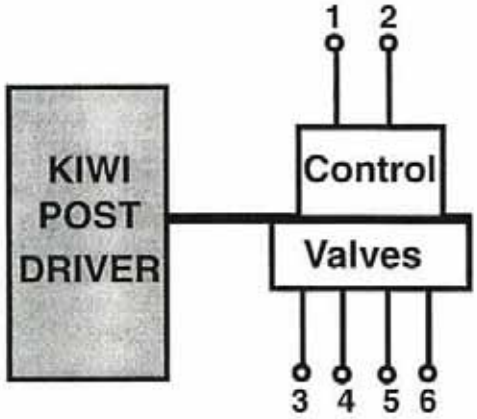
KM POST DRIVER

POST DRIVER OPERATION SAFETY & PARTS MANUAL

READ SAFE OPERATING PROCEDURES BEFORE USING EQUIPMENT

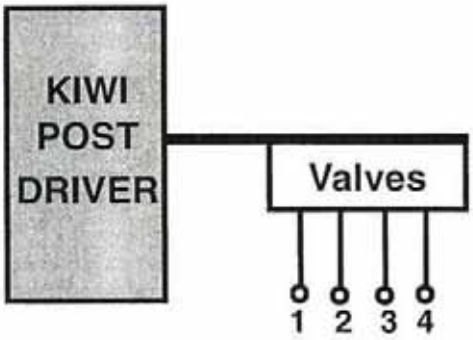
EXTREME CAUTION MUST BE EXERCISED WHEN OPERATING EQUIPMENT

Operating Procedure



Driver Lever # 1:	Controls up and down movement of post driver ram.
Auger Lever # 2:	Controls clockwise and counter clockwise operation of pilot auger. This valve has a detent in both directions of auger rotation.
Jack Stand Lever # 3	Controls the up and down movement of the stabilizing leg.
Extension Slide Lever # 4	Controls the in and out of the driver and base plate from the vehicle.
Forward & Back Lever # 5	Tilts the driving ram forward and back 25 degrees each way.
Side to Side Lever # 6	Tilts the driving ram left and right 25 degrees each way.

Skid Steer Operating Procedure (Only)

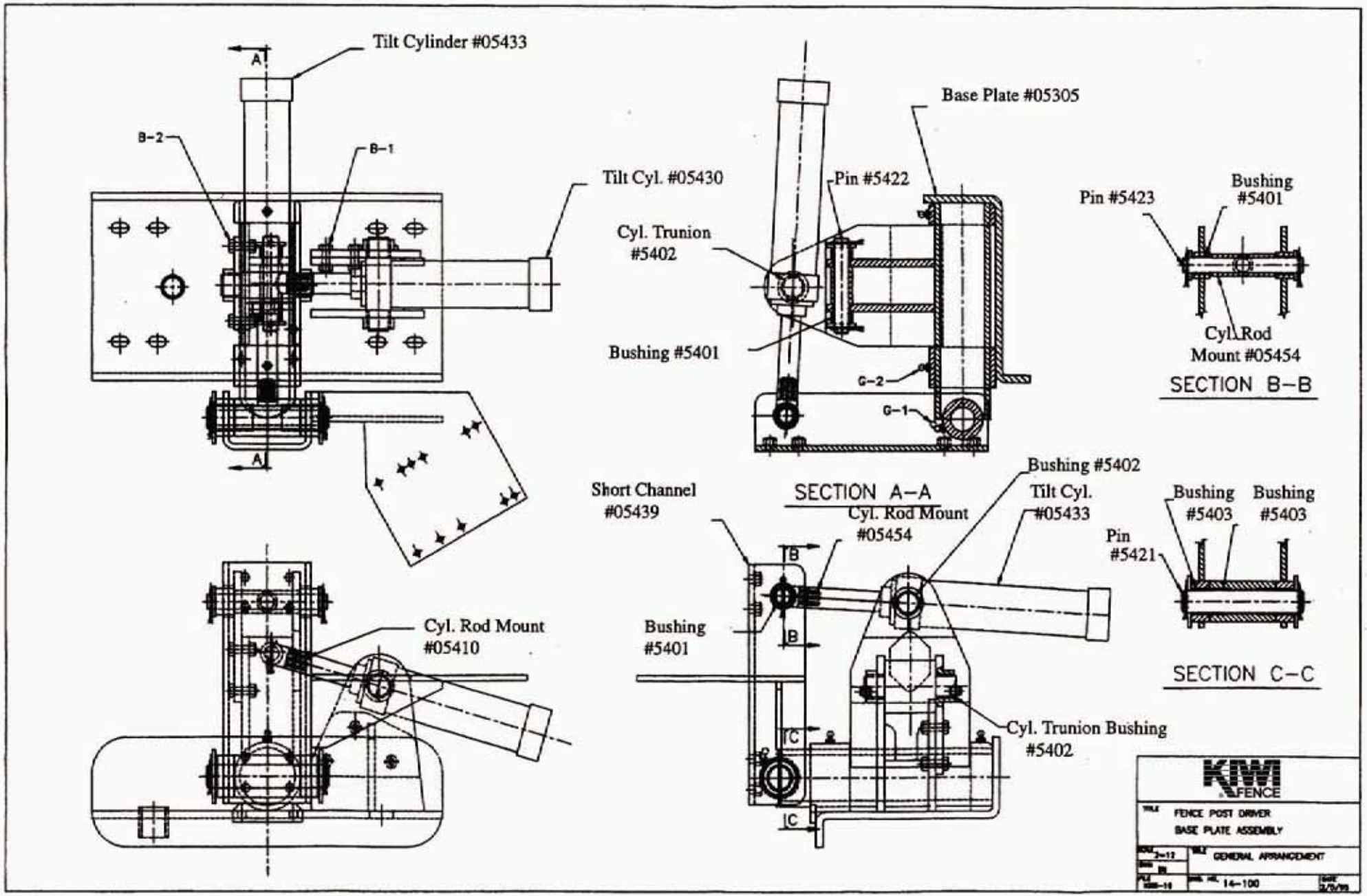


Driver Lever # 1:	Controls up and down movement of post driver ram.
Driver Lever # 2:	Controls clockwise and counter clockwise operation of pilot auger. This valve has a detent in both directions of auger rotation.
Forward & Back Lever # 3:	Tilts the driving ram forward and back if connected into Loader Cylinders.
Side to Side Lever # 4:	Tilts the driving ram left and right 25 degrees each way.

PROCEDURE FOR DRIVING POSTS

Step 1	Stand at a 45-degree angle to the driving ram. Do NOT STAND IN FRONT OF THE DRIVING RAM.
Step 2	Lift the driving ram from the transport leg approximately 6 inches by pulling lever #1 slowly.
Step 3	Position driving ram straight up and down by pushing in on lever #6.
Step 4	Extend driving ram and base plate unit to desired distance from vehicle by pulling lever #4.
Step 5	Stabilize the driving ram and base plate with the Jack Stand by pulling lever #3 until the weight is taken off the truck suspension.
Step 6	Adjust the driving ram to vertical alignment or at a right angle to the ground as desired by using lever #7.
Step 7	Raise driving ram "Driving Plate" to a height approximately 6 inches above post height by pulling lever #1. Position post flat against back of driving ram web and hold it in position with a post holder.
Step 8	Carefully lower the post driver on to the top of the post by pushing lever #1. Check for alignment and clearance BEFORE actually driving the post into the soil.
Step 9	Lift driving ram above the post approximately 6 inches and drop ram onto the post by pushing lever #1 while carefully holding post in the driver with post holder. Start driving the post with a few short strokes until the post is in far enough to hold it's position by itself, then stand back and finish driving the post to the desired height.
NOTE	Oil springs and steel slides on driver daily. Grease major pivot points weekly.

