OPERATOR'S MANUAL

DEMCO GRAIN CART

WITH

LANDFLEX TRACKS™

AND

EARTHFORM™ SUSPENSION

Contents

1 SPECIFICATIONS

TORQUE SPECIFICATIONS FOR HARDWARE						
BOLT SIZE	BOLT TYPE	BOLT GRADE	DRY FT-LB (N-m)	WET FT-LB (N-m)	LOCATION	QTY PER MODULE
M10	Hex Head Bolt	10.9	16 (21.7)	12 (16.3)	Wheel Hub Caps	60
M14	Hex Head Bolt	10.9	147 (200)	110(149)	(6)Cylinder Pins,(2)Belt Alignment Pins (5)Trail Arm Pins,(12)Bogie Roll Retainer	25
M20	Hex Head Bolt	10.9	400 (542)	300 (407)	(40) Idler Wheels, (5)Belt Support Base (6) Oscillation Pivot Cap Retainer	51
M24	Hex Head Bolt	10.9	733 (994)	550 (745)	(2) Belt Alignment Arm, (1)Tension Arm	3
3/8"	Hex Head Bolt	8	44(59.6)	33 (44.7	(2) Belt Support Spindle	12
1/2"	Hex Head Bolt	5	87(117)	65 (88)	(12) Belt Support Wheels	2

TORQUE SPECIFICATIONS FOR JIC 37° CONNECTORS						
		TORQUE		TOLERANCE		
SAE DASH SIZE	THREAD SIZE	FT-LB	N-m	FT-LB	N-M	FFFT
-6	9/16 -18	21	28	+/- 1	+/- 1	1 1/4

TORQUE SPECIFICATIONS FOR O-RING BOSS CONNECTORS					
		TORQUE		TOLERANCE	
SAE DASH SIZE	THREAD SIZE	FT-LB	N-M	FT-LB	N-m
-6	9/16 -18	27	37	+/- 2	+/- 3
-8	3/4 -16	48	65	+/- 2	+/- 3

LUBRICATION CAPACITIES				
AMBIENT TEMPERATURE RANGE	LUBRICATION SYSTEM	METHOD OF LUBRICATION	TYPE OF LUBRICATION	CAPACITY
20°F (7°C) to 100°F (38°C)	Bogie Wheel Hub	Oil Bath	SAE 15W40 Motor Oil	16 oz. (472mL)
	Idler Wheel Hub	Oil Bath	SAE 15W40 Motor Oil	22 oz. (650mL)
	Bushings	Grease	Mobilith SHC 220 Grease	

HYDRAULIC SYSTEMS SETTINGS		
SUB SYSTEM	CHARGED WITH	SETTING
Tension Cyl. Accumulator	Nitrogen	300 psi (2.07 MPa)
Tension Cyl. Hydraulic	Mobilfluid 424 Hydraulic Oil	550 psi (3.80 MPa)
Front Suspension Cyl. Accumulator	Nitrogen	1750 psi (12.1 MPa)
Rear Suspension Cyl. Accumulator	Nitrogen	250 psi (1.72 MPa)
Rear Suspension Cyl. Hydraulics	Mobilfluid 424 Hydraulic Oil	23" Pin to Pin

BEARING PRELOAD	
LOCATION	PRELOAD
Bogie Wheel Hubs	0.5 Tangs
Idler Wheel Hubs	1.0 Tang

