Backhoe

Operator's Manual

Form 9-6862

J I Case
A Tenneco Company
Light Equipment Division

This Safety Alert Symbol indicates important safety messages in this manual. When you see this symbol, carefully read the message that follows and be alert to the possibility of personal injury or death.

IMPORTANT

If this machine is used by an employee or is loaned or rented, make absolutely certain that the operator(s), prior to operating:

1. **Is instructed in safe and proper use.**
2. **Reviews and understands the Manual(s) pertaining to the machine.**

WARNING

BEFORE STARTING ENGINE

STUDY OPERATOR'S MANUAL SAFETY MESSAGES
READ ALL SAFETY SIGNS ON MACHINE
CLEAR THE AREA OF OTHER PERSONS

LEARN & PRACTICE SAFE USE OF CONTROLS BEFORE OPERATING

IT IS YOUR RESPONSIBILITY TO UNDERSTAND AND FOLLOW A MANUFACTURER'S INSTRUCTIONS ON MACHINE OPERATION, SERVICE, AND TO OBSERVE PERTINENT LAWS AND REGULATIONS. OPERATOR AND SERVICE MANUALS MAY BE OBTAINED FROM YOUR EQUIPMENT DEALER.

321-3705

Issued 5/79, J.I Case, Light Equipment Division (Revised 1/80)

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INTRODUCTION TO THE OWNER

This manual is your guide to safe, productive operation. Read it carefully. It will help to reduce trial and error learning. It should also minimize damage and downtime caused by improper maintenance.

For additional information, contact your nearest authorized Case Dealer.

D70 Backhoe

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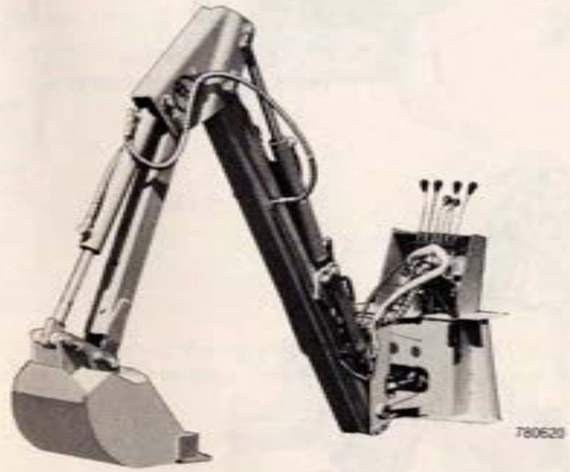

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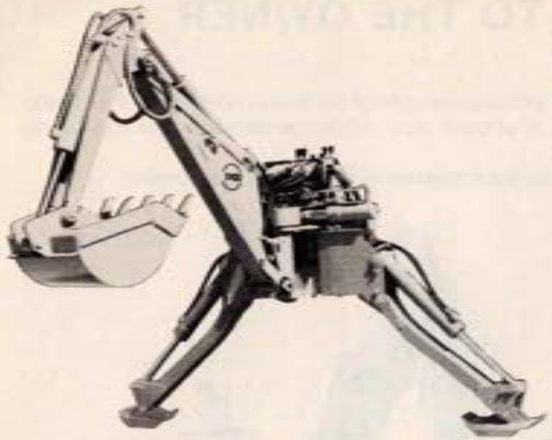
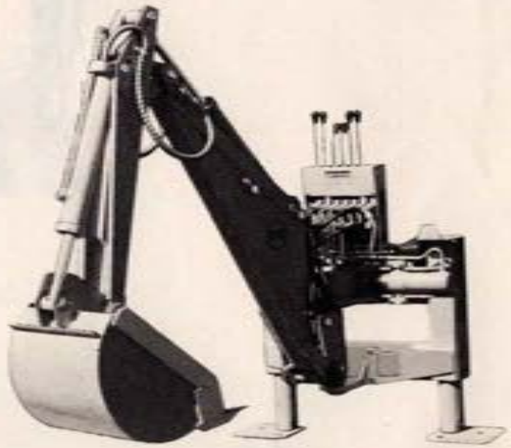
SD70 Backhoe



D100 Backhoe
(with outrigger stabilizers)
(D100XR similar)



D100 Backhoe
(with verticle stabilizers)

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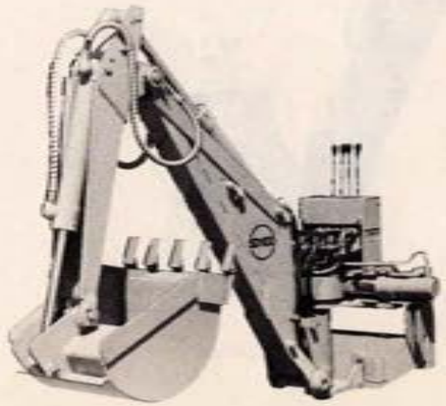

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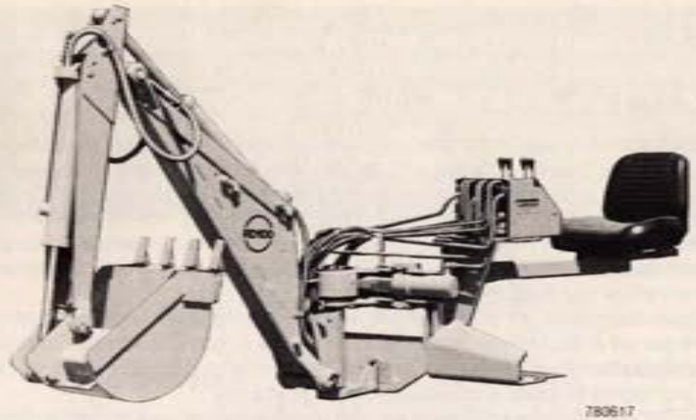

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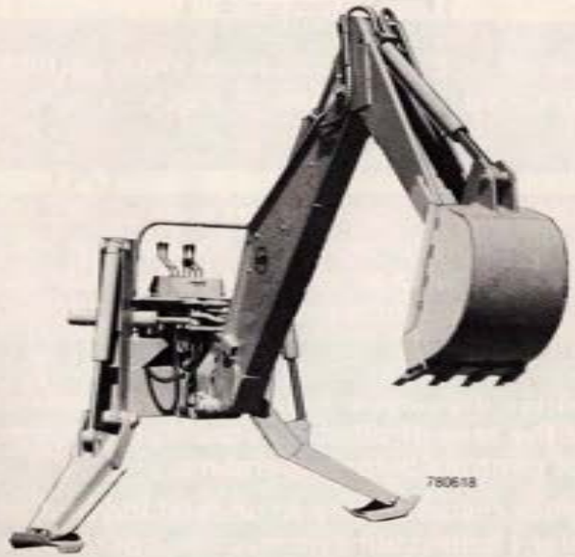
RD100 Backhoe



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D130 Backhoe

J I Case reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to such changes.

SAFETY

SAFETY RULES

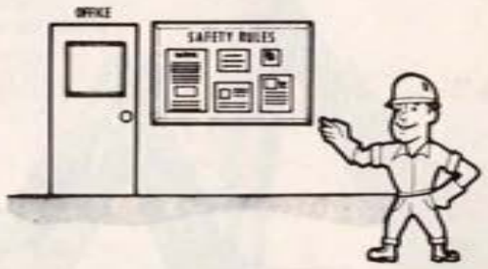
Your safety and the safety of those around you is highly dependent upon the care and good judgment you exercise in the use of this equipment. Know the positions and functions of all controls before attempting to operate. BE SURE TO CHECK ALL CONTROLS IN A SAFE OPEN AREA BEFORE STARTING YOUR WORK.

READ THIS MANUAL THOROUGHLY and make sure you understand its contents. All equipment has limitations. Be sure you understand all operating characteristics of this machine before starting to operate.

The safety information in this manual is not intended to replace safety codes, insurance requirements, federal, state, and local laws, rules, and regulations.

Know the regulations and laws that apply to your area and be sure that your machine is properly equipped to meet such laws and regulations.

It is recommended that the following safety rules be copied and posted on the job site and in your office.

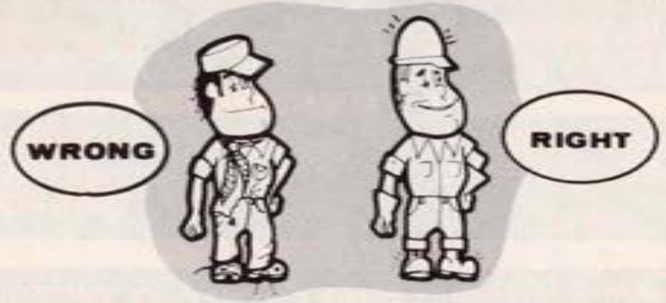


PRE-STARTING

WARNING: Before starting engine, study operator's manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating.

It is your responsibility to understand and follow manufacturer's instructions on machine operation, service, and to observe pertinent laws and regulations. Operator's manuals may be obtained from your Case dealer.

CAUTION: Wear the proper safety equipment — avoid loose clothing. Obtain additional safety equipment when your safety may be in doubt. Hard hat, safety shoes, ear protectors, reflective clothing, safety goggles, and heavy gloves may be required. Failure to wear the proper safety equipment could result in personal injury.



WARNING: Always make certain that the work area is clear of any people or obstructions BEFORE operating machine.

CAUTION: Be sure the operator's area, steps, and grab handles are free of oil, loose objects, or ice. During operation, stop and take time to clear the operator's area as required. Remove or secure all maintenance or personal items. Failure to keep these areas clean could cause a serious accident.

CAUTION: Visually check the machine for leaks and broken, missing, or malfunctioning parts. Be sure all caps, dip sticks, battery covers, etc., are secure before starting. A properly maintained machine will help avoid accidents.

WARNING: Know the location of underground cables, water mains, gas lines, etc. Machine contact with underground obstructions could result in personal injury.

OPERATION

WARNING: Be fully aware of the location of all the controls before operating this machine. BE PARTICULARLY CAREFUL IF THIS IS NOT THE MACHINE YOU NORMALLY OPERATE. Proper machine operation can help to prevent accidents.

WARNING: Fasten your seat belt. On machine equipped with ROPS, always fasten seat belt securely before starting engine.

CAUTION: Never wear a seat belt loosely or with slack in the belt system. Never wear the belt in a twisted condition or pinched between the seat and structural members.

WARNING: If at any time you become confused while operating the machine, stop the engine. Return all controls to neutral and restart the engine to begin operation again.

WARNING: Before operating in an unfamiliar area, walk around the full length of the proposed trench site and check for hidden holes, drop-offs, or obstacles that could cause an accident.

CAUTION: Understand the machine's limitations. Keep it under control at all times. DO NOT TRY TO DO TOO MUCH TOO FAST.

WARNING: Operate at a speed consistent with working conditions and the terrain. Be extremely careful when working on banks and hillsides. Do not rush.

CAUTION: Keep alert. Clear the operating area of all unauthorized persons. Know the location of fellow workers in your area.

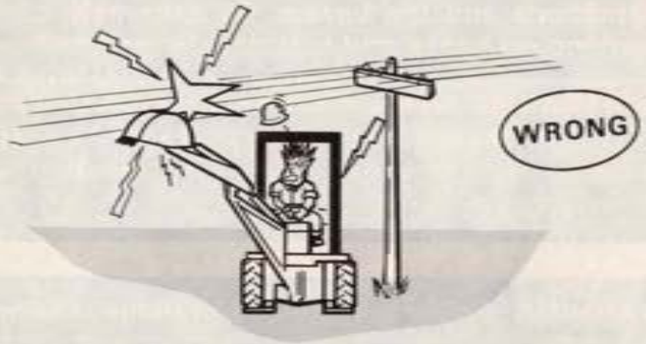
WARNING: Lower the equipment to the ground, engage the parking brake, if equipped, stop the engine and remove the key before leaving the operator's seat.

DANGER: Exhaust fumes can kill. If necessary to start an engine in an enclosed area, be sure to provide adequate ventilation.