Base Plate Assembly

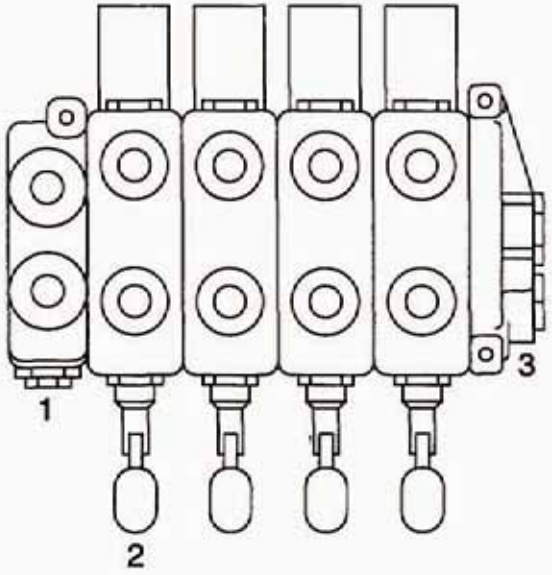


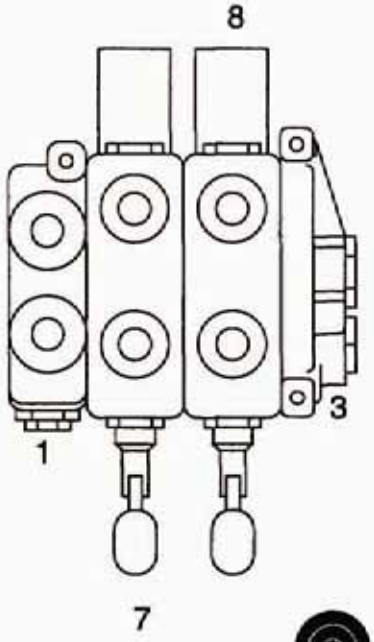
KW POST DRIVER

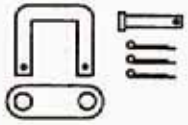
Valve Assembly

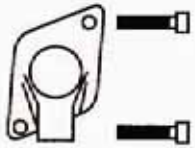
Valve Assembly

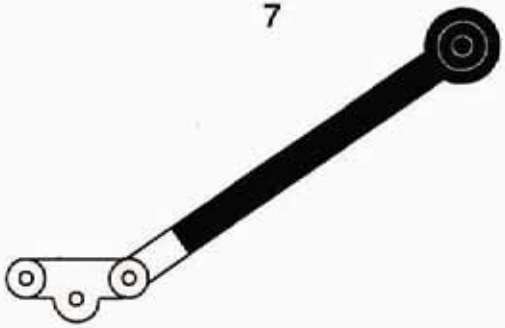
1. 5736 - V-20 Left End Cover
2. 5706 - V-20 Work Section
3. 5739 - V-20 Right End Cover
4. 57209 - Chain Link
5. 57407 - Handle Bracket
6. 57100 - Handle
7. 5763 - V-20/3 Way Work Section
8. 5766 - V-20 Detent Kit





