

Long Tom Drill Carrier Owner's Manual



PHQGlobal

...TAKING MINES TO THE NEXT LEVEL!

Revised: May 28th, 2019

C2-1175 Appleby Line Burlington, Ontario CANADA L7L 5H9
Phone: (905) 332-3271 Toll Free: (800) 267-2082 Fax: (905) 332-9497
Website: www.phqglobal.com



Preface

This manual is intended to provide the end user(s) of our Long Tom units with operating and maintenance instructions for better understanding of their machines, as well as insight into their components through our parts lists and access to part numbers for ease of ordering replacements.

For information on any other components not shown in this manual or for any other enquiries not covered herein, please contact us directly using one of the following methods:

PHQ Global Inc.
C2 1175 Appleby Line
Burlington, ON L7L 5H9
Tel: (905) 332-3271 Fax: (905) 332-9497
Email: sales@phqglobal.com
Web: www.phqglobal.com

IMPORTANT NOTICE:

Due to ongoing product improvements, all information, diagrams and part numbers in this manual are subject to revision. Please contact us directly for the most recent versions of any documentation we provide.

1. Overview	1
2. Carrier Styles & Dimensions	
2.1 Skid Steer	2
2.2 Rail Mount	3
2.3 Crawler	4
3. Specifications & Options	
3.1 Technical Data	5
3.2 Standard Features	5
3.3 Options	6
4. Initial Setup	
4.1 Safety Points	7
4.2 Moving The Carrier Prior To Setup	8
4.3 Setup Procedure	10
5. Operation	
5.1 Trimming	11
5.2 Drilling	13
6. Maintenance	
6.1 Maintenance Schedule	14
6.2 Checking Oil Levels	14
6.3 Accessing the Motors & Gear Cases	14
6.4 Opening & Closing The Chain Guards	14
6.5 Replacing a Drive Chain	15
6.6 Adjusting Drive Chain Tension	16
6.7 Greasing	17
6.8 Assembly of the Mounting Bracket (X-1674)	18
6.9 Assembly of the Balance Cylinder (W-1672)	20
6.10 Assembly of the Leg Cylinder (W-2619)	24
7. Parts List	
7.1 Balance Cylinder (W-1672)	30
7.2 Leg Cylinder (W-2619)	31
7.3 Mounting Bracket (X-1674)	32
7.4 Carrier (Skid-Steer)	33
7.5 Carrier (Rail Mount)	X

Origins of the Long Tom Drill Carrier

A cost-effective solution was required to reduce or eliminate the negative aspects of handheld drilling, including:

- Hard physical labour under uneven terrain
- High injury frequency, especially strains
- Low productivity
- Difficulty in pulling out steel due to drilling on a decline

Long Tom Drill Carriers were designed to solve all of the above problems while offering low maintenance costs, safe operation and increased drilling achievement per man-shift.

Benefits

- Removes physical effort when lifting drill, collaring hole, maintaining alignment, moving from hole to hole, changing steel
- Easier and more accurate collaring
- Quicker movement from hole to hole
- Quicker changing of steel
- Capable of drilling a 2400 mm hole in one pass
- Eliminates air leg slippage
- Eliminates hazards due to steel breakage
- Pulls steel from hole under power
- Drills are permanently mounted and hosed up
- Unit drives to the face ready to drill (NOTE: Rail-mount style requires external propulsion).
- Fully pneumatic with no hydraulics
- Simple airleg-type maintenance

Applications

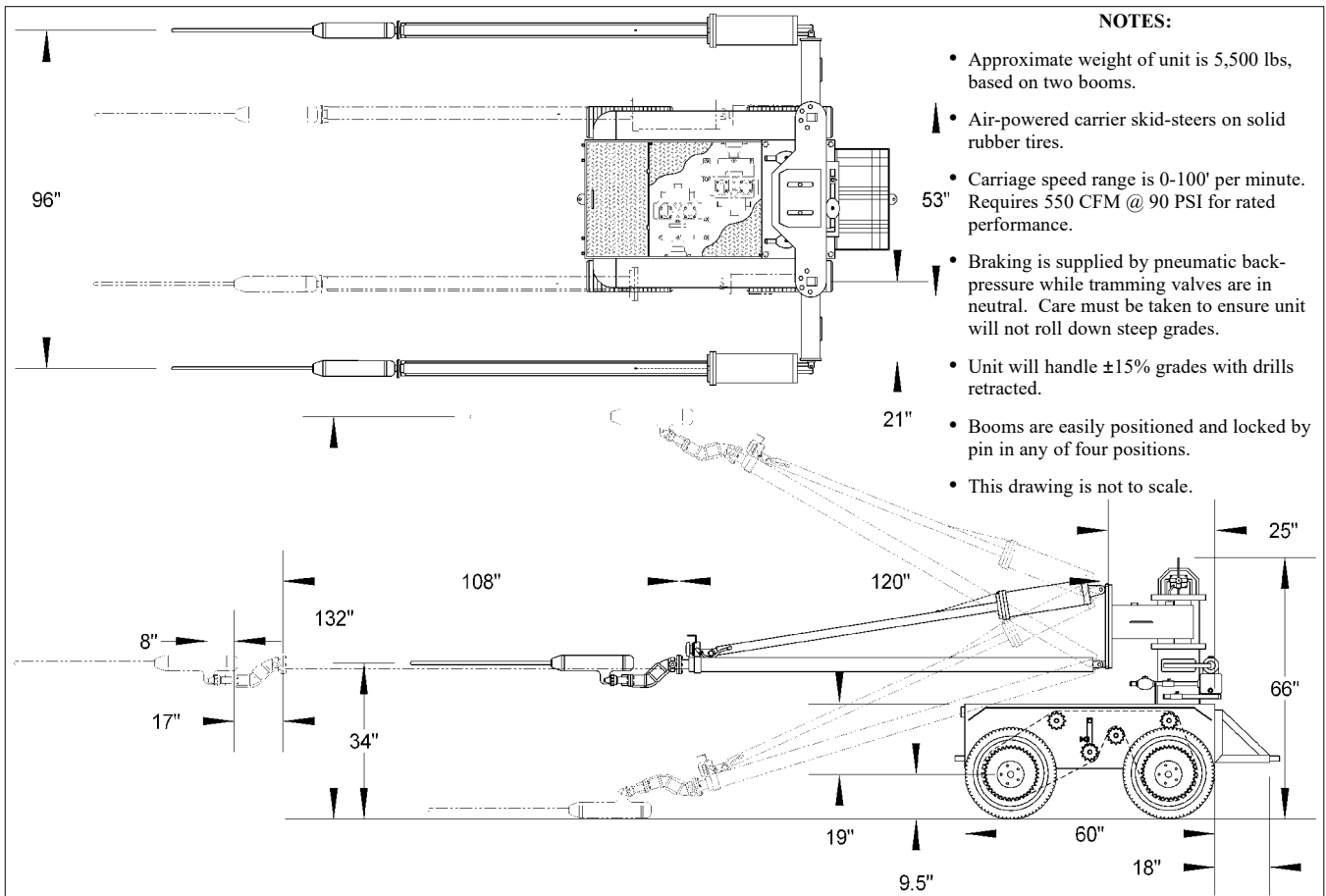
- Sub-level development
- Drift development
- Ramping
- Mechanized undercut & fill
- Thin-seam room & pillar

Customization

All Long Tom models are customizable according to the customer's wishes. Our standard new models come equipped with two booms, however we can produce them in a three (or even single) boom configuration as needed. We also provide optional brackets for increasing the height and/or length of booms, allowing for greater face coverage.

