

Loading Trucks

When loading trucks, the Loader operator is at the mercy of the truck spotter. Extra maneuvering will slow down the load cycle. There are certain basic methods of good truck spotting that will speed up the loading operation.

The most practical for the Loader is placing the truck at a 45° angle to the bank. With this method, the Loader turns are only half as sharp and in most cases the load can be delivered with a short reverse movement.

PREVENTIVE MAINTENANCE

See Loader manual for information on adjusting the float detent, main relief valve and maintenance of hydraulic cylinders.

The maintenance for the Drott bucket will require only a few minutes of regular daily attention. It will pay off in performance and length of service life.

Make it a daily habit to check the following.

1. Check all mounting and fastening bolts.
2. Check all keeper pins and pivot pins.
3. Check hydraulic cylinders, line connections and control valve for signs of oil leakage and wear.
4. Check oil level in reservoir.
5. Lubricate (See Lubrication Instructions for Drott Bucket).

NOTE!

The clam cylinder on the Drott Bucket should be cleaned each day to prevent the build up of dirt or foreign matter. This should be a part of the daily preventive maintenance checkup.

CASE[®]
Model
"32"
Backhoe

INTRODUCTION

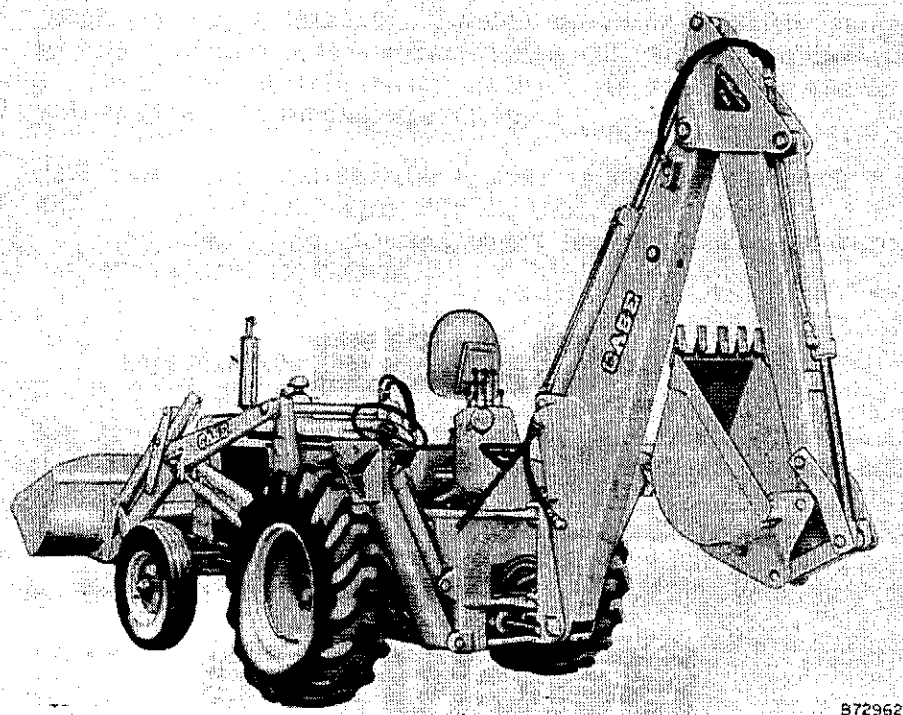


Figure 1 - Left Hand Rear View Tractor-Backhoe

The "530" CONSTRUCTION KING BACKHOE is another matching tool for the CASE Wheel Tractor. It is a perfectly balanced unit that will handle the toughest digging jobs. Here are some outstanding features:

1. **LONGER REACH.** This Backhoe can reach 19 feet 7-1/2 inches back from the tractor rear axle. This boosts productivity per hour by reducing tractor moves.
2. **STRONGER, MORE POWERFUL.** Rugged box-welded boom and dipper arm with all stress points reinforced with tough fabricated steel plates. The heavy duty, 20 G.P.M. pump (22 G.P.M. on Torque Converter Models) has enough capacity to provide ample power for fast, easy digging even in tough going.
3. **HYDRAULIC FOOT-CONTROLLED 190° SWING.** This cuts the cycle time, because the operator has his hands free to

maneuver the bucket and dipper arm at the same time. All the controls are centrally located for fast, easy operation.

4. **STABILIZERS.** Rugged rectangular tubular stabilizers with extra large pads that extend beyond the tractor tires to provide exceptional balance and stability while digging. Individual stabilizer controls enable the operator to level the Backhoe on uneven ground. Special pads with flat bottoms are available as optional equipment for use in cemetery or street.
5. **BUILT-IN REGENERATIVE SYSTEM.** The backhoe hydraulic control valve has a built-in regenerative system to give more positive control action. When the oil being supplied by the pump is insufficient to meet the requirements of the backhoe cylinders, the oil returning to the reservoirs through the valve is automatically redirected to supplement the oil from the pump. This eliminates cavitation (voids) in the cylinders without the use of restrictors, thus giving faster, more positive control action.

SERIAL NUMBER LOCATION

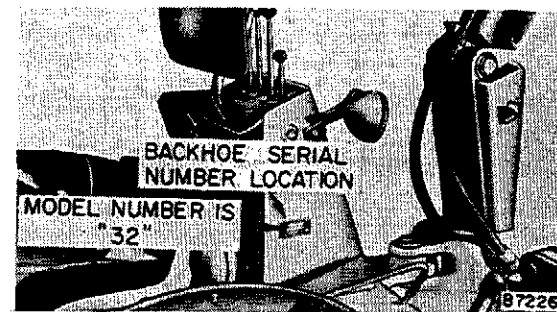


Figure 2
Backhoe Serial Number
Location

When ordering parts from your Authorized Case Dealer, always specify the serial number and model of your Backhoe. The serial number plate is located on the left hand side of the valve shield.

NOTE: The terms "right hand" and "left hand", whenever used in this manual are determined by standing at the rear of the unit and facing in the direction of forward travel of the Tractor.

However, all "right hand" and "left hand" backhoe operating references are determined by sitting in the operator's seat, facing the rear.

general specifications

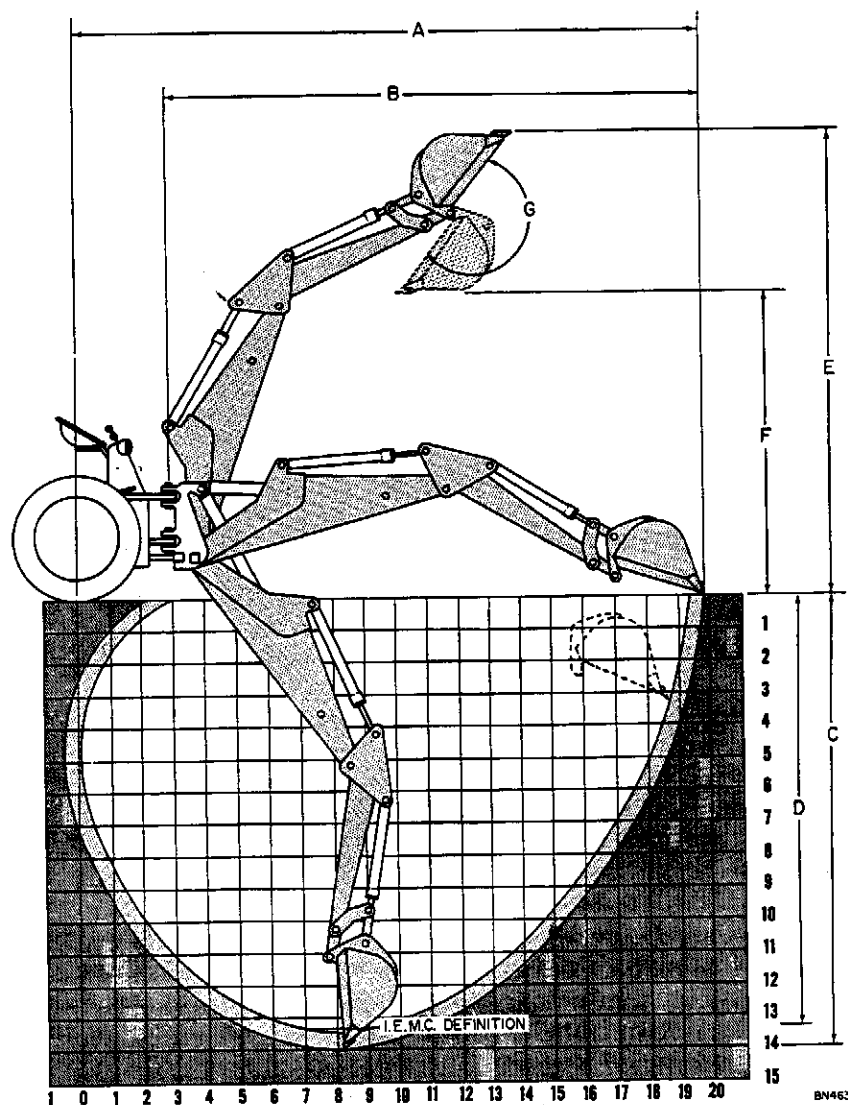


Figure 3 - Specifications

Dimensions given are for standard bucket, with dump link in first adjustment position. Lower line on digging profile is with standard trenching bucket in first adjustment position; upper line is for bellhole bucket.

- *A. Overall Reach (From Tractor Rear Axle) 19' 7-1/2"
- *B. Digging Radius (From Pivot) 16' 8-1/2"
- C. Digging Depth (Manufacturer's Rated) 14' 0"
- *D. Digging Depth (IEMC Definition) 13' 6"
- *E. Overall Height (Maximum) 15' 4"
- *F. Loading Height (Clearance) 11' 2"
- *G. Bucket Arc (Stop to Stop) 165°
- * Free Swing Arc 190°
- Overall Length (Loader and Backhoe at Carry) . . 21' 7"
- Overall Width (Backhoe at Carry - Stabilizers Up) . . 81"
- * Overall Height (To Top of Backhoe at Carry) . . . 10' 6"
- * Digging Force 8760 lbs.

Hydraulic System

- System Pump Direct drive, gear type
- *Pump Capacity
 - (Standard Clutch Models) 20 G.P.M. @ 1900 R.P.M.
 - @ 2000 P.S.I.
 - (Torque Converter Models) . . . 22 G.P.M. @ 2100 R.P.M.
 - @ 2000 P.S.I.
- Reservoir Refill Capacity 11 U.S. Gallons
- *Filter . . . Return line, full flow, replaceable, micronic element
- Control Valve Stacked, six spool, parallel circuit
- Hydraulic Lines . . . Steel tubing with brazed or flared fittings.
- Wire-braid high pressure hose with crimped fittings (full flow).

Hydraulic Cylinders

- *Type . . . Double-acting with hardened and chrome plated rods
- Boom Cylinder (1) . . 4 x 39-3/16" Stroke, 2" Piston Rod
- Crowd Cylinder (1) 4 x 32" Stroke, 2" Piston Rod
- Bucket Cylinder (1) 3-1/2 x 27-1/4" Stroke, 1-3/4" Piston Rod
- Swing Cylinders (2) . . 4 x 11" Stroke, 1-3/4" Piston Rod
- Stabilizer Cylinders (2) . . 3-1/2 x 16-3/8" Stroke, 1-3/4" Piston Rod

*Specifications conform to Society of Automotive Engineers (SAE) or Industrial Equipment Manufacturers Council (IEMC) definitions whichever is applicable.

Shipping Weight

	With Torque Converter	Without Torque Converter
Gasoline (With Buckets)	8795	8645
Diesel (With Buckets)	8995	8845

IMPORTANT!

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



Lubrication

The lubrication of your Backhoe will require only a few minutes of your regular daily attention, and will greatly increase the life of the machine. Use high grade oil and grease of unvarying specification. Always buy lubricants from a reputable dealer who handles a reliable product.

Hydraulic System

Complete information on the hydraulic system is given on page 9 of this manual.



Recommended Lubricant

Grease Fittings	Lithium "Soap-Base" Grease
Grade Recommendations - Below 32° F.	#1
32° F. to 90° F.	#2
Above 90° F.	#3

Pressure Fittings

Before applying a grease gun to pressure fittings, wipe all accumulated dirt from each fitting tip.



Backhoe Controls With Foot Operated Swing

The following chart indicates control positions and the Backhoe action for each position on units equipped with standard foot operated swing.

