

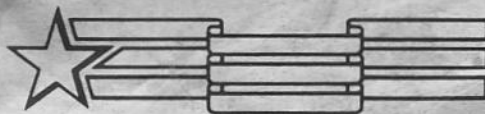
HP 31
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Ingersoll

HYDRAULIC PTO KIT
HP32, HP42
Operator's Manual 8-57950

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QUALITY IN THE AMERICAN TRADITION


Ingersoll Equipment Co., Inc.

Winneconne, Wisconsin 54986-9576



This Safety Alert Symbol Indicates Important Safety Messages In This Manual When You See This Symbol Carefully Read The Message That Follows and Be Alert To The Possibility Of Personal Injury Or Death

SAFETY RULES



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

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

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



Remember, a careful operator is always the best insurance against an accident.

Always give complete and undivided attention to the job at hand.



CAUTION: Only operate controls while in the operator's position.



WARNING: Be sure the Hydraulic PTO lever is in the neutral position before starting the tractor. This control is NOT equipped with a neutral start switch and accidental engagement of the attachment could cause injury.

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

TABLE OF CONTENTS

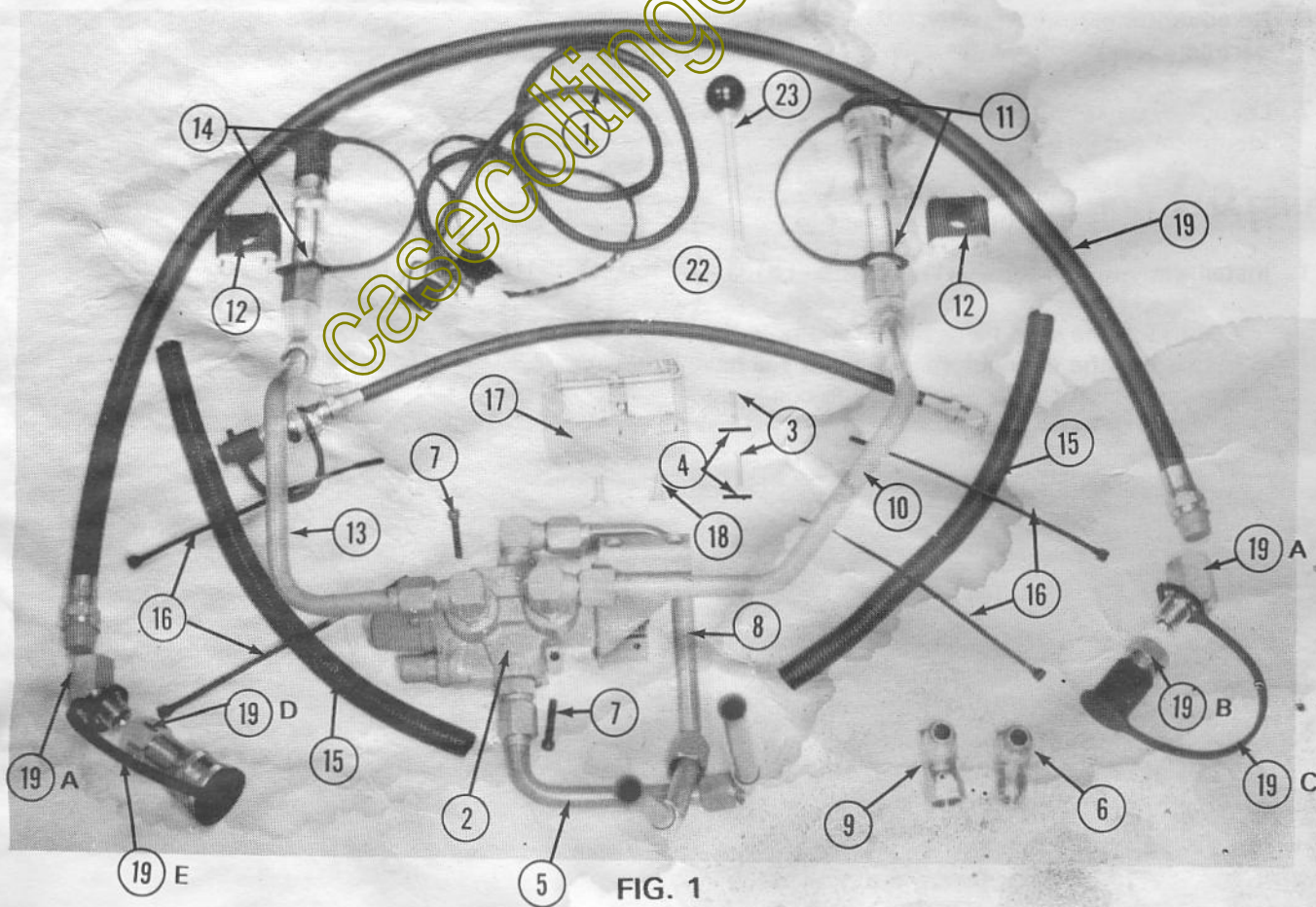
SAFETY RULES
INTRODUCTION
INSTALLATION
OPERATION
MAINTENANCE
PARTS

PAGE 1
PAGE 2
PAGE 3-7
PAGE 7
PAGE 7
PAGE 8-9

INTRODUCTION

CONGRATULATIONS, YOUR PURCHASE OF THIS HYDRAULIC PTO WILL MAKE YOUR INGERSOLL HYDRAULIC TRACTOR MORE VERSATILE THEN EVER. YOU CAN NOW OPERATE MANY HYDRAULIC ATTACHMENTS AVAILABLE FROM YOUR LOCAL INGERSOLL DEALER. TO MENTION A FEW OF THE ATTACHMENTS AVAILABLE: LOG SPLITTER, CHIPPER/SHREDDER, TILLER, HYDRA VAC, HYDRA BAGGER, SNOW THROWER, REAR MOUNT MOWER, AND HYDRA CUTTER.

