

MOBILE DRILLING, INCORPORATED

960 N. PENNSYLVANIA ST.

INDIANAPOLIS 4, INDIANA

MODEL No.

SERIAL No.

PARTS & OPERATIONS

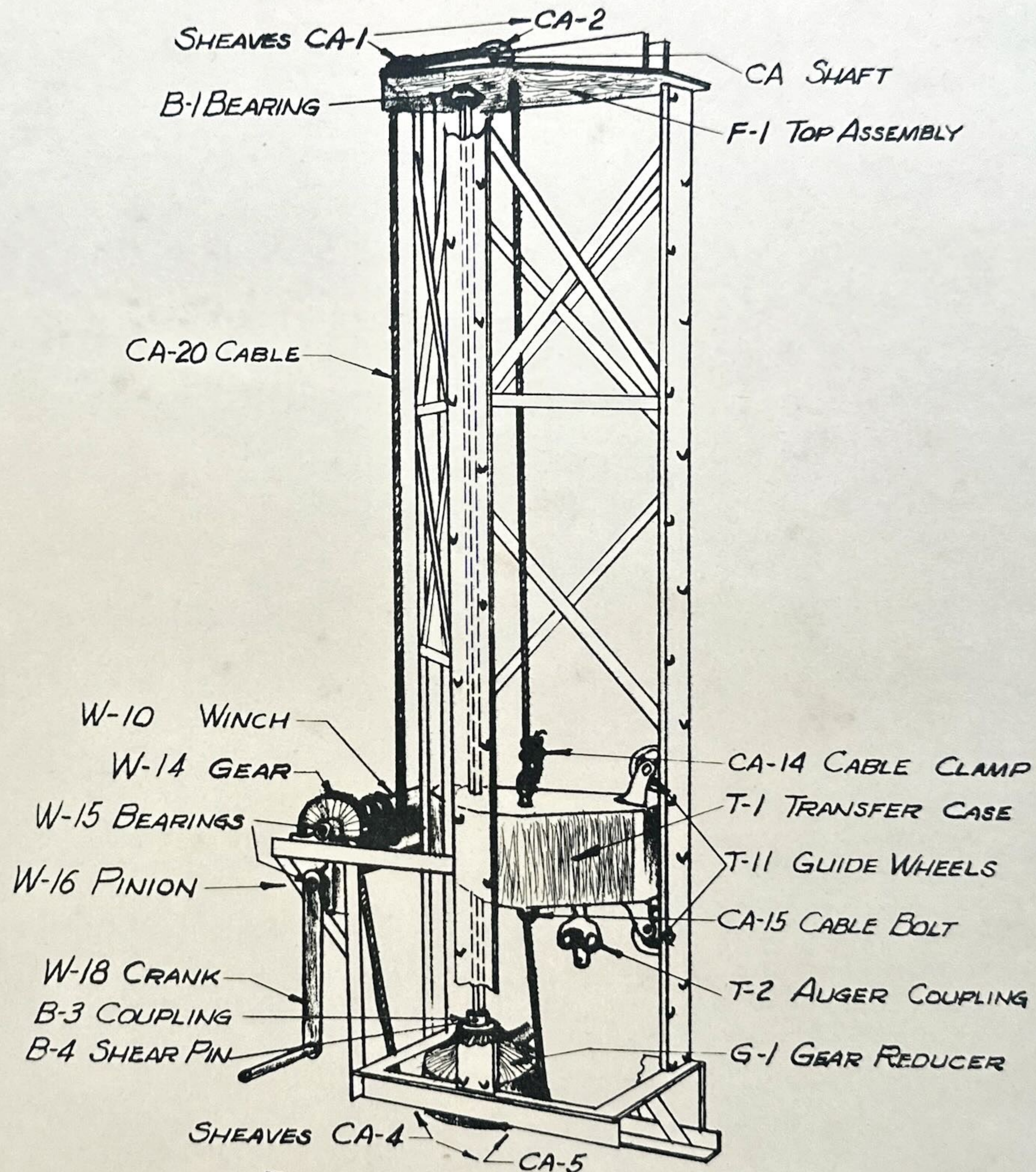
THE RIGHT
COMBINATION
for ECONOMICAL
DRILLING

WHEN

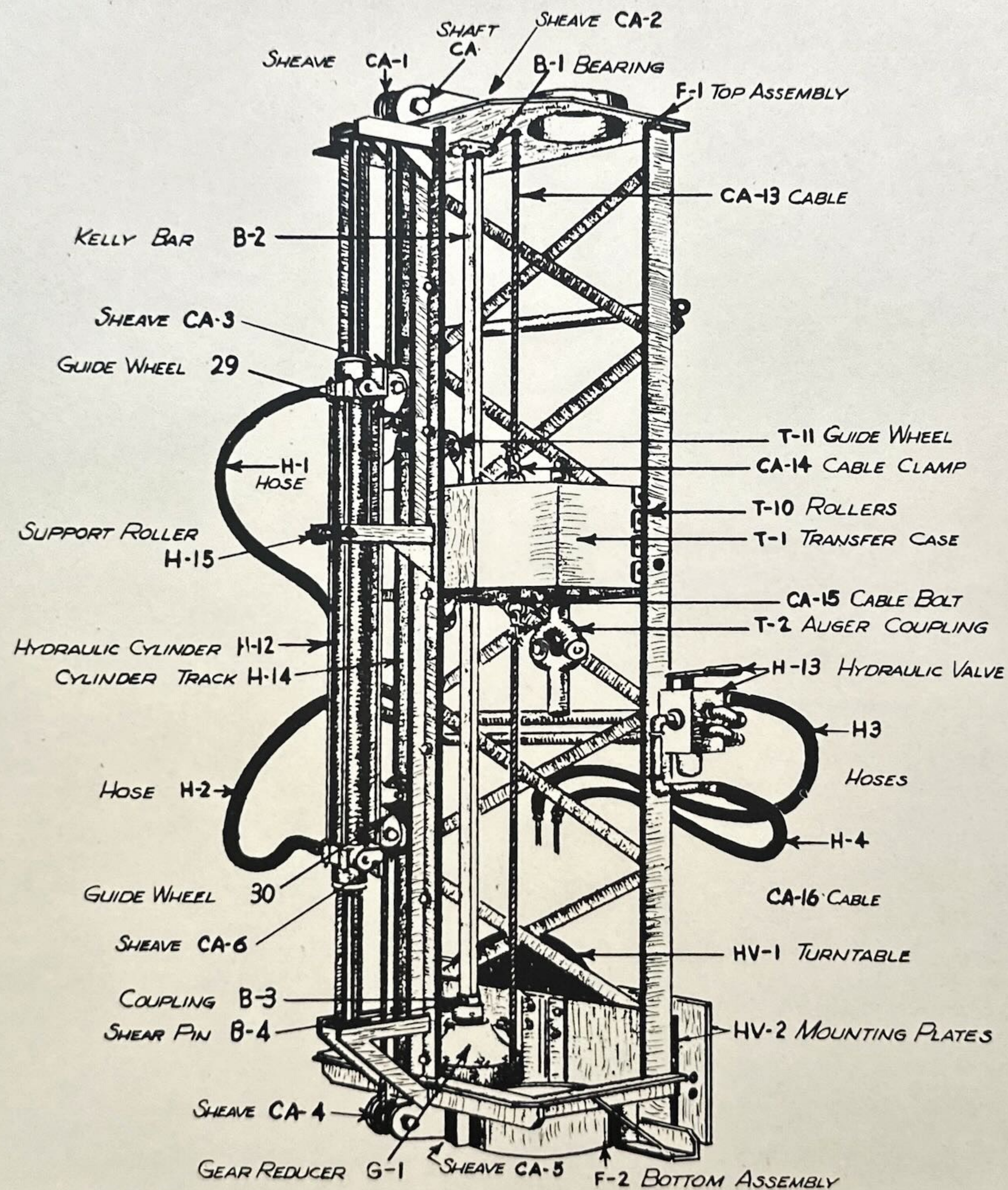
PROSPECTING FOR COAL, OIL
MINERALS, SAND, GRAVEL, CLAY

ROAD BUILDING - WATER WELLS
SOIL TESTING - POST-HOLE DIGGING





DRILLING FRAME ASSEMBLY DIAGRAM
 SHEET # 8



DRILLING FRAME ASSEMBLY DIAGRAM

OPERATING INSTRUCTIONS AND DRILLING INFORMATION

1. Always be sure the transfer case (T-1) of the drilling frame is in its lowest position when moving from one drilling location to another. This centralizes the weight. When drilling on a steep hillside it is generally necessary to level up the rig by blocking up the low side, although for most locations the universal auger coupling (T-2) compensates for sloping ground. In wooded areas it is good practice to brace the front bumper of the jeep down hill against a tree or stump. Provide over-load springs, then weight down the front end with extra sections of auger.
2. Be sure that all sectional augers are well lubricated on the connecting ends for each location.
3. Check cutting bits for excessive wear and change when welded tip is worn away.
4. Install auger guide ring (X-3) as per instructions on Tools & Fixtures sheet # 38.
5. Disengage the travel transmission.
6. From the rear of the jeep, using Mobile Controls, engage the rear P.T.O. and disengage the jeep main clutch.
7. Run transfer case (T-1) to the highest position. Attach sectional auger to universal coupling (T-2).
8. Engage the jeep main clutch and start drilling.
9. After the first five foot auger has been drilled into the earth remove the auger guide ring (X-3). Run the transfer case (T-1) to the top of the drilling frame and attach another five foot section of auger in the manner previously described. Repeat until the necessary depth of hole is reached.
10. By manipulating throttle control rope the RPM of the augers is controlled.
11. By operating the hydraulic control valve (H-13) the rate of penetration into the ground is controlled.
12. The Mobile Drill has an auger RPM of approximately 10 to 200 RPM. When cutting hard materials use the slow speeds. Soft materials can be cut at about 100 RPM. To transport materials up the auger flights do not feed the drill into the earth but hold its elevation and race the auger to about 200 RPM.
13. Silty material is sticky and does not tend to feed itself up the flights. To overcome this in heavy silts it may be necessary to remove the tools to clean the hole.

OPERATING INSTRUCTIONS AND DRILLING INFORMATION ----- Continued

14. In heavy clays the auger sometimes tends to draw the jeep towards the ground. In such cases feed the drill slowly. It may also be necessary to chock up the rear end of the jeep.
15. When moist or wet earth is encountered the drill vibrates rapidly in a rubbery manner indicating moisture.
16. To keep an accurate record of all strata encountered check each new formation both by feel and by examining the cuttings as they travel up the spiral. It is possible, depending of course upon the experience of the driller, to tell within a few inches the thickness of the various formations.
17. The auger bits cut a larger diameter hole than the auger head and auger spiral. This is calculated to provide clearance for the auger and its head. When the bits become worn this clearance is reduced with the resulting auger wear. Therefore, the bits must be inspected regularly. They may be changed as often as once per hole, dependent upon the abrasive qualities of the materials encountered. These bits will not melt----they wear off, as they are manufactured from specially analyzed high speed steels.
18. When withdrawing tools from a hole pull up a five foot section of auger and hold it with the auger retainer (X-1). Disconnect the auger from the auger coupling (T-2) and remove the five foot section. Run the transfer case down and attach to the next section. Remove auger retainer (X-1). Run the transfer case to the top of the drilling frame and repeat the process until all augers are removed.
19. When tools are lost in the hole, use the fishing tool (X-2) as described on Tools & Fixtures Diagram sheet # 38.

INSTRUCTIONS FOR CONVERTING FROM VERTICAL TO HORIZONTAL

See Horizontal Supports Diagram sheet # 21.

1. Remove the single bolt in mounting plate (HV-2) and insert a pin temporarily to hold the drilling frame.
2. Insert shoe (5) into shoe guide (6) and temporarily tighten setscrews.
3. Remove diagonal brace (2). Pull out the temporary pin from the mounting plate (HV-2) and lower the drilling frame to the horizontal position.
4. Couple support braces (2) and (3) and attach the # (2) end to bracket (4) and the # (3) end to the shoe guide (6). Couple support braces (1) and (4) and attach the # (1) end to point B on the (2) brace, and the # (4) end to shoe guide (6). These braces now form a triangle which holds the shoe guide rigid and thus prevents the drilling frame from twisting.

INSTRUCTIONS FOR CONVERTING FROM VERTICAL TO HORIZONTAL ----- (Continued)

5. Tighten turnbuckles to draw in support braces which thereby holds the drilling frame rigid.
6. Adjust the shoe (5) with setscrews which maintains correct horizontal slope of drilling frame.
7. Change universal auger coupling (T-2) from bottom to top of transfer case (T-1). See also Transfer Case Diagram sheet # 25, spline shaft (T-14).
8. The procedure is now the same as for vertical drilling.