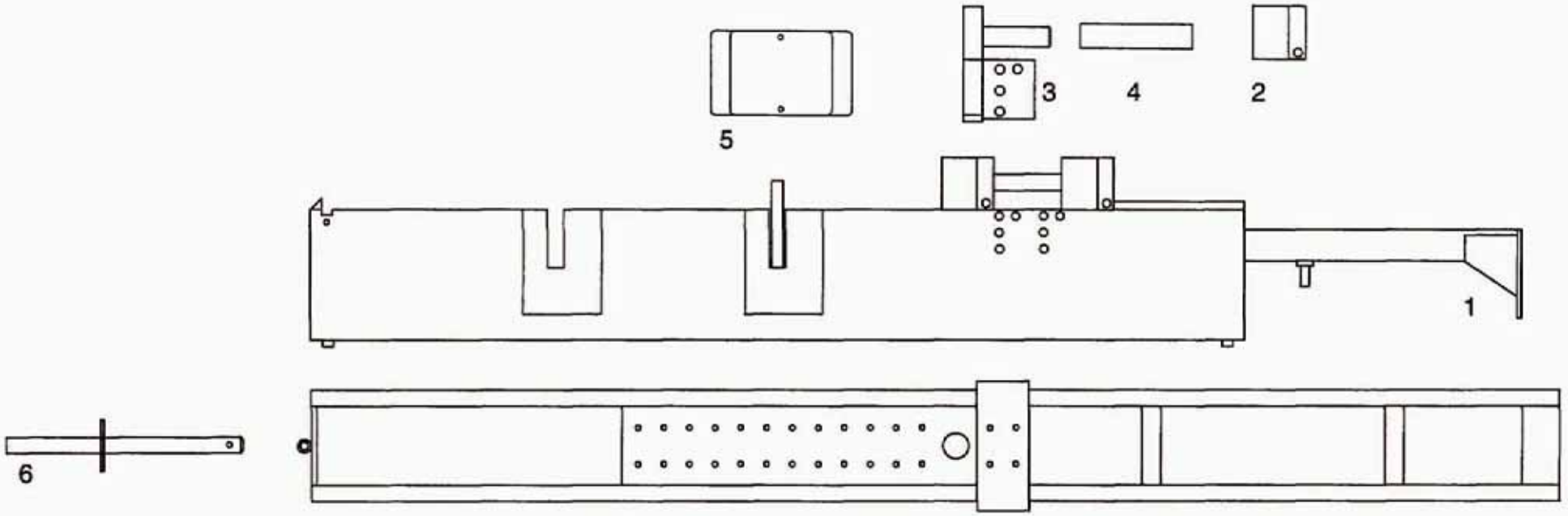

4


5


6

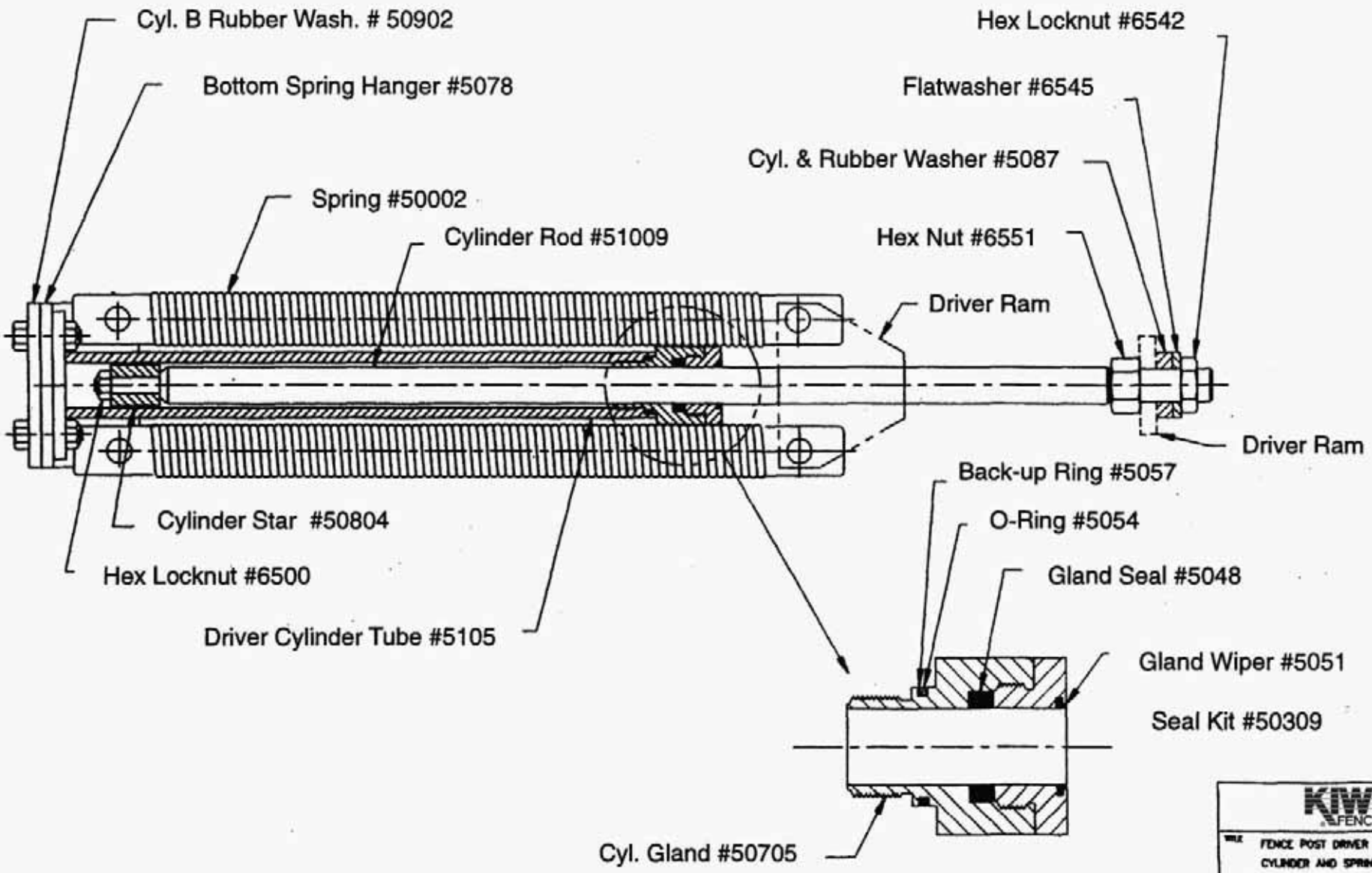
KIWI POST DRIVER

Driver Assembly

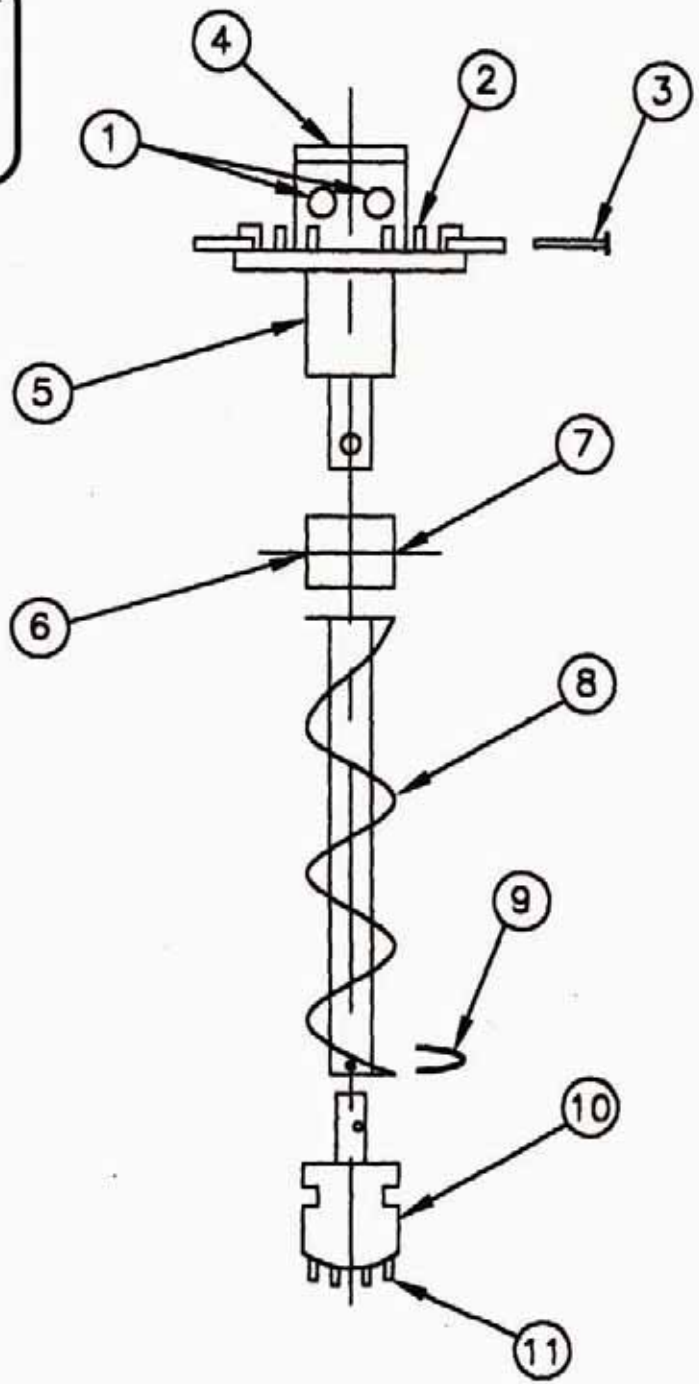


1. 5001 - Post Driver Assembly
2. 5093 - Splash Guard
3. Bolt in Head
4. Driver Spacer Tube
5. 51108 - Driver Slide in Plate
6. 5081 - Transport Pin

Driver Cylinder Assembly & Springs



KWI POST DRIVER



MK	DESCRIPTION	KWI P/N
1	HYD HOSE	5918
2	1/2-20NF X 1 1/2" HHB	6572
3	LOCK PIN	05123
4	MOTOR	05280
5	BEARING	05206
6	1/2-13NC LOCKNUT	6512
7	1/2-13NC X 3 1/2" HHB	6575
8	4" FLIGHT	52105
9	U-TYPE CLIP	52402
10	4 1/2" HEAD	52501
11	4DC BIT	52500

