

HIGHLINE MFG.
INC.

1997

XL-78

**Assembly-Operator
Parts Manual**

Presidents Message

The XL-78, a proven name in the rock picking field, is manufactured by HIGHLINE Mfg. Inc. The XL-78 rock picker was designed to work in the most difficult of rock picking situations. A little time and effort spent in proper maintenance will increase the performance and durability of your picker.

This operator manual has been prepared to provide information necessary for the safe and efficient operation of your XL-78 picker. In it you will find safety procedures, maintenance routines and detailed part diagrams.

In order to maintain high standards, changes or improvements are made from time to time. HIGHLINE reserves the right to make these changes and add improvements when practical to do so without incurring any obligation to make such changes and improvements on machines sold previously.

Should the need arise, this manual will assist you in acquiring replacement parts. Should your dealer not have the parts you require in stock, they will be happy to order them for you. If you should find that you require information not covered in this manual, feel free to consult HIGHLINE or your local dealer.

HIGHLINE Mfg. Inc. thanks and congratulates you for selecting the XL-78 rock picker as the machine of your choice.



Raymond Bussiere
President

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President's Message

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Warranty

HIGHLINE Mfg. Inc. warrants its products to the original owner for a period of two years from date of purchase, subject to the following provisions.

- Warranty registration must be submitted to Highline Mfg. within 30 days of purchase
- 1st year Parts & Labor
- 2nd year Parts Only
- Warranty service must be performed by a HIGHLINE dealer authorized to sell new equipment of the type involved. At the time of requesting warranty service, the purchaser must present evidence of the date of delivery of the equipment. The purchaser shall pay any premium for overtime labor requested by the purchaser, any charge for making service calls, and any charges incurred in transporting the equipment to and from the place where the warranty work is performed. Freight costs associated with warranty repairs are not reimbursable.
- Any labor subject to warranty must be authorized by a HIGHLINE Mfg. Inc. representative, before work is started.
- Machines used for rental, custom work, industrial or construction use will be warranted for a period of 30 days from date of purchase. (Parts and Labor)
- Warranty will be void if any component of this machine is altered or modified in any way, unless written permission is given by HIGHLINE Mfg. Inc.
- HIGHLINE Mfg. Inc. will not assume any responsibility for any damage that may occur to equipment to which this machine may be attached.
- Warranty terms and conditions are subject to provincial and state legislation.
- Warranty is limited to the purchase value of the equipment and can never exceed the MSRP.

Safety Precautions

CAREFUL OPERATION IS THE BEST INSURANCE AGAINST AN ACCIDENT
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- Always disengage PTO before dismounting tractor. Do not operate unless PTO guards are in place. PTO guards must turn freely and be properly attached and maintained.
- Always keep safety PTO shields in place.
- Never allow anyone to stand behind rock picker while dumping or picking rocks.
- Ensure that the apron is completely down before the bucket begins to dump. Stones could be caught under the apron, not allowing it to lower onto the frame. If this occurs and the bucket is lifted serious damage may result.
- Keep yourself and others clear of rotating parts to prevent injury.
- Always shut machine off before servicing.
- Never attempt to manually remove rocks from tines while PTO is engaged. Disconnect PTO before cleaning rock picker.
- Lower transport locks before raising bucket. To remove transport locks, raise apron slightly and lower brackets. **DO NOT** lift bucket when transport locks are in position otherwise sever damage **WILL** occur.
- Relieve pressure in hydraulic lines before disconnecting lines or performing maintenance on the hydraulic system.

1. Pre-delivery & Installation Instructions

1.1 General Description of XL-78

The XL-78 rock picker covers a width of 7' wide and has a dumping height of 8'. One set of hydraulic lines are required for dumping and lowering the picker's collecting apron. The rock picker may either be PTO or hydraulic driven however the hydraulic driven reel may be reversed if the rock picker becomes plugged.

1.2 Pre-Delivery Check List

The following is a list of parts required if the XL-78 has not been assembled prior to delivery. If any parts are not included contact your authorized HIGHLINE dealer or HIGHLINE Mfg. Inc.

Quantity	Description	Part No.
1	XL-78 Rock Picker	XL-78H
2	21" Tire Assemblies	70104
2	21" Axle Assemblies	70088
2	Hub Complete	301115
8	3/4"x2-1/2" UNC Grade 5 Bolt	B5C1240P
8	3/4" UNC Nut	NC12P
8	3/4" Lock Washer Plated	LW12P

1.3 Assembly Instructions

The only assembly required on the XL-78 is tire mounting. Mounting of the tire and axle involves bolting the axle plate to the frame with the bolts supplied.

2. Operating Instructions

2.1 Field Preparation

Field preparation plays a major role affecting the picking performance of the XL-78. For best picking conditions, the field should be cultivated prior picking. This operation brings stones to the surface and buries field residue.

2.2 Pre-start instructions

Transport locks need to be lowered before raising bucket. To remove transport locks, raise apron slightly and lower locks. **Warning: DO NOT lift bucket when transport locks are in position otherwise severe damage WILL occur.**

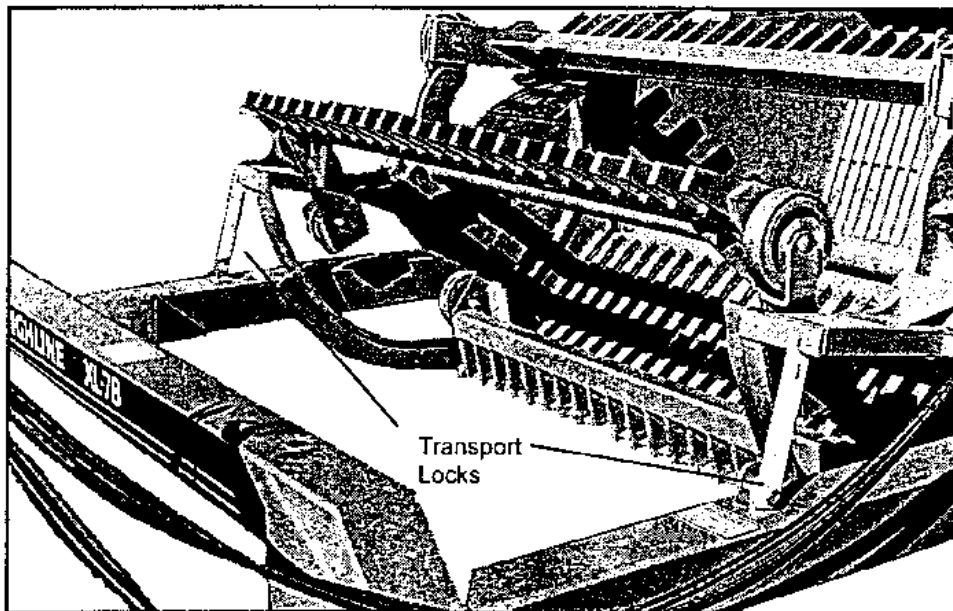


Figure 1. Locks in Transport Position

2.3 Transporting Instructions

To ensure safe transport of the XL-78, the transport locks and reel should be raised to prevent the apron from dragging. To put transport locks in place, raise the apron until the locks catch on the reel frame. To lower locks, raise apron until locks are free and move them forward.

For road transport, the hitch may be turned to reduce the travel width of the rock picker. To change the position of the hitch, the wedge is removed and the hitch is positioned for field or transport position. The wedge is then placed back into position, with the retaining pin in place, and the machine is now ready for field or transport use.

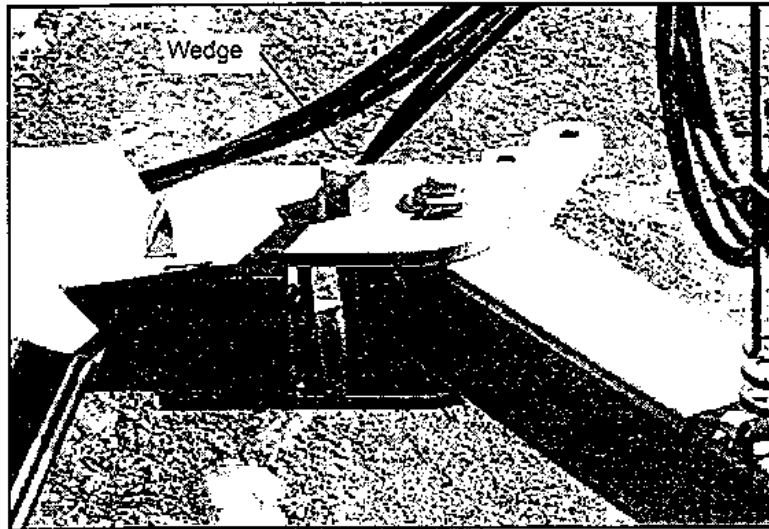


Figure 2. Hitch Wedge

2.4 Apron Height Adjustment & Bucket Dumping

The apron (Figure 3) height is adjustable using the hydraulic cylinders. The working height of the apron will depend upon the soil conditions and the size of rocks. By extending the cylinder, the apron will lower. Extending the cylinders until the reel touches the frame will set the apron at its lowest picking level. Extending the cylinder more will raise the bucket into dumping position.