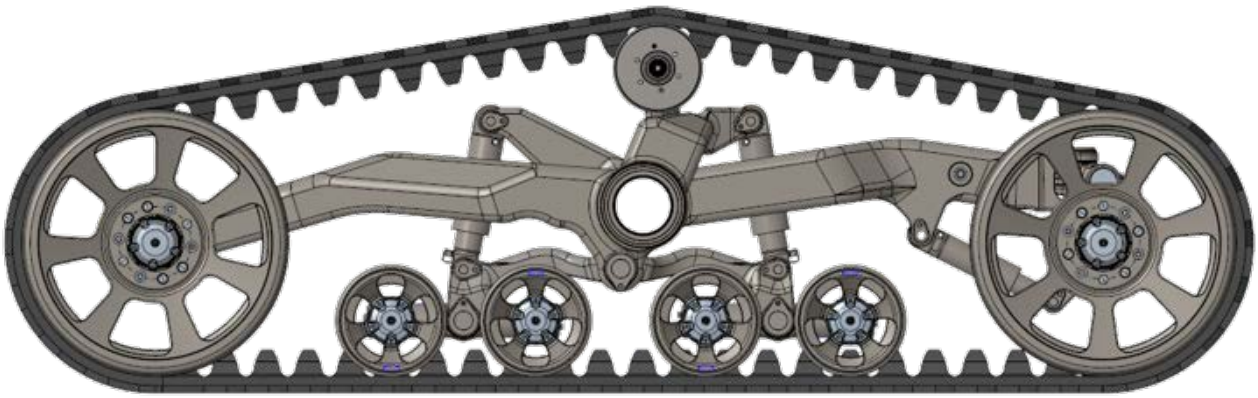


Figure 1-1 LandFlex Tracks with EarthForm Suspension

	Cart Model		
	1722	**2222**	
	Rated	**Rated**	**Maximum**
Cart Capacity, bu.	**1,700**	**2,200**	**2,350**
Empty Cart Weight, lbs.	40,000	41,000	41,000
Full Weight, lbs. @ 60lbs./bu.	142,000	173,000	185,000
Tongue Weight, lbs.	6,000	6,000	6,000
Ground Pressure, psi.	12.7	15.6	16.7
Maximum Travel Speed Empty, mph	**25**	**25**	**25**
Belt Width, in.	42	42	42
Belt Length, in.	372	372	372
Flat Plate Area/cart, sq. in.	10,690	10,690	10,690
Overall Module Length, in.	168	168	168
Overall Module Height, in.	50	50	50

2 ABBREVIATIONS AND SYMBOLS

CAUTION	Indicates possible hazardous situation that, if not avoided, may cause minor or moderate personal injury. This may also be used to indicate possible equipment damage, if not avoided.
	Indicates a prohibitive situation, DO NOT PERFORM
WARNING	Indicates possible hazardous situation that, if not avoided, may cause death or serious personal injury.
LH or RH	Left / Right Hand Side of Track Module