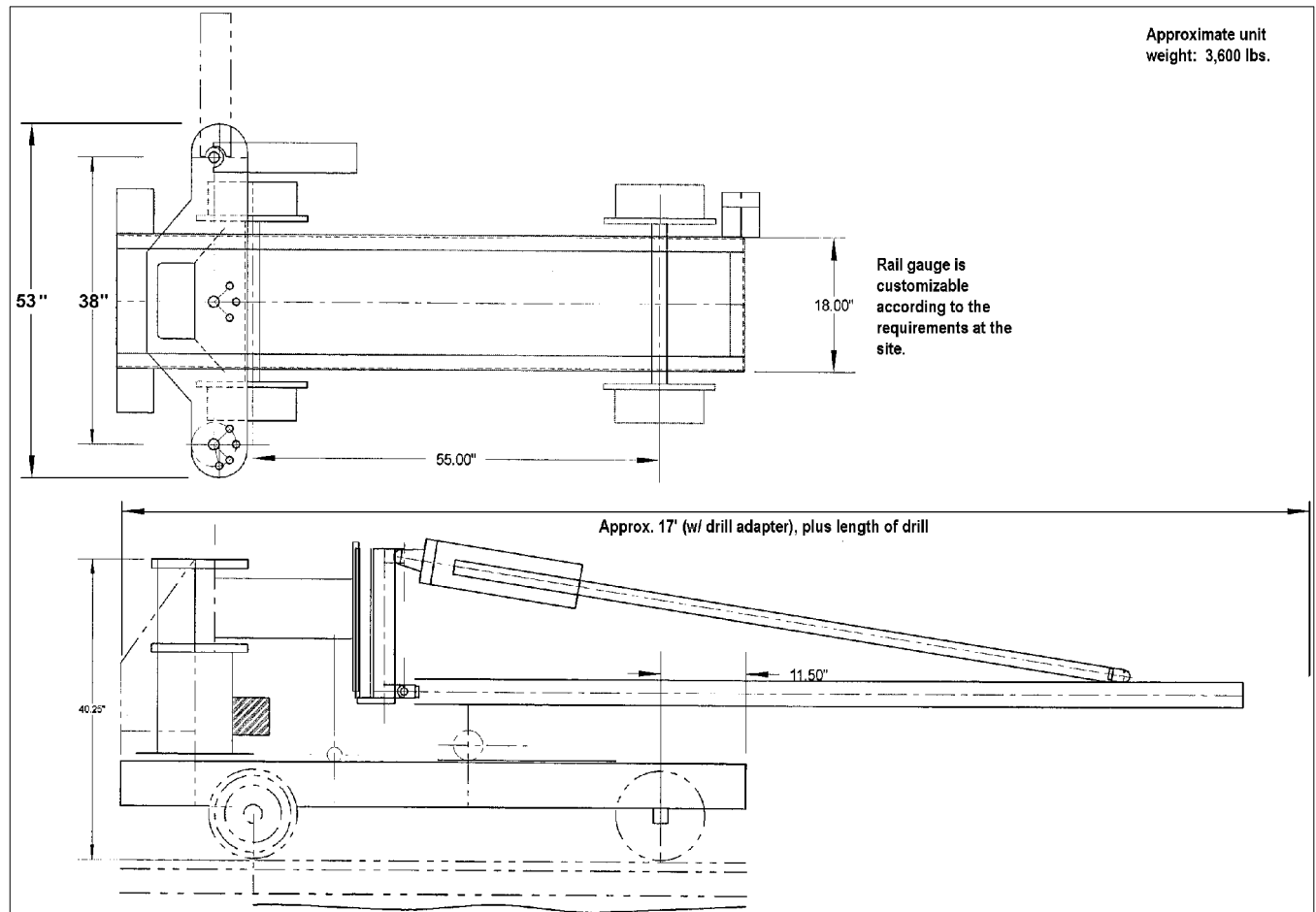
2.1 Skid-Steer

Our “standard” unit, the Skid-Steer carrier is a fully-mobile, self-propelled wheeled carrier suitable for most underground applications. Featuring two independent pneumatic motors driving four solid rubber tires, this style has impressive mobility in most conditions and does not require the presence of rails. Each unit comes equipped standard with two booms.



2.2 Rail Mount

For situations involving an existing network of rails, our rail-mount carrier is the most cost-effective option. While this unit does not have its own propulsion system, it does come equipped with 3 of the same booms as our standard skid-steer units, thus its face coverage remains the same while adding support for a third operator. The standard rail gauge is 24", however this can be customized according to the requirements of the site.



2.3 Crawler

For extremely challenging terrain, additional power and traction are necessary. For this reason we have worked together with customers to create a custom crawler carrier. Like the skid-steer these models are fully self-propelled, however they feature an extremely rugged track-based design. Each side is independently controlled allowing for great manoeuvrability, while offering the same range of boom motion as our other models.

***Please note:** As these units are custom-built for the requirements of their application, no general dimension drawings or specific parts lists are presently available. For service, support or enquiries on these units, please contact us directly via the information at the front of this manual.*



3.1 – Technical Data *		
	Skid Steer	Rail Mount
Length, Overall	17'	
Width, Overall	53"	48"
Height, Overall	66"	48"
Weight	5,500 lbs	4,000 lbs
Booms (Standard)	2	3
Boom Length	9', retractable	
Standard Face Coverage	8'W x 11'H **	
Motor	GAST	n/a
Gear Box	GAST	n/a
Tramming Valves	1" Inlet / Outlet Spring-Return to Neutral	n/a
Drive Chain Size & Length	#80 HD Chain, 11' 2" long	n/a
Drill Adapters	PHQ250, or custom as required	
Tires	Four solid rubber, 22x8x16	n/a
Lubricators	3, 1.5 litres each	
Air Consumption & Requirements	175 CFM @ 90 PSI required for each drill in operation. 550 CFM required for tramming. Air must be delivered to the air header via a minimum 2" bull hose.	