CONSULT YOUR INGERSOLL DEALER FOR DETAILS ON PRICE AND AVAILABILITY.



ASSEMBLY PROCEDURES:

PREPARATION:

1. Remove the right rear fender from the tractor.
2. Remove the belly pan from the underside of the tractor.
3. Drain the hydraulic system:

Place the travel valve in the full forward position to prevent the reservoir from draining

Place a clean pan under the travel valve prior to removing the hydraulic lines.

Loosen and remove the pump to travel valve line at the "IN" port of the travel valve. See FIG. 2 (Note: Do not remove the line at the pump.)

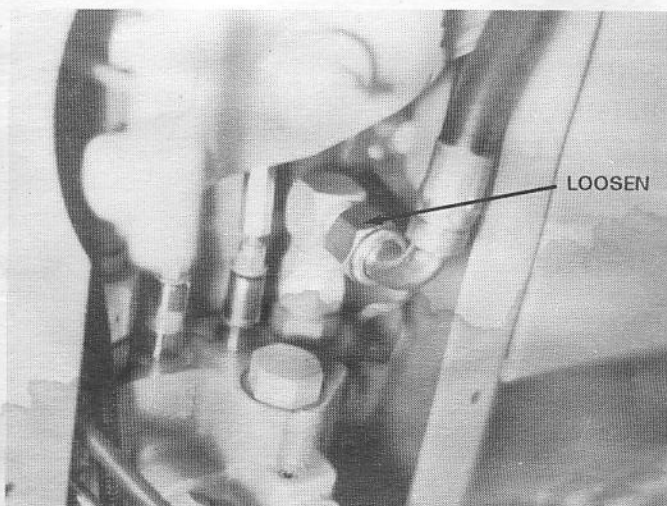


FIG. 2

4. Remove the center access cover shown in FIG. 3 by removing the 3 each phillip head screws.
5. Remove the shift cover shown in FIG. 4 by removing the shift knob and 4 each phillip head screws.
6. Remove the battery from the battery compartment.
7. Layout all parts as shown in FIG. 1 for easy identification.

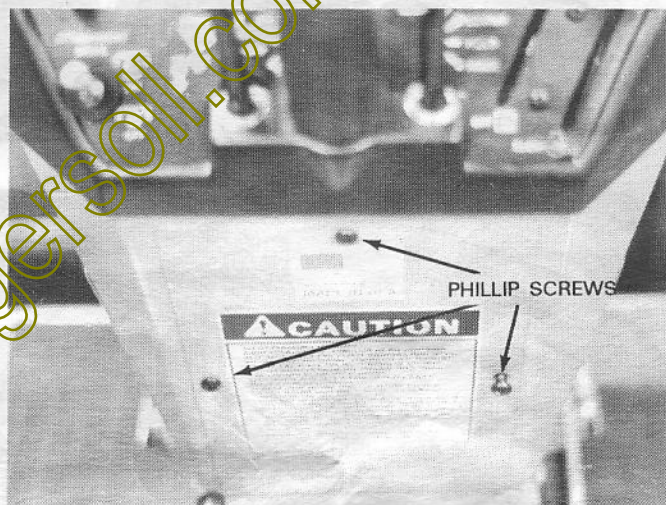


FIG. 3

INSTALLATION:

1. Install the wiring harness (1) shown in FIG. 1.
 - a. Stretch the wire harness out and note the position of the connectors. One end will have a black connector with 3 each spade connectors attached to the wires. The other end will have a long black female pigtail and 2 each white connector used for the PTO safety switches that will be connected later.
 - b. Place the black connector with the 3 spade connectors down through the left hole in the top of the tractor frame shown FIG. 5. Pull the excess wire down. Route the harness through the travel valve area and up through the access panel as shown in FIG. 6. Route the wire harness up through the access panel and into the battery compartment. See FIG. 7.

