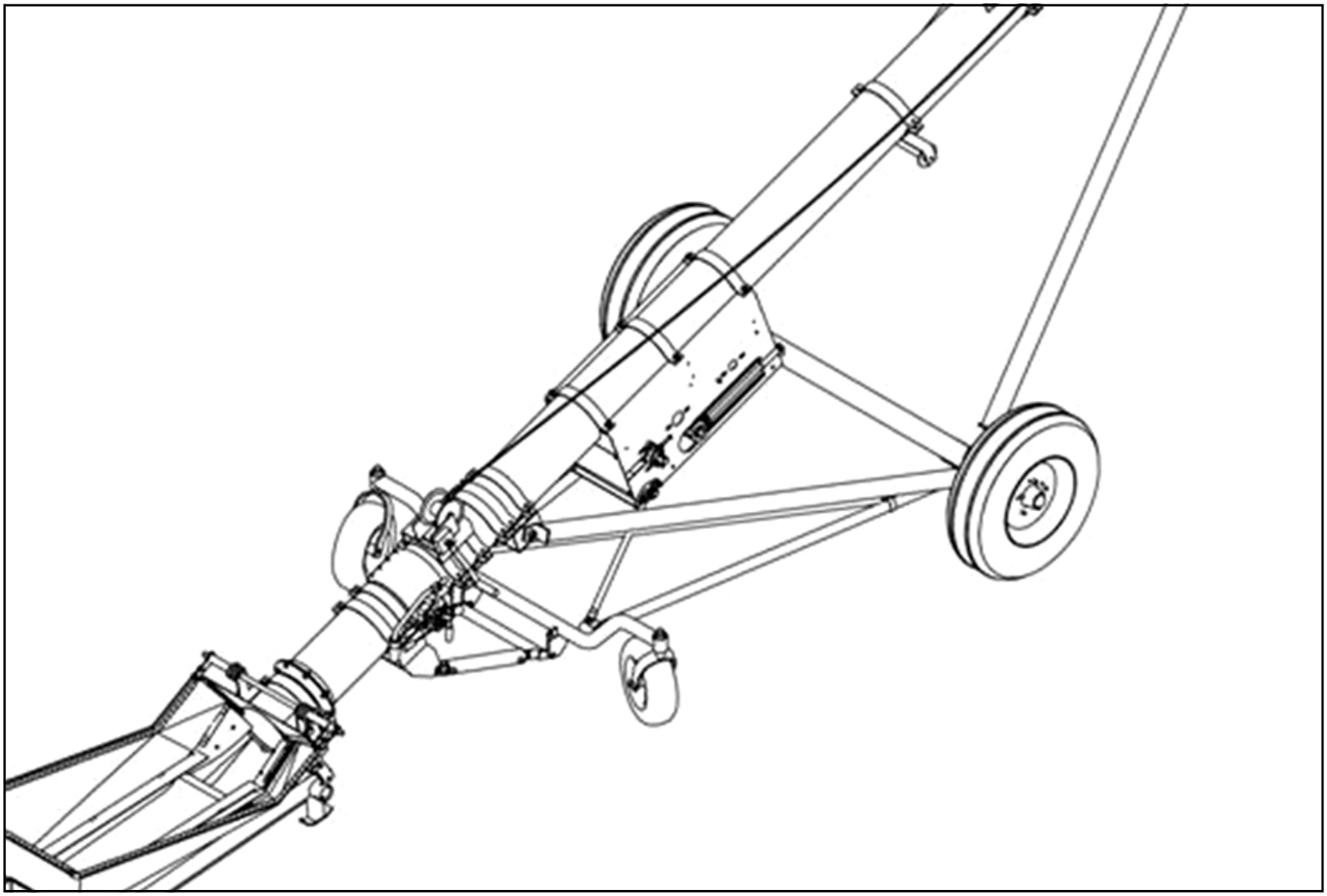
BATCO

CARRIAGE-STYLE WHEEL MOVE

1330, 1335, 1340, 1345, 1535, 1540 & 1545 SERIES
ASSEMBLY & OPERATION MANUAL



Read this manual before using product. Failure to follow instructions and safety precautions can result in serious injury, death, or property damage. Keep manual for future reference.

Part Number: P1512103 R1
Revised: Jun/13

AGI
AG GROWTH INTERNATIONAL

ORIGINAL INSTRUCTIONS

This product has been designed and constructed according to general engineering standards[a]. Other local regulations may apply and must be followed by the operator. We strongly recommend that all personnel associated with this equipment be trained in the correct operational and safety procedures required for this product. Periodic reviews of this manual with all employees should be standard practice. For your convenience, we include this sign-off sheet so you can record your periodic reviews.

Date	Employee Signature	Employer Signature

This product has been designed and constructed according to general engineering standards[a]. Other local regulations may apply and must be followed by the operator. We strongly recommend that all personnel associated with this equipment be trained in the correct operational and safety procedures required for this product. Periodic reviews of this manual with all employees should be standard practice. For your convenience, we include this sign-off sheet so you can record your periodic reviews.		

a. Standards include organizations such as the American Society of Agricultural and Biological Engineers, American National Standards Institute, Canadian Standards Association, International Organization for Standardization, and/or others.

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1. Introduction

Congratulations on your choice of a Batco wheel move to complement your agricultural operation. This equipment has been designed and manufactured to meet the needs of the discriminating buyer for the efficient movement of the 13 and 15 Series Grain Conveyors.

Safe, efficient, and trouble-free operation of your wheel move requires that you, and anyone else who will be involved with assembling the wheel move; read and understand the safety, assembly, and operation procedures contained within the manual.

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Batco distributor or dealer if you need assistance, information, or additional copies of the manual.

Operator Orientations: directions left, right, front, and rear, as mentioned throughout this manual, are as seen from the tractor driver seat facing in the direction of travel when the unit is being transported.

This manual is a supplement to the Batco Conveyor Assembly Manual. Please refer to that manual for safety precautions before assembling the wheel move kit.

2. Safety

2.1. GENERAL SAFETY INFORMATION

The Safety Alert symbol identifies important safety messages on the product and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety messages.

Why is SAFETY important?

- Accidents disable and kill.
- Accidents cost.
- Accidents can be avoided.

SIGNAL WORDS: Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the definitions below as a guideline.

DANGER	
	Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death.

WARNING	
	Indicates a hazardous situation that, if not avoided, could result in serious injury or death.

CAUTION	
	Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

NOTICE
Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

YOU are responsible for the **SAFE** use and maintenance of your equipment. **YOU** must ensure that you and anyone else who is going to work around the equipment understands all procedures and related **SAFETY** information contained in this manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Makethese practices a working part of your safety program.

Important: *Below are general instructions that apply to all safety practices. Any instructions specific to a certain safety practice (e.g., Operational Safety), can be found in the appropriate section. Always read the complete instructional sections and not just these safety summaries before doing anything with the equipment.*

- It is the equipment owner, operator, and maintenance personnel's responsibility to read and understand **ALL** safety instructions, safety decals, and manuals and follow them when assembling, operating, or maintaining the equipment. All accidents can be avoided.
- Equipment owners must give instructions and review the information initially and annually with all personnel before allowing them to operate this product. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- Use this equipment for its intended purposes only.
- Do not modify the equipment in any way without written permission from the manufacturer. Unauthorized modification may impair the function and/or safety, and could affect the life of the equipment. Any unauthorized modification of the equipment voids the warranty.
- Do not allow any unauthorized person in the work area.

2.2. ASSEMBLY SAFETY

- Read and understand the instructions to get to know the sub-assemblies and hardware that make up the equipment before preceding to assemble the product.
- Do not take chances with safety. The components are large, heavy, and can be hard to handle. Always use the proper tools, stands, jacks, and hoists for the job.
- Always have two or more people assembling the equipment. Because of the weight, do not attempt assembly alone.

2.3. OPERATION SAFETY

- Have another person nearby who can shutdown the equipment in case of accident.
- For powered products: before servicing, adjusting, or repairing, unplug and place in neutral or off position, stop the engine or motor, remove ignition key, or lock out power source and wait for all moving parts to stop.
- Be familiar with machine hazard area. If anyone enters hazard areas, shut down machines immediately. Clear the area before restarting.

- Keep hands, feet, hair, and clothing away from all moving and/or rotating parts.
- Do not allow riders on the conveyor, tractor, or towing vehicle when transporting.
- Stay away from overhead obstructions and power lines during operation and transporting. Electrocution may occur without direct contact.
- Do not operate machine when any guards are removed.
- Set park brake on tractor before starting.
- Lower conveyor to its lowest position before moving or transporting or when not in use.
- Inspect lift cable (if equipped) before using conveyor. Replace if frayed or damaged.
- Be sure that conveyor is empty before raising or lowering.

2.4. PLACEMENT SAFETY

- Move conveyor only with a tractor/towing vehicle. The only exception is moving a Top Drive conveyor, since these units are balanced differently.
- Stay away from overhead power lines when moving conveyor. Electrocution can occur without direct contact.
- Chock conveyor and tractor wheels front and rear before operating.
- Keep conveyor as low as possible when moving. Raise only when it is next to storage facility.
- Be familiar with the machine hazard area. If anyone enters hazard area, shut down machine immediately. Clear the area before restarting.
- Operate the conveyor on level ground free of debris. If ground is uneven, anchor the conveyor to prevent tipping or upending.