DANGER: Keep all machine parts away from live electrical lines. If work must be done close to high voltage lines, have the utility disconnect them. It is not necessary to actually contact a power line for the electricity to ground through the machine. If power does ground through the machine, remain on the machine and DO NOT TOUCH THE MACHINE STRUCTURE. Refer to the following chart.

CONDUCTOR VOLTAGE	MINIMUM WORKING CLEARANCE FROM CONDUCTOR	MINIMUM TRANSIT CLEARANCE FROM CONDUCTOR
50,000 Volts or Less	10 ft. (3 m)	4 ft. (1.2 m)
Over 50,000 Volts	10 ft. (3 m) plus 0.4 ft. (10.2 mm) for each 1,000 volts over 50,000	10 ft. (3 m)
345,000 to 750,000 Volts		16 ft. (4.8 m)

NOTE: If the above requirements are less stringent than state requirements, the state requirements shall apply.



WARNING: Gas carried in pipelines is flammable/explosive. Use proper precautions to avoid igniting gas which could cause personal injury.

WARNING: Operate backhoe from operator's seat only. Operation from any other position could result in personal injury.

WARNING: Never dig under the stabilizers or backfill blade. The madhine could tip into the excavation if the bank caved in.

WARNING: When operating on a slope, always position the machine to swing the backhoe to the uphill side if possible. Swinging the backhoe to the downhill side could tip the machine and result in personal injury.

CAUTION: Engage the transport locking device(s) in backhoe before trailering or transporting a machine between job sites, or when backhoe is not in use.

WARNING: Before swinging the backhoe to either side, be sure there is ample room and that all persons are out of the way.

CAUTION: Be extremely careful when working close to an open trench. Serious injury could result from a trench cave-in.

CAUTION: Always use both hands when climbing on or off the machine. Never get on or off a machine while it is moving.

CAUTION: Do not use the control levers as a handhold for getting on or off the machine.

CAUTION: To help avoid uncontrolled machine movement and unauthorized use, stop the engine before leaving the machine unattended.

CAUTION: Understand correct maintenance procedures before attempting repairs. There is no disgrace in asking for help. Proper maintenance procedures can help prevent accidents.

CAUTION: Wear safety glasses when servicing the machine, especially when pounding or grinding. Flying particles can cause permanent eye injury.

CAUTION: Always lower the backhoe to the ground or block it securely before performing any service or adjustment.

CAUTION: Hydraulic systems are highly pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissues causing serious injury. Use a piece of wood or cardboard when looking for leaks — never use the hands or other parts of the body.

Relieve hydraulic pressure before disconnecting circuits. When reassembling, make absolutely certain that all connections are tight.

If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious complications may arise if medical attention is not given at once.

WARNING: Use extreme caution when disconnecting hydraulic lines. High pressure in a system could cause injury when fittings are disconnected. Relieve all pressure before working on system.

CAUTION: Stop the engine before you grease, oil, or perform any maintenance on the machine unless otherwise instructed in the owner's manual or service manual.

IMPORTANT: Always install new decals whenever the old decals are destroyed, lost, painted over, or illegible. When individual parts are replaced that have decals attached, be sure to install a new decal with the new part. Replacement decals are available from your Case dealer.

SERIAL NUMBER LOCATION

SERIAL NUMBER LOCATION

When ordering parts or requesting information from your authorized Case dealer by personal contact or correspondence, always specify the model and serial numbers of the machine and backhoe in question. Record serial numbers in the space provided at the back of this manual. The backhoe serial number plates for all models are located on the backhoe control console.

NOTE: The terms "right hand" (RH) and "left hand" (LH) as used in this manual are determined by sitting in the operator's seat and facing the backhoe control console.

CAUTION: Understand correct maintenance procedures before attempting repairs. There is no disgrace in asking for help. Proper maintenance procedures can help prevent accidents.

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SPECIFICATIONS

SPECIFICATIONS — D70, SD70 BACKHOE

NOTE: All specifications taken in accordance with SAE Standards or Recommended Practices and ICED Definitions where applicable.

GENERAL

Model ..... Case D70, SD70 Backhoe
Type ..... Utility

OPERATIONAL

Digging Force
with Bucket Cylinder ..... 2950 lbf (13.12 kN)
with Dipper Stick Cylinder ..... 1396 lbf (6.21 kN)

BUCKET CAPACITY

BUCKET TYPE	SIZE		CUTTING WIDTH		CAPACITY			
					RATED		STRUCK	
	in.	mm	in.	mm	ft^3	m^3	ft^3	m^3
Trenching	20	508	22.5	572	1.26	0.035	0.94	0.027
	16	406	18.5	470	0.89	0.025	0.73	0.020
	12	305	14.5	368	0.6	0.017	0.52	0.015

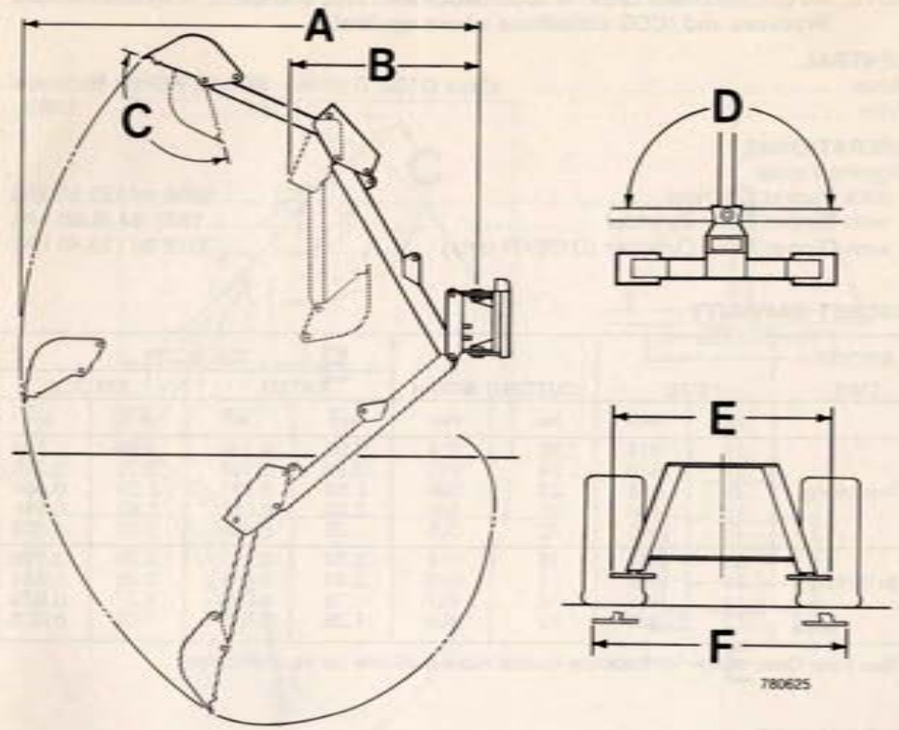
HYDRAULICS

System relief valve setting ..... 2000 psi (13,800 kPa)

WEIGHTS — Approximate Operating (without bucket)

D70 ..... 500 lbs (227 kg)
SD70 ..... 450 lbs (204 kg)

DIMENSIONS — D70, SD70 BACKHOE



A. Reach ..... 108.0 in. (2743 mm)
B. Length-Transport ..... 45.25 in. (1149 mm)
C. Bucket Rotation ..... 127°
D. Swing Arc ..... 180°
E. Stabilizer Spread (Transport) D70 only ..... 44.5 in. (1130 mm)
F. Stabilizer Spread (Maximum operation) D70 only ..... 53.8 in. (1366 mm)

SPECIFICATIONS — D100, D100XR, SD100, RD100 BACKHOE

NOTE: All specifications taken in accordance with SAE Standards or Recommended Practices and ICED definitions where applicable.

GENERAL

Model ..... Case D100, D100XR, SD100, RD100 Backhoe
Type ..... Utility

OPERATIONAL

Digging Force
with Bucket Cylinder ..... 5295 lbf (23.55 kN)
with Dipper Stick Cylinder ..... 1997 lbf (8.88 kN)
with Dipper Stick Cylinder (D100XR only) ..... 3012 lbf (13.40 kN)

BUCKET CAPACITY

BUCKET TYPE	*SIZE		CUTTING WIDTH		CAPACITY RATED		CAPACITY STRUCK	
	in.	mm	in.	mm	ft^3	m^3	ft^3	m^3
Trenching	36	914	36	914	5.50	0.156	4.37	0.124
	24	610	24	610	3.50	0.100	2.75	0.078
	20	508	20	508	2.88	0.081	2.25	0.064
	16	406	16	406	2.00	0.057	1.62	0.046
	12	305	12	305	1.25	0.035	1.00	0.028
Bell Hole	36	914	36	914	5.37	0.152	3.75	0.106
	22	559	22	559	2.87	0.081	2.25	0.064
	18	457	18	457	1.75	0.050	1.37	0.039
	12	305	12	305	1.25	0.035	1.00	0.028

*See your Case dealer for backhoe bucket sizes available for your machine.

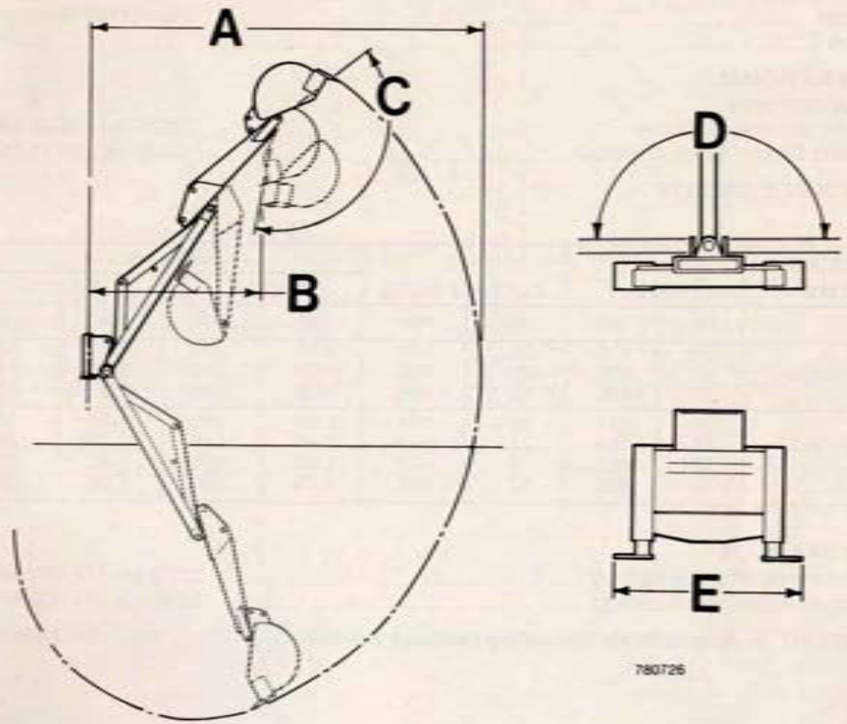
HYDRAULICS

System relief valve setting ..... 2000 psi (13,800 kPa)
Circuit relief valve setting ..... 3000 psi (21,000 kPa)

WEIGHTS — Approximate Operating (without Bucket)

D100 — vertical stabilizers ..... 810 lbs (367 kg)
D100 — outrigger stabilizers ..... 1125 lbs (510 kg)
D100XR — outrigger stabilizers ..... 885 lbs. (401 kg)
SD100 ..... 730 lbs (331 kg)
RD100 ..... 875 lbs (397 kg)

DIMENSIONS — D100, D100XR, SD100, RD100 BACKHOE



D100, SD100, RD100

A. Reach ..... 115.3 in. (2993 mm)
B. Loading Reach ..... 49.5 in. (1257 mm)
C. Bucket Rotation ..... 138°
D. Swing Arc ..... 180°
E. Stabilizer Spread - D100 only
Vertical stabilizers ..... 49 in. (1245 mm)
Outrigger stabilizers ..... 116 in. (2946 mm)

D100XR

A. Reach ..... 136.0 in. (3454 mm)
B. Loading Reach ..... 74.4 in. (1890 mm)
C. Bucket Rotation ..... 138°
D. Swing Arc ..... 180°
E. Stabilizer Spread
Outrigger stabilizers ..... 116.0 in. (2946 mm)

SPECIFICATIONS — D130 BACKHOE

NOTE: All specifications taken in accordance with SAE Standards or Recommended Practices and ICED Definitions where applicable.