3 TERMINOLOGY

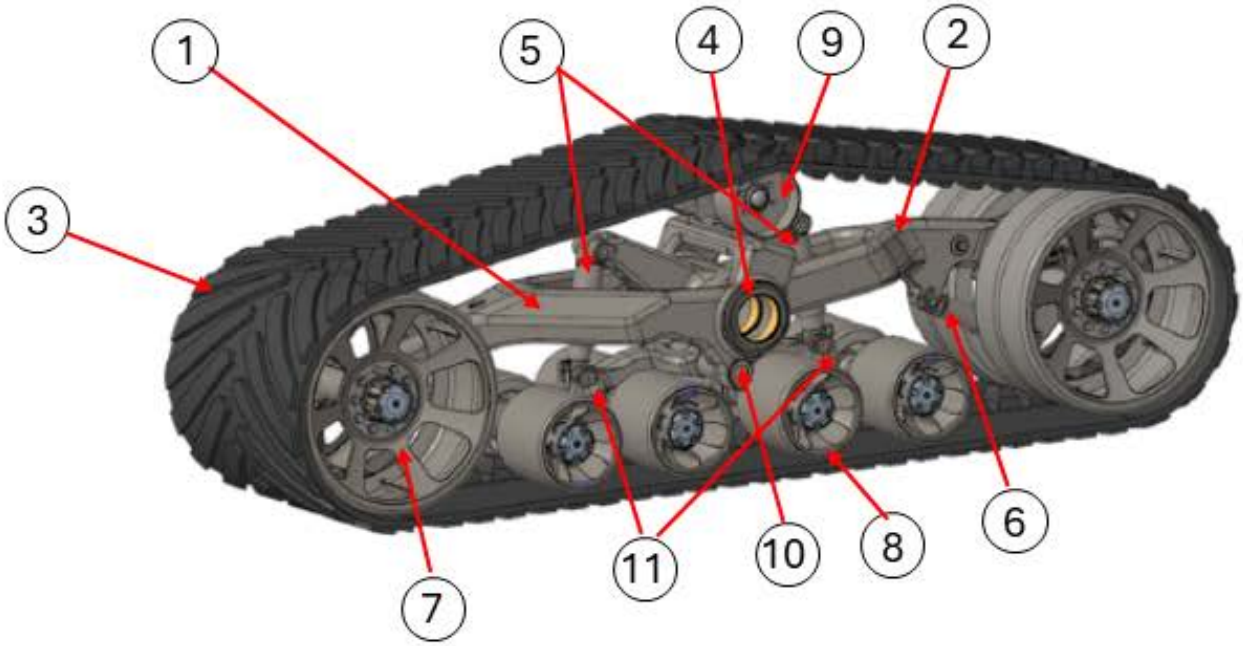


Figure 3-1 LandFlex Tracks with EarthForm Suspension Components

1. **FRONT FRAME**
2. **REAR FRAME**
3. **RUBBER TRACK BELT**
4. **OSCILLATION PIVOT**
5. **SUSPENSION CYLINDERS**
6. **HYDRAULIC TENSION CYLINDER**
7. **IDLER WHEELS**
8. **BOGIE WHEELS**
9. **BELT SUPPORT WHEELS**
10. **TRAIL ARM CONNECTION PIN**
11. **WALKING BEAM CONNECTION PIN**

4 SAFETY

WARNING Improper operation of this equipment can cause death or serious injury. Before using this equipment, make certain that every operator:

- Is instructed in safe and proper use of machine.
- Reads and understands the manual(s) pertaining to the machine.
- Reads and understands all safety decals on the machine.
- Clears area of other persons.
- Learns and practices safe use of machine controls in a safe, clear area before operating this machine.

WARNING Personal Protective Equipment (PPE) is required when working with this equipment. Wear the appropriate protective shoes, eye and face protection, hearing protection, and any other PPE appropriate for the work being conducted. Failure to comply could result in death or serious injury.

WARNING Crushing hazard. Follow lifting procedures for the grain cart and track module. Use proper capacity lifting equipment and suitable jack stands to support the grain cart Failure to comply could result in death or serious injury.

WARNING Never install, do maintenance, or repairs on the track system unless the machine on which it is mounted is turned off and the key is in the possession of the person doing the work.

WARNING Maintain travel speeds such that complete control and stability is practiced at all times. Reducing the speed when turning, crossing slopes and on rough, slick or muddy terrain will aid in controlling and stabilizing the vehicle.

WARNING Stay off slopes too steep for safe operation.

CAUTION DO NOT pull the cart with hard mud or debris lodged inside the module against rubber surfaces. After operating in muddy conditions clear the frame and wheels of mud and debris build up.

WARNING Never use tracks or frame as a step or standing platform to access or work on the grain cart or equipment. Failure to comply could result in death or serious injury.

WARNING Before starting vehicle, walk around to check for other people, tools, loose parts, etc. Keep everyone clear of the track modules when the tractor and grain cart are moving. Be aware of those persons working in the vicinity of the vehicle. Failure to comply could result in death or serious injury.

5 BREAK-IN AND BELT CARE/CONDITIONING

5.1 The following is the break-in procedure for the track system after installation of a new track system on a grain cart, or installation of a new belt on an existing track module.