3.2 Standard Features

- **General:**
 - One gooseneck per boom (allowing for optimum drilling angle) with your choice of drill adapters. We may be able to manufacture adapters for other drills types; please ask for details.
 - One air header, one water header, and all necessary valves & hoses.
- **Skid-Steer Carriers:**
 - 2 standard 9' retractable booms w/ feed cylinder & one-quart lubricators.
 - Vane drive motors w/ gear cases @ 20:1 ratio
 - Tramming valves
 - Solid rubber tires
 - Operator's Platform
- **Rail-Mount Carriers:**
 - 3 standard 9' retractable booms, w/ feed cylinder & one-quart lubricators.
 - Rail wheels w/ axles customized to the gauge of the site.

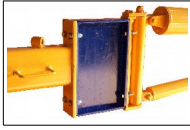
* **Technical Data:** Specifications listed are based on the shipping dimensions of the carrier itself, with booms, goosenecks & drill adapters attached in their standard / locked positions (ie. not swung open or extended). However, these figures do not include drills themselves or any other options.

** **Standard Face Coverage:** These represent maximum distances attainable under standard configurations, by allowing the booms to swing open as far as possible.

TIP: For additional height & width, please see our extender options featured on the next page.

3.3 Options

Long Tom units are designed to be highly customizable, with multiple options available to assist operators at the site. Some of these options are:



- **Boom Extenders:** For situations where the standard 8' x 11' face coverage isn't sufficient, we offer extension kits for our booms. Available in configurations increasing height by 14", or width by 12" (per boom) -- or both; these will allow you to easily increase your face coverage as needed. (Shown here in blue).



- **Drills:** If you need drills to install on your Long Tom, we do offer a selection and their corresponding adaptors. For specifics, please contact us using the information at the front of this manual.



- **Lights:** We offer lighting in the form of Wolf Turbolites mounted directly on the Long Tom carrier. These handy headlights are airtight, and powered by a small, sealed pneumatic generator so they are completely safe for underground environments.



- **Extra Boom:** Our skid-steer carriers are shipped standard with two booms, but can be modified to support an additional center boom. This third boom adds 400 lbs to the total unit weight.



- **Tow Eye:** This skid-steer option located on the operator's platform allows for easy rear towing.



- **Tool Boxes:** Located at the rear of the carrier, these are ideal for storing additional items.



- **Drill Steel Holders:** Located on the fenders.

4.1 Safety Points

1. Always use whip checks on air supply & pressure hoses.
2. Familiarize yourself with the operation of the tramming levers. See Section 5.1 for more details.
3. Operate tramming valves from operator's platform only.
4. Check to ensure the area is clear of personnel & obstacles at all times while tramming.
5. Always secure the booms when tramming, towing or lifting.
6. Always lower booms to hanging points on chain, or to ground when not in use.
7. Always shut off air supply & drain air from unit when not in use.
8. Be sure to drain the water header as appropriate if the unit is subjected to freezing temperatures.

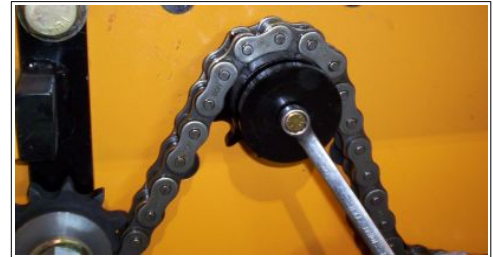
4.2 Moving the Carrier Prior To Setup

WARNING - IMPORTANT

DO NOT attempt to forcibly tow or push the Skid-Steer carrier without performing the procedures described here! Failure to do so will cause severe damage to the drive assembly.

1. **Secure the booms** before attempting to move the Long Tom.
2. **Towing & pushing (Skid-Steer).** Before attempting to tow or push the Skid-Steer carrier unit, always perform the following steps on both sides of the carrier to avoid damage to the drive assembly:

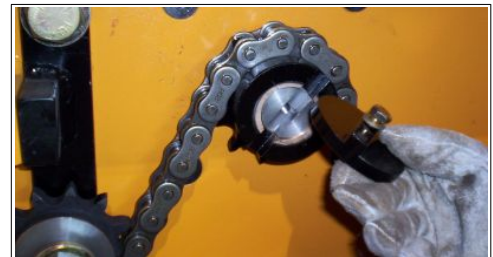
- Remove the chain guard on one side of the machine by following the directions in section 6 of this manual.
- Remove the bolt from the center of the drive cap, and set it to one side.



- Remove the cap itself (part #J-7858). You may need to use a flat-head screwdriver to pry it off.



- Reverse the cap and replace it with the key facing out. This will disengage the driveline from the air motor, preventing damage when towing.



- Secure the cap using the bolt you removed earlier.



- Replace and secure the chain guard.
- Repeat this procedure on the other side of the Long Tom.

Setup Procedure

- When the towing or pushing operation is complete, reverse this procedure to replace the locking drive caps in their original configurations, thus re-enabling the air motors.

3. Moving the carrier. It is possible to pick up and carry the Long Tom in the bucket of a scoop or other carrying device. Chain the unit to the bucket, using the chain hooks on the pedestal tower (shown to the right). Be sure to secure the booms beforehand to avoid damage from swinging.



4. Lifting the carrier. By wrapping spreader chains around the focal point pictured here (on both booms), you can achieve a balanced lift with a crane or other lifting device.



4.3 Connecting The Long Tom

1. **Perform all necessary maintenance checks prior to starting the machine.** See section 6 of this manual for instructions on checking oil levels, greasing, adjusting drive chain tightness on skid-steer models, etc.
2. **Connect to the air supply.** From the mine air supply, install a 2” (minimum) bull hose to the air header. Please note that the air source must provide pressure between 90 and 120 PSI, and must be capable of supplying up to 380 CFM. **NOTE:** *The supply of compressed air must be as free of water and other contaminants as possible. The Long Tom does not come equipped with an air supply filter.*
3. **Connect to the water supply.** Connect a water line to the water header on the Long Tom. Water source must be pressurized to a minimum of 20 PSI.



5.1 Tramming (Skid-Steer Carriers)

WARNING - IMPORTANT

While tramming, always ensure that your bull hose is secure & long enough to reach your destination. If you must add additional hose to increase the length, make sure the air supply is kept clean while you do so.

1. **Ensure that both booms are firmly secured.** It is very important to ensure the booms do not swing freely; having them suddenly swing out can cause severe damage to booms and drills, and also puts the operator at risk of injury. This is especially true when not tramming on level ground; having the booms suddenly swing out to one side puts the entire Long Tom at risk of tipping over.
2. **Ensure no other personnel are near the Long Tom.**
3. **Turn on the air supply to the header.** How you do this depends on how the air system is configured at the site, and is beyond the scope of this document.
4. **Turn on the air supply to the tramming valves.** Simply pull the valve handle located between the air header and the tramming lubricator toward the operator's platform.