GENERAL

Model ..... Case D130 Backhoe
Type ..... Utility

OPERATIONAL

Digging Force
with Bucket Cylinder ..... 6575 lbf (29.25 kN)
with Dipper Stick Cylinder ..... 3546 lbf (15.77 kN)

BUCKET CAPACITY

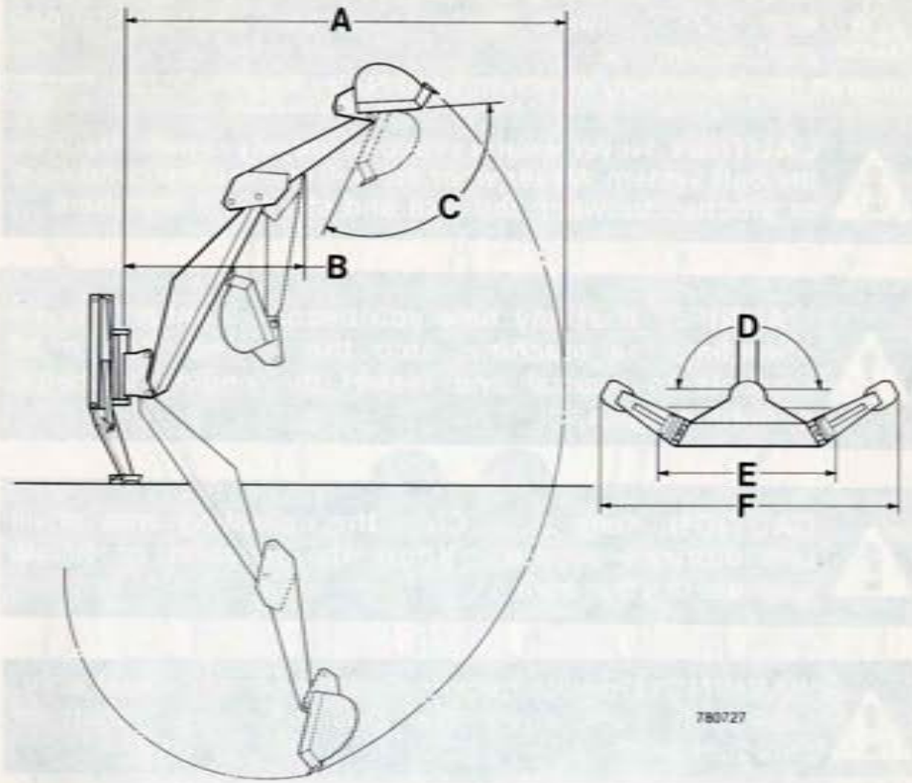
BUCKET TYPE	SIZE		CUTTING WIDTH		CAPACITY			
					RATED		STRUCK	
	in.	mm	in.	mm	ft^3	m^3	ft^3	m^3
Trenching	24	610	24	610	5.25	.149	4.37	.124
	20	508	20	508	4.00	.113	3.50	.100
	16	406	16	406	3.00	.085	2.75	.078
Bell Hole	36	914	36	914	6.00	.170	5.00	.142
	22	559	22	559	3.87	.110	3.37	.096
	18	457	18	457	3.00	.085	2.62	.074
	12	305	12	305	1.75	.050	1.50	.042

HYDRAULICS

System relief valve setting ..... 2375 psi (16,600 kPa)
Circuit Relief valve setting ..... 3000 psi (21,000 kPa)

WEIGHT — Approximate Operating (without Bucket) ..... 1550 lbs. (703 kg)

DIMENSIONS — D130 BACKHOE



A. Reach ..... 149 in. (3785 mm)
B. Length - Transport ..... 62 in. (1575 mm)
C. Bucket Rotation ..... 135°
D. Swing Arc ..... 180°
E. Stabilizer Spread - Transport ..... 64 in. (1226 mm)
F. Stabilizer Spread - Maximum ..... 90 in. (2286 mm)

BACKHOE OPERATION

WARNING: Fasten your seat belt. On machine equipped with ROPS, always fasten seat belt securely before starting engine.

CAUTION: Never wear a seat belt loosely or with slack in the belt system. Never wear the belt in a twisted condition or pinched between the seat and structural members.

WARNING: If at any time you become confused while operating the machine, stop the engine. Return all controls to neutral and restart the engine to begin operation again.

CAUTION: Keep alert. Clear the operating area of all unauthorized persons. Know the location of fellow workers in your area.

WARNING: Operate backhoe from operator's seat only. Operation from any other position could result in personal injury.

CAUTION: Always use both hands when climbing on or off the machine. Never get on or off a machine while it is moving.

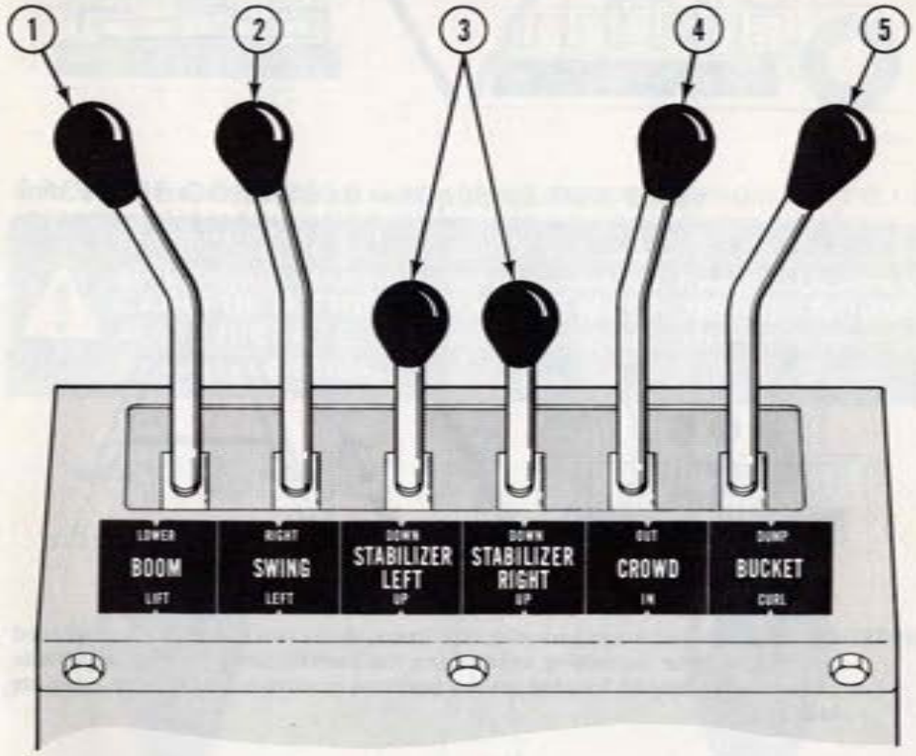
CAUTION: Do not use the control levers as a handhold for getting on or off the machine.

CAUTION: To help avoid uncontrolled machine movement and unauthorized use, stop the engine before leaving the machine unattended.

WARNING: Lower the equipment to the ground, engage the parking brake. if equipped, stop the engine and remove the key before leaving the operator's seat.

BACKHOE CONTROLS — Standard

WARNING: Be fully aware of the location of all the controls before operating this machine. BE PARTICULARLY CAREFUL IF THIS IS NOT THE MACHINE YOU NORMALLY OPERATE. Proper machine operation can help to prevent accidents.



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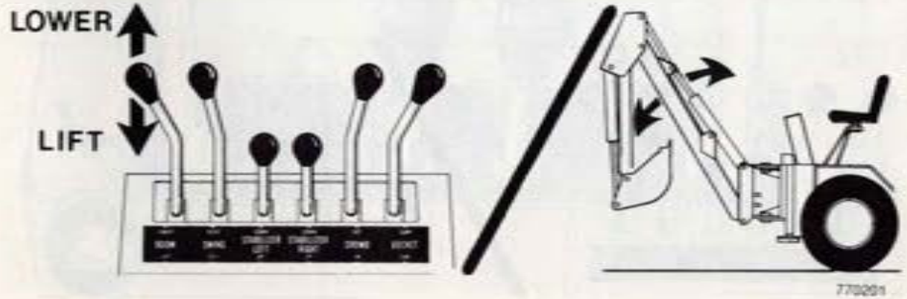
1. BOOM CONTROL LEVER — Move lever toward the backhoe to lower boom, move lever away from the backhoe to raise boom.



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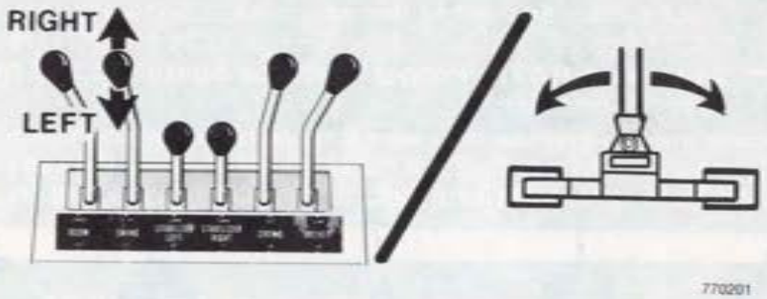
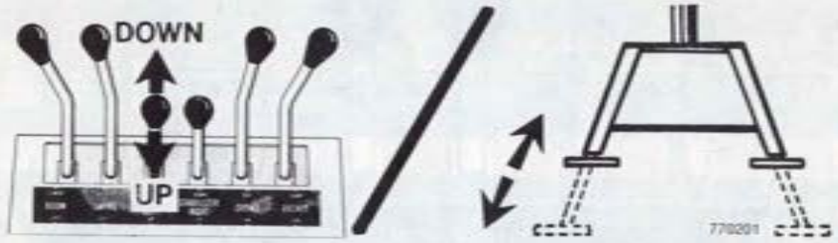
2. BOOM SWING LEVER — Move lever toward the backhoe to swing right, move lever away from the backhoe to swing left.



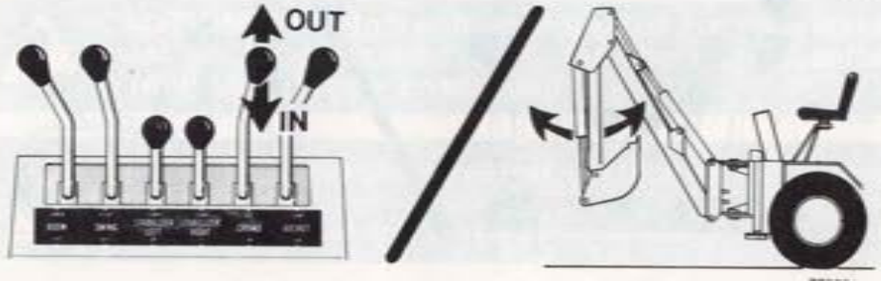
3. LEFT AND RIGHT STABILIZER LEVERS — Move the left lever toward the backhoe to lower left stabilizer, move the right lever toward the backhoe to lower the right stabilizer. Move the left lever away from the backhoe to raise left stabilizer, move the right lever away from the backhoe to raise right stabilizer.