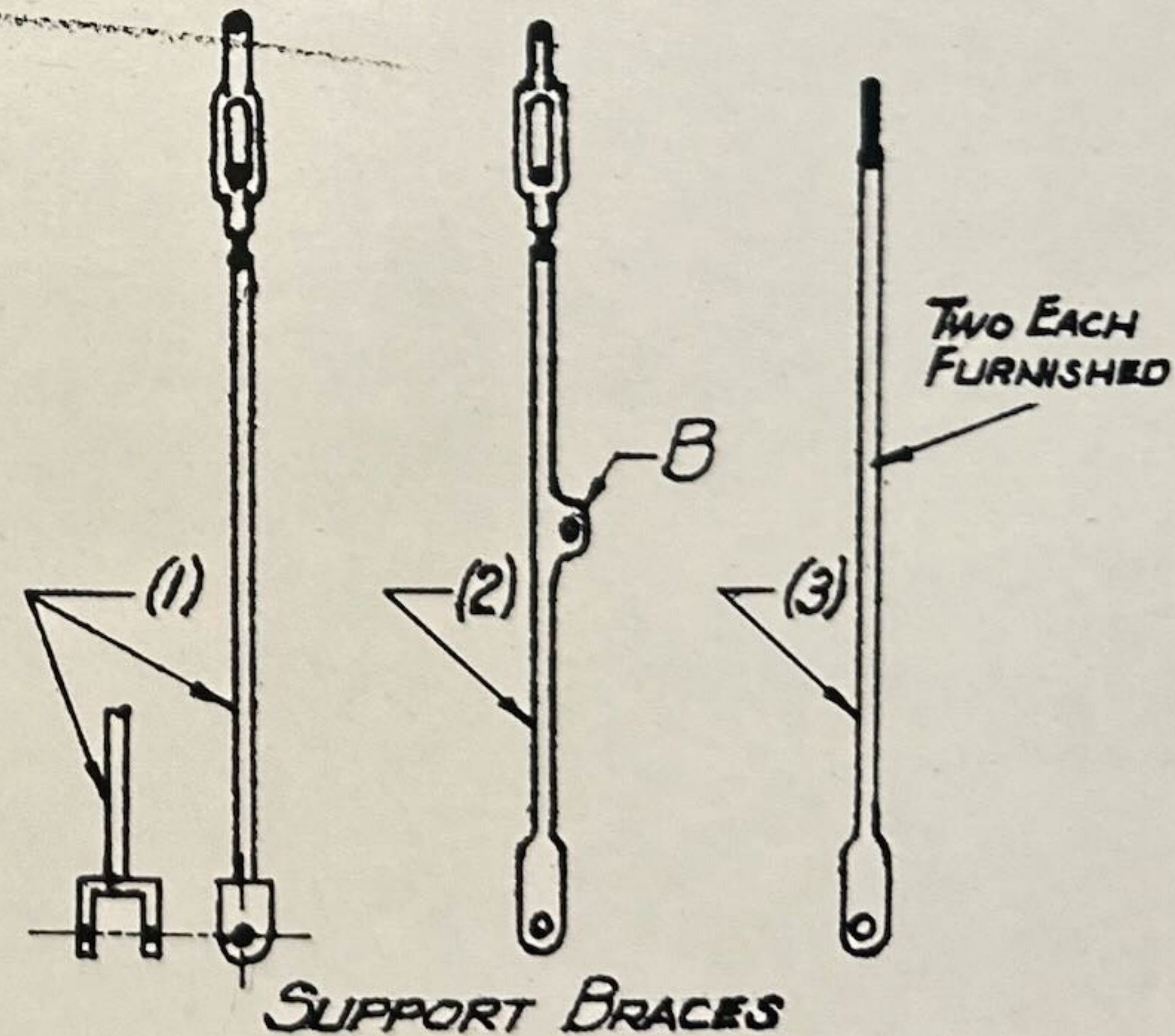
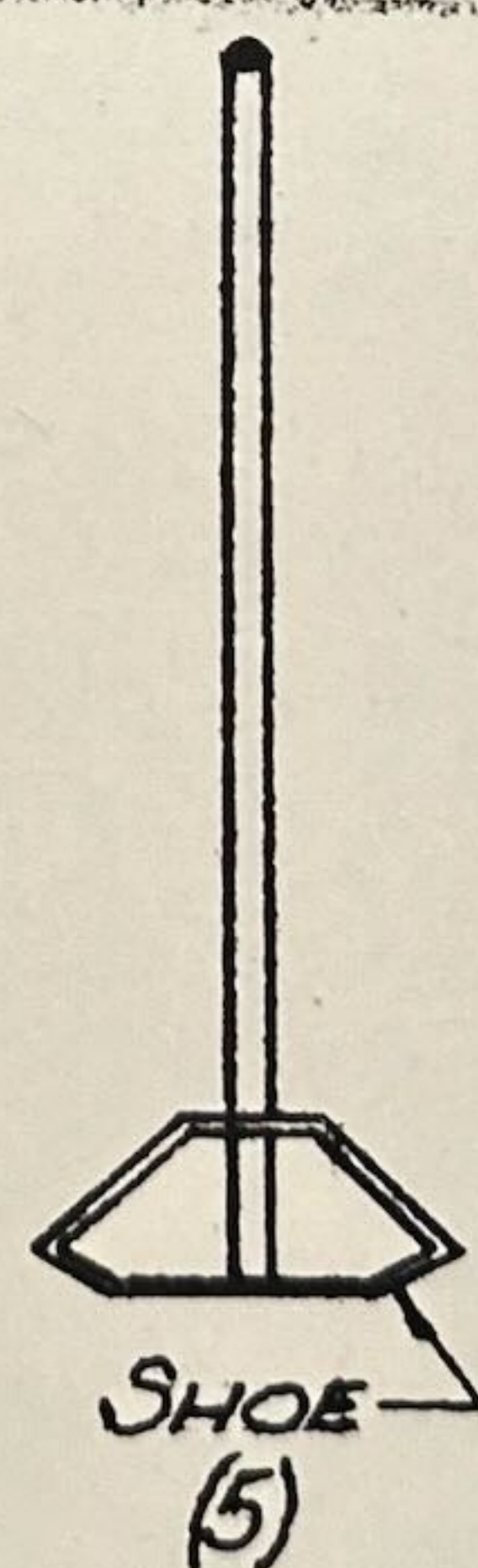
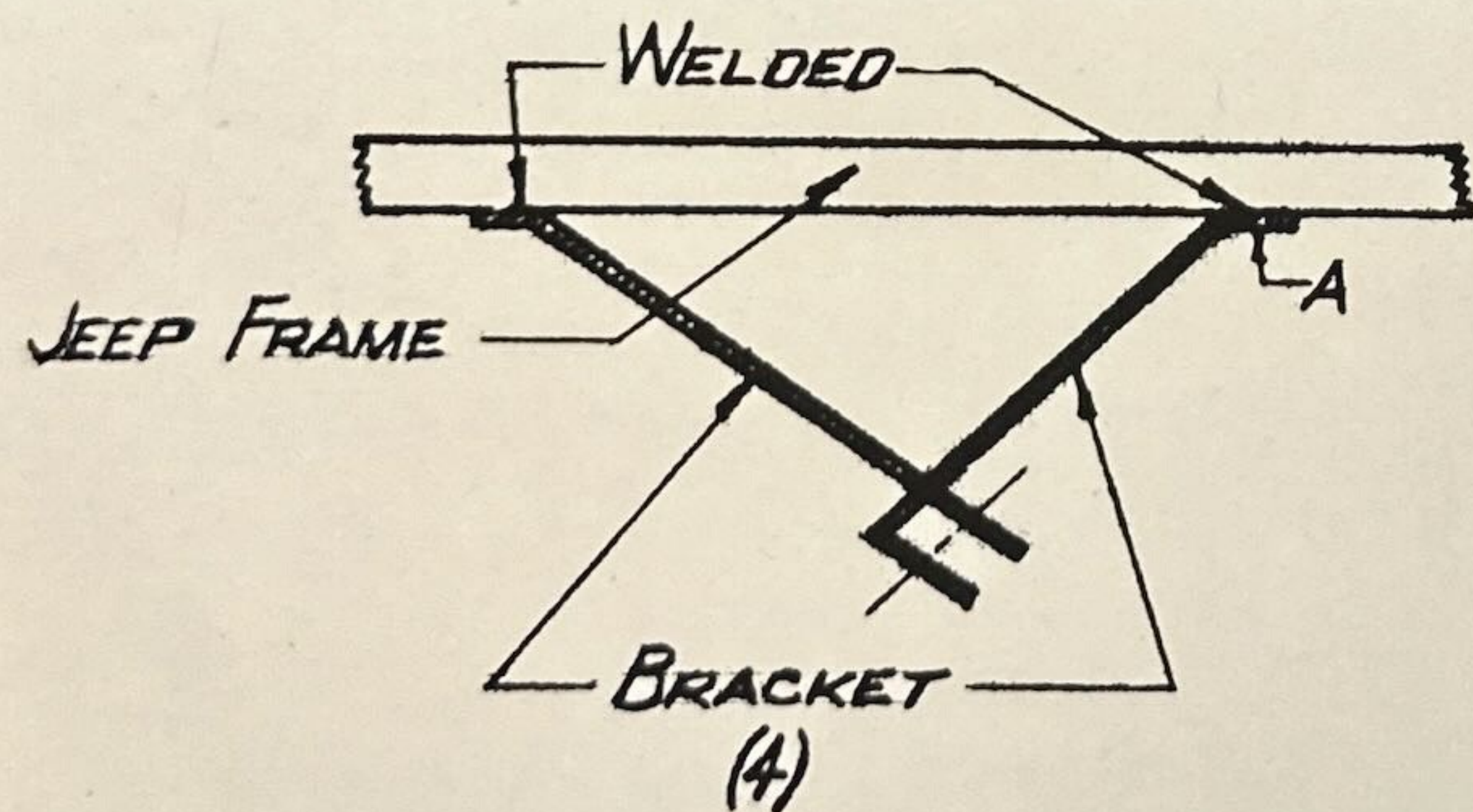
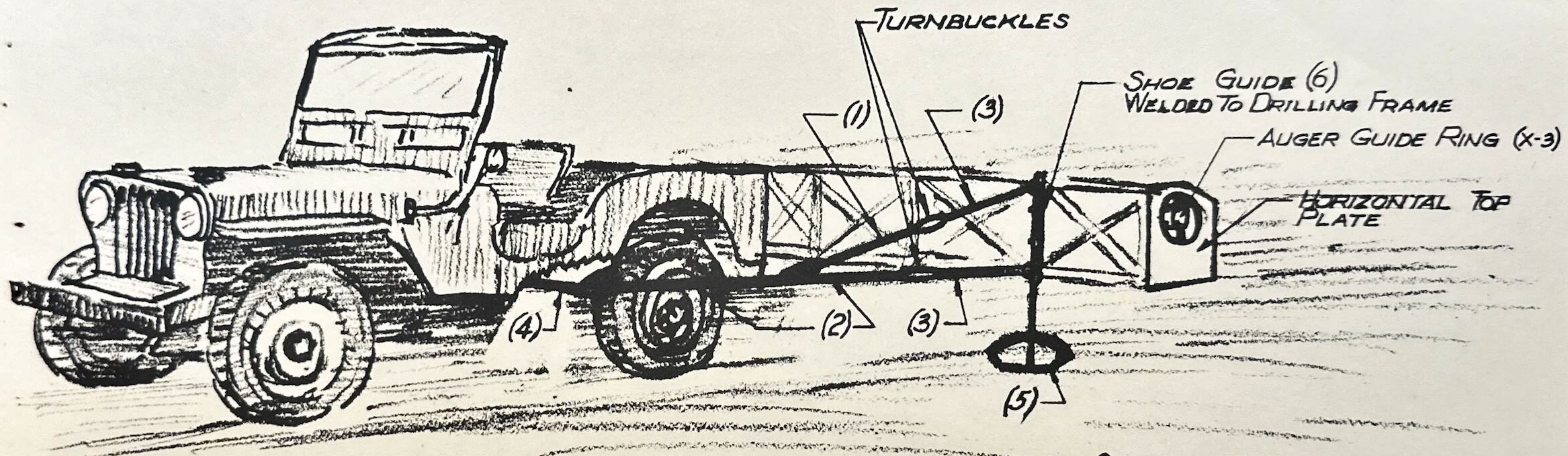
SPECIAL PARTS FOR HORIZONTAL UNITS

1. When the drilling frame is horizontal the augers drill out through the hole in the special top plate and are fastened to the opposite end of the auger drive shaft. This requires a special shaft with spline on both ends (T-14). See Transfer Case Diagram sheet # 25.
2. Since the drilling frame is set out further from the jeep by the distance occupied by the turntable and its assembly, an extra long drive shaft with spline (G-14) is furnished for coupling to the power take off. See Gear Reducer Diagram sheet # 28.
3. A special top plate (F-1) with a hole through it for auger clearance is furnished. See Drilling Frame Assembly Diagram sheet # 10 and Horizontal Supports Diagram sheet # 21.

