

# **CONVEY-ALL™**

## **ASSEMBLY MANUAL**



### **TRUCK LOAD CONVEYOR**

1640-TL • 1650-TL • 1658-TL

## **LIMITED WARRANTY**

Convey-All™ warrants to the buyer that the new machinery is free from defects in material and workmanship.

This warranty is only effective as to any new machinery which has not been altered, changed, repaired or treated since its delivery to the buyer, other than by Convey-All™ or its authorized dealers or employees, and does not apply to accessories, attachments, tools or parts, sold or operated with new machinery, if they have not been manufactured by Convey-All™.

Convey-All™ shall only be liable for defects in the materials or workmanship attributable to faulty material or bad workmanship that can be proved by the buyer, and specifically excludes liability for repairs arising as a result of normal wear and tear of the new machinery or in any other manner whatsoever, and without limiting the generality of the foregoing, excludes application or installation of parts not completed in accordance with Convey-All™ operator's manual, specifications, or printed instructions.

Written notice shall be given by registered mail, to Convey-All™ within seven (7) days after the defect shall have become apparent or the repairs shall have become necessary, addressed as follows:

**Convey-All Industries Inc.  
130 Canada Street  
Winkler, Manitoba R6W 0J3  
Canada**

This warranty shall expire one (1) year after the date of delivery of the new machinery.

If these conditions are fulfilled, Convey-All™ shall at its own cost and at its own option either repair or replace any defective parts provided that the buyer shall be responsible for all expenses incurred as a result of repairs, labor, parts, transportation or any other work, unless Convey-All™ has authorized such expenses in advance.

The warranty shall not extend to any repairs, changes, alterations, or replacements made to the new equipment other than by Convey-All™ or its authorized dealers or employees.

This warranty extends only to the original owner of the new equipment.

This warranty is limited to the terms stated herein and is in lieu of any other warranties whether expressed or implied, and without limiting the generality of the foregoing, excluded all warranties, expressed or implied or conditions whether statutory or otherwise as to quality and fitness for any purpose of the new equipment. Convey-All™ disclaims all liability for incidental or consequential damages.

This machine is subject to design changes and Convey-All™ shall not be required to retrofit or exchange items on previously sold units except at its own option.

**WARRANTY VOID IF NOT REGISTERED**

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**Note:**

To reduce the size of the electronic version of this manual, the Schematics and Drawings are contained in a supplementary document.

## Section 1: INTRODUCTION

Congratulations on your choice of a Convey-All™ Truck Load Conveyor. This unit has been designed and manufactured to exceed the exacting standards for such equipment in the agricultural industry. It will keep your operation working at optimum efficiency.

Safe, efficient assembly means that everyone who will be involved must read this manual.

Information provided herein is of a descriptive nature. Convey-All Industries Inc. reserves the right to modify the machinery design and specifications without any preliminary notice.

- Be sure the assembly area is large enough to lay out all the components. There should be sufficient clearance for people, forklifts or other equipment around all sides.
  - The assembled tube will measure 44 feet (1640-TL), 54 feet (1650-TL), and 63 feet (1658-TL) laying on the ground.
  - The finished conveyor will be 9 feet wide and 14-16 feet high.
- Gather all the required tools and supplied.
- Have hoists, forklifts, cranes or other lifting devices with the required lifting capacity, available for use.
- Have stands on hand. They must have sufficient capacity to hold up the parts being assembled.

Keep this manual for reference and to pass on to new operators or owners. Call your dealer, distributor or Convey-All Industries Inc, if you need assistance, information, additional/replacement copies, or a digital copy of this document.

### **Disclaimer:**

These instructions are based on standard assembly. A few popular options are described.  
Many options change the location and arrangement of parts.  
Your situation may necessitate a change from the described assembly instructions.

### **IMPORTANT:**

Parts lists, drawings and schematics are shipped, along with this manual.  
Refer to them, as you read this manual for specific details;  
such as, measurements, fasteners to use, and position of components.

### **1.1 OPERATOR ORIENTATION**

The directions; left, right, front and rear, as mentioned throughout this manual, are as seen from the tow vehicle driver's seat, facing the direction of travel. The hopper is the front of the conveyor.

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## Section 2: SAFETY

3 Big Reasons why safety is important to you:




- Accidents Disable and Kill
- Accidents Cost
- Accidents Can Be Avoided

The Safety Alert Symbol means:

The Safety Alert Symbol identifies important safety messages on the conveyor and in this manual.

The following signal words are used in this manual to express the degree of hazard for areas of personal safety.

When you see the symbol and/or the signal words described below, obey the accompanying message to avoid possible injury or death.

 <b>DANGER</b>	<p>Indicates a hazardous situation that, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations. Typically for machine components which, for functional purposes, cannot be guarded.</p>
 <b>WARNING</b>	<p>Indicates a hazardous situation, if not avoided, could result in death or serious injury. This word identifies hazards that are exposed when guards are removed. It may be used to alert against unsafe practices.</p>
 <b>CAUTION</b>	<p>Indicates a hazardous situation, if not avoided, could result in minor or moderate injury. It may be used to alert against unsafe practices.</p>
<b>NOTICE</b>	<p>Indicates practices or situations which may result in the malfunction of, or damage to equipment.</p>
<b>SAFETY INSTRUCTIONS</b>	<p>Safety instructions (or equivalent) signs indicate specific safety-related instructions or procedures.</p>

## 2.1 SAFETY ORIENTATION

YOU are responsible for the SAFE operation and maintenance of your Convey-All™ tube conveyor. Be sure that everyone who will assemble, operate, maintain or work around it, is familiar with the safety, assembly, operation and maintenance procedures.

This manual will take you step-by-step through the assembly process. It will alert you to all good safety practices that should be adhered to while assembling the conveyor.

Remember, you are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a regular part of your safety program. Be certain that everyone who will work with this equipment follows these procedures.


Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Conveyor owners must give assembly instructions to employees before allowing them to work with the machine.


Procedures must be reviewed annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.


- The most important safety device around this equipment are SAFE workers. It is their responsibility to understand all Safety and Assembly instructions in this document, and to follow them.
- An untrained worker exposes himself and bystanders to possible serious injury or death.
- Think SAFETY! Work SAFELY!

## 2.2 GENERAL SAFETY

- Read and understand the Assembly Manual and all safety messages before setting up, maintaining or adjusting the equipment. 

- Only competent people should assemble the conveyor.

- Have a first-aid kit available for use should the need arise. 

- Provide a fire extinguisher for use in case of an accident. Store in a highly visible place. 

- Do not allow riders.
- Do not allow children, spectators or bystanders within hazard area around the machine.

- Wear appropriate protective gear. This list may include but is not limited to:

- Hard hat
- Protective shoes with slip resistant soles
- Eye protection
- Work gloves
- Hearing protection
- Respirator or filter mask
- Hi-Visibility safety vest



- Never use alcoholic beverages or drugs which can hinder alertness or coordination while operating this equipment.

Consult your doctor about operating this machine while taking prescription medications.

- If the elderly are assisting with farm work, their physical limitations need to be recognized and accommodated.
- Review safety related items annually with all personnel who will be operating or maintaining the conveyor.



## 2.3 WORK PREPARATION

- Personal protective equipment (PPE) include:

- Protective shoes with slip resistant soles
- Eye protection
- Work gloves
- Hearing protection



Wear them when assembling, operating, adjusting, maintaining or repairing the unit.

- Do not allow long hair, loose fitting clothing or jewelry to be around equipment.
- **PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS!**

Assembling equipment can often be noisy enough to cause permanent, partial hearing loss. We recommend that hearing protection be worn on a full-time basis.



Noise over 85 db on a long-term basis can cause severe hearing loss.

Noise over 90 db adjacent to the operator over a long-term basis may cause permanent, total hearing loss.

**Note:**

Hearing loss from loud noise (impact driver, tractors, radios, etc.) is cumulative over a lifetime without hope of natural recovery.

- Clear working area of stones, branches or hidden obstacles that might be hooked or snagged, causing injury or damage.
- Assemble only in daylight or good artificial light.
- Be sure assembly is in a stable position.

## 2.4 ASSEMBLY SAFETY

- Follow good shop practices:
  - Keep assembly area clean and dry.
  - Be sure electrical outlets and tools are properly grounded.
  - Use adequate light for the job.



- Provide adequate space for access to all sides of machine.
- Use forklifts, hoists or cranes with sufficient lift capacity to handle the heavy components.
- Two people are needed to handle the heavy, bulky components.
- Place the machine and components on heavy duty, work stands before working underneath.
- Stay away from overhead obstructions when lifting the assembly. Contact can damage the components, or cause them to fail.
- Tighten all bolts and fasteners to their specified torque before using the unit.
- Removal of safety guards may be necessary while testing the assembly. Be Alert and be Careful! Replace the guards when finished.




## 2.5 SAFETY DECALS

- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible.
- Replaced parts must display the same decal(s) as the original parts.
- All safety decals have a part number in the lower right hand corner. Use this part number when ordering replacements.
- Safety decals are available from your authorized distributor, dealer's parts department or from Convey-All Industries Inc.


### 2.5.1 How to Install Safety Decals:

1. Be sure the application area is clean and dry. Ensure the surrounding temperature is above 10°C (50°F).
  - Remove all dirt, grease, wax from the surface.
  - Clean with a non-ammonia based cleaner.
  - Wipe the clean surface with isopropyl alcohol on paper towel, and allow to dry.
2. Determine the exact position before you remove the backing paper.
3. Peel a small portion of the split backing paper.
4. Align the decal over the specified area. Use a squeegee to carefully press the small portion, with the exposed adhesive backing, into place.
5. Slowly peel back the remaining paper and carefully smooth the rest of the decal into place.
6. Small air pockets can be pierced with a pin and smoothed out using the squeegee, or a piece of sign backing paper.

## 2.6 HYDRAULIC SAFETY


- Never use Teflon tape to seal threads! It does not hold at high pressure. Always use Loctite® 545 Thread Sealant. 
- Always place all hydraulic controls in neutral before disconnecting and working on hydraulic systems.
- Relieve pressure in hydraulic system before maintaining or working on machine. 
- Make sure that all components in the hydraulic system are kept in good condition and are clean.
- Replace any worn, cut, abraded, flattened or crimped hoses.
- Do not attempt any makeshift repairs to the hydraulic fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.
- Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of a hand to isolate and identify leaks. 
- If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.

## 2.7 ENGINE SAFETY

- Read and understand the operating manual provided with the engine. 
- Use proper tools to service engine.
- Do not run engine in an enclosed area. Exhaust gases contain carbon monoxide, an odorless and deadly poison.

- Store fuel in approved safety containers.

- Do not store fuel near open flame. 

Appliances such as a stove, furnace, or water heater use a pilot light which can create a spark. 

- No smoking when filling fuel tank.
- Do not remove fuel cap while engine is running.
- Do not refuel indoors where area is not well ventilated. Outdoor refueling is preferred.
- Do not refuel while engine is running. Allow engine to cool for 5 minutes before proceeding.
- Use fresh fuel. Stale fuel can gum carburetor and cause leakage.
- Check fuel lines and fittings frequently for cracks or leaks. Replace if necessary.
- Do not operate engine if fuel has spilled. Move machine away. Avoid creating any ignition until the fuel has evaporated.
- Do not run engine above rated speeds. This may result in damage and injury.
- Do not tamper with the engine speed selected by the original equipment manufacturer.
- Do not operate engine with grass, leaves, dirt or other combustible materials in muffler area.
- Do not operate engine without muffler.

- Do not tamper with governor springs, governor links or other parts which may increase the governed engine speed.
- Do not strike flywheel with hard object or metal tool. This may cause it to shatter in operation.
- Keep cylinder fins/governor parts free of grass and other debris which can affect engine speed.

### **WARNING**

#### **HOT EQUIPMENT HAZARD**

Do not touch muffler, cylinder or fins while engine is running. Contact will cause burns.

- Do not use this engine on any forest covered, brush covered, or grass covered unimproved land, unless a spark arrester is installed on muffler. The arrester must be maintained in effective working order by operator.

In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands.

- Inspect the muffler periodically. Replace it when necessary.

If engine is equipped with a muffler deflector, inspect periodically. Replace with correct part.


- Do not check for spark, or crank engine with spark plug or spark plug wire removed.
- Do not run engine with air filter or its cover removed.

### **NOTICE**


#### **POSSIBLE ENGINE DAMAGE**

Decelerate engine slowly to stop. Avoid choking the carburetor to stop engine. Choke only for an emergency stop.

## 2.8 TIRE SAFETY

- Failure to follow procedure when mounting a tire on a wheel or rim can produce an explosion and may result in serious injury or death. 
- Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Have a qualified tire dealer or repair service perform required tire maintenance.
- When replacing worn tires, make sure they meet the original tire specifications. Never undersize.
- Reference the tire side wall for information on the maximum cold tire pressure (PSI). Keep the tires inflated to this setting.

## 2.9 BATTERY SAFETY

- Keep all sparks and flames away from batteries, as gas given off by electrolyte is explosive.
- Avoid contact with battery electrolyte: wash off any spilled electrolyte immediately.
- Wear safety glasses when working near batteries. 
- Do not tip batteries more than 45 degrees, to avoid electrolyte loss.
- To avoid injury from spark or short circuit, disconnect battery ground cable before servicing any part of electrical system.
- Boosting the engine through the battery, or recharging the battery, may cause a short in the electrical system.
- Before using the battery, after it has been in storage, be sure it has the optimal charge.

## Section 3: PREPARATION

Prepare to assemble the conveyor by: cleaning the area, gathering lift equipment, stands and tools.

### 3.1 TOOLS

Tool requirements include but are not limited to:

#### **IMPORTANT:**

Always use calibrated torque wrenches. Use of anti-seize lubricant, dirt in hole, and damaged threads can cause over-torquing. USE TORQUE VALUES WITH CAUTION.

- Two ratchets - 3/8" drive:
  - Shallow socket: 3/8, 7/16, 1/2, 9/16"
  - Deep socket: 7/16, 1/2, 9/16"
  - Extension bar
- One ratchet - 1/2" drive:
  - Shallow socket: 9/16, 5/8, 11/16, 3/4, 15/16"
  - Deep socket: 3/4, 15/16"
  - One 3" and one 6" extension bar
  - Breaker bar, 1/2" drive +/- 16"
- SAE Wrenches: 3/8, 7/16, 1/2, 9/16, 5/8, 11/16, 3/4, 7/8, 15/16, 1", 1-1/8, 1-1/4"
- SAE Ratchets: 3/8, 7/16, 1/2, 9/16, 5/8, 11/16, 3/4, 7/8, 15/16"
- Rivet gun
- Adjustable wrench: one 6" and one +/- 12"
- Allen keys: 1/16 to 3/8"
- Multi-Driver
- Flathead screwdriver
- 10" bent nose pliers with wide cutter
- 7" cutting pliers
- 32oz ball peen hammer
- Rubber mallet
- Cordless, heavy duty 18V, impact wrench:
  - 1/2" drive, 1/2 to 3/8" reducer
- 1/4" x 10" aligning punch
- 6" centering punch
- Grease gun
- Two rolls of electrical tape
- 100' measuring tape
- Black ink marker
- Level
- One reel of fish wire
- One ton capacity winch with 200 feet of cable

### 3.2 RECEIVING

The conveyor is shipped from the factory in two crates, with the tubes strapped on top. The first crate includes the engine cradle, the second contains the rest of the parts. Additional larger parts may be bundled together.

Use a forklift to unload the crate from the truck.

When the crate is unloaded:

1. Open the crate.
2. Lay out the contents on the ground.
3. Unpack the box of fasteners, clips, etc.
4. Use the packing slip as a guide. Confirm that all listed parts and supplies have been included in the crate, and accompanying packages.
5. Contact the transport company and the factory immediately if any components or bags are missing.



Fig 1 - Engine cradle crate



Fig 2 - Components crate



Fig 3 - Documentation, fasteners & small parts

### 3.3 PREPARE FOR ASSEMBLY

Assembly should be done in a large, open, well-lit area. There should be access to the machine from any side, at all times.

Two people must work on assembling the unit. Together, they can handle large, heavy or unwieldy components.

Always use stands, hoists, jacks, cranes, winches and other support systems. This equipment must have enough capacity to handle all the components safely during the assembly procedure.

## Section 4: ENGINE CRADLE ASSEMBLY

The Cradle is normally assembled in the factory, before shipping. These instructions are included in case it needs to be assembled on site.

### **⚠ CAUTION**

**EQUIPMENT WEIGHT HAZARD**  
Stands must hold 2500 lb in weight,  
and be stable.

#### **4.1 BATTERY**

1. Place a layer of rubber belting onto the base of the holder.
2. Assemble the brackets on the battery holder, which is in the middle of the cradle.
3. Place battery onto the holder.
4. Clamp the battery down securely in place.

#### **IMPORTANT:**

Battery cables are attached to the engine. Wait with connecting them to the battery until the conveyor assembly is finished.



Fig 4 - Cradle frame

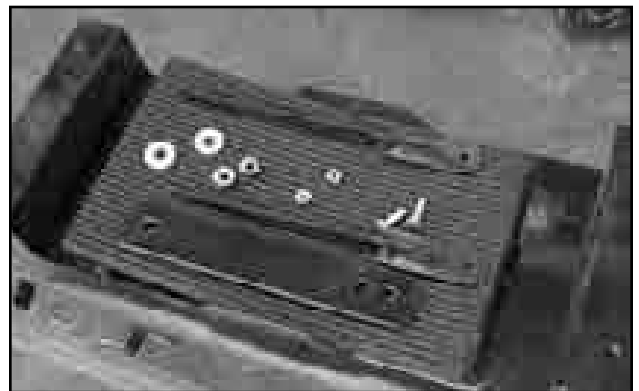


Fig 5 - Battery holder brackets



Fig 6 - Battery on cradle

## 4.2 GAS ENGINE

Go to Section 4.3, if you have a diesel engine to install.

**Note:**

Position of engine mounting holes will depend on the engine being installed. Measure your specific engine base.

5. Drill 4 holes for engine mounting bolts.

**⚠ WARNING**

**EQUIPMENT WEIGHT HAZARD**

Use lift equipment rated to hold 2000 lb.

6. Hoist engine and position over predrilled holes.
  - Tighten the bolts to secure the engine into place.
7. There are two sets of electrical wires coming from the engine; positive and ground.

**Positive Connection:**

8. Connect the white, Positive wire to the yellow wire coming from the engine.
9. Attach the black, Positive wire to the engine starter.
10. Attach the red, positive battery cable over top the other wire on the starter connection.

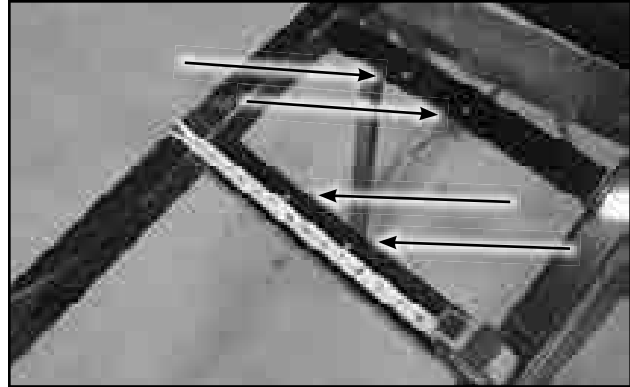


Fig 7 - Measure and drill holes for engine base



Fig 8 - Engine

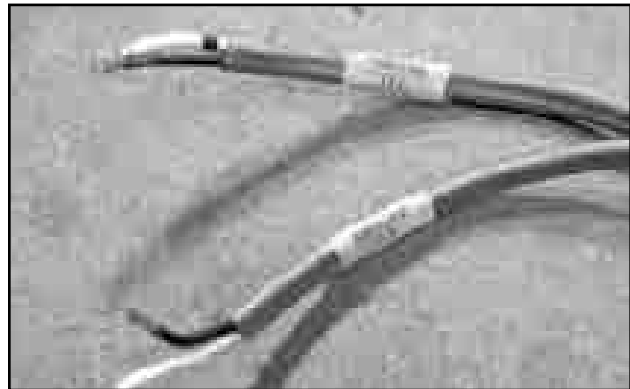


Fig 9 - Positive and ground coming from engine

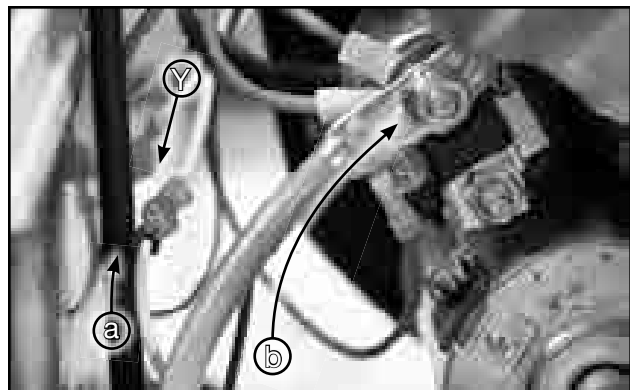


Fig 10 - Yellow wire to white (a), black (b) to ignition



**Ground Connection:**

11. Place the black and white, ground wires on the mounting bolt at the base of the engine.
12. Attach the black, ground battery cable over top the ground and tighten the bolt.

