Technical Manual

OPERATOR, UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS)

BACKHOE, 2 YARDS CAPACITY
NSN 3815-01-153-1867

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Current as of 14 March 1990

REPORTING OF ERRORS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MB, Warren, Ml 48397-5000. A reply will be furnished to you.

This technical manual is an authentication of the manufacturers commercial literature and does not conform with the format and contents specified in AR 310-3, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

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GENERAL INFORMATION

Figure 1 illustrates the backhoe attachment for the Model 5060 Crane. This manual is confined to lubrication, installation and removal, adjustments, and general information concerning operation and maintenance of the backhoe attachment. It will also contain repair parts information

BACKHOE WORKING RANGES

The working ranges and other pertinent specifications are tabulated in Figure 2

OPERATION

Positioning the Crane. Position the crane so that most of the work will be over the front or rear of the crawler. Dumping or unloading should be done over the sides of the crawler, if possible. Set the propel brakes. See Crane Operator's Manual.

Operating Cycle. The backhoe operating cycle consists of four steps; filling the dipper, hoisting, swinging, and dumping. During backhoe operation, tension must be maintained in both the left and the right drum lines at all times, since they are interdependent. Start the crane engine and operate the backhoe as given in the next steps

The function of the drums during backhoe operation are tabulated below. The numbers in the column "controls" correspond to the items in Figure 2-1 of TM 5-3810-303-14.

Drum	Function	Controls
Left	Dipper Stick	5, 6, 23, 25
Right	Backhoe Boom	4, 8, 24, 26
Boom Hoist	Backhoe Boom Line	11

During backhoe operation install the planetary lowering lockouts(see Figure 2-4, Item48 of TM5-3810-303-14).

INSTALLING BACKHOEATTACHMENT

GENERAL

The Truck Crane may be converted to backhoe operation by removing the crane boom and installing the backhoe front end attachment. The components necessary for the equipment conversion are: backhoe boom, backhoe bucket, auxiliary gantry mast, auxiliary gantry backstop assembly, digging cable, and boom hoist cable.