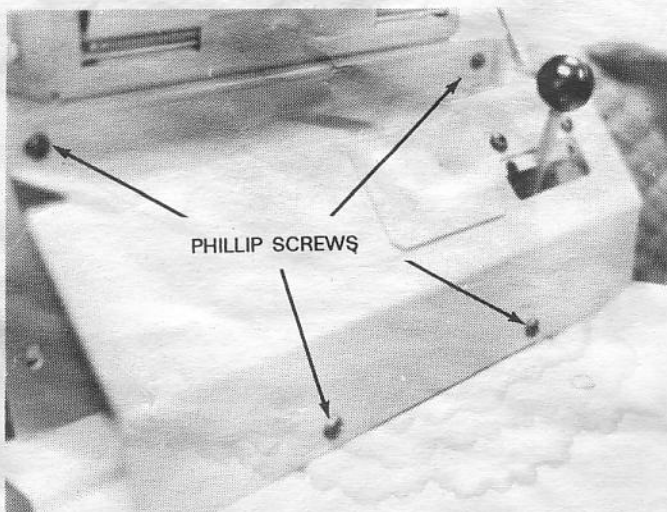


FIG. 4

INSTALLATION: (continued)

1. c. Carefully remove the connector from the left side of the PTO switch mounted to the dash. This connector will look like the connector on the wiring harness. Securely connect the spade terminals into the connector removed from the PTO switch. (NOTE: The wire(s) in the spade connectors will be the same color code as the PTO connector. Be sure they match.)

d. Install the connector on the harness to the PTO switch on the dash. Position the excess wire(s) out of the way. Reinstall the battery and the access cover removed in the preparation section.

e. Install the black pigtail at the other end of the harness through the seat support hole as shown in FIG. 5. (NOTE: Pull forward on the seat support to allow clearance between the seat support and fuel tank.) Pull the excess wire through the hole and tuck under the seat support by the switch. Be sure the wire cannot be pinched. This connector will be used for off seat operation of the log splitter and chipper-shredder.

f. Reinstall the fender previously removed.

2. Install the PTO valve (2) shown in FIG. 8.

- a. Install the clevis pin (3) with cotter pin (4) in the rear hole of valve bracket FIG. 9.
- b. Check the other clevis pin for proper fit at the hole in valve spool and lever. (NOTE: Do not install at this time.)

3. Install the metal tube (5) which will be connected from the rubber pump line to the PTO valve "IN" port. Position the tube from the underside of the tractor as shown in FIG. 10. The metal tube will follow the left inside tractor frame rail and project up through the right hole in the top of the tractor frame. See FIG. 9.

a. Install the metal tube on the "IN" side of the PTO valve as shown in FIG. 9. (NOTE: Do not tighten at this time.)

b. Install the 90 degree (6) male 7/8 X 14 fitting on the pump line and metal tube to the PTO valve.

c. Position the metal tube along the left frame rail and note the position. See FIG. 10.

