

HIGHLINE MFG.
INC.

1999

XL-78 ROCK PICKER

Assembly-Operator Parts Manual

MADE IN CANADA

Report: BMOB1R
 Date: 1/27/99
 Time: 16:28:50
 By: TERRY M QPADEV0006

CNS Bill of Materials - Single Level BOM Report

Page: 1

Parent Part #

Customer:

Customer Part #:

ECN #:

Eng. Drawg. #:

Location:

Revision: A 1/27/99

Size:

Seq/Line	Component Part #	Description	Quantity		Engineering	Stock	Vendor #	Loc.
			Per	Units		Drawing/Loc/Size/Item Type ECN#		
10-	1 30294	SCREW, TEK, 1/4X1	2.0000	EA		P		WRH
10-	2 31649	ELEC, CLAMP, CABLE, 1/2	1.0000	EA		P		WRH
10-	3 31650	ELEC, CLAMP, CABLE, 3/4	1.0000	EA		P		WRH
10-	4 30526	ELEC, LIGHT, RED&AMBER, LEFT	1.0000	EA		P		WRH
10-	5 30527	ELEC, LIGHT, RED&AMBER, RIGHT	1.0000	EA		P		WRH
10-	6 31535	BOLT, HEX, 1/4X1-1/2, UNC, GRS, 2P	8.0000	EA		P		WRH
10-	7 31646	BOLT, U, 3/8X6XS	4.0000	EA		P		WRH
10-	8 31174	NUT, NYLOCK, 1/4, UNC, 2P	8.0000	EA		P		WRH
10-	9 31176	NUT, NYLOCK, 3/8, UNC, 2P	8.0000	EA		P		WRH
10-	10 31351	WASHER, FLAT, 3/8, 2P	8.0000	EA		P		WRH
10-	11 31613	TIE, CABLE, NYLON, BLCK, 11-1/2, 40	5.0000	EA		P		WRH
10-	12 48109	BRACKET, LIGHT, RIGHT, RP	1.0000	EA		M		WRH
10-	13 48110	BRACKET, LIGHT, LEFT, RP	1.0000	EA		M		WRH
10-	14 48105	ELEC, HARNESS, LIGHTS, XL78	1.0000	EA		M		WRH

BT

ORIGINAL

FOR PRODUCTION
 USE

Report: BMD81
Date: 2/11/99
Time: 11:02:27
By: TERRY M @ HMHA

CRM Bill of Materials - Single Level BOM Rpt
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Page: 1

Parent Part

Customer Part #:

ECN #:

Eng. Dwg. #:

Location:

Revision: B 2/11/99

Size:

Customer:

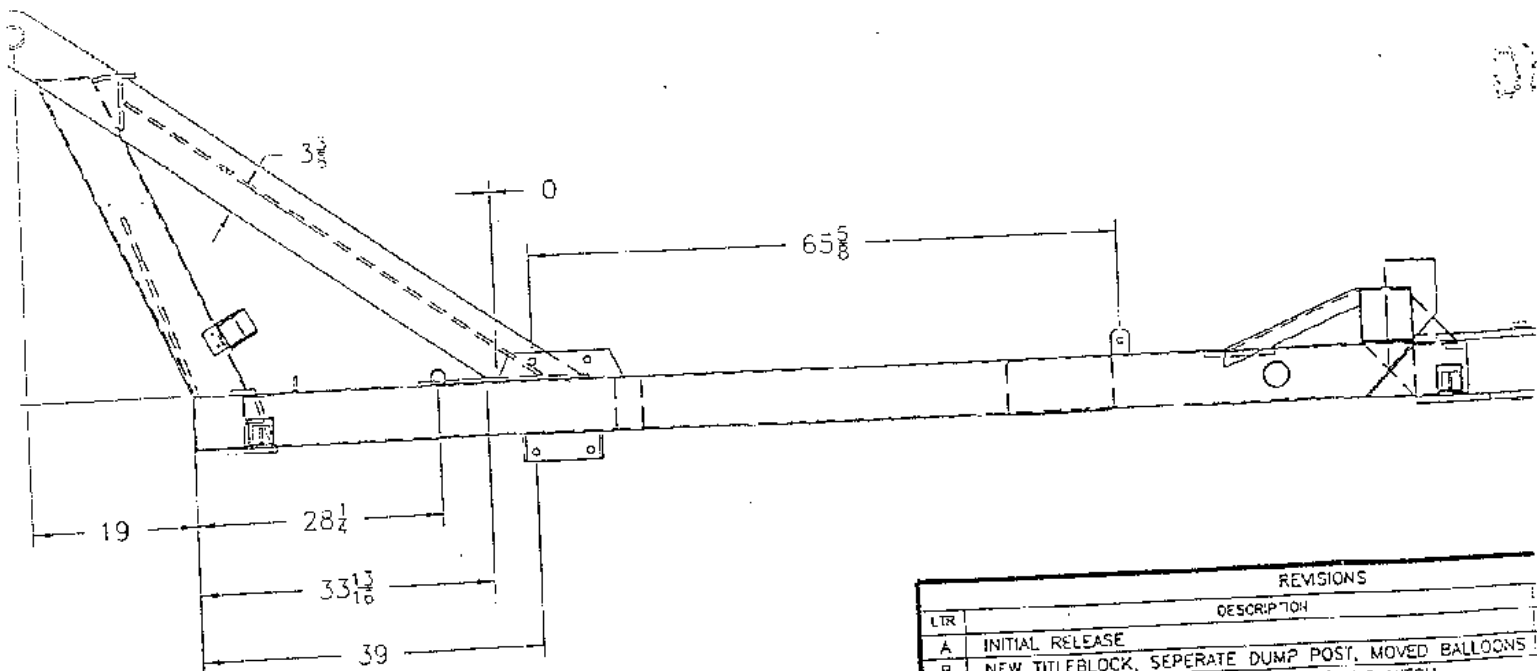
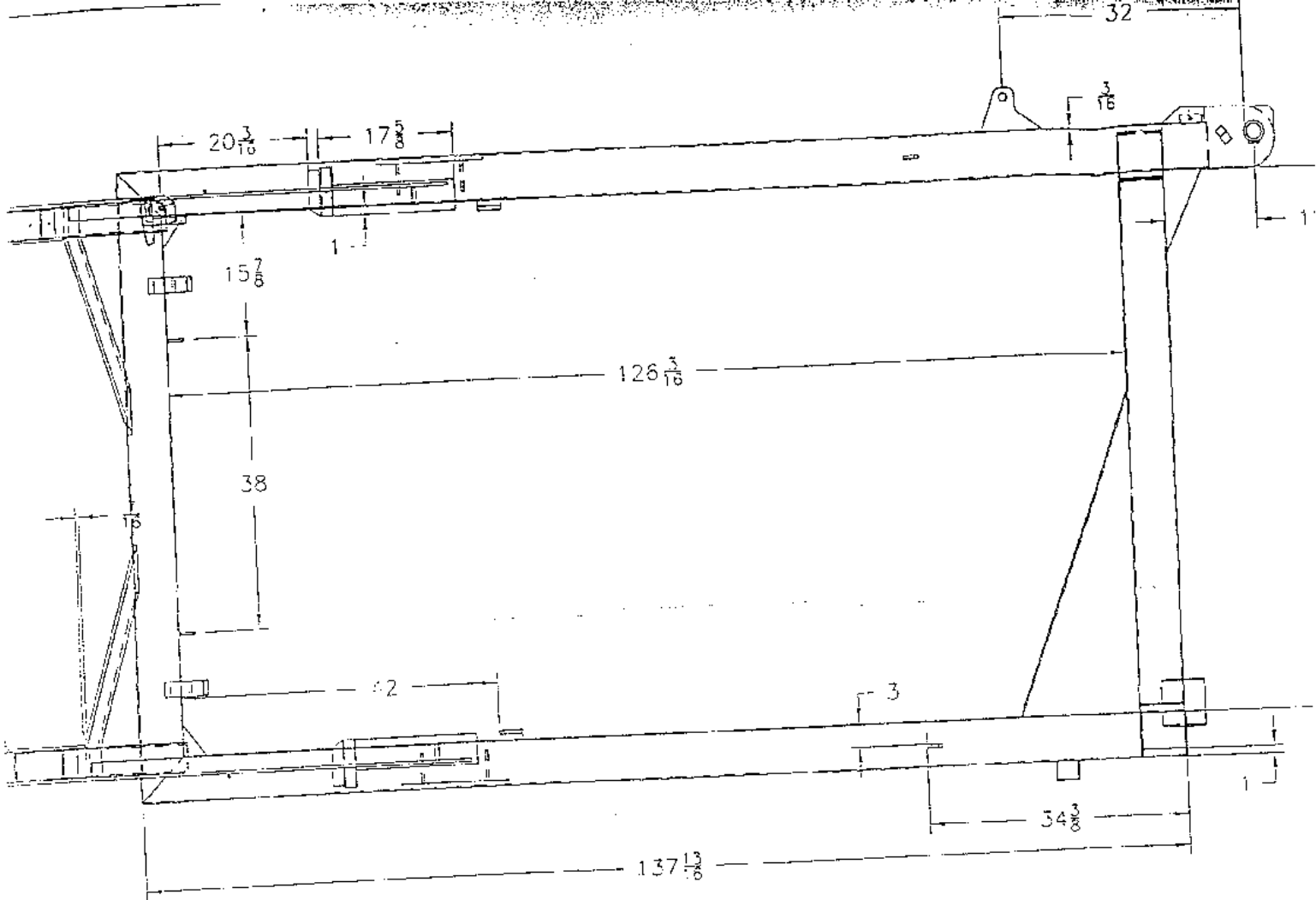
Seq/Line	Component	Part #	Description	Quantity	Engineering	Stock	Stock
				Per	Units	Drawing/Loc/Size/Item Type ECN#	Vendor # Loc.
10-	1	32247	HYD,CYL,3X14,1.25,8FP	1.0000	EA	P	WRH
10-	2	E4625	LOG,CYL,SWING HITCH	1.0000	EA	P	WRH
10-	3	30212	HYD,FIT,ELBOW,8MP-8MJ90	2.0000	EA	P	WRH
10-	4	30209	HYD,FIT,PIONEER,MALE,8FP	2.0000	EA	P	WRH
10-	5	30219	HYD,HOSE,3/8X96,8FJX-8MP	2.0000	EA	P	WRH