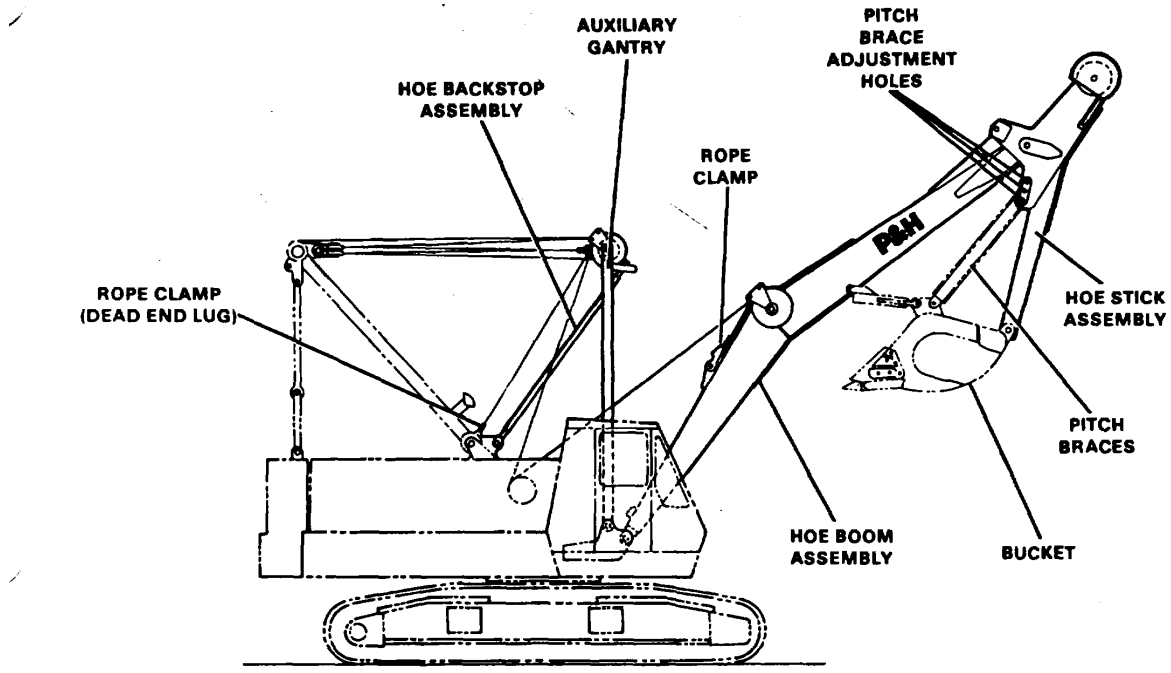

Figure 1. Backhoe Assembly

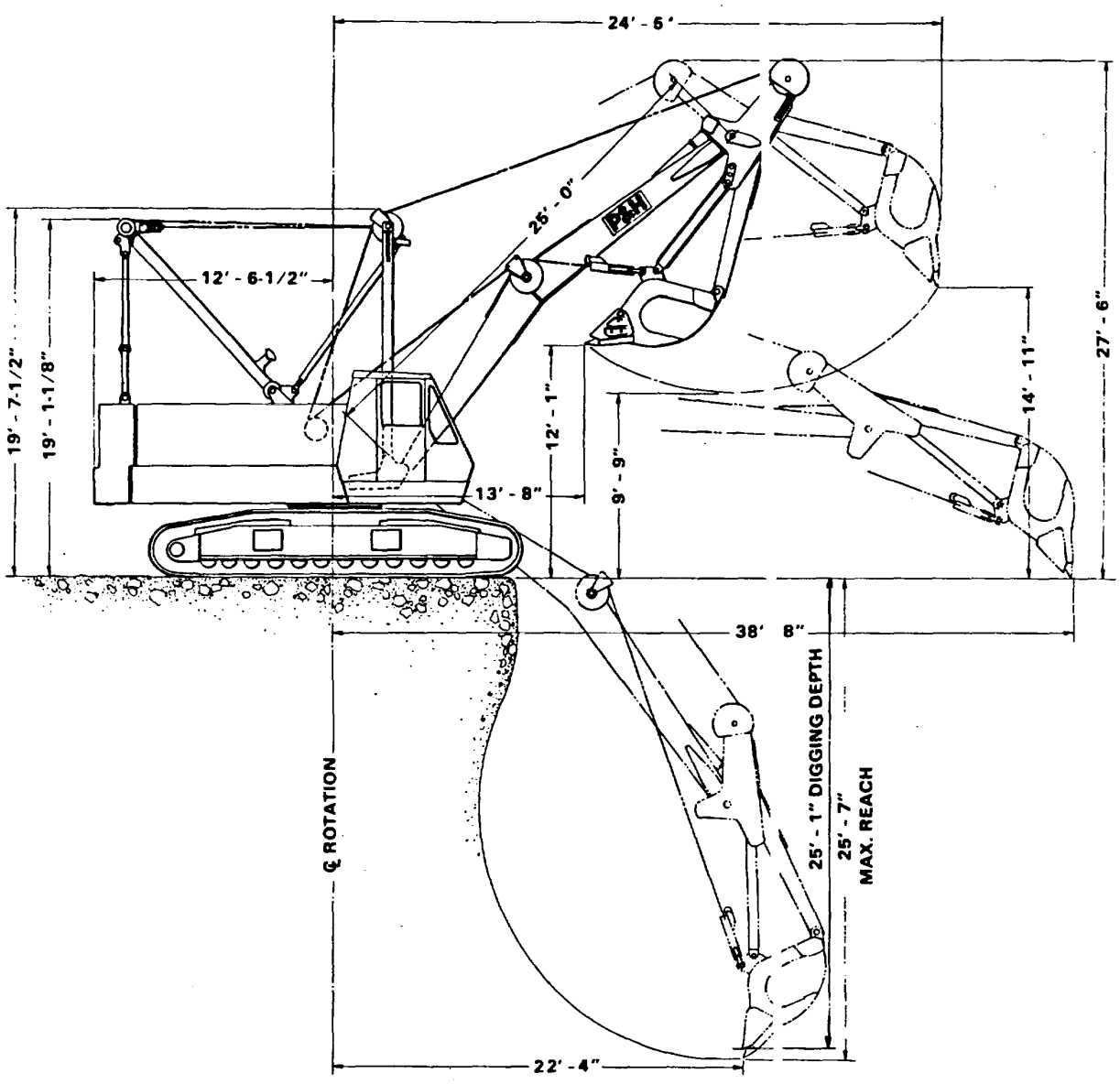

Figure 2. Trench Hoe Range Diagram

To install the Backhoe Attachment the auxiliary gantry must be installed first. then the backstop installed. Next the boom hoist is reeved and the gantry is raised to allow Installation of the backhoe boom. Finally the hoist and digging drum cable is installed. The following paragraphs will cover the topics of gantry backstops. reeving and backhoe boom.