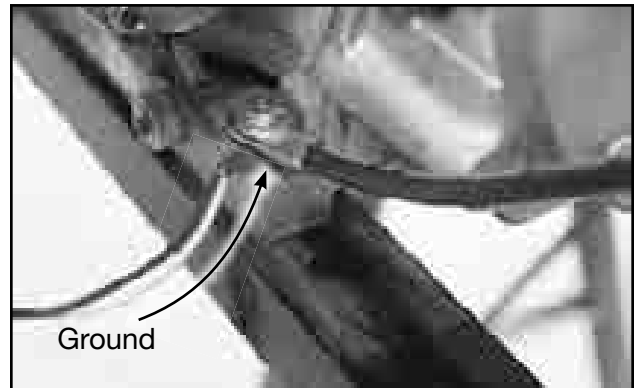


Fig 11 - Ground to engine base

13. Fit the battery cables onto the battery.
14. Add a cable clamp to the cradle frame, to secure the battery cables, so they don't drag.

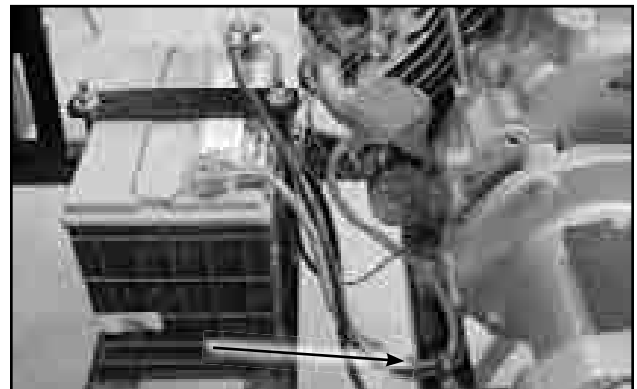


Fig 12 - Cables to battery

**Engine Muffler:**

15. Place the gaskets over the muffler openings at the back of the engine.
16. Hold the muffler in place.
17. Bolt it to the engine, sandwiching the gaskets in place.



Fig 13 - Engine muffler

**Hydraulic Pump:**

The Casappa hydraulic pump is shown in the following instructions. It is a direct spline pump and has four ports leading out of it.

**NOTICE**

**HYDRAULIC SEALANT HAZARD**

Never use Teflon tape to seal threads!  
It does not hold at high pressure.  
Always use Loctite® 545 Thread Sealant.

**Note:**

Refer to schematic for specifics on the hydraulic fittings.

18. Slide Shaft Coupler onto rear of engine.
  - Place a key into the slot and hammer flush with shaft.
19. Rotate shaft, so key groove is on top.
20. Place the light, blue coupling spider onto shaft coupler.

21. Bolt the hydraulic pump to its base.
22. Side hydraulic pump (and base) over coupler, with window to top.
  - bolt to engine using lock washers.

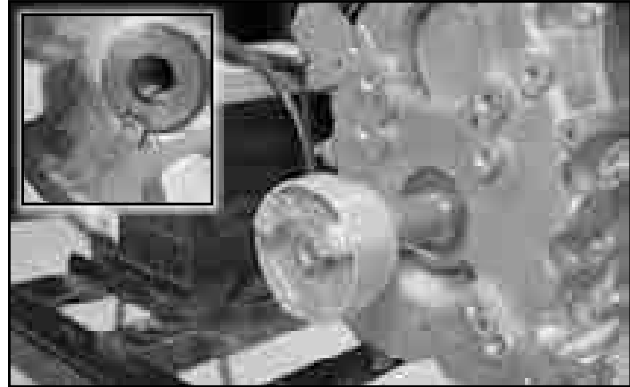


Fig 14 - Shaft coupler

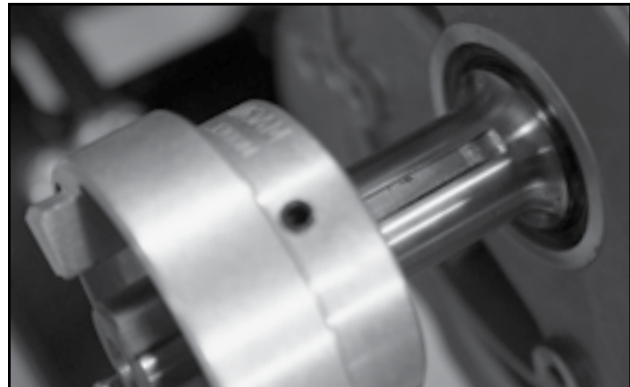


Fig 15 - Rotate shaft so key groove is on top



Fig 16 - Coupling spider



Fig 17 - Hydraulic pump over shaft

23. Inside window, sandwich the spider between coupler and pump.  
- Tighten set screw.

24. Drill a hole into the top of the base.  
- Clean up the metal shavings.



Fig 18 - Hydraulic pump

25. Screw the cover over pump window.



Fig 19 - Close pump window

### 4.3 DIESEL ENGINE

If you will be using a diesel engine on your conveyor, the model of engine can vary widely. These instructions are meant as a general guide only.

**Note:**

The engine sits on brackets, with vibration dampeners sandwiched between.

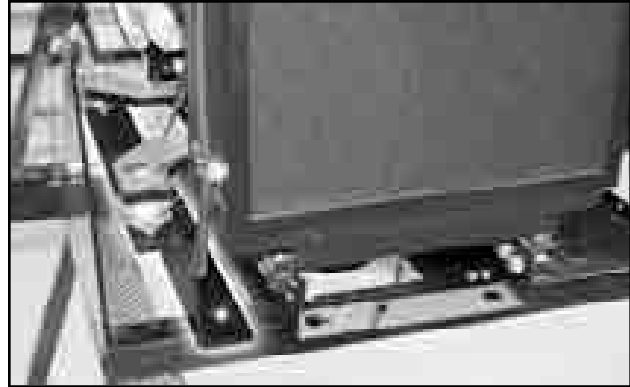


Fig 20 - Brackets for diesel engine



Fig 21 - Engine vibration dampeners

26. Fasten the diesel engine to the cradle frame.



Fig 22 - Diesel engine

27. Attach the control box.  
 - Bolt the control box onto the valve stand.



Fig 23 - Control box

28. Plug the cable from the engine into the back of the control box.



Fig 24 - Cable to control box

29. Attach the throttle to the bent plate on the front edge of the valve mount plate.

**Note:**

Hydraulic valves will be installed later.



Fig 25 - Throttle

30. Connect the throttle cable to the engine.



Fig 26 - Throttle cable

31. Attach the hydraulic pump to the back plate of the engine.



Fig 27 - Throttle cable

## 4.4 FUEL TANK

32. Bolt 4 threaded rods onto the base plate.
  - 2 on each side.
33. Place 2 strips of rubber belt on the base (for the tank to sit on).
34. Sit the tank on the base.
  - The welded brackets on the side must fit over the rods.
  - Use washers and nuts to tighten the tank in place.
35. Remove the plastic plugs from the:
  - Front, centre flange
  - Top, inside (left side) corner flange
  - Rear, bottom centre flange
36. Insert the appropriate fittings into each port.

### For unit with gas engine:

- Coat 2 threaded, metal plugs with teflon thread sealant.
- Insert plugs into front centre, and top corner flanges.

### For diesel engine unit:

- Place a 8MP to 4FP fitting and NPT-2 1/4" barb 90° fitting to the top inside corner.
- Insert a metal plug into front flange.

37. Place these fittings into the rear flange.
  - 8MP - 4FP fitting.
  - Add a 1/4" Barb 1/4" NPT 90° fitting.
38. Close the fuel tank with the cap.

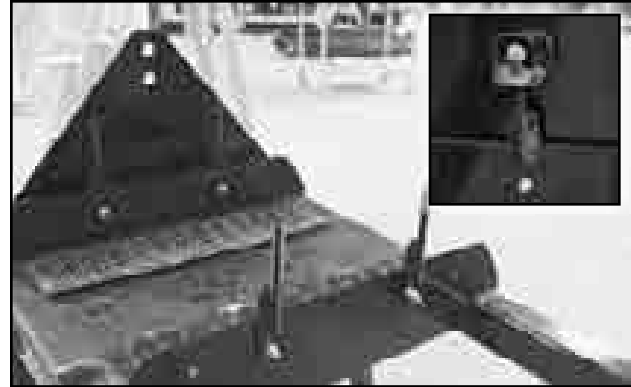


Fig 28 - Brackets for fuel tank



Fig 29 - Metal plugs



Fig 30 - Barbed fuel fitting



Fig 31 - Fuel cap with integrated level meter

## 4.5 HYDRAULIC OIL RESERVOIR

### **NOTICE**

**HYDRAULIC SEALANT HAZARD**  
 Never use Teflon tape to seal threads!  
 It does not hold at high pressure.  
 Always use Loctite® 545 Thread Sealant.

39. Place a metal plug in bottom of the reservoir.
  - Add Loctite® 545 thread sealant.
  
40. Install filler cap.
  - Place cork gasket around hole on top of reservoir.
  - Place wire mesh filter over cork.
  - Add a second cork gasket over the filter.
  - place the base of the cap on top.
  - bolt cap base in place.
  - close cover.
  
41. Attach the level/temperature gauge to the outside, rear corner.

**Note:**

Reservoir is held up by side brackets.  
 It will not sit on frame.

42. Attach the reservoir to the vertical cradle brackets, front and rear.
  - Bolt the front, both top and bottom.
  - Bolt the rear, using only the bottom hole.

Keep rear, top hole free for the filter bracket.



Fig 32 - Plug at bottom of Reservoir

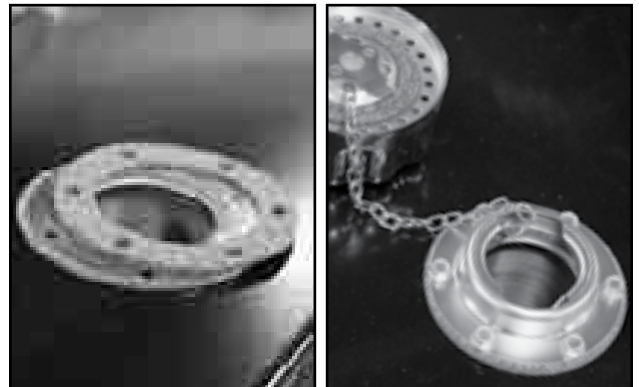


Fig 33 - Oil Filler Cap Assembly



Fig 34 - Level/Temperature gauge



Fig 35 - Front of reservoir

43. Bolt filter mount bracket to top, rear corner of vertical cradle bracket.
  - Tighten bolts.
44. Remove the two front plugs.
  - Add Loctite® 545 Thread Sealant.
  - Tighten the plugs back in place.
45. Remove plugs from back of reservoir.
46. Insert an oil return fitting in the left-side, upper flange.
  - Use Loctite® 545 Thread Sealant.



Fig 36 - Rear of reservoir with filter mount bracket

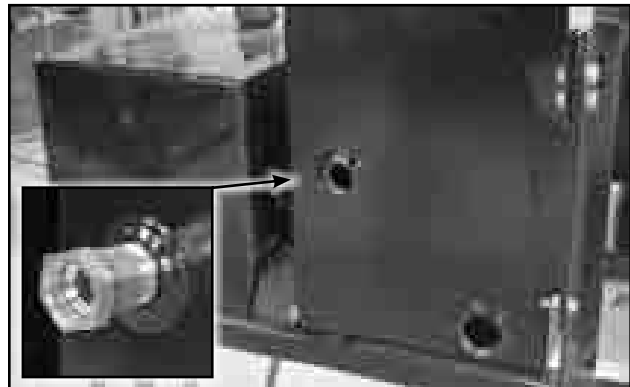


Fig 37 - Oil return fitting for reservoir

**Note:**

When installed, the spout of the Pump Inlet Extension must be angled up inside the tank. Mark the outside rim, to identify the top.

47. Insert the Pump Inlet Extension in the bottom, corner flange.
  - Use Loctite® 545 Thread Sealant.
  - Rotate and tighten the extension so the mark, identifying that it is angled up, is to the top.
48. Add the hydraulic fitting.
  - Use Loctite® 545 Thread Sealant.



Fig 38 - Pump inlet extension



**Note:**

Refer to schematic for specifics on the hydraulic fittings.

49. Partially assemble the return fittings for the hydraulic filter.
  - Use a 1.25 x 6.25 inch hose between the filter and 90° fitting into the reservoir.
50. Connect the filter assembly to the return fitting at the left-side, of the reservoir.
51. Bolt the filter mount head to the bottom of the bracket.
52. Add hose fittings to filter mount.
53. Lubricate the filter gasket. Work up, into the threading of filter mount head.
54. Screw on filter.
55. Add the gauge to hydraulic filter mount.
  - Use Loctite® 545 Thread Sealant.



Fig 39 - Hydraulic filter fittings



Fig 40 - Hydraulic filter



Fig 41 - Filter gauge

## 4.6 FUEL HOSES

### Fuel Hose to Gas Engine:

56. Run fuel hose from fuel tank to engine fuel pump.  
 - Clamp the hose to the frame along the way.



Fig 42 - Fuel hose from tank

57. Fasten fuel hose at the rear of battery holder, to the frame.  
 - Use hose clamps and self-tapping screws.



Fig 43 - Fuel hose clamped behind battery

58. Route fuel hose around engine and up to the fuel pump.

### Fuel Hose to Diesel Engine:

59. Run two fuel hoses from tank to engine:  
 - The first, from the rear, centre is the supply hose.  
 - the second from the side, front corner is the return hose.



Fig 44 - Fuel hose to pump on engine

60. Zip-tie the hoses together.  
 - Clamp hose to frame.
61. Attach the supply hose, to the fuel-water separator.  
 - From the separator to the inline fuel filter.  
 - From the inline fuel filter to the engine fuel filter.
62. Connect the return hose to the engine.

## 4.7 CRADLE HYDRAULICS

63. Below the valve table, beside the engine, cover the edge of the cradle, with a length of rubber insulator. This will protect the hydraulic hoses from rubbing on the metal edge.

**Note:**

Refer to schematic for specifics on the hydraulic fittings.

64. Bolt a hydraulic bi-directional relief valve to the bottom of the valve mount support arm.  
- The ports are numbered, which will be referenced when installing the hoses.
65. Install the correct fittings onto both conveyor belt valve and mover kit valve.
66. Bolt the valves to the bottom of the valve mount plate.
67. Install the pressure gauges to the valves.  
Use Loctite 545 Thread Sealant.

**Note:**

The drawing below will be used to identify hose-to-valve locations.

Fig 48 - Valve Drawing

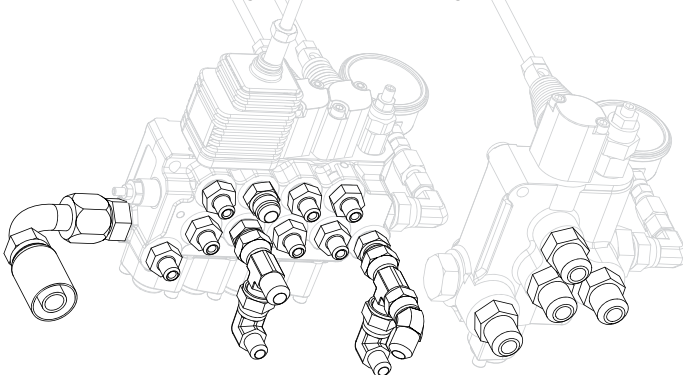


Fig 45 - Rubber edge protector

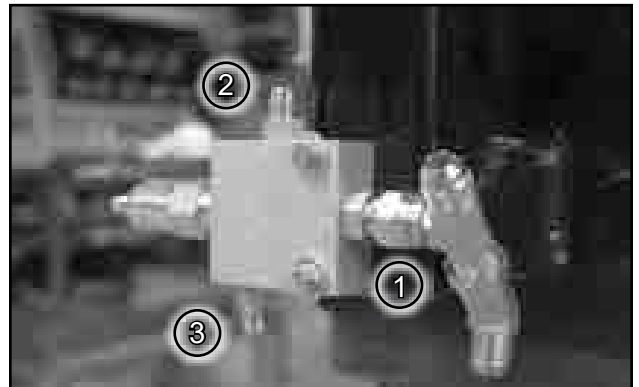


Fig 46 - Hydraulic bi-directional relief valve



Fig 47 - (a) Conveyor belt valve, (b) mover kit valve

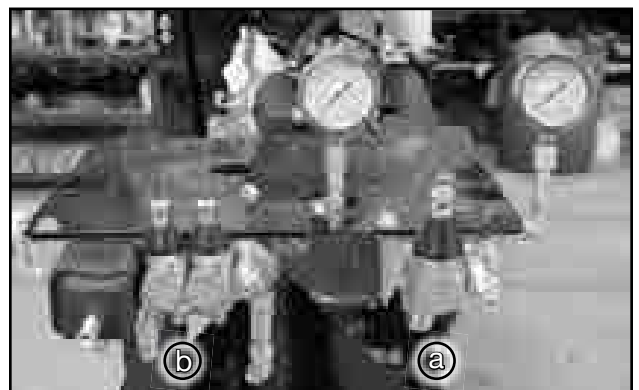


Fig 49 - (b) Mover kit valve, (a) conveyor belt valve

- 68. Run a 1 x 12 inch supply hose from the ball valve at the rear of the reservoir to the left, inner port on the pump.
- 69. Run a 3/4 x 14-1/2 inch supply hose from the "T" fitting after the ball valve to the left, front port on the pump.

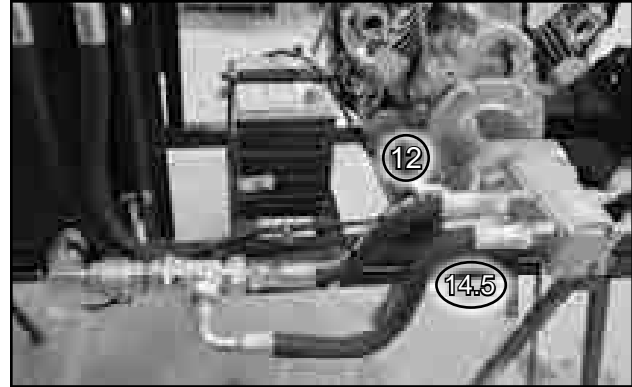


Fig 50 - Hydraulic supply hoses to the pump

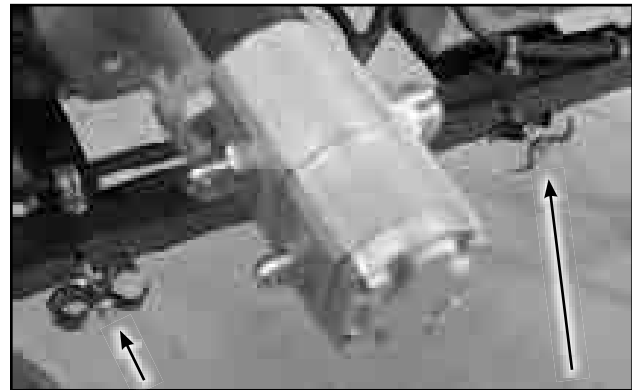
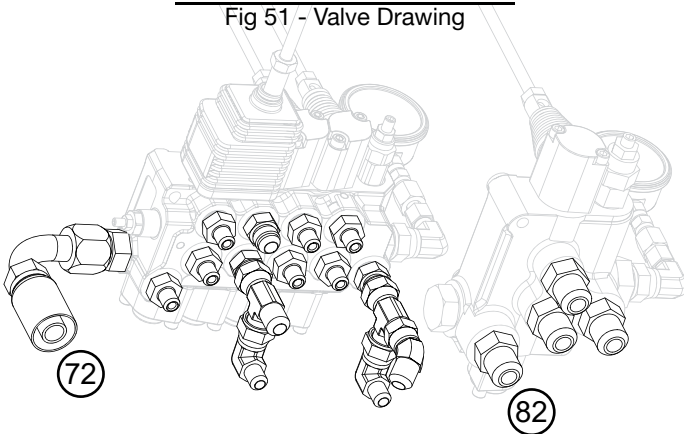


Fig 52 - Butterfly hose clamps



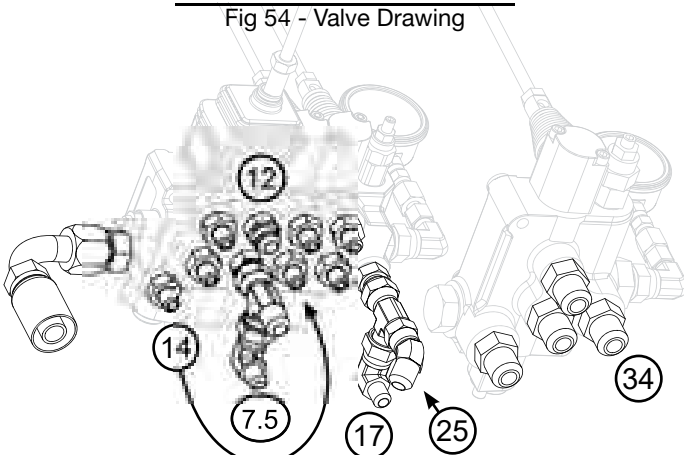
Fig 53 - Hydraulic return hoses to the filter

Fig 51 - Valve Drawing



- 70. Send a 3/4 x 82 inch hose from the filter fitting to return port on the conveyor belt valve.
- 71. Run a 3/4 x 72 inch hose "T" fitting before the filter to return port on the mover kit valve.
- 72. Use hose clamps to secure the 3/4 inch hoses to the cradle frame below the engine.