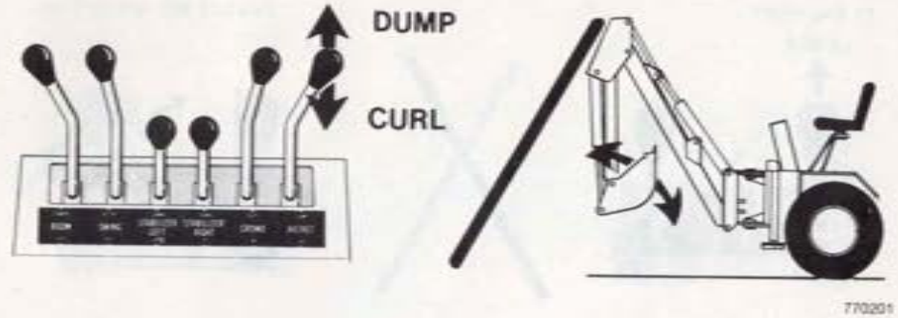
Left stabilizer operation shown

NOTE: On machines not equipped with stabilizers, these two levers will be replaced by a single lever for raising or lowering the backfill blade. The backfill blade control lever may be located on the backhoe control console or at a remote location.

4. CROWD LEVER — Move lever toward the backhoe to move diper stick out, move lever away from the backhoe to crowd dipper stick in.

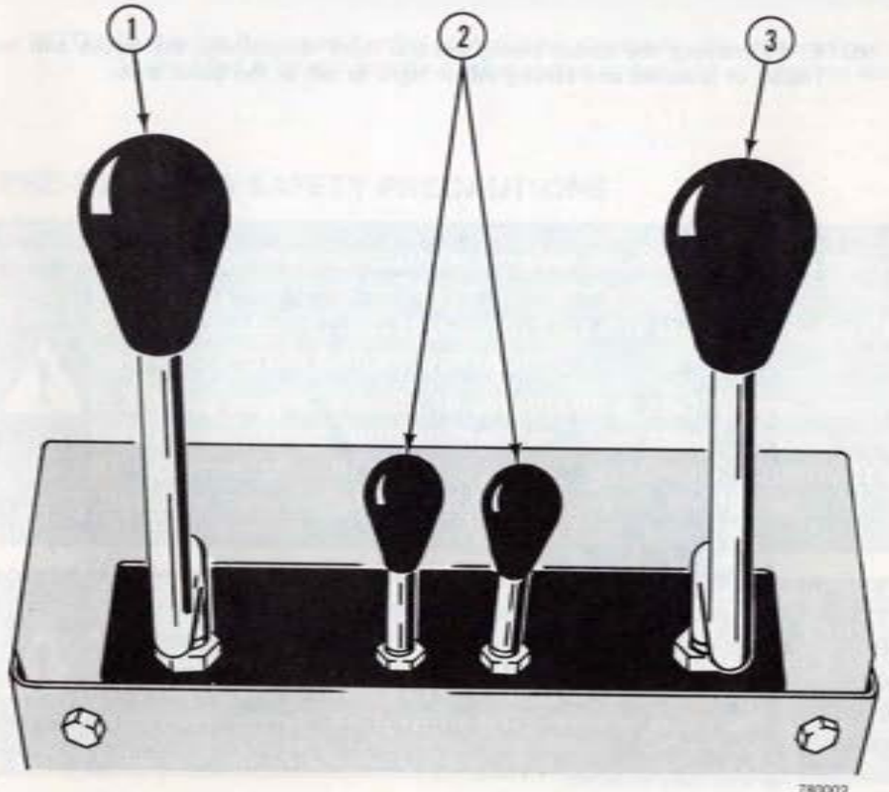


5. BUCKET CONTROL LEVER — Move lever toward the backhoe to dump bucket, move lever away from the backhoe to curl bucket.

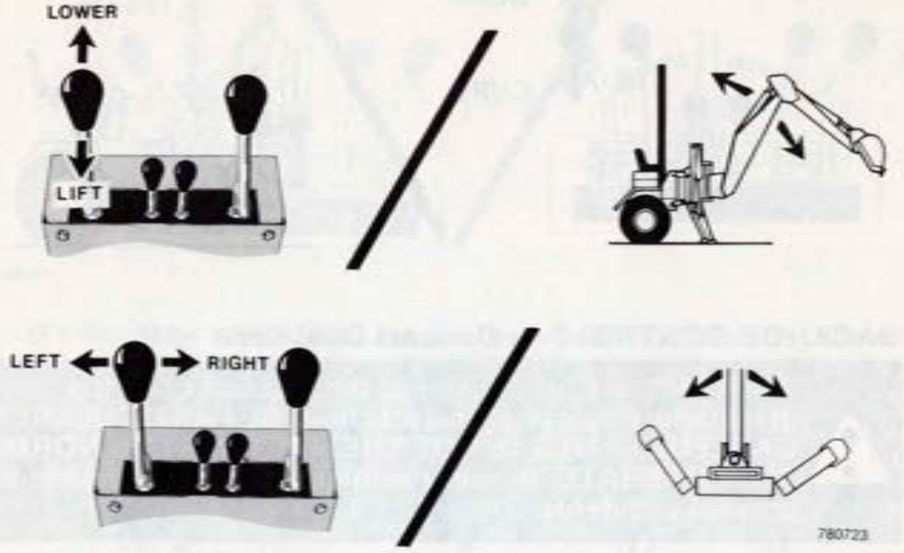


BACKHOE CONTROLS — Optional Dual Lever

WARNING: Be fully aware of the location of all the controls before operating this machine. BE PARTICULARLY CAREFUL IF THIS IS NOT THE MACHINE YOU NORMALLY OPERATE. Proper machine operation can help to prevent accidents.



1. BOOM/SWING CONTROL LEVER — Move lever toward the backhoe to lower the boom, move lever away from the backhoe to raise the boom. Moving the lever to the left will swing the boom to the left, moving the lever to the right will swing the boom to the right.



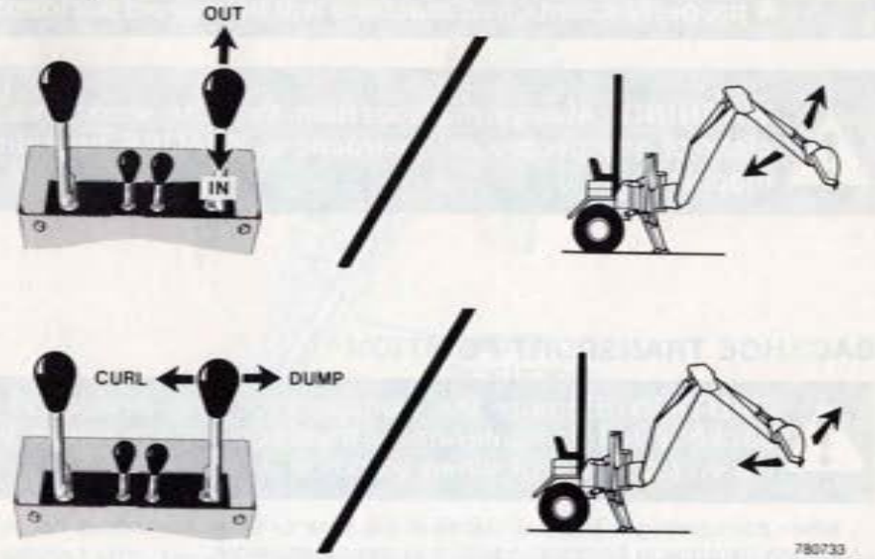
NOTE: By moving the boom/swing control lever diagonally, the boom can be raised or lowered and swung either right or left at the same time.

2. LEFT AND RIGHT STABILIZER LEVERS — Move the left lever toward the backhoe to lower the left stabilizer, move the right lever toward the backhoe to lower the right stabilizer. Move the left lever away from the backhoe to raise the left stabilizer, move the right lever away from the backhoe to raise the right stabilizer.

Left stabilizer operation shown.

NOTE: On machines not equipped with stabilizers, these two levers will be replaced by a single lever for raising or lowering the backfill blade. The backfill blade control lever may be located on the backhoe control console or at a remote location.

3. CROWD/BUCKET CONTROL LEVER — Move the lever toward the backhoe to move the dipper stick out, move the lever away from the backhoe to crowd the dipper stick in. Moving the lever to the left will curl the bucket, moving the lever to the right will dump the bucket.



NOTE: By moving the crowd/bucket control lever diagonally, the dipper stick can be crowded in or out and the bucket curled or dumped at the same time.

PRE-STARTING SAFETY PRECAUTIONS

WARNING: Before starting engine, study operator's manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating.

It is your responsibility to understand and follow manufacturer's instructions on machine operation, service, and to observe pertinent laws and regulations. Operator's manuals may be obtained from your Case dealer.

CAUTION: Be sure the operator's area, steps, and grab handles are free of oil, loose objects, or ice. During operation, stop and take time to clear the operator's area as required. Remove or secure all maintenance or personal items. Failure to keep these areas clean could cause a serious accident.

CAUTION: Visually check the machine for leaks and broken, missing, or malfunctioning parts. Be sure all caps, dip sticks, battery covers, etc., are secure before starting. A properly maintained machine will help avoid accidents.

WARNING: Always make certain that the work area is clear of any people or obstructions BEFORE operating machine.

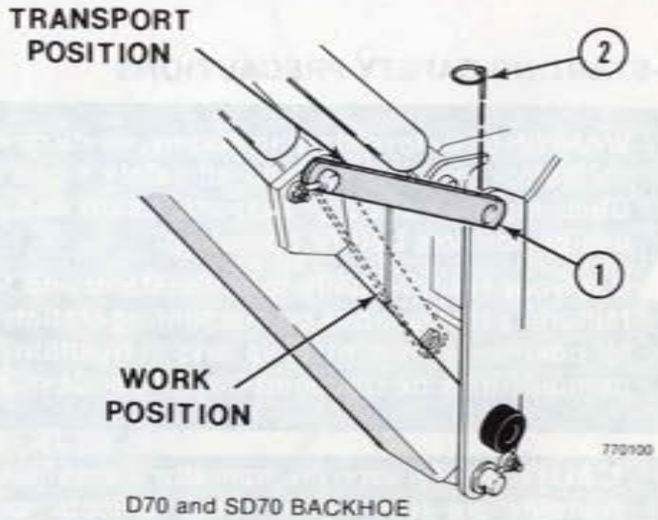
BACKHOE TRANSPORT POSITION

CAUTION: Engage the transport locking device (s) in backhoe before trailering or transporting a machine between job sites, or when backhoe is not in use.

When transporting a backhoe between job sites or when backhoe is not in use, place the backhoe in transport position as described below.

D70 and SD70 BACKHOES

1. Raise the boom to align transport link (1) with hole in frame. Engage link and install lock pin (2).



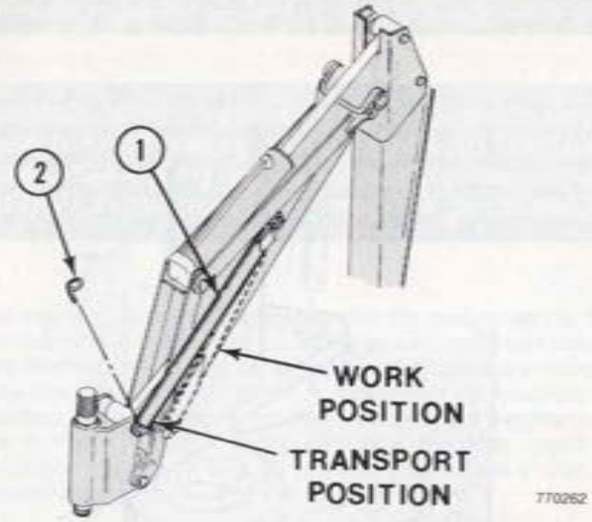
D70 and SD70 BACKHOE

IMPORTANT: Transport link must be secured to boom with lock pin when backhoe is in use.

2. Retract the dipper stick completely.
3. Curl the bucket completely in.
4. Raise the stabilizers or backfill blade to full height.