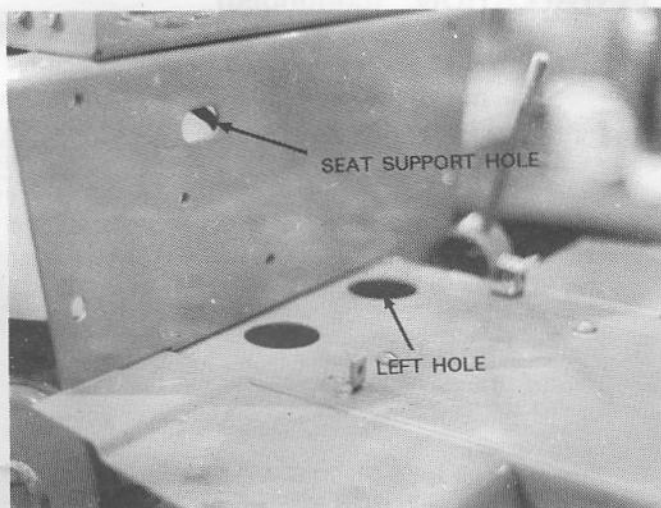


FIG. 5

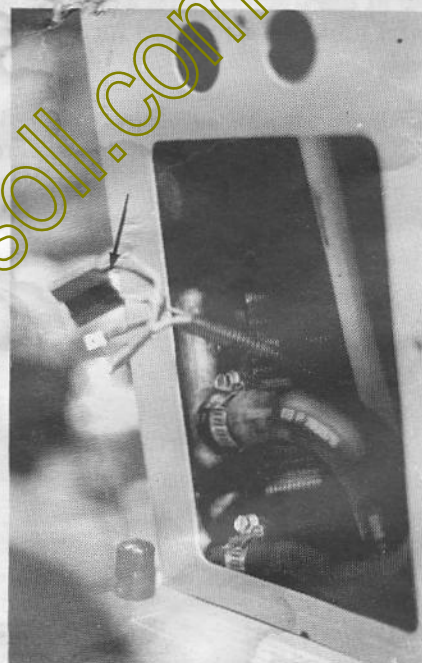


FIG. 6

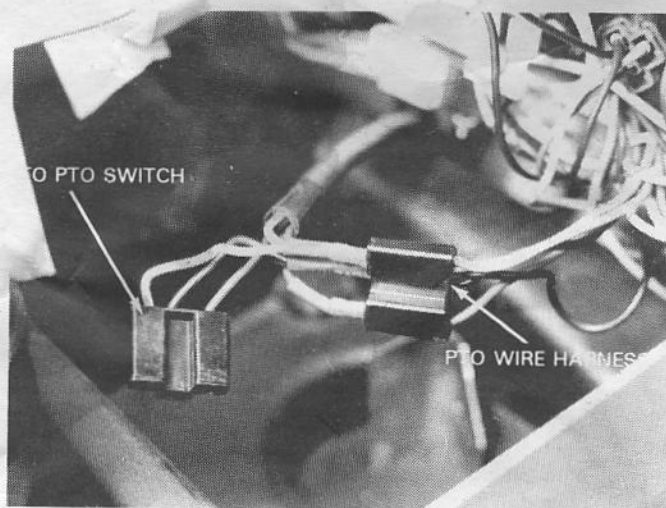


FIG. 7

INSTALLATION: (continued)

3. d. Using a 1" open end or tube wrench; tighten the tube nut at the valve. (NOTE: This must be tightened before the valve is mounted to the seat support.)
- e. Using a 1" open end or tube wrench; tighten the pump line and metal tube to PTO valve line at the 90 degree fitting. See FIG. 11.
4. Install 2 each 1/4-20 X 1 1/4 cap screws (7) and mount the valve to the seat support as shown in FIG. 8. Tighten both cap screws.

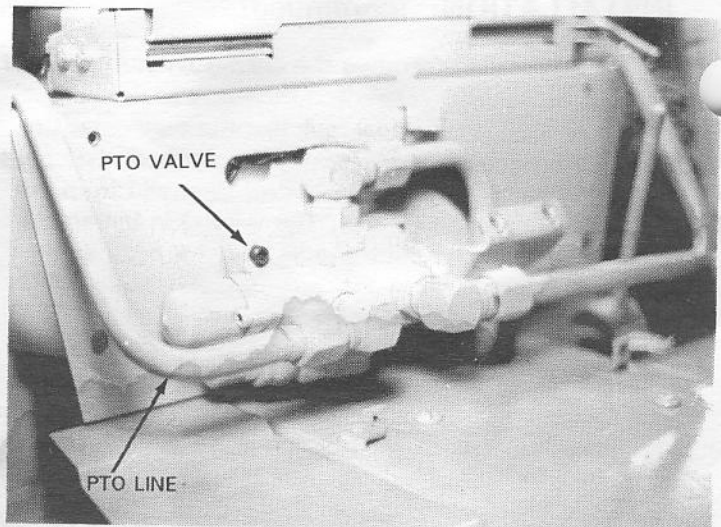


FIG. 8

5. Install metal tube (8) that will be connected from the PTO valve "OUT" side to the travel valve "IN" side. See FIG. 9. Position the tube through the left hole in the tractor frame as shown in FIG. 9. The metal tube will be routed forward towards the travel valve.

a. Secure the metal tube to the "OUT" side of the PTO valve as shown in FIG. 9. (Note: Do not tighten at this time.)

b. Install the 90 degree male/female fitting (9) to the travel valve. See FIG. 12. (NOTE: The 90 degree fitting on the travel valve must be moved to accommodate the fittings and tubes in this area. Adjust as necessary and re tighten.)

c. Insure the metal tube is positioned correctly. Tighten the tube nut at the "OUT" side of the PTO valve and all fittings at the "IN" side of the travel valve. Use a 1" wrench.

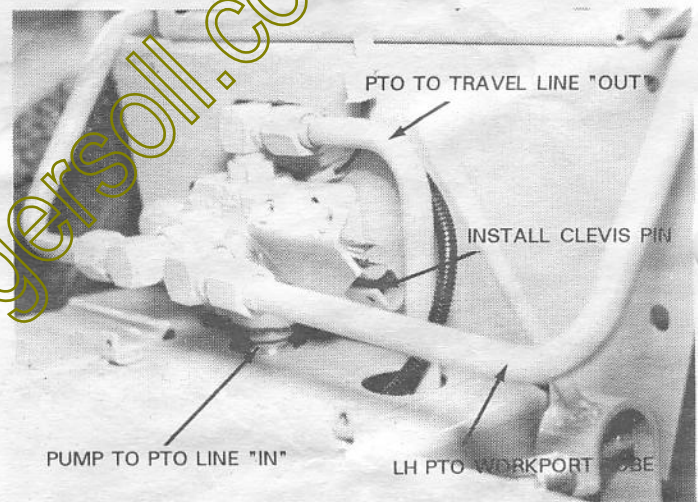


FIG. 9

6. Install the left hand work port line (10) to the left hand PTO work port shown in FIG. 9. The pipe should run parallel with the rear fender below the seat. See FIG. 13. (NOTE: Do not tighten at this time.)

a. Install the female quick coupler, pipe nipple, and adapter fitting (11) to the left PTO work port tube as shown in FIG. 13 and tighten securely.

b. Install the tube clamp (12) by positioning the clamp around the pipe nipple and securing to the seat and fender support. See FIG. 13.