5. Step onto the operator's platform and place your hands on the tramming handles.

- Slowly push both handles forward together to tram the Long Tom forward.
- Pull both handles backward to move in reverse.



Operation

- Since each side of the carrier is independently controlled, varying the angle of the handles will cause the unit to turn. Pushing the right handle forward further than the left will cause the carrier to turn left.
- Conversely, pushing the left handle forward further than the right will cause the unit to turn right.
- Releasing both handles will cause them to snap back to their neutral positions, thus stopping the Long Tom.



5.2 Drilling

Please note that detailed drilling practises are beyond the scope of this document. Drilling should only be performed by qualified & experienced personnel, and the information presented here should only be taken as a guideline to illustrate the standard operation of a Long Tom.

- 1. Tram to your drilling location,** leaving approximately two meters from the face to the end of your drill (or whatever you feel is appropriate). Please note that rail-mount units will require external propulsion to reach their destination.
- 2. Equip your drills with the necessary steel.** Use shorter starter steel for collaring holes, then progress to the desired length. Ensure that drill bits are not undersized in circumference. Refer to your drill manual for specifics.
- 3. Raise or lower the booms as needed.** Rotating the pressure regulator handle on each boom will change its elevation. Clockwise rotation will cause the boom to lower, while counter-clockwise rotation will cause it to rise.
- 4. Lock the boom in place using the chain.** When you have achieved the desired height, lock each boom in place by wrapping its chain around the hook located on its balancing cylinder. Be sure to leave slight pressure on the chain.
- 5. Carefully advance the boom** by turning the hexagonal handle on the gooseneck. Be sure to apply sufficient pressure, but be careful not to apply so much that you damage the drill or bit.
- 6. Supply air pressure to the boom** using the drill controls.
- 7. Monitor air & water pressure for drilling** using the drill controls.
- 8. Apply air to the drill** using the drill controls.
- 9. To drill lifter holes,** allow the leg cylinder to rotate 90° so the drill is oriented sideways.
- 10. To drill uppers,** you will need to deploy benches or stand on the muck pile to reach the boom & drill controls.
- 11. To retract the drill,** use air & water pressure along with slight hammering & rotation of the drill. More pressure & hammering are needed as the steel length increases, as well as with holes drilled at a negative degree.




6.1 Maintenance Schedule

1. Grease boom & swivel assemblies daily.
2. Grease the drive lines weekly or sooner depending on tramming distance, work environment & overall use.
3. Check oil levels for the motors & gear cases after the first 10 hours of operation, then check again every week (or 40 hours of operation).
4. Grease tramming valves every 80 hours of use, or sooner if the machine is undergoes extensive tramming.
5. Fill lubricators with oil once or twice daily, depending on use.
6. Check chain tension daily.

WARNING - IMPORTANT

Always disconnect the Long Tom unit from the air & water sources before attempting any of the procedures listed in this section.

6.2 Checking Oil Levels

1. Check the level of oil in all three lubricators. Simply unscrew their caps and fill as necessary, making sure to use a grade of rock drill oil suitable to your temperature & conditions.
- 
2. Check oil levels in the air motors. Refill as needed with #30 engine oil. See the motor manual (supplied) for more details.
 3. Check oil level in the gear cases and refill as needed with 80-90 hypoid gear oil. See the motor manual (supplied) for more details.

6.3 Accessing the Motors & Gear Cases

To access the motors, simply remove the four bolts holding the motor cavity cover and flip the cover aside. Remember to replace and fasten the cover before attempting to operate the Long Tom.

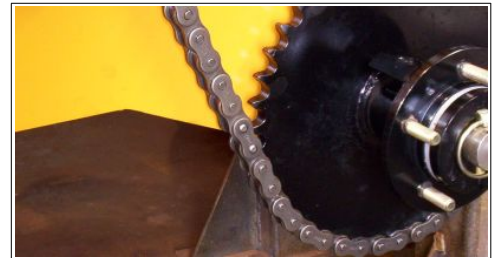
6.4 Opening & Closing the Chain Guards

Each side of the Skid-Steer Long Tom features a chain guard which must be opened to perform maintenance procedures. Remove one bolt from each of these guards, while loosening the other bolt. Swing the guards open to allow easy access to the chains, sprockets & idlers. When done, simply reverse this procedure to close & fasten the chain guards.



6.5 Replacing a Drive Chain

1. Open the chain guards as described above.
2. If replacing the chain (part Y-8040), lay it out as shown here:
3. Bring both ends of the chain together and temporarily fasten them in place using a clamp, as shown here.
4. Insert a master link (Y-8040-1) and secure with a half-link (Y-8040-2) to complete the chain.