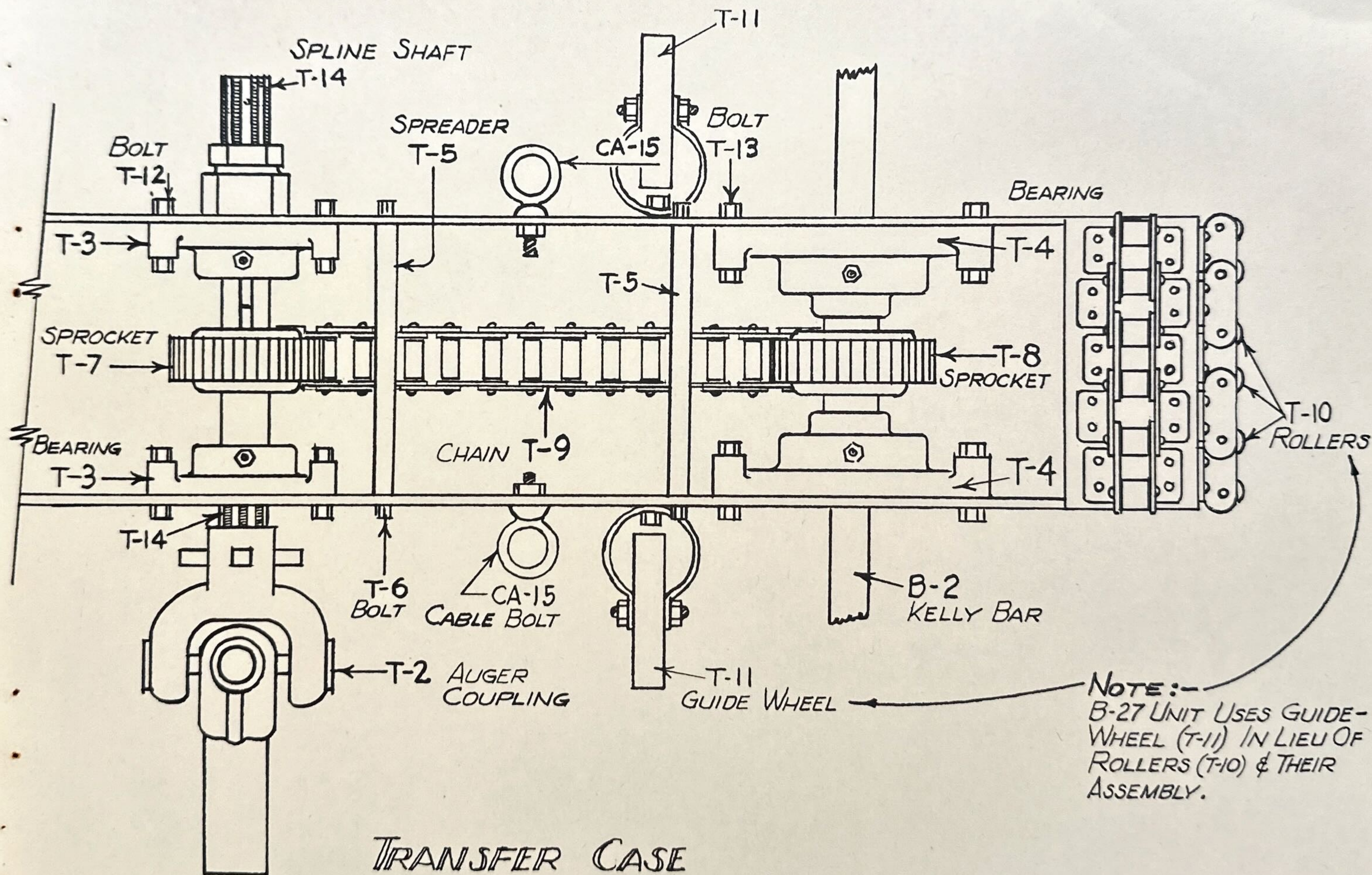
MOUNTING INSTRUCTIONS FOR VERTICAL ONLY (BOTH B-27 & B-35 UNITS)

See Mounting Diagram sheet # 32.

1. Temporarily remove tailgate.
2. Remove drawbar attachment.
3. Mount drilling frame (3) onto back of jeep by bolting through drawbar attachment bolt holes (1).
4. Fasten gear reducer (G-1) to power take off by slipping P.T.O. connecting adapter (G-16) over P.T.O. spline.
5. Attach one end of diagonal braces (2) to drilling frame (3).
6. Attach other end of diagonal braces (2) to bed (4) of jeep by drilling $\frac{1}{2}$ " diameter holes through bed (4) and frame cross-brace (5) of jeep, and insert wood block spacer (6) between bed (4) and cross-brace (5) before bolting together with connecting bolt (7).

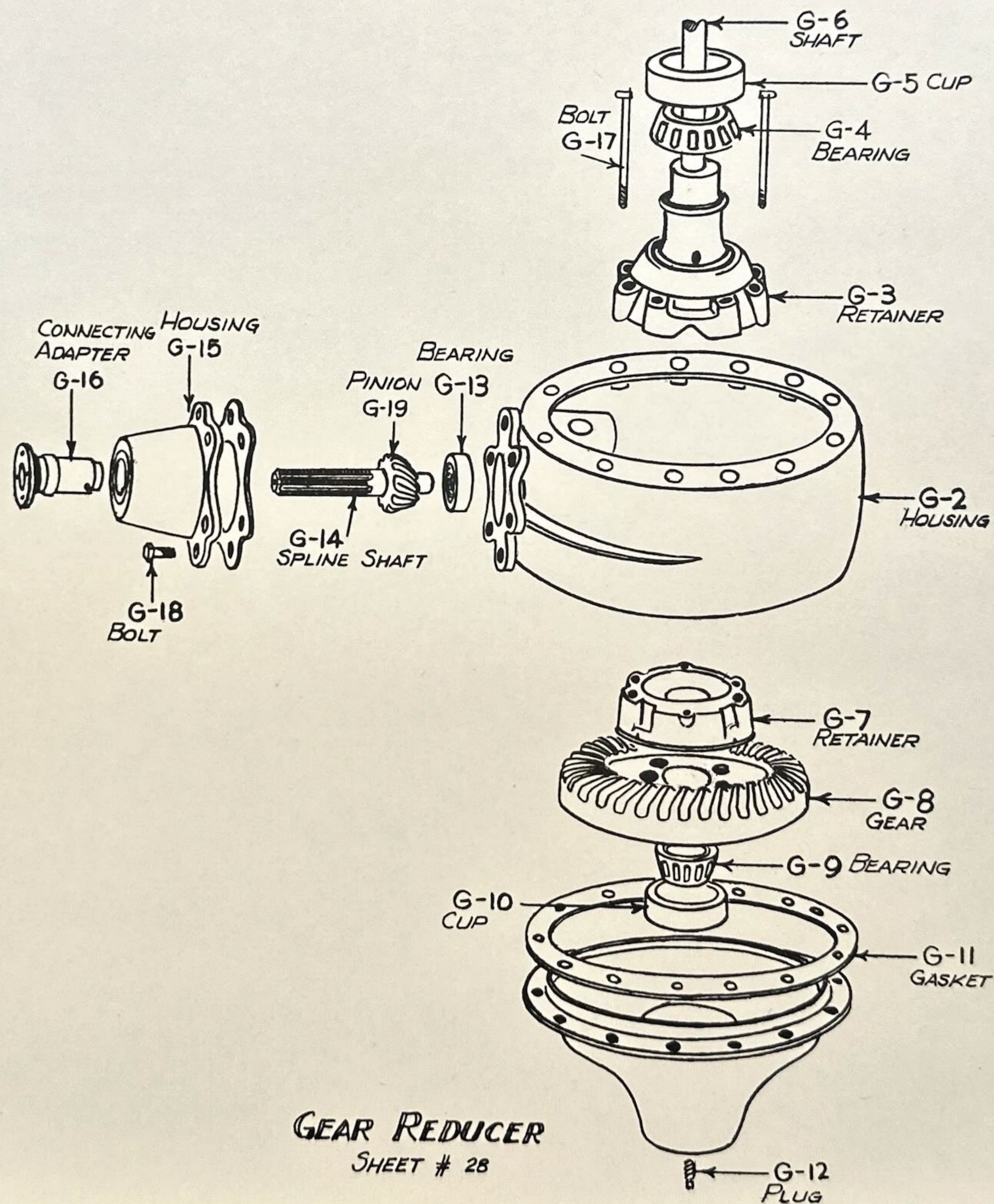


HORIZONTAL SUPPORTS
SHEET # 21

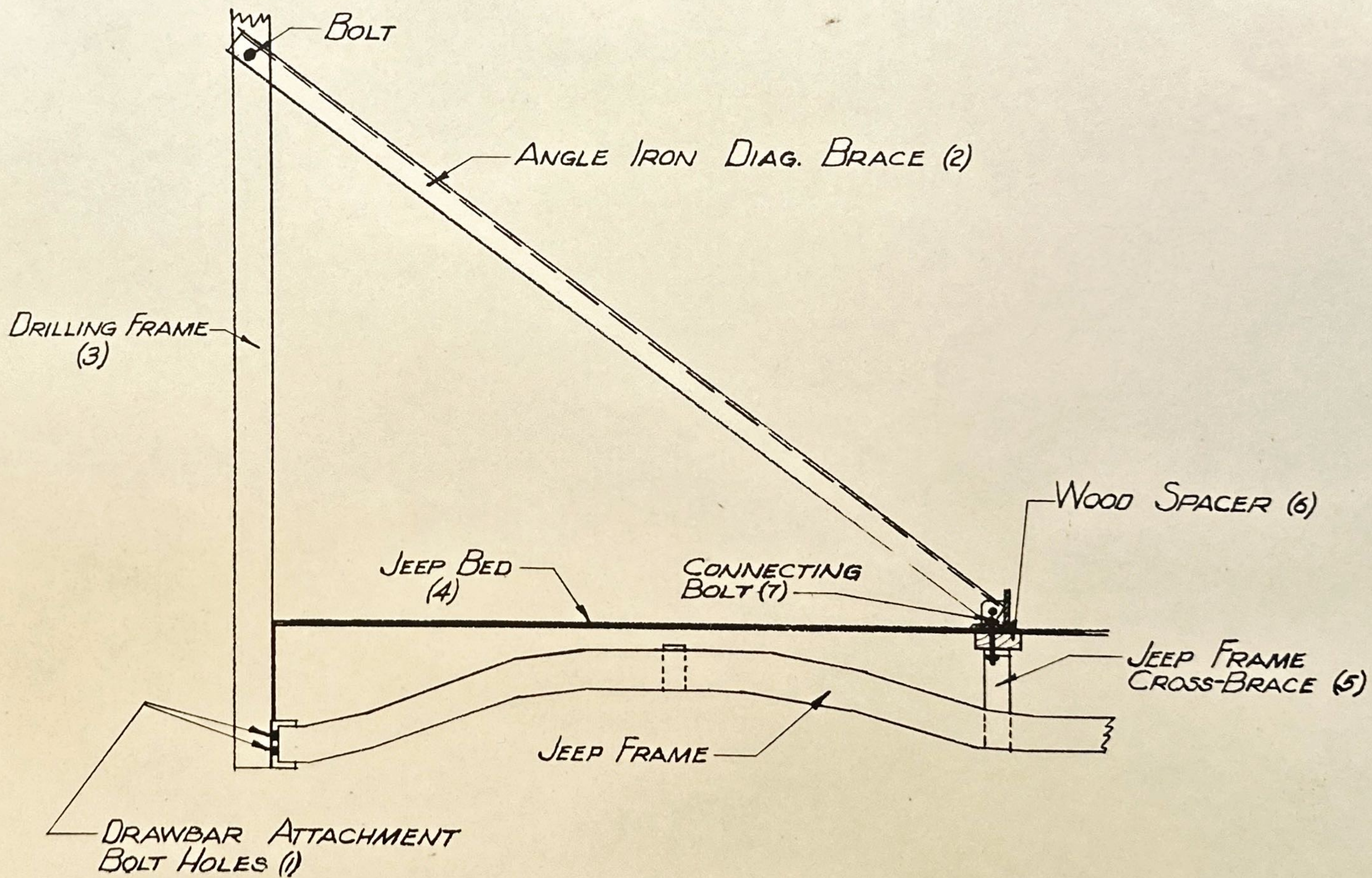


TRANSFER CASE

SHEET # 25



GEAR REDUCER
SHEET # 28

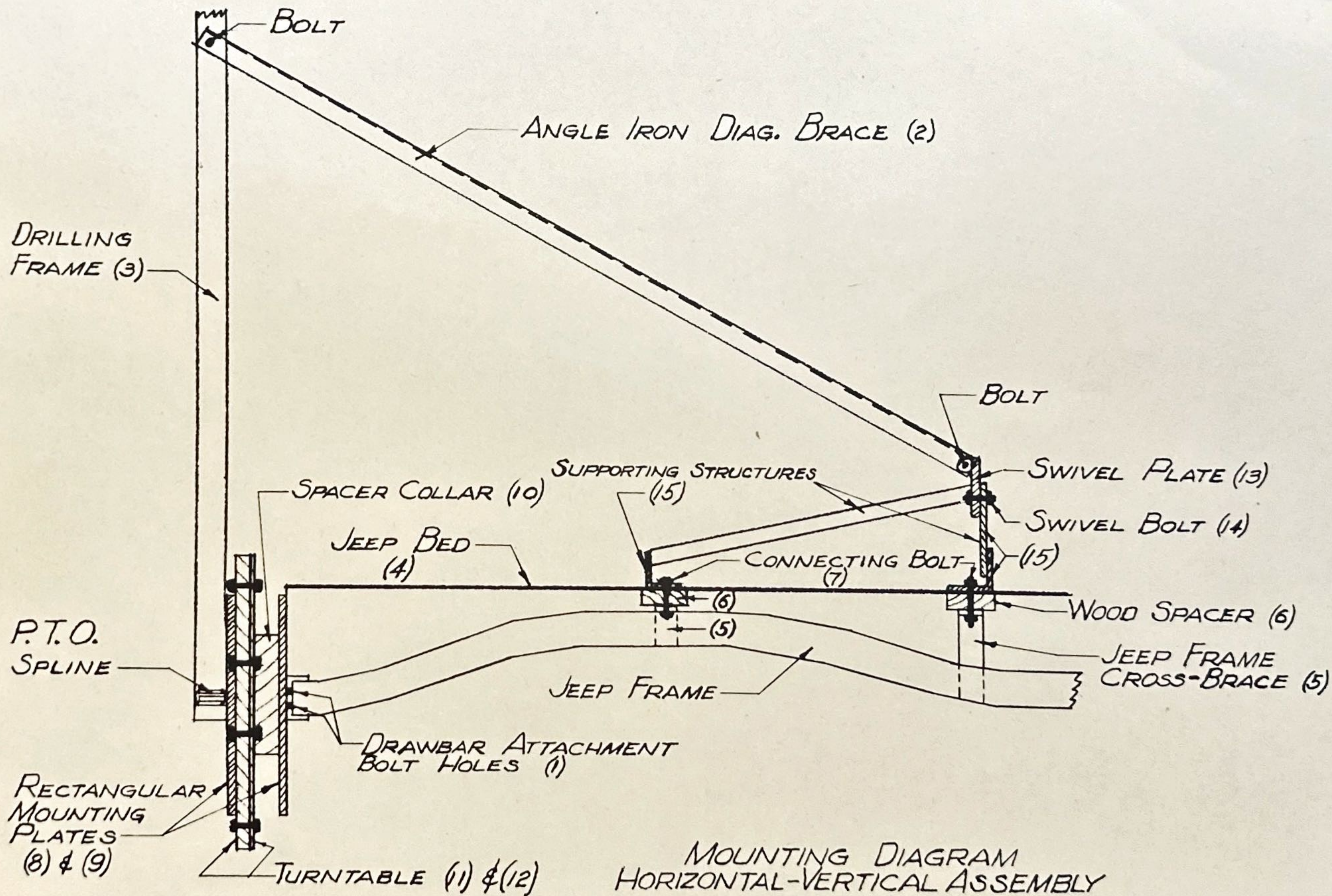


MOUNTING DIAGRAM
VERTICAL ONLY UNITS
SHEET #32

MOUNTING INSTRUCTIONS FOR HORIZONTAL-VERTICAL ASSEMBLY (BOTH B-27 & B-35 UNITS)

See Mounting Diagram Sheet # 36.

