BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G92.335.1
Issue 1, March, 1955
AT&T Co Standard

HP-40 HP-45 POLE DERRICKS

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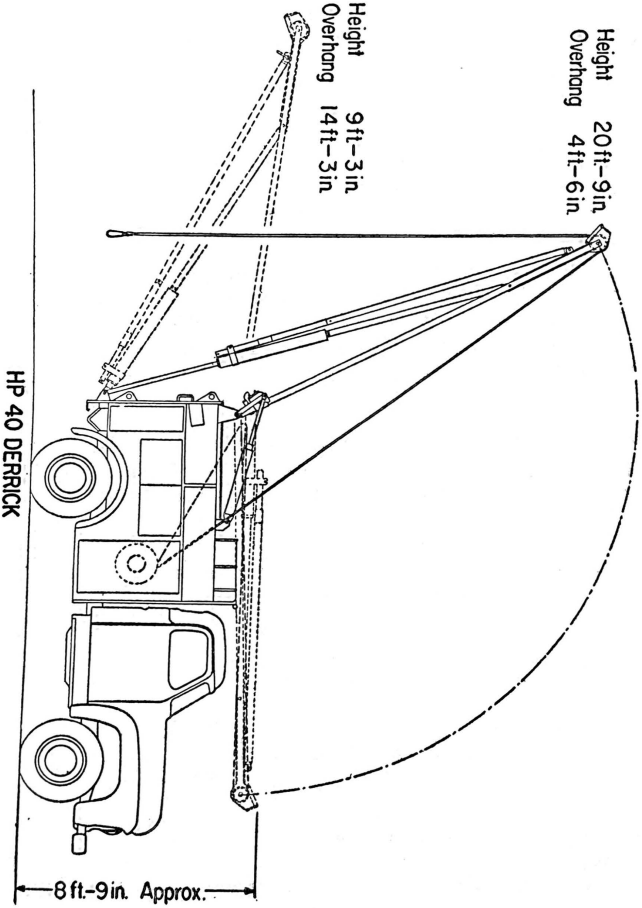
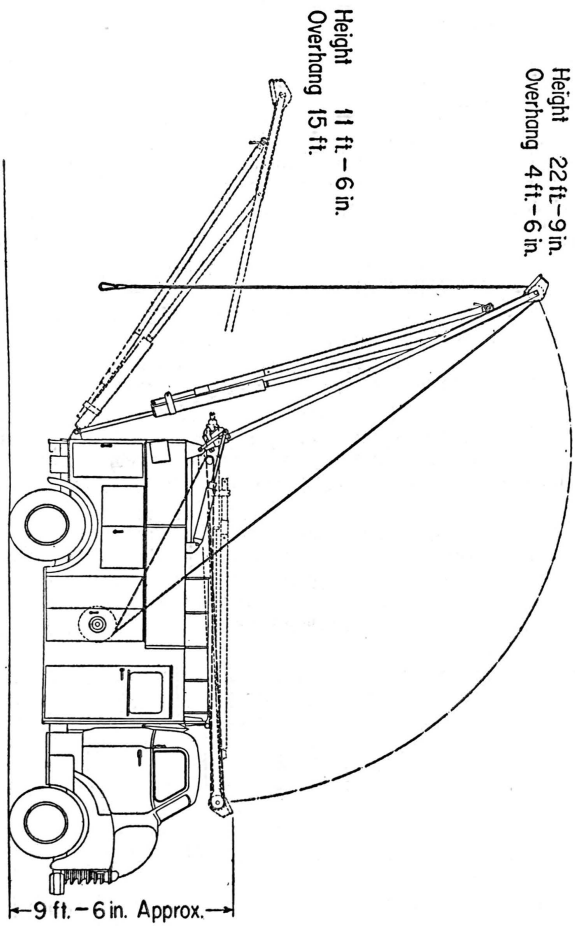
1. GENERAL

1.01 This practice describes the HP (Hydraulic Power) pole derrick and outlines the operating procedures.

1.02 These derricks are for general pole work and the number in the code is the maximum length pole that can be conveniently handled.