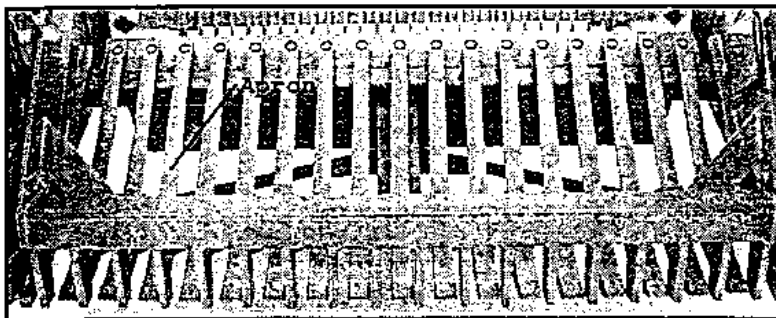


Figure 3. Front View of Apron

2.5 Field Instructions

For proper operation, the XL-78 should run at a field speed of 3-4 mph (4.8-6.5 km/h) and have a reel speed of 35 rpm. When picking large rocks, the field speed and reel speed should be decreased to reduce possible damage of large impacts. The operating height of the apron varies depending on the field conditions. The apron should be adjusted to allow it to follow the contour of the ground and still remain slightly below the stone.

2.6 Maintenance Instructions

To ensure long operating life of your XL-78, follow this maintenance procedure.

- Periodically check tire air pressure to guarantee equal tire pressure.
- Check gear box oil and add #90 gear oil if needed.
- Check all bolts and set screws for tightness periodically.
- Check chain tightner (If PTO equipped).
- Grease the following points as described.

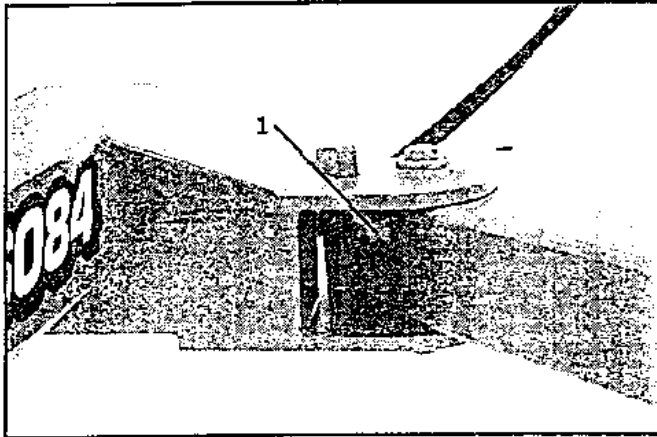


Figure 4. Hitch Greasing Points

Item No.	Description	Frequency
1	Hitch Pivot	Monthly

*70068 Bolt sleeve drop in type
Bolt wedged in type*

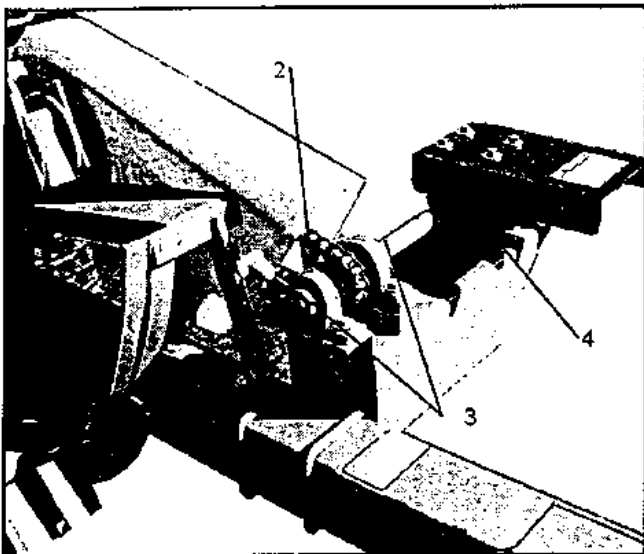


Figure 5. PTO Drive Greasing & Oiling Locations

Item No.	Description	Frequency
2	Gear Box Chain	As required
3	Gear Box Chain Bearing	As required
4	Gear Box	Bi-seasonally

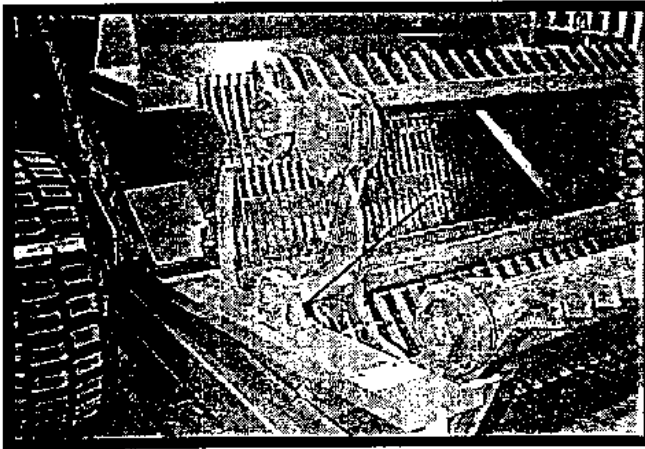


Figure 6. Reel Greasing Locations

Item No.	Description	Frequency
5	Reel Bearing (Right)	Seasonally

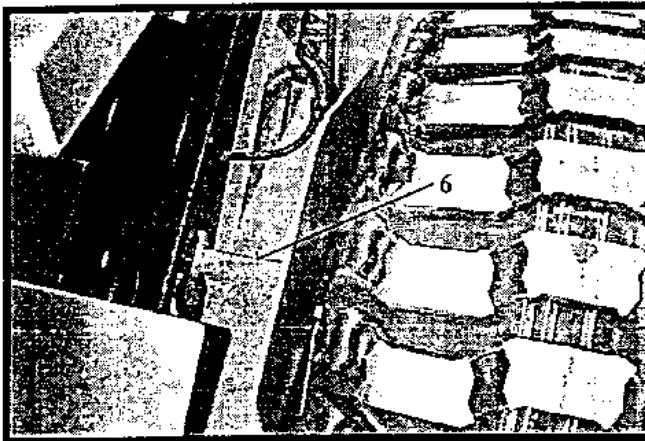


Figure 7. Apron & Tire Maintenance Locations

Item No.	Description	Frequency
6	Apron Pivot	Daily
7	Wheel Hub	4 times/year
8	Tire Pressure	As specified