BT

ORIGINAL

FOR PRODUCTION

USE



REVISIONS	
LTR	DESCRIPTION
A	INITIAL RELEASE
B	NEW TITLEBLOCK, SEPERATE DUMP POST, MOVED BALLOONS
C	ADDED WEAR PLATES AND LUG FOR SWING HITCH
D	
E	
F	

Table of Contents

Table of Contents	1
Warranty	3
President's Message	5
Safety Precautions	6
1 Pre-Delivery & Installation Instructions	7
1.1 General Description of XL-78 Rock Picker	7
1.2 Pre-Delivery Check List	7
2 Operating Instructions	8
2.1 Field Preparation	8
2.2 Pre-Start Instructions	8
2.3 Transporting Instructions	8
2.4 Apron Height Adjustment & Bucket Dumping	9
2.5 Field Instructions	9
3 Maintenance Instructions	10
3.1 Grease Locations	10
4.0 Parts Information	12
4.1 Main Assembly	12
Main Assembly Drawing	13
4.2 Reel Assembly	14
Reel Drawing	15
4.3 Apron Assembly	16
Apron Drawing	17
5.0 Hydraulic Systems	18
5.1 Motor Hydraulics	18
Motor Hydraulic Drawing	19
5.2 Cylinder Hydraulics	20
Cylinder Hydraulic Drawing	21
6.0 590 Parallel Drive Gearbox	23
7.0 H817 Hub	25
Hub Drawing	26
8.0 Cylinders	27
8.1 4 ½ x 42, 2 Rod	27
4 ½ X 42 Cylinder Drawing	28
9.0 Specifications	30

NOTES:

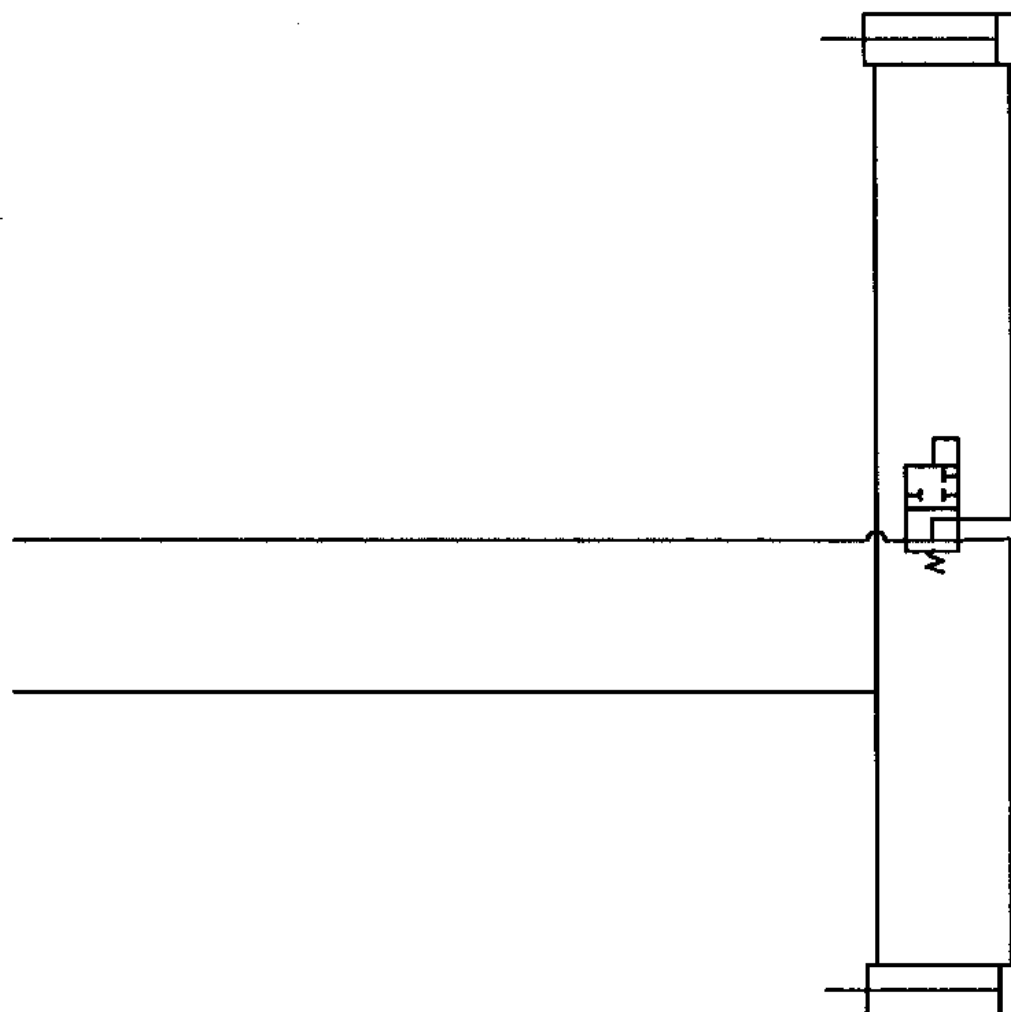
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The equipment shown is protected by patents.

Default Tolerances:

1. LINEAR DIMS. $\pm .005$
 $\frac{1}{16}$ - $\frac{1}{8}$ IN. FRACTIONAL = $\pm 1/16$
2. ANGLES $\pm 1/2^\circ$
3. CONCENTRICITY .010 DIA
4. SURFACE FINISH 125 MICRO INCH RMS
5. HATCHING INTERNAL RADIUS .015
6. WELLS SHARP CORNERS

DIMS ARE IN INCHES



REVISIONS

LWR	DESCRIPTION	DATE	CHANGED BY
A	INITIAL RELEASE	16 JAN 99	BJW
B			
C			
D			
E			
F			

Engineering: SJT

Drawn By: BJW

Page:
1 of 1

Scale: NTS

Size:
A

MATL

Date:

15 JAN 99

Model:

XL78

Description:

HYDRAULIC CYLINDER SCHEMATIC

HIGHLINE

MFG
INC.

Draw No:

70102

Rev
A

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:

- 1st year Warranty covers Parts & Labor
- 2nd year Warranty covers Parts Only
- Warranty registration must be submitted to HIGHLINE Mfg. Inc. within 30 days of purchase.
- Highline Mfg Inc. is not liable for any damages to this equipment resulting from use of this equipment that is inconsistent with this manual and such is not covered under this warranty.
- Warranty will be void, and Highline Mfg. Inc. will not be liable in any way, if the equipment is used for any other purpose than the intended agricultural application.
- All warranty service must be handled through an authorized HIGHLINE Mfg. Inc. dealer. At the time of requesting warranty service, the purchaser must present evidence of the delivery date of the equipment. The purchaser shall pay any premium for requested overtime, any charge for making service calls, and any charges incurred in transporting the equipment to and from the location of the warranty service. 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.
- Warranty will be void if any component of this equipment is altered or modified in any way, unless written permission is given by HIGHLINE Mfg. Inc.
- Equipment used for rental, custom work, industrial or construction use will not be warranted by Highline Mfg. Inc.
- HIGHLINE Mfg. Inc. will not assume any responsibility for any damage occurring to equipment which this equipment may be attached.
- Warranty terms and conditions are subject to provincial and state legislation.
- Warranty is limited to the Purchase price paid for the equipment, up to the Manufacturers suggested retail price. **ANY LIABILITY RESULTING FROM THE WORKMANSHIP OF THIS EQUIPMENT** is limited to the purchased price paid. Highline Mfg. Inc. assumes no responsibility whatsoever for liability resulting from the misuse or improper operation and maintenance of this equipment.