Fig 54 - Valve Drawing



- 73. Loop a 3/8 x 14 inch hose from the return port to right, inner, rear port.

74. Run a 3/8 x 7-1/2 inch port from the #2 (top) port on the bi-directional relief valve to the 90° fitting off the left, inner rear port.
75. Send a 1/2 x 12 inch hose from the upper fitting of the #1 (right side) port of the relief valve to the left, inner, front port.
76. Send a 3/8 x 17 inch hose from the #3 (bottom) port on the relief valve to the “T” fitting on the far right supply port on the mover kit valve.
77. Route a 3/4 x 34 inch hose from the right, inner port on the pump to the far right, supply port on the conveyor belt valve.
78. Run a 1/2 x 25 inch hose from the right, outer port on the pump to the 45, far right supply port fitting on the mover kit valve.

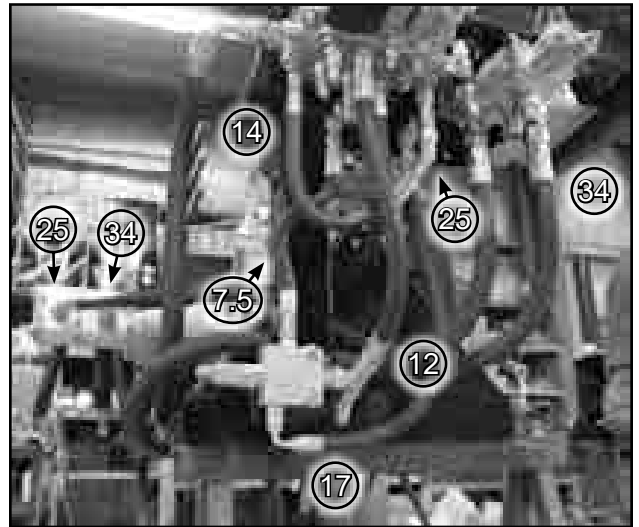


Fig 57 - Hydraulic hoses to valves

**Note:**

The back pressure can be adjusted, using the set screw on the relief valve. Fine-tune the pressure to your requirements.

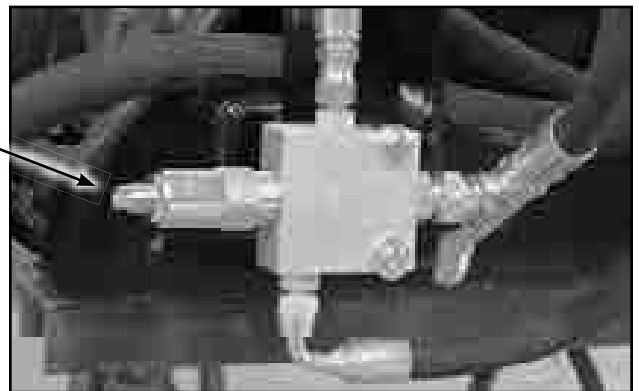


Fig 55 - Adjust hydraulic bi-directional relief valve

**NOTICE**

**EQUIPMENT FAILURE POSSIBLE**  
Adjustment of the conveyor belt valve set screw is critical, to the operation.

79. Adjust the oil pressure to the conveyor belt valve.
  - Loosen nut, to turn set screw with hex key.
  - Turn set screw all the way in.
  - Then, turn out 1 and a 1/2 turns.
  - Hold set screw with hex key, tighten nut.



Fig 56 - Adjust conveyor belt valve

## 4.8 FINISH CRADLE

80. Screw handles onto the valves.

81. Adhere the decals in their locations:

- Valve Instructions
- Gas Only (Diesel Only)
- Hydraulic Oil Only
- No Smoking



Fig 58 - Valve decals



Fig 59 - Decals

## Section 5: UNDERCARRIAGE ASSEMBLY

While assembling the undercarriage, some instructions state directions of left and right. These directions are seen from standing in front of the axle, with the main frame tubes leading away.

- Left is the drivers-side
- Right is the passengers-side

### 5.1 MAIN FRAME ASSEMBLY

#### **WARNING**

##### EQUIPMENT WEIGHT HAZARD

Use lift equipment rated to hold 2000 lb.  
Never lift heavy objects alone, find help!

1. Place the axle on stands.
2. Lay undercarriage main frame tubes in position, against brackets on axle.
  - Attach using 1/2 x 1-1/2 inch bolts.
  - Do not tighten yet.
3. Bolt the undercarriage main frame cross tubes; do not tighten.
  - (a) Mover Kit Lift Frame Cylinder Mount
  - (b) Motor Cradle Mount
4. Measure the distance between the ends of the main frame tubes. The inside measurement must be 16-1/2 inch apart to fit under the tube.
5. Tighten all the cross tube bolts, including to the axle.



Fig 60 - Axle and main frame tubes

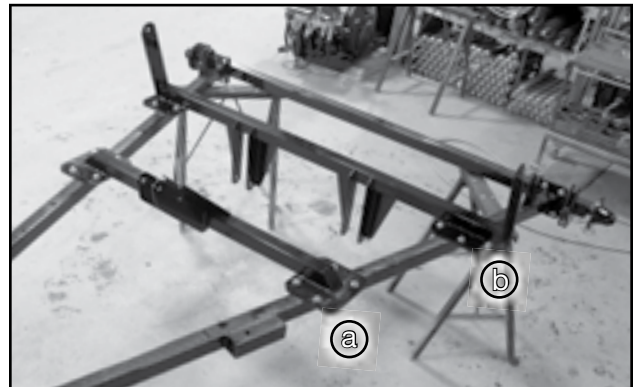


Fig 61 - (a) Mover kit cylinder mount, (b) steering wheel tube

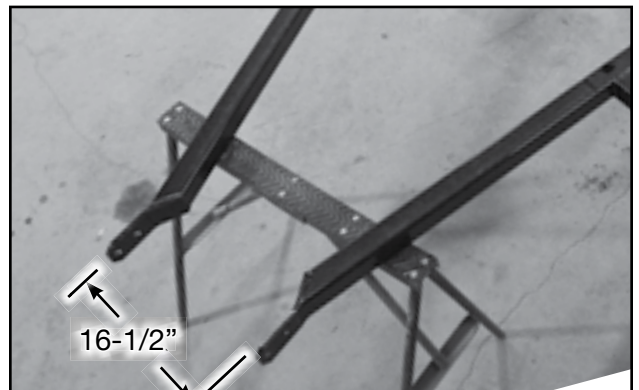


Fig 62 - Main frame tube measurement

6. Attach Pulley Swivel Bracket.
  - Insert the pin.
  - Secure the pin with a 3/16 x 2 inch cotter pin. Twist ends.
7. Put 3-1/2 inch Pulley into the bracket.
  - Insert the pin and secure with a cotter pin.

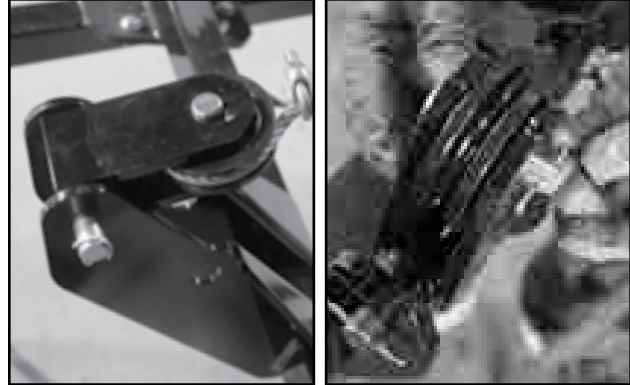


Fig 63 - Pulley assembly

8. Hoist cradle onto the undercarriage.

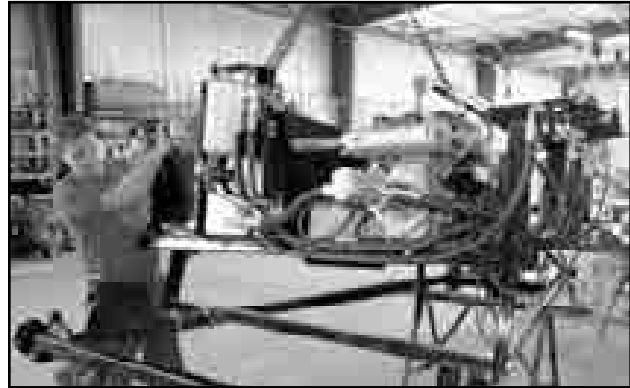


Fig 64 - Hoist cradle onto undercarriage

9. Attach cradle to mount
  - Use 5/8 x 1-3/4 inch bolts.
  - Sandwich one washer between the cradle arm and the mount.
  - Place two on the outside.

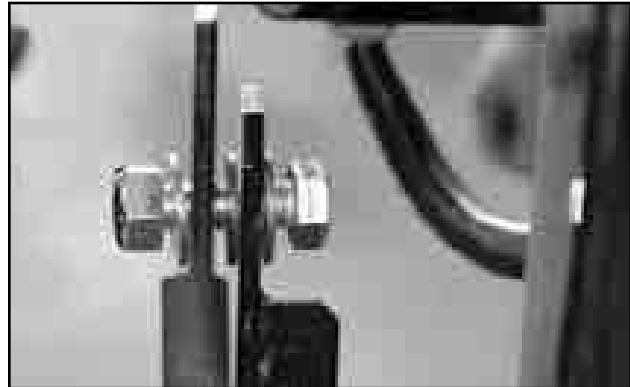


Fig 65 - Cradle assembly detail



## 5.2 MOVER KIT DRIVE ASSEMBLY

10. Place 1/2 x 4 inch bolts with nuts into the threaded hole on the axle.
- Add to both ends of axle.



Fig 66 - 4 inch bolt on axle

11. Gather these components:
- (a) Mover Kit Mount Plate Pivot
  - (b) Mover Kit Axle Hydraulic Motor Mount
  - (c) Mover Kit Handle (left and right sides)  
Left side pictured.
  - (d) Mover Kit Over Centre Linkage (left and right sides)  
Left side pictured.

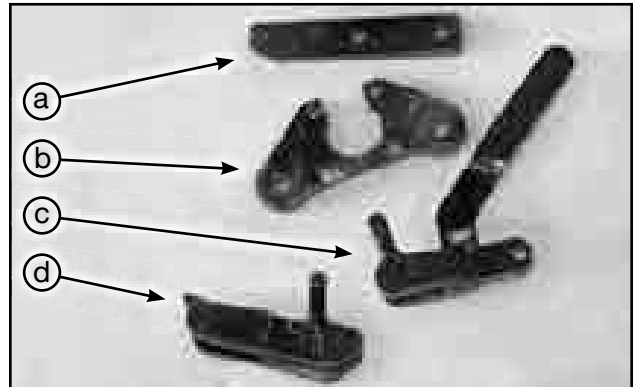


Fig 67 - Mover kit drive, left side components pictured

**Note:**

Use copper-based anti-seize lubricant.

12. Mover Kit Mount Plate Pivot:
- Coat around holes with lubricant.
  - Use 1/2 x 2-1/2 inch bolt.
  - Fasten, using middle hole.  
Angled corner, must face up, below 4 inch bolt.
  - Insert the bolt from the outside.

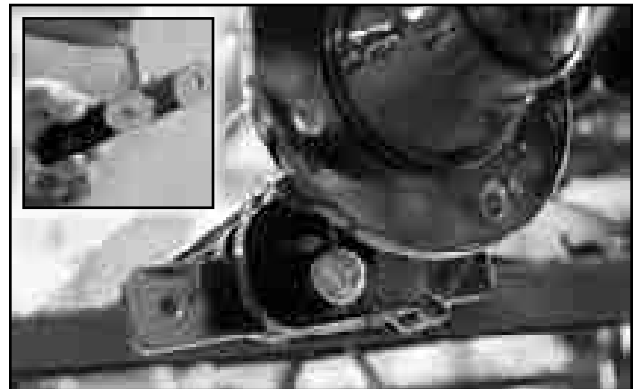


Fig 68 - Mover Kit Mount Plate Pivot

**Note:**

Insert motor mount bolt from the inside.  
All other bolts are placed from the outside.

13. Mover Kit Axle Hydraulic Motor Mount:
- Coat both ends with lubricant.
  - Bolt into place above axle, extending away from the engine.
  - Use 1/2 x 2-1/2 inch bolt.
  - Insert from the inside of axle.



Fig 69 - Mover Kit Axle Hydraulic Motor Mount

14. Mover Kit Handle:

- Coat bolt hole with lubricant
- Use 1/2 x 2-1/2 inch bolt.
- Bolt to the Mount Plate Pivot.  
Handle must point down, and bend inward.
- Insert the bolt from the outside.



Fig 70 - Mover Kit Handle

15. Mover Kit Over Centre Linkage:

- Use 1/2 x 2-1/2 inch bolt.
- Bolt to the Handle.  
The welded rod must be on the lower portion of component, pointing inward.
- Insert the bolt from the outside.



Fig 71 - Mover Kit Over Centre Linkage

16. Bolt the end of the Over Centre Linkage, to the end of the Hydraulic Motor Mount.

- Use 1/2 x 2-1/2 inch bolt.
- Insert the bolt from the outside.

17. Spray lubricant on all joints

Work the handle, until it moves smoothly.

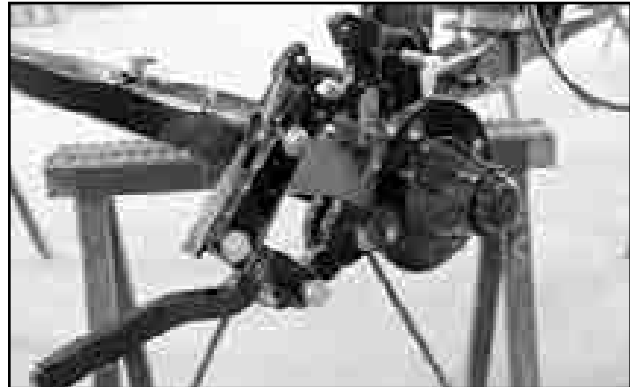


Fig 72 - Mover kit assembly

18. Lower Handles.

19. Place springs, between the Handle and Over Centre Linkage, connecting both rods.

- Squeeze the ends of springs around the rods.

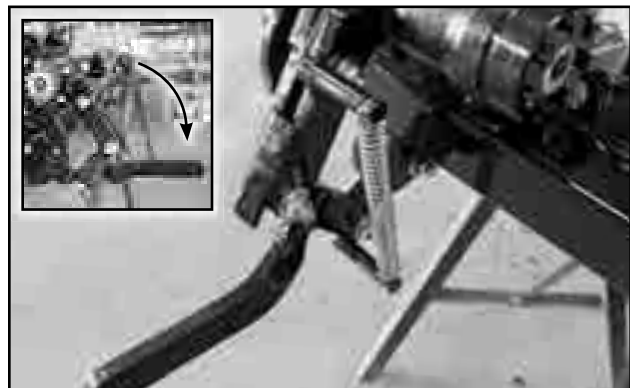


Fig 73 - Mover kit hydraulic motors Spring

20. Attach a 1/16 x 9 inch cable to the spring holding pin.
  - Crimp pin end using a swage.
  - Loop around Over Centre Linkage rod, beside spring end.
  - Tighten cable with swage, and crimp.
  - Heat-shrink tubing over ends.

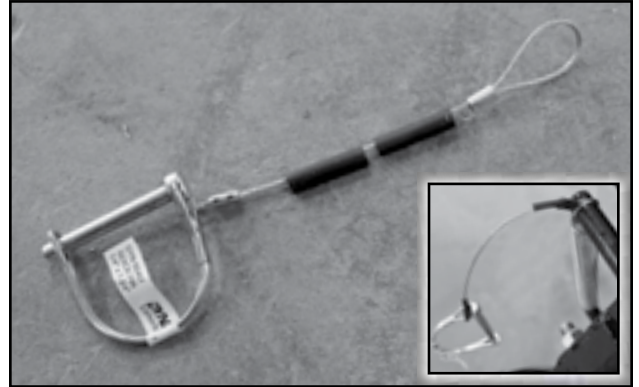


Fig 74 - Mover Kit Pin

21. Add four butterfly hose clamps to the top of the axle tube. Measure from left to right:
  - 21 inch from left hand-side wheel hub.
  - 38-1/2 inch from left wheel hub.
  - 54-1/2 inch from left wheel hub.
  - 17 inch from right-side wheel hub.
  - Use self-tapping screws.

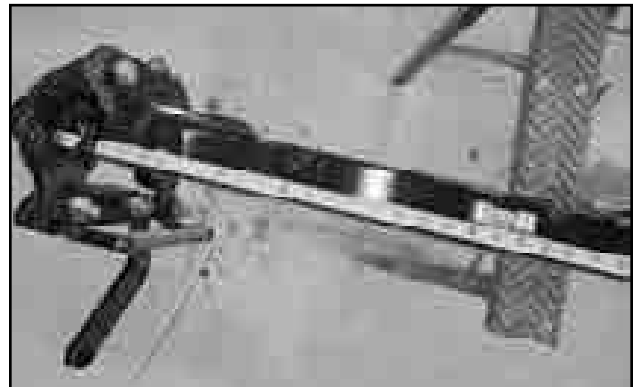


Fig 75 - Butterfly hose clamps

### 5.2.1 Mover Kit Hydraulics:

**Note:**

Refer to the hydraulic schematics for fittings and hose placement.

22. Prepare the hydraulic motors for the axle:
  - Remove plugs.
  - Add 4 - 90° hydraulic fittings, point to the rear.
23. Bolt motors onto motor mounts.
  - Use 5/16 x 1-1/4 inch bolts.
24. Rotate the motor shafts, so key grooves are to the top.
25. Add sprockets and fasteners to motor shafts.



Fig 76 - Attach hydraulic motors

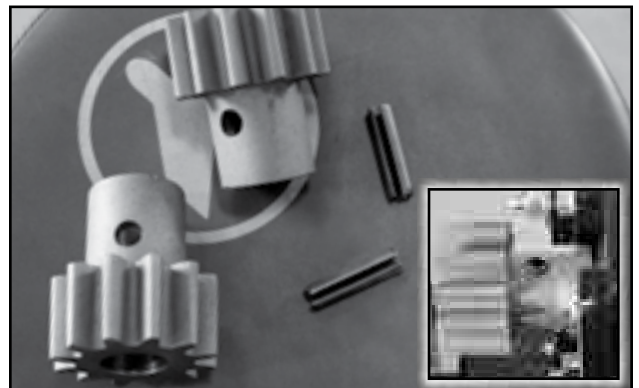


Fig 77 - Sprockets

26. Attach a 1/2 x 52 inch hose onto the bottom, inside fitting on the left-side motor
27. Attach a 1/2 x 54 inch hose to the top, outside fitting, on the same motor.
28. Flatten hoses on top of the axle tube.
  - Fit under the hose clamps and tighten.

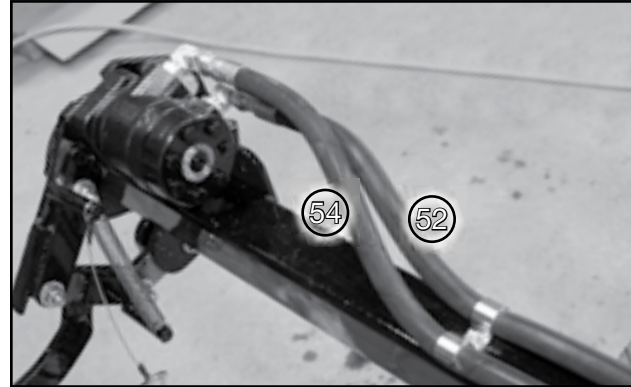


Fig 78 - Hoses between hydraulic motors

29. Attach both 52 inch and 54 inch hoses to the left side of the cushion block, which will sit in the axle as well.
30. Run a 1/2 x 15 inch hose from the right-side of the cushion block to the bottom, outside fitting on the motor.
31. Run a 1/2 x 16 inch hose from the block to the top, inside fitting of the same motor.
32. Run a 1/2 x 45 inch from the top, outside port on the cushion block, to the lower fitting of the #1 (right side) port of the relief valve.