WARNING	
	When releasing conveyor from the towing vehicle, test the intake end for downward weight. Do not raise the intake end above drawbar height. Conveyor upending may occur.

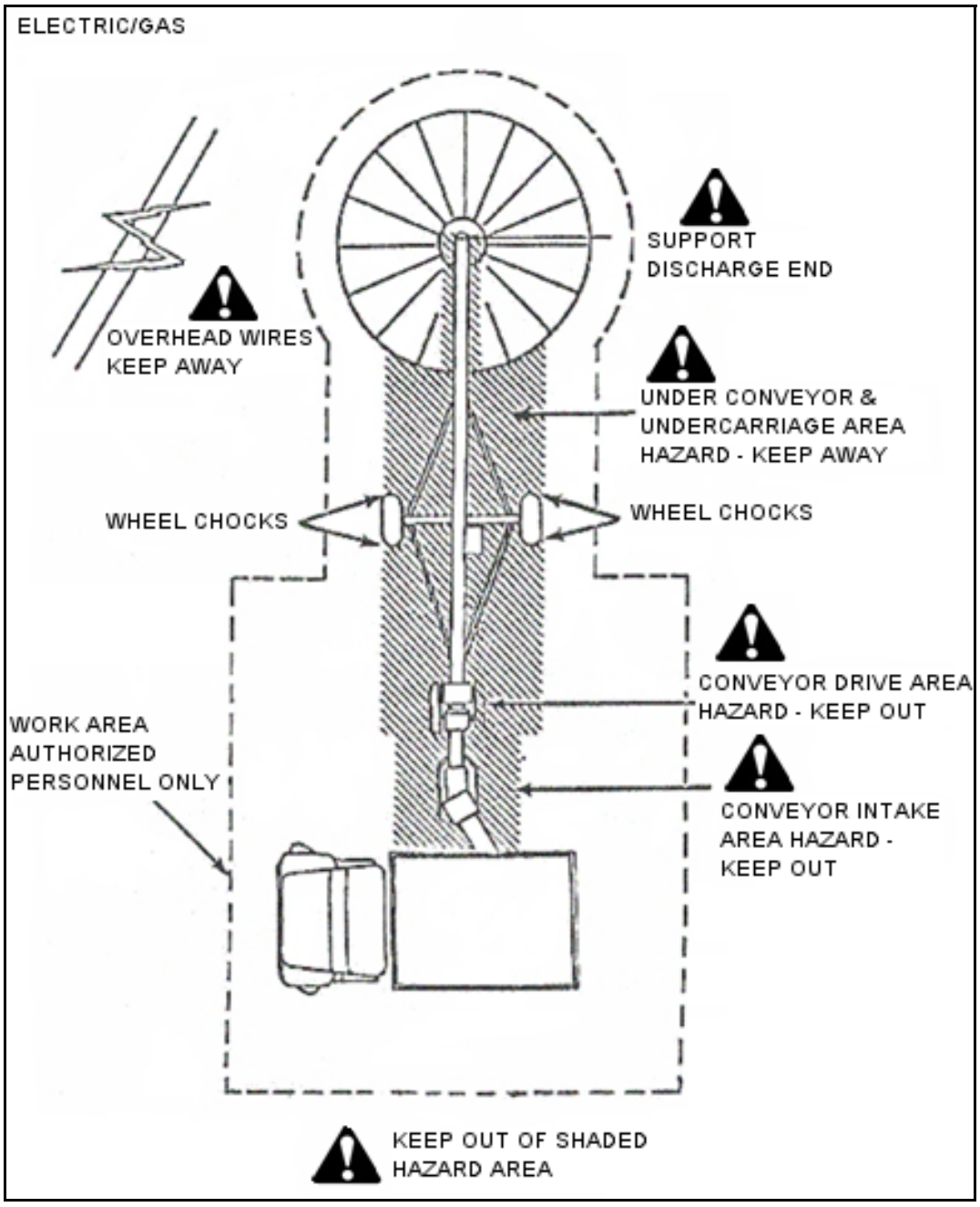


Figure 2.1 Workplace Hazard Area (Electric/Gas Drive)

2.5. MAINTENANCE SAFETY

- Place all controls in neutral or off, stop engine or motor, remove ignition key or disable power source and wait for all moving parts to stop before servicing, adjusting, or repairing.
- Before applying pressure to a hydraulic system, make sure all components are tight and that hoses and couplings are in good condition.
- Relieve pressure from hydraulic circuit before servicing or disconnecting from tractor.
- Place stands or blocks under the frame before working beneath the machine.

- Support conveyor tube before attempting maintenance on the undercarriage assembly. Where possible, conveyor should be in the full down position.
- After maintenance is complete, replace and secure all safety guards and safety devices.
- Remove all tools and unused parts from machine before operation.
- Remove buildup of grease, oil, and debris.
- Inspect all parts. Ensure parts are in good condition and installed properly.
- New safety decals must be applied if old decals have been damaged, removed, become illegible, or if any parts with decals have been replaced. New safety decals are available from your distributor, dealer, or factory.

Use only genuine Batco replacement parts or equivalent. Replacement parts must meet ASAE standards or serious injury may result. Use of unauthorized parts will void the warranty. If in doubt, contact Batco or your Batco dealer.

Do not modify the equipment. Unauthorized modification may impart the function or safety of the equipment, could affect the life of the equipment, and will void your warranty.

2.6. HYDRAULIC SAFETY

- Always place all hydraulic controls in neutral and relieve system pressure before disconnecting from tractor or working on hydraulic system.
- Keep all components in the hydraulic system tightly secured, clean and in good condition.
- 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 adhesive. 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 hands to isolate and identify a leak.
- Before moving a hydraulic cylinder, ensure that the attached component is safely secured.

WARNING	
	Hydraulic fluid can cause serious injury if it penetrates the skin. If it does, see a doctor immediately. • Relieve pressure before disconnecting hydraulic line. • Wear proper hand and eye protection and use wood or cardboard, not hands, when searching for leaks.

2.7. TRANSPORT SAFETY

- Read and understand all the information in the operation manual regarding procedures and safety when moving or transporting the conveyor.
- Check with local authorities regarding transport on public roads. Obey all applicable laws and regulations.
- Before raising/lowering/moving the conveyor, make sure the area around the conveyor is clear of obstructions and/or unauthorized personnel. Never allow anyone to stand on or beneath conveyor while transporting or placing conveyor.
- Wheels must be free to move when raising or lowering conveyor.
- Do not stand between towing vehicle and conveyor when hitching.
- Make certain that the hitch pin is in place and the safety chain is properly attached. Use a type of hitch pin that will not permit conveyor to separate from towing vehicle.
- Attach conveyor to towing vehicle with a pin and retainer. Always attach safety chain(s).
- Fully lower conveyor before transporting.
- Always travel at a safe speed. Do not exceed 20 mph (32 km/h). Reduce speed on rough roads and surfaces. Use caution when making corners or meeting traffic. Discharge end can swing dramatically on sharp corners. Ensure you are clear of obstructions and oncoming traffic.
- Use extreme care and minimum ground speed when operating or transporting on hillsides, over rough ground, or near ditches or fences.
- Always attach an SMV (slow moving vehicle) sign before transporting conveyor, and equip the conveyor with the necessary lights for transportation where required by law. Always use hazard warning flashers on the tractor/towing vehicle when transporting unless prohibited by law.
- Do not allow riders on the conveyor, the tractor/towing vehicle or skid steer during transport.
- Stay away from overhead obstructions and power lines when operating and transporting. Electrocution can occur without direct contact.
- Long conveyors have a large turning radius. Allow ample room for turning, as discharge end may swing dramatically.
- Review the work safety area diagram before starting work.