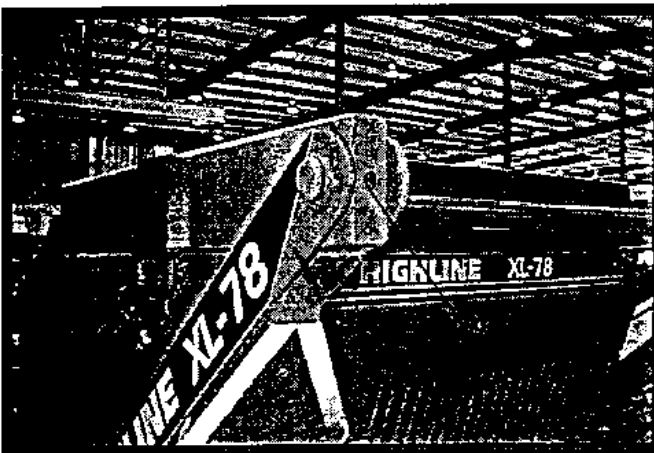


Figure 8. Grease Points of Dumping Mechanism

Item No.	Description	Frequency
9	Rear Bucket Pivot	Daily

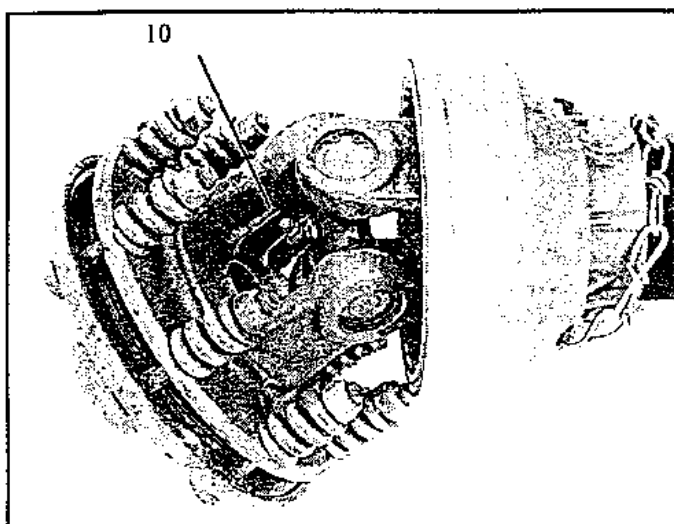


Figure 9. Clutch Grease Point

Item No.	Description	Frequency
10	Clutch Yoke	Daily

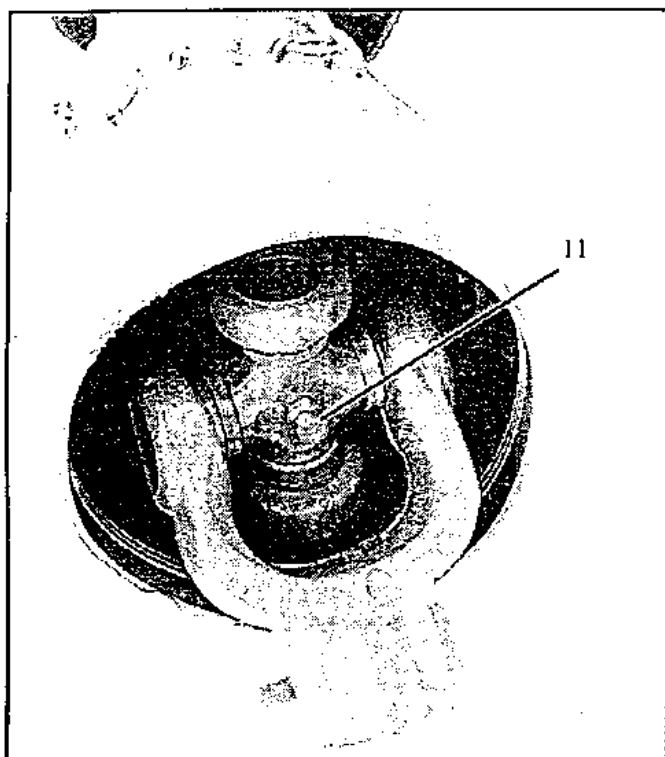


Figure 10. PTO Yoke Grease Point

Item No.	Description	Frequency
11	PTO Mount Yoke	Daily

2.7 "Series 40 PTO Clutch"

- Atmospheric conditions and prolonged storage may alter the operating characteristics of friction clutches. Before first use or after a period of storage, all spring adjusting nuts should be backed off until springs are loose, then tightened one turn.
- The clutch should then be slipped until it starts to smoke. The springs should then be set to the desired spring setting. Set all springs to the same length.

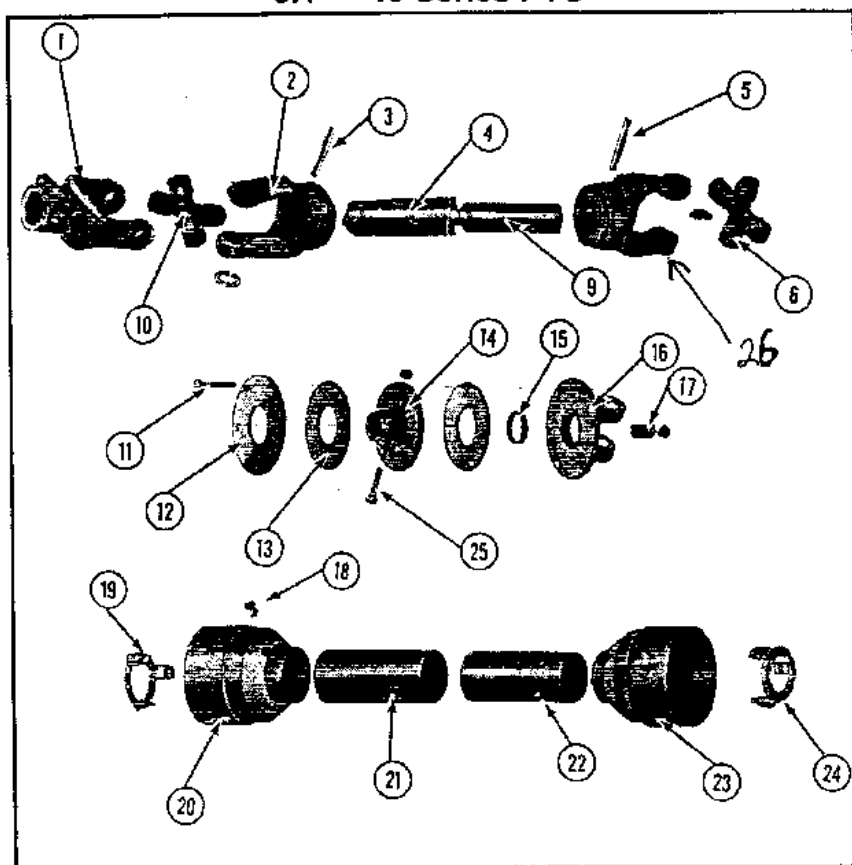
NOTE: After a clutch has been "run in", slippage will be approximately 20% higher than before.

- The temperature of the clutch should be checked often during the first 20 minutes of operation about every eight hours. If the clutch smokes or is too hot to touch, then the springs should be tightened or the clutch will fail.
- Some clutches may have a spring stop inside the spring to prevent tightening the spring beyond a preset length.

CAUTION! Injury may result if spring is tightened beyond preset length.
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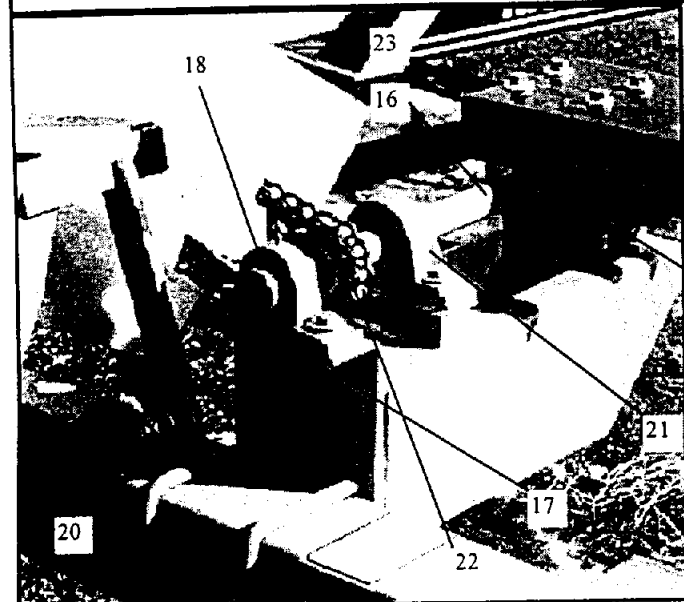
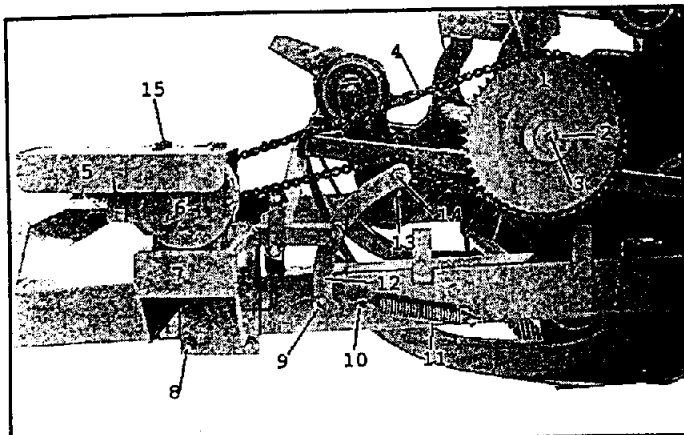
3. Parts Information