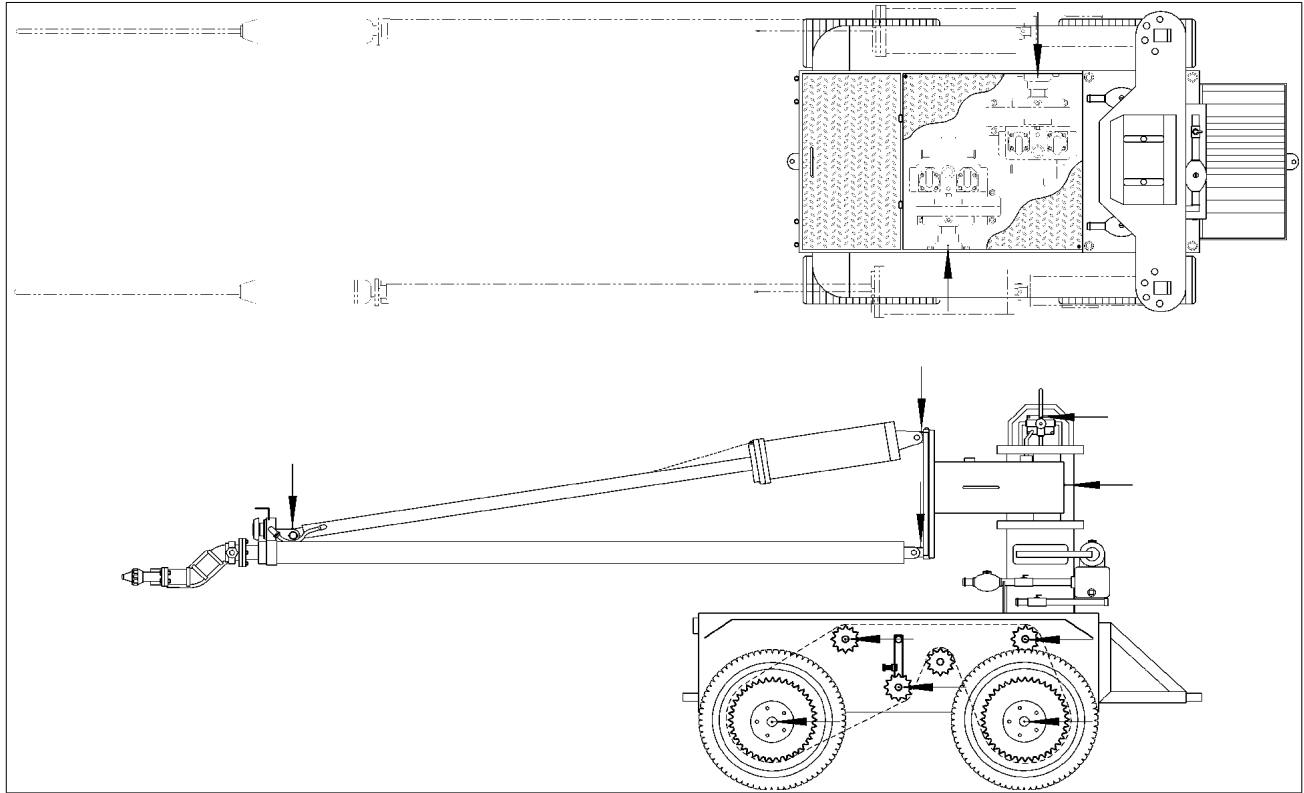
6.6 Adjusting Drive Chain Tension

1. Open the chain guards as described above.
2. Loosen the locking nut and rotate it further toward the head of the bolt.
3. Turn the bolt clockwise to drive the tension arm tighter into the chain, or turn counterclockwise to reduce the tension.
4. Increase the tension until no slack is visible anywhere in the chain, particularly between the top two idler sprockets. Do not attempt to tighten beyond this point.
5. When satisfied with the chain tension, tighten the locking nut against the plate to secure the assembly.



6.7 Greasing

Use good quality NLG-2 grease for all grease points. The following diagram shows all grease points on a Skid-Steer Long Tom (indicated by arrows). Remember that there are chain sprockets & idlers on both sides of the machine.



6.8 Assembly of the Mounting Bracket (X-1674)

1. Before beginning, gather all components of the mounting bracket (shown here). Please refer to section 7.3 for full descriptions & part numbers.



2. Slide the taper lock pedestal (X-1637) onto the shaft of the mounting plate (W-1511) so that it rests on the taper.



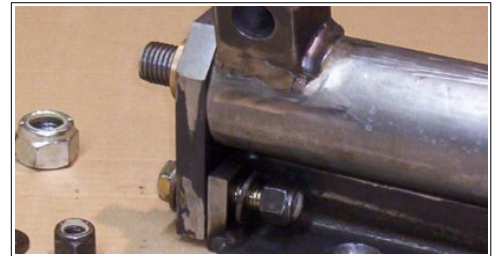
3. Push the pedestal pressure ring (Y-1280) into the top bearing plate (Y-1631).



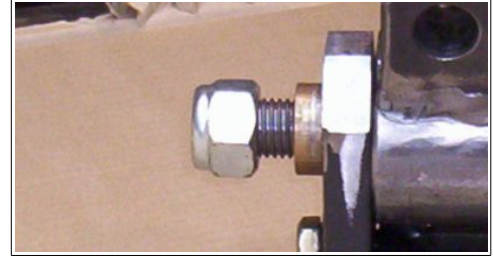
4. Place the top bearing plate (Y-1631) on the bracket assembly, taking care to line up the bolt holes on the bottom. Slide the washers (J-5140) onto the bolts (J-5130) and push them through the holes as pictured here.



5. Slide each of the remaining two washers (J-5140) onto the ends of the bolts (J-5130), followed by the hex nuts (J-5150). Fasten everything securely.

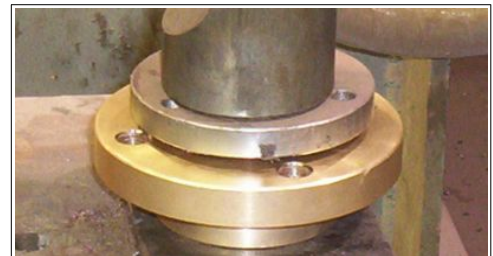


6. Securely fasten the top bearing plate assembly (Y-1631) to the taper lock pedestal (X-1637) with the nylon insert nut (49TU-168). **Please note that this should only be tightened until proper swivel resistance is encountered. Do not overtighten.**
7. Screw one of the grease fittings (1610) into the center of the taper lock pedestal itself (X-1637).
8. Screw the other grease fitting (1610) into the hole provided on the taper lock pedestal (X-1637) near the top bearing plate assembly (Y-1631).



6.9 Assembly of the Balance Cylinder (W-1672)

1. Before beginning, gather all components of the balance cylinder (shown here). Please refer to section 7.1 for full descriptions & part numbers.
2. Insert the piston rod bearing (Y-271) into the cylinder head (X-1671).
3. Carefully press the bearing into place as pictured here.
4. Seat the rod wiper (250-G2) into the socket on the packing cap (Y-268).
5. Using flat piece of plate to evenly distribute pressure, carefully press the rod wiper (250-G2) into the packing cap (Y-268) as shown here.



6. Check to ensure the rod wiper is tightly seated in its groove before continuing.



7. Insert the complete Rod Packing Set (Y-274) into the cylinder head (X-1671).



8. Slide the gasket (Y-269) on the packing cap (Y-268), making sure the bolt holes line up.



9. Place the packing cap (Y-268) onto the cylinder head (X-1671), making sure to line up the holes. Place washers (J-5020) on all four bolts (J-5010) and screw them in firmly.



10. Thoroughly apply grease to the inner regions of the packing cap (Y-268) and the cylinder head (X-1671).



11. Flip the cylinder head (X-1671) upside down and place the gasket (Y-272) as shown here.



12. Slide the cylinder head (X-1671) onto the piston rod (Y-1257) as shown here.



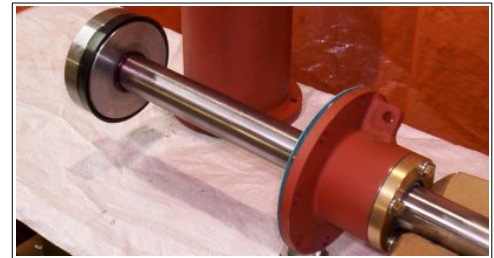
13. Slide the cup follower (Y-265) onto the end of the piston rod (Y-1257).