D100, D100XR, SD100 and RD100 BACKHOES

1. Raise the boom to align transport link (1) with frame. Engage link and install lock pin (2).



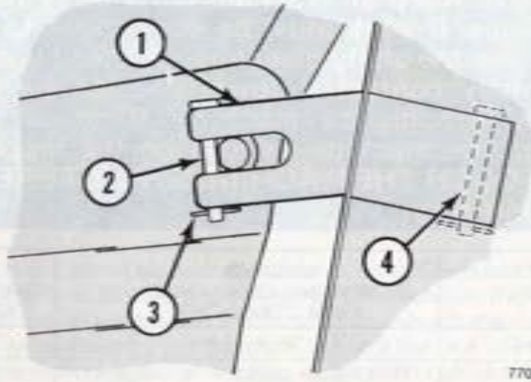
SD100 shown, D100, D100XR, RD100 similar.

IMPORTANT: Transport link must be secured to boom with lock pin when backhoe is in use.

2. Retract dipper stick completely.
3. Curl the bucket completely in.
4. Raise stabilizers or backfill blade to full height.

D130 BACKHOE

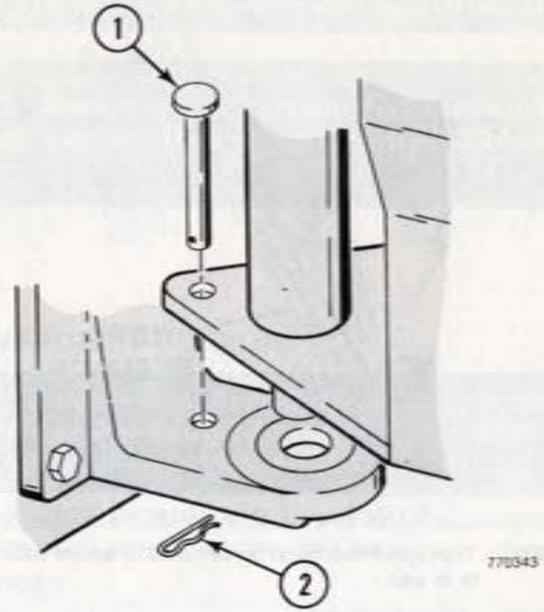
1. Raise the boom to engage the transport lock (1) with the boom cylinder pin. Install the lock pin (2) and install the hairpin (3).



D130 BACKHOE

NOTE: The lock pin and hairpin can be stored in the hole provided on the boom (4) while the backhoe is in use.

2. Retract the dipper stick completely.
3. Curl the bucket completely in.
4. Raise the stabilizers to full height.
5. Align the hole in the boom frame with the hole in the pivot casting.



D130 BACKHOE

6. Install the swing lock pin (1) and the hairpin (2).

POSITIONING THE MACHINE

DANGER: Keep all machine parts away from live electrical lines. If work must be done close to high voltage lines, have the utility disconnect them. It is not necessary to actually contact a power line for the electricity to ground through the machine. If power does ground through the machine, remain on the machine and DO NOT TOUCH THE MACHINE STRUCTURE. Refer to the following chart.

CONDUCTOR VOLTAGE	MINIMUM WORKING CLEARANCE FROM CONDUCTOR	MINIMUM TRANSIT CLEARANCE FROM CONDUCTOR
50,000 Volts or Less	10 ft. (3 m)	4 ft. (1.2 m)
Over 50,000 Volts	10 ft. (3 m) plus 0.4 ft. (10.2 mm) for each 1,000 volts over 50,000	10 ft. (3 m)
345,000 to 750,000 Volts		16 ft. (4.8 m)

NOTE: If the above requirements are less stringent than State requirements, the State requirements shall apply.

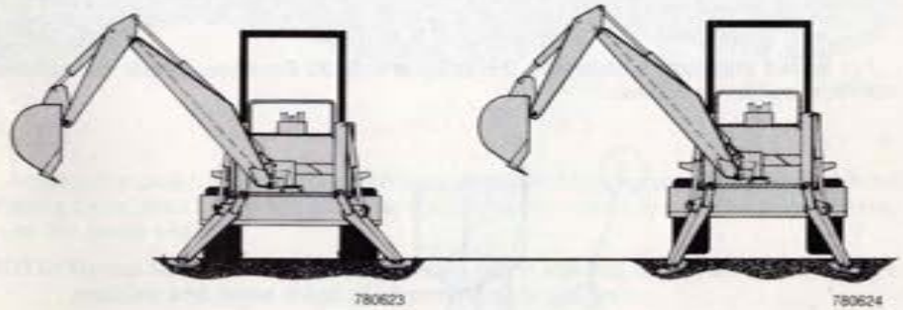
WARNING: Know the location of underground cables, water mains, gas lines, etc. Machine contact with underground obstructions could result in personal injury.

WARNING: When operating on a slope, always position the machine to swing the backhoe to the uphill side if possible. Swinging the backhoe to the downhill side could tip the machine and result in personal injury.

During normal digging, as the bucket penetrates the ground and is filled, there is a tendency for the rear of the unit to raise up off the ground and move toward the bucket. To minimize this tendency on rubber tired machines, engage the creep control. Turn the control in the direction that will obtain movement of the machine away from the proposed excavation. Adjust control until the machine just begins to move. As the machine begins to move, turn the creep control or variable speed control in the opposite direction just enough to stop movement. This places a load on the ground drive system, counteracting the pull of the backhoe.

NOTE: Some rubber tired machines may not be equipped with a creep control. Engage the parking brake on these machines to help prevent being pulled toward the excavation by the backhoe.

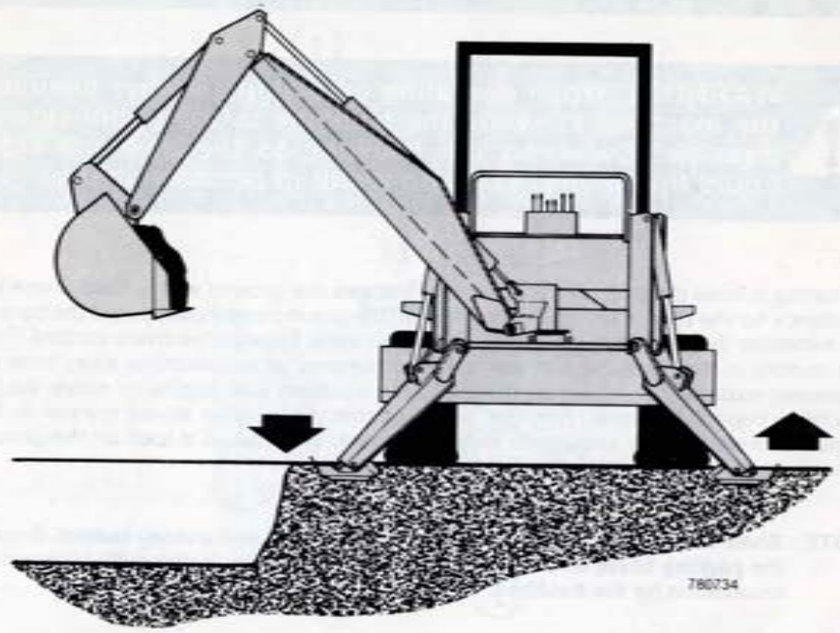
On track mounted machines, lock both steering brakes by pulling them completely back into the over-center position.



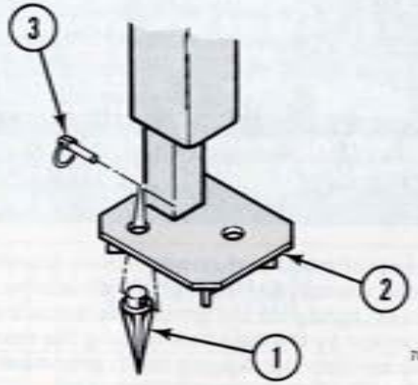
CORRECT INCORRECT

Set the stabilizers or backfill blade so that the machine is level and the weight is taken off the rear of the machine. Do not raise the rear of the machine off the ground. The rear of the machine should rest lightly on the ground, as this will also help prevent being pulled toward the excavation by the backhoe. Raising the rear of the machine off the ground will not only reduce stability, digging depth and impair performance, but may also impose unnecessary stresses on the machine.

Stability is particularly important when operating the backhoe at the extreme swing positions, because the tendency is to lift one stabilizer and transfer the weight of the machine to the other stabilizer.



For added stabilizer stability on the D100 and D130 Backhoe, attach the optional stabilizer spikes as follows.



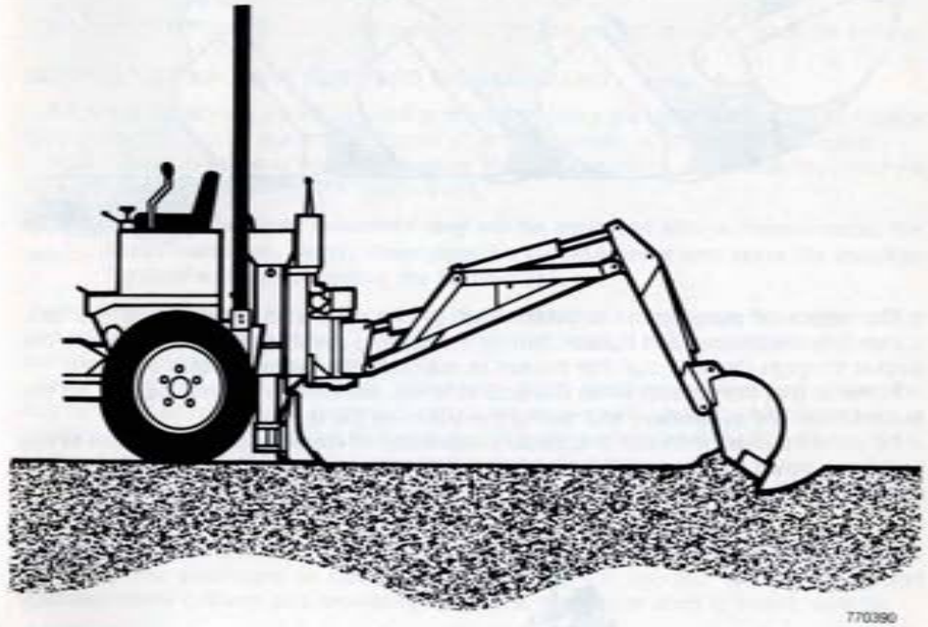
Insert stabilizer spikes (1) in holes provided in stabilizer pads (2). Secure stabilizer spikes with klik pins (3).

STARTING THE EXCAVATION

To familiarize yourself with the operation of the backhoe, practice coordinated use of the controls in a safe, open area at reduced engine speed. Gradually increase engine speed as the technique is mastered.

Strive to develop a smooth digging cycle. Avoid abrupt or jerky movements. This is accomplished by operating two or more controls at the same time and not allowing the cylinders to reach their limit of travel.

To start the excavation, position the backhoe as shown for maximum breakout force.

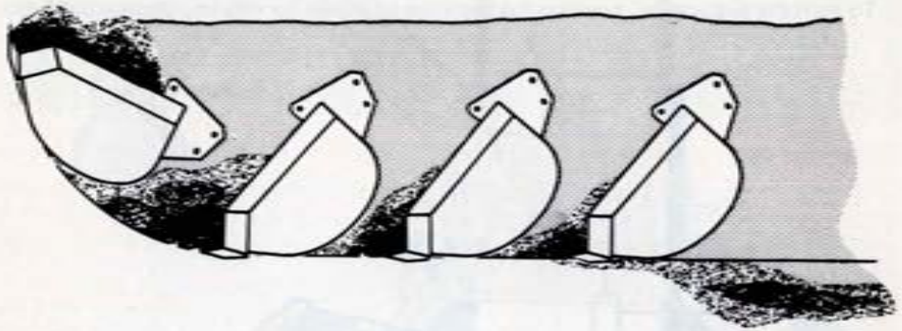


Actuate the crowd cylinder to start the dig cycle. Approximately halfway through the digging cycle, start to curl the bucket and continue the crowd cycle. If the bucket stalls, raise the boom slightly.

NOTE: Do not use too much down pressure when starting to dig, as this will lift the machine and move it out of alignment with the work.