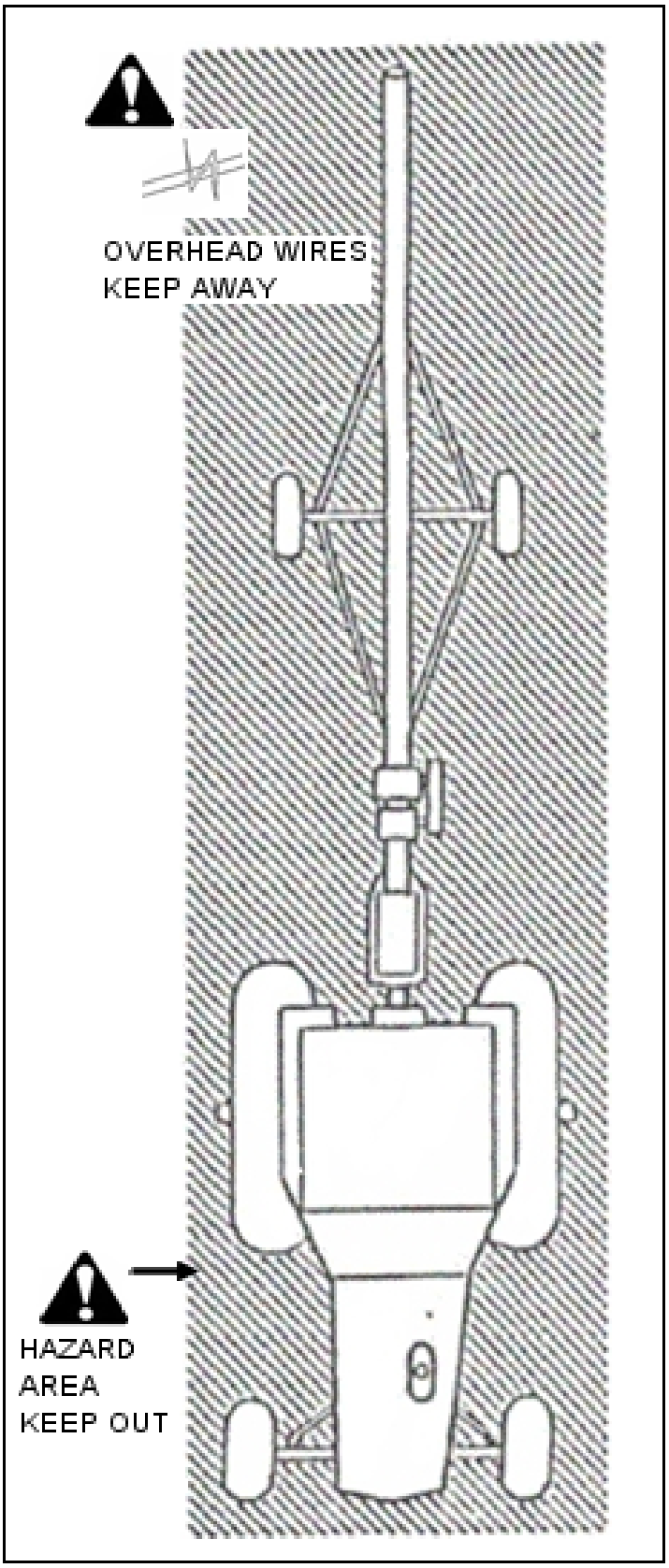


Figure 2.2 Transport Hazard Area

2.8. STORAGE SAFETY

- Store the unit in an area away from human activity.
- Do not permit children to play on or around the stored machine.
- Fully lower conveyor before storing.

2.9. ENGINE SAFETY

- Be sure to stop engine andremove key or lock out power before inspecting or servicing engine
- Refer to engine operation manual for further details.

2.10. TIRE SAFETY

1. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion that may result in serious injury or death.
2. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
3. Have a qualified tire dealer or repair service perform required tire maintenance.
4. When replacing worn tires, make sure they meet the original tire specifications. Never under size the replacement tire.
5. Do not weld to tire rim with the tire mounted on rim. This action may cause an explosion which could result in serious injury or death.
6. Inflate tires to the manufacturer's recommended pressure.

2.11. SAFETY DECALS

- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Safety decals are available from your distributor, dealer, or factory.

2.11.1. DECAL INSTALLATION

1. Decal area must be clean and dry, with a temperature above 50°F (10°C).
2. Decide on the exact position before you remove the backing paper.
3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
5. Small air pockets can be pierced with a pin and smoothed out using the sign backing paper.

2.11.2. SAFETY DECAL LOCATIONS

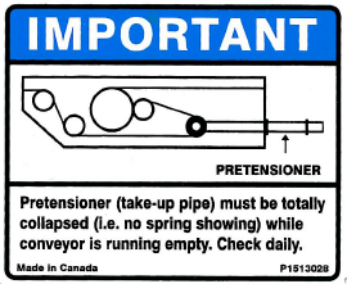
Replicas of the safety decals that are attached to the equipment are shown in the figure(s) that follow. Proper safety procedures require that you familiarize yourself with the various safety decals and the areas or particular functions that the decals apply to, as well as the safety precautions that must be taken to avoid serious injury, death, or damage.

Batco reserves the right to update safety decals without notice. Safety decals may not be exactly as shown.

DECAL # P1513022

DECAL # P1513008

DECAL # P1513008



DECAL # P1513028

DECAL # P1513002

3. Assembly

WARNING *Before continuing, ensure you have read and understand the relevant information in the safety section. Safety information is provided to help prevent serious injury, death, or property damage.*

Before starting the assembly of your wheel move, please read the following instructions carefully, and familiarize yourself with all the sub-assemblies and hardware making up the wheel move.

When tightening all fasteners, See Section 8.2. for proper torque specifications.

3.1. PRE-ASSEMBLY

3.1.1. GENERAL

1. Select an assembly area that is level, has a firm or hard surface, and is free of debris. Be sure it is large enough to allow access from all sides when the components are being assembled.
2. Bring all the tools, blocks, stands, jacks and hoists to the assembly area before starting.
3. The following tools and equipment are required to assemble the machine:

3	standard socket set and wrench set
1	torque wrench
1	standard 25’ (7.62 m) tape measure
1	2’ (0.61 m) level
1	tire gauge
1	tire hook

CAUTION	
	Ensure conveyor is in fully lowered position with hopper end on the ground before proceeding with the assembly of the wheel move.

3.1.2. CRIMPING TUBES

Note: *During the installation of all u-clamps (3) on the grain conveyor tubes, they will need to be tightened until the tube begins to deform or crimp. This locks the u-clamps into place to prevent loosening during operation. The term "crimp" will be used to describe this technique throughout this manual. (See Figure 3.1).*

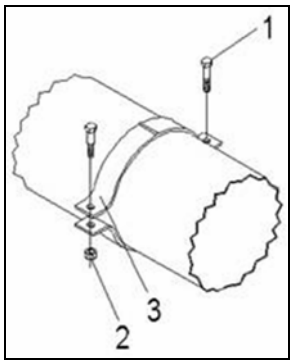


Figure 3.1 U-Clamp

3.2. FRAME ASSEMBLY

Table 3.1 Carriage-Style Wheel Move Frame

ITEM	DESCRIPTION	PART NUMBER	P/P	STR
1	AXLE 30-45	13030100	1	1
2	AXLE TAB RIGHT	13120012	1	1
2	AXLE TAB LEFT	13120013	1	1
3	BOLT HEX 1/2" X 1-1/2"	P0115013	2	2
4	NUT NYLOCK 1/2"	P0134008	2	2
5	CROSSBRACE CLAMP BAND	P020200321	2	2
6	V-FRAME	P020202038	1	1
7	TRANSPORT PIPE (35 STD, FL)	P020200319-76	2	2
7	TRANSPORT PIPE (45 STD, FL)	P020200319-101	2	2
8	TIRE AND RIM	P029900316A	2	6
9	BOLT HEX 3/8" X 1-1/2"	P0115047	2	2
10	BOLT HEX 3/8" X 1"	P0115046	6	6
11	NUT NYLOCK 3/8"	P0134006	8	8
12	BOLT HEX 1/2" X 1-1/2"	P0115013	2	2
13	CROSSBRACE	P020200320	2	2
14	BOLT HEX 3/8" X 2" GR8	P0118050	2	2
15	NUT NYLOCK 3/8"	P0134006	2	2
16	WHEEL MOVE SUSPENSION BRACKET	15010067	1	1
17	2" U-CLAMP	13012002	2	2
18	BOLT 1/2" X 2-1/2" GR8	P0118017	4	4
19	LOCKNUT 1/2"	P0134008	4	4
20	HYDRAULIC CYLINDER	P020200308	2	2
21	BOLT HEX 1/2" X 2-1/2"	P0118017	2	2
22	NUT NYLOCK 1/2"	P0134008	2	2
23	BOLT HEX 3/8" X 2"	P0118050	2	2
24	NUT NYLOCK 3/8"	P0134006	2	2
25	BAR HANDLE	P020200305	1	-
26	VALVE 3 SPOOL - TWO HANDLE	P0861009	1	-

Table 3.1 Carriage-Style Wheel Move Frame

27	SWIVEL 8 ORB X 1/2” F 90	P0820012	1	-
28	BOLT HEX 5/16” X 3”	P0115064	3	-
29	CONTROL HANDLE	P020200303	1	-
30	ELBOW 6 ORB X 3/8” JIC	P0820611	6	-
31	SWIVEL 8 ORB X 1/2” F 90	P0820012	1	-
32	CONTROL PANEL RING	P020200301E	11	-
33	NUT NYLOCK 5/16”	P0134005	3	-
34	RAM EXTENSION (35 STD, FL)	13120014	1	1
34	RAM EXTENSION (45 STD)	13120015	1	1
34	RAM EXTENSION (45 FL)	13120016	1	1
35	WHEEL YOKE WELDMENT	P020200314A	2	2
36	1" COLLAR	P029900248	2	2
37	BOLT HEX 3/4” X 6”	P0115044	2	2
38	NUT NYLOCK 3/4”	P0134012	2	2
39	TANDEM AXLE WITH BEARINGS	P0202015-2	-	2
40	DOUBLE WHEEL YOKE	P020202020	-	2
41	BOLT HEX 3/8” X 2”	P0115050	-	2
42	BOLT 1/2” X 1-1/2”	P0115013	-	2
43	STEERING SUB-ASSEMBLY	-	-	1
44	BOLT 3/8” X 2”	P0115050	-	4
45	NUT NYLOCK 3/8”	P0134006	-	4
46	AXLE CAP FOR OVERCENTER	P11130185	-	2
47	LOCK WASHER 1/2”	P0152008	-	2
48	BOLT 1/2” X 2” GR8	P0118016	-	2
49	NUT NYLOCK 3/8”	P0134006	-	2
50	NUT NYLOCK 1/2”	P0134008	-	2
51	NUT NYLOCK 1/2”	P0134008	2	2
52	STEERING BAR	P020202023	-	1
53	STEERING BAR COLUMN WITH BEARINGS	P020202021	-	1
54	STEERING COLUMN PLATE	P020202021-1	-	1
55A	YOKE LINK ARM	P020206004	-	2
55B	STEERING STOP	P020202024	-	1
56	BOLT 1/2” X 2” GR8	P0118016	-	1
57	NUT NYLOCK 1/2”	P0134008	-	1
58	BOLT HEX 1/2” X 1-1/2”	P0115013	-	2
59	NUT NYLOCK 1/2”	P0134008	-	2
60	BOLT HEX 3/8” X 2”	P0118050	-	1
61	NUT NYLOCK 3/8”	P0134006	-	1
62	TIE ROD END (BALL JOINT) 1/2”	P020202063	-	2
62	1/2” X 8” ROD	P020202022-2	-	1