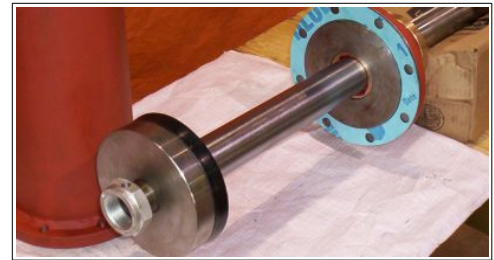
14. Cover the cup follower (Y-265) with the cup packing (Y-266)



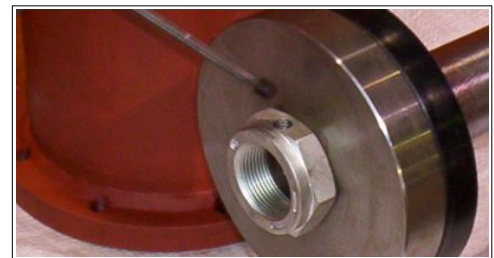
15. Slide the piston head (Y-267) onto the end of the piston rod (Y-1257).



16. Screw the rod nut (Y-1250) onto the threaded end of the piston rod (Y-1257).



17. Screw in the set screw (supplied with Y-1250) to the hole on the rod nut (Y-1250)



18. Slide the bare balance cylinder (X-1642) over the assembly, taking care to ensure the bolt holes line up with the head gasket (Y-272) and the cylinder head (X-1671). Fasten the two pieces together using eight bolts (J-5030), eight washers (J-5040) & eight **nuts**.



19. Screw the pipe plug (Y-1263) into the hole on the end of the bare balance cylinder (X-1642).



20. Loop a chain clevis through one of the links of the drop lock chain (J-5000), then fasten it to the balance cylinder as shown here.



6.10 Assembly of the Leg Cylinder (W-2619)

1. First, gather the components shown here. Pictured here from left to right are::

- 1x Retaining Ring (5000-275)
- 1x Rod Wiper (275-HD2)
- 1x Set Rod Packing (Y-274)
- 1x Piston Rod Bearing (Y-271)
- 1x Packing Cup (Y-1252)



2. Seat the bearing (Y-271) into the packing cup (Y-1252) as shown here.



3. Carefully press the bearing into place.



4. When pressed properly, the assembly should look like this.



5. Place the packing cup down and insert the set of rod packings as shown.



6. Insert the rod wiper on top of the cup packings.



7. Using a pair of pliers, place the snap ring into place to lock the assembly together.



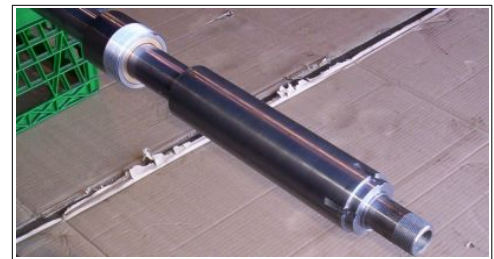
8. Gather the remaining leg cylinder components as shown here. For full descriptions & part numbers, please refer to section 7.2.



9. Slide the completed packing cup (Y-1252) onto the piston rod (Y-1730).



10. Slide an inlet cup follower (W-2590) onto the piston rod (Y-1730).



11. Place a cup packing (Y-1241) onto the inlet cup follower (W-2590).



12. Place a brass piston head (Y-1238) after the cup packing (Y-1241).



13. Place another cup packing (Y-1241) onto a cup follower (Y-1236).



14. Slide the cup packing & cup follower from the last step onto the piston rod (Y-1730).



15. Insert a set screw (provided) into the hole on a rod nut (Y-1250).



16. Screw the rod nut (Y-1250) onto the piston rod (Y-1730).



17. Start pushing the transfer hose (J-5110) through the other end of the piston rod (Y-1730). Manoeuvre it until you see the end sticking out of piston rod as shown.



18. Attach a transfer hose end fitting (J-5120) to the end of the transfer hose (J-5110).



19. Gently screw the transfer hose end fitting (J-5120) into the threads of the rod nut (Y-1250).



20. Insert the entire piston rod assembly (Y-1730) into the leg cylinder (X-1656).





This page intentionally left blank.

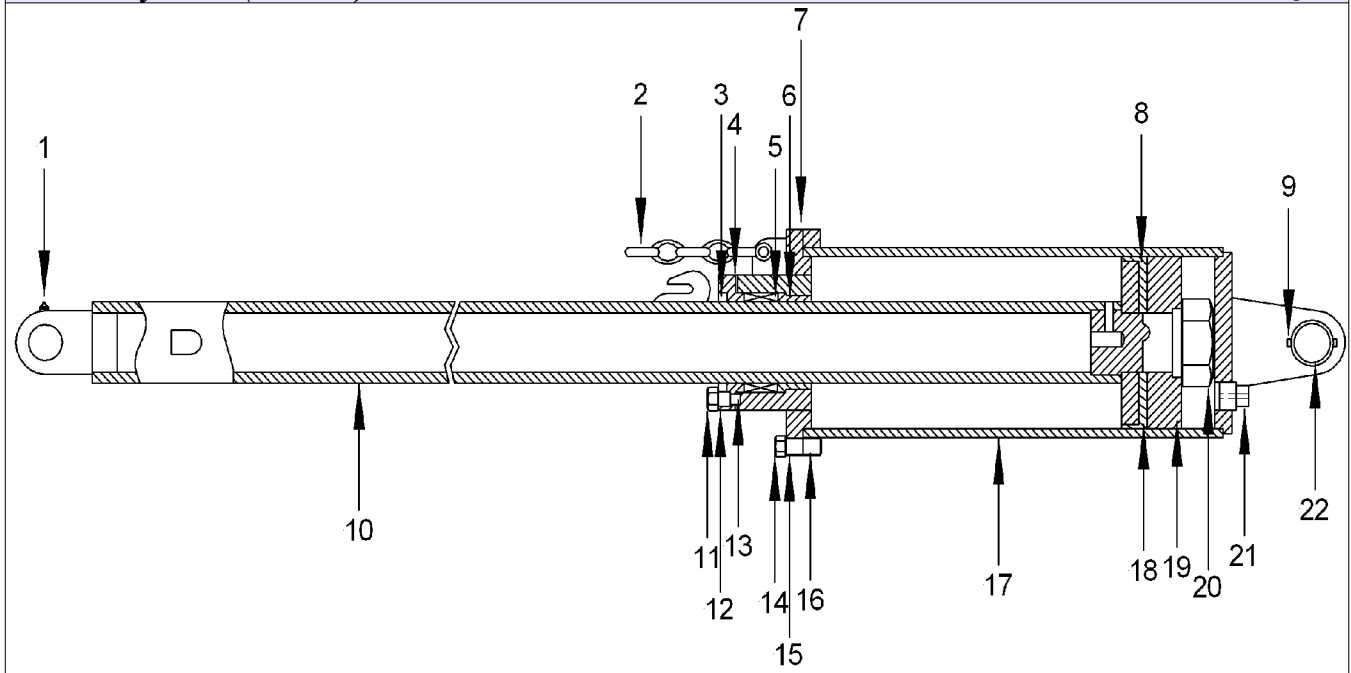


This page intentionally left blank.