President's 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 assure the performance and durability of your rock picker.

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

In order to maintain high standards, changes or improvements are made from time to time. **HIGHLINE Mfg Inc.** reserves the right to make those 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, the dealer 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 Mfg Inc.** or your local dealer.

HIGHLINE Mfg Inc. thanks and congratulates you for selecting a XL-78 rock picker as the machine for your rock picking needs.



Raymond Bussiere
President

Safety Precautions

CAREFUL OPERATION IS THE BEST INSURANCE AGAINST AN ACCIDENT

- Always disengage PTO and hydraulic motors before dismounting tractor.
- Do not operate unless guards are in place.
- Keep yourself and others clear of rotating parts to prevent injury.
- Never allow anyone to stand near rock picker while dumping or picking rocks.
- Never attempt to manually remove rocks from tynes while hydraulic motor is engaged.
- 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 Rock Picker

The XL-78 rock picker covers a width 84" wide and has a dumping height of 96". One set of hydraulic lines are required for dumping and lowering the picker's collecting apron. The rock picker is hydraulic driven however the 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 rock picker 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	
2	Tire Assy, 21 in, 10 ply	70104
2	Axle Assembly	70121
8	Bolt, Hex, 3/4" x 2 1/2", UNC, Grade 5	31040
8	Nut, Nylock, 3/4", UNC	31175
8	Washer, Lock, 3/4" Plated	31246

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 to picking. This operation brings stones to the surface and buries field residue.

2.2 Pre-Start Instructions

Transport locks need to be lowered before operation. To lower transport locks, raise apron slightly and lower transport locks towards the front of the machine. DO NOT lower apron when transport locks are in position otherwise severe damage WILL occur.

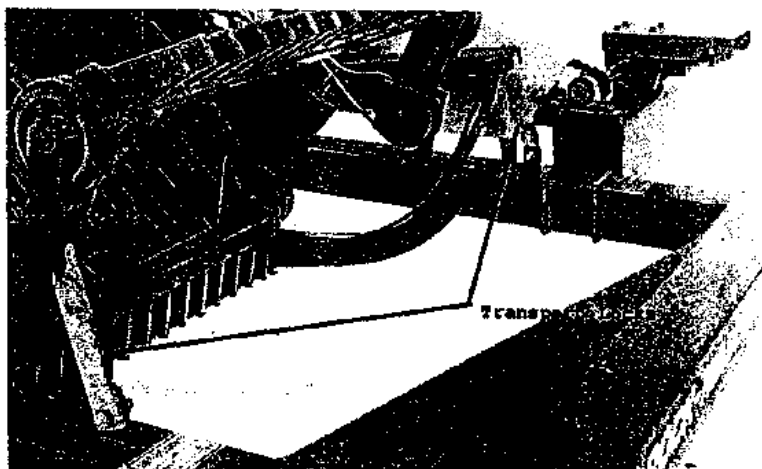


Figure 1. Locks in Transport Position

2.3 Transporting Instructions

To ensure safe transport of the XL-78 rock picker, 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 transport locks catch on the reel frame. To lower transport locks, raise apron until locks are free and turn 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 and ready for field or transport.

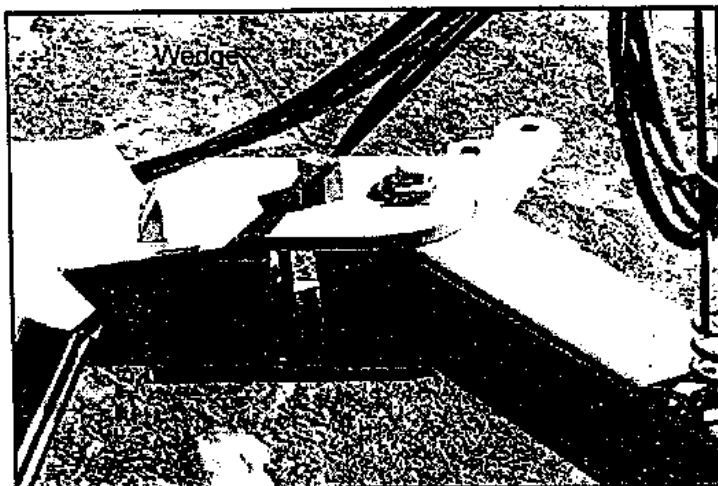


Figure 2. Hitch Wedge

2.4 Apron Height Adjustment & Bucket Dumping

The apron (Figure 3) height is adjustable through the hydraulic cylinders. By lowering the cylinders completely, the apron will be at its lowest picking level. 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 cylinder more will raise the bucket into dumping position.

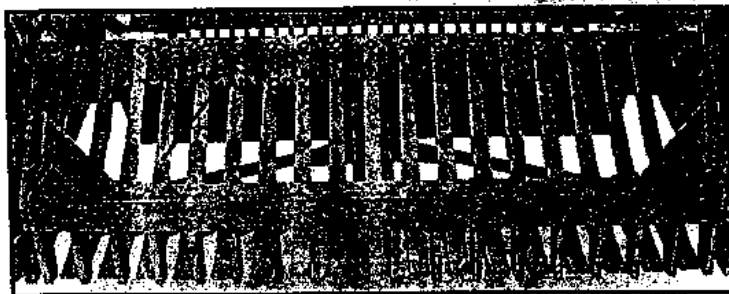


Figure 3. Front View of Apron

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 the reel rotating at 35 rpm. When picking large rocks, field speed should be decreased to reduce possible damage of large impacts. The operating height of the apron varies depending on the size of stones picked. For small stones, the apron should be as low as possible to the ground and be raised to a suitable level for larger stones.

3 Maintenance Instructions

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

- Ensure tire air pressure is maintained at 27 psi. If tire pressure is not maintained, severe tire damage may result.
- Check gear box oil and add #90 gear oil if needed
- Periodically check all bolts and set screws for tightness.
- Grease the following points as described.

3.1 Grease Locations



Figure 4. Hitch Grease Location

Grease No	Description	Frequency
1	Hitch Pivot	Monthly

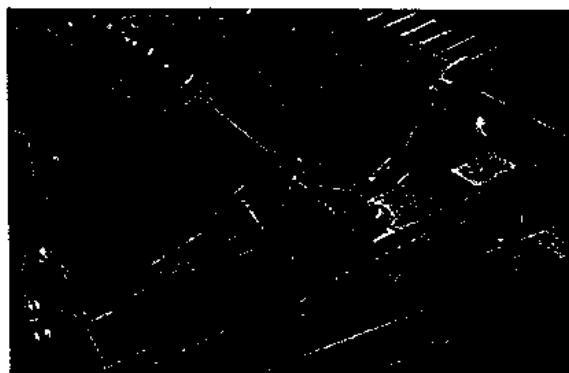


Figure 5. Reel Greasing Locations

Grease No	Description	Frequency
2	Reel Bearings	Yearly

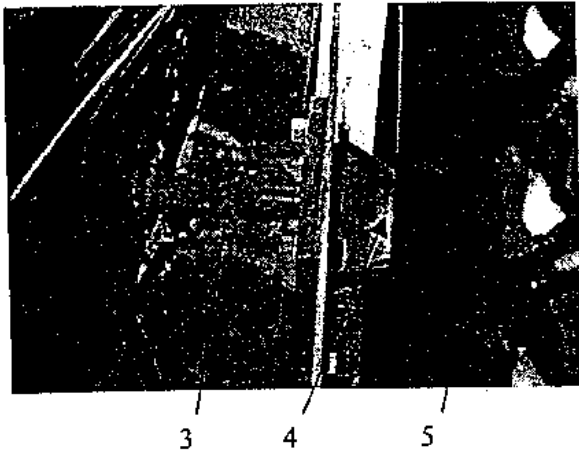


Figure 6. Apron & Tire Maintenance Locations

Grease No	Description	Frequency
3	Apron Pivot	Daily
4	Wheel Hub	4 Times/Year
5	Tire Pressure	27 psi