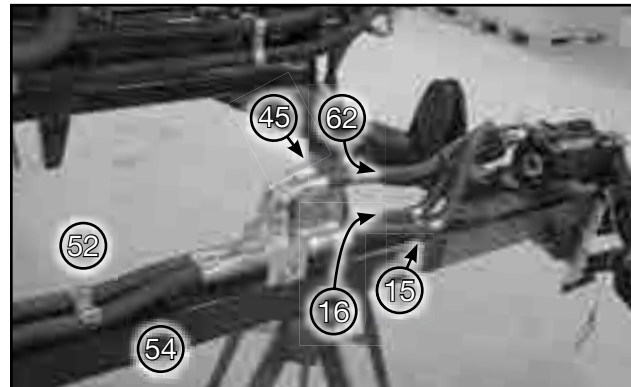


Fig 79 - 117" Hydraulic hose to valve

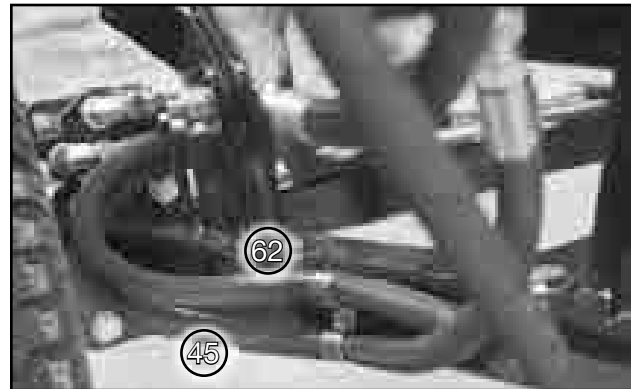
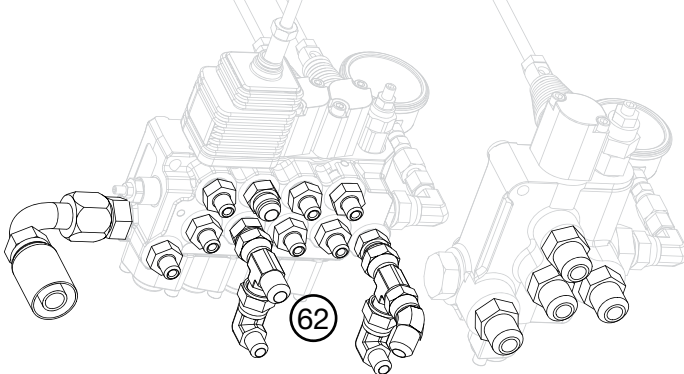


Fig 81 - Clamp hoses

Fig 80 - Valve Drawing



33. Run a 1/2 x 62 inch from the top, inside port on the block, to the to the left, inner, rear port on the mover kit valve.

### 5.3 UNDERCARRIAGE LIFT ARMS

34. Bolt on wheels

35. Lower axle to sit wheels on the ground.



Fig 82 - Wheels

36. Attach Lift Arms to hinge bracket on Undercarriage Main Frame Tubes.

- Use 5/8 x 2-1/2 inch bolts.
- Do not tighten, yet.



Fig 83 - Lift arms

37. Attach Lift Frame Cross Tube (a) to arms.

- Use 1/2 x 1-1/2 inch bolts.
- Do not tighten, yet.

38. Attach Lift Frame Hydraulic Cross Tube (b) to arms.

- Use 1/2 x 1-1/2 inch bolts.
- Do not tighten.



Fig 84 - Lift arms on main frame hinge bracket

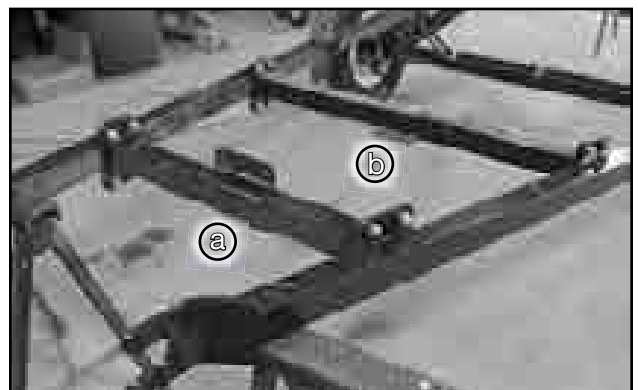


Fig 85 - (a) Lift frame cross tube, (b) Hydraulic cross tube

**5.3.1 Install the Hydraulic Cylinder:**

39. Bolt the Hydraulic Lift Upper Mount Clamp to the Lift Frame Hydraulic Cross Tube.
- Use 1/2 x 1-1/2 inch bolts.
  - Tighten these bolts.



Fig 86 - Lift frame hydraulic cross tube with clamp

40. Lift the cylinder with a hoist.
- Attach the base of cylinder to cross tube bracket.
  - Use 1/2 x 1-1/2 inch bolts.
  - Do not tighten, yet.



Fig 87 - Air hole in bottom cylinder plug

41. Attach Hydraulic Lift Upper Mount Clamp Plate around bottom of cylinder.
- Use 1/2 x 1-3/4 inch bolts to fasten the plate to the clamp.
  - Do not tighten, yet.



Fig 88 - Lift cylinder

42. Position and centre the cylinder on its plate.
- Tighten the cylinder bolts.

**IMPORTANT:**

Be sure the cylinder has a breath fitting;  
it is critical for proper function.

43. Insert a breather vent into the lower port of the cylinder.



Fig 89 - Breather vent

**5.3.2 Tighten Undercarriage Frame Bolts:**

44. Use a pry bar to centre holes.
  - Now, tighten all bolts connecting cross tubes to arms.
45. Finally, tighten the hinge between the Lift Arm and the Main Frame Tube brackets.



Fig 90 - Centre bolt holes

**5.3.3 Hydraulic Cylinder Hoses:**

46. Prepare hydraulic fittings for placement on lower plug on cylinder.
  - Use a Restrictor fitting.
47. Connect a 3/8 x 54 inch hydraulic hose to the cylinder.



Fig 92 - Fittings to the hydraulic cylinder

48. Secure the hose along the top of the Lift Arm.
  - Fasten the hose clamps to the arm with self-tapping screws.



Fig 91 - Route the 66 inch hose

49. Add a ball valve.
50. Connect a 3/8 x 66 inch hose to the ball valve.



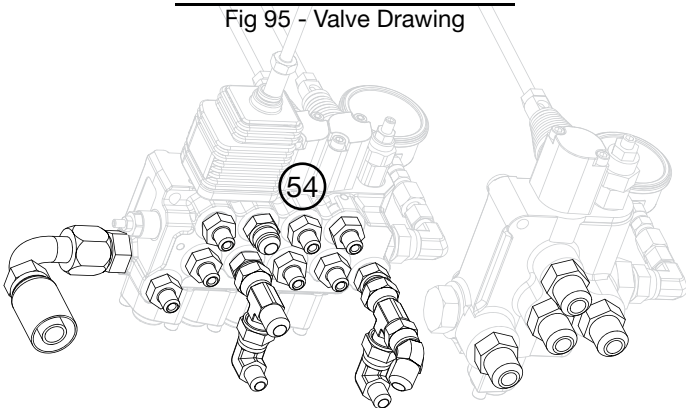
Fig 93 - Ball valve

**IMPORTANT:**

Clamp hose so it will not be pinched when the undercarriage moves.

51. Clamp the hose to the side of the arm, out of the way of the hinge.

Fig 95 - Valve Drawing



52. Connect the hose to the right, inner, front port.



Fig 94 - Route hose around hinge



Fig 96 - Roller slide roller

**5.3.4 Roller Slide Roller:**

53. Place the 1-1/4 x 28 inch Roller Slide Roller in the top end of Lift Arms.

54. Slide the bearing assembly over the roller slide shaft, on both ends.
- Centre the shaft.
  - Secure with 5/16 x 2 inch carriage bolts.
  - Place from the inside.
  - Washers and nuts tightened from outside.

55. Place an eccentric locking ring (off-centre fit) over the shaft, outside the bearings, on both sides.
- Slide on and turn to hand tighten.
  - Use a hammer and punch to tap the locking ring, firmly tightening it.
  - Tighten the set screw on the locking ring.

56. Add bearing covers.
- Secure with push-on lock washers.



Fig 97 - Eccentric locking ring



Fig 98 - Lift Cylinder Port



**5.3.5 Lift Cable:**

57. Feed a 3/8 x 31' cable through top of cylinder assembly, around the left-side pulley.



Fig 99 - Lift cable

58. Return cable back under cylinder.  
- Up and around the lower left-side pulley.  
- Thread it through the space in the mount clamp.



Fig 100 - Thread lift cable around bottom pulley

59. Back to the top of the cylinder, lead the cable around the right-side pulley.



Fig 101 - Thread lift cable up towards the top

60. Again, return cable back under the cylinder.  
- Up and around the lower right-side pulley.  
- Thread it through the space in the clamp.



Fig 102 - Thread lift cable back down under cylinder

61. At the top of the cylinder, Add 3 clamps to the cable.
- Route the cable around the support (above the pulleys), just before the mounting plate.



Fig 103 - Add clamps to lift cable

62. Bring the cable back around the support.
- Thread it back through the three clamps.



Fig 104 - Bring cable around mounting plate

**IMPORTANT:**

Apply U-Bolt over dead end of cable,  
live end rests in saddle.  
Tighten nuts evenly, alternate from one nut to the other until recommended torque is reached.

63. Tighten the 1st clamp.
- Give 4 inch of slack cable, below clamp.



Fig 105 - Tighten cable clamps

64. Slide the 3rd clamp up towards the support.
- Tighten 3rd clamp.
  - Position 2nd clamp in the middle and tighten.

65. Wrap the cable and with electrical tape.

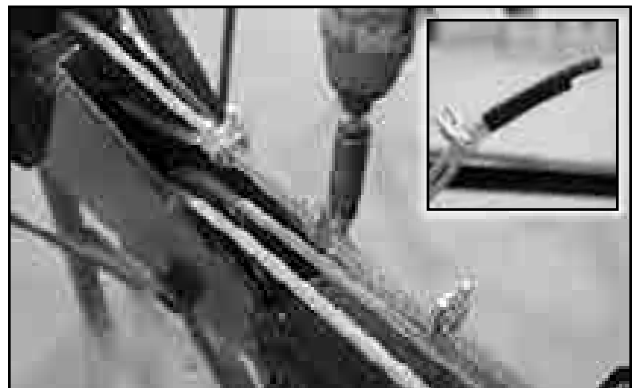


Fig 106 - Tighten cable clamps

66. Pull cable tight. Remove slack from around cylinder.



Fig 107 - Remove slack from lift cable

67. Measure from the top of the cylinder mount bracket, down to the centre of the pulley assembly.  
 - Must be 124 inch.  
 - Raise the lift arm until you have the correct measurement.

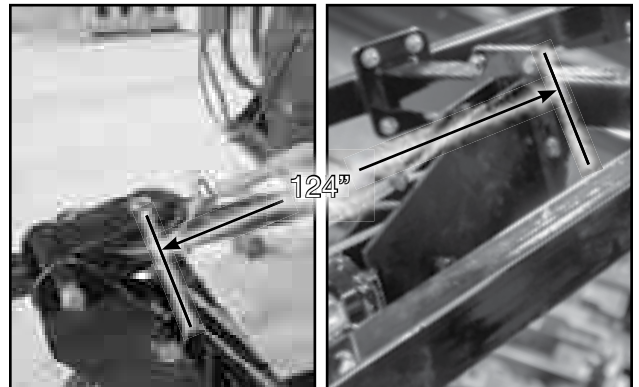


Fig 108 - Lift arm end

**IMPORTANT:**

These measurements are necessary, to fasten the cable at the correct length.

68. Add three cable clamps to the other end of the cable.  
 - Feed the cable around the pulley from right to left.



Fig 109 - Thread cable around pulley

**IMPORTANT:**

U-Bolt over dead end of cable, live end rests in saddle.

69. Pull the cable tight and fasten first clamp.  
 - Leave 4 inch of slack cable, above clamp.

70. Slide third clamp close to pulley and tighten.

71. Centre the 2nd clamp between the other clamps, and tighten.

72. Wrap end of cable with electrical tape.



Fig 110 - Tighten clamps

## 5.4 STEERING AXLE ASSEMBLY

The steering axle is normally assembled in the factory, before shipping. These instructions are included in case reassembly is required.

73. Lay the steering axle frame onto stands.
74. Insert the hubs into both ends of the frame.
  - Insert 1 x 5 inch clevis pins, lock with cotter pins.
75. Insert a 3/4 x 5-1/4 inch clevis pin in the left-side hub.
  - Add the Tie Rod to the bottom of the pin.
  - Add washers as spacers, if necessary.
  - Secure with a cotter pin.
76. Insert the end of the cylinder into the centre of the frame.
  - Insert the 3/4 x 3-1/2 inch clevis pin.
77. Position the end of the 1-1/2 x 6 inch hydraulic cylinder in the mount at the centre of the axle.
  - Insert the 3/4 x 3-1/2 inch clevis pin
  - Lock with a cotter pin.
78. Insert 3/8 inch hoses into the opening at the end of the left-side arm:
  - 3/8 x 116-3/4 inch (9' 8-3/4") hose.
  - 3/8 x 123-3/4 inch (10' 3-3/4") hose.
79. Thread both hoses towards the axle and connect them to the cylinder.
  - 116-3/4 inch hose to the inner fitting.
  - 123-3/4 inch hose to the outer fitting.
80. Insert the top of the cylinder into its mount by the right-side hub.
  - Swing the tie rod around until to below the cylinder.
  - Slide a 3/4 x 5-1/4 inch clevis pin to hold both the cylinder and rod in place.
  - Add washers as spacers, if necessary.
  - Secure with a cotter pin.
81. Bolt the steering wheels onto the hubs.



Fig 111 - Steering wheel frame

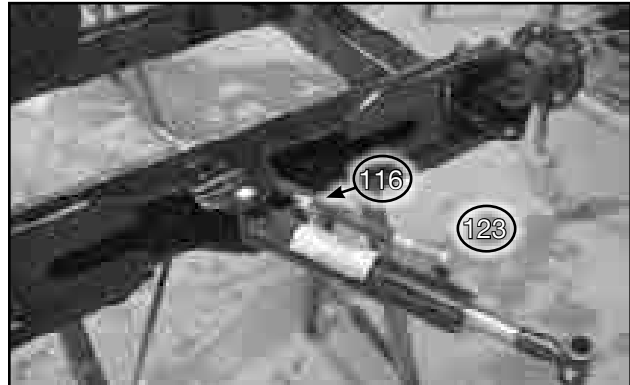


Fig 112 - Hydraulic hoses



Fig 113 - Tie rod and cylinder



Fig 114 - Steering wheels

## 5.5 STEERING AXLE ONTO UNDERCARRIAGE

82. Lay the steering wheel assembly below the undercarriage.
83. Raise the frame arms into the axle mount brackets below the cradle mount.



Fig 115 - Steering axle frame

- Insert bolts and washers, then tighten the nuts.



Fig 116 - Frame arms attached to mount brackets

84. Insert the lift cylinder (2 x 24") between main frame and steering axle assembly.
  - Insert 1 x 3-1/2 inch clevis pins into steering frame.
  - Secure with cotter pins.
  - Insert 1 x 4-1/2 inch clevis pin into undercarriage cylinder mount.
  - Secure with cotter pins.



Fig 117 - Steering axle lift cylinder

85. Bolt a lift lock block to the side of the lift cylinder bracket.
86. Fasten a 3/8 x 15-1/2 inch hose to the end of the lift cylinder.
  - Circle it around to the top fitting in the block.
87. Fasten another 3/8 x 22 inch hose to the top end of the lift cylinder.
  - Connect it to the bottom fitting in the block.



Fig 118 - Steering wheels

88. Connect a 3/8 x 74 inch hose to the lower fitting in the lock block.
89. Connect a 3/8 x 70" hose to the upper fitting.
  - Add a restrictor between the hose and the block.
90. Secure both hoses to the cross tube with a butterfly clamp.

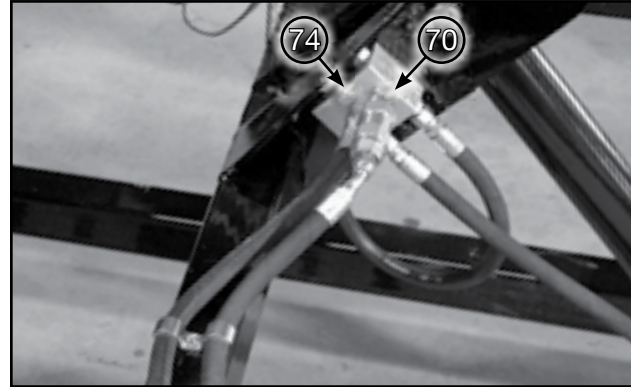
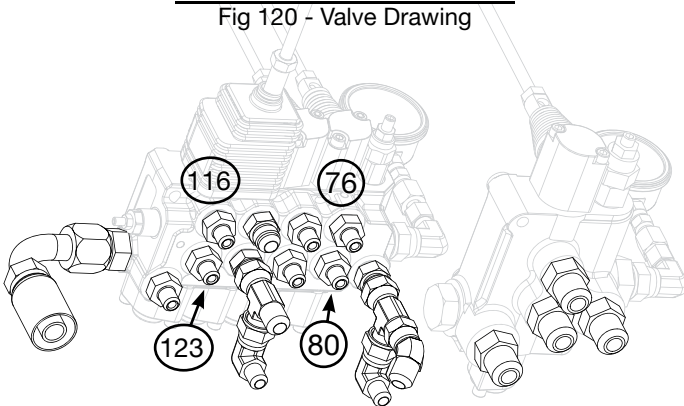


Fig 119 - Hydraulic hoses

Fig 120 - Valve Drawing



**Note:**

These two hoses will be clamped to the main frame later in the assembly.



Fig 121 - Hydraulic hoses

91. Run both hoses along the main frame tube and up to the mover kit valves.
  - Attach the 80 inch hose to the right, outer, rear port.
  - Attach the 76 inch hose to the right, outer, front port.
92. Clamp the steering cylinder hoses from the end of the frame arm to the rear side of the cradle mount.
  - Use self-tapping screws to fasten the butterfly clamps.

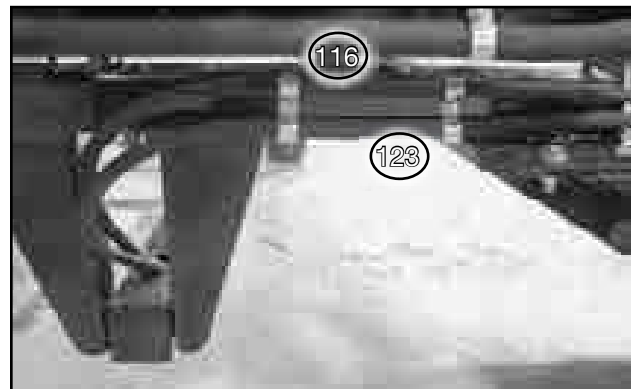


Fig 122 - Steering cylinder hoses

93. Fasten the 123 inch hose to the left, outer, rear port on the mover kit valve.
94. Connect the 116 inch hose to the left, outer, front port.

95. Connect two 3/4 x 152 inch (12'-8") hoses to the front and rear ports on the conveyor belt valve.

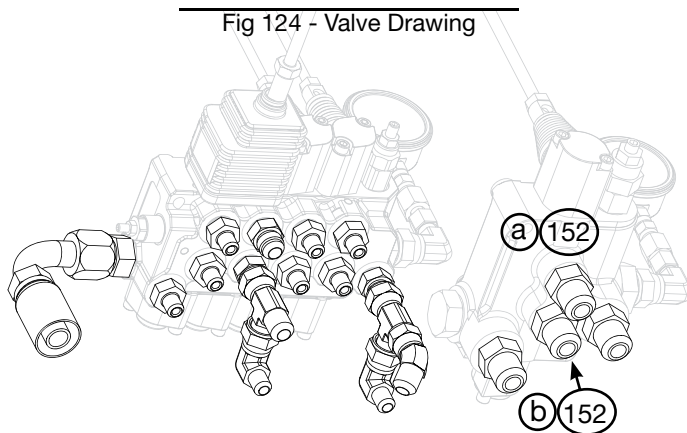


Fig 123 - Hydraulic hoses

96. Clamp the two hoses to the side of the main frame tube using a clamp block.

97. Now, clamp the lift cylinder hoses on top of the clamp block.



Fig 125 - Clamp the hoses

98. Store the 3/4 inch hoses until the tube is installed on the undercarriage.

99. Apply red reflector strips to the back of the axle beside the wheels.



Fig 126 - Red rear reflector on axle

100. Fasten the document holder on the inside of the lift arm, just up from the ball valve.  
- Use self-tapping screws.



Fig 127 - Document holder

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## Section 6: TUBE ASSEMBLY

### 6.1 PREPARE THE HOPPER

The hopper rollers are normally installed in the factory, before shipping. These instructions are included in case reassembly is required.

#### **⚠ CAUTION**

**EQUIPMENT WEIGHT HAZARD**  
Stands must hold 2500 lb in weight,  
and be stable.

1. Install the tail roller.
  - Slide bearing assemblies over the roller slide shaft, on both ends.
  - Centre the shaft.
  - Secure with 5/16 x 2 inch carriage bolts.
  - Place the bolts from the inside.
  - Add washers outside and tighten the nuts.
2. Place eccentric locking rings (off-centre fit) over the shaft, outside the bearings, on both ends of the shaft.
  - Slide the rings on and turn to hand tighten.
  - Use a hammer and punch to tap the locking rings, firmly tightening it.
  - Tighten the set screw on the rings.
3. Install two rollers at the transition.
  - Leave the first hole, closest to the tail roller empty. It will be installed after the belt is strung.
  - Use the same procedure as for the tail roller. See above.