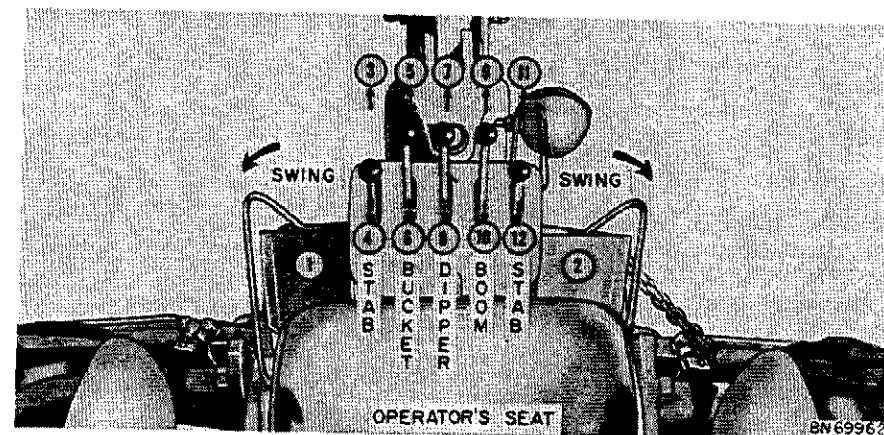


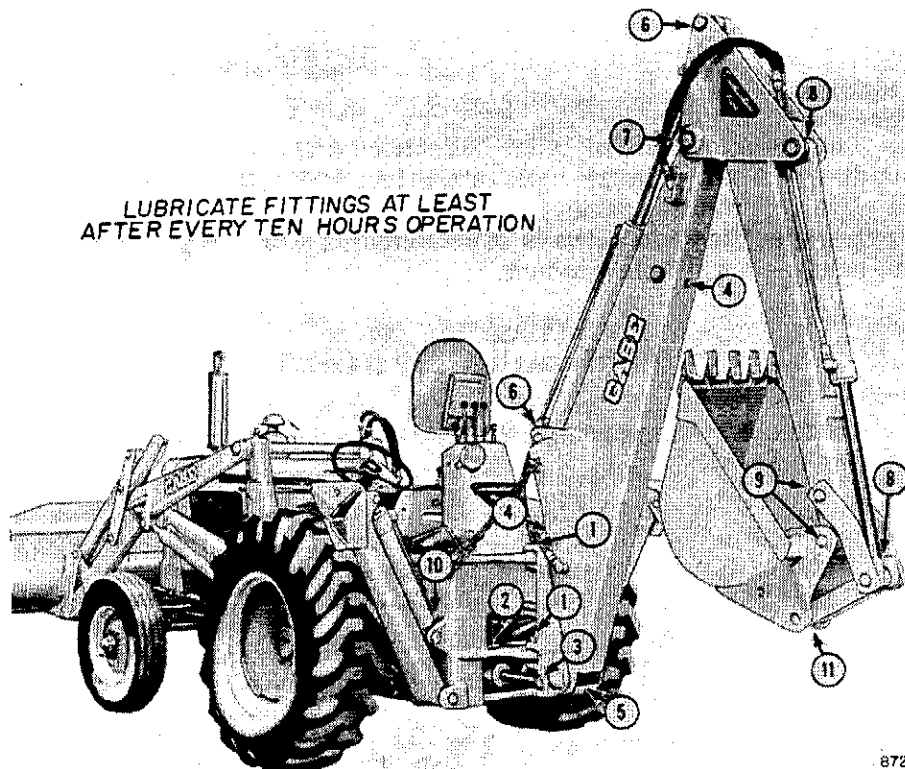
Figure 5 - Operator's View of Backhoe Controls (Foot Swing)

POSITION	CONTROL MOTION	*BACKHOE ACTION
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- | | | |
|-----|----------------------|-----------------------------------|
| 1. | Push L.H. Pedal Down | To swing boom to operator's left |
| 2. | Push R.H. Pedal Down | To swing boom to operator's right |
| 3. | Push Lever Forward | To lower left hand stabilizer |
| 4. | Pull Lever Backward | To raise left hand stabilizer |
| 5. | Push Lever Forward | To roll out or dump bucket |
| 6. | Pull Lever Backward | To retract or load bucket |
| 7. | Push Lever Forward | To extend dipper arm |
| 8. | Pull Lever Backward | To retract dipper arm |
| 9. | Push Lever Forward | To lower boom |
| 10. | Pull Lever Backward | To raise boom |
| 11. | Push Lever Forward | To lower right hand stabilizer |
| 12. | Pull Lever Backward | To raise right hand stabilizer |

***IMPORTANT:** Even though "right hand" and "left hand" sides of the Backhoe are determined by standing at the rear of the unit (facing in the direction of forward travel), "right hand" and "left hand" Backhoe operating references are determined by sitting in the operator's seat facing rearward.

LUBRICATE FITTINGS AT LEAST
AFTER EVERY TEN HOURS OPERATION



872962

Figure 4 - Backhoe Lubrication Fittings

LOCATION	NO. OF FITTINGS	*TIME INTERVAL
1. Tower Swing Pins	1 top, 1 bottom, each side	10 Hours
2. Swing Cylinder Trunion	2 each side	10 Hours
3. Swing Cylinder Yoke	1 each side	10 Hours
4. Boom Cylinder	1 each end	10 Hours
5. Boom Pivot Pin	1	10 Hours
6. Crowd Cylinder	1 each end	10 Hours
7. Dipper Arm Pivot Pin	1	10 Hours
8. Bucket Cylinder	1 each end	10 Hours
9. Bucket Pivot Pin	2	10 Hours
10. Stabilizer Cylinders	1 upper end	10 Hours
11. Bucket Dump Link	1	10 Hours

*If Backhoe is operating in mud or water, lubricate fittings more often.

Backhoe Controls With Hand Operated Swing

If a hand operated swing is desired, it can be installed in place of the standard foot operated swing by your Authorized Case Dealer.

The following chart indicates control positions and Backhoe action for each position on units equipped with optional hand operated swing.

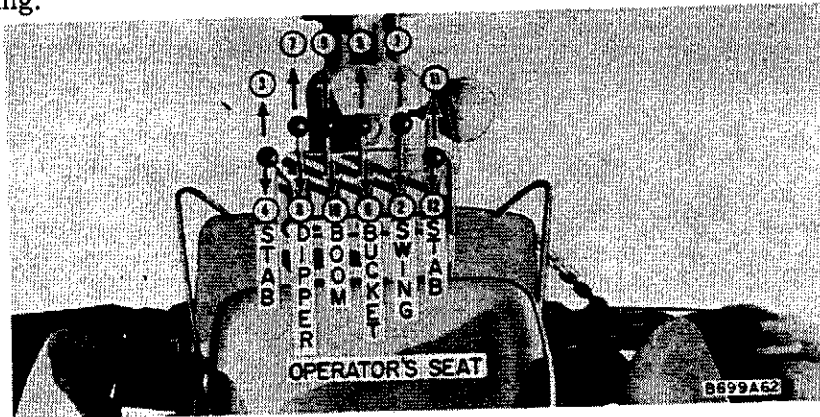


Figure 6 - Operator's View of Backhoe Controls (Hand Swing)

POSITION	CONTROL MOTION	*BACKHOE ACTION
1.	Push Lever Forward	To swing boom to operator's left
2.	Pull Lever Backward	To swing boom to operator's right
3.	Push Lever Forward	To lower left hand stabilizer
4.	Pull Lever Backward	To raise left hand stabilizer
5.	Push Lever Forward	To roll out or dump bucket
6.	Pull Lever Backward	To retract or load bucket
7.	Push Lever Forward	To extend dipper arm
8.	Pull Lever Backward	To retract dipper arm
9.	Push Lever Forward	To lower boom
10.	Pull Lever Backward	To raise boom
11.	Push Lever Forward	To lower right hand stabilizer
12.	Pull Lever Backward	To raise right hand stabilizer

***IMPORTANT:** Even though "right hand" and "left hand" sides of the Backhoe are determined by standing at the rear of the unit (facing in the direction of forward travel), "right hand" and "left hand" Backhoe operating references are determined by sitting in the operator's seat facing rearward.

Preparation for Operating the Backhoe

Before starting operation, always check the hydraulic oil level in the reservoirs, see "Checking Hydraulic Oil Level" page 10. Operating the Backhoe with an insufficient amount of oil can damage the hydraulic pump in a few seconds.

Check engine oil and water levels and then start the Tractor engine and allow it to warm up to operating temperature. Place the transmission in neutral and set the parking brake.

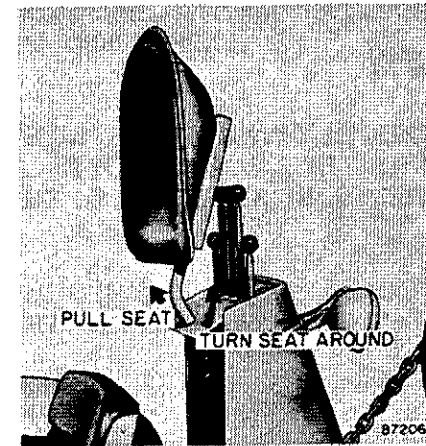


Figure 7 - Backhoe Seat in Raised Position

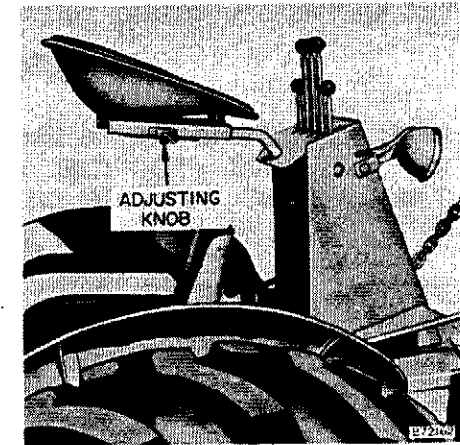


Figure 8 - Backhoe Seat in Operating Position

Grasp the seat, pull back, and swing around to operating position. Be sure the seat rod locks into position.

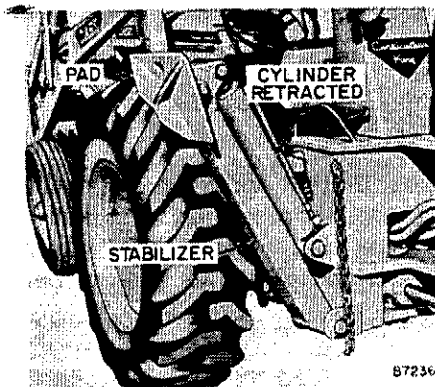


Figure 9 - Stabilizer Up

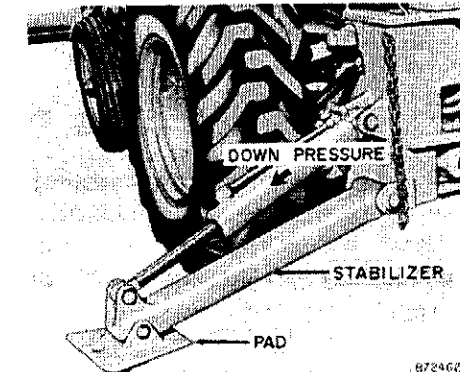


Figure 10 - Stabilizer Down

Increase the speed of the engine to approximately 100 R.P.M. Actuate the stabilizer control levers and lower the stabilizers to relieve most of the weight from the Tractor rear tires. DO NOT OPERATE THE BACKHOE UNLESS THE STABILIZERS ARE DOWN.

Actuate all other control levers and put the Backhoe through a complete working cycle. After becoming familiar with the controls and a definite "feel" is developed, the Backhoe can be operated easily and smoothly at normal engine operating speed. Normal engine operating speed is between 1500 and 1800 R.P.M.

IMPORTANT!

BEFORE OPERATING THE BACKHOE, STABILIZERS MUST BE LOWERED TO THE GROUND. THIS TAKES MOST OF THE WEIGHT OFF TRACTOR TIRES AND STABILIZES THE UNIT.

BEFORE SWINGING THE BACKHOE BOOM, MAKE SURE THERE IS AMPLE ROOM AND THAT ALL PEOPLE ARE OUT OF THE WAY.



Seat Adjustments

The seat can be adjusted closer to the controls or further away to suit the individual. Lower the seat to operating position. Then, sit in the seat and pull out on the adjusting knob. Slide the seat forward or backward until the desired position is obtained.

After the seat has been adjusted, release the knob so the seat locks into position. BE SURE THE PLUNGER GOES THROUGH THE HOLE IN THE SEAT FRAME.



CAUTION!

OPERATE THE BACKHOE ONLY FROM THE OPERATOR'S SEAT.

Engine Speed

For maximum fuel economy and engine life, the Backhoe should be operated at the lowest engine speed that will provide adequate performance. Normal engine operating speed is 1500 to 1800 R.P.M.

Preparation for Job-to-Job Travel

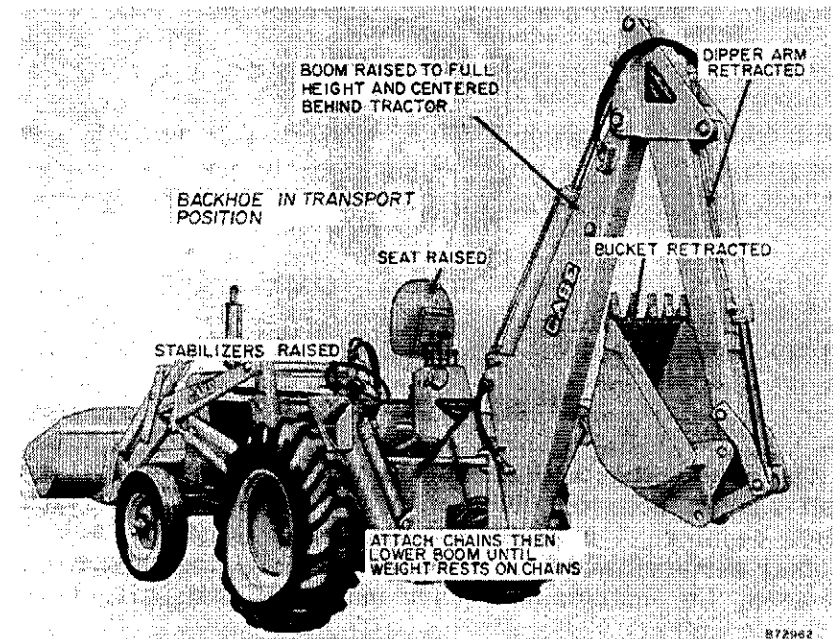


Figure 11 - Backhoe in Transport Position

When preparing for transport, raise the boom to full height. To prevent the dipper arm from swinging in transport, retract the dipper arm under hydraulic pressure until relief valve can be heard by-passing. Retract the bucket completely. Center the boom and hook the transport chains.

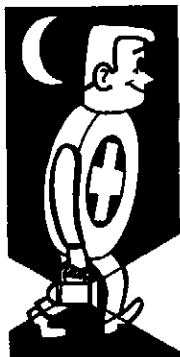
Raise the stabilizers to full height. Grasp the seat, pull back, and swing around to transport position. BE SURE SEAT IS LOCKED INTO POSITION PRIOR TO MOVING THE TRACTOR.

IMPORTANT!

BE SURE THE BOOM TRANSPORT CHAINS ARE IN POSITION BEFORE TRANSPORTING THE BACKHOE.

THE RATE OF TRAVEL ON HILLSIDES AND CURVES SHOULD ALWAYS BE SUCH THAT THERE IS NO DANGER OF TIPPING.

BE SURE THE PROPER LIGHTS ARE INSTALLED AND OPERATING WHEN TRAVELING AFTER SUNDOWN.



Digging Profile

The use of the bellhole bucket will allow the operator to dig a bell-shaped hole or holes with vertical sides and a minimum surface opening. It is ideal for digging under streets, sidewalks, and other surfaces which must be undercut. As the surface opening decreases, the maximum square-cut depth will also decrease.