3.1 40 Series PTO



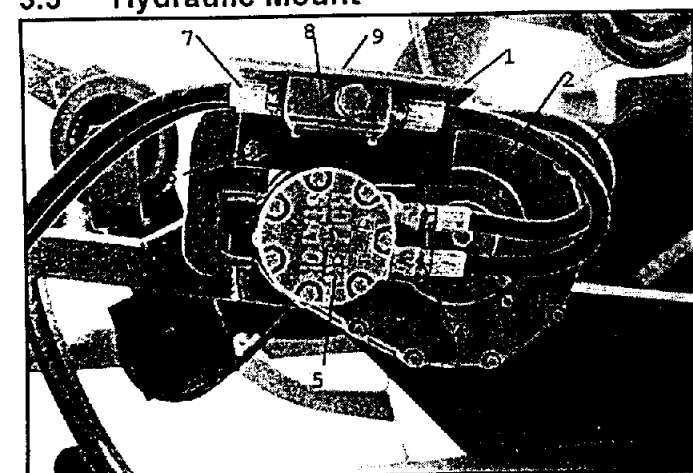
Item No.	Part No.	Description
1	901021	1-3/8" - 6 Spline Yoke 32819
	901048	1-3/8" - 21 Spline Yoke 32846
2	901023	Outer Tube Yoke 32821
3	901024	Roll Pin Outer Yoke 32822
4	901025	Outer Tube E1077
5	901028	Roll Pin 32826
6	901022	Cross Kit 32820
9	901035	Inner Tube E1076
10	901022	Cross Kit 32820
11	901031	Spring Bolt (M10x80) 32829
12	901036	Pressure Plate 32834
13	901029	Clutch Facing 32827
14	901037	Clutch Support 32835
15	901038	Bushing 32836
16	901039	Flanged Yoke 32837
17	901030	Clutch Spring 32828
18	901137	Cone Retaining Bolt 32829
19	901040	Outer Tube Retaining Collar 32838
20	901041	Outer Tube Cone 32839
21	901042	Outer Shield Tube 32840
22	901043	Inner Shield Tube 32841
23	901044	Inner Tube Clutch Cone 32842
24	901045	Inner Tube Retaining Collar 32843
25	901034	M12 x 65 Bolt 32832

3.2 Gearbox Mount



Item No.	Part No.	Description
1	701020	80C50 Sprocket 32679
2	801302	1/2"x3-1/8" Washer 32734
3	B5C0816	1/2"x1" UNC Bolt 31130
	LW08P	1/2" Lock Washer Plated 31244
4	702001	#80 Chain x 98 Pins 32686
	702002	#80 Connector Link 32689
	702003	#80 Half Link 32690
5	70035	Gearbox Guard
6	101004	Gearbox Complete 32201
7	70024	Gearbox Mount
8	UB1296128	3/4"x6"x8" U-Bolt
	LW12P	3/4" Lock Washer Plated 31244
	NC12P	3/4" UNC Nut 31166
9	70037	Eye Bolt Hinge Mount
10	EB0896	1/2"x6" UNC Eye Bolt
	LNC08	1/2" UNC Lock Nut 31173
11	400005	Tightner Spring 32352
12	70036	Tightner Arm
13	701003	80A12 Idler Sprocket 32664
14	B5C1240P	3/4"x2-1/2" UNC Grade 5 Bolt 32040
	LW12P	3/4" Lock Washer Plated 31244
	NC12	3/4" UNC Nut 31166
15	B12MM30M	M12x30 Bolt Grade 8.8 31320
16	101002	1-1/2"x25" Gearbox Shaft 32200
17	B5C0940	9/16"x2-1/2" UNC Grade 5 31342
		Bolt 31152
	FW09	9/16" Flat Washer 31242
	LNC09	9/16" Lock Nut 31179
18	400001	1-3/8" Pillow Block Bearing 32348
19	B12MM30MM	M12x30 Bolt Grade 8.8
20	FW12	3/4" Flat Washer 31238
	CP0332	Cotter Pin
21	400034	1 1/2" Pillow Block 32381
	B5C0932	9/16"x2" UNC Gr. 5 31451
	FW09	9/16" Fl Washer 31242
	LNC09	9/16" UNC Locknut 31179
22	701016	80C11 Sprocket 32676
23	400028	Chain Guard 32325

3.3 Hydraulic Mount

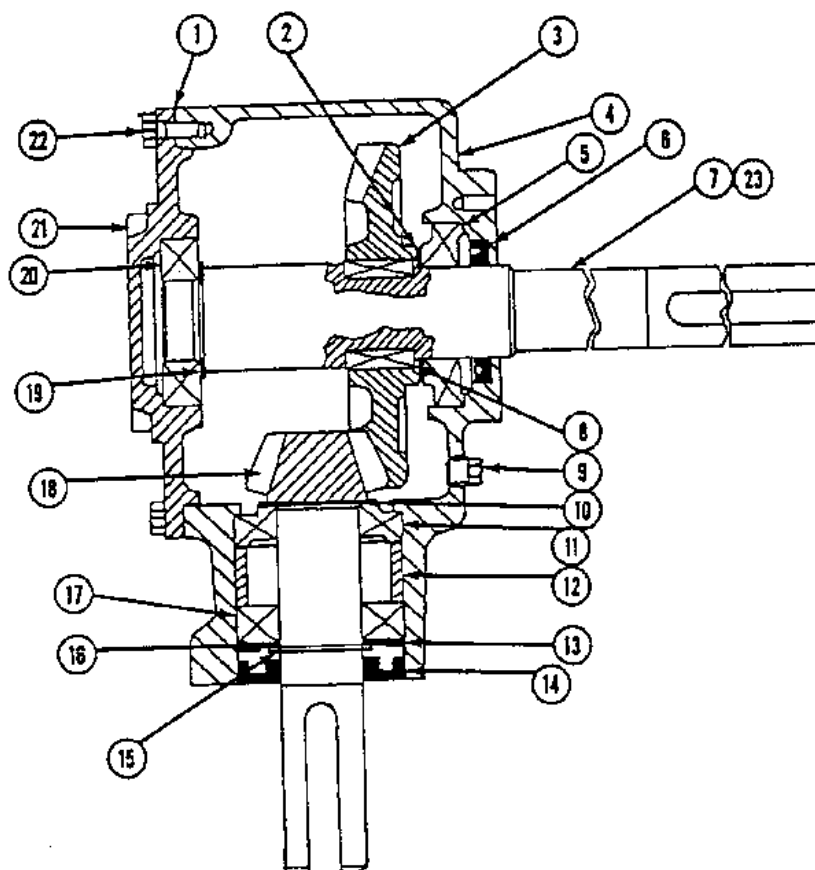


Item No.	Part No.	Description
1	70038	Hyd. Cushion Valve Anchor
2	101201	590 Gear Box 32269
3	601007	1/2"x20" 08MB-08MB Hose 32582
4	60SB1008	7/8" MORB x 1/2" FNPT Str.
5	601302 32644	RE1808050 Hyd. Motor
6	B5C0824	1/2"x1-1/2" UNC Grade 5 Bolt 31307
	LNC08	1/2" UNC Lock Nut 31173
7	601008	1/2"x144" 08MB-08MB Hose 32583
8	601404	DXV50 Cushion Valve 32660
9	70038	Hyd. Cushion Valve Anchor
10	B5C0816	1/2"x1" UNC Grade 5 Bolt 31064
11	LW08	1/2" Lockwasher 31244