Fig 129 - Hopper frame



Fig 128 - Install hopper rollers



Fig 130 - Hopper

## 6.2 TUBE AND COMPONENTS

Check drawings and bills of material for size of bolts or fasteners to use during assembly.

4. Lay out the tube sections.
  - 12 gauge section after the hopper.
  - 14 gauge section at discharge end.

### Tube Layout:

- 1640-TL: one - 20', and one - 10' tube.
- 1650-TL: two - 20' tubes.
- 1658-TL: two - 20' and one - 7-1/2' tube.

### IMPORTANT:

The flange seam marks the top of tube.

Tubes have male and female ends.  
Point male ends towards the discharge.

5. Find the tube flange seam, place it at the top of tube.
6. Bolt the tubes together, and tighten.
  - Leave top two holes open, on either side of seam, on the 1650-TL or 1658-TL. The cable bridging support arm, will be attached here.
7. Roll tube back and forth, over a flat surface to check the tube straightness.

If tube is crooked:

- Shim, the inside of bend.
- Remove bolt. Use 1 washer at a time.
- Sandwich it between the tube flanges.
- Tighten the bolts.
- Roll back and forth, checking again.

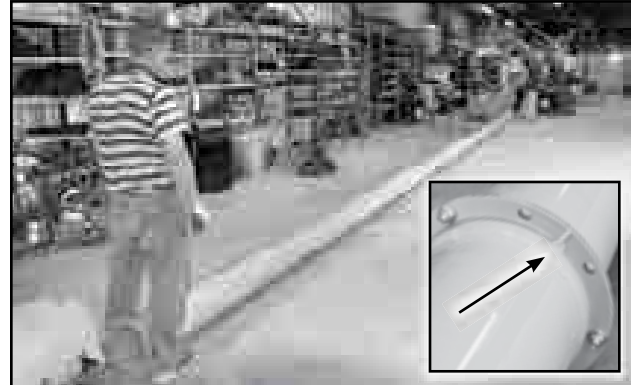


Fig 131 - Flange seams to top

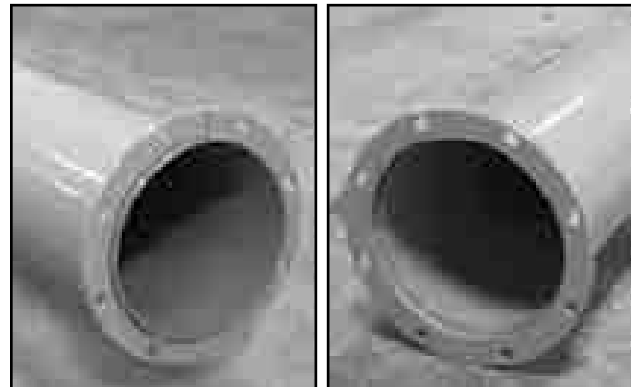


Fig 132 - Tube Section, Male and Female Ends

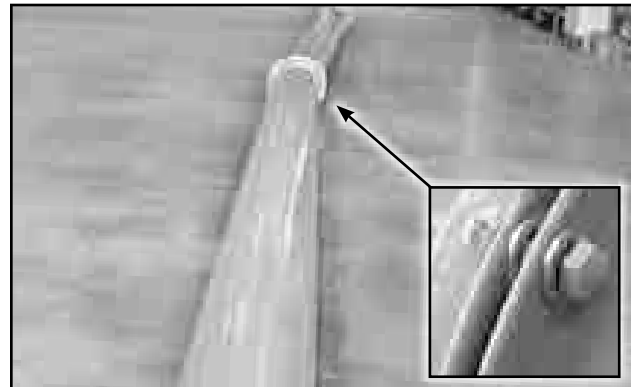


Fig 133 - Shim tube



Fig 134 - Attach hopper, flange seam to top

**6.2.1 Install Components:**

8. Bolt the hopper to the tube. See Figure 136.
  - Leave holes at 10 and 2 o'clock open, on the 1650-TL or 1658-TL. The bridging cables will attach here.

**Note:**

Ensure tube flange seam is on top.

9. Bolt the Discharge Housing to the far end of the tube.
  - Leave holes at 10 and 2 o'clock open, on the 1650-TL or 1658-TL. The bridging cables will attach here.
10. Hook a tape measure to the tube flange at the hopper. Refer to the Drawing.
  - Measure and mark the location of component on the tube.

**Note:**

Always place the part on discharge side of the mark.

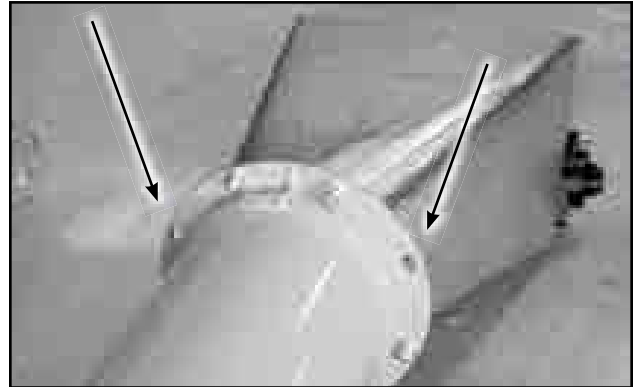


Fig 135 - Attach Discharge

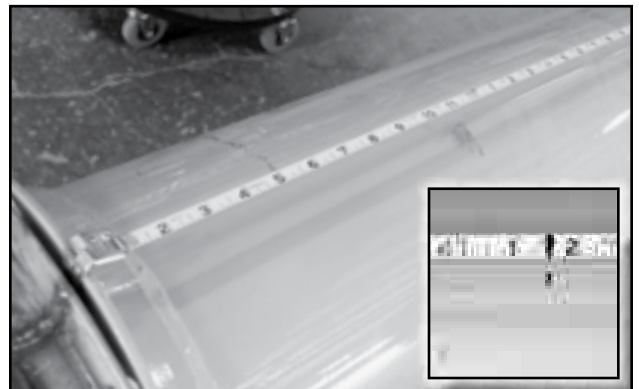


Fig 136 - Mark Measurements

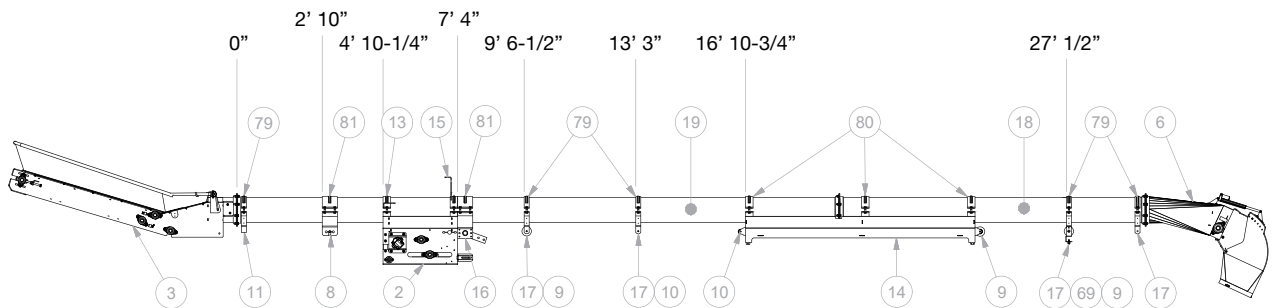


Fig 137 - 1640-TL Schematic

TITLE: 1640-TL W/MOVER KIT

ITEM	PART #	DESCRIPTION	QTY
2	650506968	DIRECT HYD. DRIVE BOX WITH TENSIONER	1
3	504185	S-NECK HOPPER - OPEN TRANSITION	1
6	503281	SWIVEL HOOD DISCHARGE BODY W/ ROLLER	1
8	501190	HEAVY DUTY RETURN ROLLER ASSEMBLY	1
9	501119	RETURN ROLLER FL - TYPE 1-7/8 x 17-7/8 x 7/8	3
10	501118	RETURN ROLLER - 1.875 x 17.875 x .438	5
11	405705	TUBE CLAMP - TYPE 2 W/WIND GUARD MOUNT	1
13	405482	WINCH MOUNT TUBE CLAMP	1
14	403938	ROLLER SLIDE - TYPE 90	1
15	401360	LIGHT MOUNTING BRACKET	1
16	400350	UNDERCARRIAGE MOUNT BRACKET - GAS	1
17	400217	RETURN ROLLER BRACKET	6
18	400030	TUBE - 14GA x 10D x 120L	1
19	400022	TUBE - 12GA x 10D x 240L	1
62	119452	BRIDGING TOWER #1 - CROSS BRACE	2
67	117693	BRIDGING TOWER #1 - MAIN ANGLE	2
69	116214	LIGHT MOUNT	1
79	101078	TUBE CLAMP - TYPE 2	7
80	101077	TUBE CLAMP - TYPE 3	3
81	101076	TUBE CLAMP - TYPE 6	2
85	100934	BRIDGING - SHORT CROSS BRACE	1

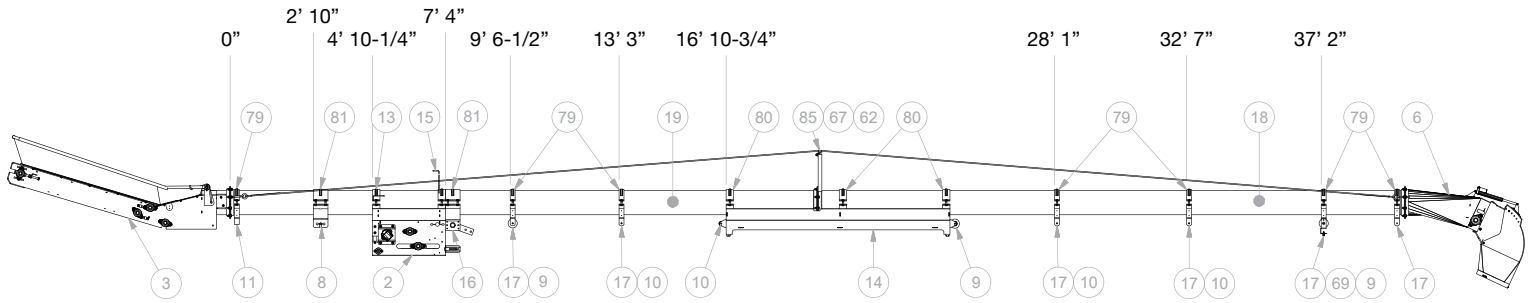


Fig 138 - 1650-TL Schematic

PART NO: 650506927 TITLE: 1650-TL W/MOVER KIT

ITEM	PART #	DESCRIPTION	QTY
2	650506968	DIRECT HYD. DRIVE BOX WITH TENSIONER	1
3	504185	S-NECK HOPPER - OPEN TRANSITION	1
6	503281	SWIVEL HOOD DISCHARGE BODY W/ ROLLER	1
8	501190	HEAVY DUTY RETURN ROLLER ASSEMBLY	1
9	501119	RETURN ROLLER FL - TYPE 1-7/8 x 17-7/8 x 7/8	3
10	501118	RETURN ROLLER - 1.875 x 17.875 x .438	5
11	405705	TUBE CLAMP - TYPE 2 W/WIND GUARD MOUNT	1
13	405482	WINCH MOUNT TUBE CLAMP	1
14	403938	ROLLER SLIDE - TYPE 90	1
15	401360	LIGHT MOUNTING BRACKET	1

16	400350	UNDERCARRIAGE MOUNT BRACKET - GAS	1
17	400217	RETURN ROLLER BRACKET	6
18	400023	TUBE - 14GA x 10D x 240L	1
19	400022	TUBE - 12GA x 10D x 240L	1
62	119452	BRIDGING TOWER #1 - CROSS BRACE	2
67	117693	BRIDGING TOWER #1 - MAIN ANGLE	2
69	116214	LIGHT MOUNT	1
79	101078	TUBE CLAMP - TYPE 2	7
80	101077	TUBE CLAMP - TYPE 3	3
81	101076	TUBE CLAMP - TYPE 6	2
85	100934	BRIDGING - SHORT CROSS BRACE	1

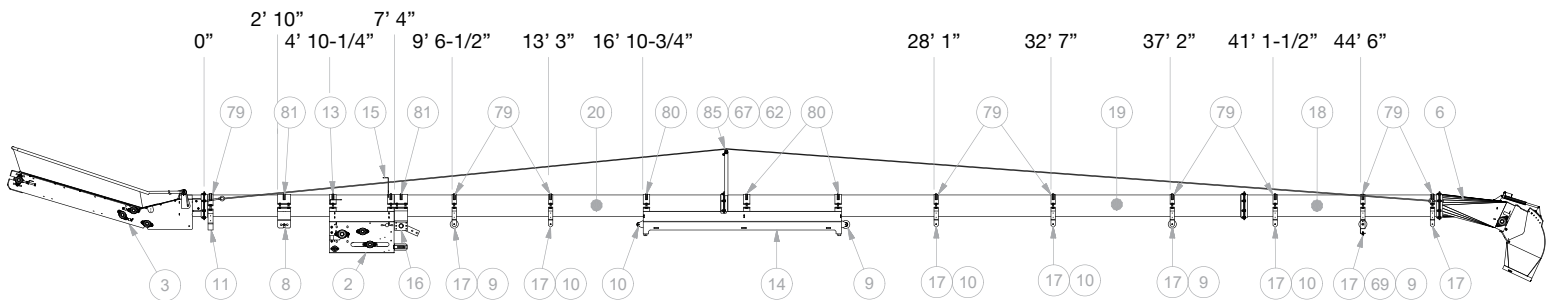


Fig 139 - 1658-TL Schematic

TITLE: 1658-TL W/MOVER KIT

ITEM	PART #	DESCRIPTION	QTY
2	650506968	DIRECT HYD. DRIVE BOX WITH TENSIONER	1
3	504185	S-NECK HOPPER - OPEN TRANSITION	1
6	503281	SWIVEL HOOD DISCHARGE BODY W/ ROLLER	1
8	501190	HEAVY DUTY RETURN ROLLER ASSEMBLY	1
9	501119	RETURN ROLLER FL - TYPE 1-7/8 x 17-7/8 x 7/8	3
10	501118	RETURN ROLLER - 1.875 x 17.875 x .438	5
11	405705	TUBE CLAMP - TYPE 2 W/WIND GUARD MOUNT	1
13	405482	WINCH MOUNT TUBE CLAMP	1
14	403938	ROLLER SLIDE - TYPE 90	1
15	401360	LIGHT MOUNTING BRACKET	1

16	400350	UNDERCARRIAGE MOUNT BRACKET - GAS	1
17	400217	RETURN ROLLER BRACKET	6
18	400031	TUBE - 14GA x 10D x 90L	1
19	400023	TUBE - 14GA x 10D x 240L	1
20	400022	TUBE - 12GA x 10D x 240L	1
62	119452	BRIDGING TOWER #1 - CROSS BRACE	2
67	117693	BRIDGING TOWER #1 - MAIN ANGLE	2
69	116214	LIGHT MOUNT	1
79	101078	TUBE CLAMP - TYPE 2	7
80	101077	TUBE CLAMP - TYPE 3	3
81	101076	TUBE CLAMP - TYPE 6	2
85	100934	BRIDGING - SHORT CROSS BRACE	1

11. Install the Undercarriage Slide on the tube.
  - Lift the tube.
  - Move the Slide beneath.
  - Align cutout in Slide with tube flange. If necessary, cut the Slide to fit.
  - Lay tube on top.
  - Place three, 3 inch tube clamps above Slide tube clamps.
  - Add the bolts, but do not tighten.



Fig 140 - Undercarriage slide

12. Lift the tube to place the drive box under the tube.  
The hydraulic motor is already attached to the drive box.

**Note:**  
Position Drive Box so  
springs facing discharge.

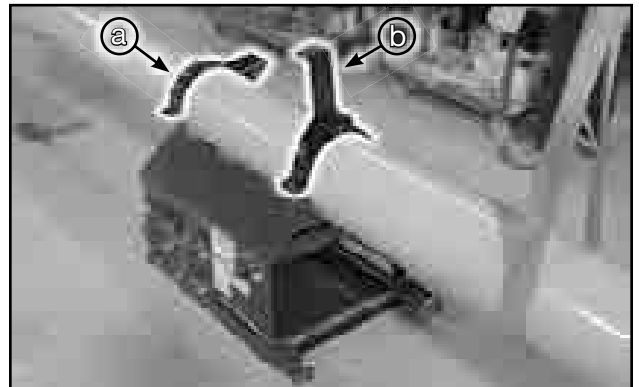


Fig 141 - Drive box and tube clamps

13. Bolt the Winch Mount Tube Clamp (a) to the drive box at the hopper end of the tube.
  - Do not tighten, yet.
14. Bolt Light Mounting Bracket (b) above the drive box springs.
  - Do not tighten, yet.



Fig 142 - Hopper on stands

**⚠ WARNING**  
EQUIPMENT WEIGHT HAZARD  
Use lift equipment rated to hold 2000 lb.  
Ensure stands can hold the weight,  
and are stable.

**⚠ CAUTION**  
OVERHEAD EQUIPMENT HAZARD  
Use caution when working under the tube.

15. Lift the entire tube.
16. Place the Hopper and Discharge on stands.



Fig 143 - Discharge on stands

17. Place the 2 inch Tube Clamp with Windguard Mount under the tube, against the hopper flange.

- Lay a 2 inch tube clamp on top and bolt together.
- Do not tighten, yet.

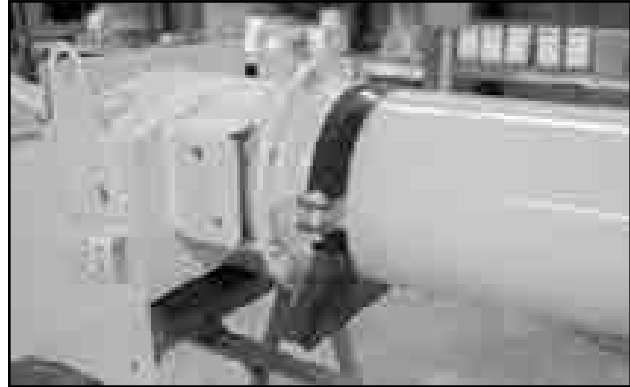


Fig 144 - Tube clamp with windguard mount

18. Fit the Heavy Duty Return Roller under the tube, before the Drive Box.

- Fasten a 6 inch tube clamp over the tube.
- Do not tighten the bolts.

**Note:**

Roller should already be installed.  
If not attach it now.

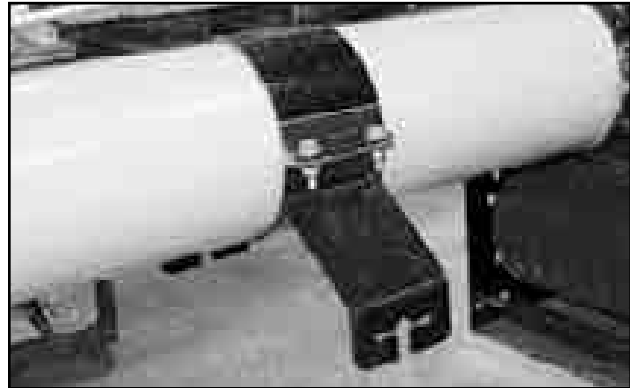


Fig 145 - Heavy duty return roller frame

19. Use Roller - Type 1-78 x 16" x 3/4 x 19".

- place two Bearing - FD204 - 3/4 inch Shaft onto roller shaft.
- Add eccentric locking rings to the shaft.
- Insert from inside the return roller frame.
- Insert carriage bolts from outside, and tighten.



Fig 146 - Heavy duty return roller

- Use a hammer and punch to tap the locking rings, firmly tightening them.
- Tighten the set screw on the locking ring.



Fig 147 - Assemble heavy duty return roller

20. Place the Undercarriage Mount Assembly below the tube in front of Drive Box.
  - Fasten it to a 6 inch tube clamp.
  - Loosely secure bolts.



Fig 148 - Undercarriage mount assembly

21. Place 2 Return Roller Brackets and their tube clamps in position between the Drive Box and Slide.
  - Loosely secure bolts.
22. Finish placing Return Roller Brackets with tube clamps after the Slide to the end of the unit. Refer to Figures 139, 140 or 141
  - Do not tighten bolts, yet.

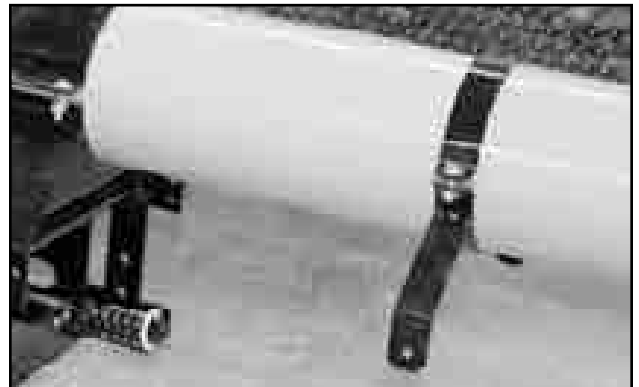


Fig 149 - Level hopper

### 6.2.2 Level Components:

**IMPORTANT:**

Conveyor ends must be level, before all other components can be levelled.