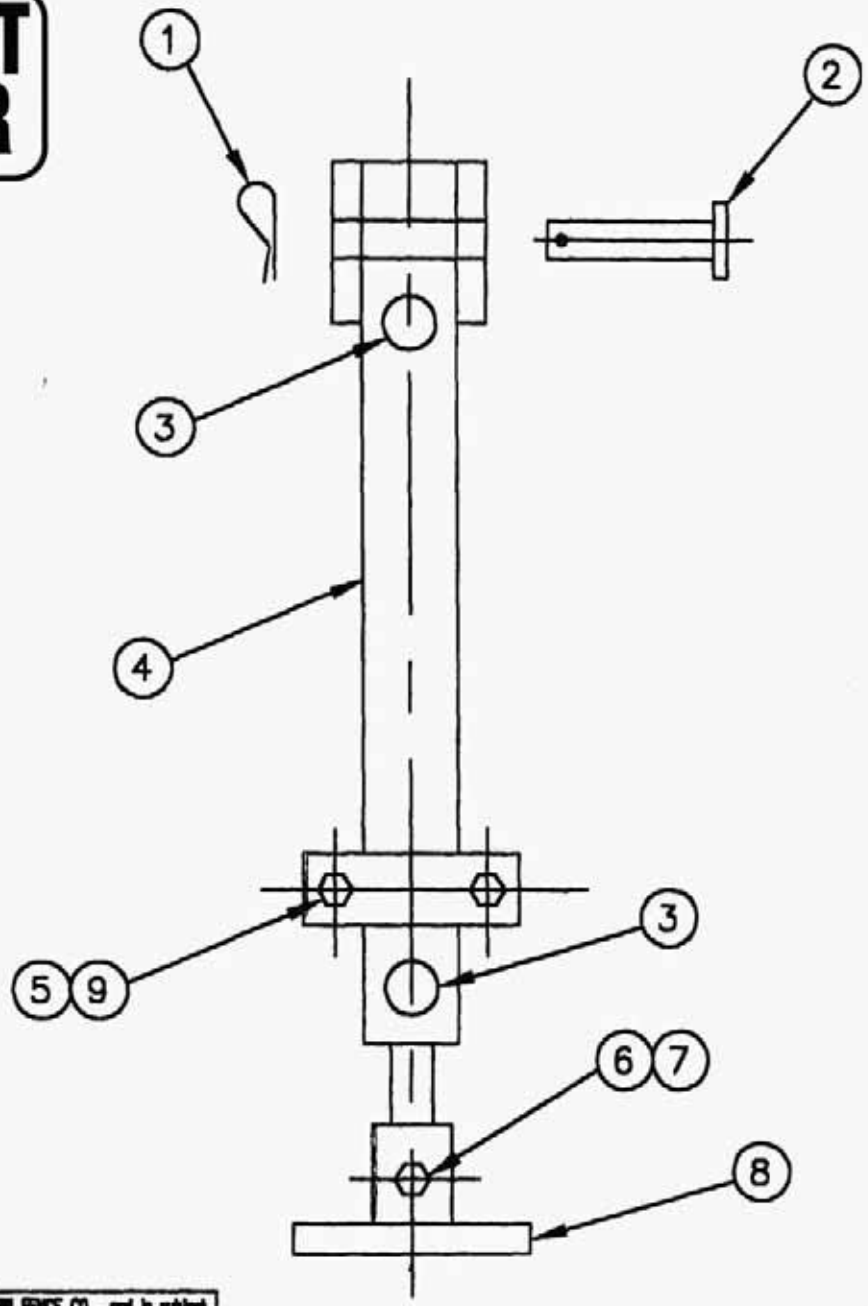
REV.	DATE	BY	DESCRIPTION	APPROVED
1	2/11/98	DM	ISSUED FOR MANUFACTURE	

DRAWN DM
SCALE NONE
FILE 16M139

TITLE AUGER PART LIST

DATE 2/11/98
DWG. NO. 16-113

KWI POST DRIVER

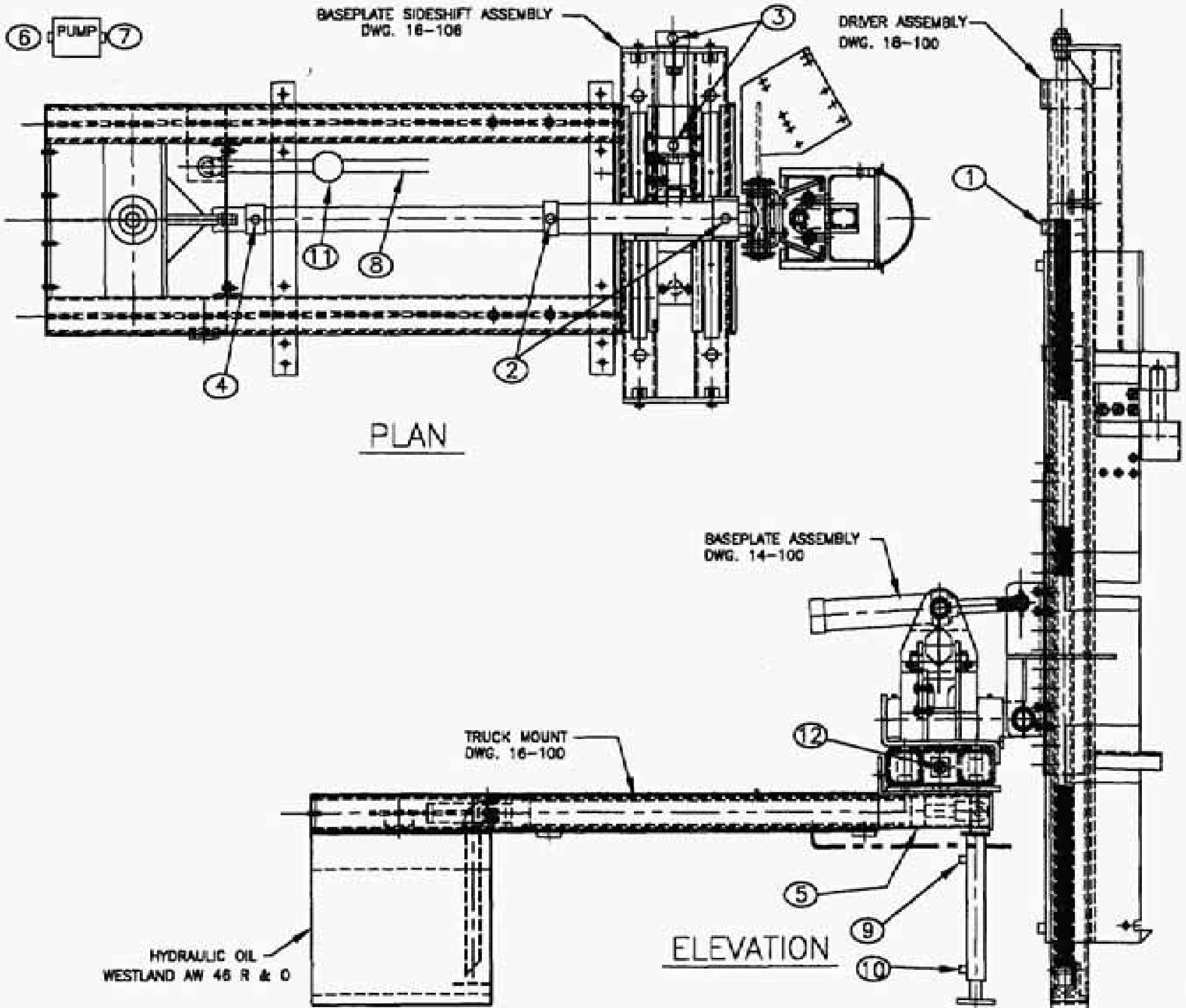


MK	DESCRIPTION	KWI P/N
1	1/8" HAIRPIN COTTER	05123
2	LOCKPIN	5422
3	HYD HOSE	5916
4	CYLINDER	05123
5	1/2-13NC X 3 1/2" HHB	6575
6	1/2-13NC LOCKNUT	6512
7	1/2-13NC X 3" HHB	6605
8	FOOT	05123
9	1/2" LOCKWASHER	6530

Post Puller Parts List

REV.	DATE	BY	DESCRIPTION	APPROVED
A	2/11/86	DM	ISSUED FOR MANUFACTURE	

DRAWN DM
SCALE NONE
FILE KWI41
TITLE POST PULLER PART LIST
DATE
DWG. NO. 16-115
A



MK	DESCRIPTION	KWI P/N
1	DRIVER CYL HOSE	5022
2	FRONT TO BACK TILT CYL HOSES	5028
3	SIDE TO SIDE TILT CYL HOSES	5030
4	TRUCK MOUNTSLIDE CYL REAR PORT HOSE	5032
5	TRUCK MOUNT SLIDE CYL REAR PORT HOSE	5016
6	SUCTION SUPPLY HOSE	5034
7	PRESSURE SUPPLY HOSE	5036
8	RETURN SUPPLY HOSE	5014
9	TOP JACK STAND HOSE	5016
10	BOTTOM JACK STAND HOSE	5018
11	FILTER	55502
12	SIDE SHIFT HOSES	05123

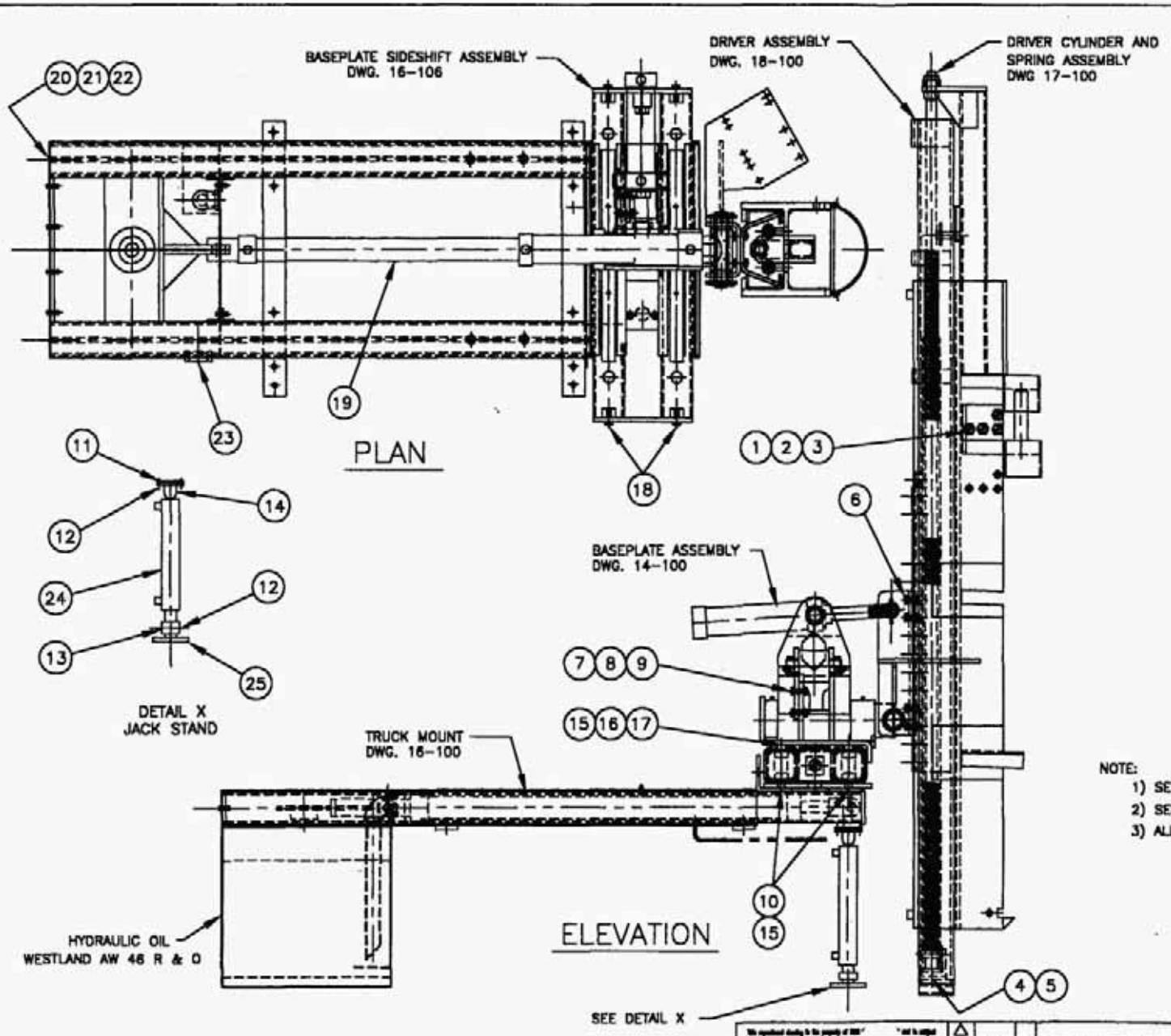
NOTE:
SEE DWG 16-113 FOR AUGER ASSEMBLY
SEE DWG 16-115 FOR POST PULLER ASSEMBLY

KWI FENCE

FENCE POST DRIVER
TRUCK MOUNT
HOSE SCHEDULE

DWN: DM	DATE: 1/15/98	SCALE: 1" = 1'-0"
CH'D:	DATE:	DWG NO: 16-112
FILE NAME: KWI-38		REV: △

REV.	DATE	BY	DESCRIPTION	APPROVED
△				
△	1/15/98	DM	ISSUED FOR MANUFACTURE	



MK	QTY	DESCRIPTION	P/N
1	8	3/4-16NF X 2" HHB	6563
2	8	3/4-16NFHEX NUT	6530
3	8	3/4" LOCKWASHER	6566
4	2	1/2-13NC X 2 1/2" HHB	6548
5	2	1/2-13NC LOCKNUT	6512
6	8	1/2-13NC X 1 1/2" HHB	6548
7	4	1/2-13NC X 1 1/2" HHB	6548
8	4	1/2-13NC HEX NUT	6584
9	4	1/2" LOCKWASHER	6530
10	4	5/8-11NC X 1 1/2" SOC FLT HD CAPSCR	05123
11	5	1/2-13NC LOCKNUT	6512
12	4	1/2-13NC X 1" HHB	6593
13	1	1/2-13NC X 2 1/2" HHB	6521
14	1	UNIVERSAL JOINT	5798
15	4	5/8-11NC HEX NUT	6596
16	4	5/8-11NC X 2" HHB	6608
17	4	5/8 LOCKWASHER	6590
18	4	1/2-13NC X 1 1/2" HHB	6548
19	1	SLIDE EXTENSION CYL.	06725
20	6	3/8-16NC X 1" HHB	6527
21	6	3/8 LOCKWASHER	6506
22	6	3/8-16NC HEX NUT	6578
23	1	SUCTION STRAINER	08788
24	1	JACK STAND CYLINDER	5793
25	1	JACK STAND FOOT	05829