7. Install the right hand work port line (13) to the right hand PTO work port shown in FIG. 8. (NOTE: All the steps are the same as in 6, 6a, and 6b except the quick coupler will be a male (14) on the right hand work port.)

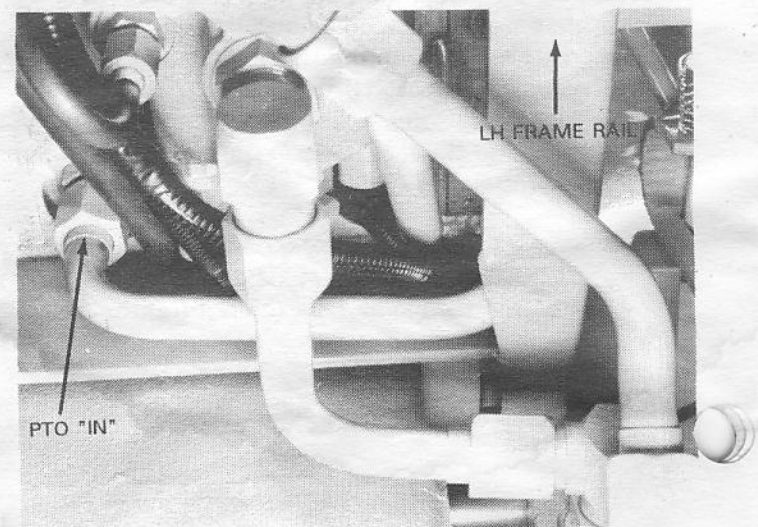


FIG. 10

INSTALLATION (continued)

8. Install the black plastic corrugated conduit (15) both rear PTO tubes. Secure the conduit in place with 4 each black nylon ties (16); one at the top and one at the bottom of each tube. See FIG. 13.

9. Install the PTO lockout plate (17) to the valve bracket as shown in FIG. 14 using 2 each 5/16-18 X 1/2 inch hex bolts (18). (NOTE: Do not tighten at this time.)

a. Install the PTO lever (23) to the valve bracket FIG. 14 on the clevis pin previously installed in step 2a and install the remaining clevis pin through the valve spool and PTO lever. Be sure to install the cotter pins and bend.

b. Center the PTO lockout plate with the valve lever in the neutral position and tighten the hex bolts. See FIG. 14.

c. Install the white connectors to the micro switches installed on the PTO lockout plate as shown in FIG. 14.

d. Remove the blank from the shift cover as shown in FIG. 15. Install the shift cover over the SHIFT and PTO levers and secure with the 4 each phillip head screws removed in preparation step 5. Install the SHIFT lever and PTO lever knobs.

10. Connect the male (19B) quick coupler to the hydraulic line (19) and tighten securely. Attach this line to the rear PTO "OUT" port and attachment motor "IN" port. Connect the female (19D) quick coupler to the attachment return hose furnished with the attachment and tighten securely. Install the dust plug (19E) and dust cap (19C) on the quick couplers. (NOTE: If a 3 Point Hitch is install with the HP32 you must use the 45 degree fittings (19A) with the quick couplers to gain proper clearance.)

11. Install the case drain line (22) to the travel control valve:

a. Remove the cap plug located on the right side of the travel valve on the out (return) line.