The bellhole bucket digs approximately 8 inches less than the trenching bucket.

LEGEND

1. Standard bucket in first adjustment position.
2. Standard bucket in second adjustment position.
3. Bellhole Bucket.

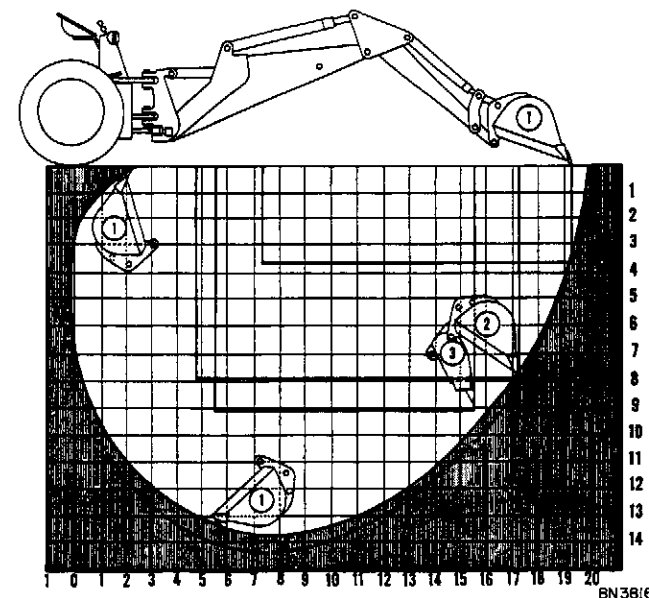


Figure 12 - Digging Profile

The straight contour line is the digging profile without loader down pressure, and the broken contour line is the digging profile with loader down pressure.

Backhoe Uses

The Model "32" Backhoe is a specialized, hydraulically operated piece of equipment that has many varied uses. Some of its many functions are:

1. General digging
2. Digging footings
3. Septic tank installation
4. Draining fields
5. Laying pipe lines
6. Fuel storage tank installation
7. Loading trucks
8. Cemetery excavations
9. Utilities construction and maintenance
10. Excavating for cyclone and fallout shelters

Backhoe operating methods for these applications will vary with the job, type soil, and the operator. However, the following basic rules should be observed.

Backhoe Anchor Via Loader Bucket

The loader bucket provides a convenient anchor for Backhoe operations.

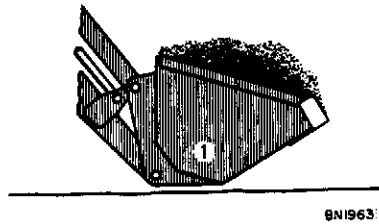
#1 RECOMMENDED

Load in bucket at ground level with bucket rolled back.

Minimum load on cylinders, lift arms and bucket.

Good counterbalance with dirt in bucket.

Easiest to advance tractor.



BN1963

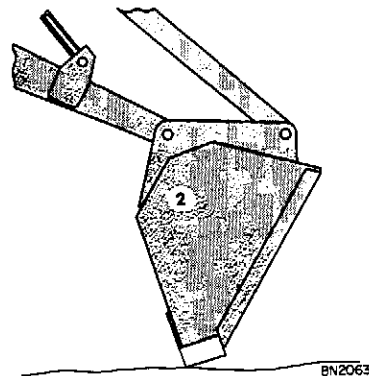
#2 LIMITED RECOMMENDATION

Cutting edge biting earth; down pressure on lift cylinders.

Average load on cylinders, lift arms, and bucket.

No counterweight effect, only sliding resistance.

#3 NOT RECOMMENDED

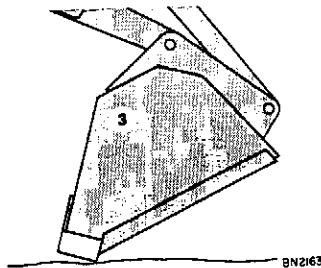


BN2063

Bucket face down; down pressure on lift cylinders.

Maximum load on bucket and stabilizers.

No counterweight effect; minimum sliding resistance.



BN2163

Always lock cylinders solidly with oil by actuating control levers in both directions until the relief valve bypasses before attempting the above operations

Function of Backhoe Cylinders

The Backhoe digs best while digging below its own level. There are three cylinders used in the digging cycle.

THE BOOM CYLINDER lifts the Backhoe assembly and lowers it. It also applies down pressure while digging.

THE CROWD CYLINDER operates the dipper arm. It pushes to a horizontal position or pulls it back nearly parallel to the boom.

THE BUCKET CYLINDER actuates the bucket to give the cutting edge the proper angle for good penetration. It also folds the bucket under to hold material being moved and dumps the bucket.

Proper Use of Bucket Teeth

The bucket is equipped with cutting edges on both sides and bottom; digging teeth are along the bottom edge. These teeth and cutting edges aid in cutting through hard packed material, thus they should always be used to an advantage, see Figure 13.

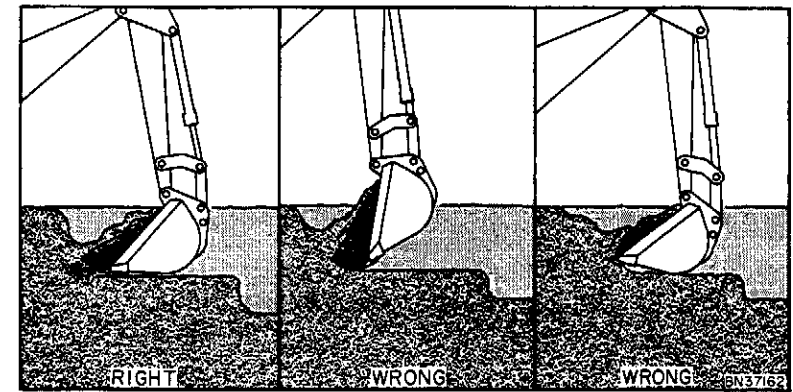


Figure 13 - Proper Use of Bucket Teeth

Initial Contact

At initial contact with the ground the boom and dipper arm should be positioned at an angle that will give good penetration as shown in Figure 14. The boom and dipper arm should not be extended in a straight horizontal line as shown in Figure 15.

The bucket may be "dropped" for penetrating hard ground (breaking the crust). The unit also has down pressure on the boom for controlled penetration.

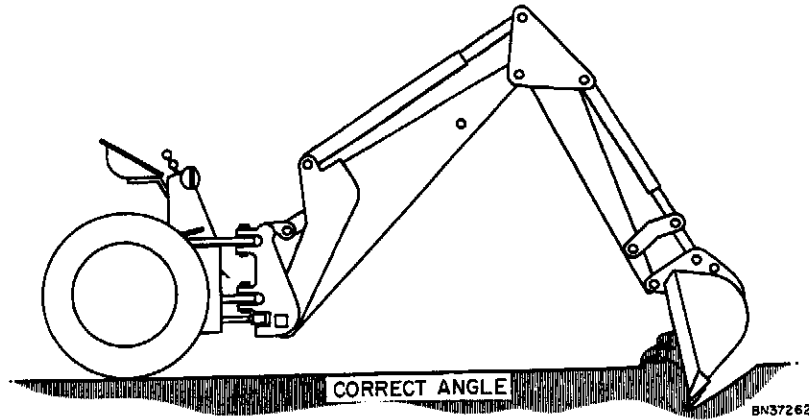


Figure 14 - Boom and Dipper Arm at Proper Angle

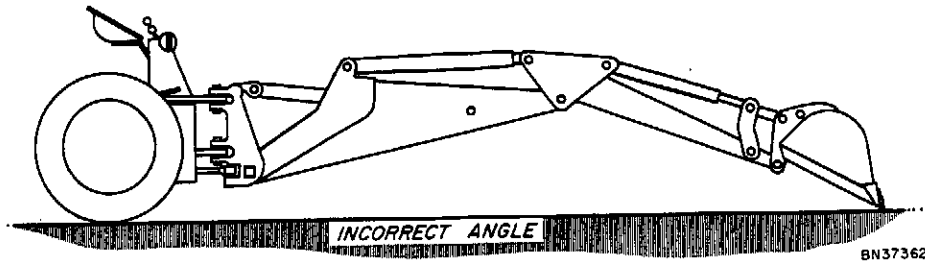


Figure 15 - Boom and Dipper Arm Extended Too Far

Filling the Bucket

The bucket is filled by moving the dipper arm lever and actuating the bucket lever. This should be a synchronized movement between the bucket and dipper arm. The basic problem encountered by most new operators is trying to "crowd" it through.

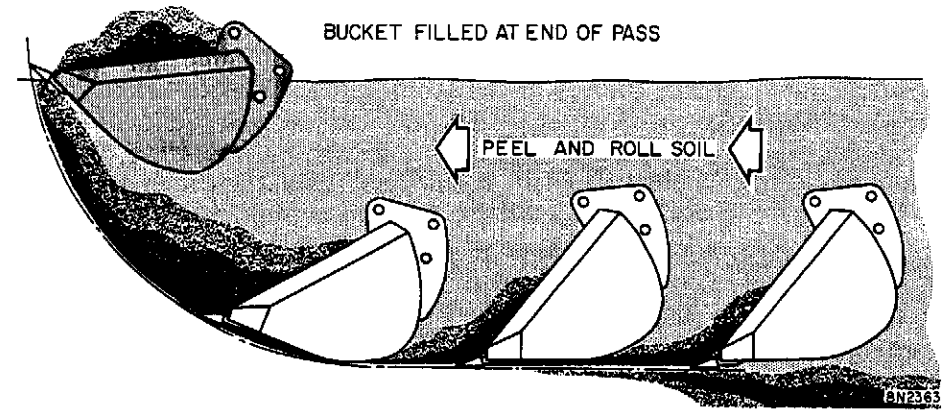


Figure 16 - Filling the Bucket

Do not use boom down pressure and attempt to dig with other cylinders at the same time. This reduces system pressure to the pressure of the boom down relief and decreases digging ability. Apply boom down pressure and return control lever to neutral. Then, start the digging cycle using the crowd and bucket cylinders.

The operator should determine the length of his pass and judge the penetration of the bucket so the bucket will be filled at the end of the pass. The depth of penetration will depend on the type soil.

The bucket should be raised from the hole with the boom cylinder as soon as the bucket is full. No work can be accomplished by dragging a full bucket. Anytime the crowd cylinder cannot move the dipper arm, the bite must be lessened. This can be done by actuating either the bucket or boom cylinder slightly.

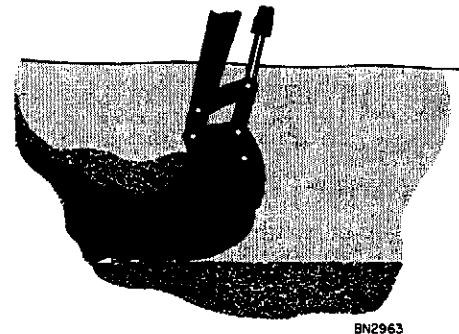


Figure 17 - Loading the Bucket

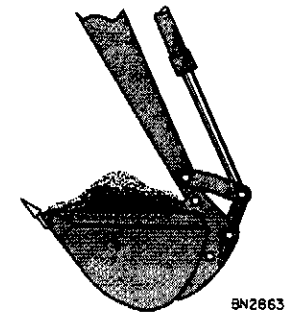


Figure 18 - Lifting the Bucket

The secret of getting a full bucket everytime is to work from the top down and take a shallow enough bite to enable the operator to make a clean, smooth pass.

Raising the Bucket From the Hole

Do not pull the dipper arm closer to the boom than necessary to clear the ditch or hole. This will eliminate the need for extending the dipper arm to dump the bucket on the spoil pile. All operations should be made smoothly for efficient operation. Yanking on the controls and jamming the bucket WILL NOT DO THE WORK, but can damage the equipment.

The Backhoe is so engineered that the operator CANNOT strike the boom with the bucket. This Backhoe is equipped with stops at all crucial points to protect cylinders and other related parts.

Once the bucket is clear of the bank it can be swung to the side of the excavation for dumping. When starting an excavation, dump the material far enough to the side so there will be room to pile the entire spoil.

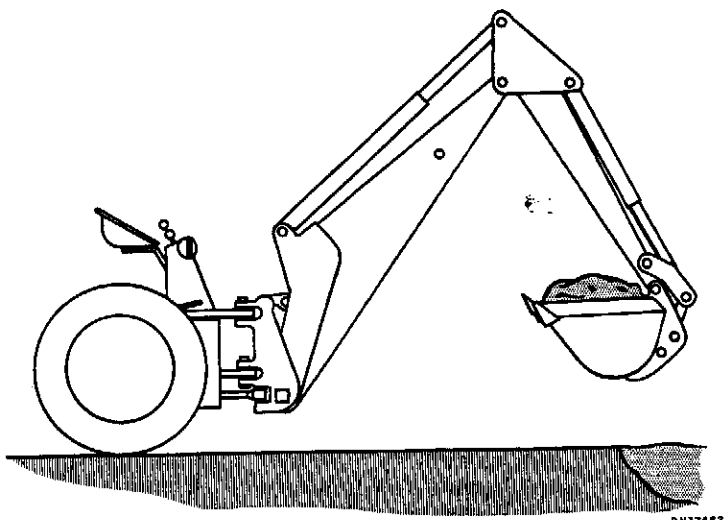


Figure 19 - Raising the Bucket From the Hole

With the Case Backhoe you can make a full 190° swing, so it is possible to dump on either side of the excavation as desired. The swing is fully hydraulic and needs no pin moving or other mechanical changes to achieve a full 190° swing. The swing is controlled by the operator's feet. Push down on the left pedal and the Backhoe swings left. Push down on the right pedal and the Backhoe swings right. This foot swing arrangement leaves the operator's hands free for better control of the Backhoe and faster, more efficient digging.

Return Cycle

When dumping the bucket, the crowd and bucket cylinders should be actuated simultaneously so everything is in readiness for the return cycle.

By lowering the boom and swinging at the same time on the return, the operator can speed up the digging cycle. As soon as the bucket is directly over the ditch, neutralize the swing with the opposite swing pedal and drop the bucket.

