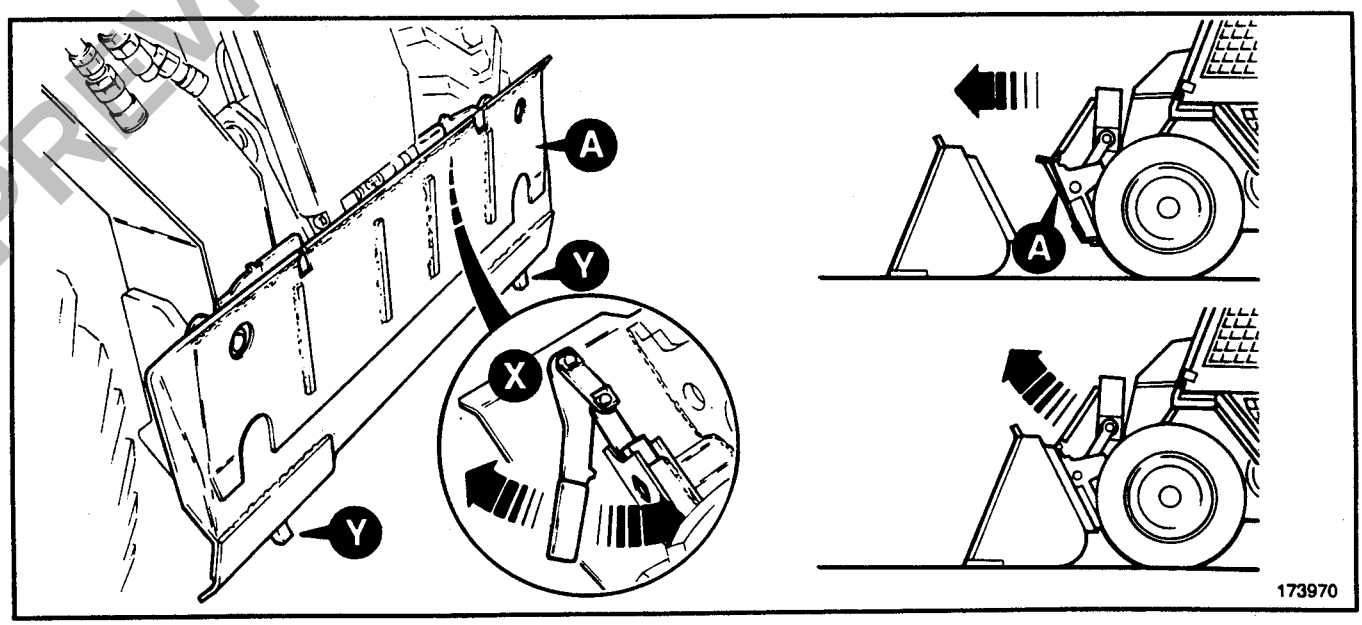
7 Push levers **X** fully towards the middle of the hitch plate to engage the Quickhitch locking pins **Y**. They will lock into detents.

8 The shovel/attachment is now locked onto the Quickhitch.

9 If appropriate connect the attachment tail hoses to the loader arm pipework (see ***Connecting/Disconnecting Hydraulic Hoses*** in *OPTIONAL ATTACHMENTS* section).

10 Return to the cab seat (or make sure your assistant is well clear of the Quickhitch). Pull back the Safety Restraint Bar. The shovel/attachment is now ready for use.





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