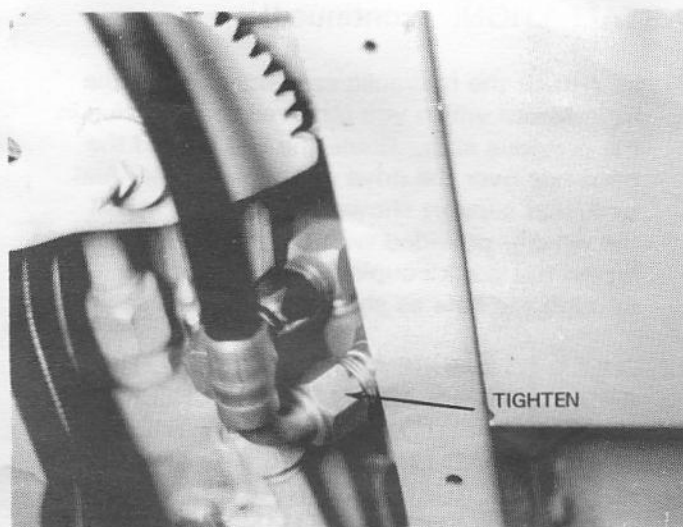


FIG. 11



FIG. 12

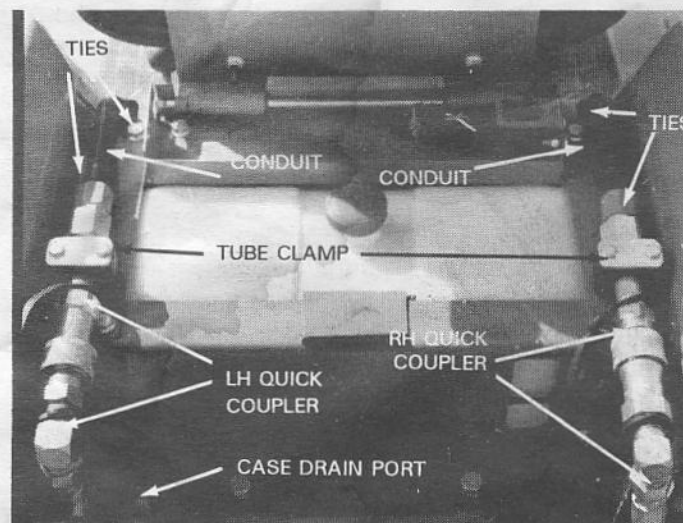


FIG. 13

INSTALLATION: (continued)

11. b. Attach the hydraulic case drain line to the fitting from which you removed the cap plug in the previous step. Route the line around the transaxle over the drive motor to the rear fuel tank/seat support shown in FIG. 13. Install the washer provided with the line and securely fasten the quick coupler, washer, and line through the hole as shown and tighten securely.
12. CHECK TO INSURE ALL FITTINGS ARE TIGHT AND ALL WIRES ARE IN PLACE. CHECK THE HYDRAULIC FLUID LEVEL. START THE TRACTOR AND ENGAGE THE PTO AND CHECK FOR LEAKS. (CAUTION: NEVER CHECK FOR LEAKS WITH YOUR BARE HAND. HYDRAULIC FLUID MAY BE UNDER EXTREME PRESSURE AND WILL CAUSE SEVERE INJURY. USE A PIECE OF WOOD, CARDBOARD, OR A HEAVY PAIR OF RUBBER GLOVES.)
13. DO NOT ENGAGE THE PTO WITHOUT A HYDRAULIC ATTACHMENT PROPERLY INSTALLED AND HOSES CONNECTED. SPIKE PRESSURES MAY OCCUR THAT COULD CAUSE PUMP DAMAGE.

OPERATION:

To operate your PTO you should be sitting on the tractor seat. (NOTE: You should only operate your PTO from the off seat position if your tractor is equipped with the off seat safety switch provided with the Chipper/Shredder and Log Splitter.)

1. To engage your PTO; lift your right LEVER STOP and slowly move the PTO LEVER to the right. As your attachment increases in speed you should continue moving the lever to the right until it is in the detent position. (NOTE: DO NOT move the PTO LEVER to the left unless your attachment permits reverse operation. Motor damage may occur. Consult your attachment owners manual.)
2. To disengage your PTO; slowly move the PTO LEVER to the left until the attachment decreases in speed and stops rotation or movement. When you are in the neutral position; your right LEVER STOP will close.

MAINTENANCE:

Periodically check for leaks and the condition of your hoses. Always keep the Quick Couplers clean and install caps or plugs when not in use.