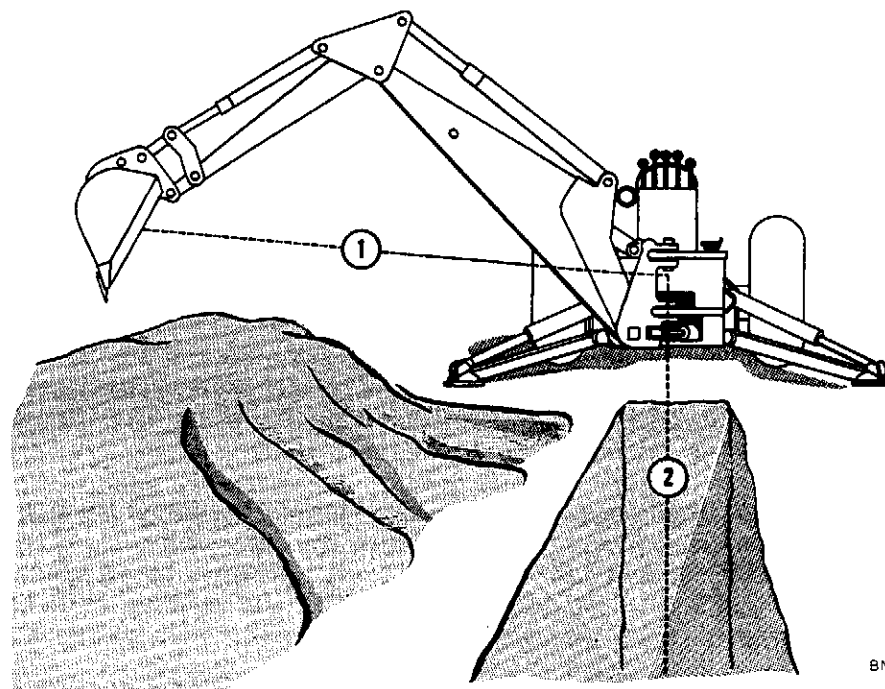


Figure 20 - Dumping the Bucket

Loading Trucks

Loading trucks can be accomplished very satisfactorily with the Backhoe by curling the bucket close to the dipper arm to prevent spillage from the bucket when it is raised.

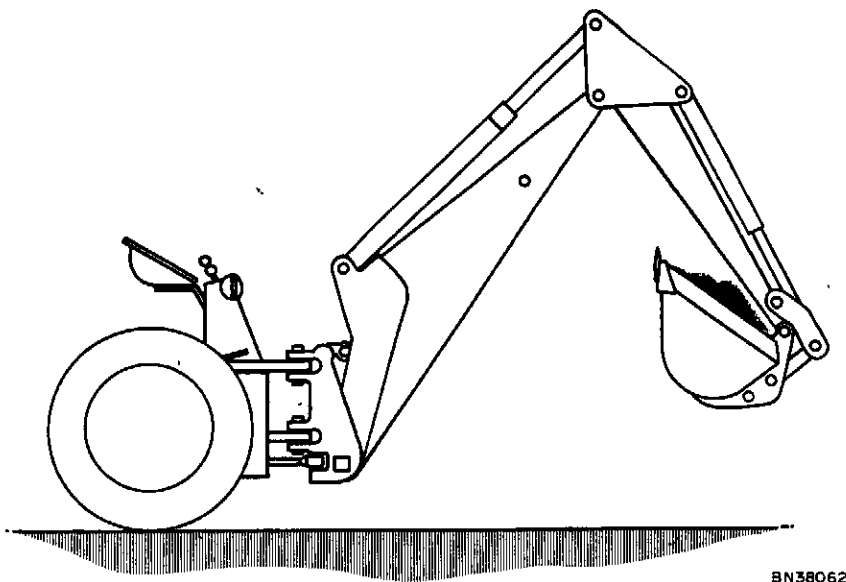


Figure 21 - Bucket Close to Dipper Arm

Digging Basement With 36 Inch Trenching Bucket

The 36 inch trenching bucket (see pages 85 and 86) is designed for high volume dirt removal. This bucket increases production, as it cuts a full 36 inches wide and has a SAE struck capacity of 8.7 cu. ft.

Figure 22 illustrates the technique used in basement digging. Notice that two corners are left open or free of spoil pile. If the dirt is to be removed, it can be loaded directly into a truck, eliminating an additional loading operation and leaving a clean job site. This method completes the job, leaving a straight vertical wall, an even floor, and no ramp or uncleared area. The excavation sides may be used as outside forms for basement walls if desired.

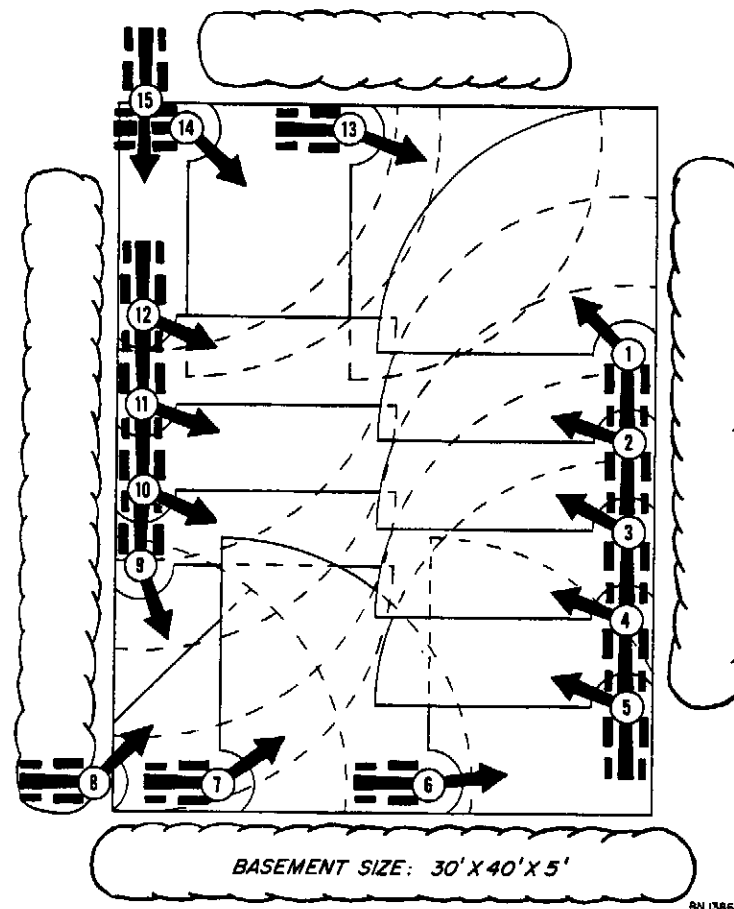


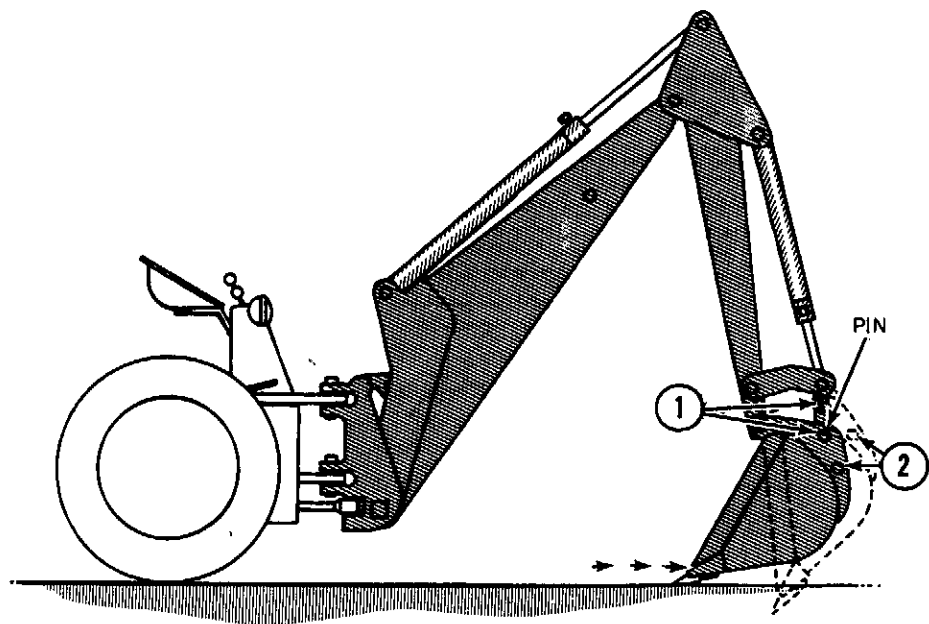
Figure 22 - Digging Basement with Backhoe

Trenching Bucket Adjustment Positions

Trenching buckets are provided with two adjustment positions — see Figure 23. With the link in the #1 position, the bucket can be used for normal trenching type operations. With the link in the #2 position, the bucket teeth are extended back. This allows for digging deeper holes with straight-cut sides, with a smaller surface opening.

CHANGING ADJUSTMENT POSITION

Remove the pin as shown in Figure 23. Then swing the bucket around to the opposite adjustment position and reinstall the pin.



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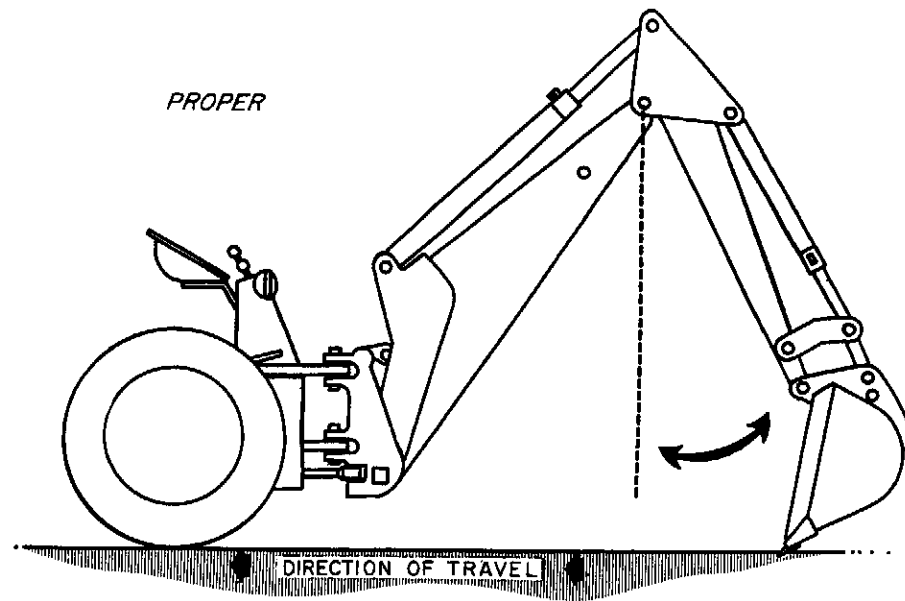
Figure 23 - Trenching Bucket Adjustment Positions

Walking Backhoe With Dipper Arm

Many operators prefer to push the Backhoe with the dipper arm, rather than driving the Tractor, while digging. This is entirely satisfactory, provided it is done in a safe manner and the following precaution is observed.

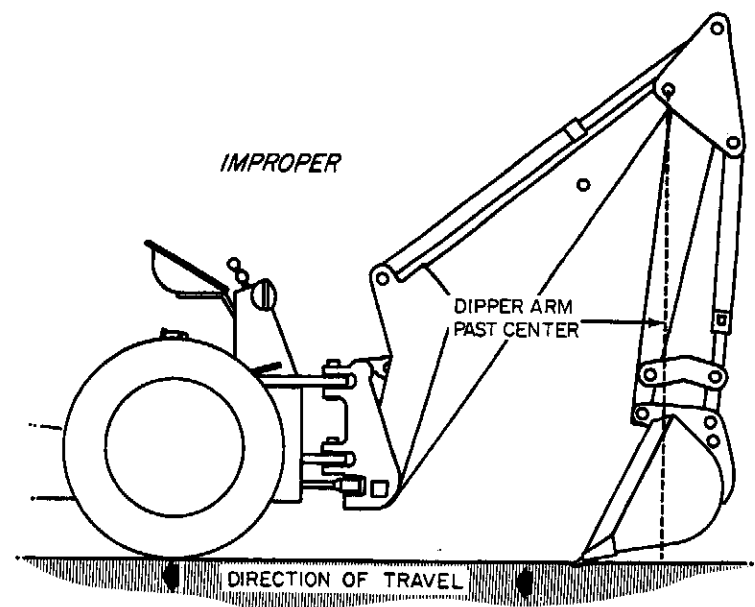
As shown in Figure 24, all movement of "walking" Backhoe MUST BE WITH THE DIPPER ARM FROM BELOW BOOM PIVOT PIN REARWARD. UNDER NO CONDITIONS WALK BACK-HOE WITH DIPPER ARM UNDER BOOM, see Figure 25.

The improper procedure allows the dipper arm to go past center, which places severe shock load on the crowd (dipper arm) cylinder. This could result in damage to the crowd cylinder or related parts.



BN36862

Figure 24 - Walking Backhoe with Dipper Arm



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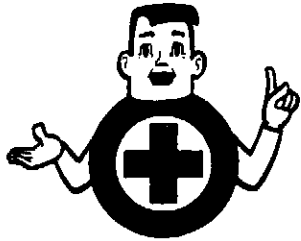
Figure 25 - Walking Backhoe with Dipper Arm

Removing the Backhoe

If only the Loader is to be used for a while it may be advantageous to remove the Backhoe instead of carrying it "piggy-back". To remove the Backhoe proceed as follows:

CAUTION!

BEFORE REMOVING THE BACKHOE, ACTUATE EACH CONTROL LEVER IN BOTH DIRECTIONS UNTIL THE RELIEF VALVE BYPASSES IN ORDER TO LOCK THE CYLINDERS WITH OIL.



Drive the unit onto a level spot, preferably concrete or some other hard surface. Use the control levers to form a "tripod" with the Backhoe as shown in Figure 26. Lower the stabilizers exerting just enough down pressure to take all weight of the Backhoe from the Tractor.