1. Temporarily remove tailgate.
2. Remove drawbar attachment.
3. Bolt to back of jeep through drawbar attachment bolt holes, the assembly comprised of the rectangular mounting plate (8), spacer collar (10) and male half of turntable (11).
4. Bolt the other assembly comprised of rectangular mounting plate (9), and female half of turntable (12) to the drilling frame (3).
5. With the drilling frame horizontal, engage the male and female halves of the turntable (11) & (12), and bolt through their faces with the 9 each allen bolts. To accomplish this, the two turntable halves must first be aligned, thus permitting the 9 each allen bolts to be inserted one at a time by rotating the drilling frame ultimately to the vertical position.
6. Fasten gear reducer (G-1) to power take off by slipping P.T.O. connecting adapter (G-16) over P.T.O. spline.
7. Attach one end of diagonal braces (2) to drilling frame (3).
8. Attach other end of diagonal braces (2) to swivel plate (13), which is pivoted at the center of the jeep about the swivel bolt (14).
9. The swivel plate (13) and its supporting structures (15) is then properly aligned. The bolt holes now can be drilled for the connecting bolts (7) through the jeep bed (4) and the jeep frame cross-brace (5).
10. Insert wood spacer (6) between bed (4) and cross-brace (5) of jeep.
11. Bolt parts together with connecting bolts (7).
12. The drilling frame is now mounted onto the jeep in a vertical position with the converting turntable and its supporting members installed. There is still the need for additional support when the frame is turned to the horizontal position. This is accomplished as explained in the section on Instructions For Converting From Vert. to Horiz. Sheet # 15. Also a bracket (4) is welded to the frame of the jeep with point A on line with the forward rear-spring shackle.

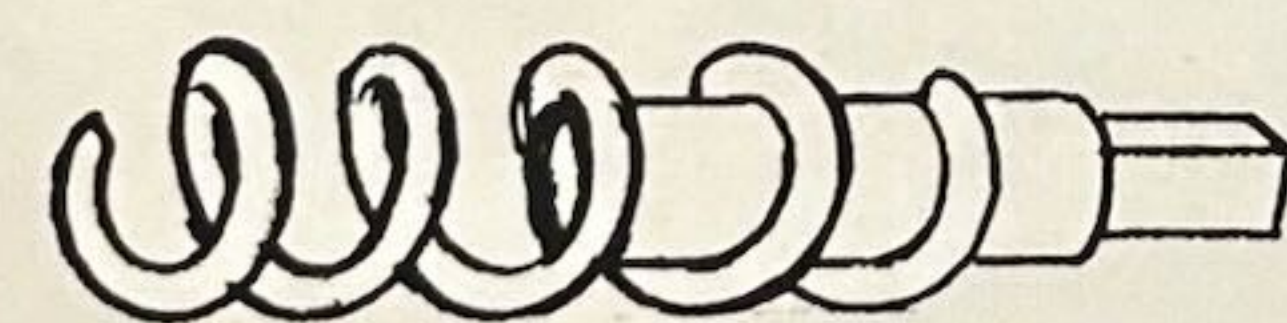


MOUNTING DIAGRAM
 HORIZONTAL-VERTICAL ASSEMBLY
 SHEET # 36

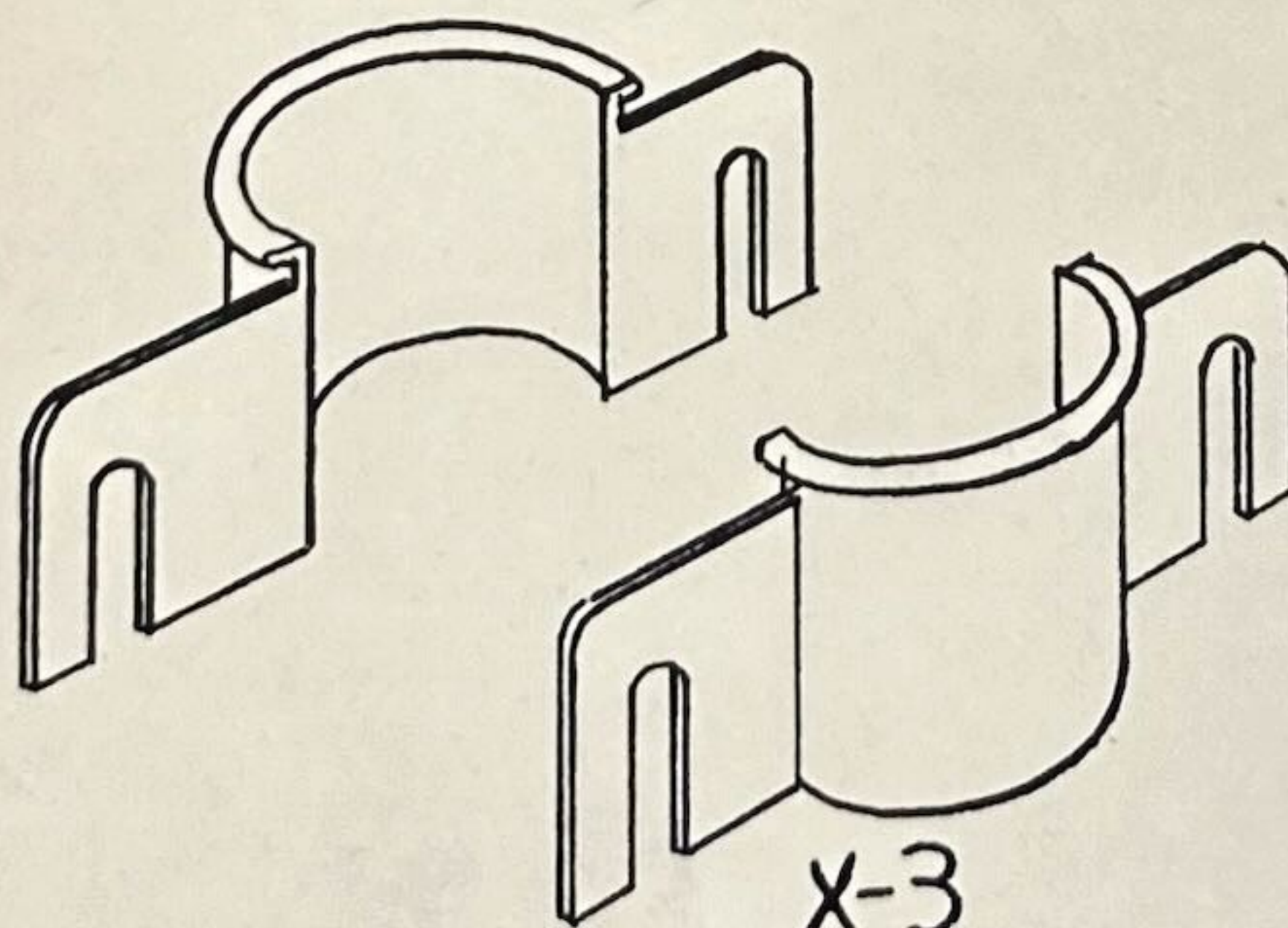
OPERATING TOOLS AND FIXTURES

There are three tools and fixtures that facilitate the process of drilling a hole.

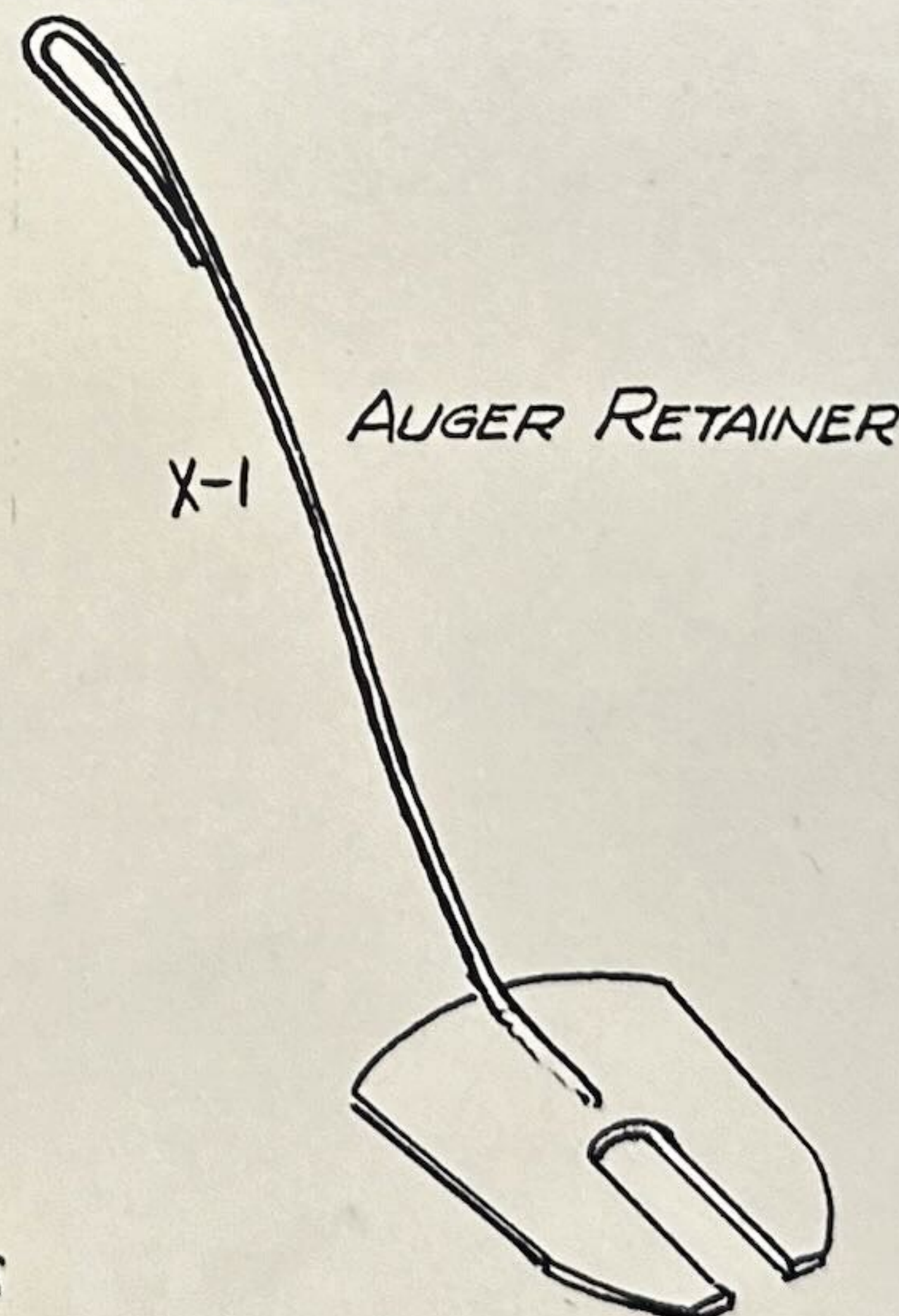
- a. An Auger Retainer (X-1) is furnished for holding the augers in an elevated position while uncoupling from the drilling frame. The auger shaft fits into the slot and the plate rests against the auger flights and on the ground at the edge of the hole thus preventing the auger from dropping back into the hole.
- b. A Fishing Tool (X-2) is supplied as a means for withdrawing an auger section which has become uncoupled in a hole. It is attached to the end of an auger and then rotated into the hole until it touches the lost section. The rotation is continued very slowly until the lost section is engaged.
- c. The Auger Guide Ring (X-3) is used as a centering support for the auger between the ground and the transfer case. (See also Drilling Frame Assembly Diagram Sheet #10 part number (F-2)). The two semicircles are placed together around the auger and are secured by engaging the slots with the circular collar on the bottom or top assembly (F-1) or (F-2) depending upon which type hole is drilled.