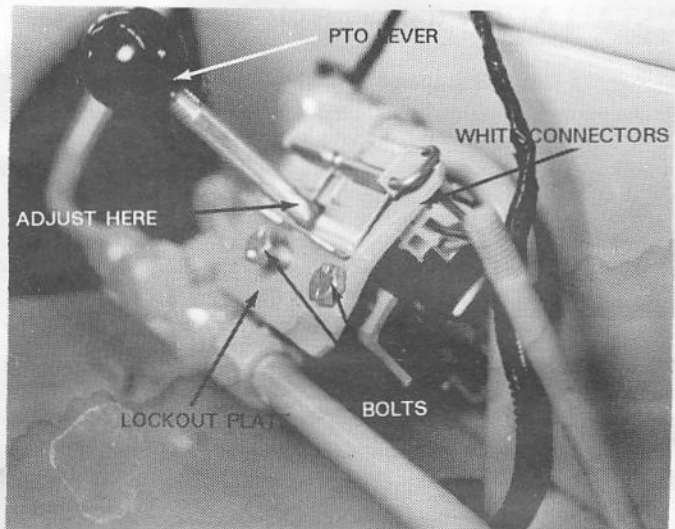


FIG. 14

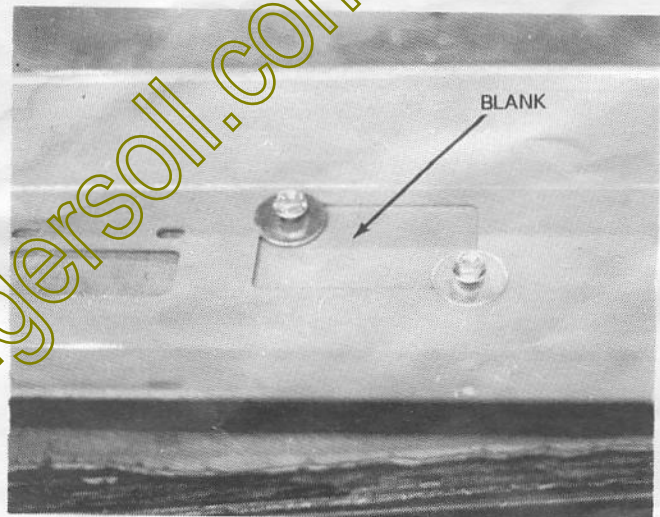


FIG. 15

NOTES

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PARTS LIST

KEY	PART		HP	HP	
#	#	DESCRIPTION	32	42	QTY.
1.	C37435	WIRE HARNESS	YES	YES	1
2.	C30046	PTO VALVE	YES	YES	1
2A.	218-5062	FITTING 7/8-14 FL X 7/8-14 STR	YES	YES	1
2B.	218-5107	FITTING (90) 7/8-14 FL X 7/8-14 STR	YES	YES	3
2C.	C37401	VALVE BRACKET	YES	YES	1
3.	C28964	CLEVIS PIN 3/16 X 1	YES	YES	2
4.	132-329	COTTER PIN 1/16 X 3/4	YES	YES	2
5.	C40670	TUBE-PUMP TO PTO "IN"	YES	NO	1
5.	C40671	TUBE-PUMP TO PTO "IN"	NO	YES	1
6.	218-475	FITTING (90) 7/8-14 FL X 7/8-14 STR	YES	YES	1
7.	61-420	CAP SCREW 1/4-20 X 11/4	YES	YES	2
8.	C40672	TUBE-PTO "OUT" TO TRAVEL VALVE	YES	NO	1
8.	C42673	TUBE-PTO "OUT" TO TRAVEL VALVE	NO	YES	1
9.	218-5232	FITTING (90) 7/8-14 MALE X 7/8-14 FEMALE	YES	YES	1
10.	C37233	TUBE-LH PTO VALVE TO QUICK DISCONNECT	YES	YES	1
11.	C37188	QUICK DISCONNECT-FEMALE 1/2" PIPE	YES	YES	1
11A.	C37142	NIPPLE 1/2" PIPE	YES	YES	1
11B.	218-465	ADAPTER 1/2" PIPE TO FEMALE 7/8-14 STR	YES	YES	1
11C.	C40642	PLUG-DUST	YES	YES	1
12.	C37144	CLAMP RUBBER	YES	YES	4
12A.	C37145	CLAMP COVER-PLATE	YES	YES	2
12B.	113-14	1/4-20 X 2 HEX HEAD	YES	YES	4
12C.	131-934	NUT 1/4-20 HEX FLANGE LOCK	YES	YES	4
13.	C37234	TUBE-RH PTO VALVE TO QUICK DISCONNECT	YES	YES	1
14.	C37187	QUICK DISCONNECT-MALE 1/2" PIPE	YES	YES	1
14A.	C37142	NIPPLE 1/2" PIPE	YES	YES	1
14B.	218-465	ADAPTER 1/2" PIPE TO FEMALE 7/8-14 STR	YES	YES	1
14C.	C40641	CAP-DUST	YES	YES	1
15.	C37454	CONDUIT (BLACK) <u>CUT TO FIT</u>	YES	YES	2
16.	C22947	NYLON TIE (BLACK)	YES	YES	4
17.	C37404	PTO SHIFT GATE	YES	YES	1
17A.	C37400	SWITCH ACTUATOR	YES	YES	1
17B.	C37399	MICRO SWITCH	YES	YES	2
17C.	C33696	#4-40 X 1/8 HEX	YES	YES	2
17D.	C33697	NUT #4-40 SEMS EXT. LOCK	YES	YES	2
17E.	C42081	LEVER STOP	YES	YES	2
17F.	C42082	HINGE PIN	YES	YES	1
17G.	C42083	TORSION SPRING	YES	YES	1
18.	C29690	BOLT 5/16-18 X 3/4 HEX HEAD	YES	YES	2
19.	C40724	HOSE-HYDRAULIC WORK HOSE 1/2" ID (56")	YES	YES	1
19A.	217-1086	FITTING (45) 1/2" PIPE "USED WITH 3 PT. HITCH"	YES	NO	2
19B.	C37187	QUICK DISCONNECT-MALE 1/2" TO WORK HOSE	YES	YES	1
19C.	C40641	CAP-DUST	YES	YES	1
19D.	C37188	QUICK DISCONNECT-FEMALE 1/2" RETURN HOSE	YES	YES	1
19E.	C40642	PLUG-DUST	YES	YES	1
20.	C33750	HOSE-HYDRAULIC CASE DRAIN 1/4" ID (21")	YES	NO	1
20.	C33560	HOSE-HYDRAULIC CASE DRAIN 1/4" ID (23")	NO	YES	1
20A.	218-443	FITTING-3/8 TUBE X 1/4" PIPE	YES	YES	1
20B.	C37249	WASHER-BELLEVILLE	YES	YES	2
20C.	C41043	QUICK DISCONNECT-MALE	YES	YES	1
20D.	C33404	CAP & PLUG-DUST	YES	YES	1
21.	C37406	LEVER-PTO	YES	YES	1
22.	C10487	KNOB (BLACK)	YES	YES	1