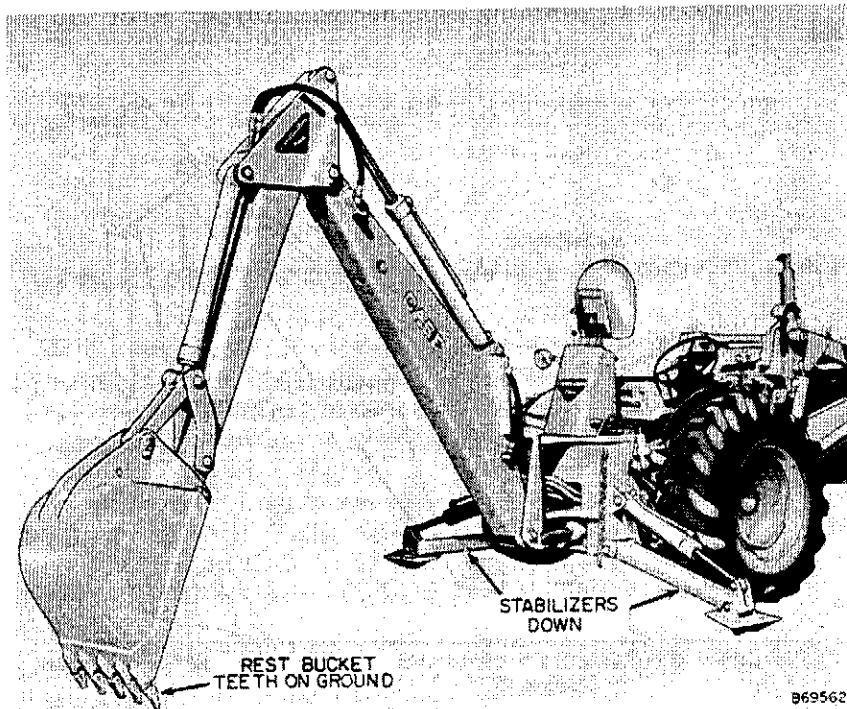


Figure 26 - Backhoe Forming a Tripod

Remove the wing nuts shown in Figure 27 from both sides of the Backhoe mounting frame. Late production Backhoes use piloted star nuts on the lower mounting studs rather than wing nuts.

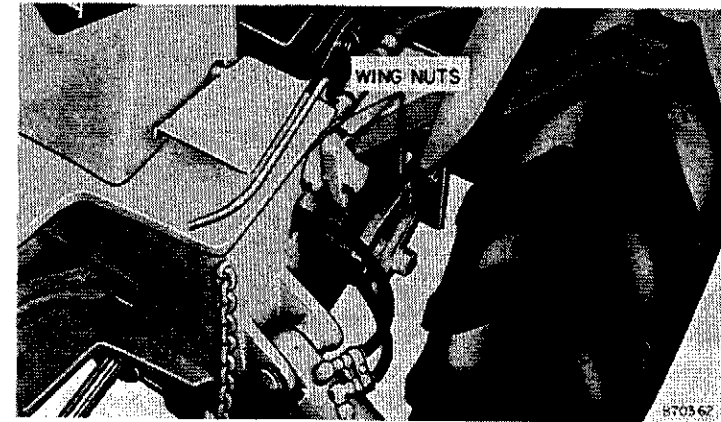


Figure 27 - Nuts To Be Removed

Start the Tractor and drive ahead JUST FAR ENOUGH TO SEPARATE THE BACKHOE FROM THE MOUNTING ARMS. If the Backhoe does not slip out of the mounting arms, raise or lower the Backhoe slightly with the stabilizers to remove any binding. Disconnect the pressure and return lines at the quick disconnect fittings.

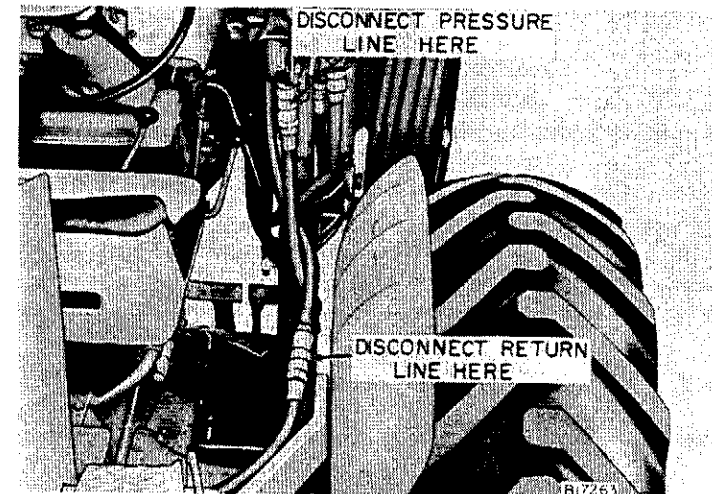


Figure 28 - Hoses To Backhoe Valve

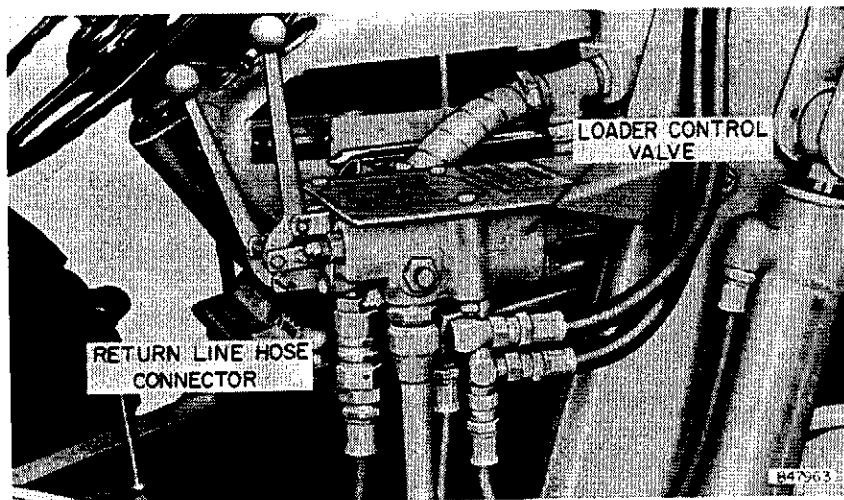


Figure 29 - Hose Connection At Loader

Connect the return line hose to the loader valve as shown in Figure 29, and the pressure line hose to the backhoe valve as shown in Figure 30. IF THE RETURN LINE HOSE IS NOT CONNECTED TO THE LOADER VALVE AS SHOWN, THE TRACTOR WILL NOT OPERATE PROPERLY.

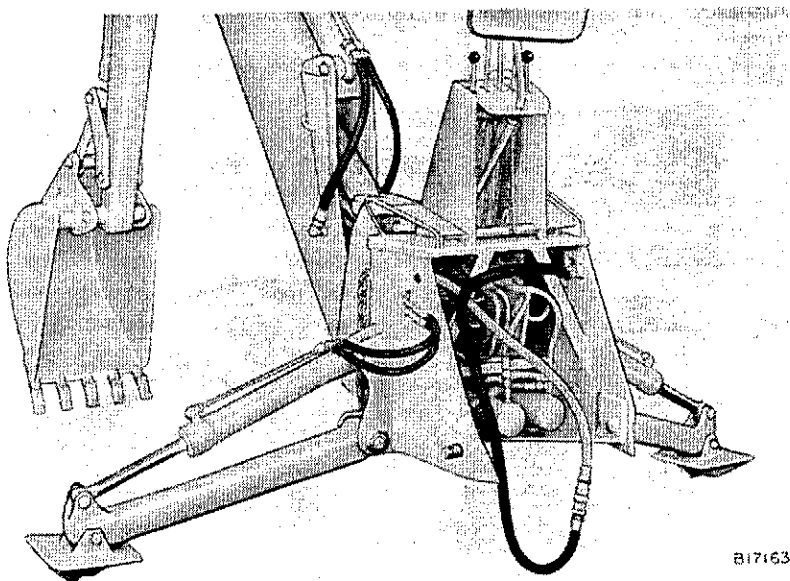


Figure 30 - Hose Connections At Backhoe

Disconnect the taillight wire at the socket on the tool box. If desired the taillight may be removed from the valve shield and installed on the fender of the Tractor. The Tractor can now be driven away from the Backhoe.

Rear Counterweight

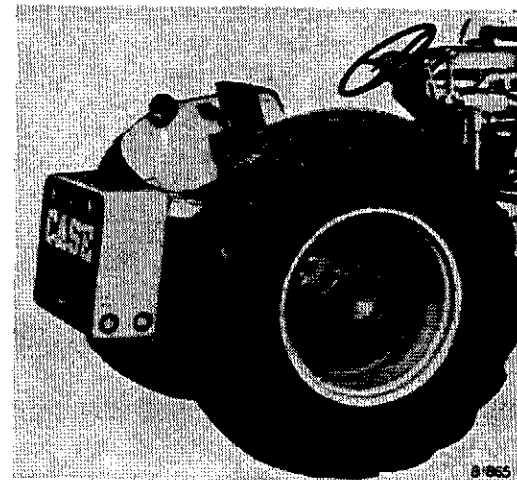


Figure 31 - Counterweight Installed

A quick attachable counterweight is available for installation on the Tractor when the Backhoe is removed. This counterweight attaches to the Backhoe mounting arms in the same way as the Backhoe.

The counterweight weighs 1400 pounds. Extreme care should be used when removing and installing the counterweight.

Reinstalling the Backhoe

To insure a satisfactory reinstallation, the following procedure MUST BE FOLLOWED.

Line the Tractor up with the Backhoe and back into the mounting. Reconnect hoses and taillight wire.

Install wing nuts and tighten with a hammer until moderately tight. Then lower the stabilizers alternately and "jiggle" the Backhoe. This will seat the conical spacers under the wing nuts.

Using a hammer, tighten the wing nuts securely until an equivalent of 1130 to 1180 ft. lbs. torque is reached. This torque can be obtained by striking the wing nuts repeated blows with a large hammer until they no longer move.

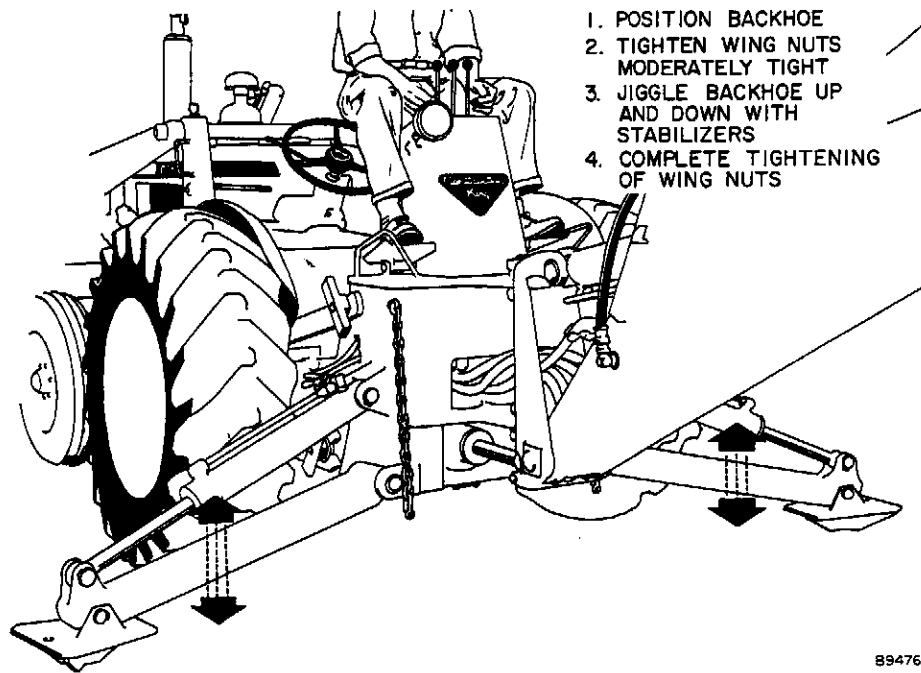


Figure 32 - Seating the Backhoe

Unless the above procedure is followed, the Backhoe may not stay tight. This could lead to severe, premature wear of the mounting points.

Some operators may prefer to tighten the wing nuts with a wrench, rather than a hammer. If this is true, use a large open end wrench with a long extension handle. Be sure wing nuts are tightened to 1130 to 1180 ft. lbs. torque.

Late production Backhoes use piloted star nuts at the lower mounting points. These star nuts must also be tightened to 1130 to 1180 ft. lbs. torque.

Installing Backhoe On Units With Draft-o-Matic Hitch

In order to install the backhoe on a unit that has a Draft-O-Matic hitch, the hitch must be folded up out of the way as follows:

Remove the yoke pins connecting the lift links to the draft arms. Disconnect the sway chains at the draft arms. If the unit is equipped with stabilizer links, they may remain attached to the draft arms.

Attach the draft arms to the lift links using the transport links on the lift links. Raise the hitch to full height. The draft arms must go on the inside of the backhoe mounting arms, and the stabilizer links (if used) go on the outside of the backhoe mounting arms.

Raise the turnbuckle and rest it against the back of the seat before backing the tractor into the backhoe. Back the tractor into the backhoe and attach the turnbuckle to the lug on the control pedestal.