GANTRY

To install the auxiliary gantry, proceed as follows

1. Support the gantry on cribbing high enough to bring gantry foot pins into position with the gantry foot lugs on the revolving frame

CAUTION

Use care when swinging the revolving frame without boom attached. It will tend to be unbalanced toward the counterweight end.

2. Swing the revolving frame and carefully move crawler unit up to cribbed up gantry so that bore in gantry foot lugs line up with foot pin holes in auxiliary gantry.
3. Attach auxiliary gantry to revolving frame with pins and washers (2 on each side revolving frame bore).
4. Secure pins with rod ends, capscrews and lockwashers.

NOTE

Final gantry positioning is done when the backhoe boom is installed. Take up slack with the boom hoist drum to support the auxiliary gantry in the VERTICAL position.

WARNING

Never allow a loaded boom to compress the backstop springs. If this minimum clearance is not maintained, tension within the boom hoist lines may collapse the gantry over the backstops.

HOE BACKSTOP

Backstops are used as a safety and warning device. They are not intended to stop the boom during operation. The primary purpose of the backstops is to give the operator a means of judging when to stop raising the boom.

One point should be kept in mind by the operator when using the backstops. If a load is picked up at a time when the backstops are nearly bottomed, the weight of the load will stretch the boom hoist cables, causing the backstops to extend, thus giving the impression that the backstop clearance has been increased. If the operator should then raise the boom still further, in line with the apparent increased backstop clearance, releasing the load will allow the stretched boom hoist lines to contract. This contraction will force. se the boom against the backstops and major damage can result.

To install the hoe backstop assembly, proceed as follows (see Figure 3):
1. Lay the backstop assembly on the auxiliary gantry. Secure to the auxiliary gantry with the pipe spacers, capscrews, lockwashers and nuts.
2. Lift the machine end of the backstop assembly into position against the machine. Install the backstops with base pin and secure with cotter pins.
3. Reeve the boom hoist cable. See REEVING later.
4. Raise the gantry to allow installation of the backhoe boom.

BACKHOE BOOM

To install the backhoe boom, proceed as follows:
1. Support the base of the backhoe boom assembly on cribbing. Use cribbing high enough to bring the boom foot pin holes into position with the boom foot lugs on the revolving frame.
2. Carefully move the crawler up to the cribbed up boom so the bores in the boom foot lugs on the revolving frame are aligned with the boom foot holes.
3. Attach the backhoe boom to the revolving frame with the boom foot pins and cotter pins. Use washer between boom foot and revolving frame lugs.

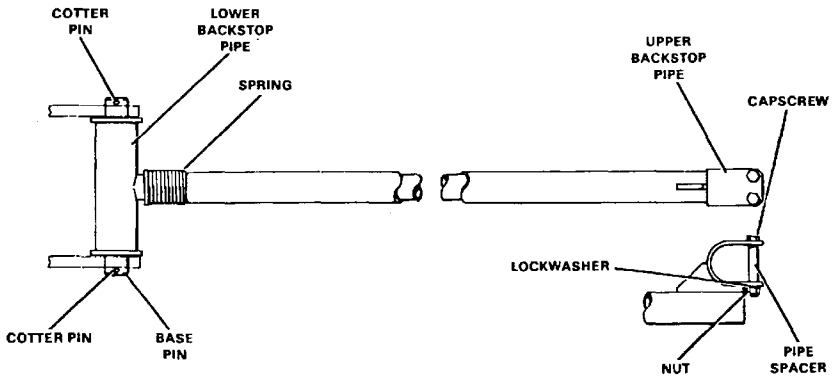

Figure 3. Back Stop (2100N520)

REEVING

BOOM HOIST REEVING. The reeving of the boom hoist cable is shown in Figure 4. Before reeving the boom hoist drum lines, spool out he rope so as to prevent any possibility of kinking during the reeving process. The rope is over-spooled onto the boo i hoist drum.