23. Level Hopper, and Discharge Housing.
  - If needed, shim the stands to level both ends.
24. Level the Tube Clamp with Windguard Mount.
  - Level Heavy Duty Return Roller Assembly.
  - Level Drive Box.
  - Level Undercarriage Mount Bracket.
  - Level all Return Roller Brackets.
25. Tighten all the bolts.



Fig 150 - Level drive box

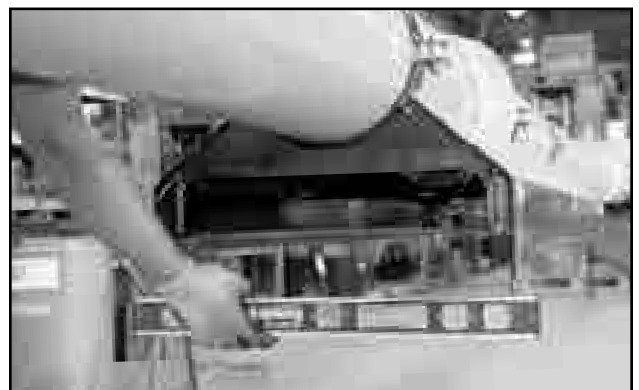


Fig 151 - Level undercarriage slide

**6.2.3 Finish the Tube:**

26. Anchor the Undercarriage Mount Bracket to the tube.
  - Drill 2 holes using a 17/64 inch (6.7 mm) bit in the top of the 6 inch tube clamp.
  - One hole on either side of the tube.
  - Fasten with self-tapping screws.

Refer to the schematics for specific return roller locations.

**Note:**

One end of the Return Roller shaft is fixed. Insert it first.  
The other end is spring-loaded. Insert it after.

**IMPORTANT:**

There should be 1/16 inch (1.5mm) spacing between roller and bracket leg. Use rubber mallet to bend, setting spacing.

27. Place the Flanged Return Rollers:
  - To the Return Roller Bracket after the Undercarriage Mount Assembly.
  - To the end of the Undercarriage Slide.
  - To the second last bracket from the discharge.

28. Add regular Return Rollers:
  - To the return roller bracket before the Undercarriage Slide.
  - To the two brackets after the Slide.

29. Leave the last Return Roller Bracket before the discharge empty.
  - It will be used to attach windguards.

30. If the optional Light Package is part of your conveyor; bolt the Light Mount below the second last Return Roller Bracket from the discharge.

31. Bolt the Winch onto the winch mount above the drive box.

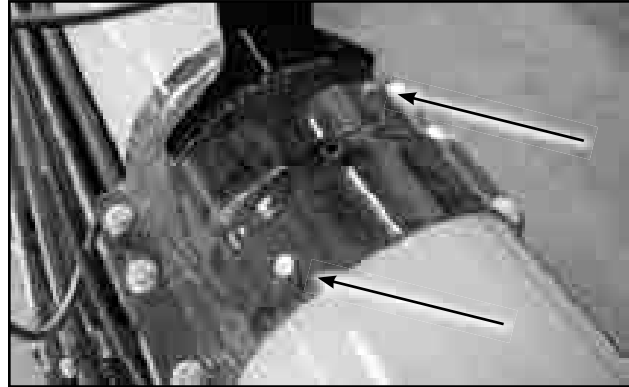


Fig 152 - Flanged return roller



Fig 153 - Return roller



Fig 154 - Optional discharge light mount



Fig 155 - Install winch



### 6.3 THREAD CONVEYOR BELT

32. Loosen the tail roller and move to its loosest position.
33. Loosen the tension spring bolts, on the drive box.
34. Hang the roll of conveyor belting off the ground below the Undercarriage Slide.
  - Belt for the 1640-TL is 87 feet long
  - Belt for the 1650-TL is 107 feet long.
  - Belt for the 1658-TL is 122 feet long.
35. Thread the belt over the return rollers, and hang at the end of the discharge.



Fig 156 - Conveyor belt roll



Fig 157 - Belt at discharge

36. Fish a cable from the hopper, through tube, and out the discharge.
37. Lace a small piece of belt, to the end of the main belt.
38. Attach the cable to the end of the belt.
39. Pull the cable, with the belt, back through the tube, towards the hopper.
40. Once the belt is to the hopper, remove the rod, and the small piece of belt.



Fig 158 - Cable at the end of the belt

**Note:**  
Review the Transition Schematic for threading the belt through hopper.

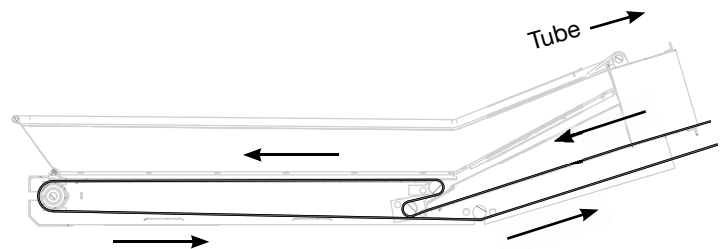


Fig 159 - Hopper transition belt path

41. Once the belt is at the hopper, feed the belt underneath, before the transition rollers.
42. Pull a large quantity of the belt out the bottom of the hopper.



Fig 160 - Lead belt lead under transition

43. Feed the belt around the top roller and onto the hopper bed.
44. Pull it across the hopper bed.



Fig 161 - Belt around transition roller

45. Feed it around the hopper tail roller.



Fig 162 - Belt around tail roller

46. Pull the belt out past the tail, until there is only a small loop of belt below the transition.



Fig 163 - Belt looped below transition

47. Once there is only a small loop at the transition, install the third roller.
  - Slide bearing assemblies over the roller slide shaft, on both ends.
  - Centre the shaft.
  - Secure with 5/16 x 2 inch carriage bolts.
  - Place the bolts from the inside.
  - Add washers outside and tighten the nuts.



Fig 164 - Belt under hopper

48. Place eccentric locking rings (off-centre fit) over the shaft, outside the bearings, on both ends of the shaft.
  - Slide the rings on and turn to hand tighten.
  - Use a hammer and punch to tap the locking rings, firmly tightening it.
  - Tighten the set screw on the rings.



Fig 165 - Belt inside hopper frame

49. Work the belt until it fits smoothly around the transition and hopper.

50. Beneath the hopper, feed the belt back, inside the bottom panels of the hopper frame.
  - Leave it end hanging down from the transition.



Fig 166 - Belt under hopper

51. Go to the remaining belt left before the slide.
  - Thread that end of the belt back over the return rollers, towards the Drive Box.

**Note:**

The tension spring bolts on the drive box should be loose.

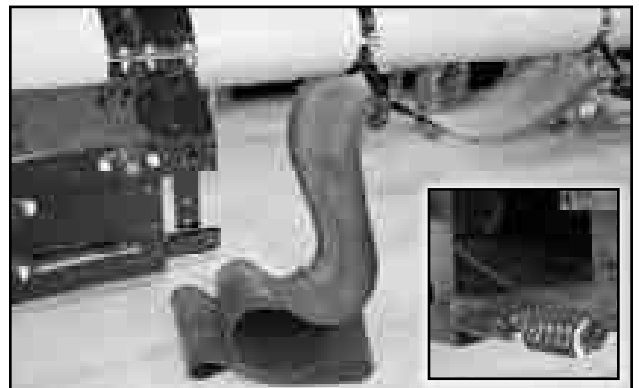


Fig 167 - Drive box schematic

52. Feed the belt into the Drive Box.  
 - Pull it below and around, the first roller.

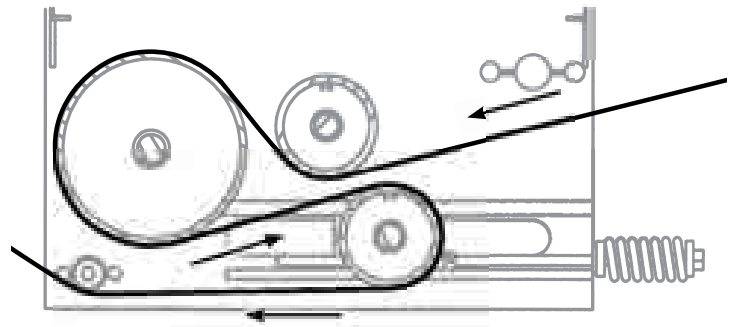


Fig 168 - Drive box belt path

53. Thread the belt over and around the large drive roller, then back inside.  
 54. Guide the belt over and around the lower roller.



Fig 169 - Belt over drive roller

55. Push it out, under the lower roller at the bottom corner of the box.

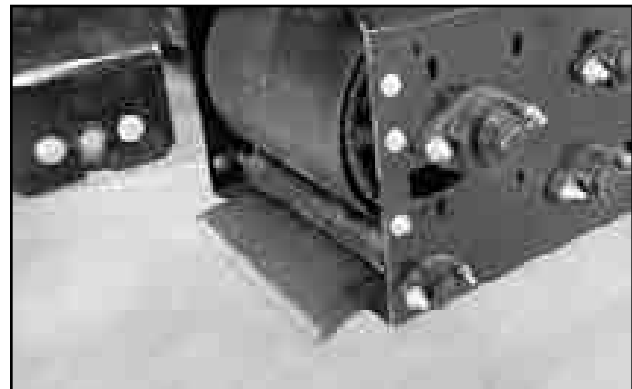


Fig 170 - Belt exiting the drive box

56. Pull the belt over the Heavy Duty Return Roller.



Fig 171 - Belt over the heavy duty return roller

57. Connect the two ends of the belt lacing.
58. Thread the lacing cable through to fasten the belt.

**Note:**

Cordless drill can be used to thread cable.

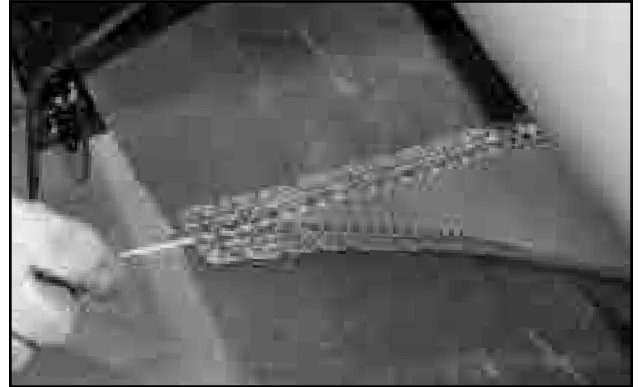


Fig 172 - Thread lacing cable

59. Cut off the excess cable.
60. Crimp lacing at both ends to lock the cable in place.
61. Cut and taper the belt corners, at both ends of the lacing.

**IMPORTANT:**

Taper the belt corners, so they don't catch when running.

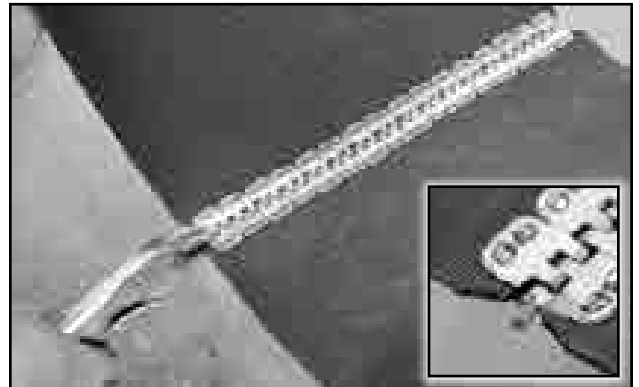


Fig 173 - Crimp lacing and cut corners

62. Set the adjustment bolts on the tail roller to 3 inch (77mm).
  - Set both sides equally, so the belt tracks correctly when running.



Fig 174 - Tail adjustment bolt

63. Adjust the Drive Box roller position by tightening the Tension Springs.

Reference the tension indicator on the outside of each spring. Tighten the bolts, until the yellow washer lines up with the arrows in the window.

Using the arrow indicators, the tension springs will measure 3-3/4 inches (95mm). This is the factory default tension.

**IMPORTANT:**

Both sides must be adjusted the same amount.

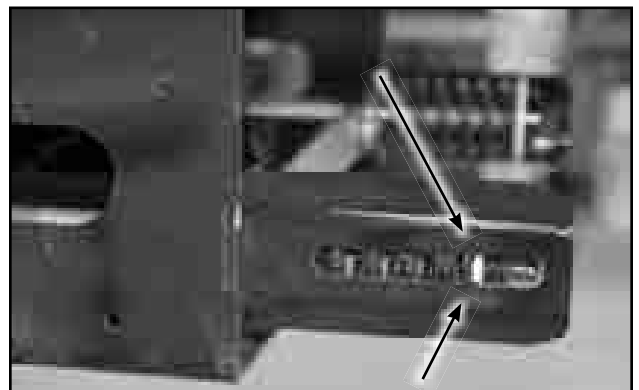


Fig 175 - Tension spring indicator

## 6.4 CABLE BRIDGING

Cable bridging is added to the 1650-TL and 1658-TL conveyors. The 1640-TL does not require bridging.

### 6.4.1 Attach Bridging:

64. Attach the Cable Bridging Support Arm to tube flange. Use the top, two holes:

- Attach the vertical struts to the flange.
- Bolt the cross brace.
- Level the cross brace.
- Tighten bolts.
- Place the cable clamps on top of the cross brace.

65. Add thimbles to cable eye bolts.

66. Attach eye bolts to the open holes, at the 10 and 2 o'clock positions, on the hopper flange.

67. Attach eye bolts (with thimbles) to the open holes, at the 10 and 2 o'clock positions, at the discharge flange.

68. Lay the cables along tube:

- No bridging used on the 1640-TL.
- Cable for the 1650-TL is 42 feet long.
- Cable for the 1658-TL is 49' 6" long.

69. Add two cable clamps to both ends of the cables.

70. Fold the cable back at 1-1/2 feet (50cm) and kink. Do this to each end.



Fig 176 - Cable bridging support arm

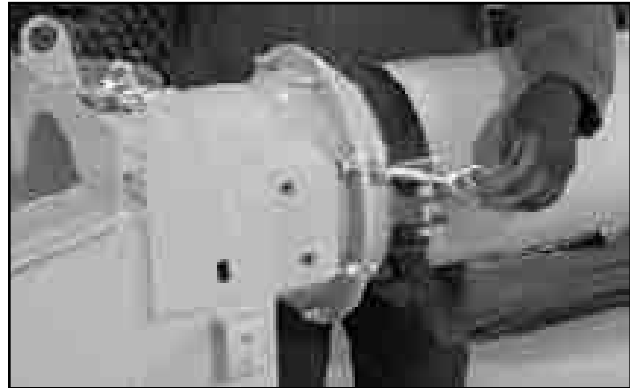


Fig 177 - Eye bolts in hopper flange



Fig 178 - Eye bolts in discharge flange



Fig 179 - Kink cable

71. Thread the cable through the eye of the bolt and around the thimble.
  - Position the kink around the thimble.
  - Slide the inner clamp towards the eye bolt.

**IMPORTANT:**

Position “U” of bolt over dead-end (a) of cable.  
 Live-end (b) rests in saddle.  
 Tighten nuts evenly, alternate from one nut to other until recommended torque is reached.

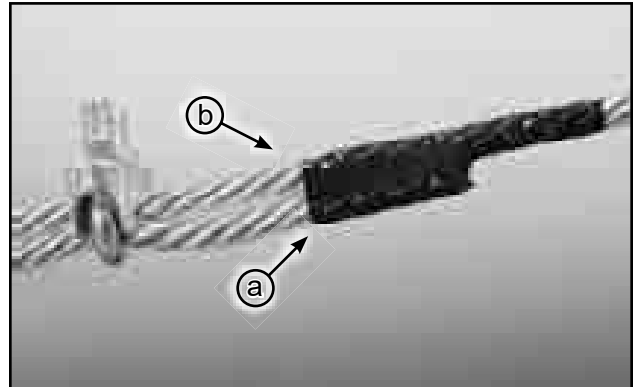


Fig 180 - (a) Dead-End, (b) Live-End of Cable

72. Push the first clamp up against the thimble, at the eyebolt.
  - Tighten the clamp.
  - Move second clamp to four inches from the end.
  - Tighten that clamp



Fig 181 - Cables attached to hopper end

73. Repeat on the other side.

74. Repeat the process to secure cables at the discharge.



Fig 182 - Cable attached to discharged end

75. Remove the U-bolt from the cable clamps on the Support Arm.

76. Lift each cable onto its saddle.

77. Insert the U-bolt.
  - Add the nuts, but do not tighten. (Bridging will move during assembly).

78. Wrap electrician’s tape around the ends of the cable.

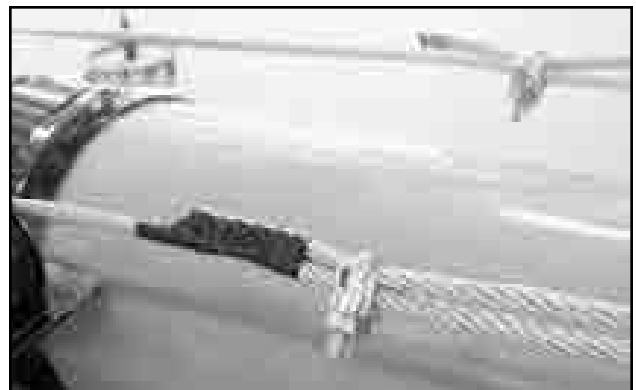


Fig 183 - Wrapped cable end

**6.4.2 Set Cable Tension:**

**Note:**

Hold cable thimble when adjusting eye bolt to keep cable straight.

**IMPORTANT:**

Tighten hopper eye bolts to secure hopper. Set tension with discharge eye bolts.

Leave as much adjustment capacity at the hopper end. It can be easily reached for future adjustments.

79. Tighten hopper eye bolts until five threads go through the nut.  
 - Tighten the eye bolt lock nuts.

80. Loosen the lock nuts on the discharge end eye bolts.  
 - Tighten nuts on eye bolts until they extend 1-1/2 inches (25 - 38 mm) out from the nut.

81. Raise the discharge end to check tube straightness.  
 - Lift the conveyor at the Slide, with a winch.

The discharge end should rise above the stand. Hopper remains sitting on the stand.

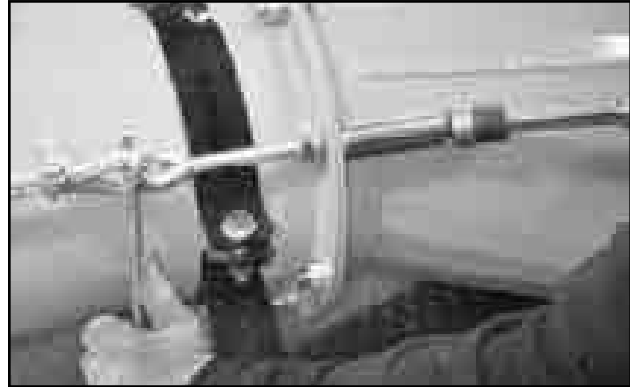


Fig 184 - Belt towards hopper



Fig 185 - Hopper eye bolts



Fig 186 - Discharge eye bolts



Fig 187 - Lift conveyor tube



82. Sight along top of conveyor tube, to confirm the tube is straight - side to side.

**Note:**

If curved:  
tighten cable on outside of arc,  
or loosen cable on inside of arc.

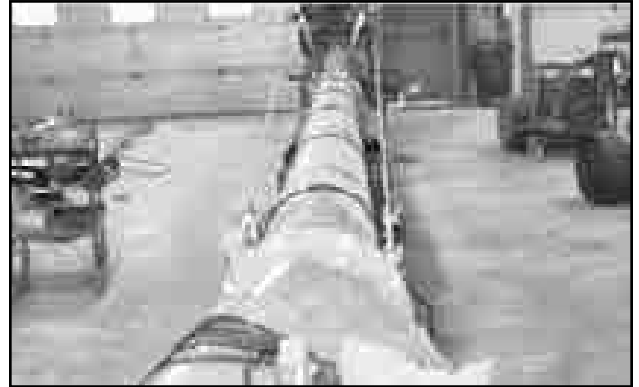


Fig 188 - Straight tube

83. Sight along the side of tube, to confirm it has a slight upward bow in it.  
- Tighten cable with the discharge end eye bolts, to set bow.

**Note:**

Tube must have an upwards bow to it  
at this time in assembly process.  
Installation of windguards and placement  
on undercarriage will bring tube downward.



Fig 189 - Upward bow in tube

## 6.5 BELT TENSION AND ALIGNMENT

Hook up an external hydraulics pack to the drive box motor. Run the belt to test the alignment and tension.

### **Tension:**

Reference the tension indicator on the outside of each spring. Line up the yellow washer with the arrows. Using the indicator, the tension bolt springs will measure 3-3/4 inch (95 mm).

If the belt needs more or less slack, stop the belt, turn off the engine, move the tail roller 1/4 to 1/2 inch. Then re-tension at the drive box.

### **Alignment:**

The belt is properly aligned when it rotates in the centre of the rollers. Check it at the discharge roller, hopper rollers, and in the drive box.

If belt is out of alignment, it moves to loose side. Tighten loose side or loosen tight side.

Loosen the specific bearing housing and adjust the roller.

At the tail roller, tighten or loosen the adjustment bolt by a 1/4 turn to 2 turns. Then, Tighten the housing.

Run the belt a couple of revolutions and check.