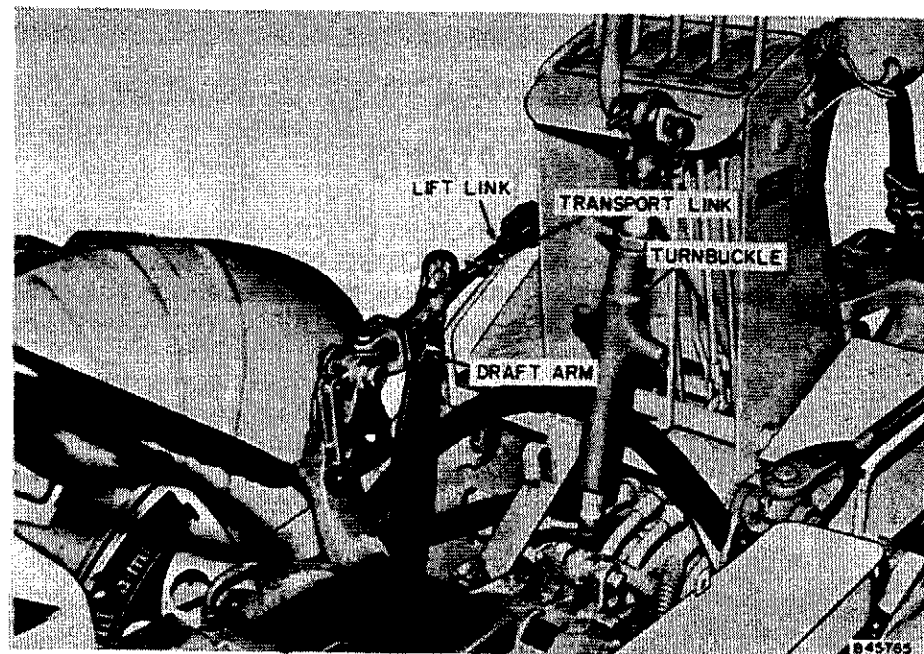


Figure 33 - Backhoe with Draft-O-Matic Hitch

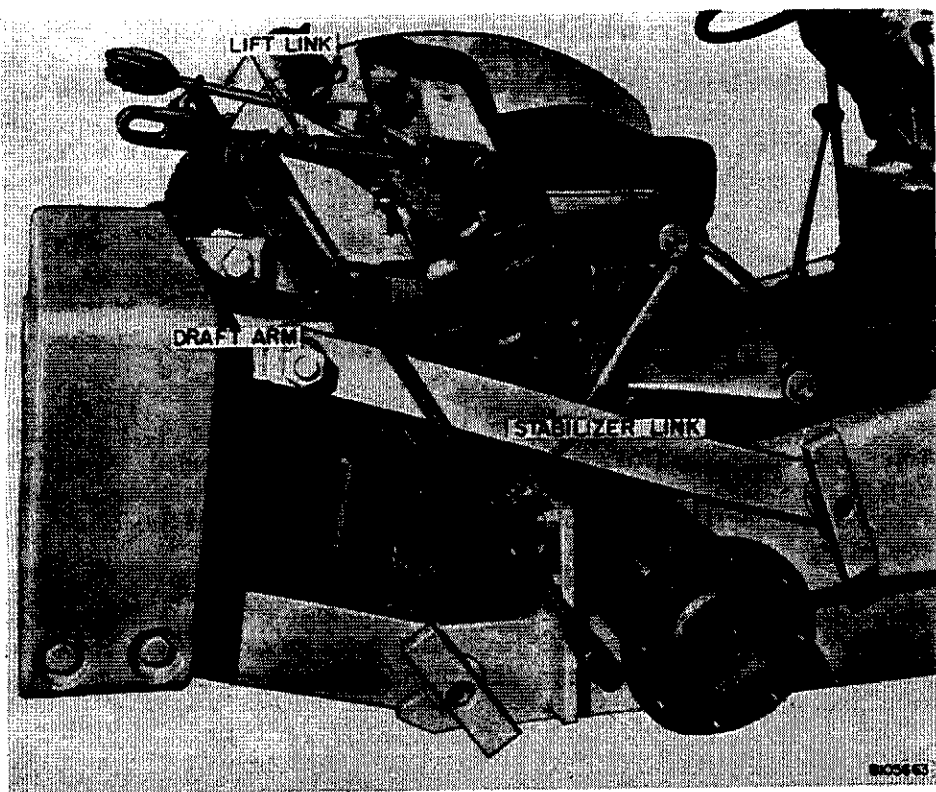


Figure 34 - Draft-O-Matic Hitch with Counterweight

IMPORTANT!

CONSULT THE OPERATOR'S INSTRUCTION MANUAL ON THE BASIC TRACTOR FOR CORRECT ADJUSTMENT OF THE DRAFT-O-MATIC HITCH AFTER REMOVING THE BACKHOE OR THE COUNTERWEIGHT.

Regular service and lubrication of your Backhoe is the best contribution to its preventive maintenance you can make. Be sure to follow all recommendations listed in "Lubrication" section of this manual. Make it a daily habit to check the following.

1. Check all mounting and fastening bolts. After the first two hours operation of a new Backhoe, be sure to check the tightness of the large wing nuts (two on each side of the Backhoe) which hold the Backhoe to the Tractor. The lower nuts are piloted star nuts on later production units. Also, check the wing nuts after the first 20 hours of operation.
2. Check all keeper and pivot pins.
3. Check hydraulic cylinders, line connections, and control valve for signs of oil leakage.
4. Check oil level in reservoir.
5. Check hydraulic cylinder piston rods for scratches or score marks.
6. Lubricate.

Bucket Teeth

These teeth are self-sharpening and will require no attention. If any tooth is broken it can be replaced by using a punch to raise the "peened down" edge, allowing the tooth to be removed from the tooth shank. This can be done without heating the tooth, but if a torch is available heat the "peened down" portion cherry red and straighten the lip while hot. New teeth must always be held in place by peening down this lip into the depression in the socket of the tooth shank.

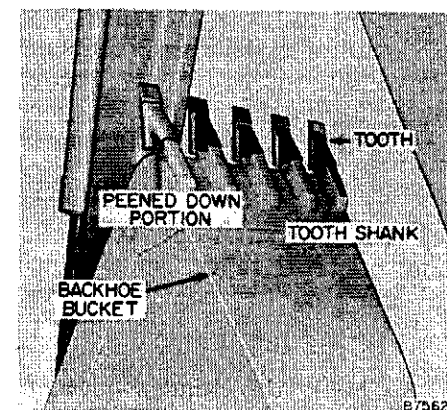


Figure 35 - Bucket Teeth

CAUTION!



BEFORE MAKING ADJUSTMENTS ON THE BACKHOE, MAKE SURE MOVING PARTS ARE RESTING ON THE GROUND OR SECURELY BLOCKED UP TO PREVENT FALLING RESULTING IN INJURY TO THE OPERATOR OR DAMAGE TO THE MACHINE.

Hydraulic Cylinders

Check cylinder piston rods for scratches and score marks which show effects of misalignment or sharp particles imbedded in the wiper ring. These should be polished out; or if excessively deep, have the piston rod replaced. Scratches and score marks can be removed using a strip of medium grit emery cloth. Always polish with a rotating rather than a lengthwise motion.

If the hydraulic cylinder will not hold the load (when the control valve is in neutral), it could indicate that the piston packing is worn. If it is determined the leak is in the piston packing, the cylinder must be serviced.

Leakage around the packing gland indicates the rod packing or seals are worn and should be replaced.

Backhoe Main Relief Valve

Early production backhoes have a main relief valve in the backhoe control valve; late production backhoes do not. On both early and late production backhoes, the operating pressure is controlled by the main relief valve in the loader control valve.

In order to obtain the correct backhoe operating pressure on early production backhoes, the main relief valve in the backhoe control valve must be set higher than the main relief valve in the loader control valve. To set the backhoe main relief valve higher than the loader main relief valve proceed as follows:

Check the loader main relief valve as described on pages 25 and 26. Do not remove the pressure gauge. Run the engine at 1800 R.P.M. Raise a stabilizer leg until a relief valve by-

passes. Hold back on the lever until a steady gauge reading is obtained.

If the gauge reading is the same as the reading obtained when testing the loader main relief valve, the backhoe main relief valve is adjusted correctly and should not be disturbed. If the gauge reading is lower than the reading obtained when testing the loader main relief valve, adjust the backhoe main relief valve until a reading of 1750 to 1850 P.S.I. is obtained. Then, turn the backhoe main relief valve adjusting screw in (to the right) 1-1/2 turns. Lock the adjusting screw with the jam nut. The backhoe main relief valve will now be set higher than the loader main relief valve, and the backhoe will be operating at loader main relief valve pressure.

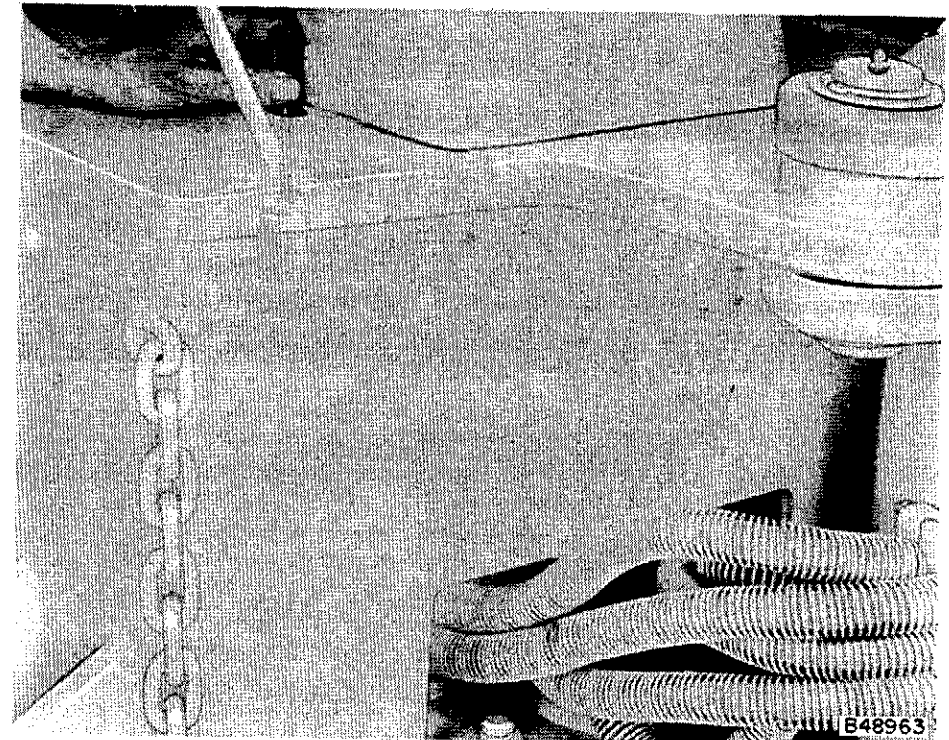


Figure 36 - Adjusting Backhoe Main Relief Valve



Stabilizer Pads

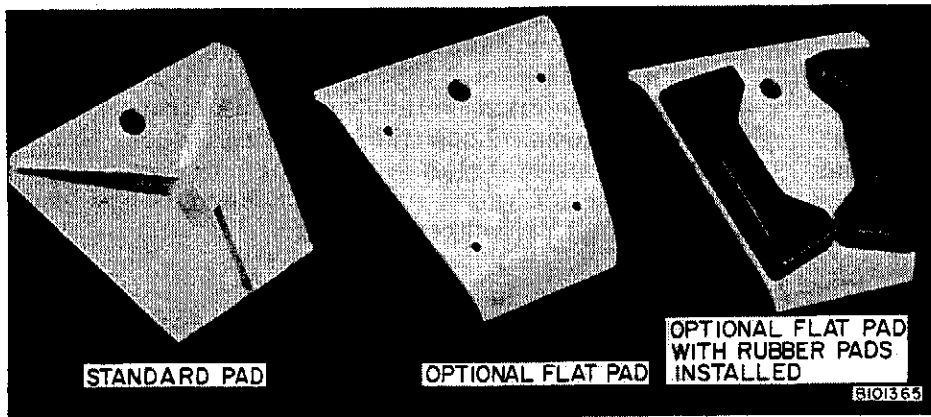


Figure 37 - Stabilizer Pads

Special pads with flat bottoms, are available from your Authorized Case Dealer for use in streets, cemeteries, or other locations where the standard ribbed pads may damage the surface. In addition, rubber pads are available for bolting to the bottom of the flat pads for use in applications where a flat steel pad may damage the surface.

Trenching Buckets

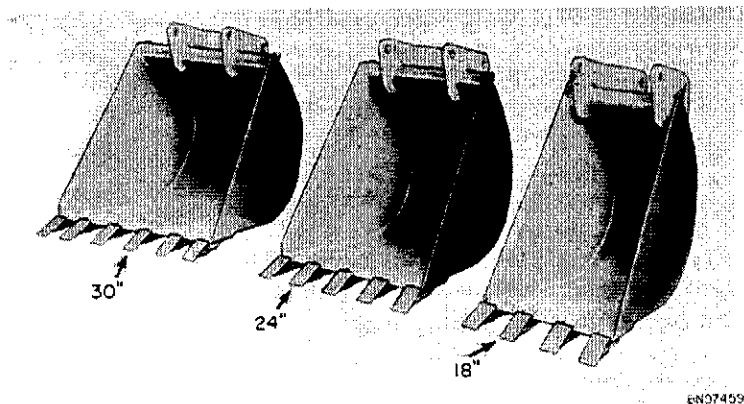
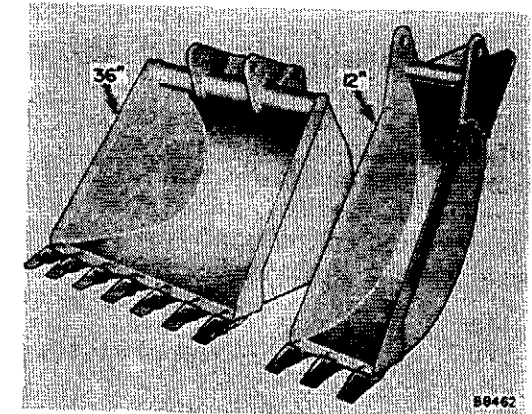


Figure 38 - Trenching Buckets

Figure 39
Trenching Buckets



The trenching bucket is ideal for normal digging of ditches and other holes where there is no space problem and the length of cut is not a critical factor. Trenching buckets are available in 12, 18, 24, 30, and 36 inch widths.

Bellhole Buckets

The use of the bellhole bucket will allow the operator to dig holes with vertical or undercut sides and a minimum surface opening. Some specific uses are undercutting sidewalks, streets, etc. Bellhole buckets are available in 12, 16, and 30 inch widths.