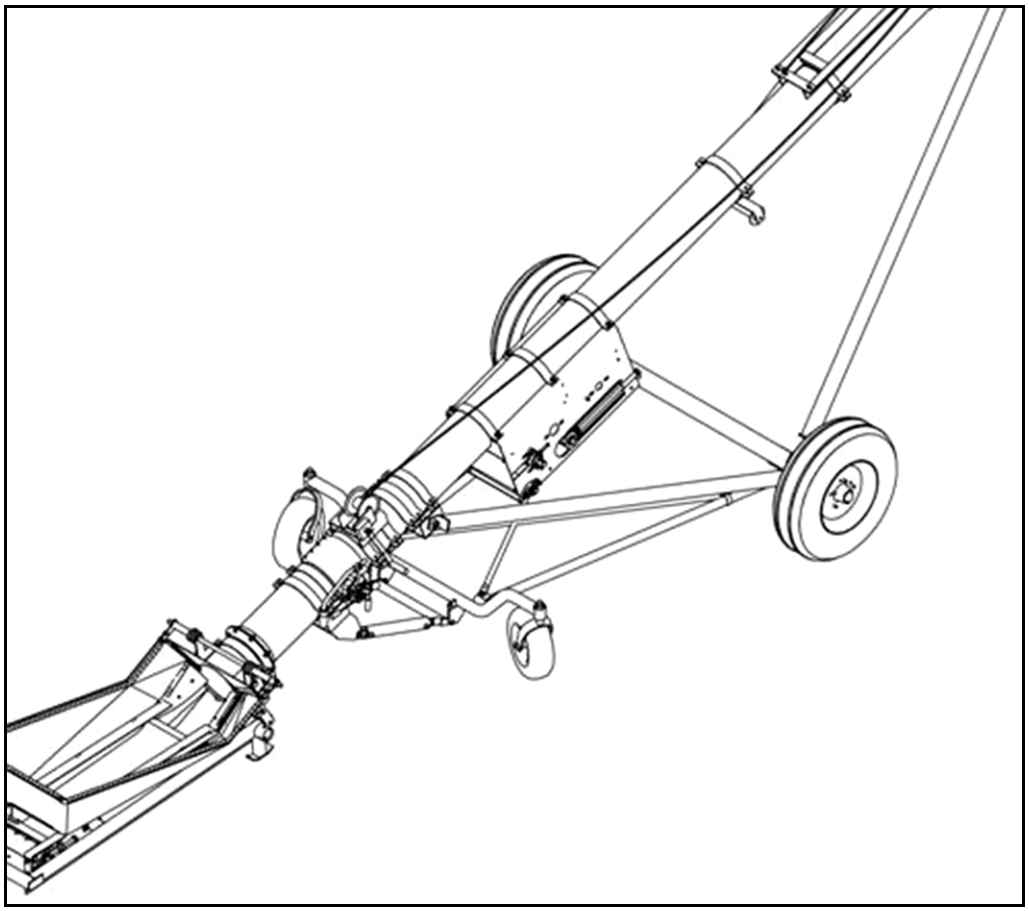


Figure 3.2 Carriage-Style Wheel Move Frame

3.2.1. AXLE PREPARATION

RETROFIT ASSEMBLY (Figure 3.3)

1. Prepare axle (1) for axle tabs (2) by removing paint from surface where the tabs are to be welded.
2. Install ring gear. See “Gear Drive Installation” on page 44 for details.
3. Weld the axle tabs to the axle at the dimensions A and B shown in Figure 3.3. Touch up paint.

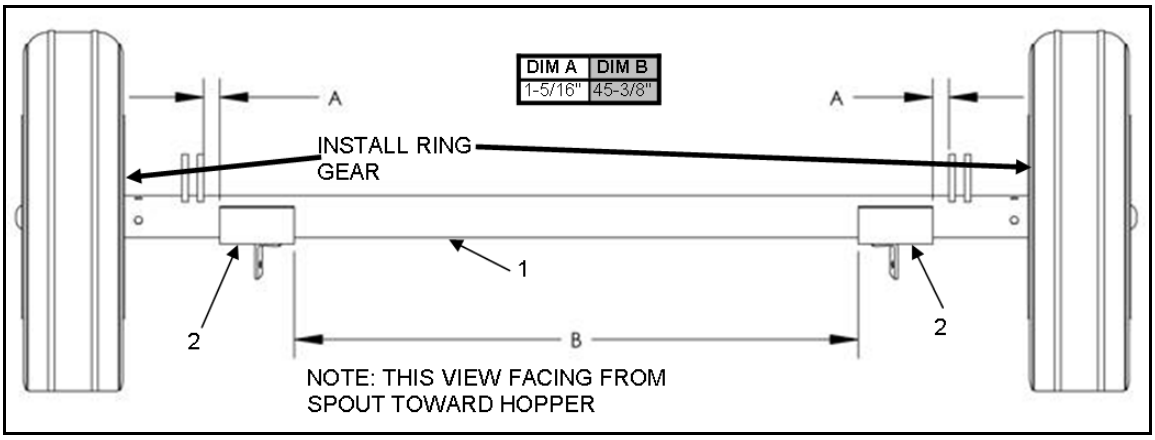


Figure 3.3 Axle and Axle Tabs

3.2.2. UNDERCARRIAGE ASSEMBLY

1. Bolt transport pipes (7) to axle (1) with bolts (3) and locknuts (4). See Figure 3.4, 3.5 and 3.6.

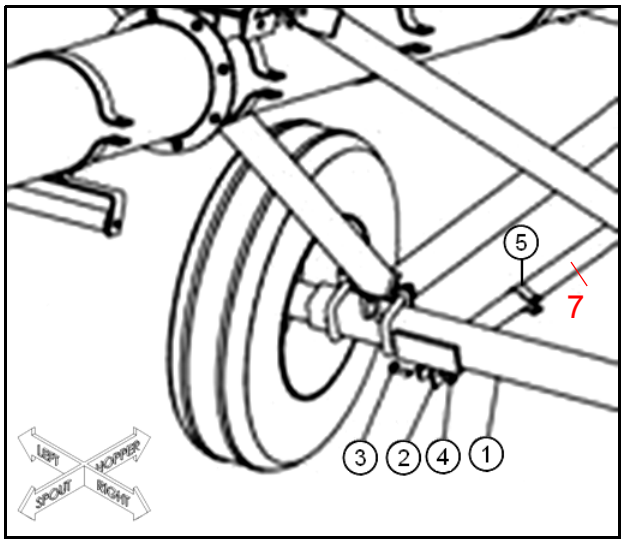


Figure 3.4

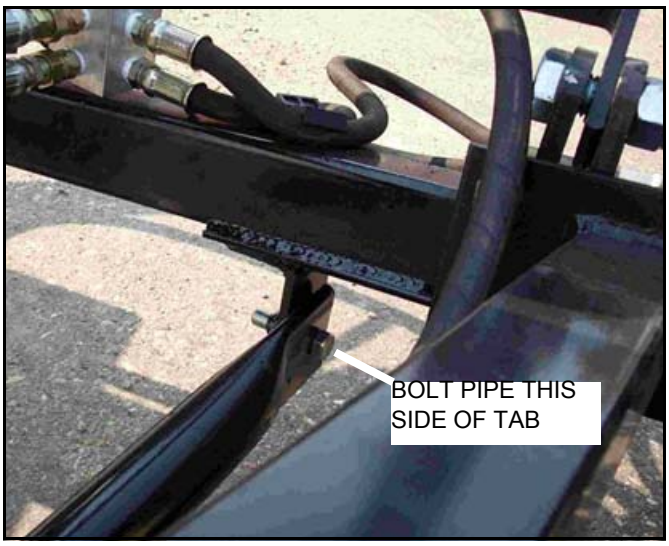


Figure 3.5

2. Fit the clevis end of the transport pipe (7) inside the clevis on the v-frame (6) with crossbrace (13). Connect together with bolts (9,10) and locknuts (11). Do not tighten. Refer to Figure 3.6.