X-2
FISHING TOOL



X-3
AUGER GUIDE RING
TOOLS & FIXTURES
SHEET # 38



X-1
AUGER RETAINER

INSTALLING CONTROL ATTACHMENTS

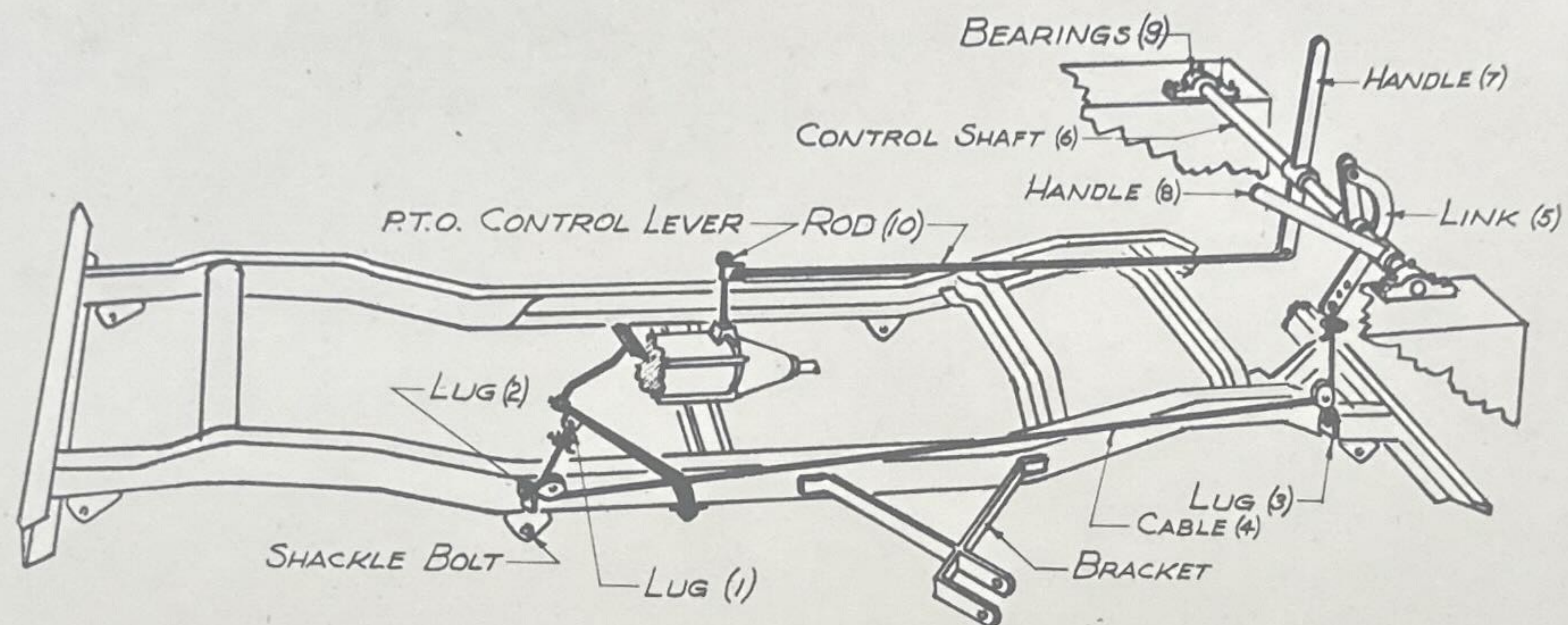
The control of both units (B-27 or B-35) during drilling, either as a horizontal or vertical unit, has been centralized at the rear of the jeep next to the drilling frame, and thus affords the operator a simple, fast method of varying the power and speed of drilling. The following attachments perform these activities. See control Diagram sheet # 45.

1. Control Shaft (6).....This shaft is mounted on bearings (9) at each end and is bolted to the rear of the jeep as shown. On this shaft are mounted the necessary handles, levers and linkages.
2. Clutch Control Attachments.....Weld Lug (1) to jeep clutch pedal as shown. Weld lug (2) to jeep frame on line with shackle bolt as shown. Weld lug (3) to jeep frame near rear end as shown. Fasten pulleys to lugs (2) and (3). Thread cable (4) through pulleys and fasten one end to lug (1) and the other end to link (5). Handle (8) operates link (5) and ultimately the clutch.
3. Power Take-off Control Attachments.....A rod (1) is supplied with a clip at one end which fits around the shaft of the P.T.O. control lever. The other end is inserted into a hole at the end of the handle (7).
4. Throttle Control Attachments.....A wire, securing rings and fastenings, with a rope are furnished. The wire is connected to the throttle rod and passed through the dashboard. The rope is then extended to the rear of the jeep and fastened at a convenient location where the operator can control the speed of augering at all times.
5. Hydraulic Auger Controls.....Mobile Drills may be equipped with a hydraulic power system for forcing the augers into the ground and then subsequently withdrawing them. The following steps and rules must be studied and followed for correct installation and usage. See Hydraulic Attachments Sheet # 47 and Control Diagram Sheet # 45.
 - a. Remove oil filter and bracket, fan, fan shroud, and voltage regulator.
 - b. Fasten pump and bracket assembly onto cylinder head studs as shown. This bracket replaces the oil filter bracket.
 - c. With tin snips, cut away fan shroud enough to clear pump pulley, and re-fasten shroud into place. The shroud may be discarded if desired.
 - d. Re-mount oil filter onto pump bracket. The oil filter hose should be run through the hole provided in the pump bracket. (In some jeep models it may be necessary to use an oil filter hose one inch longer than the hose furnished with the jeep.)
 - e. Re-mount fan using spacer and capscrews furnished as shown.
 - f. Remove double engine crankshaft pulley, and drill three 11/32" diameter holes to match the holes in the crankshaft pulley furnished.
 - g. Fasten crankshaft pulley onto engine crankshaft pulley using three capscrews and nuts furnished. The capscrew heads must be on the engine side of the resulting three-groove pulley.

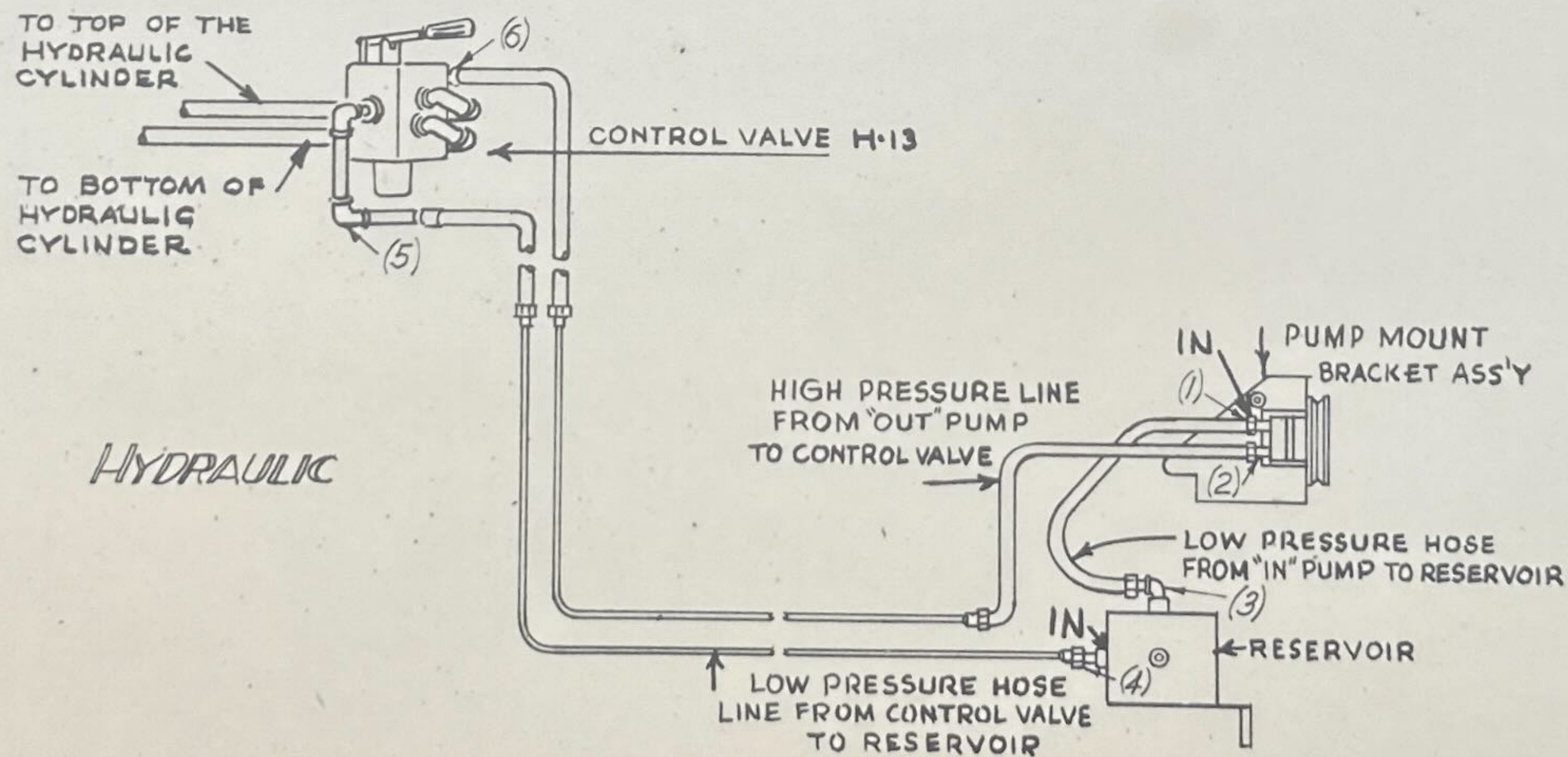
- h. Re-mount crankshaft pulley assembly.
- i. Install wood spacer blocks under front rubber bumpers on frame using screws furnished. These blocks are necessary to prevent the composite crankshaft pulley from striking the front differential housing.
- j. Screw solid end of short hose (3) into street ell on reservoir. Take hose with copper tube fastened to it and fasten tube (4) to the coupling on the reservoir.
- k. Mount the reservoir into position. Re-mount the voltage regulator onto the reservoir. Due to the variation in air cleaners, it sometimes becomes necessary to bend the air cleaner end of the reservoir bracket to properly fasten the reservoir.
- l. Take copper tube with hose at each end and connect hose (2) to "out" connection on the pump. Connect the end of the short hose (1) to the "in" connection on the pump.
- m. Take copper tube with one hose fastened to it and connect hose (5) to the valve on the drilling frame. Take copper tube with hose at each end and fasten hose (6) to valve. To secure (5) and (6), the copper tubing must be hung under the jeep and run back to the rear end where two holes must be drilled through the bed to allow passage up to the valve connections.
- n. After the entire installation has been checked, replace all engine belts and install the pump drive belt furnished.
- o. Fill the reservoir with two gallons of oil, or within two inches of the top. Use the best grade of motor oil of type used in engine.
- p. To fill the hydraulic system, start the engine and allow to idle at a minimum RPM for a few minutes. Check system for leaks.

LUBRICATION REQUIREMENTS

- 1. Fill Gear Reducer with #600 lubrication.
- 2. Lubricate kelly-bar daily with thin cup grease.
- 3. Use Alemite grease in all Alemite bearings.
- 4. Oil roller chain every 500 hours of operation.
- 5. Until used approximately 100 hours, drill and auger will be tight so grease rollers, tracks, wheels and hex on auger sections frequently until unit is worn in.



CONTROL DIAGRAMS



MOBILE DRILLING, INC. - 960 N. PENNSYLVANIA STREET - INDIANAPOLIS, IND.

PARTS PRICE LISTS

DRILLING FRAME ASSEMBLY
SHEETS #8 AND #10

	Unit Price
CA-1 Sheave	\$ 4.50
CA-2 "	4.50
CA-3 "	5.50
CA-4 "	4.50
CA-5 "	4.50
CA-6 "	5.50
CA Shaft	.60
CA-14 Cable Clamp	.50
CA-15 " Bolt	1.25
CA-16 Cable	4.50
CA-20 "	12.00
H-1 Hose Assembly	9.20
H-2 " "	8.00
H-3 " " (vertical)	5.30
H-4 " " "	5.30
H-3 " " (horizontal-vertical)	9.20
H-4 " " "	7.40
H-12 Hyd. Cylinder	225.00
H-13 " Valve	62.00
H-14 Cylinder Track	24.00
H-15 Support Roller	14.50
H-20 Hydraulic Leathers	2.70
H-21 " Rod Rings (drills prior to serial #885)	1.70
H-21 Packing Assembly (for serial #885 & later)	1.80
HV-1 Turn Table	285.00
HV-2 Mounting Plate	60.00
G-1 Gear Reducer Complete	215.00
#29 Guide Wheel	8.60
#30 " "	8.60
B-1 Bearing	12.00
B-2 Kelly Bar	37.50
B-3 Coupling	18.50
B-4 Shear Pin	.80
F-1 Top Assembly	115.00
F-2 Bottom "	185.00
T-1 Transfer case for B-35	375.00
T-1 " " " B-27	325.00
T-2 Auger Coupling	32.50
T-10 Roller Assembly	12.00
T-11 Guide Wheel	8.60
W-10 Winch	28.00
W-14 Gear	18.25
W-15 Bearing	3.50
W-16 Pinion	4.50
W-18 Crank	1.25

MOBILE DRILLING, INC. - 960 N. PENNSYLVANIA STREET - INDIANAPOLIS

PARTS PRICE LIST

TOOLS AND FIXTURES
SHEET #38

	Unit Price
X-1 Auger Retainer	\$12.00
X-2 Fishing Tool	28.00
X-3 Guide Ring	12.00
Auger carrier for front of vehicle	12.00

HYDRAULIC ASSEMBLY
SHEET #45

Hydraulic Pump	41.00
" " Assembly including brackets and pulleys	62.00
Hydraulic Pump Pulley	10.50
" Crank Shaft Pulley	6.50
" Reservoir	22.00
Drive Belt	2.25
Drive Pins for Hydraulic Pump Pulley	1.00
Set screws	.80
High Pressure Hydraulic Hose	8.00
Low " "	5.30
H-13 Control Valve	62.00

HEXANSPEED COUPLING
REPLACEMENT PARTS

For 13/16" Hexagon Shanks	
MD0375 Assembly complete	1.30
#234 Coupling Pin	.68
#236 Spring	.14
#232 Screw	.32
For 1-1/8" Hexagon Shank	
MD 0500 Assembly Complete	1.40
#415 Pin	.74
#416 Spring	.18
#232 Screw	.32
For 1-5/8" Hexagon Shank	
MD 0625 Assembly Complete	1.66
#404 Pin	.84
#406 Spring	.22
#402 Screw	.40

MOBILE DRILLING, INC. - 960 N. PENNSYLVANIA STREET - INDIANAPOLIS, IND.