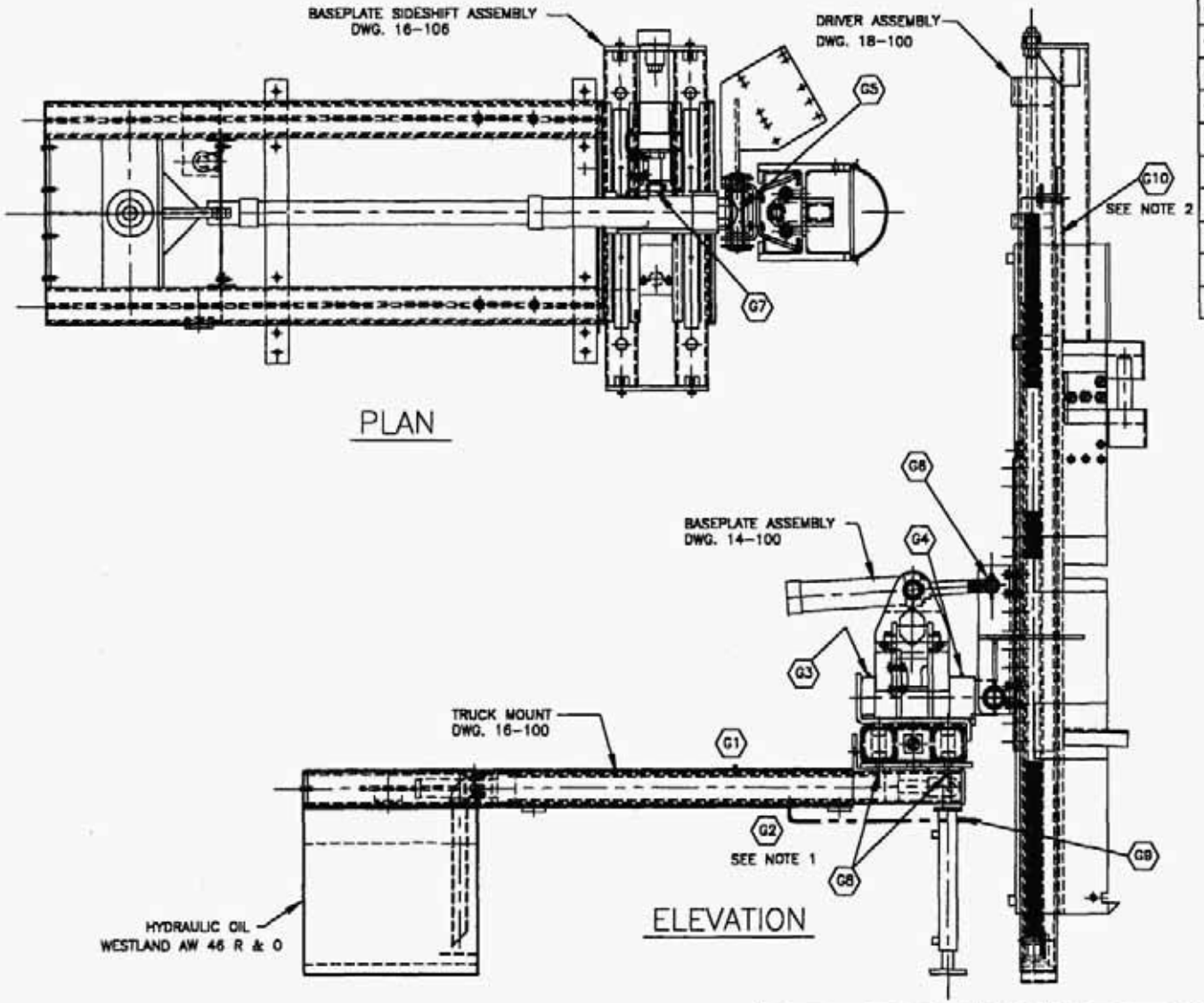
NOTE:
1) SEE DWG 16-113 FOR AUGER ASSEMBLY
2) SEE DWG 16-114 FOR POST PULLER ASSEMBLY
3) ALL BOLTS TO BE GRADE 8

KWI FENCE

FENCE POST DRIVER
TRUCK MOUNT
BOLT AND HARDWARE SCHEDULE

REV.	DATE	BY	DESCRIPTION	APPROVED
A	3/10/98	DM	ISSUED FOR MANUFACTURE	

DWN: DM | DATE: 3/10/98 | SCALE: 1" = 1'-0" | VERSION
CK'D: | DATE: | DRWG NO: 16-114 | A
FILE NAME: KTWT-40



MK	LOCATION	GREASE
G1	TOP TRUCK MOUNT SLIDE	MOBILITH AW-2
G2	BOTTOM TRUCK MOUNT SLIDE	MOBILITH AW-2
G3	REAR BASE PLATE SIDE TO SIDE PIVOT	MOBILITH AW-2
G4	FRONT BASE PLATE SIDE TO SIDE PIVOT	MOBILITH AW-2
G5	FRONT BASE PLATE FRONT TO BACK PIVOT	MOBILITH AW-2
G6	FRONT TO BACK ROD END CYL. PIVOT	MOBILITH AW-2
G7	SIDE TO SIDE ROD END CYL. PIVOT	MOBILITH AW-2
G8	BASEPLATE SIDESHIFT ASSEMBLY	MOBILITH AW-2
G9	JACK STAND UNIVERSAL	MOBILITH AW-2
G10	DRIVER SLIDE	10W30 MOTOR OIL

NOTE:
1) LOCATION OF SLIDE GREASE FITTINGS IN FRONT OF PASSENGER SIDE REAR WHEEL WELL.
2) GREASE ALL WEEKLY EXCEPT SLIDE MK G10 WHICH IS TO BE OILED DAILY.

KM FENCE

FENCE POST DRIVER
TRUCK MOUNT
LUBRICATION

REV.	DATE	BY	DESCRIPTION
A	3/16/98	DM	ISSUED FOR MANUFACTURE

DRN: D.M. DATE: 3/16/98 SCALE: 1" = 1'-0"
CK'D: DATE: DWG.NO: 16-111
FILE NAME: KIWI-37
APPROVED
REVISION A

TROUBLE SHOOTING HINTS

A. Problem: Engine Does Not Idle But Speeds Up When PTO Is Engaged

Probable Cause	*Remedy*
1. Control lever stuck open.	1. Return all valves to neutral.
2. Low leaf spring tension.	2. Repeat calibration.
3. Cold Oil.	3. Warm oil.

B. Problem: Engine Does Not Speed Up When Light Load Is Applied

Probable Cause	*Remedy*
1. PTO not engaged.	1. Engage PTO.
2. Air in sensing line.	2. Bleed line. Crack fitting at control.
3. Connecting cable.	3. Reduce slack to minimum.
4. Stops on speed screw.	4. Adjust screw.
5. Hot oil.	5. Allow oil to cool.
6. Your engine throttle linkage.	6. Oil and repair. Check manufacturer for lighter spring if it is excessive.
7. Circuit pressure is too low.	7. Revise plumbing to increase spread between your circuit and by-passing pressures.
8. Excessive leaf spring tension.	8. Repeat calibration.
9. Excessive leaf spring rate.	9. Reduce spring rate. See adjustment table.

C. Problem: Engine Does Not Return To Idle After A Load Is Applied

Probable Cause	*Remedy*
1. Engine speed excessive.	1. Reset speed screw adjustment.
2. Your engine.	2. Make sure it can idle.
3. Connecting cable.	3. Check for slack.
4. Low leaf spring rate.	4. Increase spring rate. See adjustment table.
5. Low leaf spring rate.	5. Repeat calibration.
6. Excessive by-passing pressure.	6. Remove "bottlenecks" or increase line size downstream of the control connection.

Muncie® Power Products

MUNCIE POWER PRODUCTS, INC.
General Offices and Distribution Center
P.O. Box 548 • Muncie, IN 47308-0548
(317) 284-7721 • FAX (317) 284-6991
• DRIVE PRODUCTS, INC. — Toronto
Exclusive Agents for Canada.

IN81-10 (Rev. 7-91) Printed In U.S.A.