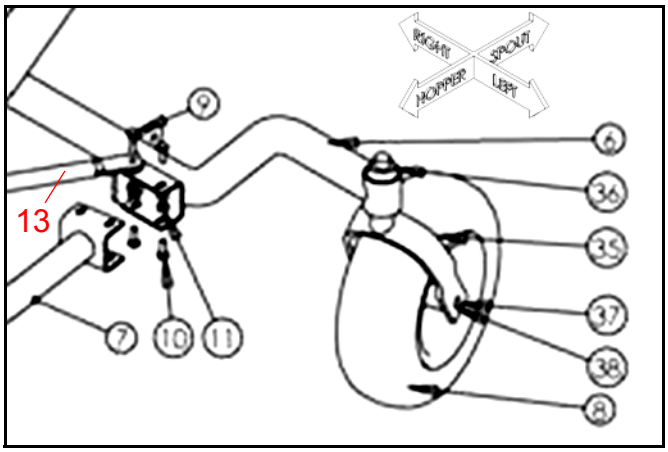


Figure 3.6

3. Attach the opposite end of the crossbrace (13) to the transport tube using clamp bands (5), bolts (14), and locknuts (15). Refer to Figure 3.7.

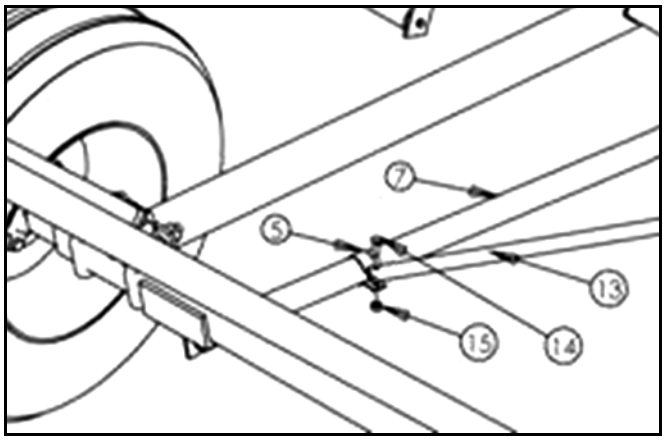


Figure 3.7

4. Attach the cross brace (13) to the v-frame (6) and mount one to the top side of the v-frame clevis and the other to the bottom. See Figure 3.6.
5. Connect the ram extension (34) to v-frame pipe (6) with bolts (12) and locknuts (51). See Figure 3.8.

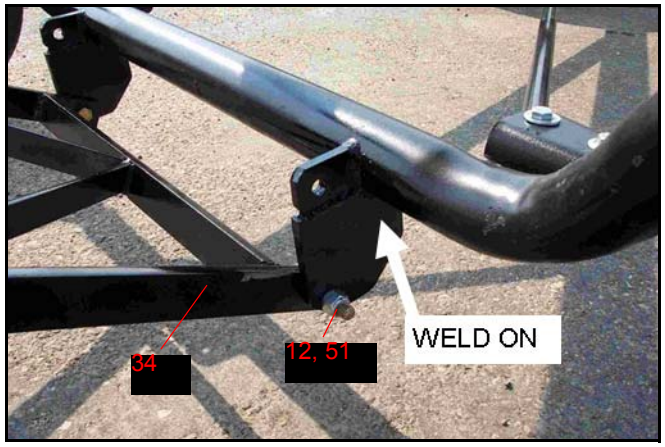


Figure 3.8

6. Loosely attach the wheel move suspension bracket (16) to the tube with u-clamps (17), bolts (18), and locknuts (19) at the dimension described in “Bracket Locations” on page 67. See Figure 3.9.

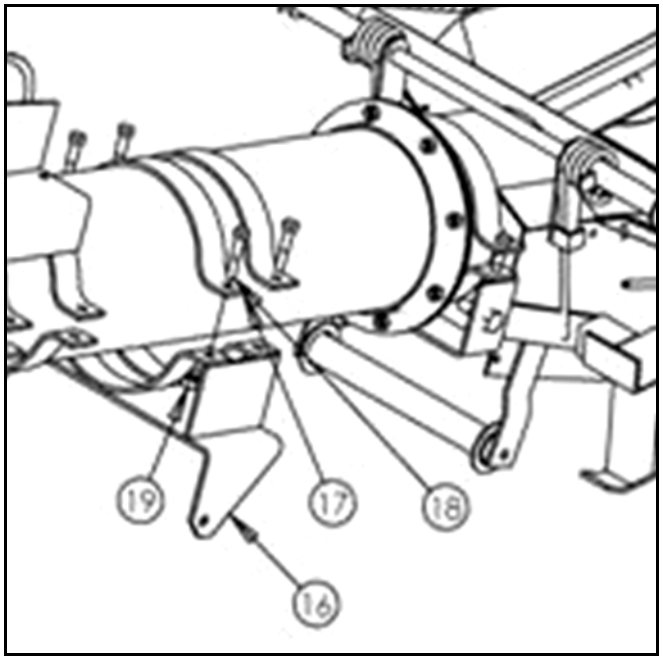


Figure 3.9

7. **Push/Pull Systems:** Bolt the control panel ring (32) to the tube. Do not tighten the bolts yet. Attach parts (25-33) to control panel ring (32). See Figure 3.10. See “Valve” on page 38 for details.

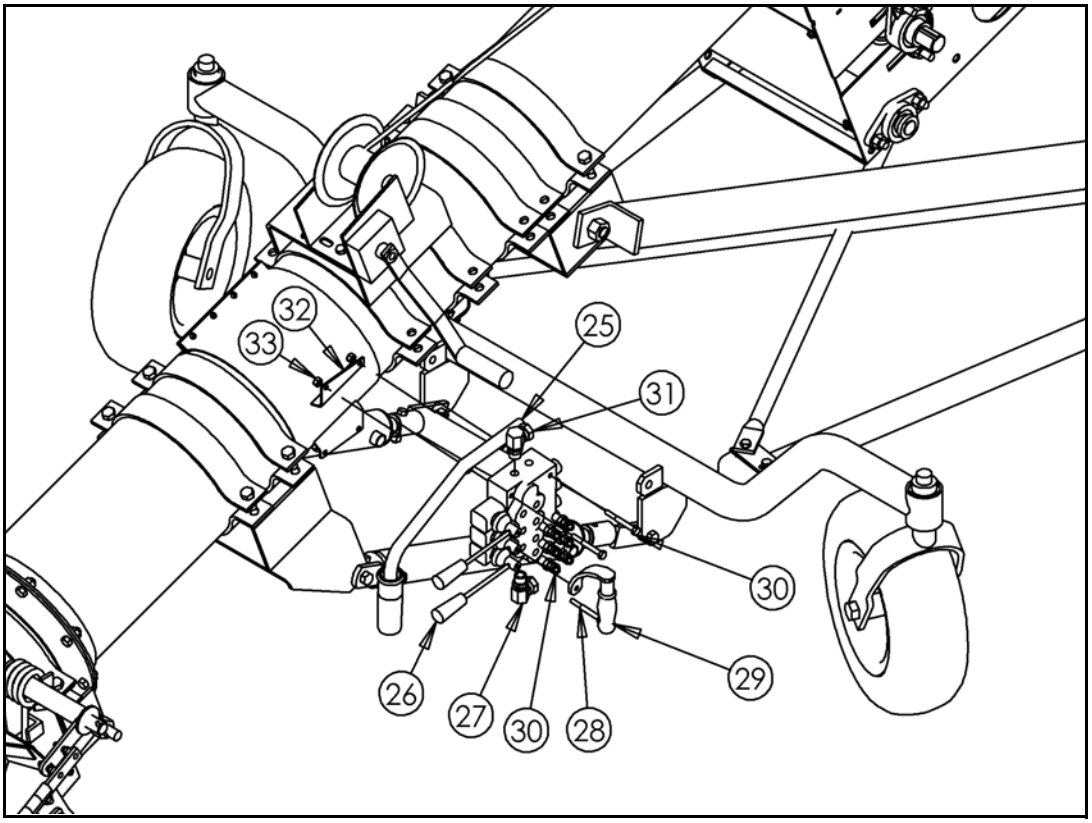


Figure 3.10

8. **Push/Pull Systems:** Install wheel yoke weldment (35) on v-frame, see Figure 3.6. Secure collar (36). Install tire (8) with bolt (37) and locknut (38). Repeat for opposite side.