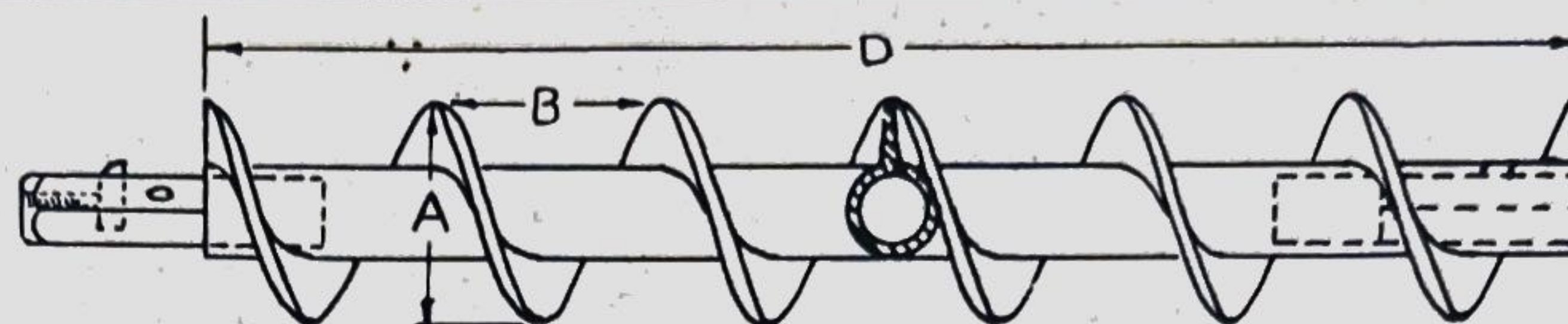
PARTS PRICE LIST

TRANSFER CASE
SHEET #25

	<u>Unit Price</u>
T-2 Auger Coupling	\$32.50
T-3 Bearing	13.50
T-4 Bearing	18.50
T-5 Spreader	3.00
T-6 Bolt	4.50
T-7 Sprocket	22.00
T-8 "	26.60
T-9 Chain	16.00
T-10 Rollers	12.00
T-11 Guide Wheel	8.60
T-12 Bolt	.75
T-13 Bolt	.80
T-14 Spline Shaft	27.50
B-2 Kelly Bar	37.50
CA-15 Cable Bolt	1.25

GEAR REDUCER
SHEET #28

G-2 Housing	42.00	
G-3 Retainer	28.00	
G-4 Bearing	6.30	
G-5 Cup	3.70	
G-6 Shaft	6.00	
G-7 Retainer	12.75	
G-8 Gear	}	60.00
G-14 Spline Shaft		
G-19 Pinion		
G-9 Bearing		6.30
G-10 Cup		3.70
G-11 Gasket		.15
G-12 Plug		.30
G-13 Bearing		2.75
G-15 Housing		7.50
G-16 Adaptor		12.00
G-17 Bolt		.75
G-18 "		.35



AUGERS

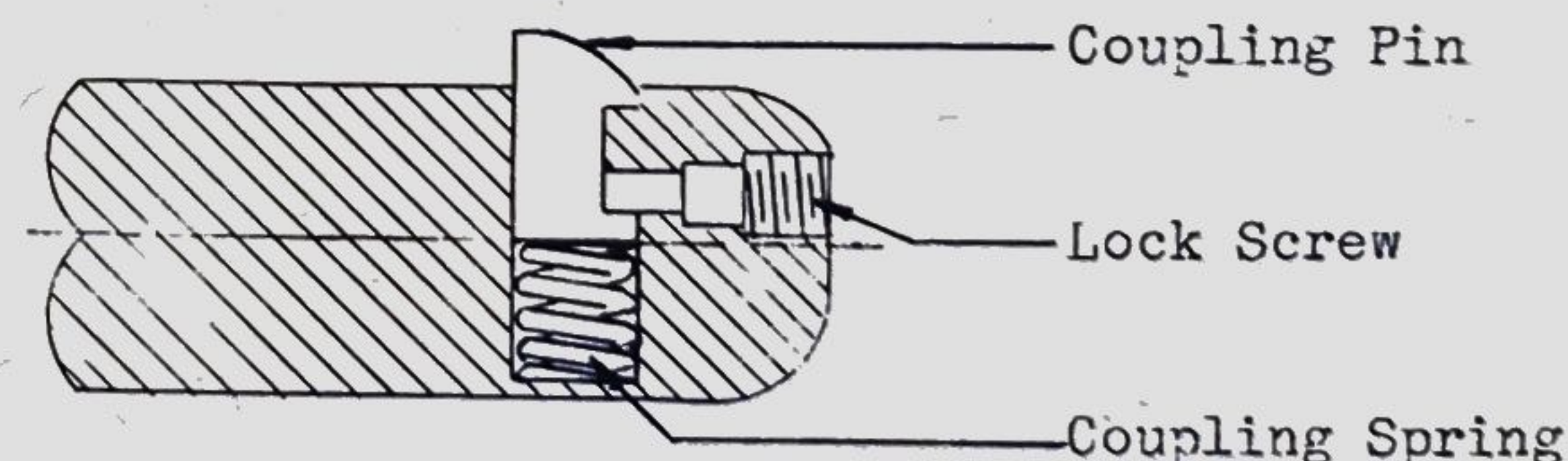
Hole Size	Auger Number	"A" Dia.	"B" Pitch	"D" Length	Coupling Size
3"	MD 271125	2 5/8"	2"	5 Ft.	13/16" Hex
3 1/2"	MD 91500	3 1/4"	3"	5 Ft.	1 1/8" Hex
4 1/2"	MD 121500	4"	3"	5 Ft.	1 1/8" Hex
5"	MD 211500	4 1/2"	4"	5 Ft.	1 1/8" Hex
6"	MD 161500	5 1/2"	5"	5 Ft.	1 1/8" Hex
7"	MD 112000	6"	5"	5 Ft.	1 5/8" Hex
8"	MD 102000	7"	7"	5 Ft.	1 5/8" Hex
9"	MD 232875	7 7/8"	7"	5 Ft.	1 5/8" Hex
10"	MD 122875	8 7/8"	8"	5 Ft.	1 5/8" Hex

Mobile sectional conveyor augers are constructed on high tensile alloy steel tubing. Light weight and rigidity, plus an extra margin of torsional safety is built into each matched set assembly. The semi-concaved flights spiral with uniform pitch and are automatically welded to the tubular core. This design provides maximum conveyance with minimum clogging and flight drag. Auger shanks and sockets are machined to exact dimensions for concentric alignment. They are heat-treated to proper physical properties to endure the strain and wear encountered. The locking device, Hexanspeed Assembly, is an automatic, smooth working coupling which reduces auger changing time to a minimum.

HEXANSPEED ASSEMBLY

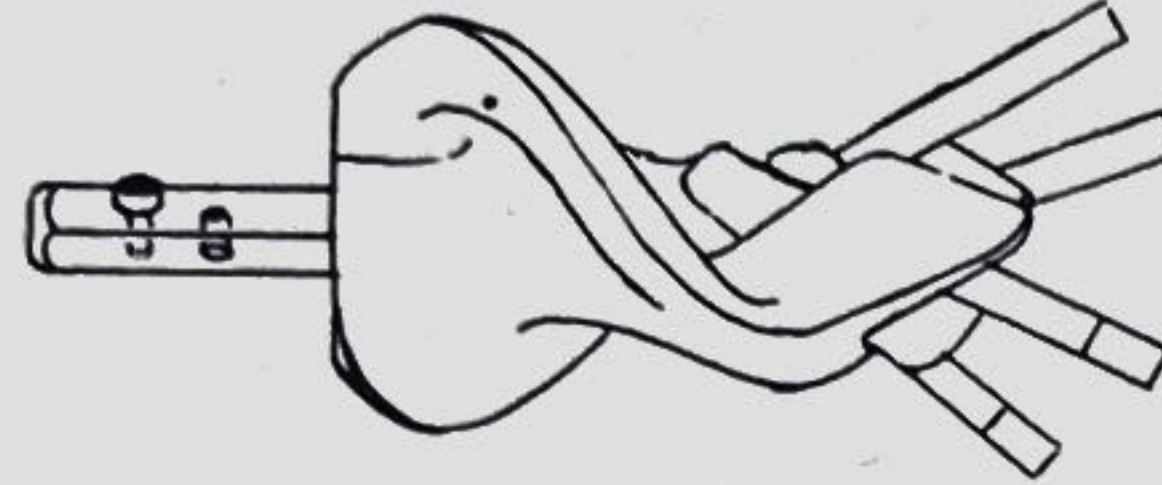
This coupling is used on all Hex shanks for coupling augers and auger heads together. Parts are heat-treated to stand up under heavy duty operation. There are three sizes as follows:

Hexanspeed No.	Shank Hex Size
MD 0375	13/16"
MD 0500	1 1/8"
MD 0625	1 5/8"



HEADS

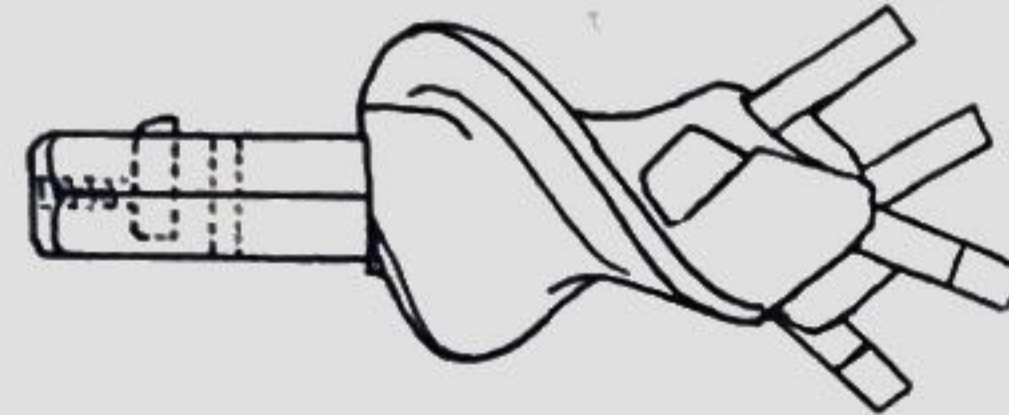
MOBILE Drill Heads are alloy steel castings, heat-treated to uniform hardness to stand up under heavy duty operation. Spirals are hard surfaced for extra resistance to abrasion. Wedges hold the bits secure in a staggered position for faster cutting action; longer bit life.



Head Number MD 301B46

Requires (4) bits $1/4"$ x $5/16"$ x $2 1/4"$
and (2) wedges. Shank hex $13/16"$.

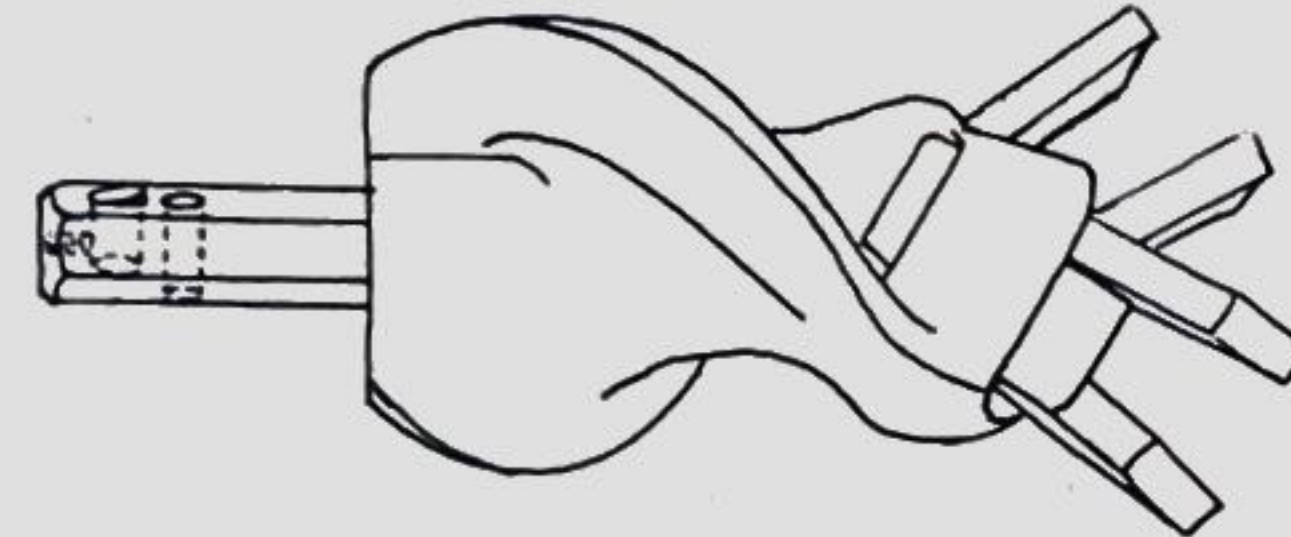
Hole Size	Bit No.	Wedge No.
3"	MD 58	8-S



Head Number MD 24C69

Requires (4) bits $3/8"$ x $3/8"$ x $2 5/8"$
and (2) wedges. Shank hex $1 1/8"$.