1.03 This is a tripod-type power-operated derrick that is not disassembled for transportation but is carried on top of the truck body.




Height 22 ft.–9 in.
Overhang 4 ft.–6 in.
Height 11 ft.–6 in.
Overhang 15 ft.
HP 45 DERRICK
←9 ft.–6 in. Approx.→

1.04 The derrick is raised from the carrying position to a point past the vertical position by horizontal hydraulic cylinders (lift rams) at the top of the truck. It is changed from one working height to another by the larger hydraulic cylinder (center ram) which forms a part of the center leg.

1.05 The cylinders are operated through a bank of valves by pressure from a hydraulic pump driven by the truck engine.

1.06 The cylinders and the hydraulic connections should be given a visual inspection for excessive leakage each day. The level of the oil in the reserve tank should be checked once a week and light (150 viscosity) hydraulic oil **not hydraulic fluid** added if necessary. This oil is generally available from the major oil companies. Running the pump for a few minutes will usually overcome sluggish operation. To avoid too slow an operation of the derrick in subzero weather it may be necessary to add one part of kerosene to two parts of hydraulic oil.

1.07 In hydraulic power operated equipment a very large force can be developed by a light pressure on a valve handle. The hydraulic valve handles should be moved slowly until the desired motion results. Too fast a movement of the valves will result in excessive speed, jerky motion and undue strain on the derrick members.

1.08 The hydraulic valve assembly is equipped with an overload release to prevent the building up of excessive pressure. The operation of this release is accompanied by an audible chatter in the valve housing.

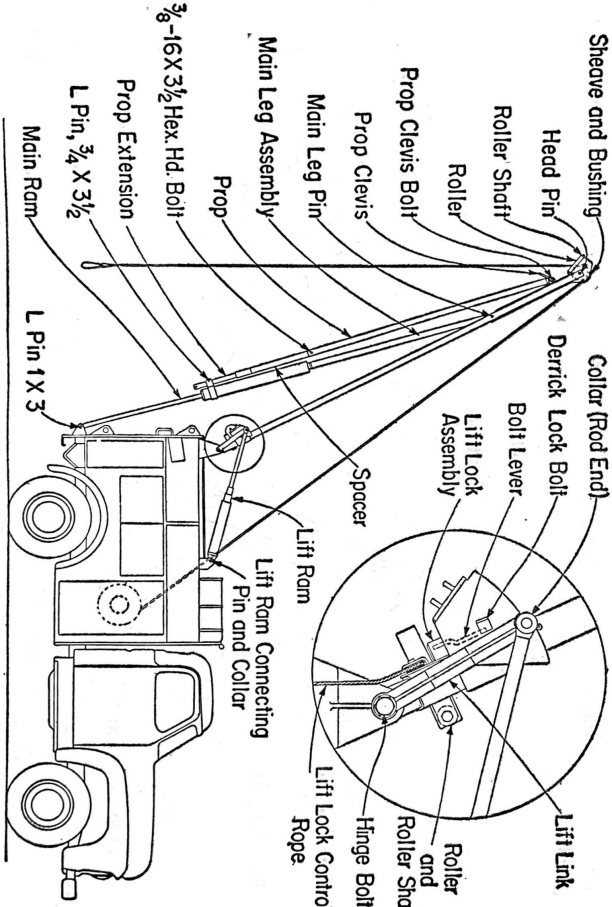
1.09 All precautions listed in the sections entitled "Pole Derricks—General" and "Pole Derricks—Work Operations" which apply to this derrick should be observed.