3.2.3. HYDRAULIC CYLINDER ASSEMBLY

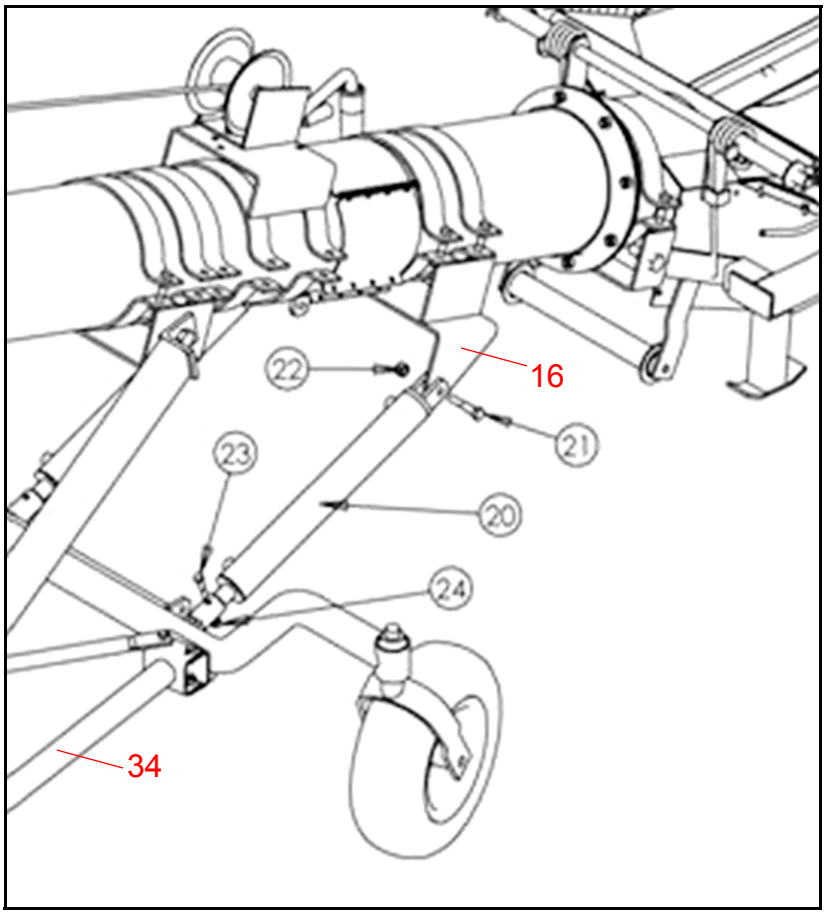


Figure 3.11

1. Connect the fully retracted cylinders (20) to the wheel move suspension bracket (16) and to the ram extension (34) with hardware supplied (21-24). See Figure 3.11.
2. Elevate the V-frame, undercarriage pipes, and ram assembly to form a straight line (transport position) as shown in Figure 3.12. Tighten the wheel move suspension bracket bolts.

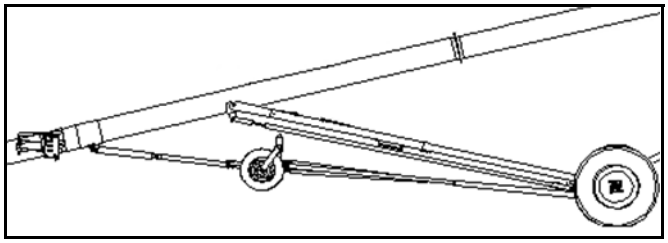


Figure 3.12

3.2.4. STEERING SUB-ASSEMBLY

Refer to Table 3.2 for the quantity ofeach component used and Figures 3.13 and 3.14 for the installation of the steering sub-assembly.

Table 3.2

Item	Description	Part No.	Qty
1	7/8” HANDLE GRIP	P020200344	2
2	STEERING ASSY W/ VALVE MOUNT	P020206032	1
3	STEERING STOP	P020206032-7	1
4	3-SPOOL VALVE	P021600006	1
5	BOLT HEX 5/16” X 2-1/2”	P0115063	2
6	NUT NYLOCK 5/16”	P0134005	2
7	SWIVEL 90 - #10 ORB X 1/2” FPT	P0820003	2
8	ELBOW #6 MORB X 3/8” MJIC 45 DEG	P0820611	6

1. Connect the steering link arm and tie rod linkage to the assembly with a 1/2” x 1-1/2” bolt and locknut, and 1/2” x 2” bolts and locknuts, respectively.
2. Build the steering assembly as follows (Figure 3.13):
   a. Attach the three spool valve (4) to the wheel move handle (1) with 5/16” x 2-1/2” bolts and locknuts (5,6).
   b. Place 45° elbows (8) in three-spool valve (4).
   c. Install swivels (7) on three spool valve.
   d. Slide steering stop (3) on wheel move handle, do not secure set screw.

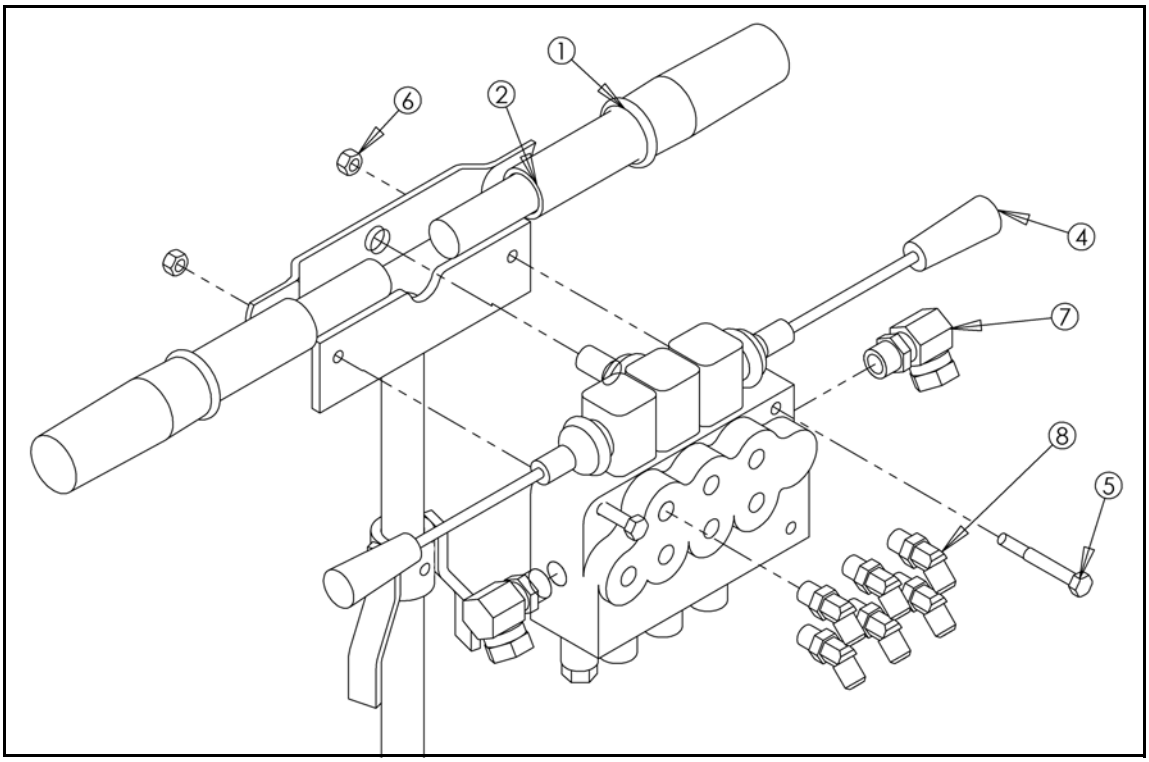


Figure 3.13

3. Install the steering assembly to the yoke link arm with a 1/4” x 2” bolt and locknut. Adjust until the tie rod is level.
4. Tighten the set screw on the steering stop once adjusted.

5. Ensure the steering assembly moves easily in both directions without obstruction.
6. Secure tandem axle (39) to v-frame (6) with axle cap (46), bolt (48) and lock washer (47).
7. Connect double wheel yoke (40) to tandem axle with yoke link arm (55A), bolt (41) and locknut (49).
8. Install tires (8) on double wheel yoke (40) with locknut (61).
9. Mount steering bar column (53) and plate (54) on tandem axle (39) with bolts (44) and locknuts (45). See Figure 3.14.

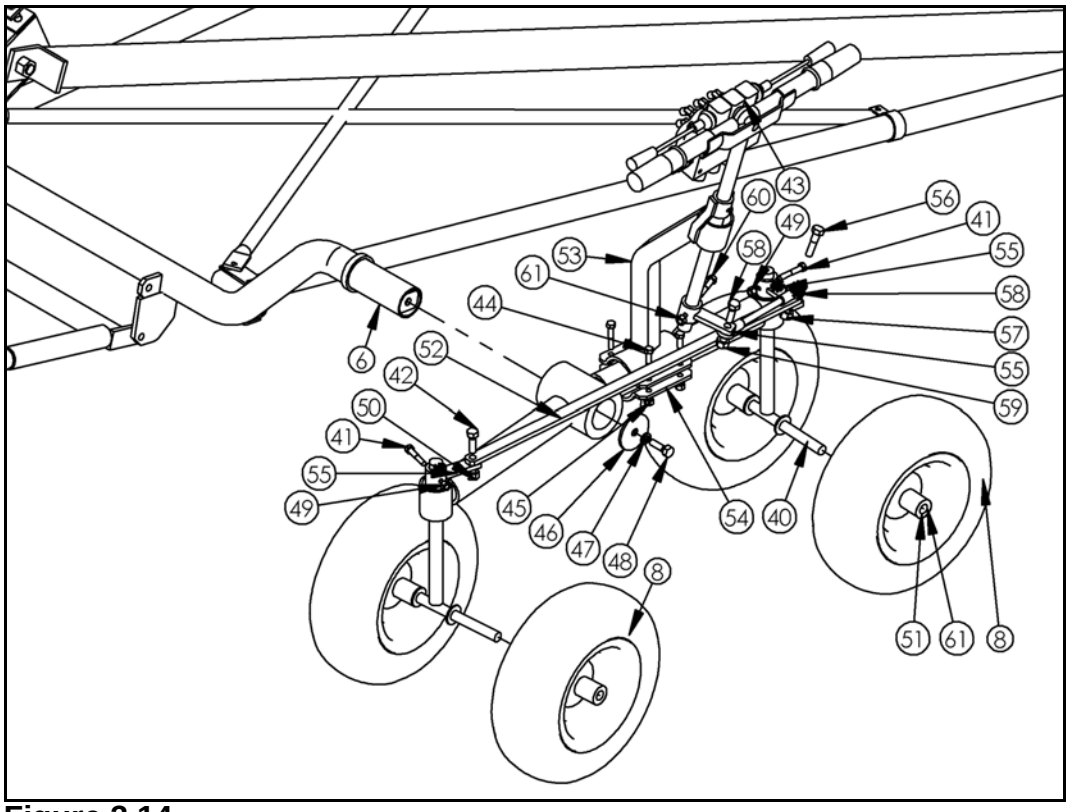


Figure 3.14

10. Install steering sub-assembly (43).
11. Attach steering stop (55B) and tie rod end (62) to sub-assembly with bolts (58,60) and locknuts (59,61).
12. Screw 1/2” x 8” rod (62) into remaining tie rod end.
13. Install tie rod end (62) and one end of steering bar (52) to yoke link arm (55A) with bolt (42) and locknut (50).
14. Affix opposite end of steering bar (52) to other yoke link arm with bolt (42) and locknut (50).
15. The opposite side tandem axle is assembled similarly, secure tandem axle (39) to v-frame (6) with axle cap (46), bolt (48) and lock washer (47).
16. Connect double wheel yoke (40) to tandem axle with yoke link arm (55A), bolt (41) and locknut (49).
17. Attach wheel yoke weldment (35) to tandem axle (39) and secure with 1” collar (36).
18. Install tires (8) with bolt (37) and locknut (38).