32647

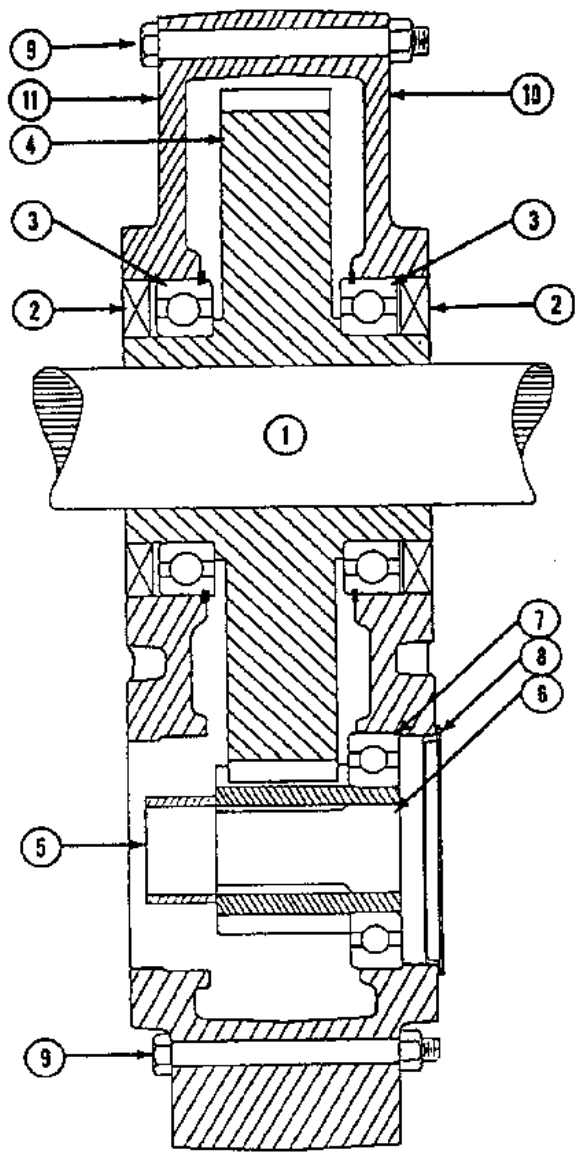
SEAL KIT

3.3 Gear Box Single



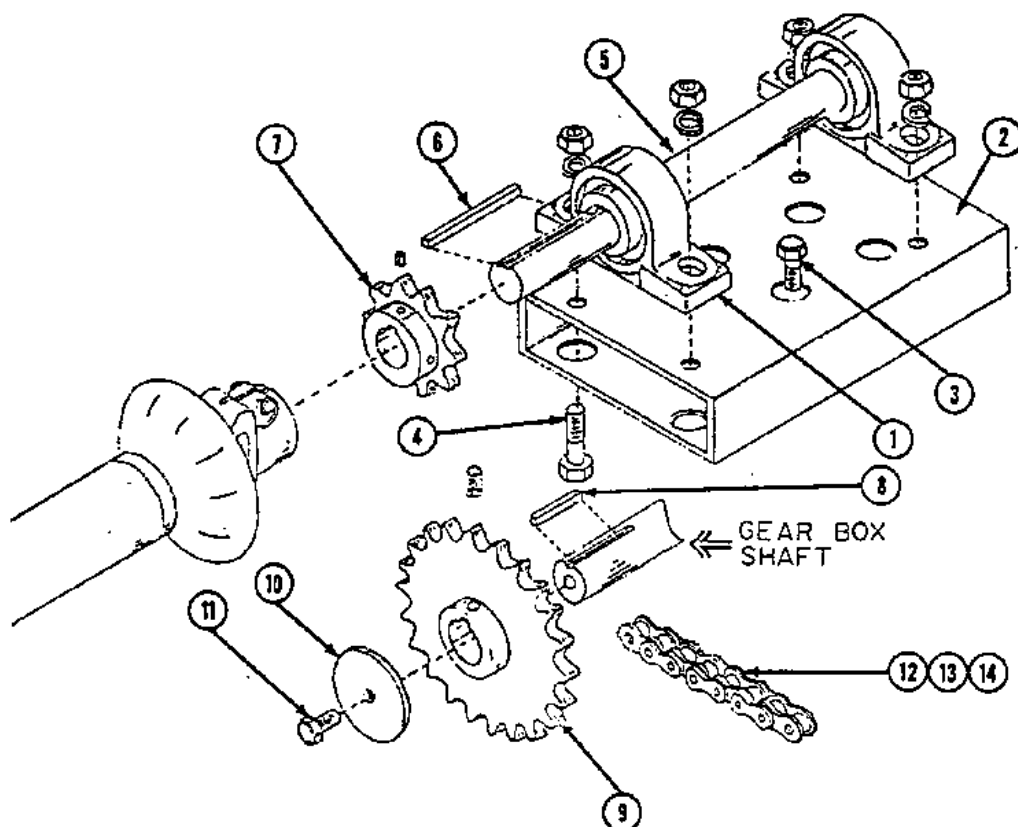
Item No.	Part No.	Description
1	100001	Gasket 32177
2	100002	Shim 40.3 x 51.5 32178
3	100003	Gear Z30 M5 32179
4	100004	Casing 32180
5	100005	30208 Bearing 32181
6	100006	Oil Seal 32182
7	101002	1-1/2"x25" Shaft
8	100007	Parallel Key 10x8x30 32183
9	100008	1/4" Plug 32184
10	100009	Shim 35.3x48 32185
11	100010	30207 Bearing 32186
12	100011	Spacer 32187
13	100012	Snap Ring 72 UNI7437 32188
14	100013	Oil Seal 32189
15	100014	Snap Ring 35 UNI7435 32190
16	100009	Shim 35.3x48 32185
17	100015	6207 Bearing 32191
18	100016	Pinion Gear Z10 M5 32192
19	100009	Shim 35.3x48 32185
20	100015	6207 Bearing 32191
21	100017	Cover 32193
22	100018	Bolt M8x20 8.8 32194
	101003	Long Shaft Gearbox Complete

3.4 590 Parallel Drive Gear Box



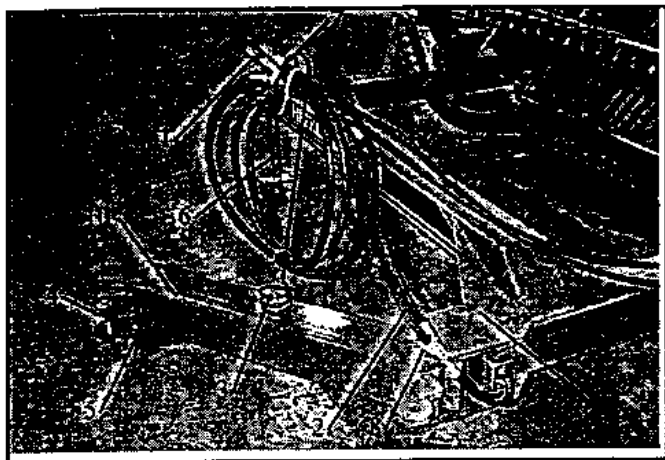
Item No.	Part No.	Description
1	400002	2" Reel Shaft 32349
2	101202	1477 Seal 32210
3	101203	1417 Bearing 32211
4	101208	58 Tooth Gear 32216
5	101206	1821 Spacer 32214
6	101207	13 Tooth Pinion 32215
7	101204	1418 Bearing 32212
8	101205	1154 Cover 32213
9	B5C0548P	5/16"x3" UNC Grade 5 Plated bolt 32050
	LNC05	5/16" UNC Lock Nut 32117
10	101210	Case, Plain Side 32218
11	101209	Case, Hydraulic Motor Side 32217
	101201	590 Gearbox complete 32209

3.6 1000 RPM kit

used only PTO

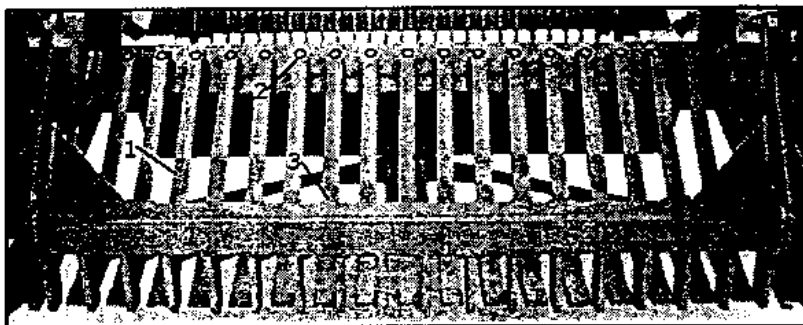
Item No.	Part No.	Description
1	400001	1-3/8" Pillow Block Complete
2	100019	1000 RPM Mounting Bracket
3	B5C0816	1/2"x1" UNC Grade 5 Bolt
	LW08P	1/2" Lock Washer Plated
4	B5C0832	1/2"x2" UNC Grade 5 Bolt plated
	NC08P	1/2" UNC Nut Plated
	LW08P	1/2" Lock Washer Plated
5	400020	1-3/8"x16-1/2" Shaft
6	801606	5/16"x4" Key
7	701008	60B15 Sprocket
8	801602	5/16"x2" key
9	701009	60B30 Sprocket
10	801302	3-1/8" O.D. x 1/2" I.D. Washer
11	B5C0616	3/8"x1" UNC Grade 5 Bolt
	LW06P	3/8" Lock Washer Plated
12	702005	#60 Chain
13	702006	#60 Connector Link
14	702007	#60 Half Link
	400021	1000 RPM Kit Complete