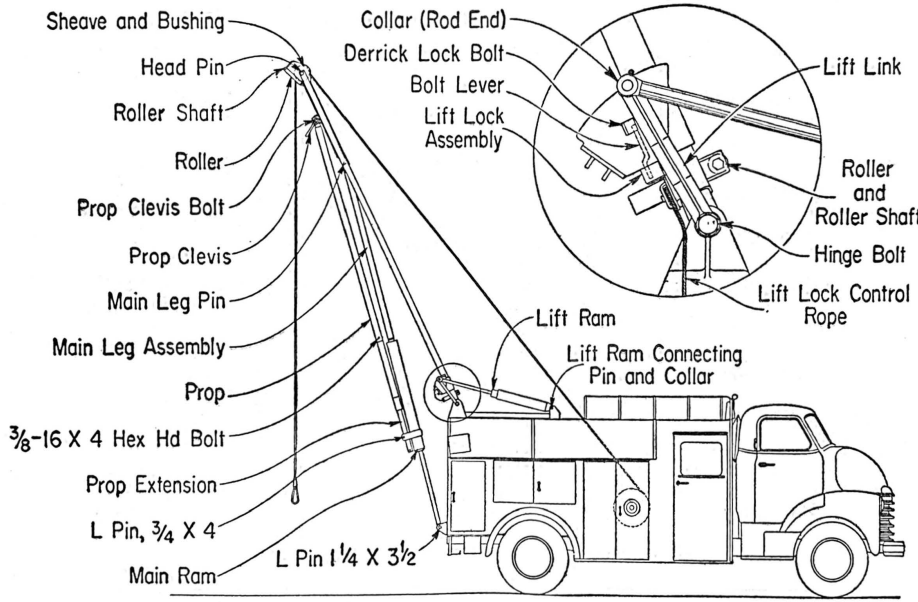
1.10 When there is a possibility of the derrick or a pole suspended by the derrick contacting electric power wires the derrick boom should always be operated by the driver in the cab. See Paragraph 4.17.

1.11 The spindle bar must not be in place at the rear of the truck in either the upper or lower position when the derrick is raised from or lowered to the carrying position, since it will interfere with the operation of the main ram of the center leg.

2. NAMES OF PARTS

2.01 The following figures show the names of the parts which may be required as repair or replacement parts.

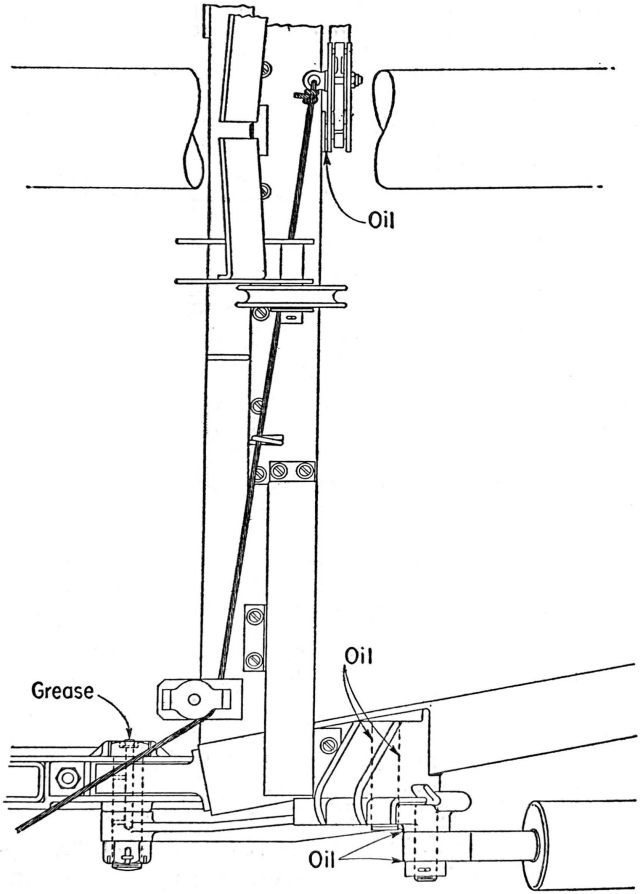




HP 45 DERRICK

3. LUBRICATION

3.01 The points indicated in the following figure should be oiled with a few drops of lubricating oil or greased where indicated to keep the derrick in good operating condition and to avoid excessive wear.