FILLING THE BUCKET

Control the bucket attitude throughout the digging cycle to keep the teeth at the proper angle for best penetration. The bucket should be positioned with the teeth parallel to the bottom of the excavation during the digging cycle. This will minimize dragging and scraping the bucket through the ground.



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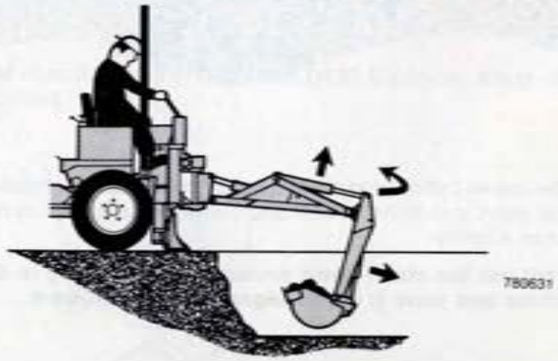
The depth of penetration is determined by the type and condition of the soil.

Use only the dipper and bucket during the digging cycle. As the dipper moves the bucket through the soil, curl the bucket to maintain the proper bucket position.

At the end of the pass or when the bucket is full, completely curl the bucket, lift the bucket from the excavation and swing the boom to the dump site.

To obtain a cleaner trench and avoid the buildup of material directly in front of the backhoe, crowd out and completely curl the bucket while starting to lift it out of the excavation. This will cause any excess material to fall back into the excavation.



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DUMP AND RETURN CYCLE

WARNING: Before swinging the backhoe to either side, be sure there is ample room and that all persons are out of the way.

Keep the swing-dump-return cycle as brief as possible. Keep the dipper moving outward and start swinging the boom as soon as the bucket clears the excavation. Continue to extend the dipper and as the spoil pile is approached, start to dump the bucket. When the bucket is empty, the dipperstick and bucket are in position to resume digging upon return to the excavation.

IMPORTANT: Avoid constant jarring or hammering-type contact between the spoil pile and the loaded bucket as this may cause premature wearing of the backhoe pins and bushings.

ALIGNMENT CORRECTIONS

Alignment corrections of the machine to the excavation may be made as follows:

MOVING THE MACHINE FORWARD OR REARWARD

To move a machine either forward or rearward, raise the stabilizers or backfill blade fully, raise the boom, crowd the dipper stick completely in and curl the bucket.

With rubber tired machines, disengage the creep control and move the machine forward or rearward using the Mono-Stick.

NOTE: Some rubber tired machines may not be equipped with a creep control. On these machines, simply disengage the parking brake and move the machine forward or rearward using the Mono-Stick.

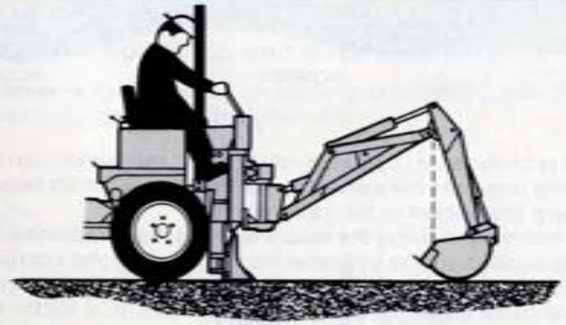
When the machine has been moved to the desired position, engage the creep control and adjust as described under "POSITIONING THE MACHINE," reset the stabilizers or backfill blade and resume digging.

With track mounted machines, disengage both steering brakes and move the machine either forward or rearward using the propulsion lever(s). After machine is positioned, lock both steering brakes by pulling them completely back into the over-center position. Reset the stabilizers and resume digging.

MOVING THE MACHINE TO THE SIDE

Minor corrections to the left or right of the excavation may be made with the backhoe by lifting the stabilizers or backfill blade clear of the ground, curling the bucket approximately halfway and crowding in so that the dipper stick is nearly vertical.

NOTE: The dipper stick pivot, bucket pivot, and the point where the bucket contacts the ground should be aligned to reduce the stress on the bucket and crowd cylinders.



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Position the dipper stick slightly forward of vertical and apply enough down pressure with the boom to raise the rear of the machine clear of the ground. SLOWLY actuate the swing cylinder to move to the right or left as required, to realign with the trench.

When the machine is in the desired position, reset the stabilizers or backfill blade and resume digging.

TRENCHING AND EXCAVATING PROCEDURES

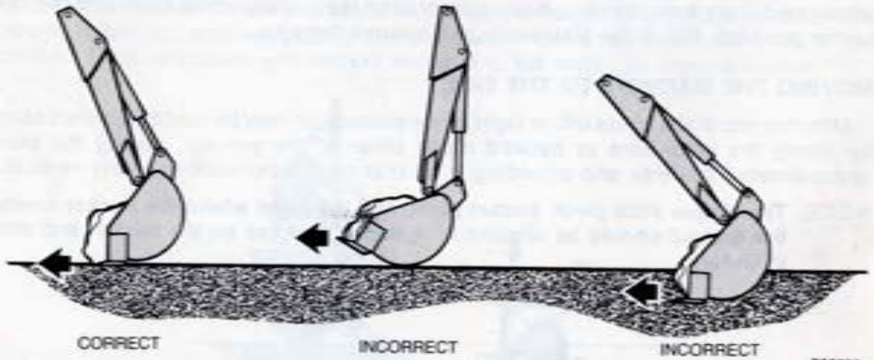
WARNING: Before operating in an unfamiliar area, walk around the full length of the proposed trench site and check for hidden holes, drop-offs, or obstacles that could cause an accident.

CAUTION: Understand the machine's limitations. Keep it under control at all times. DO NOT TRY TO DO TOO MUCH TOO FAST.

CAUTION: Be extremely careful when working close to an open trench. Serious injury could result from a trench cave-in.

Trenching is the most basic backhoe digging operation. Other digging operations are only variations of this basic function.

While trenching, it is generally important to maintain a level trench bottom. This is accomplished by setting the bucket at the proper angle of approach.

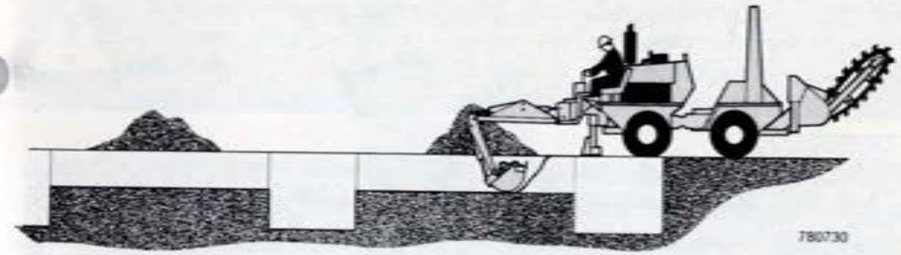


As the bucket is crowded in, continuously push on the bucket curl lever to maintain the correct cutting angle. At the same time, pull on the boom lift lever to relieve down pressure and keep the bucket in the same plane.

Continue the trench by moving the machine along the centerline of the trench away from the existing excavation. Do not move the machine beyond approximately one half the effective reach of the backhoe. Moving too far will require excessive down pressure for digging, plus hand clean-up of the trench bottom. It is better to move a lesser amount than to move too far.

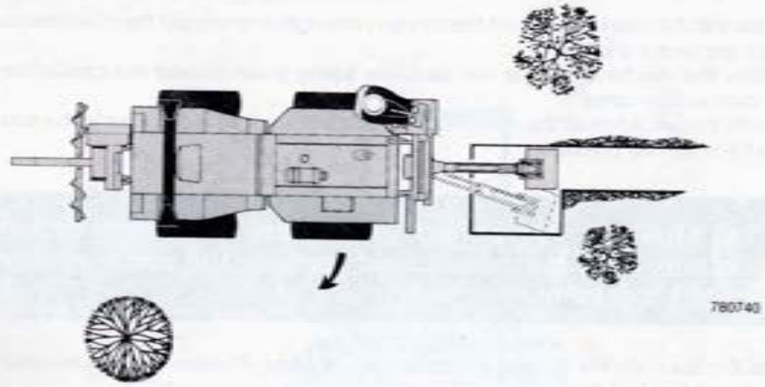
CONTINUOUS TRENCHING WITH SPACED BELLHOLES

Begin the operation by digging the trench to the desired grade.



Progress along the centerline of the trench until you reach the desired bellhole location. Dig as much of the bellhole as possible without moving the backhoe from the trench line setting.

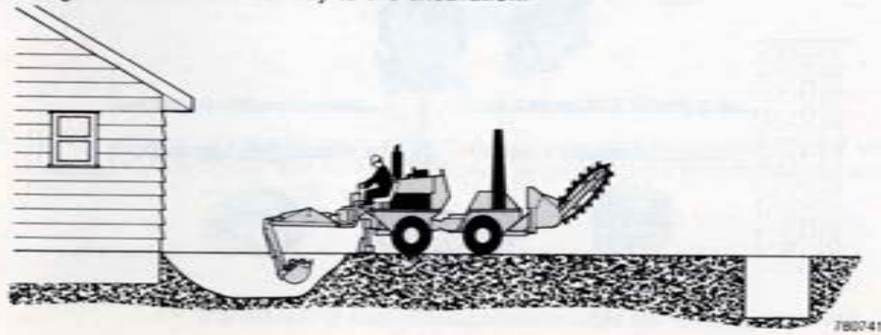
Move the machine to the side as previously described under "ALIGNMENT CORRECTIONS" and complete the bellhole.



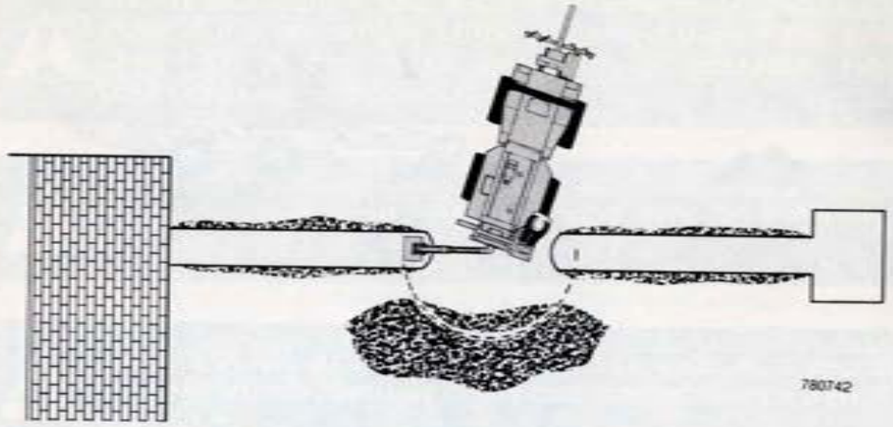
Realign the backhoe with the trench centerline and procede with the trench to the next bellhole site.

TRENCHING BETWEEN BUILDINGS AND OPEN EXCAVATIONS

To trench between a building and an existing excavation, start the trench at the building and trench out halfway to the excavation.



Reposition the machine and begin trenching from the excavation toward the first trench. Ensure alignment of the two trenches.



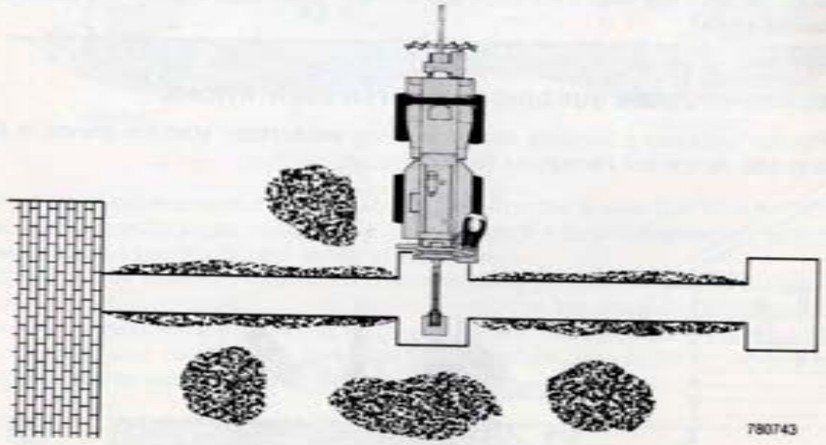
Dig toward the first trench until there is just enough room to get the machine out from between the two trenches.