3.3. PUMP AND TANK ASSEMBLY

3.3.1. HANGING GAS

Refer to 13/15 Standard Assembly Manual for additional instructions on installing the Hanging Gas Mount. See for the quantity of each component used.

Note: *Engine not mounted.*

Table 3.3

Item	Description	Part No.	Qty
1	1” SPACER	P021200013	2
2	TANK 22 L, BLACK	P029900052-3	1
3	SMALL PUMP MOUNT	P029900190	1
4	HANGING GAS MOUNT	-	1
5	PLASTIC TANK MOUNT	13060063	2
6	2” U-CLAMP	13012002	2
7	24 HP HONDA	-	1
8	BOLT 1/2” X 2” GR8	P0118016	2
9	BOLT HEX 1/2” X 2-1/2”	P0118017	4
10	NUT NYLOCK 1/2”	P0134008	4
11	FLAT WASHER 1/2” USS	P0151029	2
12	CLAMP HOSE 3/4”	P0184006	1
13	CLAMP HOSE 10”	P029900216	2
14	BELT B37	P0321037	1
15A	PULLEY 4-1/2” X 1-1/8” SINGLE	P0328905	1
15B	PULLEY 4-1/2” X 1/2”	P0328905	1
16	HOSE BARB, 10 ORB X 3/4”	P0820702	1
17	SWIVEL, 1/2” STRAIGHT	P0821130	1
18	PUMP SMALL	P0841033	1
19	PUMP GUARD ASSEMBLY KIT	P020200019	1

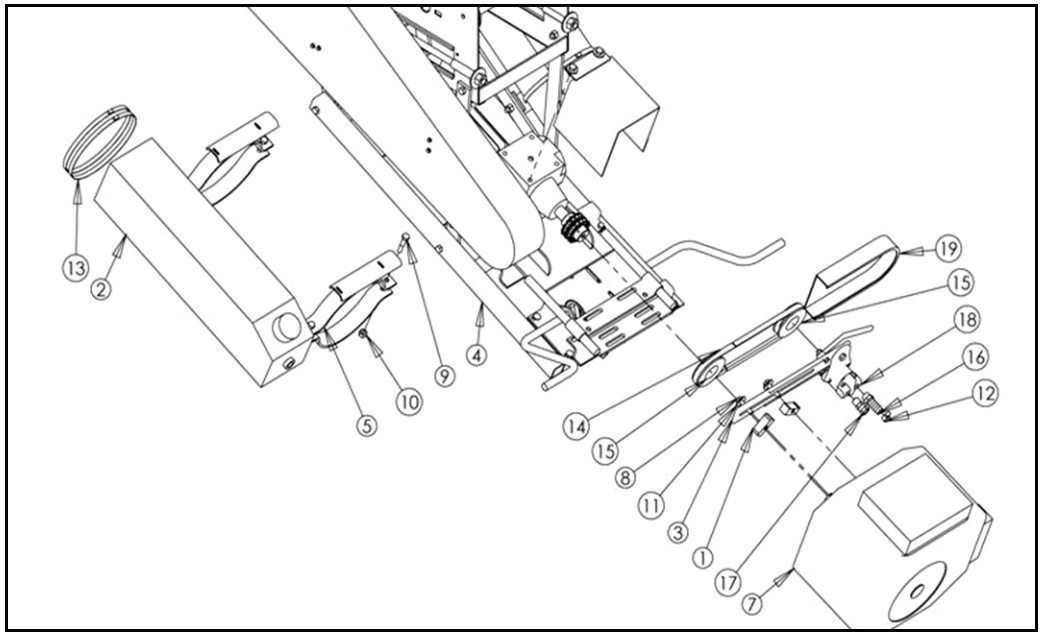


Figure 3.15

1. Mount small pump mount (3) on gas motor (7) with spacers (1), bolts (8), and flat washers (11), as shown in Figure 3.15. Do not tighten. See “Gear Pump Mount & Guard” on page 37 for details.
2. Attach pump (18) to mount (3).
3. Install fittings (16,17,12) on pump.
4. Install pulley (15) and belt (14) on drive motor shaft. Install motor on mount and connect to gearbox.
5. Install second pulley (15) on pump and connect belt.
6. With over-center handle disengaged, set position of pump mount so that belt is partially loose. Engage over-center handle, belt should be tight. Secure bolts (8). See Figure 3.16.

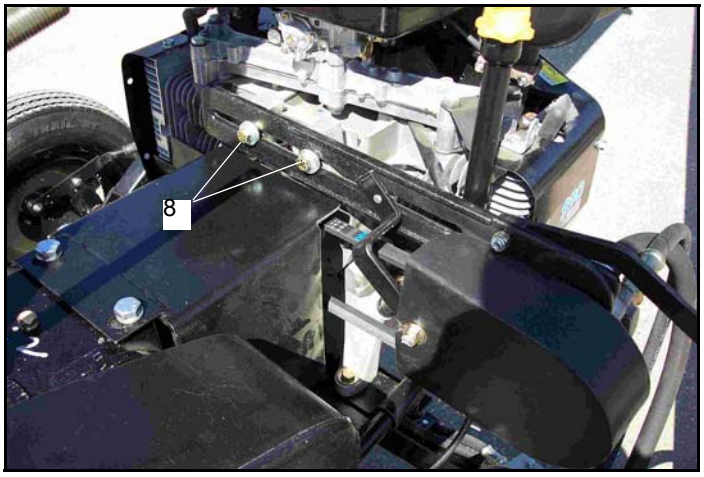


Figure 3.16

7. Install pump guard (19), note that guard may have to be notched. See “Pump Guard Installation” on page 38 for details.
8. Install tank mounts (5) with u-clamps (6), bolts (9), and locknuts (10), and secure with hose clamps (13). The reservoir must be mounted so that the oil level remains above the gear pump. To reduce weight at the intake end, mount the tanks as close as possible to the axle of the auger.
9. Secure engine as per assembly manual.

3.3.2. AXLE GAS

Refer to Table 3.4 for the quantity of each component used and Figure 3.17 and 3.18 for the assembly procedure.

Note: *This is most commonly used on electric/hydraulic top drive conveyors equipped with a mover.*

Table 3.4

Item	Description	Part No.	Qty
1	RESERVOIR BRACKET	P020102012	2
2	1” SPACER	P021200013	2
3	OIL RESERVOIR,18 L	P029900065B	1
4	SMALL PUMP MOUNT	P029900190	1
5	1345 FIELD LOADER FRAME	13000046	1
6	AXLE ENGINE MOUNT (GAS/ELEC)	13060071	1
7	GAS MOTOR	-	1
8	BOLT 1/2” X 2” GR8	P0118016	2
9	NUT NYLOCK 3/4”	P0134012	4
10	FLAT WASHER 1/2” USS BARE	P0151004	2
11	U BOLT 3” X 3”, PLATED (101)	P0183004	2
12	CLAMP HOSE 3/4”	P0184006	1
13	CLAMP HOSE 10”	P0184009	2
14	BELT B37	P0321037	1
15	PULLEY BK40H	P0328055	2
16	HOSE BARB,10 ORB X 3/4” (9900203)	P0820702	1
17	SWIVEL, 1/2” STRAIGHT (S1120-DD)	P0821112	1
18	PUMP SMALL	P0841033	1