HYDRO-THROTTLE CONTROL

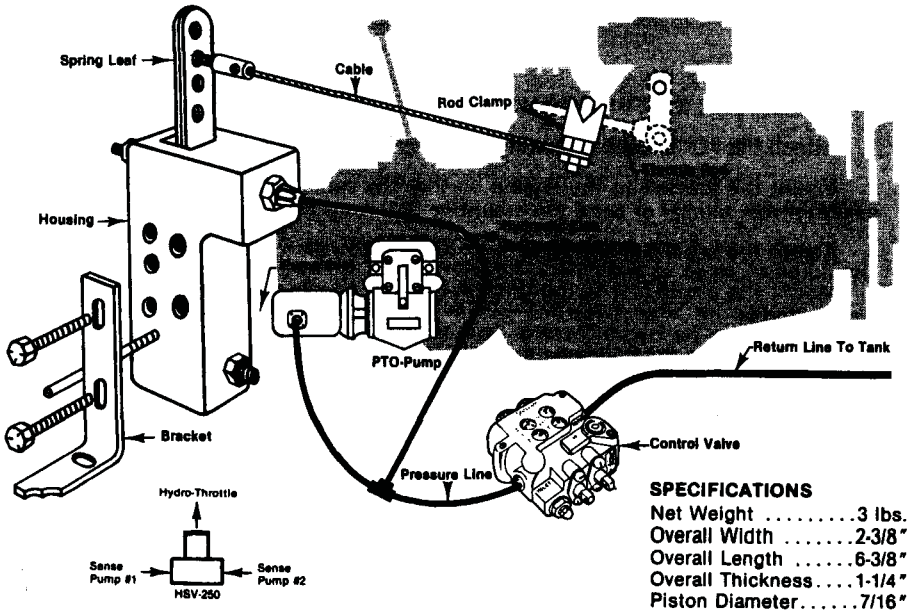
DESCRIPTION

Muncie's STA-9020 Hydro-Throttle Control, used in conjunction with hydraulic powered equipment, will automatically advance engine speed to a pre-selected R.P.M.

The STA-9020 Hydro-Throttle Control is connected into the hydraulic pressure line between the pump and control valve. Activation of any spool of the control valve will cause a pressure build-up in the pressure sensing part of the STA-9020. The internal piston, moving against the leaf springs, causes the springs to pull the throttle linkage to advance the engine speed.

When the control valve is de-activated, pressure drops and allows the STA-9020 to release its pull against the throttle linkage, returning the engine speed to idle.

Note: For use on tandem pumps, incorporate Muncie's HSV-250 shuttle valve to isolate two circuits.



SPECIFICATIONS

Net Weight	3 lbs.
Overall Width	2-3/8"
Overall Length	6-3/8"
Overall Thickness	1-1/4"
Piston Diameter	7/16"
Port Size	3/8 N.P.T.

FULLY ADJUSTABLE

The Muncie STA-9020 Hydro-Throttle is fully adjustable to meet a wide variance of operating conditions and system requirements.

The spring rate is adjustable by moving the fulcrum screw (5) and changing the number of leaf springs (three are furnished).

Spring tension is adjustable by changing the adjusting screw (4) at the base of the casting.

The amount of travel of the accelerator rod is adjustable by changing the activating rod (9) from spring hole 4 through 1 and by changing the amount of cable slack at engine idle.

The Hydro-Throttle was shipped to you assembled in a medium configuration. The table below indicates five variations of settings. Your unit is set up for variation 3. Try this variation first unless prior installations have indicated another set up is best fo your application.

Adjustment Table

Variation Number	No. of Springs	Fulcrum Hole	Spring Tension *Turns	Spring Tension *Pressure	Spring Tension Rate	Actuating Rod Hole Location
1	3	A	3	1100	11X	4
2	3	B	3	780	3X	4
3	3	C	2-1/2	640	Normal	4
4	2	C	2	370	3/4X	4
5	2	D	5/8	300	1/4X	4

*Note: Apply turns from when the screw (4) just begins to deflect the spring at zero load. Pressure is approximate when piston will begin to move.

INSTALLATION INSTRUCTIONS

1. Attach the "L" shaped mounting bracket to the control (1).

2. Mount the bracket to the engine so that the cable will be in line with the accelerator rod. Modify or bend the mounting bracket if necessary.

3. Attach the cable (10) and actuating rod assembly (9) to hole 4 of the leaf spring.

4. Mount the clamp (11) to the throttle rod and attach cable eyelet to one of the clamp studs.

5. Install a tee in the hydraulic line between the pump and control valve. This tee should be as close as possible to the valve.

6. Connect a 1/4" (minimum) high pressure hose between the tee and the pressure sensing port of the Hydro-Throttle control. Use a small amount of sealer on male threads only. DO NOT USE TEFLON TAPE. Do not allow any sealer to enter the piston area of the throttle control.

YOU ARE NOW READY TO ADJUST THE HYDRO-THROTTLE.

ADJUSTMENT PROCEDURE

1. Start engine and engage PTO and pump, but do not energize any control valves yet. Allow system to warm up and run at idle without choke (slow idle).

2. Air bleed the pressure line by cracking the fitting at the Hydro-Throttle control.

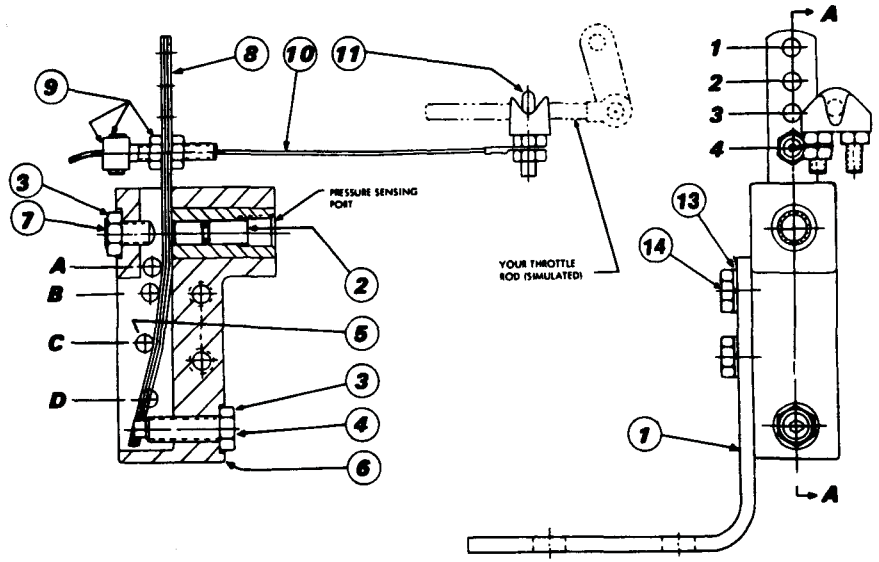
3. Turn speed adjusting screw (7) in until it touches spring. Then turn out one turn temporarily to limit stroke and prevent engine overspeeding.

4. Activate a highly loaded valve circuit. (Bottom out a cylinder to trip the pressure relief valve.) The Hydro-Throttle will attempt to pull accelerator rod.

5. Turn speed adjusting screw (7) outward until the desired engine speed (under load) is reached. Tighten lock nut (3).

6. Return valve to neutral position. The Hydro-Throttle will allow the engine to return to idle. If not, see Trouble Shooting Guide for probable causes.

7. Determine which hydraulic circuit produces the lowest pressure. (Lowering outriggers, boom swing, etc.) Operate this circuit and see if Hydro-Throttle will pull accelerator rod. If not, see Trouble Shooting Guide for probable cause.



STA-9020 Parts List

Item	Part No.	Description
1	28T35118	Bracket
2	47TA3790	Piston Assembly
3	22T35145	Nut, Jam 3/8-16
4	19T35127	Screw 3/8-16 x 2.00 Spring Tension Adjusting
5	19T35133	Screw, Fulcrum
6	47TA3808	Housing and Liner Assembly
7	19T35141	Screw 3/8-16 x 1.00 Speed Adjusting
8	27T35130	Spring, Leaf (3 required)
9	47TA3796	Rod, Actuating, with Nuts and Set Screws
10	47TA3794	Cable Assembly
11	47TA3795	Clamp
12	47TA3792	Rod/Cable/Clamp Assembly
13	21T35143	Lockwasher (2 required)
14	19T35144	Capscrew 5/16-24 x .75 Grade 5 (2 required)

INSTALLATION INSTRUCTIONS, MODELS HC-PTO-1A, 2A, 3A and 7A

Prince PTO Series pumps are specifically designed for PTO drive operation on farm tractors of all sizes. In order to utilize these pumps to their fullest potential, **please read the following before proceeding with the installation.** Note that on the back page there is a typical HC-PTO-1A installation example.

OPEN CENTER SYSTEMS ONLY— Pump unloaded to tank with directional valve in the neutral position.

PRESSURE RATING— 2250 PSI maximum relief valve setting. Insure that relief valve is not set above this level when first installing the pump.

LINE SIZE— HC-PTO-1A, 3A — 1¼" suction hose and ¾" pressure line hose. HC-PTO-2A, 7A — 1" suction hose and ½" pressure line hose.

FILTRATION— 100 mesh suction strainer and 10 micron return line filter, both properly sized for pump flow and both incorporating an internal bypass in the event of a clogged filter.

RESERVOIR— As a general guideline, the reservoir size in gallons should equal the pump output in gallons per minute.

HYDRAULIC FLUID— Use a good quality mineral base hydraulic fluid with a viscosity of 70-250 SUS at system operating temperature. Depending on temperature, commonly used fluids are 10W and 20W hydraulic fluid and ATF.

TEMPERATURE— System operating temperature should not be above 180° F. If it is, the reservoir may be too small or a heat exchanger may be required.

PORTS— All models have two #12 SAE outlet ports, with a plug provided for the unused port. A #12 SAE to ¾ female pipe adapter (500204009) is provided.