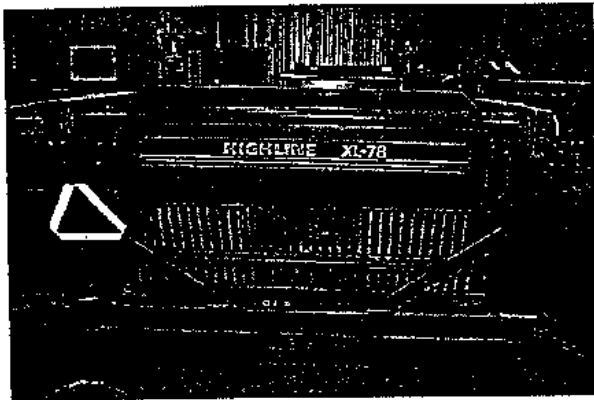


Figure 7. Dump Mechanism Grease Locations

Grease No	Description	Frequency
6	Front Bucket Pivot	Daily

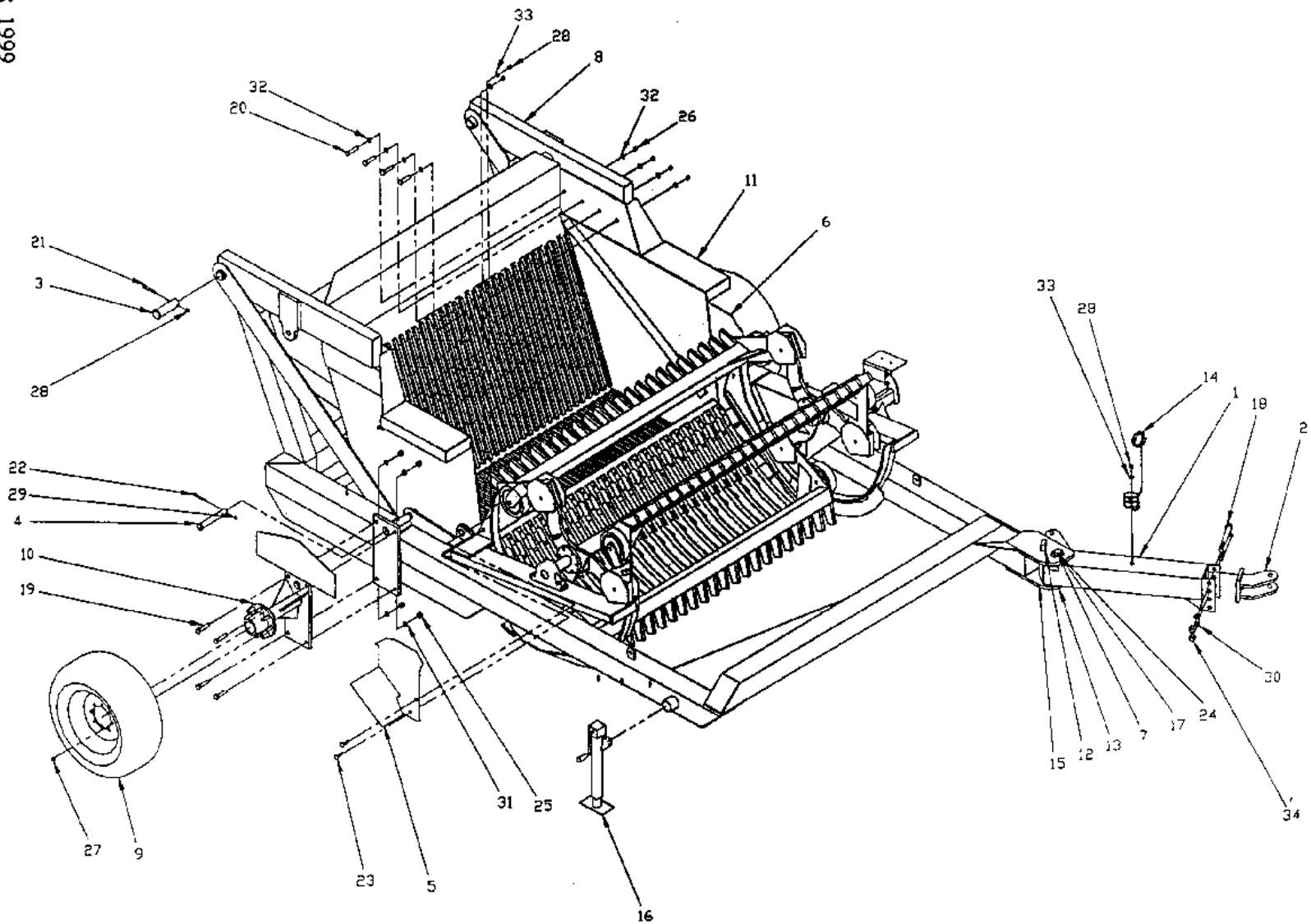
4.0 Parts Information

4.1 Main Assembly

Item	Part No.	Description	Quantity
1	70002	Arm, Hitch	1
2	70003	Hitch, Clevis	1
3	70025	Pin, Dump	2
4	70027	Pin, Apron	2
5	70051	Guard, Cylinder, Dump, Right	1
6	70052	Guard, Cylinder, Dump, Left	1
7	70068	Pin, Hitch	1
8	70091	Dump, Bucket	1
9	70104	Tire Assy, 21 in, 10 Ply	2
10	70121	Axle, Assembly	2
11	70164	Bucket	1
12	E2233	Wedge	1
13	E2240	Washer, Hitch, Bottom	1
14	30206	Holder, Hose, Hydraulic, 1/2"	1
15	91609	Pin, Hitch, 5/32"	1
16	92095	Jack, Sidewind, 5000 Lbs x 15 in	1
17	31036	Bolt, Hex, 1 x 10, UNC, Gr5, Pltd	1
18	31038	Bolt, Hex, 1 x 7 1/2, UNC, Gr5, Pltd	2
19	31040	Bolt, Hex, 3/4 x 2 1/2, UNC, Gr5, Pltd	8
20	31055	Bolt, Hex, 5/8 x 2 1/2, UNC, Gr8, Pltd	8
21	31021	Bolt, Hex, 1/2 x 3, UNC, Gr5, Pltd	2
22	31045	Bolt, Hex, 3/8 x 2 1/2, UNC, Gr5, Pltd	2
23	31010	Bolt, Carr, 1/2 x 2 1/2, UNC, Gr5, Pltd	4
24	31172	Nut, Nylock, 1	1
25	31167	Nut, Hex, 3/4	8
26	31671	Nut, Nylock, 5/8, GrC	8
27	32319	Nut, Wheel, 5/8"	16
28	31173	Nut, Nylock, 1/2	6
29	31176	Nut, Nylock, 3/8	2
30	31243	Washer, Lock, 1	2
31	31246	Washer, Lock, 3/4	8
32	31240	Washer, Flat, 5/8	16
33	31236	Washer, Flat, 1/2	4
34	31162	Nut, Hex, 1, UNC, Pltd	2

Part No.	Description	Qty
30136	Tire, Softtrac, 21.5", 10 Ply	1
32330	Rim, W16C x 16.1	1
32327	Hub, Complete, HA817-3	1
70104	Tire, Assy, 21in, 10ply	