3.7 Hitch



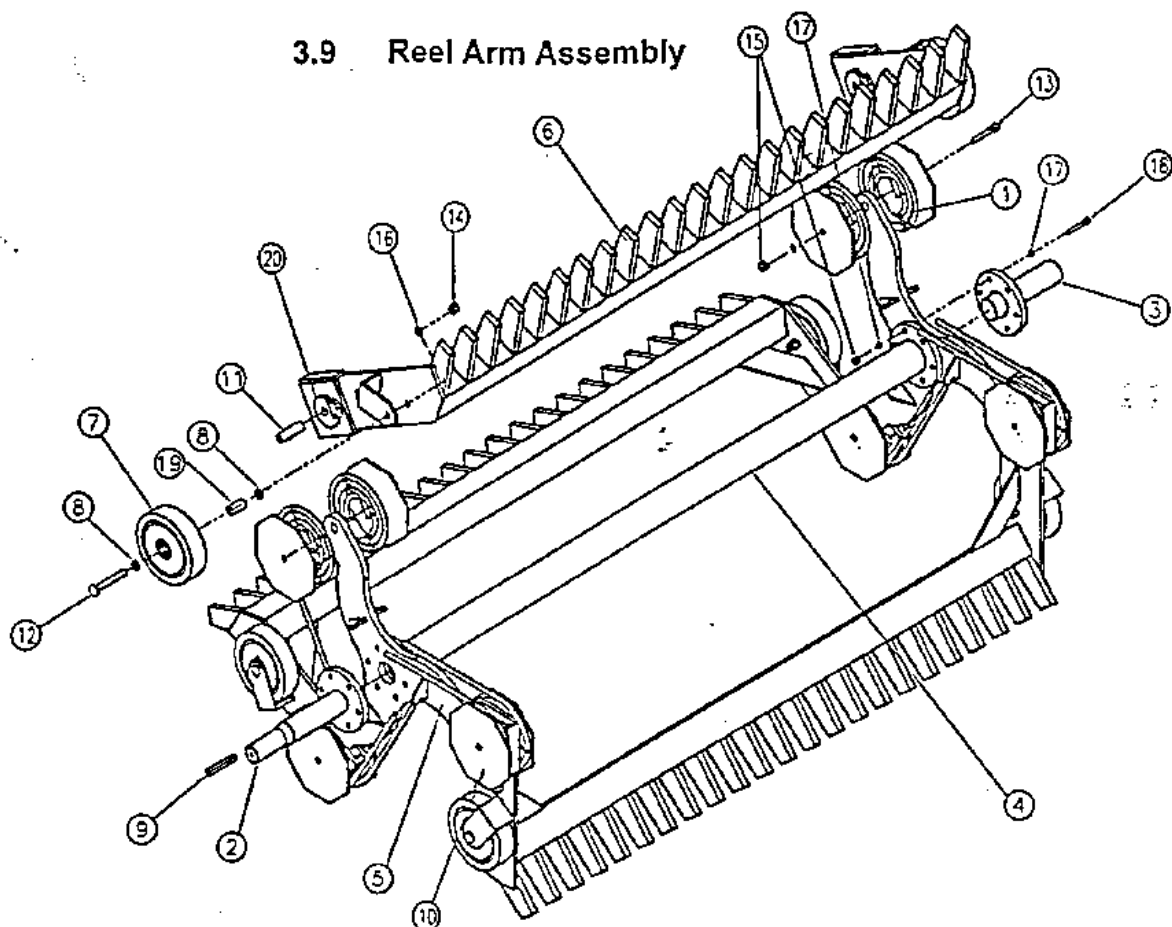
Item No.	Part No.	Description
1	601217	1/2" Pioneer Ends
2	30159	1/2"x96" Hydraulic Hose
3	500001	Hose Holder
4	70003	Hitch Clevis
5	B5C16120P	1"x7 1/2" UNC Grade 5 Bolt
6	92095	5000 lb. x 15" Hitch Jack
7	500021	Weld on Pivot Tube
8	B5C16160	1"x10" UNC Grade 5 Bolt
	LNC16	1" Lock Nut
	70040	Washer
9	70039	Hitch Wedge
10	70002	Hitch Arm

3.8 Apron



Item No.	Part No.	Description
1	500102	Apron Tine
2	B8C0840	1/2"x2-1/2" UNC Grade 8
	LNC08	1/2" UNC Lock Nut
3	B8C0856	1/2"x3-1/2" UNC Grade 8
	LNC08	1/2" UNC Lock Nut

3.9 Reel Arm Assembly



Item No	Part No	Description
1	30138	Reel Spring
2	70094	Drive Shaft
3	70095	Idler Shaft
4	70096	Reel Arm Tube
5	70097	Reel Arm
6	70105	Reel Bat Assembly
7	70106	Bogie Wheel (Complete)
8	E2304	Bogie Wheel Bushing
9	E3045	Drive Key
10	E4548	Spring Retaining Plate
11	E4549	Reel Bat Bushing
12	C5C1064	5/8 X 4 UNC GR5 Carriage Bolt
13	B5C0880P	1/2 X 5 UNC GR5 Bolt
14	LNC10	5/8" UNC Locknut
15	LNC08	1/2" UNC Locknut
16	FW10	5/8" Flatwasher
17	FW08	1/2" Flatwasher
18	B8C0848	1/2 X 3 UNC GR8 Bolt
19	400007	Bogie Wheel Bushing
20	E4547	Reel Spring Holder
-	70090	Reel (Complete)