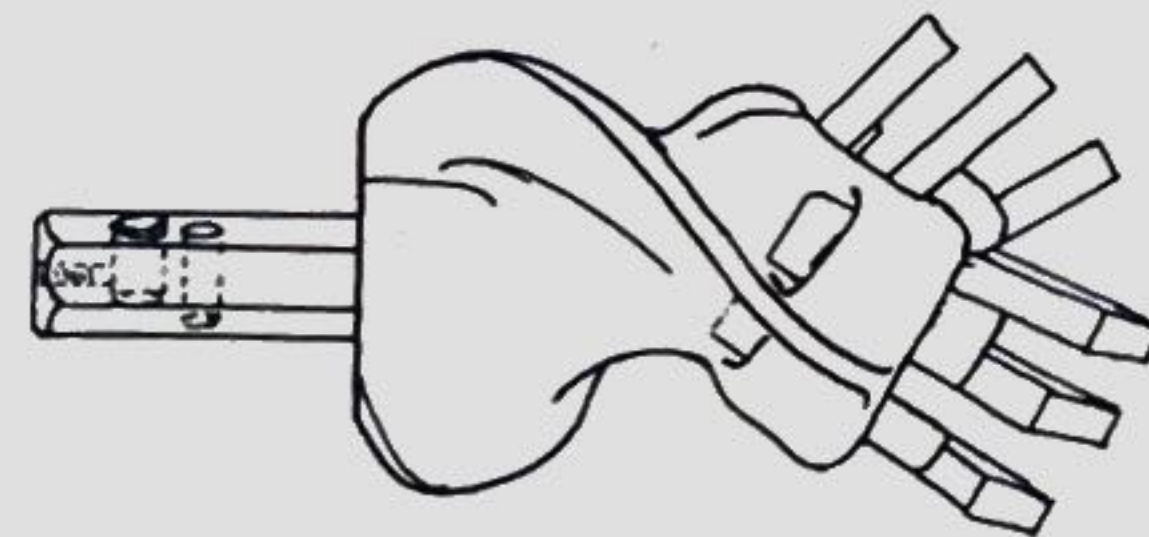
Hole Size	Bit No.	Wedge No.
$3 1/2"$	MD 95FB	24



Head Number MD 33C75

Requires (4) bits $1/2"$ x $1/2"$ x $2 3/4"$
and (2) wedges. Shank hex $1 1/8"$.

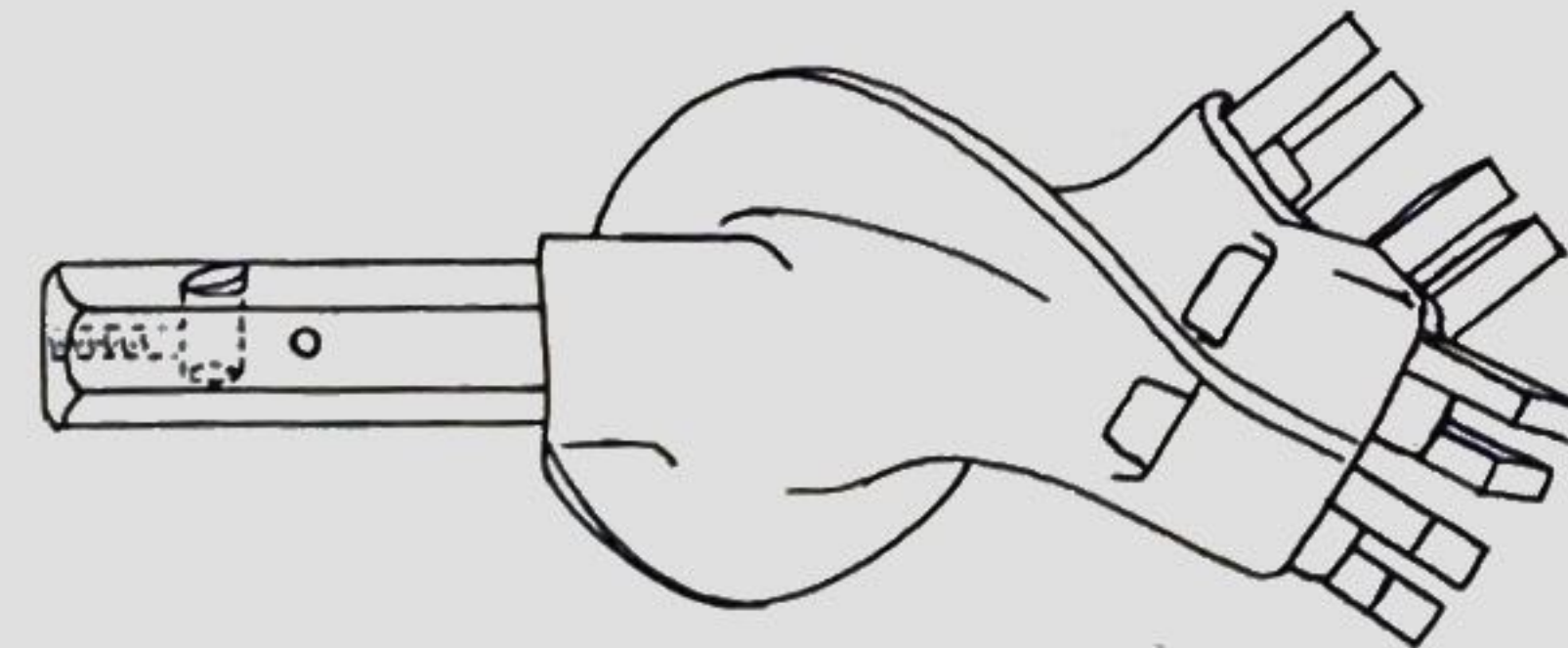
Hole Size	Bit No.	Wedge No.
$4 1/2"$	MD 95FB	33



Head Number MD 31C69

Requires (6) bits $3/8"$ x $3/8"$ x $2 5/8"$
and (4) wedges. Shank hex $1 1/8"$.

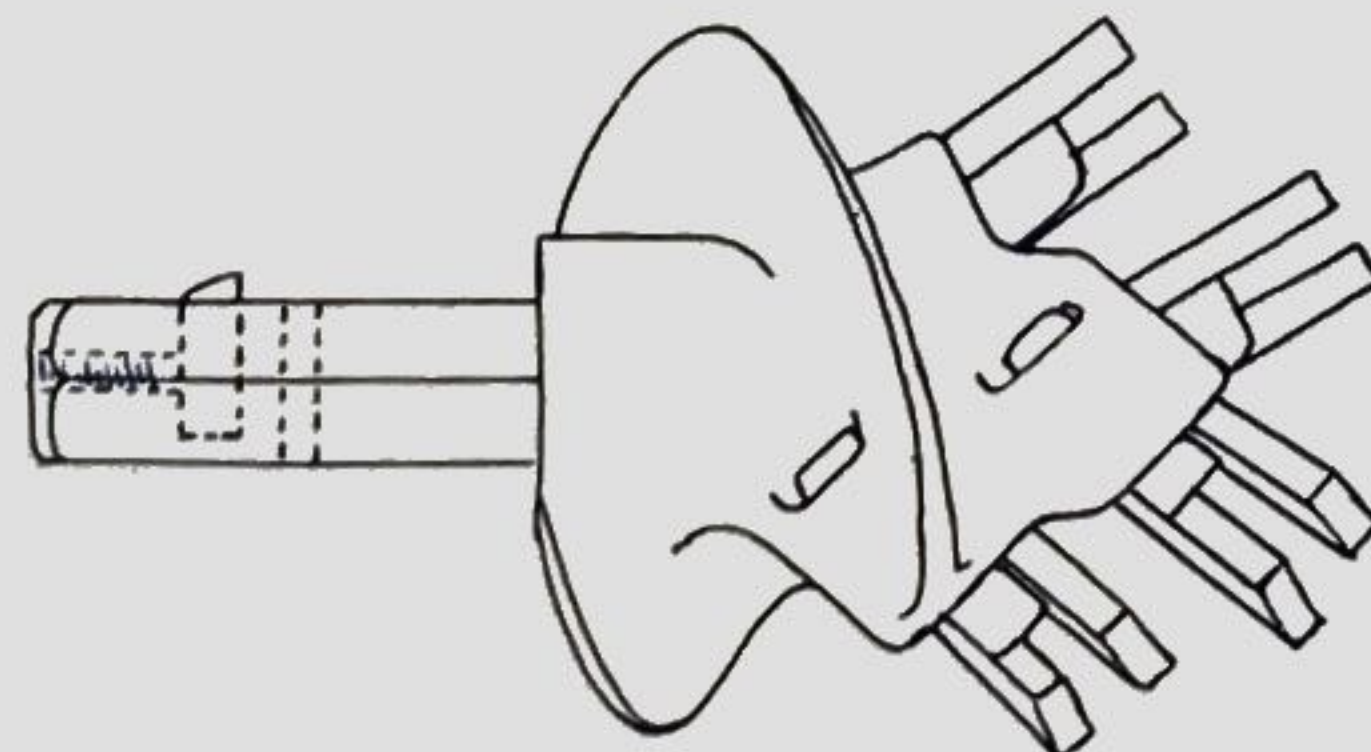
Hole Size	Bit No.	Wedge No.
$4 1/2"$	MD 95FB	3 and 14



Head Number MD 35C69

Requires (8) bits $3/8"$ x $3/8"$ x $2 5/8"$
and (4) wedges. Shank hex $1 1/8"$.

Hole Size	Bit No.	Wedge No.
5"	MD 95FB	14

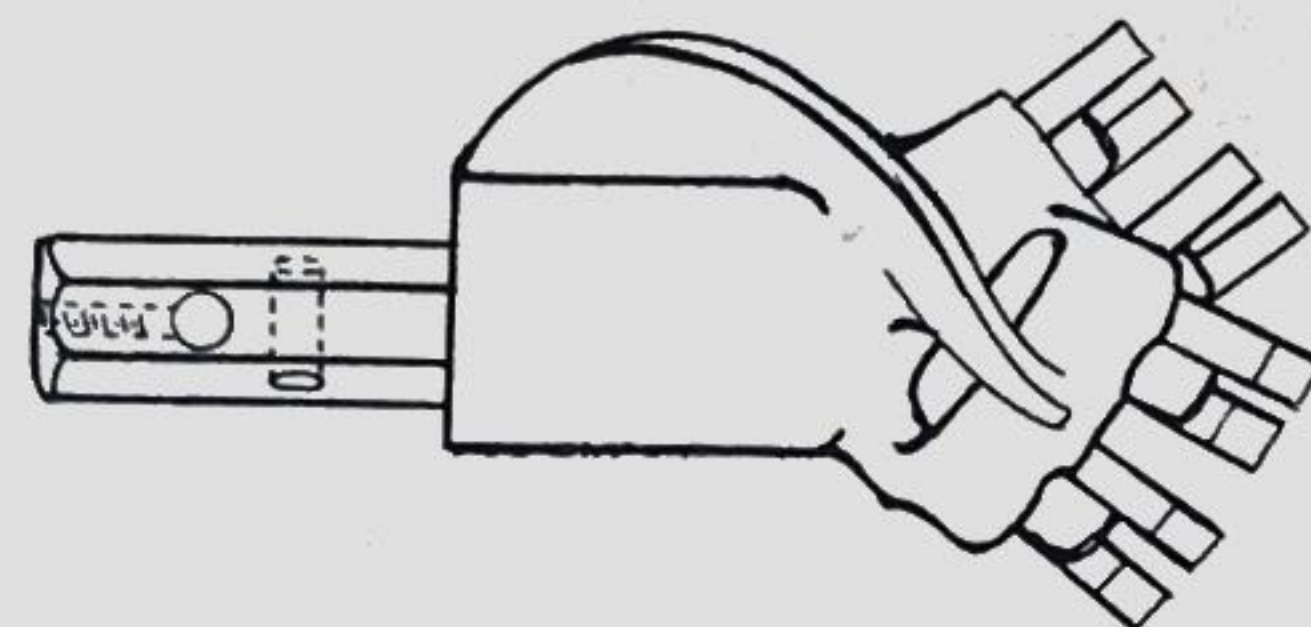


Head Number MD 14C69

Requires (8) bits $3/8"$ x $3/8"$ x $2 5/8"$
and (4) wedges. Shank hex $1 1/8"$.