Main Assembly Drawing



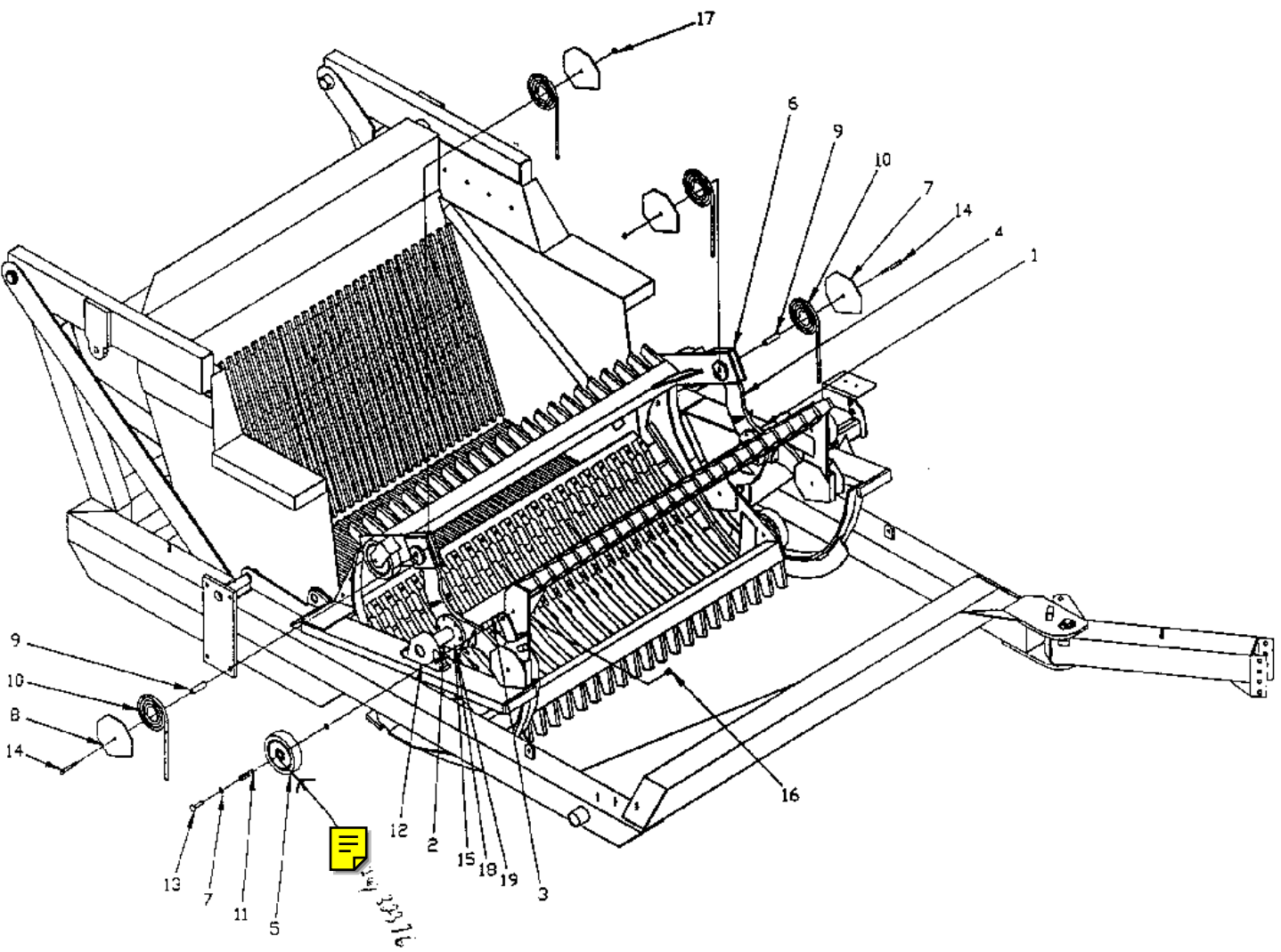
4.2 Reel Assembly

Item	Part No.	Description	Quantity
1	70094	Drive, Arm, Reel	1
2	70095	Idler, Arm, Reel	1
3	70096	Tube, Arm, Reel	1
4	70097	Arm, Reel	2
5	70106	Wheel, Bogie, Complete	6
6	70105	Batt, Reel	3
7	E2304	Bushing, Wheel, Bogie	6
8	E4548	Plate, Retainer, Spring	12
9	E4549	Bushing, Batt, Reel	6
10	30138	Spring, Reel	12
11	E4627	Bushing, Wheel, Bogie	6
12	32373	Drv, Brg, Pillow, 2-7/16	2
13	31642	Bolt, Carr, 5/8 x 5, UNC, GR5, Pltd.	6
14	31643	Bolt, Hex, 9/16 X 5, UNC, GR8, Pltd	6
15	31022	Bolt, Hex, 1/2 X 3, UNC, GR8, Pltd	12
16	31178	Nut, Nylock, 5/8", UNC	6
17	31646	Nut, Nylock, 9/16", UNC, GRC	6
18	31647	Nut, Nylock, 1/2, UNC	12
19	31236	Washer, Flat, 1/2	12
20	E4626	Bushing, Bogey, Inside	6

21 E2294 REEL BATT TOOTH

Bushing, arm, reel - E2308

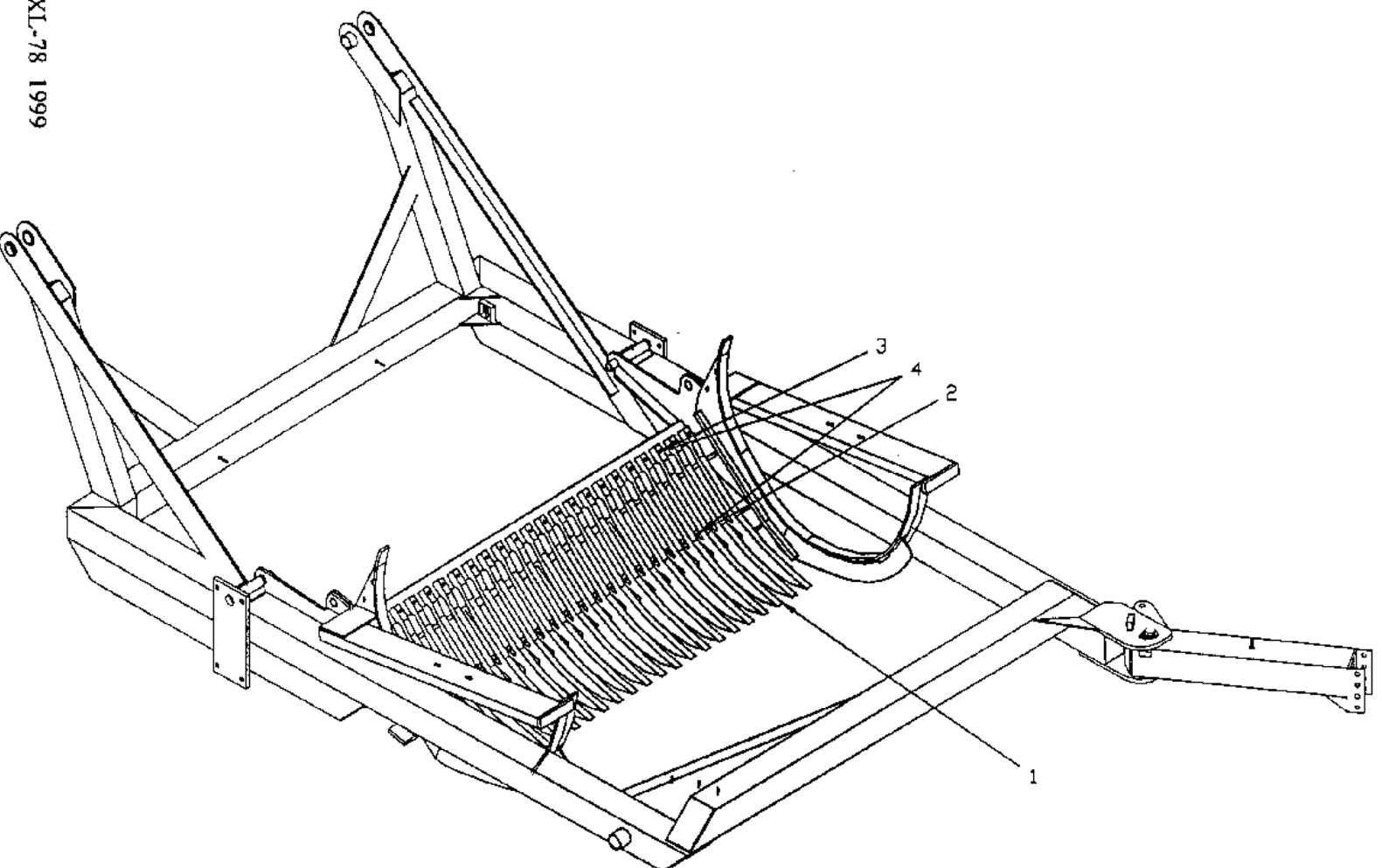
Reel Drawing



4.3 Apron Assembly

Item	Part No.	Description	Quantity
1	32466M	Tyne, Apron, 65-45-12	22
2	31024	Bolt, Hex, $\frac{1}{2}$ x 3 $\frac{1}{2}$, UNC, Gr8	22
3	31019	Bolt, Hex, $\frac{1}{2}$ x 2 $\frac{1}{2}$, UNC, Gr8	22
4	31647	Nut, Nylock, $\frac{1}{2}$, UNC, GrC	44