### **IMPORTANT:**

As belt is running...

Listen, check for problems running the belt.

Correct and adjust immediately.

Belt must run smoothly!

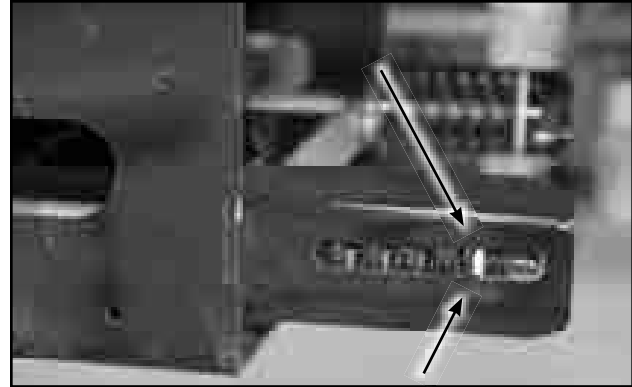


Fig 190 - Tensioning bolts



Fig 192 - Adjust bearing placement



Fig 191 - Lacing catching on something

## 6.6 DISCHARGE SPOUT

**Note:**

Discharge spout is usually plastic, unless you have ordered a stainless steel unit.

84. Bolt the Discharge Hood onto the metal housing.
  - Insert two bolts from inside along the top.
  - Insert a bolt on both side, at the bottom corner of the metal housing.

85. Bolt the Discharge Spout to the bottom corners of the Hood, on both sides.

**Note:**

There are six positioning slots on the top of the Discharge Spout. Manually position the spout at the particular output angle depending on your needs.

86. Swing the spout up and bolt it to the hood using one of the six positioning slots.

### 6.6.1 Optional Actuator Installation:

If the electric actuator and it's wiring harness is part of your package, install it now:

87. Bolt its mounts on the metal housing and to the discharge spout.
88. Do not bolt the discharge spout to the hood as described in instruction #86.
  - Install the actuator between the mounts.

**Note:**

The electrical cables will be connected after the windguards are finished.



Fig 193 - Plastic discharge hood



Fig 194 - Plastic discharge spout

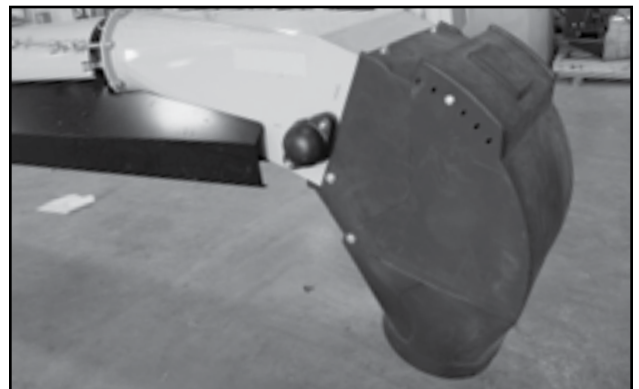


Fig 195 - Discharge



Fig 196 - Electric actuator

**6.6.2 Stainless Steel Discharge Components:**

If the optional stainless steel components, are part of your conveyor then follow these instructions:

89. Bolt the Discharge Hood onto the stainless steel housing.
- Insert two bolts from inside along the top.
  - Insert a bolt on both side, at the bottom corner of the metal housing.

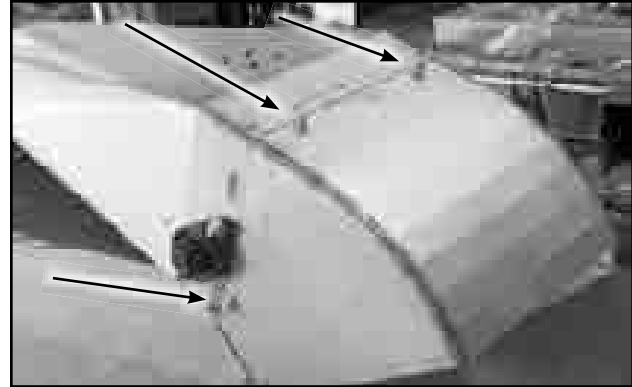


Fig 197 - Stainless steel discharge hood

90. If an electric actuator is included:
- Install the electric actuator mount bracket across the spout.
  - Install the bracket to the top of the housing.



Fig 198 - Discharge spout actuator bracket

91. Bolt the Discharge Spout to the bottom corners of the hood, on both sides.

**Note:**

There are six positioning slots on the top of the Discharge Spout. Manually position the spout at the particular output angle depending on your needs.



Fig 199 - Discharge spout

92. Swing the spout up and bolt it to the hood using one of the six positioning slots.

93. If an actuator is included, do not bolt the spout to the hood.
- Install the actuator between the mounts.

**Note:**

The electrical cables will be connected after the windguards are finished.



Fig 200 - Electric actuator

## 6.7 COMPLETE THE TUBE

### 6.7.1 Install Windguards:

The lists below are for one side of the conveyor.

1640-TL windguard sizes:

- Discharge windguard 59-3/4 inch, precut to fit.
- 32 inch guard between Discharge guard and Slide.
- 90 inch windguard after Slide.
- 30 inch tapered windguard to Drive Box.
- 65-5/16 inch guard between Drive Box and Hopper.

1650-TL windguard sizes:

- Discharge windguard 59-3/4 inch, precut to fit.
- 60 inch windguard after Discharge guard.
- 100 inch windguard to Slide.
- 90 inch windguard after Slide.
- 30 inch tapered windguard to Drive Box.
- 65-5/16 inch guard between Drive Box and Hopper.

1658-TL windguards sizes:

- Discharge windguard 59-3/4 inch, precut to fit.
- 90 inch windguard after Discharge guard.
- 60 inch windguard.
- 100 inch windguard to Slide.
- 90 inch windguard after Slide.
- 30 inch tapered windguard to Drive Box.
- 65-5/16 inch guard between Drive Box and Hopper.

94. Install the precut windguard at the discharge housing.

**1658-TL Note:**

- Mark tube flange location.
- Cut out notch in guard to fit flange.

**Note:**

- Position windguards against the Return Roller Bracket support arm weld, then lay it down on the arm.

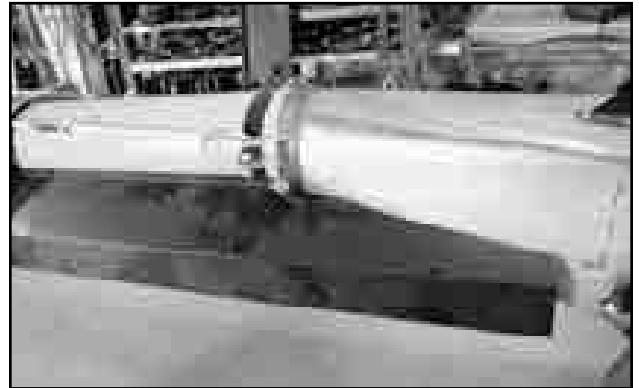


Fig 201 - Discharge windguards

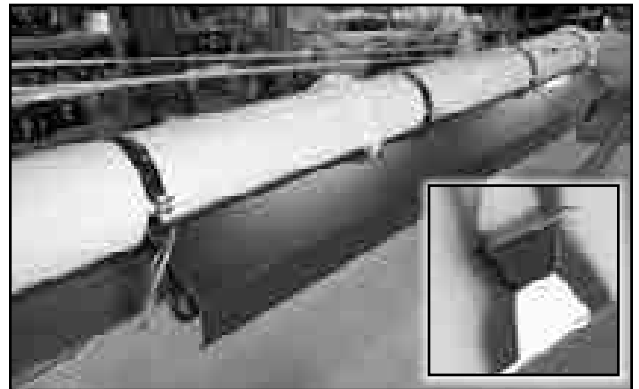


Fig 202 - Windguard crossing flange on 1658-TL

95. Position and hold the guard.
  - Use self-tapping screws to attach windguard to return roller bracket.
96. Position the next windguard, overlapping the previous:
  - Use two self-tapping screws to secure windguard to each bracket.
97. Place the windguard to overlap the Slide:
  - Cut out a piece of the bottom, corner edge of guard to fit when overlapping Slide.
  - Use self-tapping screws to secure windguards to each roller bracket and the edge of the slide.
98. Position next windguard below Roller Slide:
  - Cut out a piece of the top, corner edge of guard to fit when overlapping Slide.
  - Attach windguard to the edge of the Slide and each roller bracket.
99. Position custom shaped windguard to the Drive Box, covering Undercarriage Saddle.
  - Attach with self-tapping screws.

**IMPORTANT:**

Do not attach guards to Drive Box yet.  
Conveyor still needs to flex.

100. Position the last windguard from Drive Box to Hopper Transition:
  - Attach windguard to the bracket below the bracket at the hopper flange.
101. Install the windguards on the other side.
  - Start at the discharge, and follow the same procedures as the first side.

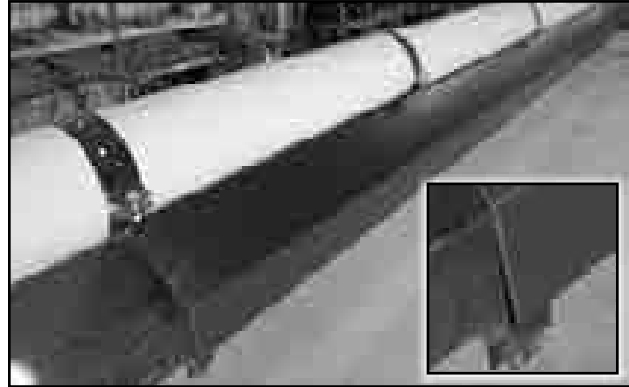


Fig 203 - Windguard to the roller slide

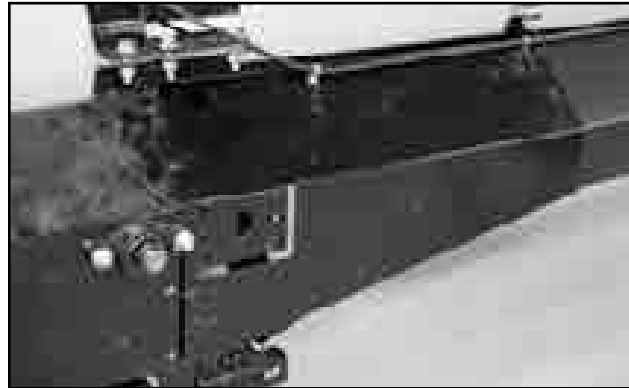


Fig 204 - Drive box windguard

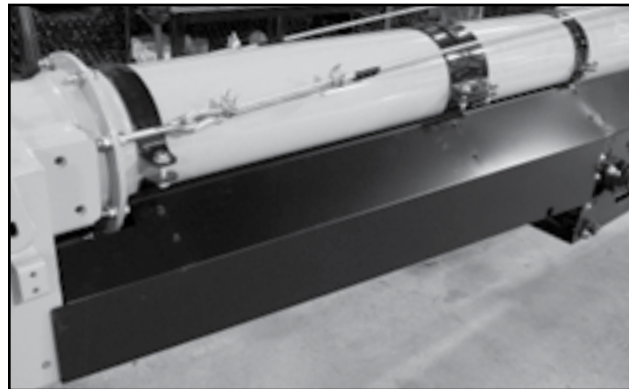


Fig 205 - Windguards



Fig 206 - Anchored undercarriage saddle

**6.7.2 Install Drip Pan:**

102. Install the Drip Pan under the windguard, between the Slide and Drive Box.
- Place notched end of Pan into Slide.
  - Use clamp to hold each corner of pan in place under windguards.
  - Use a 13/64 inch (5 mm) drill bit.
  - Drill 5 holes along each side.
  - Rivet windguard to drip pan.

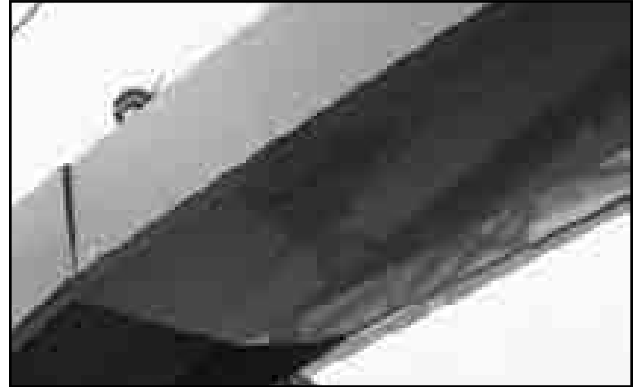


Fig 207 - Drip pan

**6.7.3 Optional Wiring Harness and Lights:**

If your conveyor includes the optional lights and actuator package, a wiring harness is included.

103. Connect the coloured wires on the electric actuator to the corresponding colours in the #16 gauge roll of wire.
- Encase wire connection in conduit.
104. Drill holes in discharge housing and windguards to attach anchor clips for wire routing.



Fig 208 - Anchor electrical wire

**Note:**

Mount anchor clips using the top screw at each roller bracket.  
 Drill 1 or 2 holes between for additional clips.



Fig 209 - Anchored wire from light

105. Install the work light onto its mount below the second last (from the discharge) return roller bracket.
- Connect the black and white wires to the #16 gauge wire, laid along the tube.
  - Encase the "T" joint in conduit.
  - Wrap the joint with electrical wire.
  - Secure the wire with anchor clips to the windguard using existing screws.



Fig 210 - Discharge working light

106. Route wires around tube flange and secure with clips on both sides.
107. Continue anchoring wire down to the light bracket above the Drive Box.



Fig 211 - Wire Around Tube Flange

108. Attach the hopper work light onto its bracket, above the drive box.
  - Connect its wires a 3 foot piece of 2 conductor wire.
  - Wrap in conduit.



Fig 212 - Hopper Working Light

109. Connect the 2 conductor wires to the black and white in the #16 gauge wire anchored to the windguard.
  - Then roll up the rest of the #16 gauge wire. (When undercarriage is attached, the wire will be connected to the switch)



Fig 213 - Hopper Working Light



**6.7.4 Apply Decals, Logos and Reflectors:**

Review the assembly drawing supplied, to determine the location of all decals, logos and reflectors.

110. Be sure the application area is clean and dry. Ensure the surrounding temperature is above 10°C (50°F).
  - Remove all dirt, grease, wax from the surface.
  - Clean with a non-ammonia based cleaner.
  - Wipe the clean surface with isopropyl alcohol on paper towel, and allow to dry.
111. Determine the exact position before you remove the backing paper.
112. Peel a small portion of the split backing paper.
113. Align the decal over the specified area. Use a squeegee to carefully press the small portion, with the exposed adhesive backing, into place.
114. Slowly peel back the remaining paper and carefully smooth the rest of the decal into place.
115. Small air pockets can be pierced with a pin and smoothed out using the squeegee, or a piece of sign backing paper.
116. Apply amber reflector strips:
  - To each side of the hopper and discharge.
  - In equal intervals of less than 15 feet up the tube.
117. Apply a red reflector strip to the end of the discharge spout.



Fig 214 - Logo

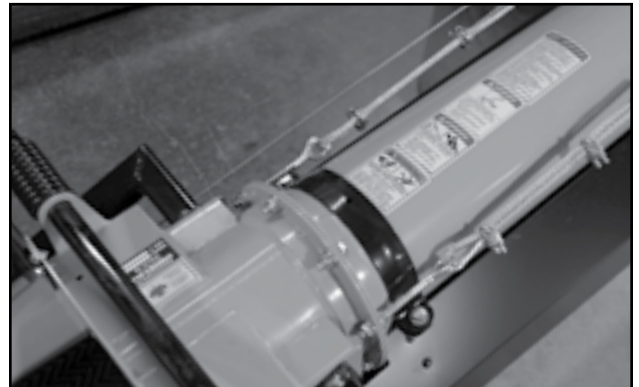


Fig 215 - Decals

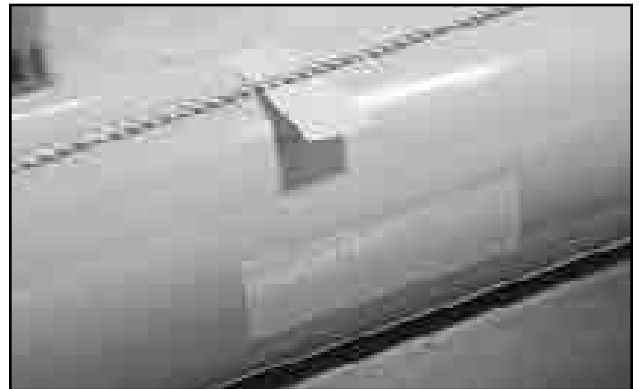


Fig 216 - Amber Reflectors

**6.7.5 Finish the Tube:**

118. Sight along top of conveyor tube, to confirm the tub straight - side to side.

**Note:**

If curved - tighten cable on outside of arc, or loosen cable on inside of arc.

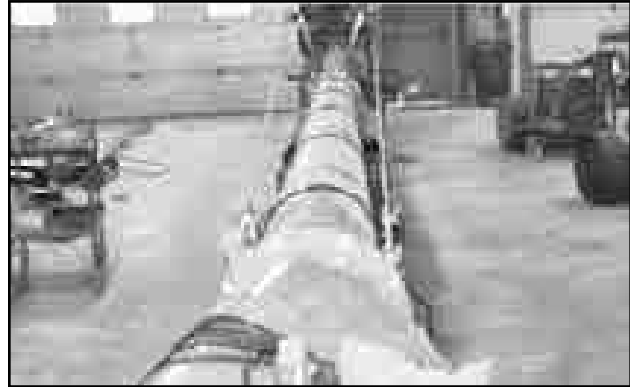


Fig 217 - Tube is Straight, Horizontally

119. Sight along the side of tube, to confirm that it is straight.

- Tighten or loosen cables with the discharge end eye bolts, to make straight.



Fig 218 - Tube is Straight, Vertically

120. Place covers over roller bearing housings:

- Hopper roller ends
- Transition rollers ends
- Drive Box roller ends
- Discharge Roller ends

Tube is complete.



Fig 219 - Bearing Covers

## Section 7: CANVAS HOPPER ASSEMBLY

The tube should already be complete and its length is straight. The belt has been tested and it is tensioned and aligned.

### 7.1 HOPPER HOOP

#### **WARNING**

##### HIGH SPRING TENSION

Be aware of tension on the spring when the Hopper Hoop is in place. Sudden release of hoop will cause injury.

#### **Note:**

The hopper hoop has a downward bend in it. Thread the canvas onto the hoop with the stitching to the outside, smooth side inward. Canvas should hang down and to the inside.

1. Work the canvas around the hopper hoop.
2. Insert the Hopper Hoop Mount Bar on top of the transition, just before the tube.
3. Place the Collapsible Hopper Springs onto each end of the Mount Bar.
  - Insert the bottom end of the spring into bracket on the frame.



Fig 220 - Belt has been tested



Fig 221 - Canvas on hopper hoop



Fig 222 - Springs on hopper hoop mount bar

4. Lay the hopper hoop with canvas installed, over the tube.

**Note:**

When installed over the hopper bed, the hoop arms will angle down.

5. Insert hoop ends over each end of the Mount Bar.
6. Insert the cotter pin, to hold the hoop in place.
  - Bend the cotter pins to secure them.

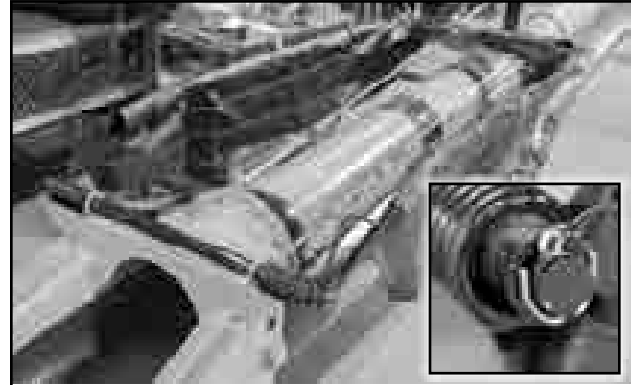


Fig 223 - Hoop laying on tube

**⚠ WARNING**

**HIGH SPRING TENSION**

Tension is added to the springs when the hoop is moved over the hopper. Hold Hoop in place securely. Sudden release of hoop will cause injury.

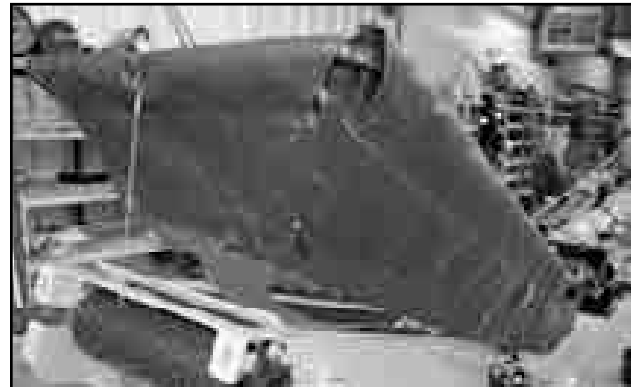


Fig 224 - Canvas over hopper

7. Bring the hoop around and into place over the hopper bed, engaging the springs.
8. Securely, strap the end of the hoop to the frame.