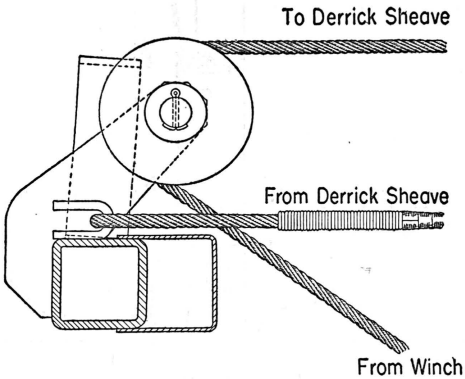


4. ERECTING THE DERRICK

4.01 The truck should be placed at a location where it will be as nearly level as practicable and where there are no overhead obstructions which would interfere with erecting the derrick. This location should be near the work so that traveling with the derrick erected is at a minimum.

4.02 The derrick parts should be given a visual inspection for defects.

4.03 If the winch line has not been left in the derrick it should be threaded through the derrick head from the bottom side up before the derrick is raised. It may be found desirable, when pulling the winch line out of the derrick for other winch work, to attach a short piece of hemp line to the eye and leave it in the derrick as a threading line.



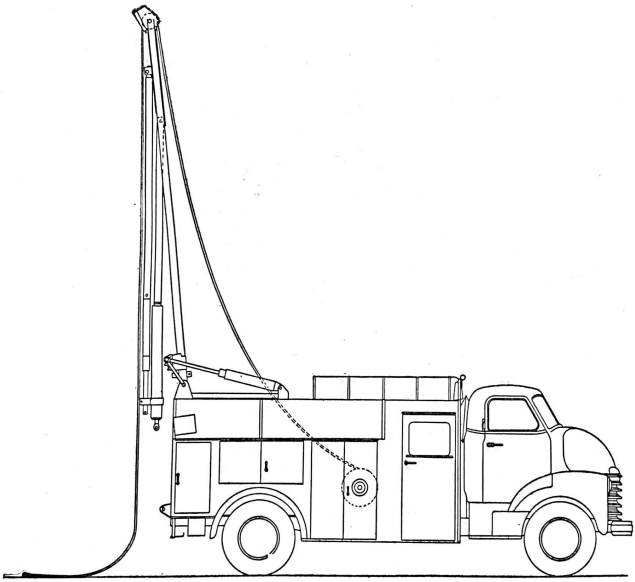
4.04 If the winch line has been left threaded in the derrick, run the winch in reverse, unhook the eye from the carrying hook and pull about 10 additional feet of line through the derrick sheave and remove the line from the support sheave. This will provide the required slack so that no pull will develop in the winch line as the derrick is raised and so that the end of the line can be conveniently reached from the ground after the derrick is erected.

4.05 The power take-off driving the hydraulic pump should be shifted into gear and the truck engine brought up to a fast idle. The pump will not produce any pressure until it has a reasonable speed. If the pump is driven by other than a single