Parts List

Balance Cylinder (W-1672)

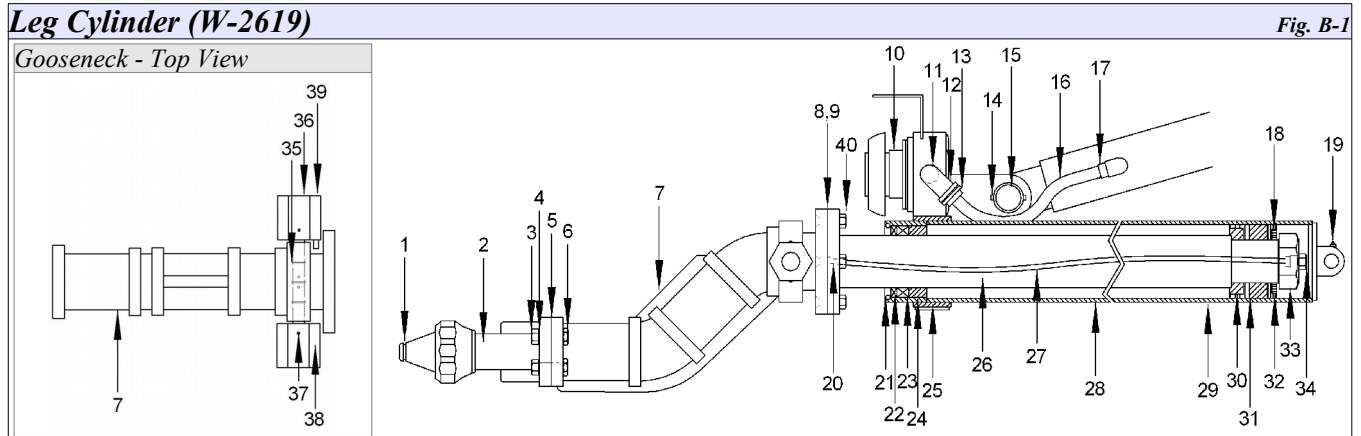
Fig. A-1



Balance Cylinder (W-1672)			<i>Fig. A-1</i>
No.	Part No.	Description	Qty
1	1610	Grease Fitting	1
2	J-5000	Drop Lock Chain	1
3	250-G2	Rod Wiper	1
4	Y-268	Packing Cap	1
5	Y-274	Set Rod Packing (Molythane)	1
6	Y-271	Piston Rod Bearing	1
7	X-1671	Cylinder Head	1
8	Y-265	Cup Follower	1
9	59-077-375-1500	Roll Pin	1
10	Y-1257	Piston Rod	1
11	J-5010	Bolt	4

Balance Cylinder (W-1672)			<i>Fig. A-1</i>
No.	Part No.	Description	Qty
12	J-5020	Lockwasher	4
13	Y-269	Packing Cap Gasket	1
14	J-5030	Bolt	8
15	J-5040	Lockwasher	8
16	Y-272	Cylinder Head Gasket	1
17	X-1642	Balance Cylinder, Bare	1
18	Y-266	Cup Packing (Molythane)	1
19	Y-267	Piston Head	1
20	Y-1250	Rod Nut	1
21	Y-1263	Pipe Plug	1
22	Y-1646	Pedestal Pin	1

Parts List

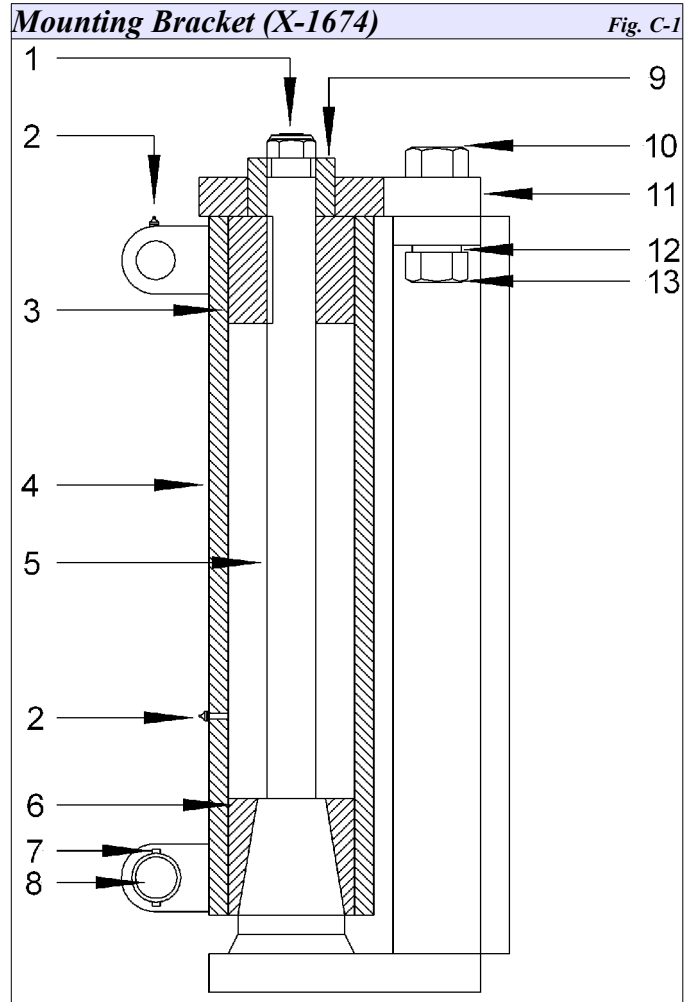


Leg Cylinder (W-2619)			Fig. B-1
No.	Part No.	Description	Qty
1	6227-15	"O" Ring	1
2	C-109HD or C-109GD	Heavy Duty PHQ250 Drill Adapter Gardner-Denver Drill Adapter	1
3	J-5050	Hex Nut	4
4	J-5040	Lockwasher	4
5	Y-1384	Gasket	1
6	J-5060	Bolt	4
7	WB-2501	Gooseneck	1
8	Y-269	Packing Cup Gasket	1
9	2813002	"O" Ring - Optional	1
10	J213AC-2	Self-Relieving Pressure Regulator	1
11	J-5070	Obsolete -- use 5080 instead	-
12	J-5080	90° Elbow (replaces <i>both</i> J5070 & J5090)	2
13	J-5090	Obsolete -- use 5080 instead	-
14	59-077-375-1500	Roll Pin	1
15	Y-1647	Leg Lift Pin	1
16	1525-4	Hose	2
17	J-5081	90° Elbow (replaces 4738-4-4B)	4
18	Y-1236	Cup Follower	1
19	1610	Grease Fitting	1
20	J-5100	Transfer Hose Fitting	1