5.2 Pull cart forward and back for 100 ft. before initial belt alignment check.

5.3 Measure distance from front idler hub to same position on rear idler hub on both inside and outside idler hubs. If inside and outside dimensions not the same, adjust the alignment bolt to rotate the rear idler axle so both dimensions are the same using the belt alignment procedure in Section 10. Repeat for other module.

5.4 Talc belts by placing a generous amount of talc on the guide lugs and inside of front and rear idler guide faces. Move the cart forward/rearward several times to insure most guide lugs have talc. If talc is not available, cat litter, oil dry or loose soil are good alternative materials.

5.5 Pull the cart for 1-2 miles at 10 mph, then check belt alignment and belt temperatures on guide lug faces, inside of idler guide surfaces and traction lug surfaces.

5.6 If guide lug end face temperatures inside vs. outside differ by more than more than 10 degrees F or belt guide surfaces are smearing or feel tacky, make undercarriage adjustments per Section 10, to realign belt to center guide lugs between idlers.

5.7 Add talc again to belt guide lugs and idler wheel guide surfaces.

5.8 Pull cart at 20-25 mph for 3-4 miles and check temperatures again and re-align if necessary. Belts will not always run exactly in the center of the idler guide surfaces but that is ok as long as the temperatures are not elevated and inside and outside are approximately the same temperatures.

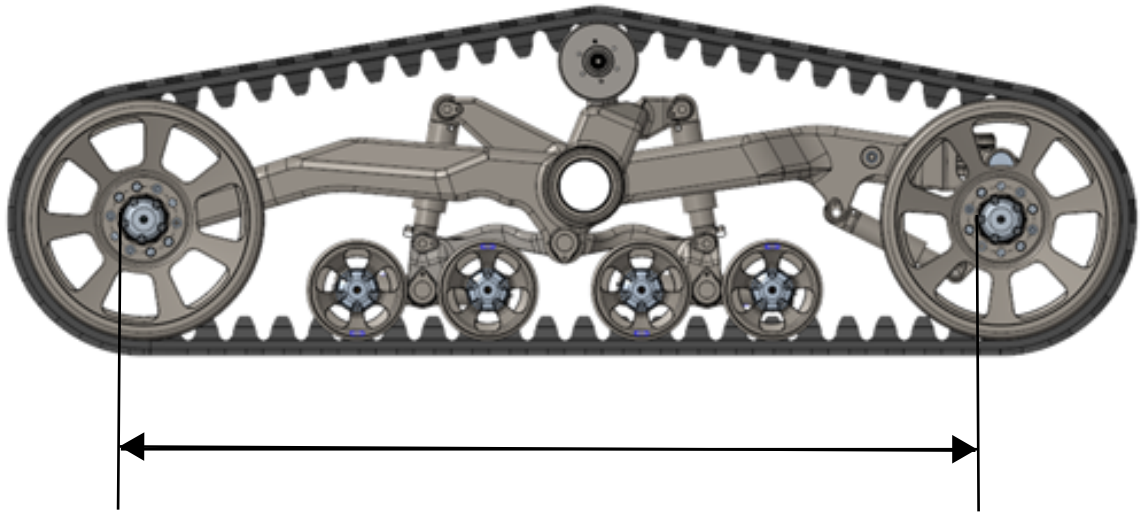


Figure 5-1 Belt Alignment Measuring

6 ROADING

6.1 The grain cart tank must be empty for all roading operation.

7 BELT WEAR PATTERNS

7.1 This section is meant to aid the Track Module owner in attaining maximum belt life. Certain working environments can cause accelerated belt wear. This section will describe common types of belt wear, common causes of this wear, and recommended action to ensure maximum belt life.