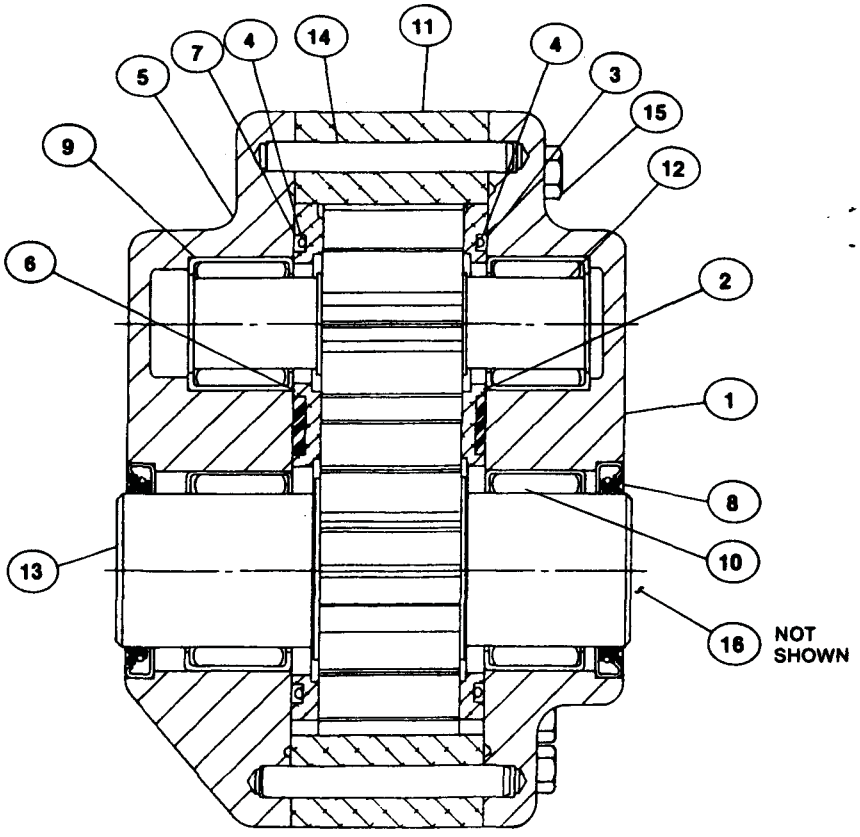
All models have a #16 SAE inlet port. HC-PTO-1A and 3A come with a #16 SAE to 1¼" hose barb adapter (270011015). HC-PTO-2A and 7A come with a #16 SAE to 1" hose barb adapter (270011017).

TORQUE ARM— Torque arm kit #180900877 is recommended, and fits all PTO pump models. The chain should be at approximately 90° to the torque arm and be secured to a rigid surface. Safety wire the S-Hook to the chain. The chain should cross the PTO shaft at a right angle to avoid putting an end thrust on the pump.

SPEED— HC-PTO-1A — 600 RPM maximum. HC-PTO-2A, 3A and 7A — 1000 RPM maximum.

PUMP MODEL	RPM	GPM AT 2000 PSI	H.P. IN AT 2000 PSI	SHAFT CONFIGURATION
HC-PTO-1A	540	21.0	32.1	1⅜ Diameter, 6 Tooth
HC-PTO-2A	540	11.4	18.1	1⅜ Diameter, 6 Tooth
HC-PTO-3A	1000	22.4	34.3	1⅜ Diameter, 21 Tooth
HC-PTO-7A	540	7.1	11.9	1⅜ Diameter, 6 Tooth

REPLACEMENT PARTS



ITEM	QTY	PMC PART NO.	DESCRIPTION
1	1	500101004	FRONT PLATE
2	1	500107029	WEAR PLATE, FRONT PLATE SIDE
3	1*	500107030	PROTECTOR, FRONT PLATE SIDE
4	2*	500107032	SEAL
5	1	500101014	BACK PLATE
6	1	500107028	WEAR PLATE, BACK PLATE SIDE
7	1*	500107031	PROTECTOR, BACK PLATE SIDE
8	2*	240016026	SHAFT SEAL
9	2	210500025	IDLER SHAFT BEARING
10	2	211100071	DRIVE SHAFT BEARING
11	1	500103020	BODY, HC-PTO-1A
11	1	500103021	BODY, HC-PTO-2A, 3A
11	1	500103022	BODY, HC-PTO-7A
12	1	500106002	IDLER GEAR ASSY, HC-PTO-1A
12	1	500106003	IDLER GEAR ASSY, HC-PTO-2A, 3A
12	1	500106012	IDLER GEAR ASSY, HC-PTO-7A
13	1	500106021	DRIVE GEAR ASSY, HC-PTO-1A
13	1	500106024	DRIVE GEAR ASSY, HC-PTO-2A
13	1	500106022	DRIVE GEAR ASSY, HC-PTO-3A
13	1	500106023	DRIVE GEAR ASSY, HC-PTO-7A
14	2	180900872	DOWEL PIN, HC-PTO-1A
14	2	180900871	DOWEL PIN, HC-PTO-2A, 3A
14	2	180900870	DOWEL PIN, HC-PTO-7A
15	12	170002074	CAP SCREW (⅜-16 x 3¾), HC-PTO-1A
15	12	170002070	CAP SCREW (⅜-16 x 3), HC-PTO-2A, 3A
15	12	170002042	CAP SCREW (⅜-16 x 2¾), HC-PTO-7A
16	2	170002075	CAP SCREW (⅜-16 x 4½), HC-PTO-1A
16	2	170002036	CAP SCREW (⅜-16 x 3½), HC-PTO-2A, 3A
16	2	170002054	CAP SCREW (⅜-16 x 3¼), HC-PTO-7A
	*	PMCK-PTO-1A	SEAL KIT, HC-PTO-1A, 2A, 3A, 7A. INDICATED ITEMS INCLUDED
NOTE THAN ITEMS 12 AND 13 ARE COMPLETE WITH SHAFT, GEAR, AND GEAR RETAINERS			

TROUBLE SHOOTING GUIDE

Hydraulic analysis and proper repair require the use of a vacuum gauge and pressure gauge for testing.
Electrical analysis requires using a volt meter for testing.

Possible Pump Trouble	Cause	Cure
Cavitation: noisy pump **Use vacuum gauge to isolate problem.**	Low oil supply.	Fill to proper level.
	Heavy oil/cold oil/wrong oil.	Change to proper oil.
	Dirty suction strainer.	Clean and replace.
	Suction line too small.	Increase size.
	Restriction in suction line.	Remove/replace.
Pump takes too long to respond or fails to respond	Low oil supply.	Fill to proper level.
	Insufficient relief valve pressure.	Use gauge to reset pressure.
	Pump worn or damaged.	Repair or replace.
Oil Heating Up	Contamination in relief valve.	Remove.
	Oil too light.	Drain and refill with proper oil.
	Dirty oil.	Drain, flush, refill with clean oil.
	Oil level too low.	Fill to proper level.
	Reservoir capacity too small.	Install oil cooler.
	Insufficient relief valve pressure or pressure too high.	Use gauge to reset pressure.
	Pump slippage.	Repair or replace.
Oil Foaming	Air leaking into suction line from tank to pump.	Tighten all connections.
	Wrong kind of oil.	Drain & refill w/non-foaming oil.
	Oil too low.	Fill to proper level.
	Improper tank or reservoir baffle.	Baffle correctly.
	Return line above oil level.	Install below oil level.
Actuator Slips	Contamination damages, control valve and allows check valve to leak.	Clean out the system.
	Cylinder or piston packing defective.	Replace or repair.
	Valve is cracked.	Replace.
	Spool not centering.	Clean contaminants from valve or replace.
	Incorrect oil.	Replace with correct oil.
	Load check stuck.	Open.
Clutch **Does not engage.**	Bad electrical connection.	Check wiring, connectors, and source.
	Blown fuse.	Replace (9A max) - check for short.
	Switch won't activate.	Replace switch.
	Low voltage.	Check wiring.
	Coil bad.	Check with ohmmeter (2.3 ohms) and replace.
Belts jumping off.	Belts too loose.	Tighten to specifications.
	Belts worn or stretched.	Replace.
	Mounting bracket loose.	Tighten or replace bolts.
	Pulleys misaligned.	Align properly with straight edge.
	Drive pulley loose.	Tighten.
	Diesel vibration/belt slap.	Add back side idler to dampen.
Clutch Slips	Low voltage.	Check wiring and source.
	Bad ground.	Ground to battery.
	Torque overload.	Reduce flow or pressure.
	Dirt/grease on armature.	Clean and reburnish.
	Armature plate rusted.	Reburnish.
	Pump locked up/damaged.	Replace pump.
Clutch Rubs	Pulley bent.	Replace pulley.
	Armature plate warped.	Replace pulley.
	Coil mounting damaged.	Replace coil.

TROUBLE-SHOOTING TIPS

FINDING AND SOLVING PROBLEMS:

Most hydraulic system failures follow the same pattern, a gradual or sudden loss of pressure or flow with a resulting loss of cylinder or motor power. Any one of the system's components may be at fault. By following step-by-step procedures, the trouble can be located in a short time.