Hole Size	Bit No.	Wedge No.
6"	MD 95FB	14

HEADS

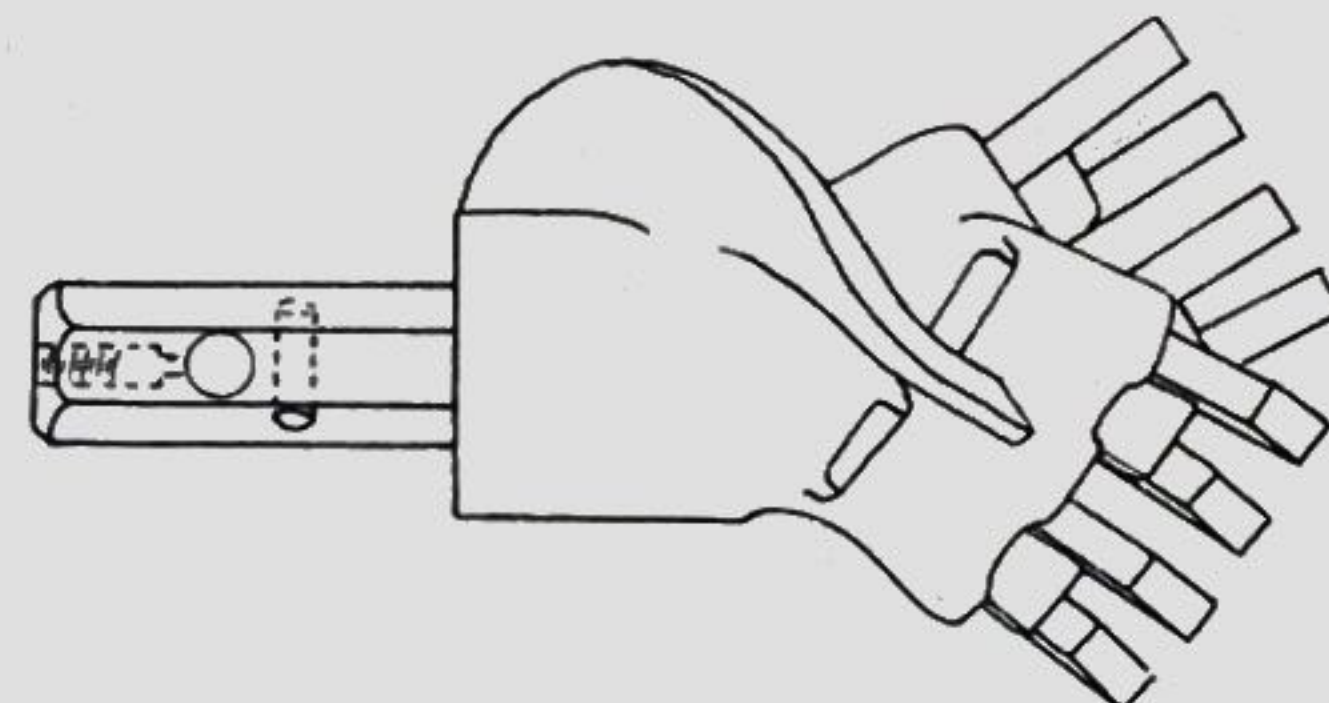


Head Number MD 47D75

Also Pilot Head for MD 70D75-9

Requires (8) bits 1/2" x 1/2" x 2 3/4"
and (4) wedges. Shank hex 1 5/8".

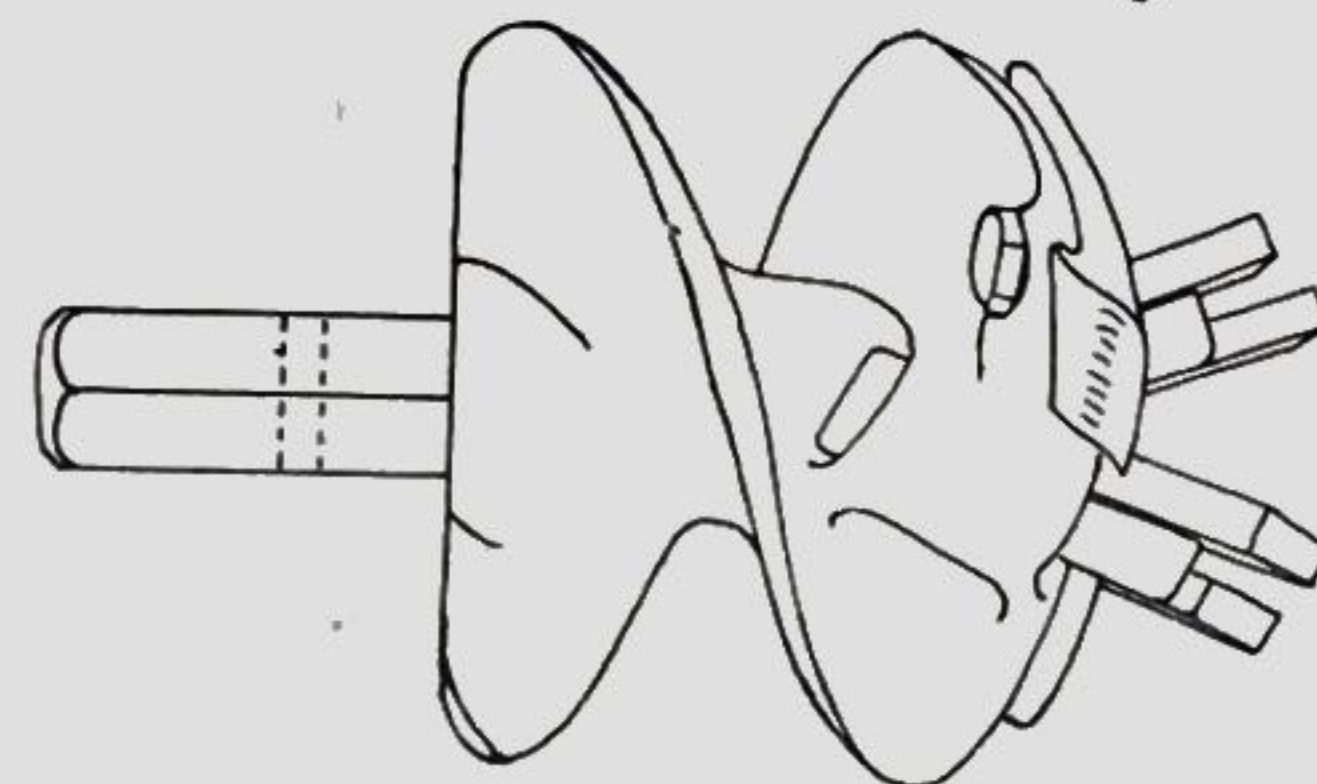
Hole Size	Bit No.	Wedge No.
6 1/4"	MD 1046	37



Head Number MD 46D75

Requires (8) bits 1/2" x 1/2" x 2 3/4"
and (4) wedges. Shank hex 1 5/8".

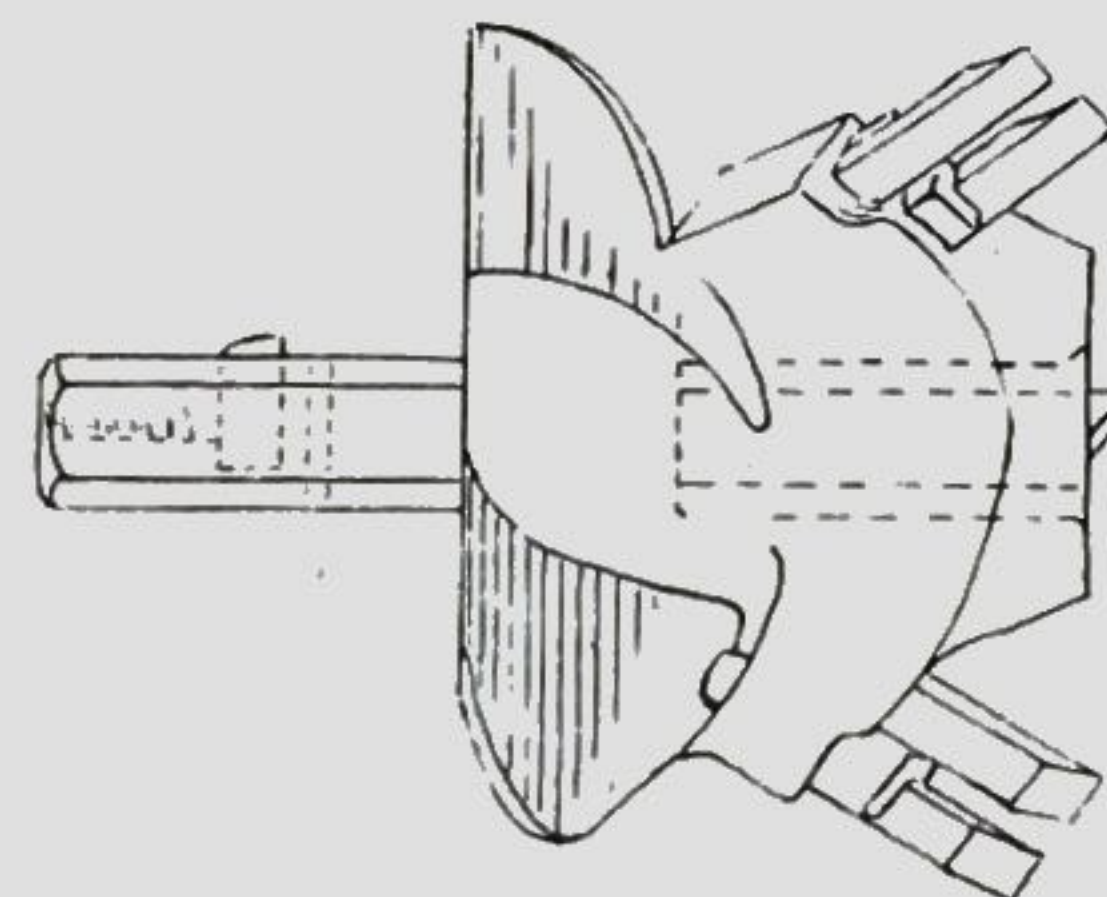
Hole Size	Bit No.	Wedge No.
7"	MD 1046	37



Head Number MD 47D75-8

Requires (4) bits 1/2" x 1/2" x 2 3/4"
and (2) cutter blades, (2) cap screws,
(2) wedges. Shank Hex 1 5/8".

Hole Size	Bit No.	Wedge No.
8"	MD 1046	37

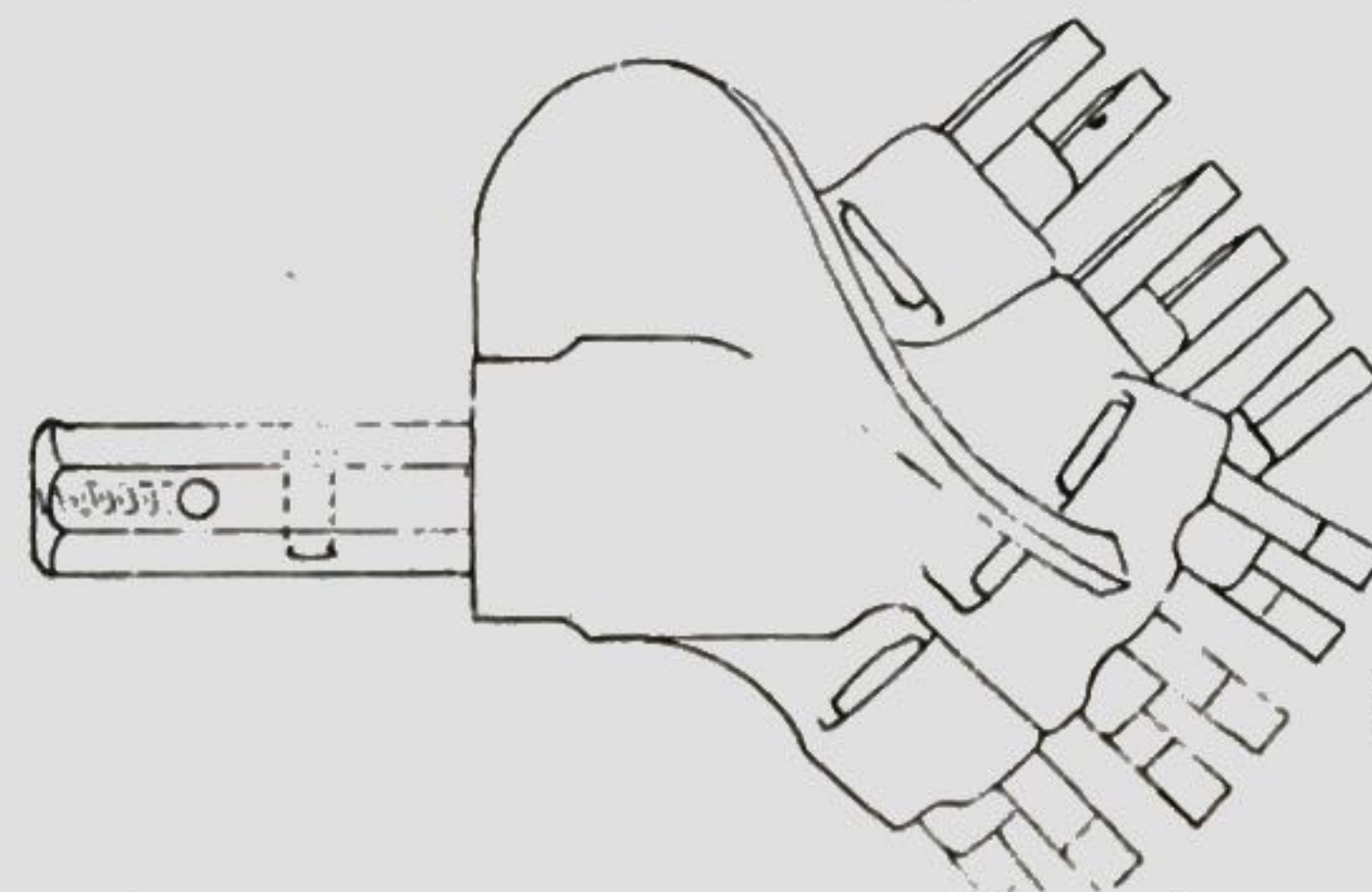


Head Number MD 70D75-9

Used with Pilot Head MD 47D75

Requires (6) bits 1/2" x 1/2" x 2 3/4"
and (3) wedges. Shank hex 1 5/8".

Hole Size	Bit No.	Wedge No.
9"	MD 1046	37



Head Number MD 47D75-10

Requires (10) bits 1/2" x 1/2" x 2 3/4"
and (6) wedges. Shank hex 1 5/8".

Hole Size	Bit No.	Wedge No.
10"	MD 1046	37