Pattern 1 Normal Wear

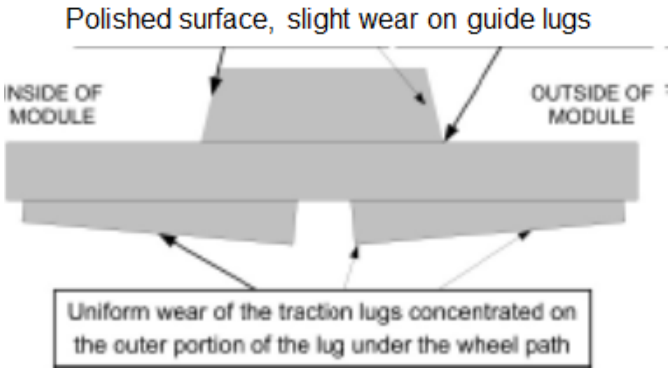


Figure 7-1 Normal Wear

7.2 Characteristics: This pattern is characterized by uniform scuffing on both sides of the guide lugs. The outer portions of the traction lug will exhibit more wear than the inner section of the traction lugs.

7.3 Cause(s): Normal Wear. The outer portions of the traction lugs may wear slightly faster than the center of the traction lugs due to operating on crowned roads.

7.4 Recommended Action: None

Pattern 2 Guide Lug End Erosion

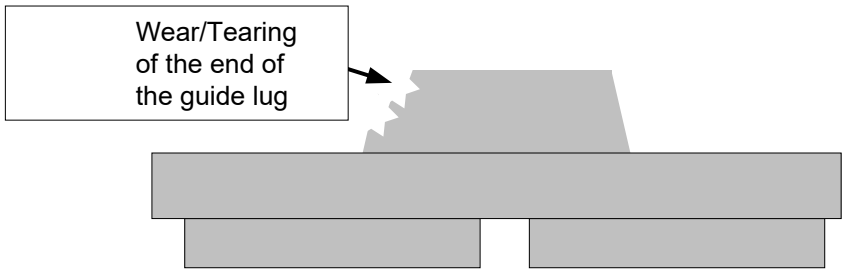


Figure 7-2 Guide Lug End Lug Erosion

7.5 Characteristics: Tearing / erosion of the side of the guide lug.

7.6 Cause(s): Excessive sharp turning under heavy loads, belt not properly aligned, or operating continuously transverse to a steep slope.

7.7 Recommended Action: Avoid excessive sharp turns, especially under heavy loads, re-align belt, try to operate the grain cart perpendicular to the base of the grade (straight up and down the hill). This type of wear is not covered by warranty.

Pattern 3 Stubble Damage

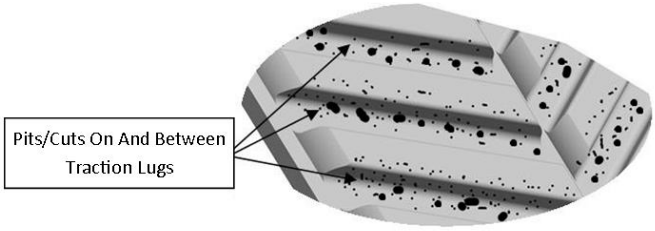


Figure 7-3 Stubble Damage

7.8 Characteristics: Pitting on the outside of the belt, typically found on the leading edge of the traction lugs and the areas between traction lugs.

7.9 Cause(s): Stubble damage due to operating on row crops. Note: Stubble damage to belts is never covered by warranty.

7.10 Recommended Action: When operating in corn or other rigid stalk crops, install stalk stompers to prevent stubble damage.

8 RECOMMENDED MAINTENANCE

8.1 Daily clean debris from inside track module. Clean wheel surfaces and any debris between wheels and frame.

8.2 Daily check hub oil levels visually through transparent caps

8.3 Visually check belt alignment by inspecting ends of guide lugs and inside belt surfaces. A well broken in surface will be smooth with no evidence of rubber roughness.

8.4 Visually check suspension cylinder rod length so cylinder pin to cylinder pin is 23 ± 1/8 inches with empty grain cart. Visually check tension cylinder rod length so part of cylinder rod is exposed.