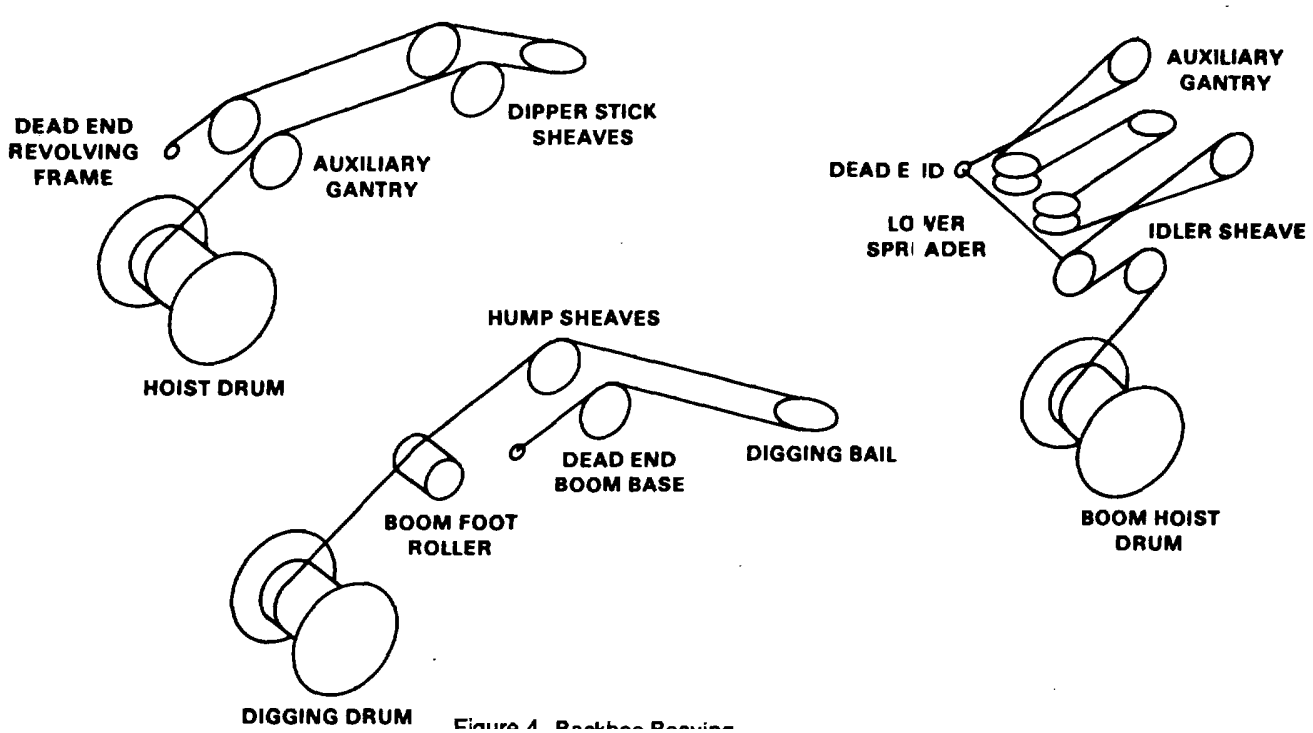

Figure 4. Backhoe Reeving

Right Hand Load Hoist Drum			
	Trench Hoe (Hoist)		
Boom Length	Rope Size	Rope Type	2 Parts
22’			
25’			125’
50’			
60’			
70’			
80’			
90’			
100’	3/4"	25	
110’			
120’			
130’			
140’			
150’			
160’			

Left Hand Load Hoist Drum			
	Trench Hoe (Digging)		
Boom Length	Rope Size	Rope Type	1 Part
25’			85’
50’			
60’			
70’			
80’			
90’			
100’	7/8		
110’			
120’			
130’			
140’			
150’			

Constant Length Ropes			
Location	Rope Size	Rope Type	Length
Boom Hoist	1/2"	27D	230’

Table 1. Rope Data