Apron Drawing

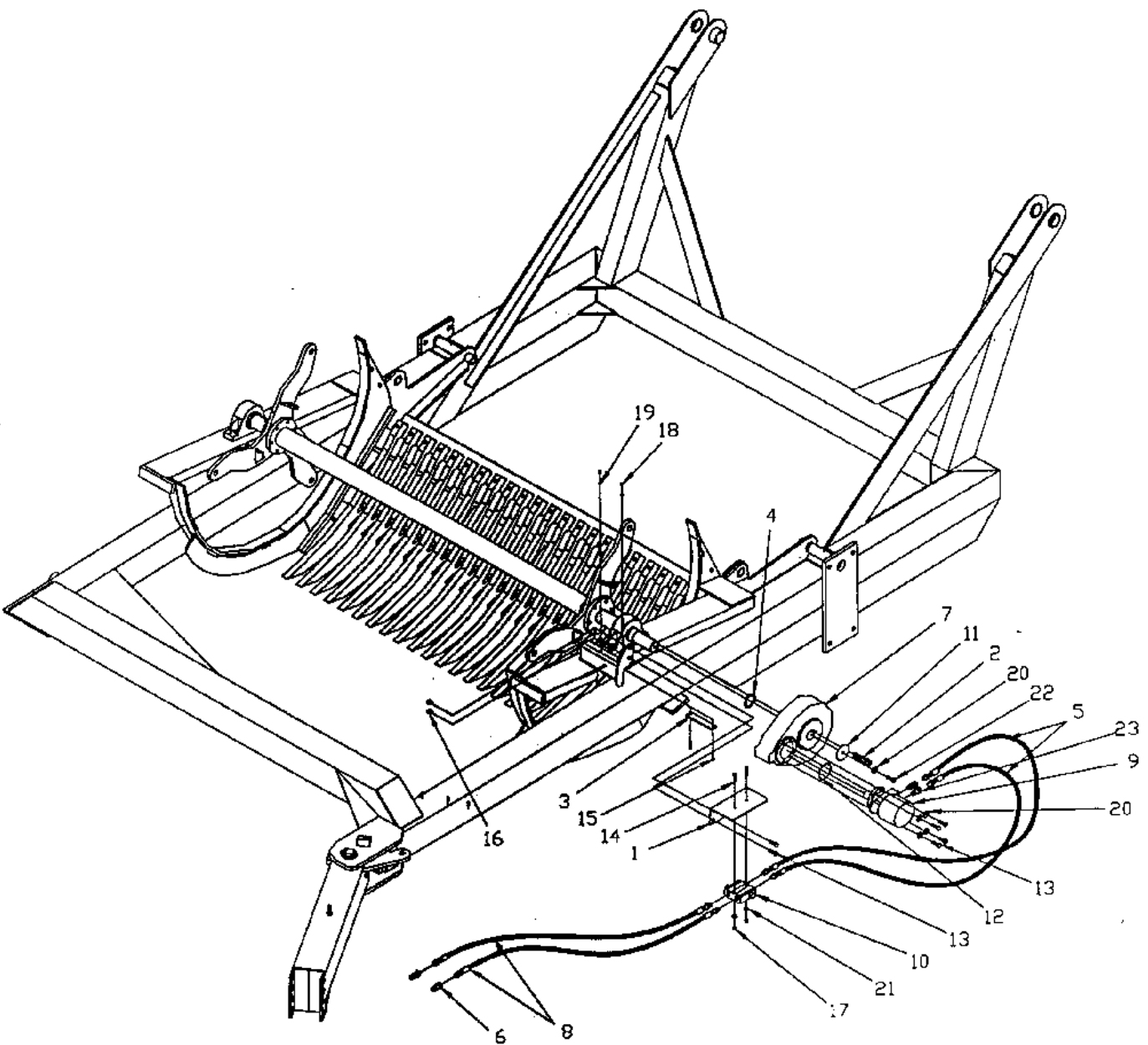


5.0 Hydraulic Systems

5.1 Motor Hydraulics

Item	Part No.	Description	Quantity
1	E2339	Anchor, Valve, Cushion, Hydraulic	1
2	E3045	Key, Drive, Reel	1
3	E4502	Bumper, Mount, Hydraulic	1
4	E4571	Bushing, Reel, Gearbox	1
5	30586	Hose, Hydraulic, ½ x 20, 8MP-8FJX	2
6	30209	Hydraulic, Tip, Pioneer, ½, 8FP	2
7	32209	Gearbox, Complete, 590	1
8	32583	Hose, Hydraulic, ½ x 144, 8MP-8MP	2
9	32644	Motor, Hydraulic RE K080500	1
10	32660	Hydraulic, Valve, Cushion, DXV50	1
11	32734	Washer, Flat, 3 1/8 x ½	1
12	32786	Hydraulic, O-Ring, 151	1
13	31016	Bolt, Hex, ½ x 1 ½, UNC, Pltd	6
14	31048	Bolt, Hex, 5/16 x 2 ½, UNC, Pltd	2
15	31060	Bolt, Stove, ¼ x 1, UNC, Pltd	2
16	31173	Nut, Nylock, ½	2
17	31177	Nut, Nylock, 5/16	2
18	31310	Nut, Nylock, ¼	2
19	31245	Washer, Lock, ¼	2
20	31236	Washer, Flat, ½	5
21	31244	Washer, Lock, 5/16	2
22	31069	Bolt, Hex, 1/2x1, UNC, Pltd	1
23	30204	Hyd, Fit, Adapter, 10MB-8MJ	2
	32647	SEAL KIT	1