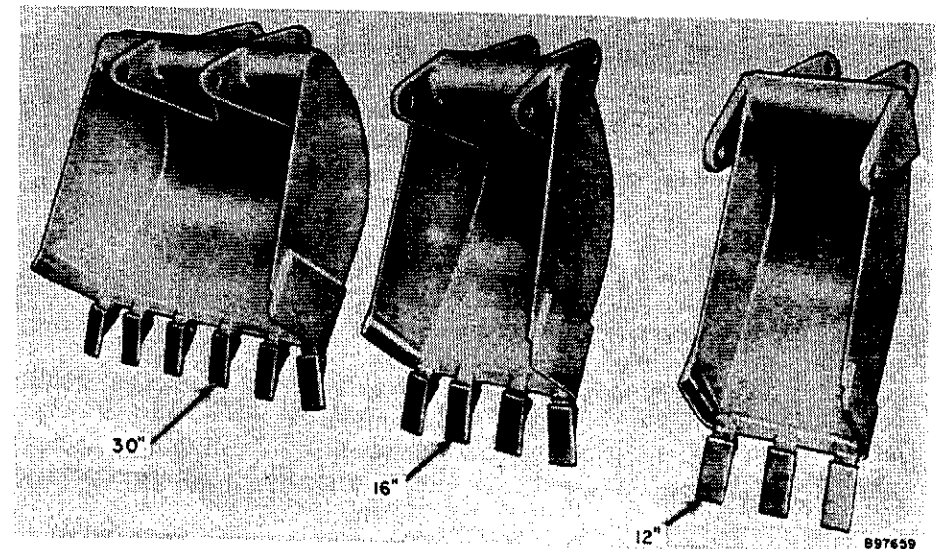


Figure 40 - Bellhole Buckets

Combination Bellhole and Graveyard Bucket

With the use of the combination bellhole and graveyard bucket, the operator can dig holes with vertical sides. The combination bellhole and graveyard bucket is 36 inches wide.

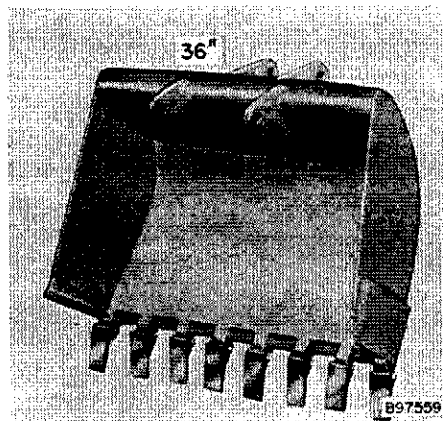


Figure 41
Combination
Bellhole and Graveyard
Bucket

Bucket Usage Chart

Trenching Buckets

Size	SAE Struck Capacity	Application
12"	*1.9 cu. ft.	Footings, seepage beds, pipe lines
18"	*4.4 cu. ft.	Seepage beds, pipe lines
24"	*5.9 cu. ft.	General purpose digging, minimum width for deep trench
30"	*7.3 cu. ft.	Sewer mains, tank holes, basements
36"	*8.7 cu. ft.	Basements, cyclone and fall-out shelters, large tank holes

Bellhole Buckets

Size	SAE Struck Capacity	Application
12"	*1.2 cu. ft.	Street repair openings, sticky materials
16"	*1.6 cu. ft.	Street repair openings, sticky materials, tough grave digging
30"	*3.0 cu. ft.	Deep holes with restricted openings, sticky materials

Combination Bellhole and Graveyard Bucket

Size	SAE Struck Capacity	Application
36"	*3.6 cu. ft.	Grave digging, large holes with restricted openings, sticky materials

*For SAE heaped capacity, add 20%.

Rear Counterweight

The optional quick attachable, 1400 lb. rear counterweight mounts directly to the backhoe mounting arms. It is recommended for use with the loader when the backhoe is removed.

Front Counterweight

The optional 500 lb. front counterweight mounts directly under the front bumper. It is recommended for use with the 14'/16' Backhoe with Extendable Boom.

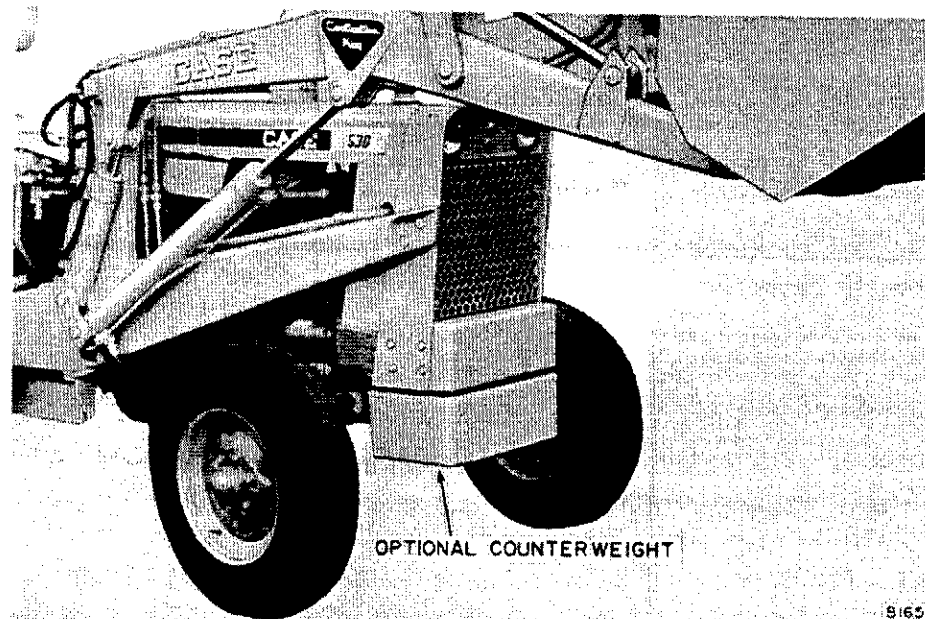


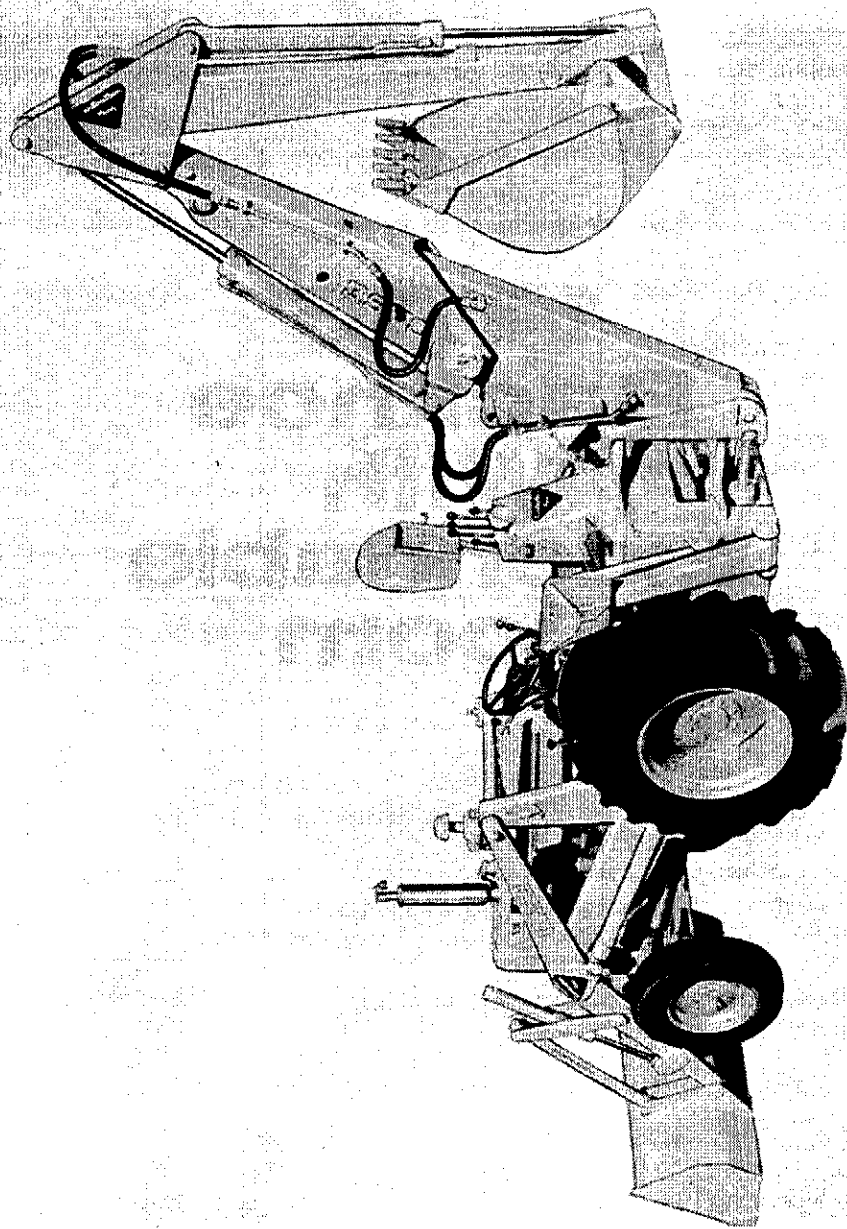
Figure 42 - 500 lb. Front Counterweight Installed

HYDRAULIC SYSTEM TROUBLE SHOOTING CHART

Problem	Probable Cause	Correction
Pump and/or valve noisy.	Pump drawing air because oil level is too low.	Check for leaks in system and maintain full reservoir.
	Pump drawing air because oil is foaming.	Use Case Hi-Lo TCH Oil.
	Suction line leaking.	Replace line.
	Suction line fittings loose.	Tighten line fittings.
	Relief valve pressure too high.	Check and have relief valve adjusted.
	Oil too heavy.	Use Case Hi-Lo TCH Oil.
Slow or erratic action.	Relief valve pressure too low.	Check and have relief valve adjusted.
	Low oil level.	Check for leaks and maintain full reservoir.
	Foaming oil.	Use Case Hi-Lo TCH Oil.
Low lift capacity	Relief valve pressure too low.	Check and have relief valve adjusted.
	Hydraulic pump worn.	Have Case Dealer check pump with flowmeter.
	Lift cylinder packing worn.	Have Case Dealer re-pack cylinder.

14'/16'
Backhoe
With
Extendable
Boom

INTRODUCTION



8107864

Figure 1 - 14'/16' Backhoe with Extendable Boom

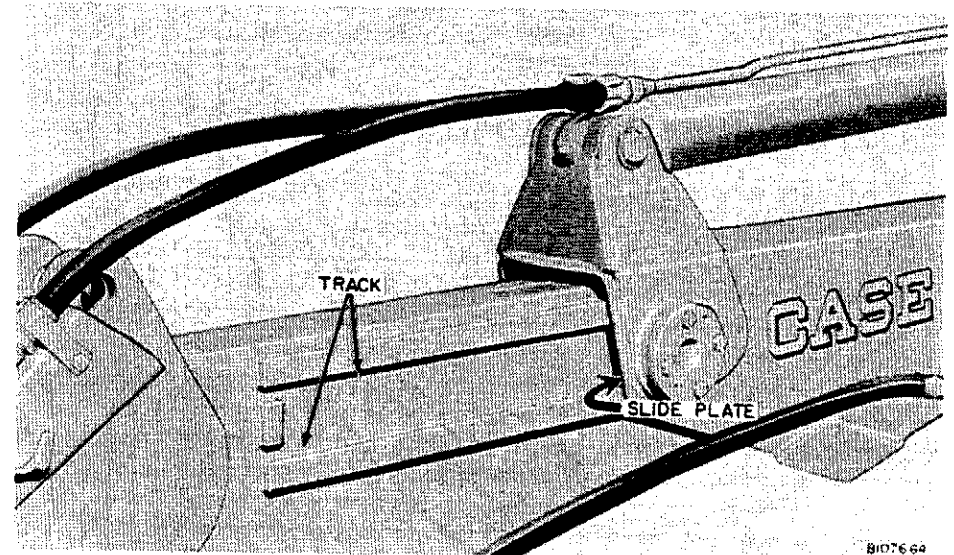
The versatility of the Model "32" Backhoe can now be greatly increased with a factory or field installation of the Extendable Boom. In addition to the outstanding features of the Model "32" Backhoe, the 14'/16' Backhoe with Extendable Boom offers:

CONVERTIBILITY: With the Extendable Boom you can go from a standard to an extra-long reaching backhoe in a matter of minutes.

GREATER DIGGING DEPTH: The greater digging depth obtainable with the Extendable Boom gives you that little extra that makes your Model "32" Backhoe the right machine for those jobs that would ordinarily require a much bigger machine.

Basic operation, lubrication, and maintenance of the 14'/16' Backhoe with Extendable Boom are the same as the Model "32" Backhoe. This section covers only items peculiar to the 14'/16' Backhoe with Extendable Boom.

LUBRICATION



8107664

Figure 2 - Slide Plate and Track Assembly

The lubrication of the 14'/16' Backhoe is the same as shown for the Model "32" Backhoe. In addition, the slide plate and track assembly should be covered with a thin coating of grease at all times.