Position the machine so that the backhoe swing pivot is over the centerline of the trench connection area.

Dig with the backhoe at the extreme swing positions, and in as close to the stabilizers or backfill blade as possible.

WARNING: Never dig under the stabilizers or backfill blade. The machine could tip into the excavation if the bank caved in.

Place the spoil on the opposite side of the trenches. Position the machine as shown and connect the two trenches.



Place the spoil to the side on the opposite side of the trench.

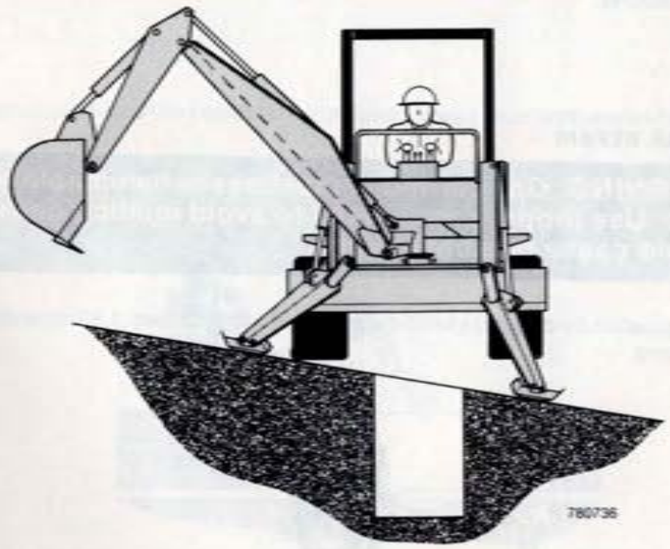
SIDE SLOPE TRENCHING OR EXCAVATING

WARNING: When operating on a slope, always position the machine to swing the backhoe to the uphill side if possible. Swinging the backhoe to the downhill side could tip the machine and result in personal injury.

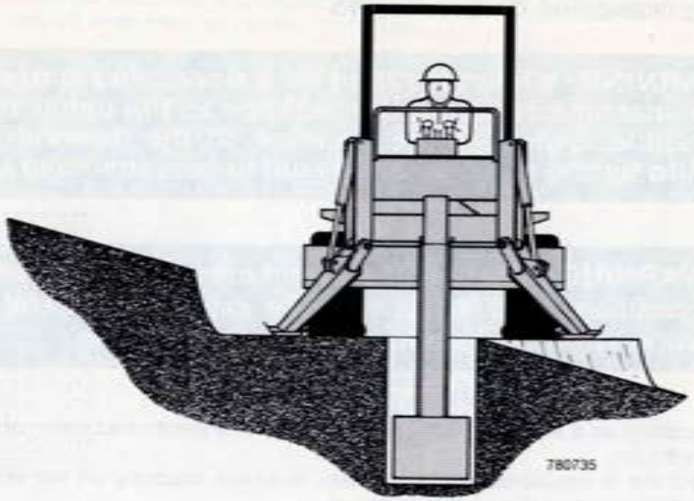
WARNING: Operate at a speed consistent with working conditions and the terrain. Be extremely careful when working on banks and hillsides. Do not rush.

When operating on a side slope, the backhoe must be positioned using one of the following methods:

1. If the machine is equipped with stabilizers, level the machine on the side slope using the stabilizers to dig plumb trenches.



2. Either stabilizer or backfill blade equipped machines, can be positioned on a side slope by cutting a level slot for the uphill side of the machine and placing the spoil from the slot to the downhill side.

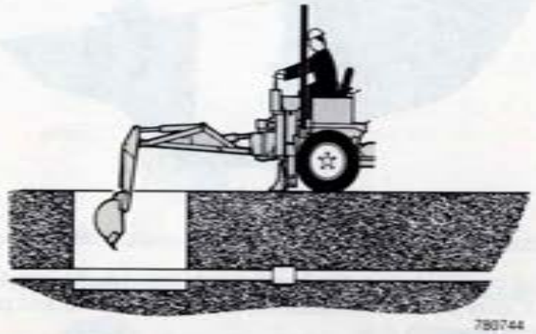


When operating on a side slope always place the spoil from the trench on the uphill side of the machine.

PIPELINE LEAK REPAIR

WARNING: Gas carried in pipelines is flammable/explosive. Use proper precautions to avoid igniting gas which could cause personal injury.

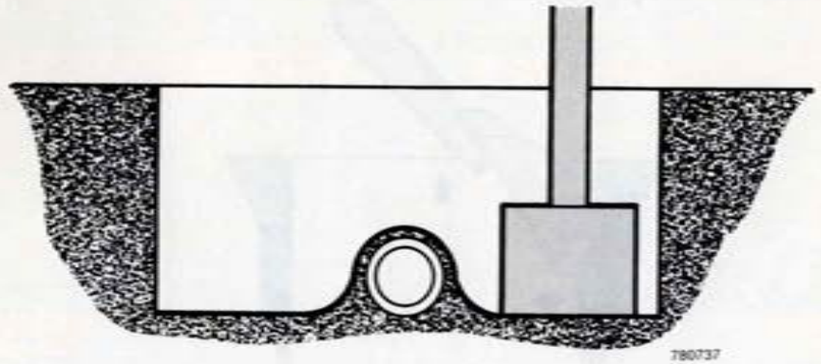
Locate the pipeline by digging a bellhole approximately six feet (1.83 m) wide and ten feet (3.0 m) long.



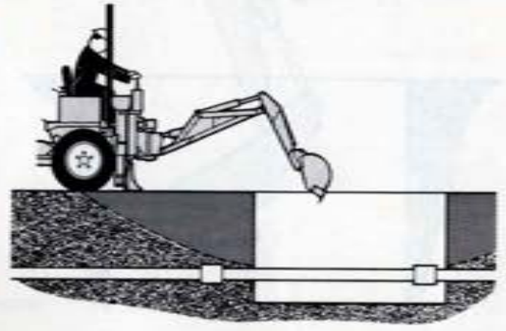
WARNING: Know the location of underground cables, water mains, gas lines, etc. Machine contact with underground obstructions could result in personal injury.

Dig lengthwise along the pipeline to locate the leak.

When the leak is located, reposition the machine to dig to grade level on both sides of the pipeline.



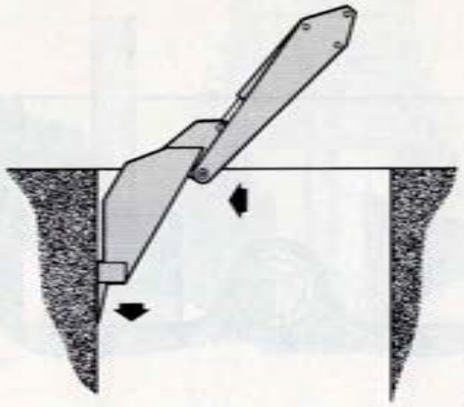
If a length of pipe must be replaced, strip the soil away from both ends of the bellhole.



Dig the bellhole or trench large enough to allow workmen adequate space to work in the leak area. Shoring of the bellhole or trench may be necessary.

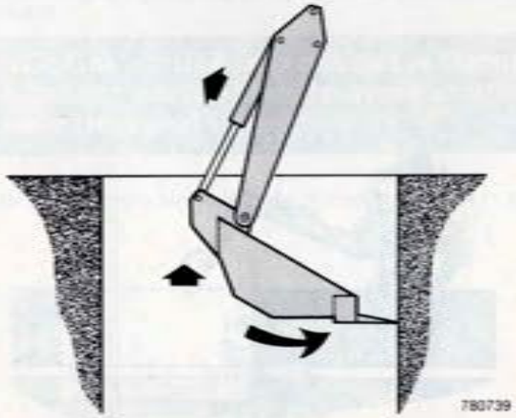
FINISHING STRAIGHT WALLS

The far wall of a trench or bellhole may be finished by crowding out while forcing the bucket down with the boom.



To keep the bucket teeth in a vertical position, continuously curl the bucket out.

To finish the near wall, lift the boom and crowd out while maintaining the bucket in a horizontal position.



BACKFILLING

Backfill by lifting the bucket over the spoil pile and then crowding in. Pull both the crowd and lift levers for smooth, even backfilling.

IMPORTANT: Backfilling by using the swing circuit and dragging the bucket sideways can cause damage to the dipstick, boom, swing cylinder, or mainframe.

PREVENTIVE MAINTENANCE

CAUTION: Understand correct maintenance procedures before attempting repairs. There is no disgrace in asking for help. Proper maintenance procedures can help prevent accidents.

CAUTION: Wear the proper safety equipment — avoid loose clothing. Obtain additional safety equipment when your safety may be in doubt. Hard hat, safety shoes, ear protectors, reflective clothing, safety goggles, and heavy gloves may be required. Failure to wear the proper safety equipment could result in personal injury.

CAUTION: Wear safety glasses when servicing the machine, especially when pounding or grinding. Flying particles can cause permanent eye injury.

DANGER: Exhaust fumes can kill. If necessary to start an engine in an enclosed area, be sure to provide adequate ventilation.

CAUTION: Always lower the backhoe to the ground or block it securely before performing any service or adjustment.

IMPORTANT: Always install new decals whenever the old decals are destroyed, lost, painted over, or illegible. When individual parts are replaced that have decals attached, be sure to install a new decal with the new part. Replacement decals are available from your Case dealer.

IMPORTANCE OF PREVENTIVE MAINTENANCE

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PREVENTIVE MAINTENANCE IS IMPORTANT TO YOU!

Preventive maintenance by you, the operator, is the easiest and most economical means of assuring many satisfactory, productive hours of operation. Properly scheduled maintenance is the key to lower operating costs and longer service life for your backhoe.

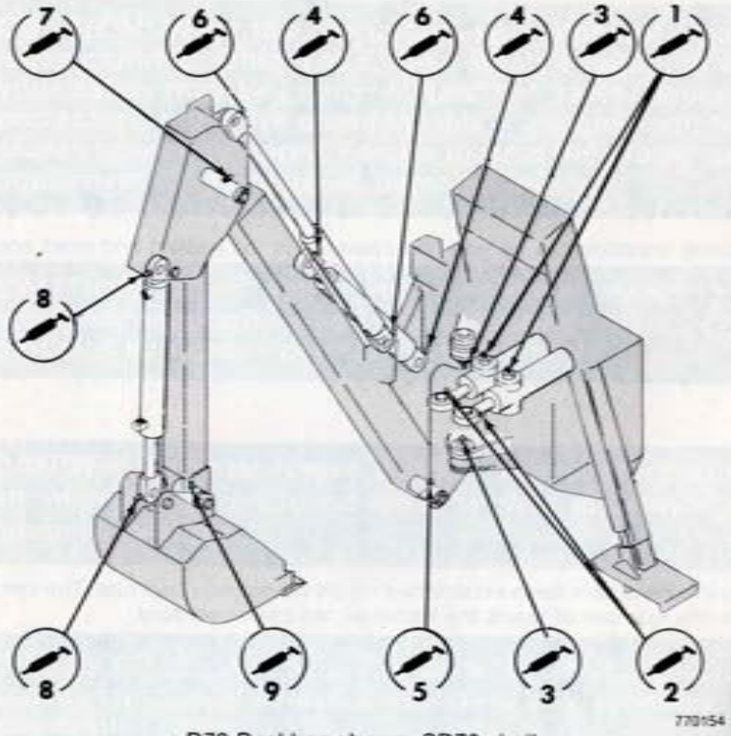
SCHEDULED MAINTENANCE

Hourly intervals have been established for servicing your backhoe. The intervals are based on the number of hours the backhoe has been operated.