Motor Hydraulics Drawing

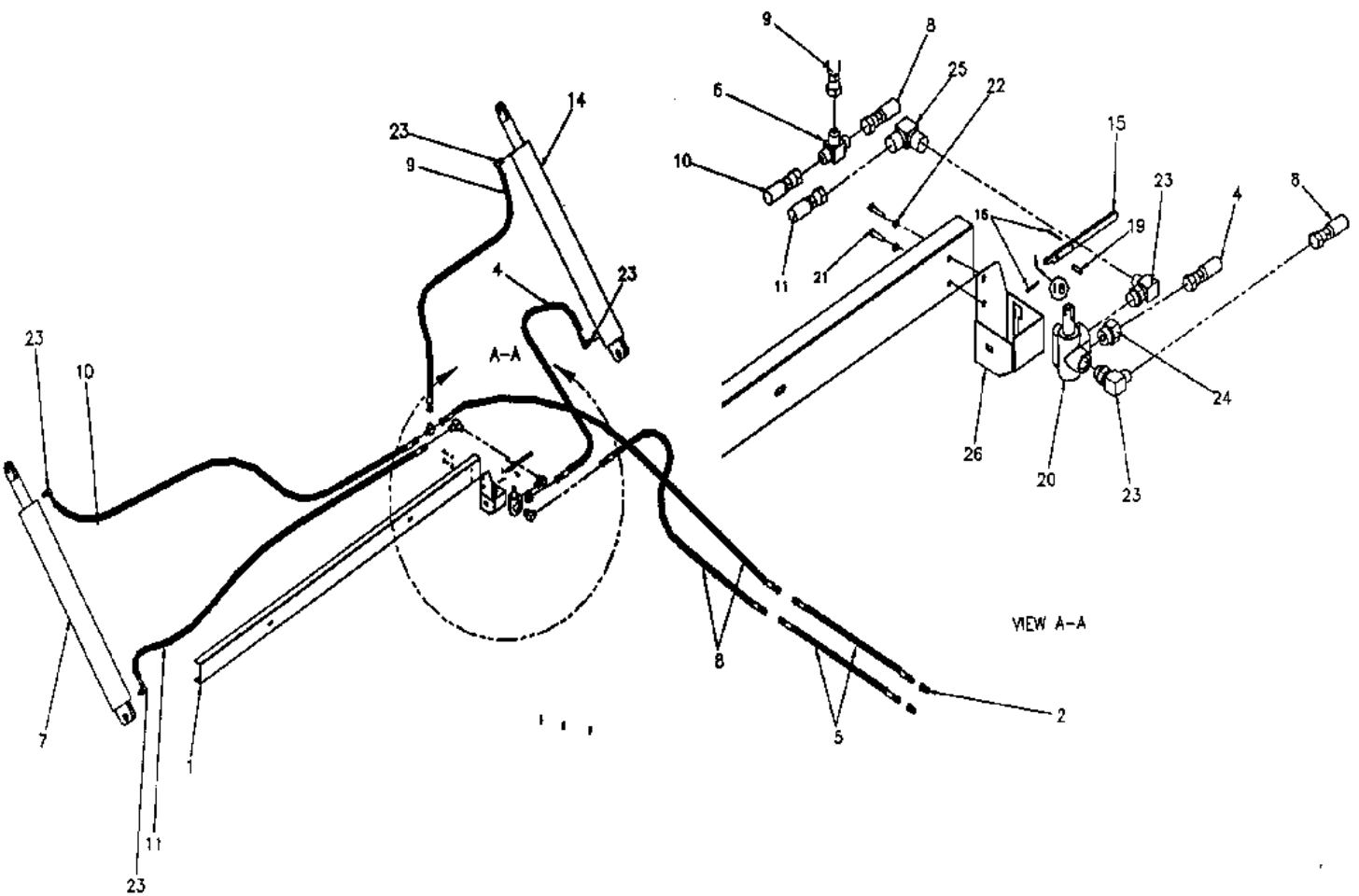


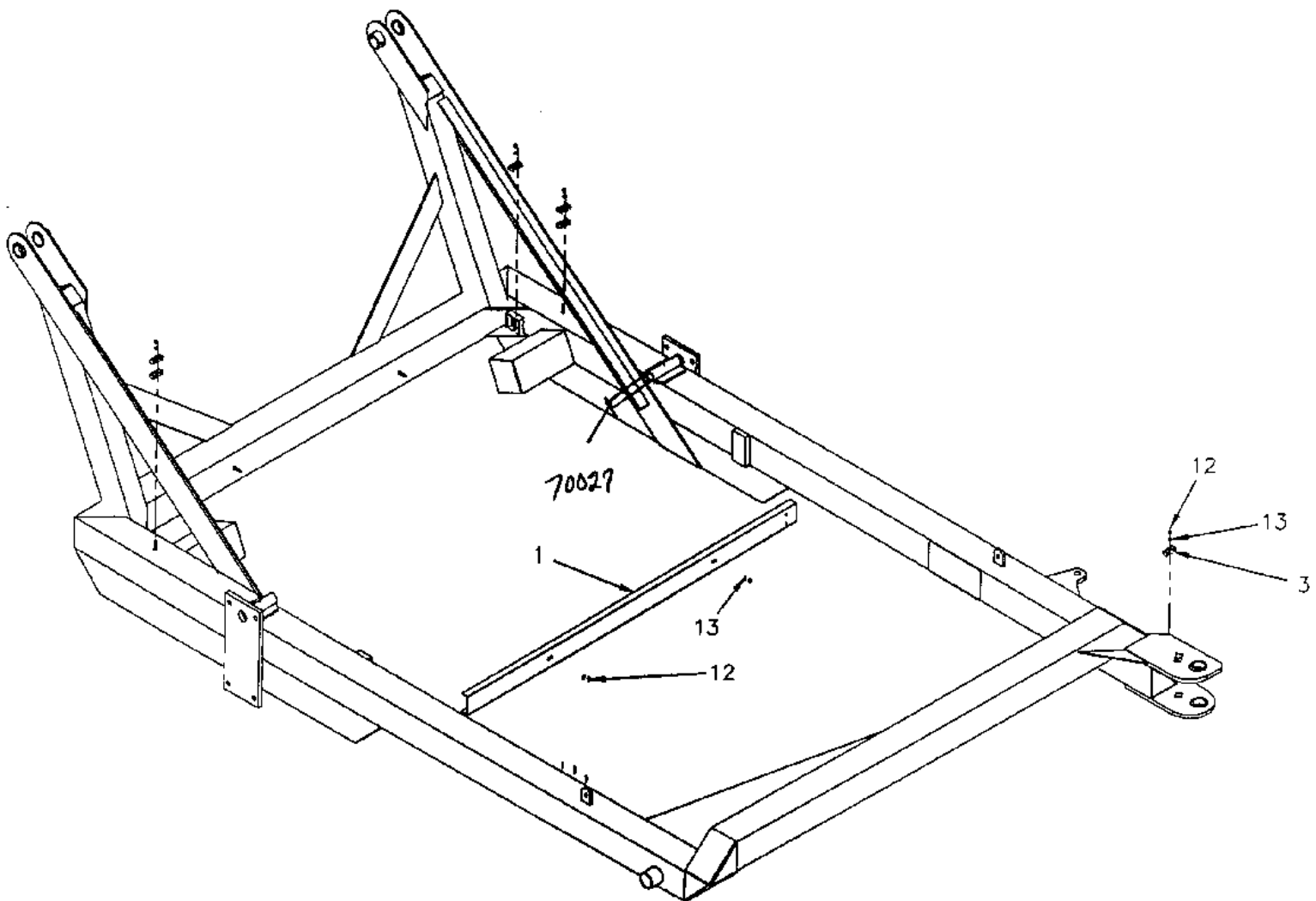
5.2 Cylinder Hydraulics

Item	Part No.	Description	Quantity
1	E4541	Guard, Line, Hydraulic	1
2	30209	Hydraulic, Tip, Pioneer, 1/2, 8MP	2
3	30210	Hydraulic, Clamp, Oil, 1/2	6
4	32054	Hose, Hydraulic, 3/8 x 54, 8FJX	1
5	30159	Hose, Hydraulic, 1/2 x 96, 8MP-8MJ	2
6	30151	Hydraulic, Fitting, Tee, 8MJ-8FJ-8MJ	1
7	30160	Hydraulic, Cylinder, 4 1/2 x 42, RHS	1
8	30139	Hose, Hydraulic, 1/2 x 169, 8MJ	2
9	32972	Hose, Hydraulic, 3/8 x 66, 8FJX	1
10	32613	Hose, Hydraulic, 3/8 x 144, 8FJX	1
11	30587	Hose, Hydraulic, 3/8 X 136, 8FJX	1
12	31177	Nut, Nylock, 5/16	6
13	31239	Washer, Flat, 5/16	6
14	30213	Hydraulic, Cylinder, 4 1/2 x 42, LHS	1
E4634 ← 15	31603	Handle	1
16	31450	Pin, Cotter, 1/8x1	2
17	31604*	Spring	1
18	31605	Pin, Hair	1
19	31606	Pin, Clevis, 1/4x7/8	1
20	31607	Hyd, Valve, Selector	1
21	31533	Bolt, Hex, 5/16x3/4, Unc, Gr 5	2
22	31346	Washer, Lock, 5/16	2
23	30211	Hyd, Fit, Elbow, 8MB-8MJ90	6
24	30215	Hyd, Fit, Adapter, 8MB-8MJ	1
25	30436	Hyd, Fit, Elbow, 8FJX-8MJ90	1
26	E4634	Bracket, Valve, Safety	1