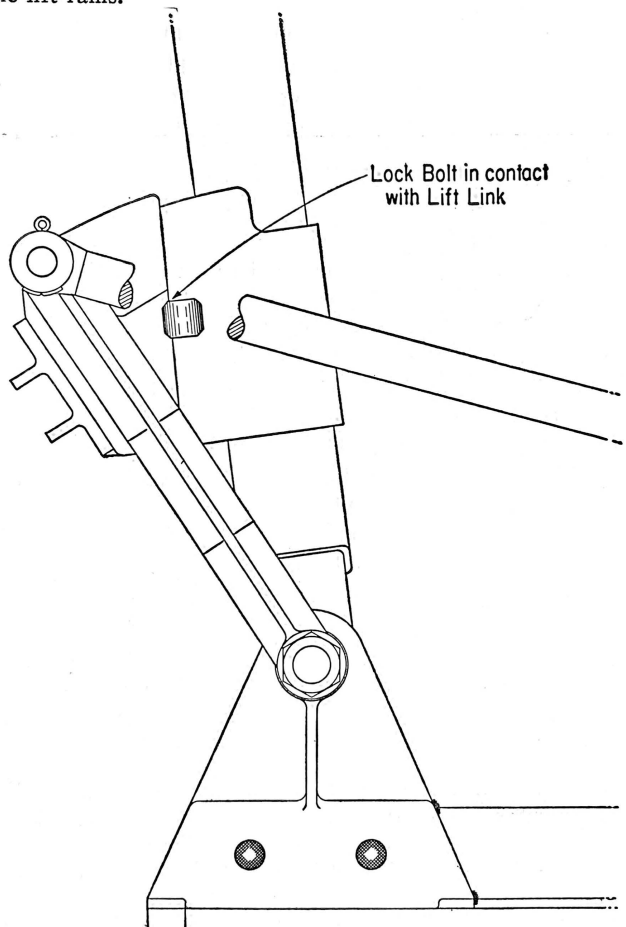
speed power take-off, do not run the pump in reverse at high speeds.

4.06 Look up at the square lock bolts to be sure they are fully extended under the lift links.

4.07 PULL slowly on the LEFT (GREEN) handle. It should never be necessary to operate more than one valve at a time.

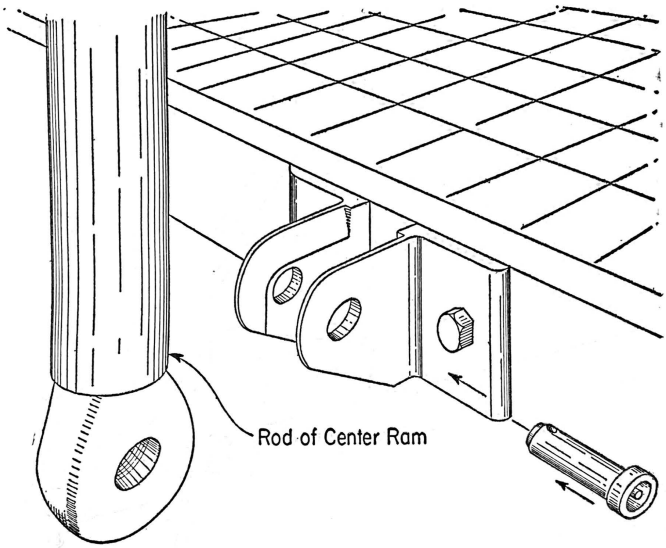


4.08 Raise the derrick until it is past the vertical position to a point where the lift rams reach the end of their travel and return the handle of the valve to the neutral position. Move the derrick very slowly as it approaches the vertical position so that there will be a minimum impact when it is stopped by the lift rams.