8.5 Annually grease belt support wheel hubs(2/module), walking beam connection pins(4/ module, both ends of pin), and trail arms (4/module located on underside of arms).

8.6 At 2,000 hours change oil in idler and bogie wheel hubs.

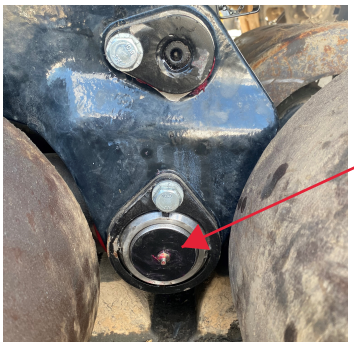
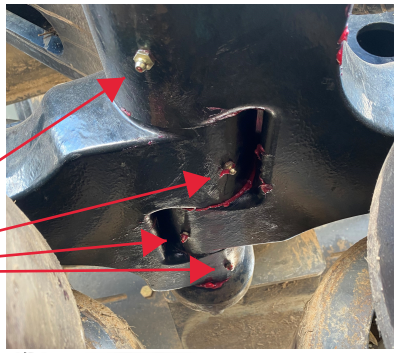


Figure 8-1, Grease Points

Walking Beam Connection Pins 4 / track module

Trail Arm Pins 4 / track module



After extended storage a small amount of oil may weep out of the wheel hub seals. This does not indicate a bad seal. If this occurs, wipe up any oil, run the equipment for 5 minutes at normal field speeds, and then check that the oil level in the hub is full to the bottom of the oil fill plug.

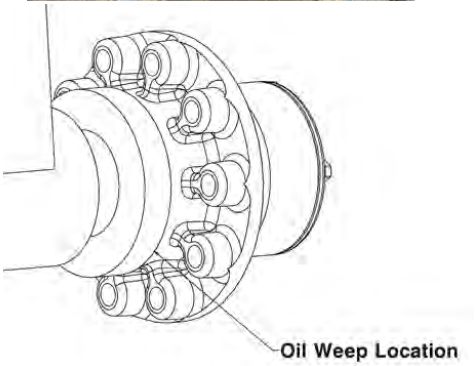


Figure 8-2 Wheel Hub Oil Weep

CHARGING HYDRAULIC SYSTEMS

NOTE: The suspension system must be charged with the grain cart empty, on a level surface, and connected to the towing tractor

Do not exceed 3000 psi (20684 kPa) while charging the hydraulic systems.