*spacer keeps from
gunning*

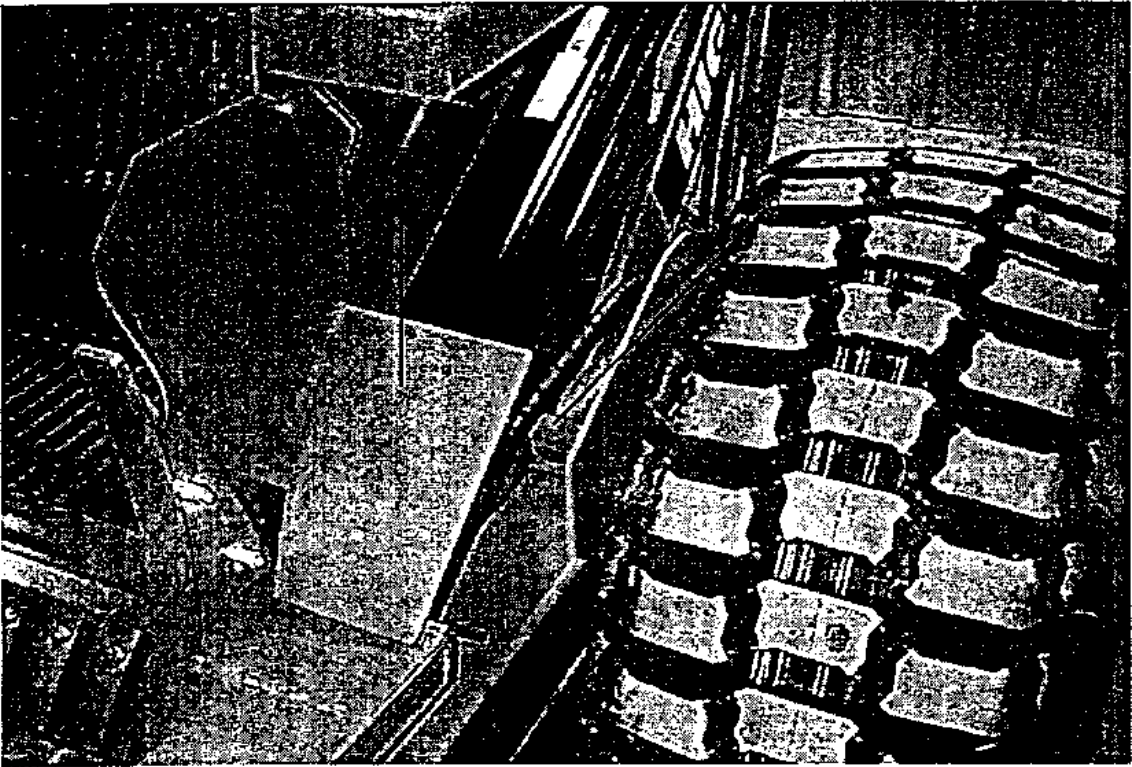
*stops wheel from going
side to side*

3.10 Dump & Bucket



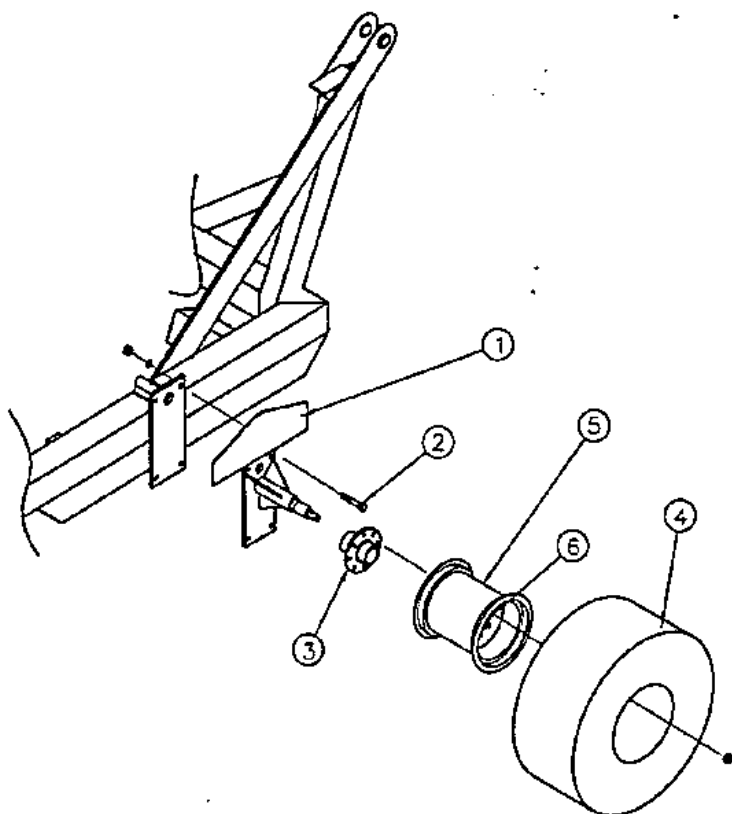
Item No.	Part No.	Description
1	70025	Dump Pin
2	70089	Bucket
3	70091	Dump Assembly
4	30174	1.25" Cylinder Pin
5	30160-1	4-1/2" x 42" Hydraulic Cylinder (Right)
	30160-2	4-1/2" x 42" Hydraulic Cylinder (Left)
6	B8C1040P	5/8 x 2-1/2 UNC Gr 8 Bolt

3.11 Cylinder Guard



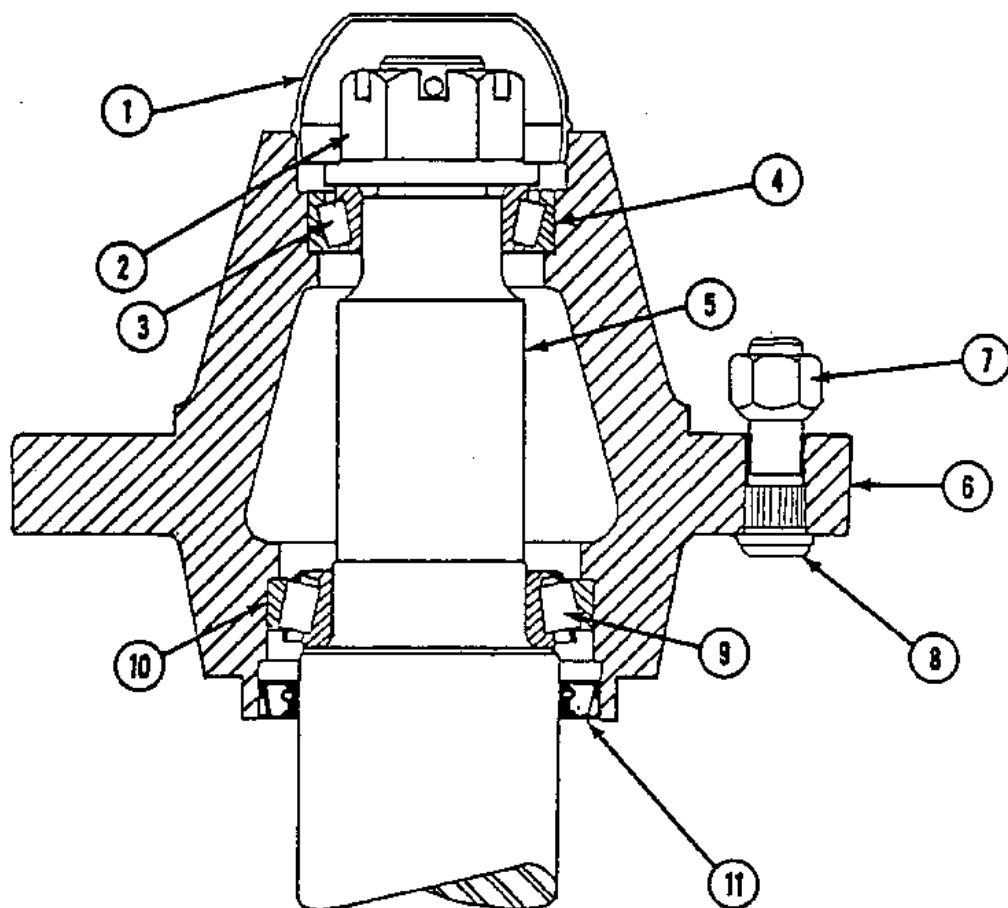
Item No.	Part No.	Description
1	70043	Hydraulic Cylinder Rock Shield
2	70027	Apron Pin with Outer Washer

3.12 Axle and Wheels



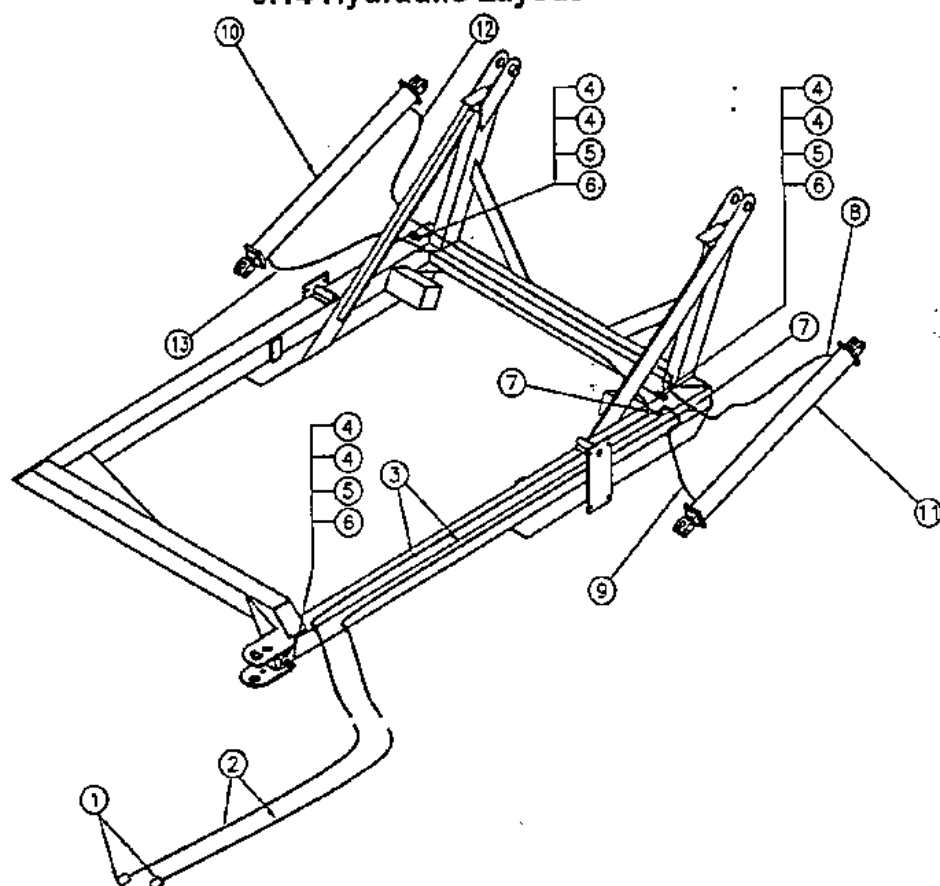
Item No.	Part No.	Description
1	70088	21.5" Axle Assembly
2	B5C1240P	3/4"x2-1/2" UNC Grade 5 Bolt
	LW12P	3/4" Lock Washer Plated
	NC12P	3/4" UNC Nut
3	301115	H817 Hub Complete
4	30136	Softrac 21.5L x 16.1 10 Ply Tire
5	301118	W16C x 16.1 Wheel
6	91048	TR415 Valve Stem