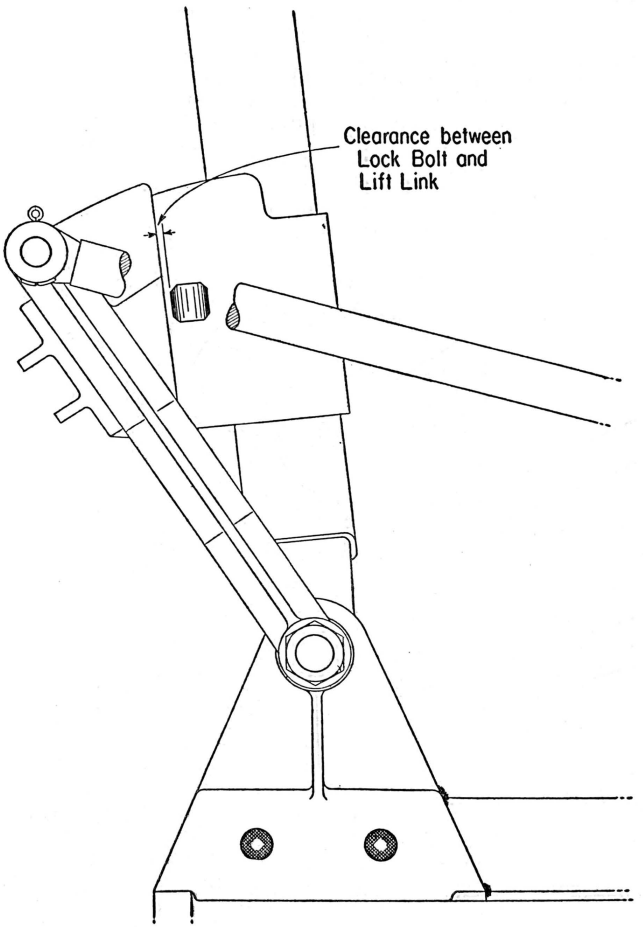
4.09 Observe that as the derrick reaches the vertical position the derrick travels ahead of the lift ram lock assembly and the derrick weight is held back by the lock bolts.

4.10 PULL on the RIGHT (WHITE) handle. This will extend the ram on the center leg. A slight increase in engine speed may facilitate this operation.



4.11 Hold the valve operated until the eye of the center ram is at the proper level to connect to the bracket on the rear bearer of the truck platform. The eye of the ram should be back of the bracket until it appears that it is approximately the correct length and then it should be pushed forward into the bracket. The rod of the ram may be rotated easily when it is in motion by using the connecting pin as a bar. The length of the ram may be adjusted to the proper length for connecting by pushing or pulling on the right-hand lever.

4.12 Connect the eye of the ram to the bracket with the connecting pin and lock the pin.



4.13 PULL slowly on the RIGHT (WHITE) handle until the derrick is raised so that the load on the lock bolts is fully released and there is clearance between the bolts and the lift link.

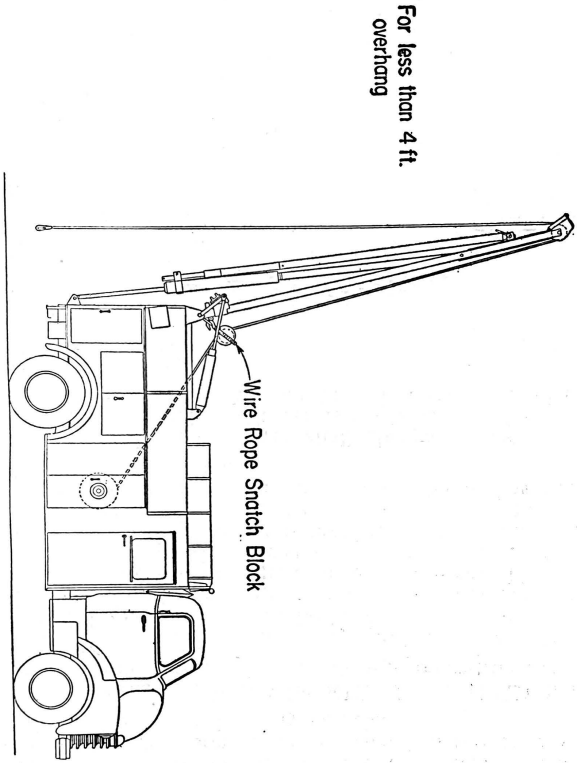
4.14 Pull on the lock control cable to fully unlock the lift locks. NEVER PULL ON THIS CABLE UNTIL THE CENTER LEG IS CONNECTED TO THE TRUCK BRACKET WITH THE CONNECTING PIN. Hold the pull on the cable and PUSH on the RIGHT (WHITE) handle to lower the derrick. As soon as the derrick has moved a short distance the pull on the cable may be released.