- Not Shown – Connects between the two cotterpins

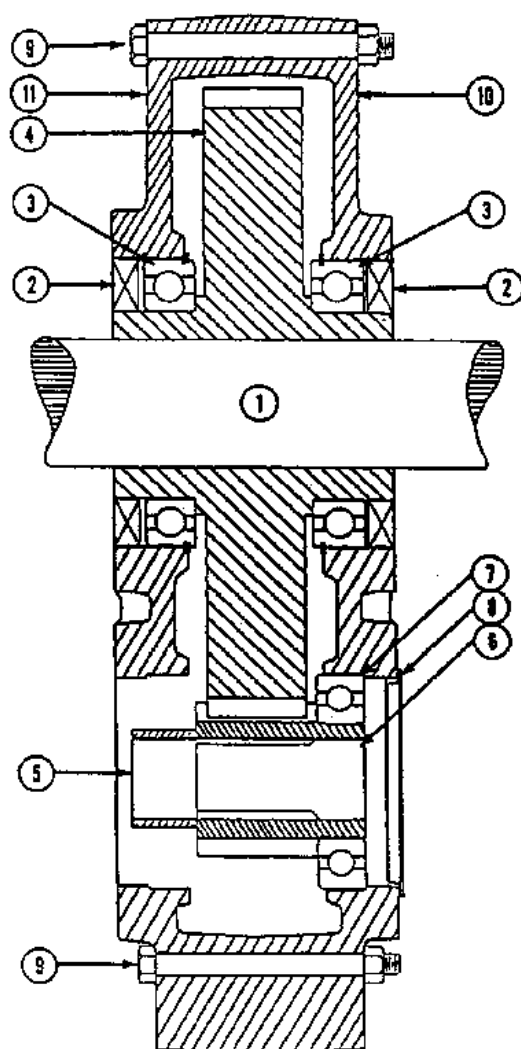
Cylinder Hydraulic Drawing





6.0 590 Parallel Drive Gearbox

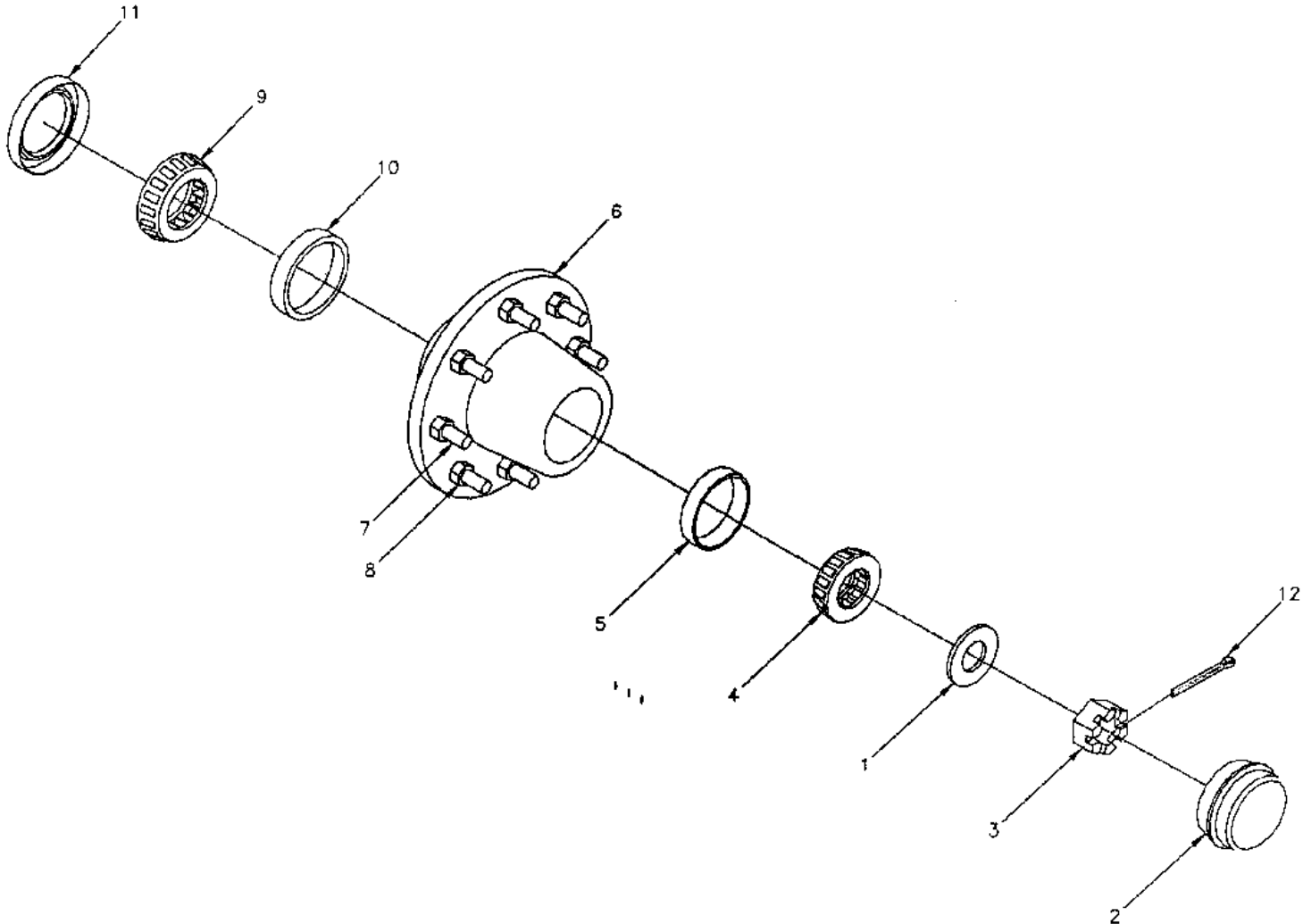
Item	Part No.	Description	Quantity
1	E4520	Shaft, Drive, Reel	1
2	32210	1477 Seal	2
3	32211	1417 Bearing	2
4	32216	58 Tooth Gear	1
5	32214	1821 Spacer	1
6	32215	13 Tooth Pinion	1
7	32212	1418 Bearing	1
8	32213	1154 Cover	1
9	31050	Bolt, Hex, 5/16 x 3, UNC, Gr5 Pltd	12
10	31177	Nut, Nylock, 5/16	12
11	32218	Case, Plain Side	1
12	32217	Case, Hydraulic, Motor Side	1



7.0 H817 Hub

Item	Part No.	Description	Quantity
1	30223	Washer, Flat, 1" SAE	1
2	32313	Cap, Dust	1
3	32314	Nut, Slotted, 1 1/4"-UNF	1
4	32315	Bearing, Outer	1
5	32316	Race, Outer	1
6	32318	Hub, 8-Bolt	1
7	32319	Stud, 5/8 x 2 1/4, UNF, WB46	8
8	32320	Nut, 5/8, UNF, WB18	8
9	32321	Bearing, Inner	1
10	32322	Race, Inner	1
11	32323	Seal, Grease	1
12	31183	Pin, Cotter, 3/16 x 2	1

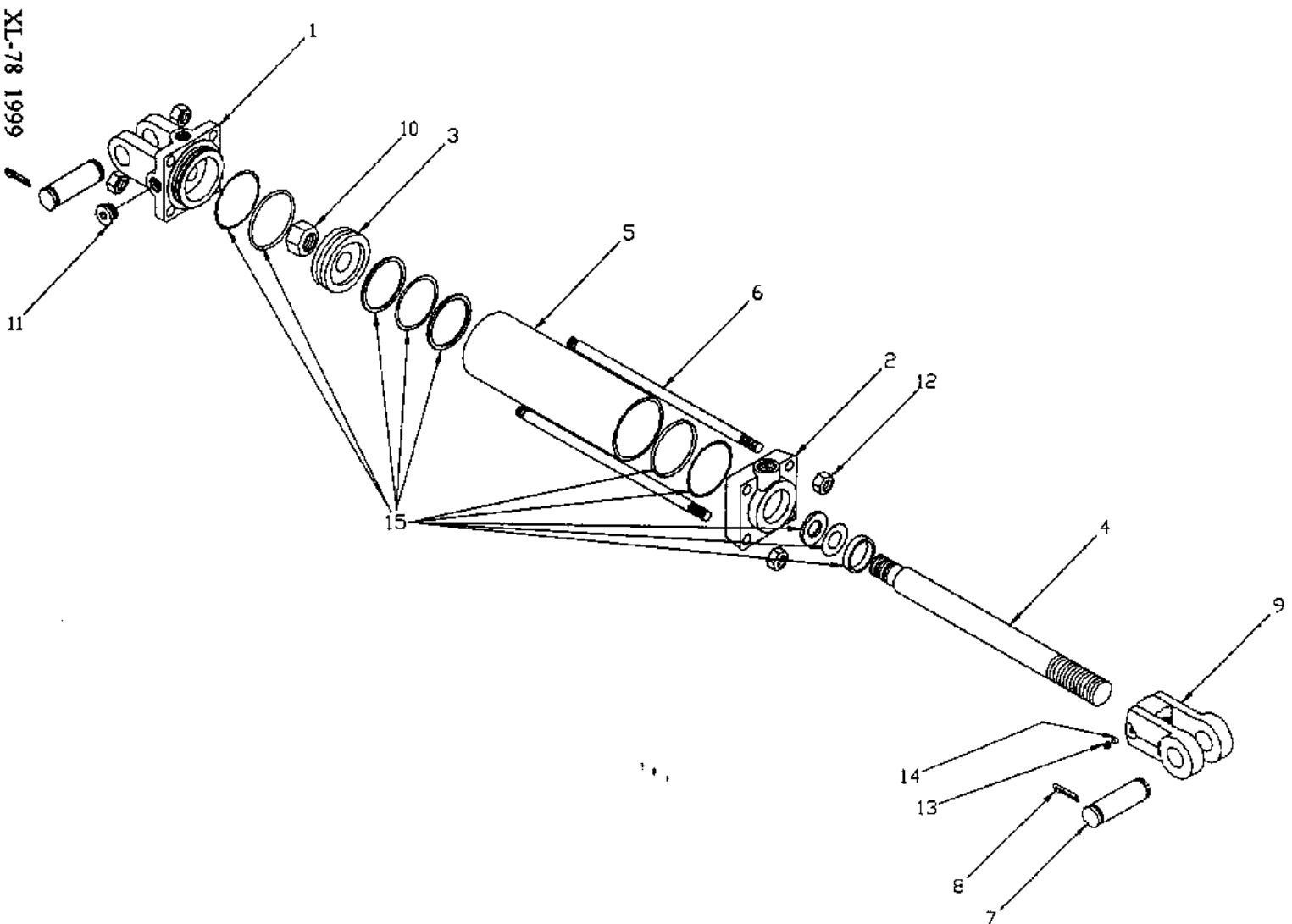
Hub Drawing



8.0 Cylinders**8.1 4 1/2 x 42, 2 Rod**

Item	Part No.	Description	Quantity
1	30175	Cap, Clevis, 4 1/2", 3/4 ORB	1
2	30176	Cap, Rod, 4 1/2" x 2", 3/4 ORB	1
3	30177	Piston, 4 1/2" Dia, TC	1
4	30178	Rod, 2" x 51 3/4"	1
5	30179	Tube, Cyl., 4 1/2" x 51 9/16", TC	1
6	30180	Rod, Tie, 5/8" x 51 9/16"	4
7	30181	Pin, 1 1/4" Dia, H2094	2
8	30182	Cotterpin, Hammerlock, 3/16" x 1 3/4"	4
9	30189	Clevis, Rod, 1 1/2", 1 1/4" Pin	1
10	30192	Nut, Hex, 1 1/4"-12 UNF GRB	1
11	30193	Fitting, Plug, 3/4"-16 UNF, Str Thd	1
12	30236	Nut, Hex, 5/8" UNF Grade 5	8
13	30239	Screw, Set, Sckt, 3/8"UNC x 1/2" Knur	1
14	30261	Lock, Thread, Nylon	1
15	30425	Kit, Repair, 4 1/2" Cyl.	1

→ use. 31796.

4 1/2 X 42 Cylinder Drawing

9.0 Specifications

Weight	Approximately 7250 lbs (3290 kg)
Total Length	17'3"
Total Width	10'10"
Total Height	6'8"
Picking Width	84"
Dumping Height	Approximately 96"
Ground Clearance	11"
Maximum Capacity	3.3 cubic yards (2.52 m ³)
Tires	21.5L x 16.1 Softrac Tires
Horsepower Required	70 - 150 Horsepower
Hydraulic Outlets	18 gpm flow required
Hydraulic Pressure	2 2500 psi.(17240 KPa)