3.13 H817 Hub



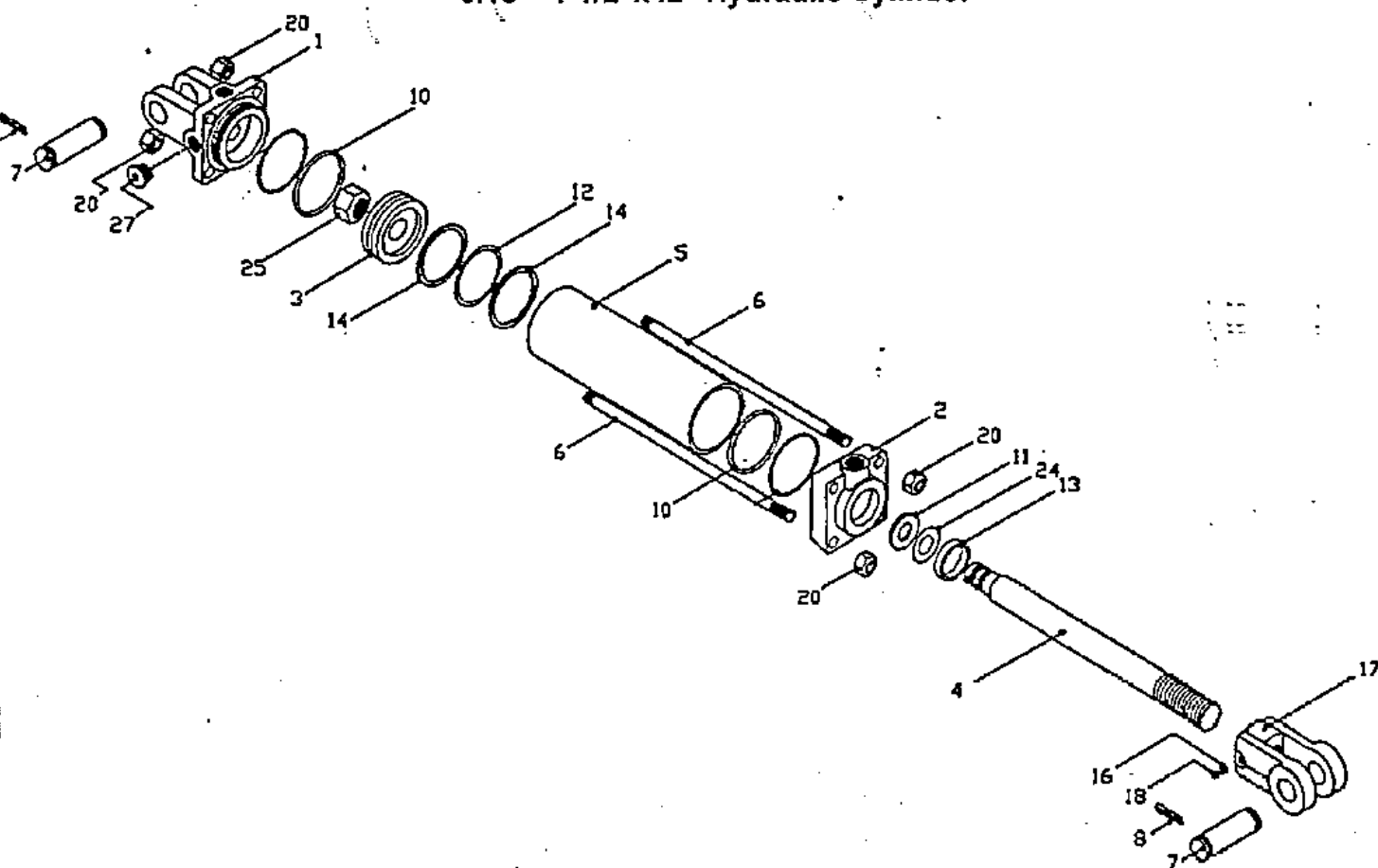
Item No.	Part No.	Description
1	301101	DC26 Dust Cap
2	301102	Castellated Nut 1-1/4" - 12 UNF
3	301103	LM501349 Outer Cone
4	301104	LM501310 Outer Cup
5	301116	S817 Spindle Only x 16"
6	301106	H817 Hub Only
7	301107	WB18 Nut 5/8" - 18 UNF
8	301108	WB46 Stud 5/8" - 18 UNF x 2-1/4"
9	301109	387AS Inner Cone
10	301110	382A Inner Cup
11	301111	SE42 Grease Seal

3.14 Hydraulic Layout



Item No	Part No	Description
1	601217	PIONEER MALE TIPS 1/2"
2	30159	HOSE, HY, 1/2, 96, 8MPX-8MJ
3	30139	HOSE, HY, 1/2, 169, 8FJX-8FJX
4	801702	OIL LINE CLAMP
5	FW05P	5/16 FLATWASHER PLTD
6	LNC05	5/16" UNC LOCKNUT
7	872FS08	08 JIC TEE M-F-M
8	30140	HOSE, HY, 3/8, 67, 8MJ-8MBX90
9	30158	HOSE, HY, 3/8, 56, 8MJ-8MBX90
10	30160-1	CYL, HYD, 4.5x42, RHS
11	30160-2	CYL, HYD, 4.5x42, LHS
12	30141	HSE, H, 3/8, 144, 8FJX-8MBX90
13	30157	HSE, H, 3/8, 136, 8FJX-8MBX90

3.15 4-1/2"x42" Hydraulic Cylinder



Item No.	Part No.	Description
1	30175	Clevis Cap 4.5 ORB 1.25 Pin
2	30176	Rod Cap 4.5 x 2.0 Bore 3/4 ORB
3	30177	Piston 4.5" TC
4	30178	Rod Cyl 2.0 x 51.75 4.5 TC
5	301789	Tube 4.5 x 51.55 TC
6	30180	Tie Rod 5/8 x 51.55
7	30181	H2094 Pin 1.25 DIA x 3.88
8	30182	Pin Cotter 3/16 x 1-3/4 2N PL
10	30183	O Ring 244 4-1/4 x 4-1/2 D90
11	30184	O Ring 325 1-1/2 x 1-7/8 D90
12	30185	O Ring 346 4-1/8 x 4-1/2 D90
13	30186	Seal C/R 19783 Oil - 2 Rod
14	30187	Seal BU 244
16	30188	Thread Lock Nylon
17	30189	Rod Clevis 1-1/2 (1-1/4 Pin)
18	30190	Sc Sckt Set 3/8 UNC x 1/2 Knur
20	30191	Nut Hex 5/8 UNF Gr 5
25	30192	Nut Lock Hex 1-1/4 - 12 UNF
27	30193	3/4 - 16 UNF Plug
31	30194	THD PROT 3/4 UNF ORB

32 30338 Seal Kit 4.5x42

4. Specifications

Picking Width	7'
Dump Height	8'
Wheels	21.5" x 16.1 tires, on 8 bolt hub with 3" axle
Cylinders	4" x 42" with 2" shaft
Chain & Sprocket	No. 80
PTO Drive	540 PTO standard or 1000 PTO optional
Hydraulic Pressure	2000 psi.(13800 kPa)
Bucket Capacity	3.3 yd ³ (2.5 m ³)
Weight	Approximately 7250 lb. (3290 kg)