4.15 Continue to PUSH on the RIGHT (WHITE) handle until the derrick reaches the desired operating position.

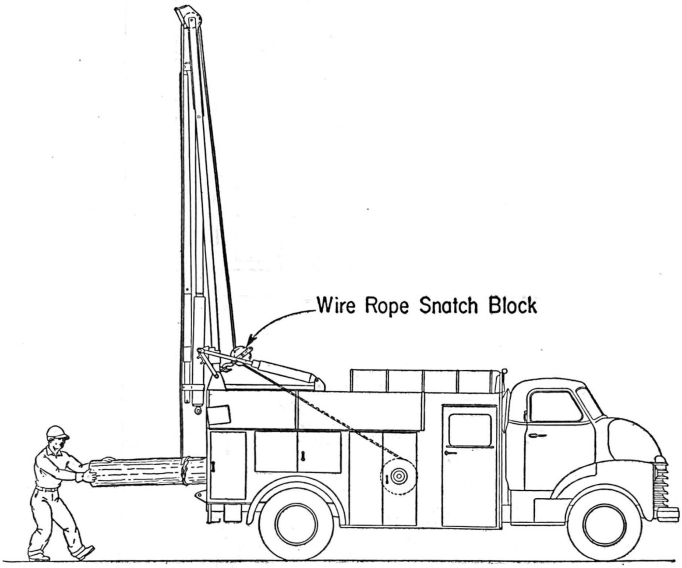
4.16 The derrick may be raised by pulling on the RIGHT (WHITE) handle or may be lowered by pushing on this handle. This valve may also be operated in a similar manner by the driver using the remote control lever in the cab. If a small movement of the boom is desired it may be necessary to slip the truck clutch so that the pump supplies a limited amount of oil since the remote control opens the hydraulic valve to its full travel. The derrick operating height may be changed while the derrick is supporting a load.

4.17 The remote control lever shall always be used to operate the boom when there is a possibility of the derrick or a pole suspended by the derrick contacting electric power wires.

5. OPERATING AT SHORT OVERHANG



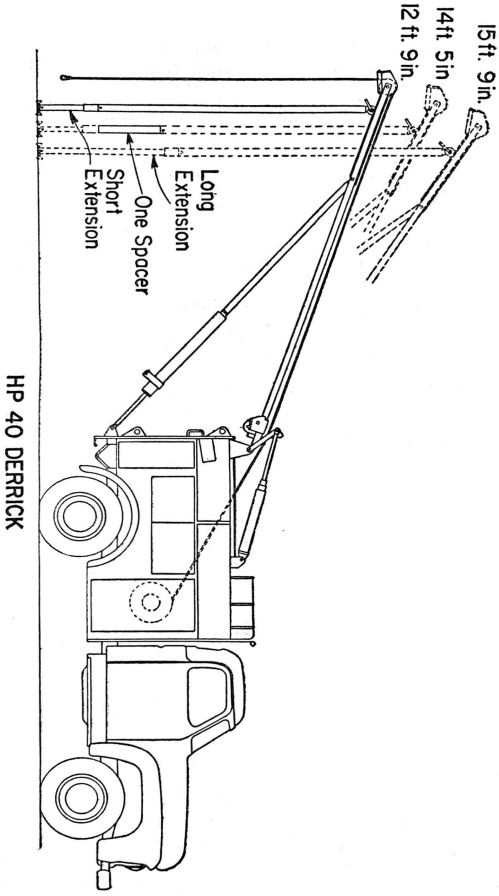
5.01 When the derrick is operated at less than a 4-foot overhang the winch line should be threaded through a block attached to the derrick cross-member so that the derrick will not be pulled back by the winch line. For this type of operation it is desirable to run the lift rams back so that they will not engage with the derrick locks.