The items listed in this section are shown in maximum hourly intervals. These intervals are based on "average" operating conditions. Actual conditions under which your backhoe is operated should be the determining factor when setting up a maintenance schedule. When operating under "severe" conditions, such as, excessive heat, cold, dust, mud, or water, more frequent servicing may be necessary.

SERVICE POINTS — D70, SD70 BACKHOE

CAUTION: Stop the engine before you grease, oil, or perform any maintenance on the machine unless otherwise instructed in the owner's manual or service manual.

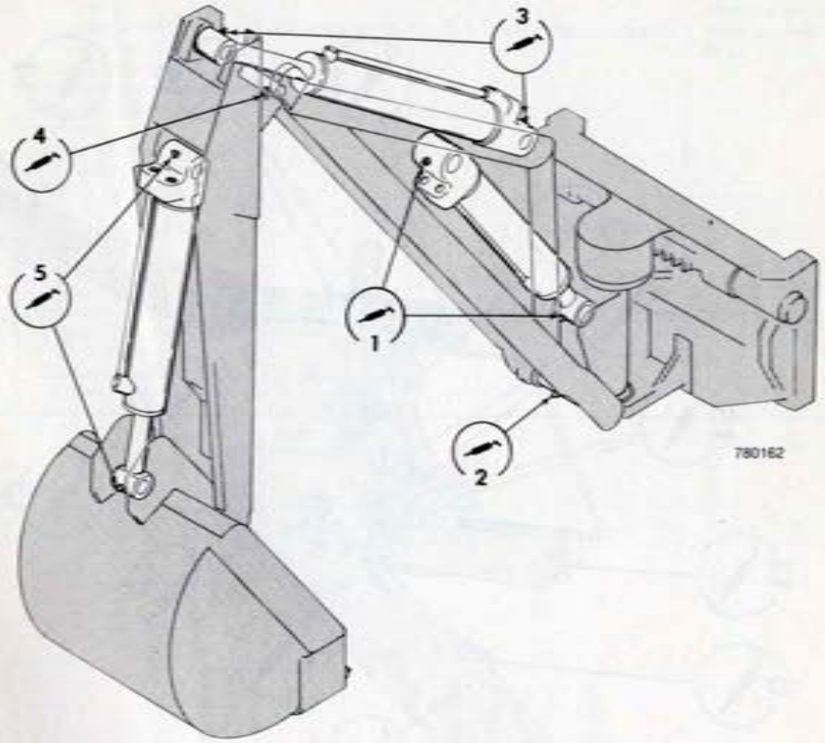


D70 Backhoe shown, SD70 similar.

REF. NO.	SERVICE POINT	SERVICE REQUIRED	FREQUENCY
1	Swing Cylinder Pivot (2 places)	Lubricate with No. 2 Lithium Base Grease	After every 10 hours of operation or weekly which ever comes first
2	Swing Cylinder - Rod (2 places)		
3	Swing Pivot (2 places)		
4	Boom Cylinder (2 places)		
5	Boom Pivot		
6	Dipper Stick Cylinder (2 places)		
7	Dipper Stick Pivot		
8	Bucket Cylinder (2 places)		
9	Bucket Pivot		

SERVICE POINTS — D100, D100XR, SD100, RD100 BACKHOE

CAUTION: Stop the engine before you grease, oil, or perform any maintenance on the machine unless otherwise instructed in the operator's manual or service manual.

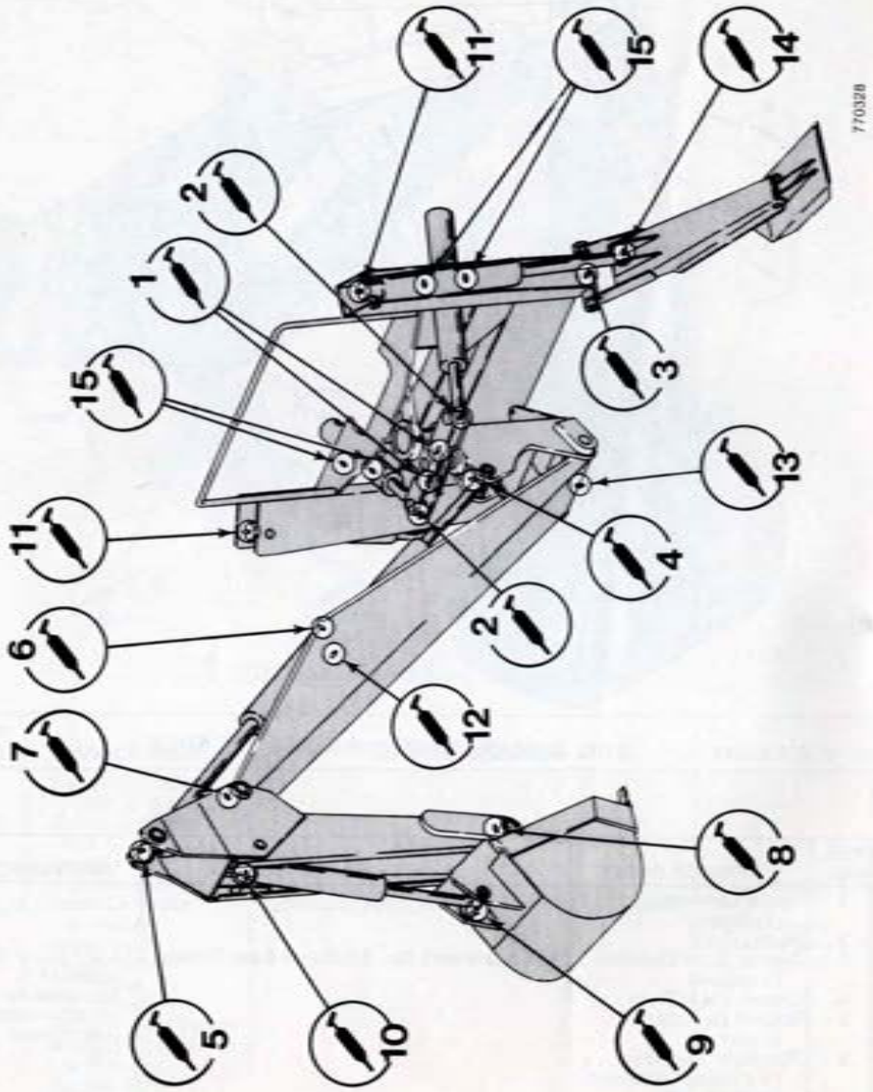


D100, D100XR, SD100 and RD100 BACKHOES

REF. NO.	SERVICE POINT	SERVICE REQUIRED	FREQUENCY
1	Boom Cylinder (2 places)	Lubricate with No. 2 Lithium Base Grease	After every 10 hours of operation or weekly which ever comes first
2	Boom Pivot		
3	Dipper Stick Cylinder (2 places)		
4	Dipper Stick Pivot		
5	Bucket Cylinder (2 places)		
6	Stabilizer Cylinders (4 places) D100 and D100XR with outrigger stabilizers (not shown)		

SERVICE POINTS — D130 BACKHOE

CAUTION: Stop the engine before you grease, oil, or perform any maintenance on the machine unless otherwise instructed in the operator's manual or service manual.



REF. NO.	SERVICE POINT	SERVICE REQUIRED	FREQUENCY
1	Swing Links (2 places)	Lubricate with No. 2 Lithium Base Grease	After every 10 hours of operation or weekly which ever comes first
2	Swing Cylinder - Rod (2 places)		
3	Stabilizer Pivot Pins (2 places)		
4	Boom Cylinder - Rod		
5	Crowd Cylinder - Rod		
6	Crowd Cylinder - Head		
7	Dipper Stick Pivot Pin		
8	Bucket Pivot Pin		
9	Bucket Cylinder - Rod		
10	Bucket Cylinder - Head		
11	Stabilizer Cylinder - Head (2 places)		
12	Boom Cylinder - Head		
13	Lower Boom Pivot Pin		
14	Stabilizer Cylinder - Rod (2 places)		
15	Swing Cylinder Pivot Pin (4 places)		
16	Control Levers (Not shown) (6 places)		

HYDRAULIC SYSTEM

HYDRAULIC SYSTEM CLEANLINESS

The hydraulic system of your backhoe consists of valves, cylinders, and hydraulic lines. The life of these components is highly dependent upon system cleanliness. The most common hydraulic system ailment is contamination.

CAUTION: Hydraulic systems are highly pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissues causing serious injury. Use a piece of wood or cardboard when looking for leaks — never use the hands or other parts of the body.

Relieve hydraulic pressure before disconnecting circuits. When reassembling, make absolutely certain that all connections are tight.

If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious complications may arise if medical attention is not given at once.

WARNING: Use extreme caution when disconnecting hydraulic lines. High pressure in a system could cause injury when fittings are disconnected. Relieve all pressure before working on system.

Protect Your Hydraulic System . . . KEEP IT CLEAN

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A little extra effort in hydraulic system cleanliness will result in better service life of the hydraulic components. This, in turn, will result in less maintenance cost, less down time, and more reliability of your backhoe.

For complete maintenance of the hydraulic system, see the appropriate section in the operator's manual for your particular machine.

FASTENER INSPECTION AND MAINTENANCE

Mounting bolts and fasteners will tend to work loose after extended periods of operation, due to vibration and/or stress. A visual check of the overall machine should be made at least weekly. Certain areas will be more prone to loosening and should be checked more often for tightness. Following is a chart listing the standard bolt torque specifications.

Bolt Size	Torque			
	Grade 5		Grade 8	
	U.S. (lb. ft.)	Metric (N-m)	U.S. (lb. ft.)	Metric (N-m)
1/4 - 20	7-9	9-12	5-10	7-15
1/4 - 28	11-13	15-18	10-15	15-20
5/16 - 18	10-15	15-20	15-20	20-30
5/16 - 24	15-20	20-25	20-25	30-35
3/8 - 16	20-25	25-35	30-40	40-50
3/8 - 24	25-30	35-40	35-40	40-55
7/16 - 14	30-40	40-55	40-60	55-80
7/16 - 20	35-45	45-60	55-65	75-90
1/2 - 13	50-60	70-80	70-90	95-120
1/2 - 20	60-70	80-120	80-100	110-135
9/16 - 12	70-90	95-120	100-120	135-160
9/16 - 18	80-100	110-135	120-140	160-190
5/8 - 11	100-120	135-160	150-190	200-260
5/8 - 18	120-150	160-200	160-200	220-270
3/4 - 10	180-220	245-300	250-310	340-420
3/4 - 16	200-240	270-325	290-350	390-475
7/8 - 9	290-350	390-475	415-505	560-685
7/8 - 14	325-400	440-540	450-550	610-745
1 - 8	430-530	580-720	610-750	870-1015
1 - 12	480-580	650-785	665-815	900-1105
1-1/8 - 7	540-660	730-895	865-1055	1170-1430
1-1/8 - 12	595-725	805-980	970-1190	1315-1610
1-1/4 - 7	755-925	1025-1255	1225-1495	1660-2025
1-1/4 - 12	830-1010	1125-1370	1350-1650	1830-2235
1-3/8 - 6	990-1210	1340-1640	1600-1960	2170-2655
1-3/8 - 12	1135-1385	1540-1860	1835-2245	2490-3045
1-1/2 - 6	1315-1610	1780-2180	2125-2595	2880-3520
1-1/2 - 12	1475-1800	2000-2440	2395-2925	3245-3965

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BACKHOE STORAGE

If the backhoe is to be stored for 30 days or more, it should be moved to a dry, protected place and, if possible, put inside a heated building. Certain precautions must be taken to prevent rust, corrosion, and deterioration of parts.

Place would planking on the ground and lower the backhoe onto the planking. After the engine has stopped, move the backhoe control levers in both directions to relieve pressure in the hydraulic system. Coat cylinder rods and all unpainted metal surfaces with grease to prevent corrosion.

NOTES

For future reference, we recommend that you record the serial number and date of purchase of your backhoe in the spaces provided. The rest of the page provides you with a place to record any information about your backhoe you deem important.

Backhoe Serial No.: _____

Date of Purchase: _____

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