SPECIFICATIONS

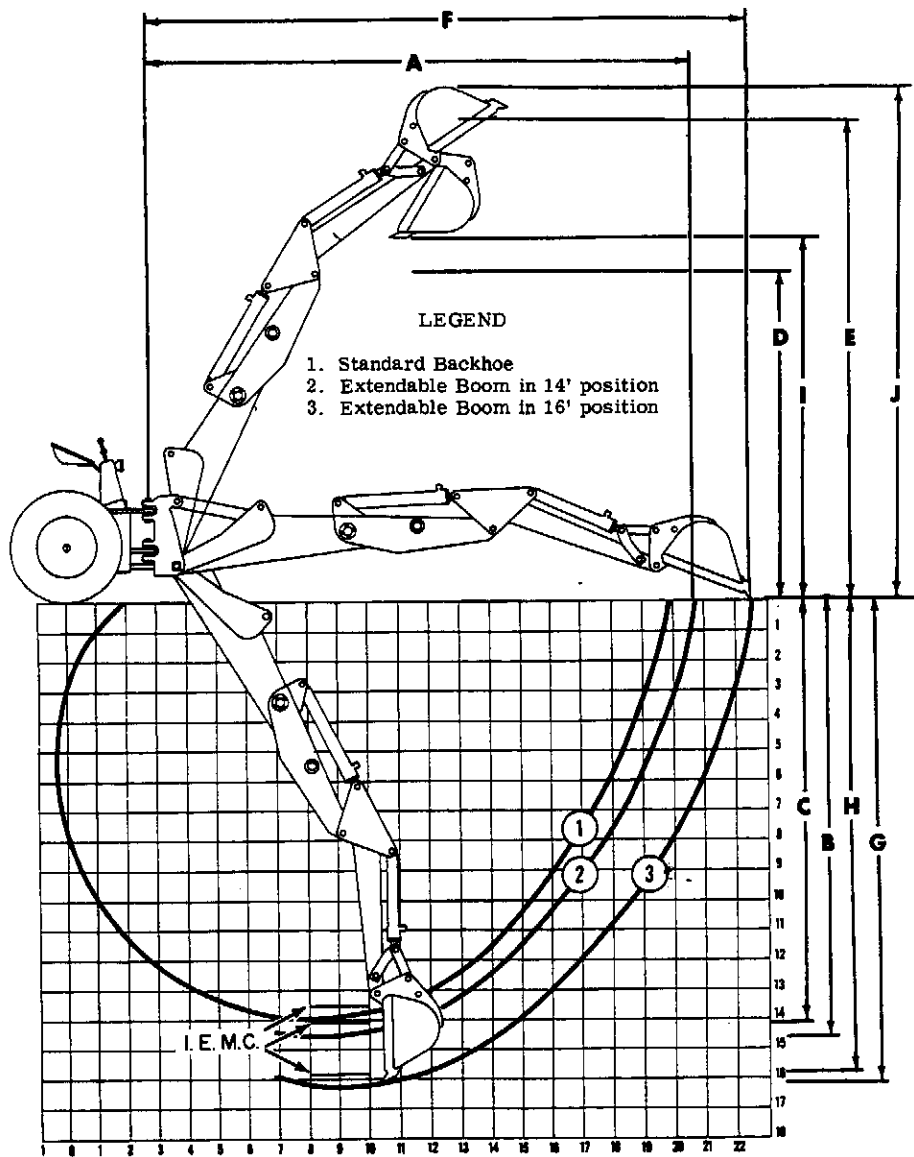


Figure 3 - Specifications

B108164

Dimensions

with extendable boom in 14' position

*A. Digging Radius (From Pivot)	17' 4-1/2"
B. Digging Depth (Manufacturer's Rating)	14' 6"
*C. I.E.M.C. Definition	14' 2"
*D. Dump Height (Clearance)	11' 6"
*E. Overall Height (Maximum)	15' 9"
* Overall Height (Backhoe at Carry)	10' 11"

with extendable boom in 16' position

F. Digging Radius (From Pivot)	19' 6"
G. Digging Depth (Manufacturer's Rating)	16' 2"
*H. I.E.M.C. Definition	15' 9"
*I. Dump Height (Clearance)	12' 9"
*J. Overall Height (Maximum)	17' 8"
* Overall Height (Backhoe at Carry)	12' 4"

*Specifications conform to Society of Automotive Engineers (SAE) or Industrial Equipment Manufacturers Council (IEMC) definitions whichever applicable.

OPERATING INSTRUCTIONS

Extending or retracting the Extendable Boom can be done by one man with very little time or effort. To enable the operator to determine when the Extendable Boom is properly aligned for insertion or removal of the 1-3/4" pin, pivot the Backhoe to full Left or Right of the tractor.

to extend boom:

1. The boom, dipper, and bucket should be extended in a straight, horizontal line with the bucket resting on the ground.
2. Remove the internal hair pin cotter from the clevis pin.
3. Remove the clevis pin from the tapered 1-3/4" Extendable Boom locking pin.
4. Remove the 1-3/4" pin by using a heavy drift punch. Do not hammer on the tapered end of the pin. If the pin drives hard, raise or lower the boom to relieve the binding (Figure 4).

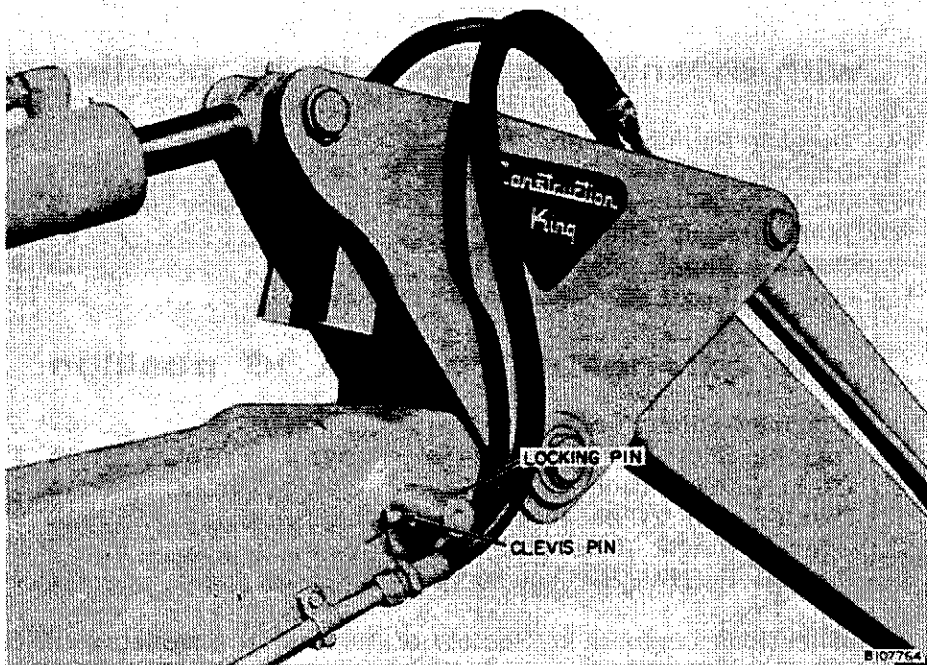


Figure 4 - Extendable Boom Locking Pin

5. The boom can now be extended by folding the bucket under (Figure 5).

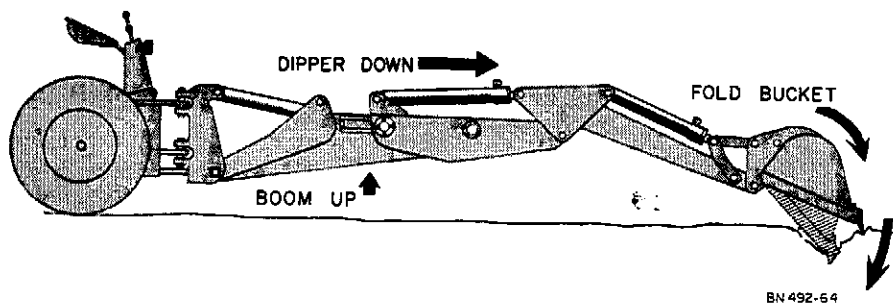


Figure 5 - Extending the Boom

6. Align the holes by raising the boom while applying a slight down pressure on the bucket with the dipper control.
7. The holes should be aligned when the Extendable Boom is against the forward stops (toward bucket) and the top edges are parallel with the main boom of the Backhoe.

8. Replace the 1-3/4" pin. This pin is tapered to allow for any slight misalignment of the holes in the boom.

to retract boom:

1. Remove Extendable Boom locking pin in the same manner as described in extending the boom.
2. Raise the boom slowly at the same time lowering the dipper arm and bucket.
3. The Extendable Boom will slide back into the fully retracted position as the boom is raised.



CAUTION!

BE SURE TO KEEP HANDS AWAY FROM THE SLIDE PLATE AND TRACK WHILE RETRACTING THE BOOM.

4. With the boom against the rear stop (toward tractor) the Backhoe can be lowered and the tapered pin replaced.

Job-To-Job Travel

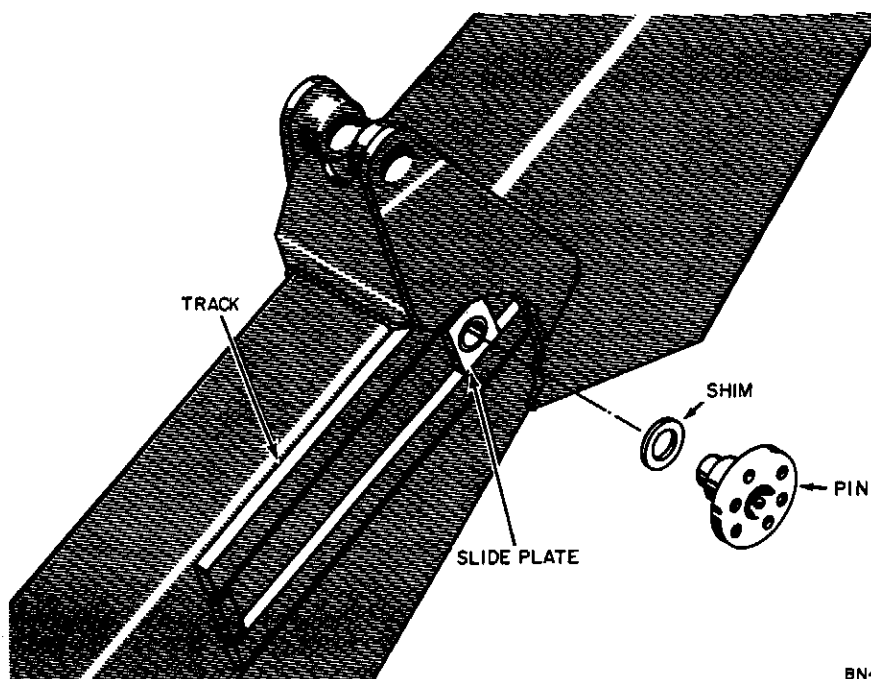
The backhoe can be transported in either the 14' or 16' position. It is recommended that a front counterweight be used with the 14'/16' Backhoe with Extendable Boom.

Use extra precaution when transporting the Backhoe in the 16' position due to the added clearance height needed.

PREVENTIVE MAINTENANCE

The 14'/16' Backhoe with Extendable Boom requires very little additional care beyond that required for the Model "32" Backhoe. It is suggested that:

1. The slide plate and track be lubricated and kept free of dirt.
2. The slide plate can be rotated 90° if after long use it becomes worn and "sloppy" in the track (Figure 6).



BN49064

Figure 6 - Eliminating Side-Play with Shim

3. Any side-play in the Extendable Boom can be eliminated by the addition of a shim between the slide plate and pin assembly (Figure 6).



"YES, MR DEALER, IVE
STUDIED THE MANUAL"

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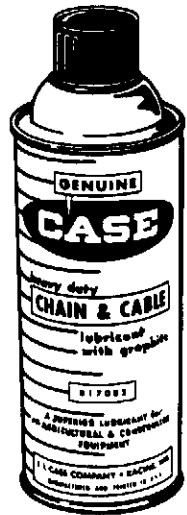
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INSIST ON GENUINE CASE PARTS

Case parts insure satisfactory service because they are made from the same patterns and materials as original equipment parts - they are tested, proved, and guaranteed by Case.

Here are just a few of the accessory items your Case Dealer stocks to help keep your equipment looking and performing like new.

CASE TRACTOR SHAMPOO
Helps keep your CASE equipment looking clean and new.



COOLING SYSTEM PROTECTOR

Stops leaks, lubricates water pump and prevents rust in the cooling system.

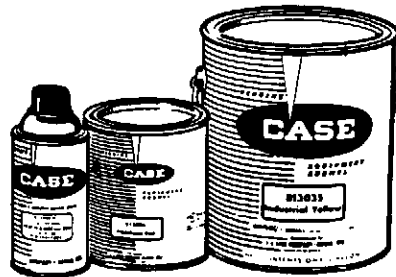


CHAIN AND CABLE LUBRICANT

Penetrating lubricant and rust preventive for all chains and cables.

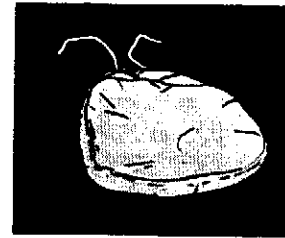
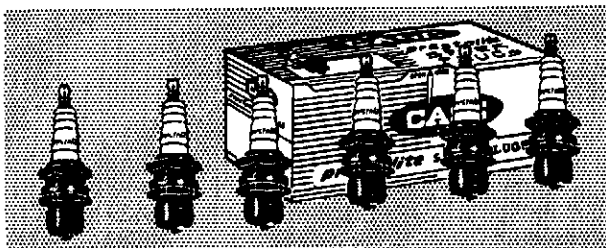
CASE EQUIPMENT ENAMEL

Keep the original finish and color on all CASE equipment.



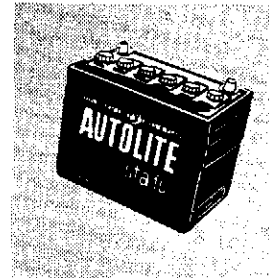
PRESTOLITE SPARK PLUGS

For sure fire starts and original equipment dependability.



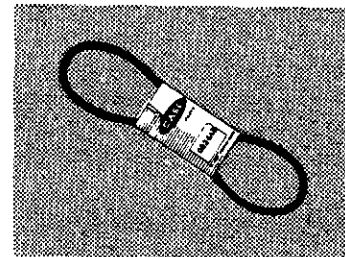
SEAT COVERS

For all style seats.



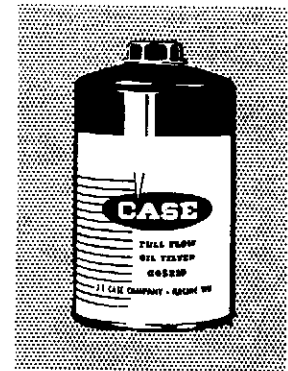
BATTERIES

Same dependability as original equipment - for sure starts.



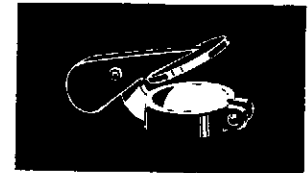
FILTERS

Case engine crankcase, hydraulic system, diesel fuel and transmission filters - insure same micron filtering as original equipment.



Hi-Lo TCH OIL

One oil for transmissions, converters, hydraulics and power steering systems.



WEATHER CAPS

Helps protect exhaust systems.

FORMULA 77

Brings back original color to oxidized enamels, decals, vinyl - stops rust - waterproofs.

BELTS

Case belts fit properly and are designed for long life.



AVAILABLE FROM YOUR CASE DEALER