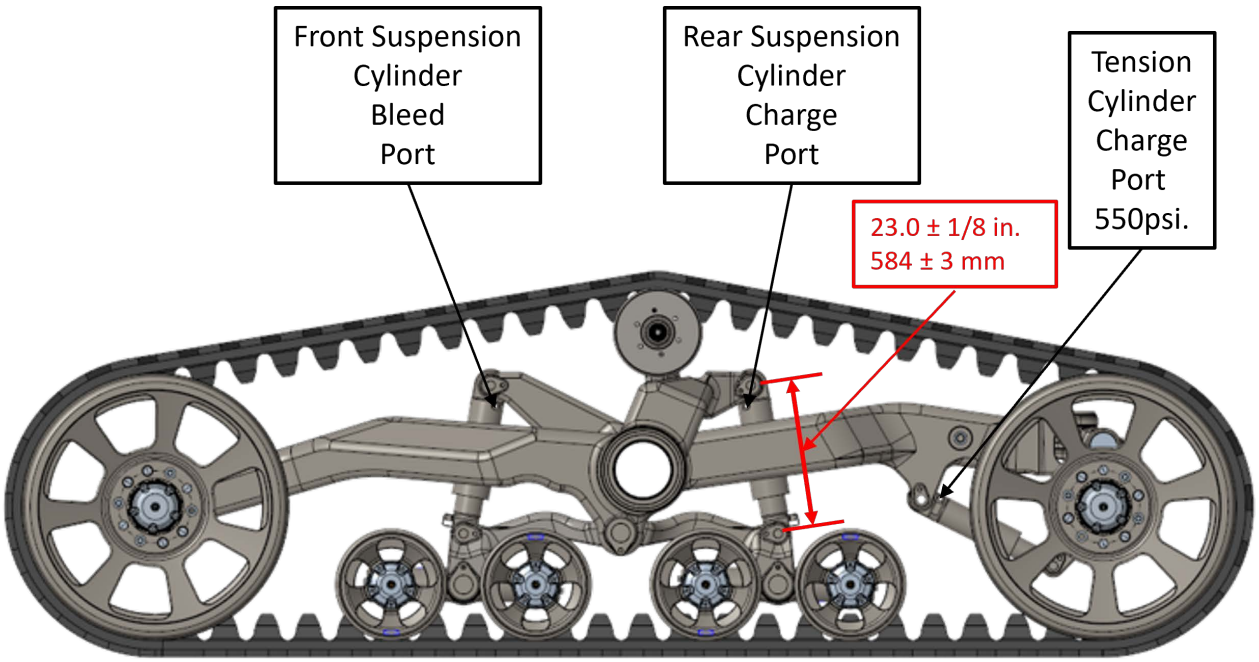


Figure 9.1 Hydraulic Charging Port Locations and Suspension Specification

9.1 Charge the suspension and tension hydraulic systems with the Free-standing Hydraulic Charge Unit T0200 provided with your cart. **Never use a tractor hydraulic system to charge the cylinders**.

9.2 Before connecting the charge unit to the track module, bleed the air from the hose and charge unit to insure clean oil is going into the cylinders. Place the discharge end of the charge hose into a bucket. Briefly cycle the pump until the discharge is free of air and any contaminant.

9.3 Purge entrained air from the cylinders and connecting hoses. Close the Bleeder Valve on the Control Valve Assembly. Connect the Charge Control Valve to the suspension charge port located near the top of the rear suspension cylinder. Install one end of a clear, 1/4" dia. drain hose onto the bleed port on the front suspension cylinder and place the other end in a bucket. Open the bleeder valve on the front cylinder to release any pressure in the system so the cylinders are totally compressed, i.e. the suspension cylinders collapsed.

Figure 9 -2 T0200 Freestanding Hydraulic Charge Unit

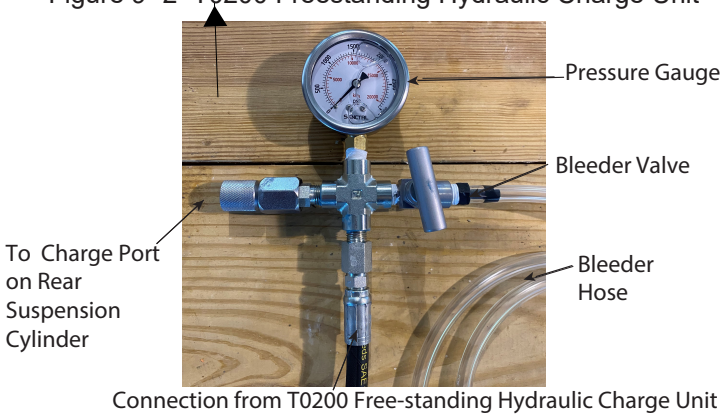


Figure 9 -3 Controls for Hydraulic Charge Unit

9.4 Pump oil into the system with the Charge Kit until there is no air visible in the drain hose from the front suspension cylinder. Then close the front suspension cylinder bleed port and charge the system to 300 psi. Wait 10 minutes for any entrapped air to settle. Open the bleeder valve on the front cylinder to release any pressure in the system. When the cylinders are fully compressed, pump oil into the system until there is no air visible in the drain hose from the front suspension cylinder. Repeat this process of pressurizing to 300 psi and then releasing several times to insure that all the air is out of the hose connecting the cylinders and the tops of the suspension cylinders.