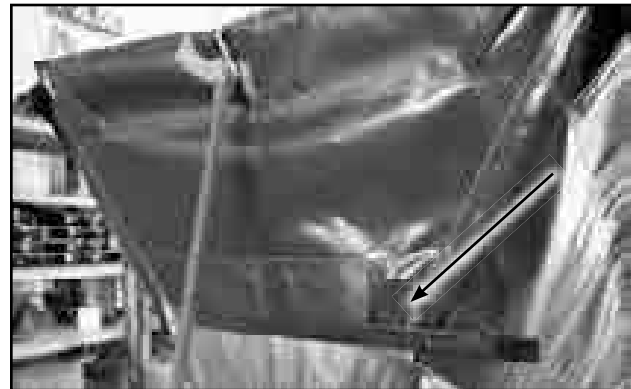


Fig 225 - Tail canvas insert



Fig 226 - Transition canvas insert

## 7.2 HOPPER CANVAS

9. Insert the Tail Canvas Insert (flat bar) in the sleeve at the bottom of the hopper canvas. See Figure 227.
10. Work the Transition Canvas Inserts (flat bars) into the end of the side sleeves, one on both sides. See Figure 228.
11. Slide the Side Canvas Insert (flat bar) into the canvas sleeve on both sides.

**Note:**

The end of the Insert with the screw hole closest to the end, goes in first. Now, the holes will match the pre-drilled holes on the side bracket.

12. Centre the Tail Canvas Insert inside the front sleeve.
  - Drill holes, and insert elevator bolts.
13. Find the tail and side flashing.

14. Lay the tail flashing down on the angled bracket at the front of the hopper.
15. Place the side flashing on top of the side bracket.
  - The end with the large hole should be at the front.
16. Layer the side flashing over the tail flashing, so their bolt holes overlap.
17. Insert the elevator bolt into:
  - First, the large hole of the side flashing.
  - Second, the tail flashing.
  - Third, through the hole in the tail bracket.

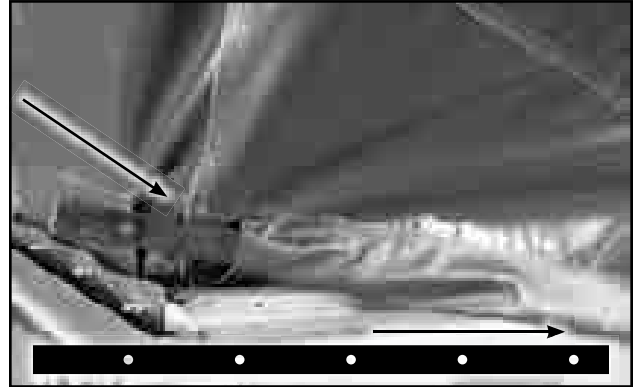


Fig 227 - Side canvas insert



Fig 228 - Bolts in tail end of canvas

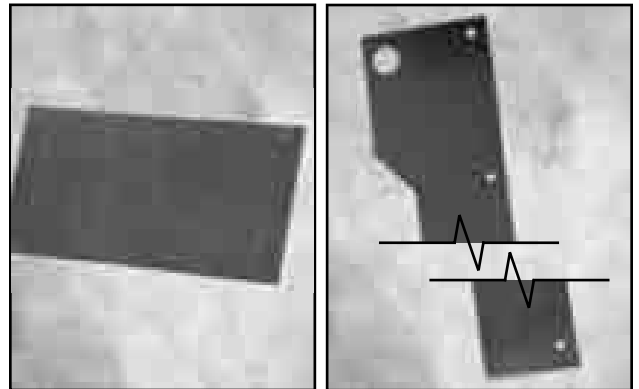


Fig 229 - Tail flashing and side flashing



Fig 230 - Canvas and flashing

18. Add a washer and tighten the nut.
19. Repeat on the other side.
20. Find the Hopper Transition Flashing.

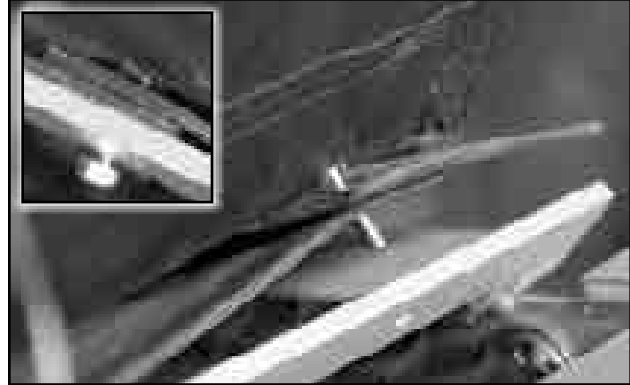


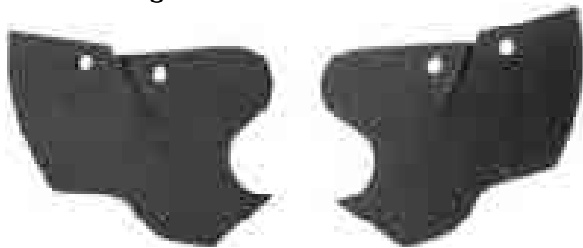
Fig 231 - Secure canvas and flashing to frame bracket

21. Fasten the canvas, through flat bar Inserts, to flashing mounts on the frame (angle iron).



Fig 232 - Hopper transition flashing

22. Install corner flashing into the transition:
  - Fit Flashing around the belt, which is wrapping around roller.
  - It must tightly cup the belt.
  - Corner Flashing lays beneath Side Flashing.



23. Lay corner flashing underneath, side flashing in middle, hopper canvas on top.
  - Push elevator bolts through all layers.
  - Bolting all layers to the Flashing Mounts.

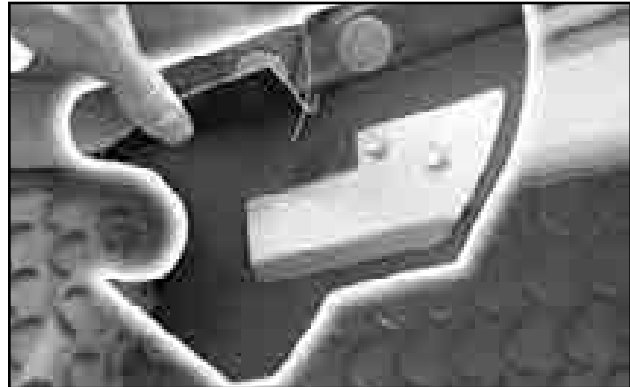


Fig 233 - Flashing clamp

24. Use Flashing Clamps to hold corner flashing in place.
  - Use self-tapping screw.
  - Drill into hopper frame, just above the belt.

25. Fasten the rest of the flashing to their brackets, on both sides.

26. **IMPORTANT:** After the flashing is installed, work the point of the corner flashing down, around the roller.



Fig 234 - Tuck corner flashing below roller

**Note:**

Cable guides should already be fastened to the hopper frame. If not, attach them now.

27. Attach a cable guide inside the front bracket on the hopper hitch.
28. Attach another guide to the corner of the hitch frame.
29. Bolt a third and fourth cable guide to the frame, at the transition.
30. Make a small opening in the centre, at the front of the hopper canvas, to access the hoop inside.
  - Work a cable thimble around the hoop tube, inside the canvas.
31. Thread the cable through a swage.
  - String the cable around the thimble, inside the canvas.
  - Insert the end of the cable into the swage.
  - Tighten up the cable and swage.
  - Crimp tight.
32. Tuck the thimble into the canvas.
33. String the cable through each cable guide, around the corner and to the winch.
34. Insert the cable into the winch.
  - Secure with a bolt.
35. Crank the winch to tighten the hopper cable.



Fig 235 - Cable thimble



Fig 236 - Cable guides



Fig 237 - Transition cable guide



Fig 238 - String cable

36. Work rubber tubing over the canvas frame, to protect the canvas edges.



Fig 239 - Rubber tubing

The hopper is complete.



Fig 240 - Finished open transition hopper



## Section 8: INSTALL UNDERCARRIAGE

### 8.1 TUBE ONTO UNDERCARRIAGE

#### **⚠ CAUTION**

OVERHEAD EQUIPMENT HAZARD  
Secure raised equipment.  
Use caution when working under tube.

1. Raise the tube to give clearance for the undercarriage.
2. Place the undercarriage in position below the tube.
3. Lower the tube so the Roller Slide sits in the roller at the top of the undercarriage.
  - Keep most weight supported by the winch.
4. Position the edge of the Slide Roller, so it sits in the groove of the roller.
  - Lower tube frame, to bear weight on roller.
  - Let the Undercarriage roller lay against the top edge of the Slide.



Fig 241 - Move undercarriage below tube



Fig 242 - Rest tube slide on undercarriage roller



Fig 243 - Slide in roller grooves

5. Attach the Slide Track Angle Iron to both ends of the Slide, to keep the undercarriage roller inside.
  - Use 1/4 x 1 inch (6.3 x 25.4 mm) bolts.
  - Bolt one on lower end of Slide.
  - Use 2 bolts on upper side.

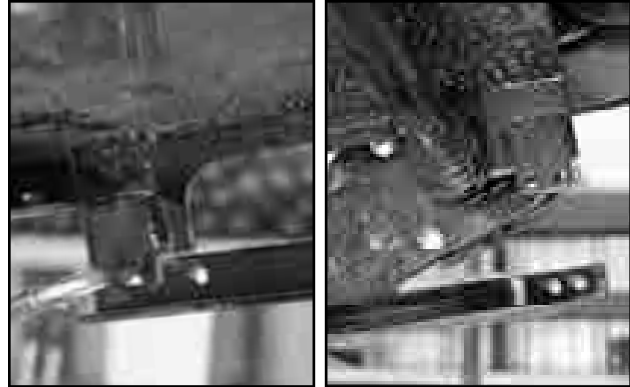


Fig 244 - Slide track angle iron

6. Fasten other the angle Iron for the opposite side of the Slide.

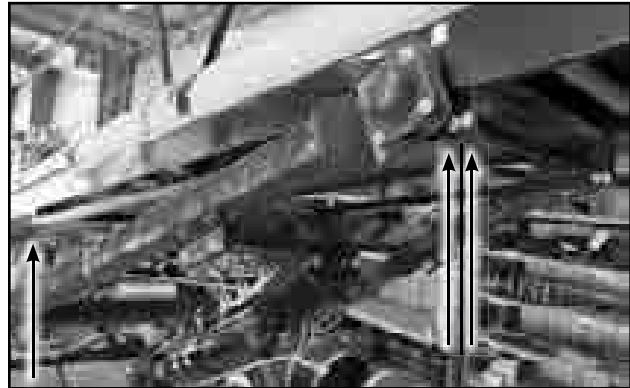


Fig 245 - Slide track angle iron

7. Position the Undercarriage Main Frame Tubes inside, with Saddle arms to the outside.

**Note:**

Lift tube, move arms,  
to be able to fit bolts into holes



Fig 246 - Saddle arms to undercarriage tubes

8. Insert the bolts through the saddle arm and connect the main frame tube.
  - Use 5/8 x 2 inch (19 x 50 mm) bolts.
  - Insert bolts from outside.
  - Snug up only.



Fig 247 - Saddle bolts

9. Repeat the process for the other Saddle arm.
  - Use 5/8 x 2 inch (19 x 50 mm) bolts.
  - Insert bolt from outside
10. Tighten bolts on both sides.



Fig 248 - Saddle bolts

11. Bolt the Motor Mount Levelling Arm Mount Tab to the opening in the windguard, just above the drive box.



Fig 249 - Motor mount leveling arm mount tab

12. Bolt the Levelling Arm bracket to the cradle frame below the engine.

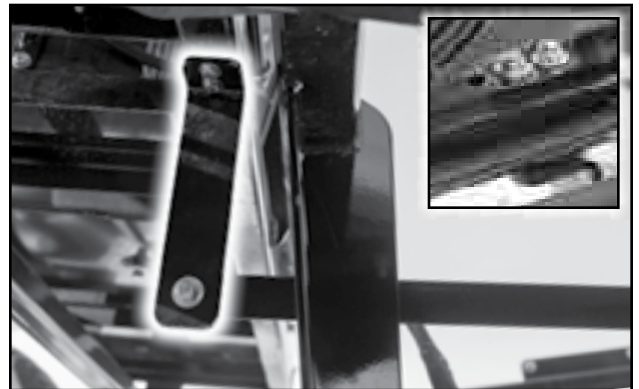


Fig 250 - Motor mount leveling arm

13. Fasten one end to the Arm Mount Tab.
  - Use 3/8 x 1-1/4 inch bolts.
  - Use 3 washers, one on either end of the bolt and one between the brackets.
14. Connect the other end to the Tab on the Cradle Assembly
  - Use 3/8 x 1-1/4 inch (9.5 x 31.7 mm) bolts.
  - Use 3 washers, one on either end of the bolt and one between the brackets.



Fig 251 - Motor mount leveling arm mount tab on cradle

**8.1.1 Attach Windguards to Drive Box:**

**IMPORTANT:**

Because the tube needs to flex during assembly, the windguards remained free from the Drive Box, until now.

15. The windguards can now be secured to Drive Box.

- Use self-tapping screws.
- Attach the guard to the front and back of the Drive Box.

16. Repeat on the other side.

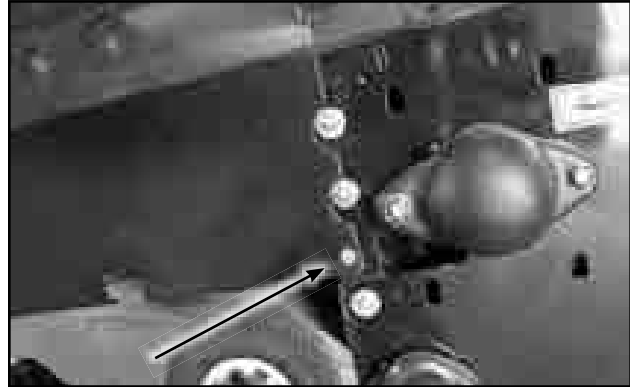


Fig 252 - Attach windguard to drive box

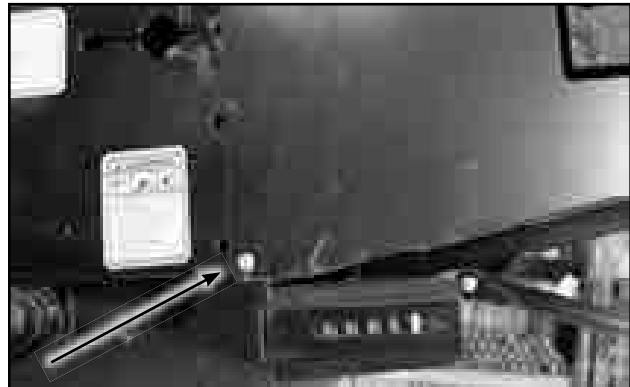


Fig 253 - Attach windguard to drive box

**8.1.2 Tighten Bridging Clamps:**

17. Tighten U-bolts on Cable Bridging Support Arm.



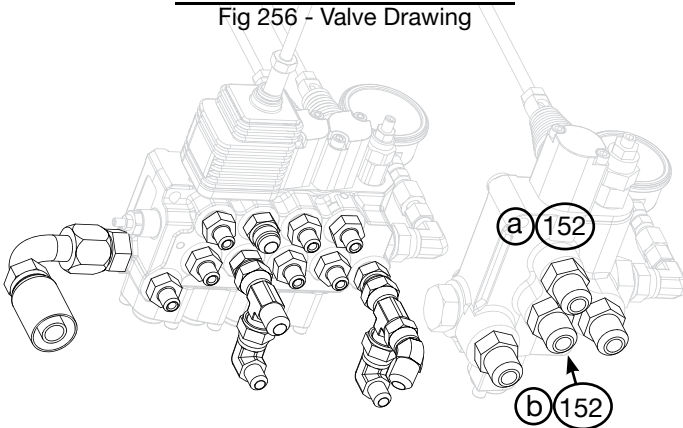
Fig 254 - Cable bridging clamps

## 8.2 HYDRAULICS AND ELECTRICAL

**Note:**

Refer to the hydraulic schematics for fittings and hose placement.

Fig 256 - Valve Drawing



- Unroll the two 3/4 x 152 inch (12'-8") hoses from on the undercarriage.

**IMPORTANT:**

Be sure the hoses will not be pinched under the cradle, or rub against the wheel.

- Finish clamping the two hoses along the undercarriage arms.

**Note:**

Where possible, use existing screws holding windguards.

- Add a clamp block on top of the windguard, fasten it to the undercarriage saddle.
- Attach the first hose (a) to the outside port on the hydraulic motor.
- Attach the second hose (b) to the inside port on the motor.

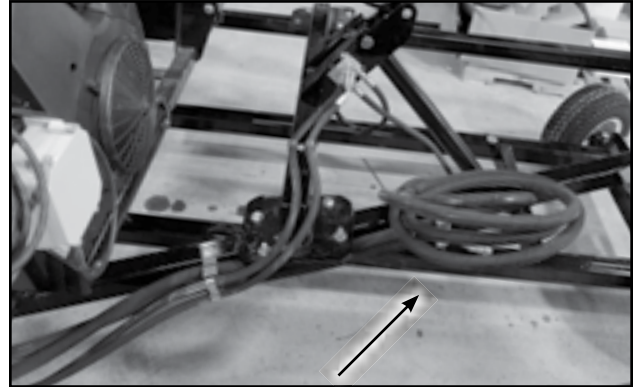


Fig 255 - 3/4 Inch hydraulic hoses



Fig 257 - Clamp hoses

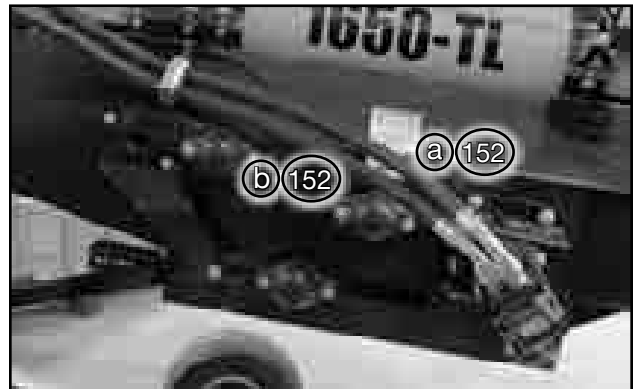


Fig 258 - Hydraulic motor hoses

23. Route the electrical cable from the tube to the junction box at the hydraulic valves.
24. Zip-tie the hoses together.



Fig 259 - Zip-tie hoses and cables

25. Bolt the Hydraulic Valve Cover into place, to cover and protect the hose/valve connections.

If your conveyor includes the optional lights and actuator package, a wiring harness with the control box, is included. The lights and discharge actuator should be connected already.



Fig 260 - Hydraulic valve hose cover

26. Attach the wiring harness control box to the side of the Hydraulic Valve Cover.
27. Connect the battery.
28. Fill the hydraulic reservoir and the fuel tank.
29. Run the engine and test all the controls.

Your Truckload Conveyor is complete.

## **Section 9: REFERENCE**

This section contains detailed information, including drawings and schematics essential for the assembly process. For information not included here, or for a digital copy of this manual, please call your dealer or Convey-All Industries Inc. directly for assistance (1-800-418-9461).

**Note:**

To reduce the size of the electronic version of this manual, the Schematics and Drawings are contained in a supplementary document.

### 9.1 BOLT TORQUE

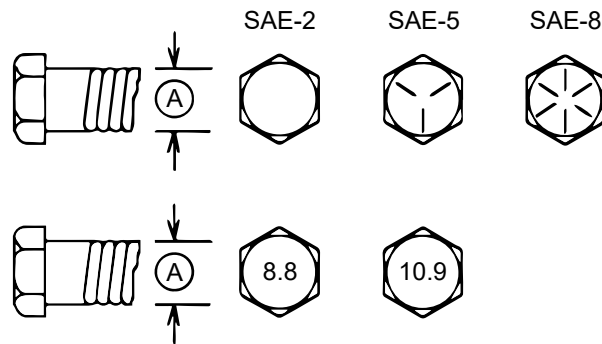
The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

ENGLISH TORQUE SPECIFICATIONS						
Bolt Diameter "A"	Bolt Torque*					
	SAE 2		SAE 5		SAE 8	
	(Nm)	(ft-lb)	(Nm)	(ft-lb)	(Nm)	(ft-lb)
1/4"	8	6	12	9	17	12
5/16"	13	10	25	19	36	27
3/8"	27	20	45	33	63	45
7/16"	41	30	72	53	100	75
1/2"	61	45	110	80	155	115
9/16"	95	60	155	115	220	165
5/8"	128	95	215	160	305	220
3/4"	225	165	390	290	540	400
7/8"	230	170	570	420	880	650
1"	345	225	850	630	1320	970

Table 1 - English Torque

METRIC TORQUE SPECIFICATIONS				
Bolt Diameter "A"	Bolt Torque*			
	8.8		10.9	
	(Nm)	(ft-lb)	(Nm)	(ft-lb)
M3	0.5	0.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	774
M30	1495	1103	2100	1550
M36	2600	1917	3675	2710

Table 2 - Metric Torque



Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

\* Torque value for bolts and capscrews are identified by their head markings.



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