1. SYSTEM INOPERATIVE

- **No oil in system, insufficient oil in system.** Fill system. Check for leaks.
- **Wrong oil in system.** Refer to specifications. Change oil.
- **Filter dirty or clogged.** Drain oil and replace filter or filter element.
- **Oil line restriction.** Oil lines dirty or collapsed. Clean or replace.
- **Air leaks in pump suction line.** Repair or replace as necessary.
- **Worn or dirty pump.** Clean, repair or replace. Check alignment. Check for contaminated oil. Drain and flush system.
- **Badly worn components (valves, cylinders, etc.)** Examine and test for internal or external leakage. Replace faulty components. Check for cause of wear.
- **Leakage.** Check all components, particularly the relief valve for proper settings. Refer to technical manuals.
- **Excessive load.** Check unit specifications for load limits.
- **Slipping or broken pump drive.** Repair or replace belts, couplings, etc. Check for proper alignment or tension.

2. SYSTEM OPERATES ERRATICALLY

- **Air in system.** Check suction side of system for leaks. Repair.
- **Cold oil.** Allow ample warm-up period.
- **Dirty or damaged components.** Clean or repair as necessary.
- **Restriction in filters or lines.** Clean and/or replace elements or lines.

3. SYSTEM OPERATES SLOWLY

- **Oil viscosity too high, cold oil.** Allow oil to warm up before operating machine.
- **Low pump drive speed.** Increase engine speed (check manual for recommendations).
- **Low oil level.** Check reservoir and add oil as necessary.
- **Air in system.** Check suction side for leaks. Repair.
- **Badly worn pump, valves, cylinders, etc.** Repair or replace as needed.
- **Restriction in filters or lines.** Clean and/or replace elements or lines.
- **Improper adjustments.** Check orifices, relief valves, etc. Adjust per manual.
- **Oil leaks.** tighten fittings. Replace seals or damaged lines.

4. SYSTEM OPERATES TOO FAST

- **Wrong size or incorrectly adjusted restrictor.** Replace or adjust as necessary.
- **Engine running too fast.** Reduce engine speed.

5. OVERHEATING OF OIL IN SYSTEM

- **Oil passing thru relief valve for excessive time.** Return control valve to neutral when not in use.
- **Incorrect oil, low oil, dirty oil.** Use recommended oil, fill reservoir, clean oil, replace filter element.
- **Engine running too fast.** Reduce engine speed.
- **Excessive component internal leakage.** Repair or replace component as necessary.
- **Restriction in filters or lines.** Clean and/or replace elements or lines.
- **Malfunctioning oil cooler.** Clean or repair.
- **Insufficient heat radiation.** Clean dirt and mud from reservoir and components.
- **Malfunctioning component.** Repair or replace.

6. FOAMING OF OIL

- **Incorrect, low or dirty oil.** Replace, clean or add oil as needed.
- **Air leaks.** Check suction line and component seals for suction leaks. Replace.

7. NOISY PUMP

- **Low oil level, incorrect oil, foamy oil.** Replace, clean or add oil as needed.
- **Suction line plugged, inlet screen plugged.** Clean or replace.
- **Worn or damaged pump.** Repair or replace.

8. LEAKY PUMP OR MOTOR

- **Damaged or worn shaft seal.** Replace. Check for misalignment.
- **Loose or broken parts.** Tighten or replace.

9. LOAD DROPS WITH CONTROL VALVE IN NEUTRAL

- **Leaking cylinder seals or fittings.** Replace worn parts.
- **Control valve not centering when released.** Check linkage. Check for spool binding. Repair.

10. CONTROL VALVE STICKY (Binding).

- **Valve linkage misaligned.** Repair.
- **Tie-bolts too tight (stack valves).** Loosen as necessary.
- **Valve damaged.** Repair or replace.

11. CONTROL VALVE LEAKS

- **Tie-bolts too loose (stack valves).** Tighten as necessary.
- **Seals damaged or worn.** Replace.

12. CYLINDER LEAKS

- **Seals worn or damaged.** Replace.
- **Rod damaged.** Replace.

13. CYLINDER LOWERS WITH VALVE IN "METER UP" POSITION

- **Damaged or leaky lift check.** Replace check.
- **Leaking cylinder seal.** Replace seal.

TERMINOLOGY

ACCUMULATOR: A container which stores fluid under pressure. Used as an energy source or to absorb hydraulic shock. Common types are piston, bladder and diaphragm.

BLEEDER (BLEED VALVE): A device for removal of pressurized fluid. Used to bleed air from system.

CAVITATION: A gaseous condition within a liquid stream caused when pressure is reduced to the vapor pressure. To be avoided due to destructive effects on pumps and motors.

CIRCUIT; PILOT: Used to control a main circuit or component.

CIRCUIT; REGENERATIVE: Used to increase cylinder speed by directing rod end discharge to the piston side of the cylinder. Can be incorporated into directional control valve as fourth position.

CYLINDER: A device which converts hydraulic energy into linear mechanical motion and force.

CYLINDER; DOUBLE ACTING: A cylinder which can apply force and motion in either direction.

CYLINDER; SINGLE ACTING: A cylinder which can apply force in one direction only.

CYLINDER; DEPTH CONTROL: A mechanical or hydraulic device, adjustable, for limiting cylinder stroke.

CYLINDER; REPHASING: A cylinder design which permits the use of two or more cylinders in series, automatically synchronizing cylinder position at the end of each stroke.

DETENT: A spring device which maintains the spool of a directional control valve in position.

DETENT RELEASE: A mechanical, hydraulic or electrical device for releasing the detent.

FILTER: A device incorporated into a hydraulic system to remove contaminants from the oil.

FITTING: A device for connecting hose or pipe to hydraulic components.

FLOAT SPOOL (POSITION): A spool valve design which connects all ports to the tank (return) port, usually in a detented fourth position, allowing a cylinder or motor to "float".

FLOW RATE: The volume of fluid passing through the system or component in gal. per min. (or l/m)

FLUID POWER SYSTEM: The transmission and control of power through the use of fluid pressure.

MOTOR: A device which converts hydraulic energy into rotary motion, either fixed or variable.

PORT: The internal or external terminus of a passage. The point where the fitting is attached.

PRESSURE: The force per unit area, expressed in pounds per square inch (psi), bars, or atmospheres.

PRESSURE; BACK: The pressure encountered on the downstream or return side of a component.

PRESSURE; CRACKING: The pressure at which a pressure operated valve begins to pass fluid.

PRESSURE; MAXIMUM RATED: The maximum pressure at which a component should be operated on a continuous basis, usually the relief valve setting at maximum flow rate.

PUMP: A device which converts mechanical energy into hydraulic energy, either fixed or variable.

RESERVOIR: A container which stores the liquid in a fluid power system.

SEAL: A device which prevents or controls the escape or passage of hydraulic fluid.

VALVE: A device which controls fluid flow rate, direction, or pressure.

VALVE; DIRECTIONAL CONTROL: A device for directing or preventing the oil flow in a system.

OPEN CENTER (TANDEM) TYPE: Has the inlet port connected to the outlet (tank) port in neutral.

CLOSED CENTER TYPE: Has the inlet port blocked from the outlet and work ports in neutral.

TWO-WAY: A 2 port valve with inlet and outlet ports. THREE-WAY: A 3 port valve (in, out and work) normally used with a single acting cylinder or uni-directional motor.

FOUR-WAY: A 4 port valve (in, out and 2 work) used with double acting cylinders, bi-directional motors.

TWO, THREE, FOUR POSITION: The number of positions in which a valve can be positioned.

SERIES TYPE: A multiple spool valve in which the return oil from the first spool is directed to the inlet of the second spool (and from the second to the third, etc.). This type valve permits simultaneous operation of two or more functions with the same oil flow. However, the total pressure requirements of all functions are accumulative.

PARALLEL TYPE: A multiple spool valve in which the inlet oil is connected to all spools simultaneously. If more than one spool is actuated, the function requiring the lowest pressure will operate first.

SERIES-PARALLEL TYPE: A multiple spool valve which has all spools connected to the open center passage in neutral. However, when actuated, the upstream valve takes full priority. The return oil is directed to downstream spools as in a series type valve.

POWER BEYOND (HIGH PRESSURE CARRYOVER): A sleeve attachment which permits the oil flow from one valve (when in neutral) to be used by another valve downstream. Hence, a 3-spool valve could be connected to a 2-spool valve to create a 5-spool valve. The first valve takes priority and must have a separate outlet port to return oil from an activator back to the reservoir.

LOAD CHECK (LIFT CHECK): A device which prevents a load from dropping when a valve is shifted, until ample pressure and flow is available to hold or move the load.

Warranty

Kiwi Fence Systems, Inc. warrants up to one year only products of its manufacture, against failure caused by defective materials or workmanship which occur during normal use. Kiwi's obligation is to repair or replace any part of any product that Kiwi's inspection shows to be defective. (All inspections conducted at the Kiwi facility). Kiwi shall not be liable for loss of time, manufacturing costs, labor, material, loss of profits, shipping costs, consequential damages, direct or indirect because of defective products or workmanship.

KIWI FENCE

(724) 459-8991
www.postdriver.com