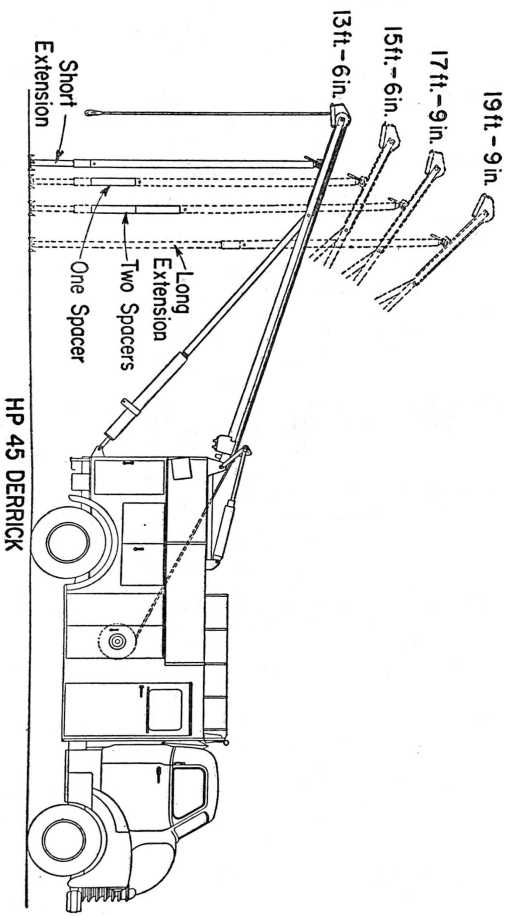


5.02 The derrick may be used in the vertical position, without the center ram being connected, to load material onto the platform of the truck. For this work if the load is over about 400 pounds the block on the cross-member should be used.

6. CHANGING TO GROUND POSITION

6.01 The derrick may be changed to the ground position by releasing the prop from the clamp holding it to the main leg, and allowing the prop to swing out to the vertical position.





6.02 The prop and prop extension are carried assembled in the position with one spacer. The prop and extension may be assembled in the other positions by removing the small bolt at the lower end of the prop and reassembling to the position required.

6.03 Place the prop ground plate on the ground and lower the derrick while guiding the prop onto the eye of the ground plate. Be sure that the ground plate rests firmly on the ground and that the prop is in a vertical position. Apply a light load on the prop by lowering the derrick.

6.04 If desired, the ground plate may be attached to the prop with a small bolt so that it can be pulled out of soft ground by raising the derrick.

7. CHANGING TO THE CARRYING POSITION

7.01 Be sure that the spindle bar is not in place at the rear of the truck in either the upper or the lower position.

7.02 PULL on the LEFT (GREEN) handle to run the lift rams out to the end of their travel or to be sure that they are at the end of their travel.

7.03 If the derrick has been operating in the ground position remove the ground plate and if necessary reassemble the prop extension to its carrying position. Push the prop back to the center leg, and attach it with the connecting pin. This may be done with the derrick at any convenient height so that the connecting pin can be easily reached.

7.04 PULL on the RIGHT (WHITE) handle to raise the derrick until the lift ram locking mechanism engages. The engagement of the lock will usually be heard and can also be observed by looking up at the square lock bolts.

7.05 Watch the connecting pin at the bracket and PUSH slowly on the RIGHT (WHITE) handle until the derrick starts to move back down as the center ram shortens. This will relieve the load on the connecting pin holding the center leg to the rear of the truck. Remove the pin.

7.06 PUSH on the RIGHT (WHITE) handle to shorten the ram of the large cylinder. When the rod has been run in to the end of its travel release the valve handle. A slight increase in engine speed may facilitate this operation.

7.07 PUSH slowly on the LEFT (GREEN) handle to lower the derrick to the carrying position. Make the derrick travel slowly as it approaches the carrying seat on the truck.

7.08 Release the handle of the valve when the derrick rests on the carrying seat.

7.09 If the winch line is to be left threaded through the derrick the line should be placed over the support sheave on the rear derrick cross-member and the eye attached to the carrying hook. The slack should be pulled up but no excessive load placed in the winch line. The carrying hook is a safety device and will be straightened out if the line is pulled too tightly.