Leg Cylinder (W-2619)			Fig. B-1
No.	Part No.	Description	Qty
21	5000-275	Retaining Ring	1
22	275-HD2	Rod Wiper	1
23	Y-274	Set Rod Packing (Molythane)	1
24	Y-1252	Packing Cup	1
25	Y-271	Piston Rod Bearing	1
26	Y-1730	Piston Rod (Bare)	1
27	J-5110	Transfer Hose, 117½" Long	1
28	X-1656	Leg Cylinder, Bare	1
29	Y-1237	OPTIONAL: Inlet Cup Follower, 13/16" Long	1
30	W-2590	Inlet Cup Follower, 12" Long	1
31	Y-1238	Piston Head (Brass Guide)	1
32	Y-1241	Cup Packing (Molythane)	2
33	Y-1250	Rod Nut	1
34	J-5120	Transfer Hose End Fitting	1
35	6227-11	"O" Ring (Feed / Reversing Valve)	3
36	Y-1745	Reverse Valve	1
37	59-048-250-1750	Roll Pin	2
38	Y-2030-A	Valve Handle - w/o stop	1
39	Y-2030-B	Valve Handle - w/ stop	1
40	J-5285	Bolt	4

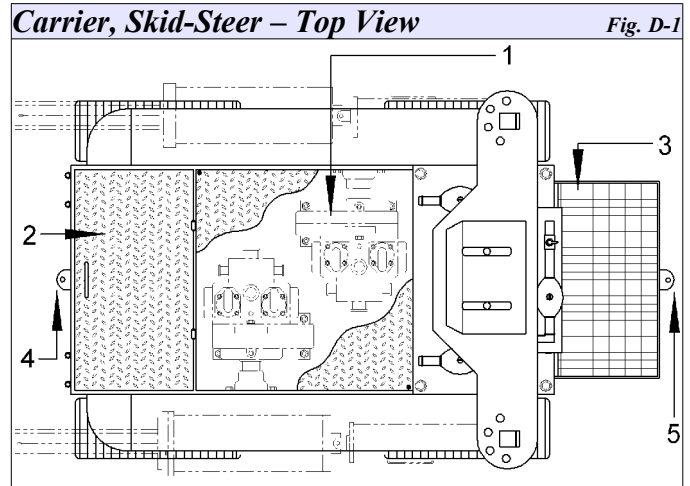
Parts List

Mounting Bracket (X-1674)			<i>Fig. C-1</i>
<i>No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Qty</i>
1	49TU-168	Nylon Insert Nut	1
2	1610	Grease Fitting	2
3	Y-1282	Top Bushing	1
4	X-1637	Taper Lock Pedestal, Bare	1
5	W-1511	Mounting Plate, Bare	1
6	Y-1283	Taper Bushing	1
7	59-077-375-1500	Roll Pin	1
8	Y-1647	Pedestal Leg Pin	1
9	Y-1280	Pedestal Pressure Ring	1
10	J-5130	Bolt	2
11	Y-1631	Top Bearing Plate	1
12	J-5140	Washer	4
13	J-5150	Hex Nut	2

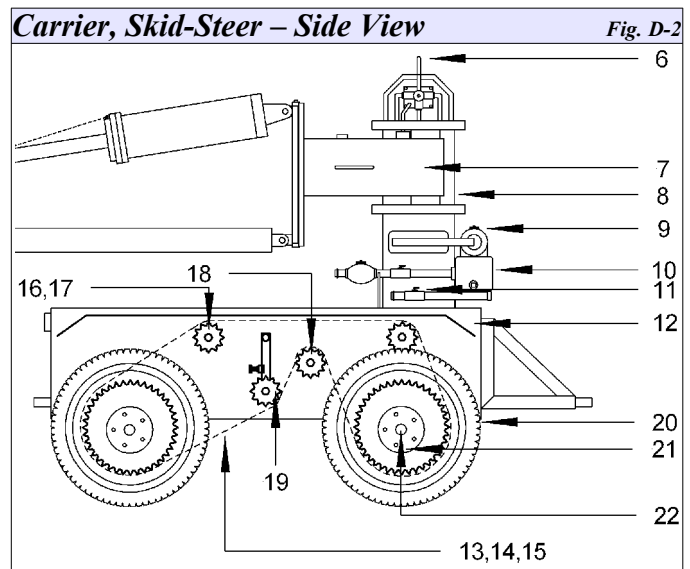


Parts List

Carrier, Skid-Steer – Top View Fig. D-1			
No.	Part No.	Description	Qty
1	J-5160-GAST	Air Motor (Gast)	2
2	J-7804	Main Frame Hatch	1
3	J-7194	Operator's Platform	1
4	J-5170	Tow Eye, Front	1
5	J-5180	Tow Eye, Rear (Optional)	1



Carrier, Skid-Steer – Side View Fig. D-2			
No.	Part No.	Description	Qty
6	J-1"-4	Tramming Valves	2
7	J-8241	Boom Mount – Hinge Weldment	2
8	J-8240	Turret Pedestal Weldment	1
9	1007695	Lubricator	3
10	J-5190	Air Header	1
11	J-5200	Valve	4
12	J-1000	Main Frame Weldment	1
13	Y-8040	Drive Chain Assembly	2
14	Y-8040-1	Master Link	2
15	Y-8040-2	Half Link	2
16	J-7844	Idler Sprocket c/w Bushing	4
17	J-7900	Idler Shaft	4
18	J5210 / J5280	Drive Sprocket Assembly	2
19	J-5220	Tensioner Assembly	2
20	JJ800X16	Tire & Rim Assembly	4
21	201012	Hub Ass'y	4
21	J-5230	Inner Spacer (5/16")	4
21	J-5240	Outer Spacer (3/16")	4
21	J-5250	Sprocket Cap / Axle Lock	4
21	342003	Lynch Pin	4
21	J-5350	Nylon Axle Bushing	4
22	J-5260	Axle	2



Drive Shaft Assembly (J5210 / J5280) Fig. D-3			
No.	Part No.	Description	Qty
23	J-5270	Lock Collar (inc. w/ J-212-39)	2
24	J-212-39	Flange Bearing	2
25	J-7824-V	Drive Gear Adapter Shaft (Gast)	2
26	J-7724	Adapter Shaft Spacer	2
27	J-8202	Drive Sprocket, Slotted	2
28	J-7858	Drive Sprocket Cap, Keyed	2