* 17A, 17B, 17C, 17D - BEHIND SHIFT GATE KEY 17

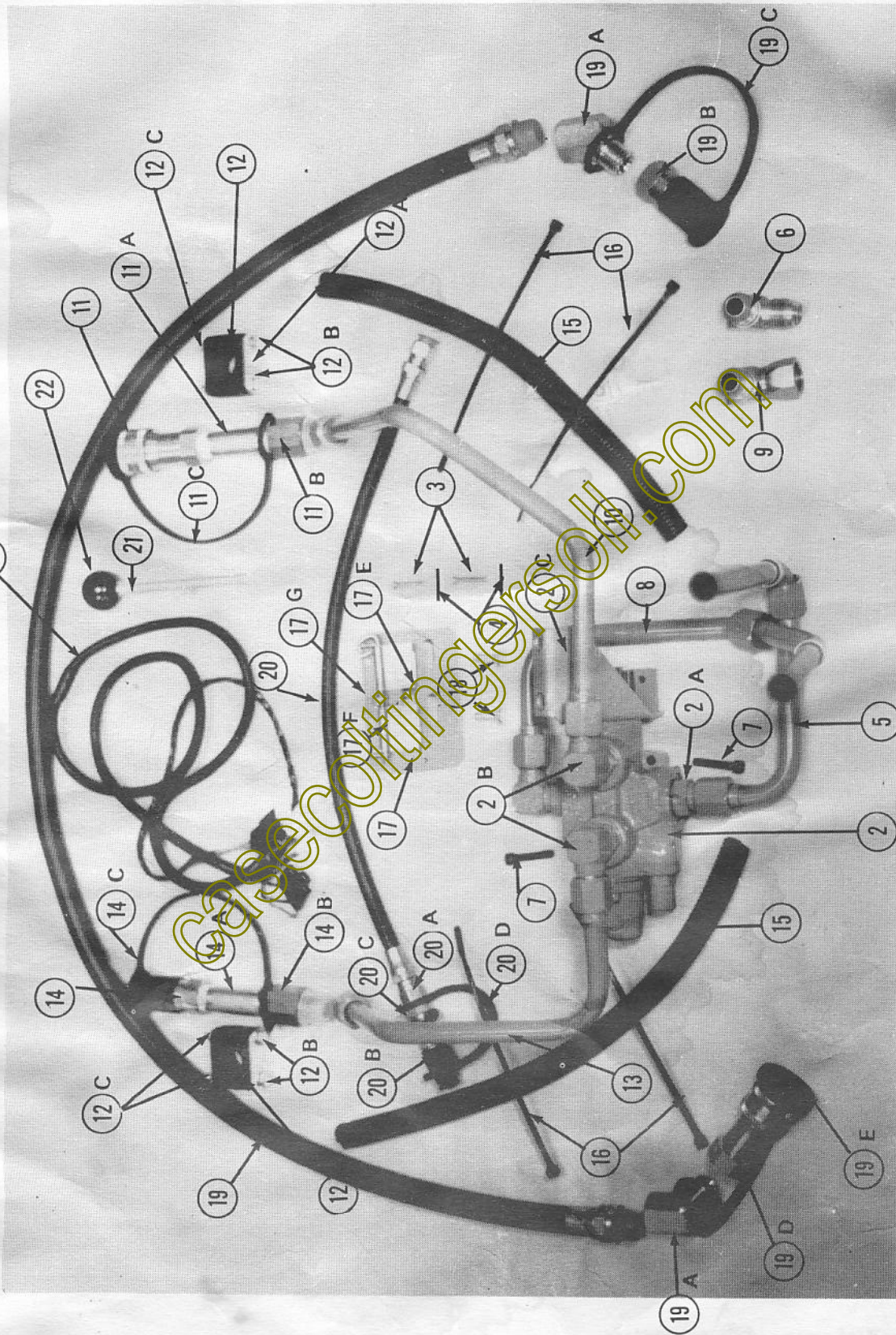


FIG. 16