9.5 Close the front cylinder bleeder valve, and charge the rear cylinder raising the cart until there a distance of 23 ± 1/8” from pin to pin on the rear suspension cylinder.

9.6 Remove the charge kit from the rear suspension cylinder and the drain hose from the front suspension cylinder.

9.7 Use the charge kit to charge the tension cylinder. The charge port is located on top of the tension cylinder. Connect the Charge Control Valve and pump hydraulic oil into the system until the pressure reaches 550 psi (3,792 kPa).

9.8 Open the Bleeder Valve on the Charge Control Valve allowing the cylinder to compress. Check for air bubbles in the bleeder hose. Close the bleeder valve, and charge the tension cylinder back to 550 psi (3,792 kPa).

9.9 Repeat charging and bleeding the cylinder until no air bubbles are visible in the bleeder hose. Charge the tension cylinder back to 550 psi (3,792 kPa).

9.10 Remove the charge kit from the tension system.

9.11 Check the rear suspension cylinder length. If it has changed more than 1/8 in. from the 23.0" setting connect the charge kit to the suspension system to adjust the length of the rear suspension cylinder back to 23.0” from pin to pin. Remove the charge kit.

9.12 Use the charge kit to verify the tension cylinder pressure. Adjust the pressure back to 550 psi (3,792 kPa) if necessary.

10 BELT ALIGNMENT PROCEDURE

10.1 Measure the distance from front idler hub to same position on rear idler hub on both inside and outside idler hubs. If the inside and outside dimensions not the same or if the belt is rubbing hard against one side of the guide wheel surfaces, adjust the alignment bolt.

10.2 Loosen the alignment bolt 1/2 turn on the opposite side of the rear frame where the belt is rubbing hard, i.e. if the belt is rubbing on the right end of the guide lugs, loosen the bolt on the left side of the track module 1/2 revolution.

10.3 Then tighten the opposite alignment bolt to 550 ft.lbs. torque (wet).). Note: Idler hub center to center distances, inboard to outboard, may vary slightly to achieve optimum track alignment.

10.4 Pull the grain cart for up to 1 mile and recheck the belt running position. Belts will not always run exactly in the center of the idler guide surfaces but that is ok as long as the temperatures are not elevated and inside and outside are approximately the same temperatures.

10.5 Recheck torque on belt alignment bolts to make sure they are at 550 ft. llbs.(wet).

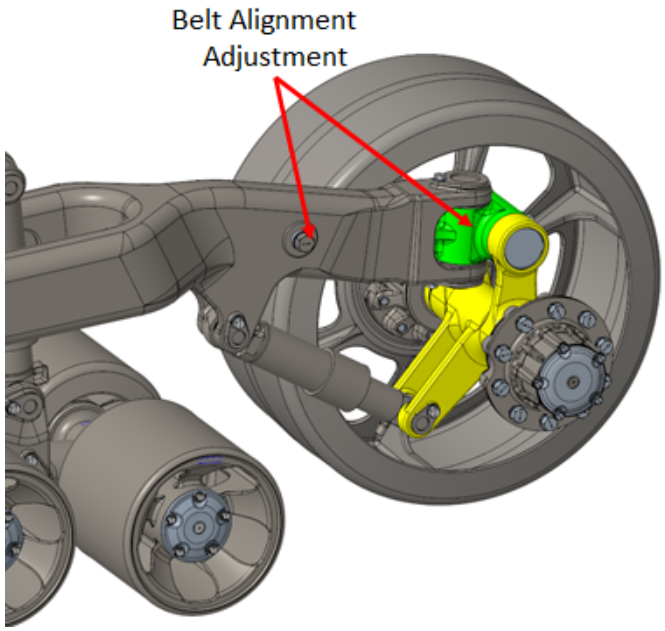


Figure 10-1 Belt Alignment Adjustment Mechanism

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