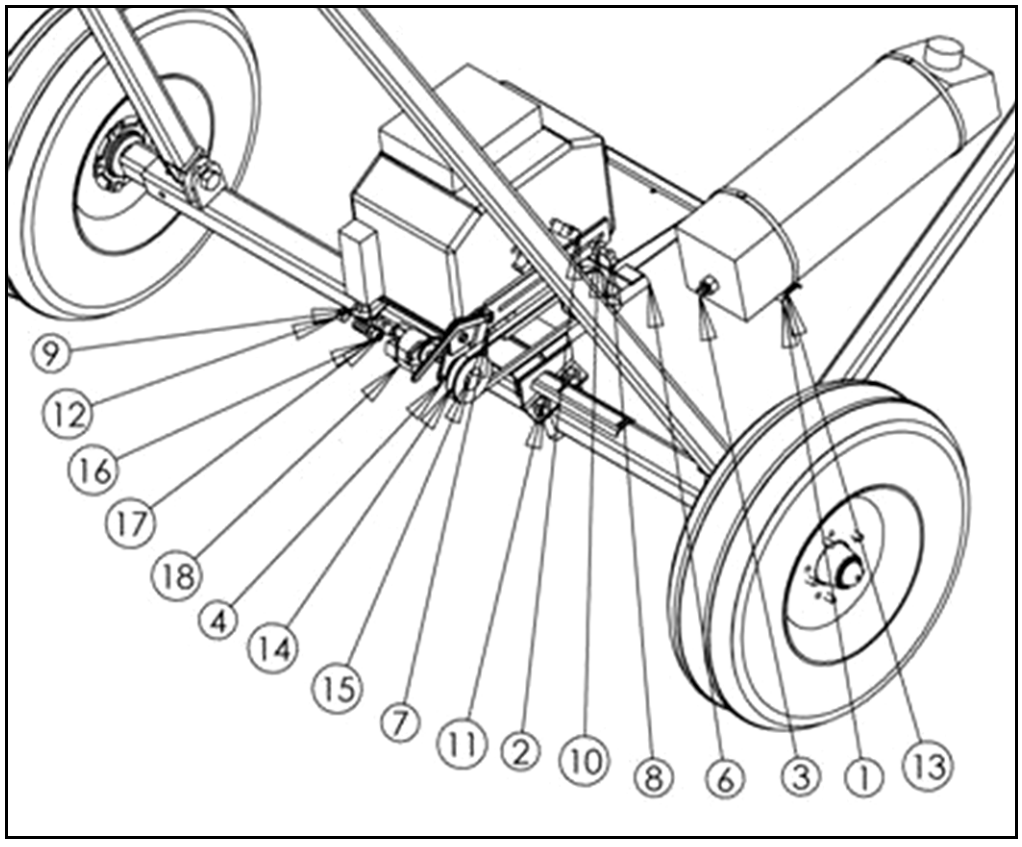


Figure 3.17

1. Prepare mount (6) for reservoir brackets and flat bar (2) by removing paint from surface. Weld the brackets to the axle approximately as shown in Figure 3.18. Touch up paint.

Figure 3.18

2. Install axle mount (6) on axle with u-bolts (11) and locknuts (9).
3. Install motor (7) on mount (6).
4. Affix pump mount (4) to motor (7) using spacers (2), bolts (8), and flat washers (10). Do not tighten. See Section 3.6 for details.
5. Mount pump (18) on pump mount (4) and insert fittings (9,16,17).
6. Attach pulleys (15) to gas motor (7) and pump (18). Connect with belt (14).
7. With over-center handle disengaged, setposition of pump mount (4) so belt is partially loose. Engage over-center handle, belt should be tight. Secure bolts (8).
8. Place tank on brackets as shown in Figure 3.18 and secure with hose clamps (13).

3.3.3. DIRECT DRIVE

Refer to Table 3.5 for the quantity of each component used and Figures 3.19, 3.20, and 3.21 for the assembly of the gas wet kit.

Table 3.5

Item	Description	Part No.	Qty
1	3/4” HOSE, TANK TO PUMP	SEE HOSE ASSY	1
2	1/2” HOSE, PUMP TO VALVE	SEE HOSE ASSY	1
3	1/2” HOSE, VALVE TO TANK	SEE HOSE ASSY	1
4	1” SPACER	P021200013	2
5	OIL RESERVOIR - 18 L	P029900052-3	1
6	SMALL PUMP MOUNT	P029900190	1
7	DIRECT DRIVE	-	1
8	PLASTIC TANK MOUNT	13060063	2
9	2” U-CLAMP	13012002	2
10	CONVEYOR ASSEMBLY	-	1
11	CLUTCH STOP BRACKET	13060049	1
12	BOLT HEX 3/8” X 1-1/2”	P0115047	1
13	BOLT HEX 3/8” X 2-1/2”	P0115051	2
14	BOLT HEX 3/8” X 3”	P0115053	1
15	BOLT HEX 7/16” X 1-1/2”	P0115077	1
16	BOLT HEX GR8 1/2” X 2-1/2”	P0118017	4
17	NUT NYLOCK 3/8”	P0134006	1
18	NUT NYLOCK 1/2”	P0134008	4
19	FLAT WASHER 3/8” USS PLATED	P0151009	3
20	WASHER LOCK 3/8”	P0152006	2
21	CLAMP HOSE 3/4”	P0184006	2
22	CLAMP HOSE 10”	P029900216	2
23	BELT B37	P0321037	1
24	MOTOR PULLEY 1-1/8” X 4-1/2” SINGLE	P0328905	1
25	PUMP PULLEY 1/2” X 4-1/2” SINGLE	P0328906	1
26	SWIVEL #8 ORB X 1/2” FPT	P0821130	1
27	HOSE BARB,10 ORB X 3/4” (9900203)	P0820702	1
28	SWIVEL, 1/2” STRAIGHT (S1120-DD)	P0821112	1
29	PUMP SMALL	P0841033	1
30	ELECTRIC CLUTCH ASSY (N/S 1999)	P02063000A	1

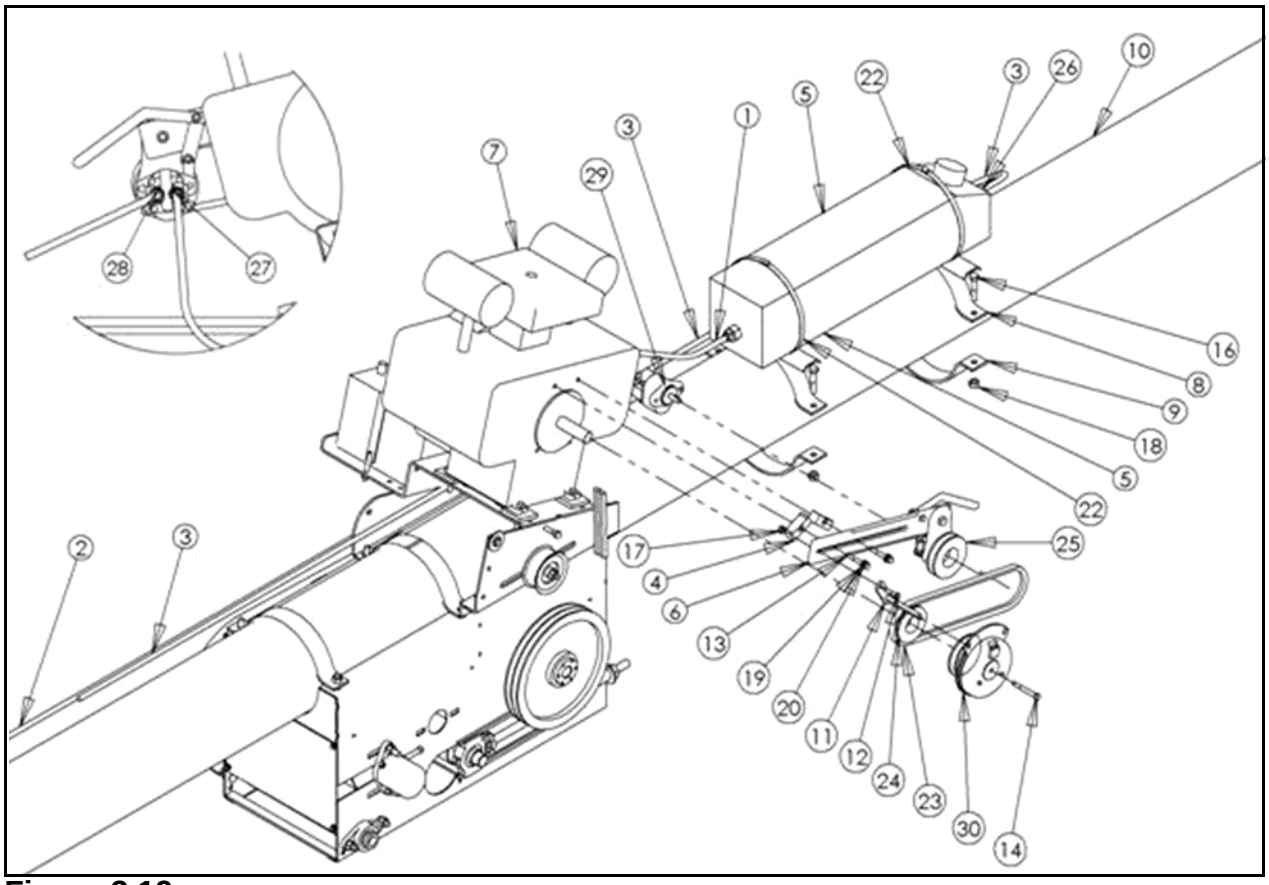


Figure 3.19

1. Attach spacers (4) and small pump mount (6), to motor using 3/8” x 2-1/2” bolts (13), lock washers (20), and flat washers (19).
2. Connect clutch stop bracket (11) with 3/8” x 1-1/2” bolt (12) and locknut (17).
3. Install electric clutch (30) and motor pulley with 3/8” x 3” bolt (14). Secure top with clutch stop bracket (11). See Figure 3.20.

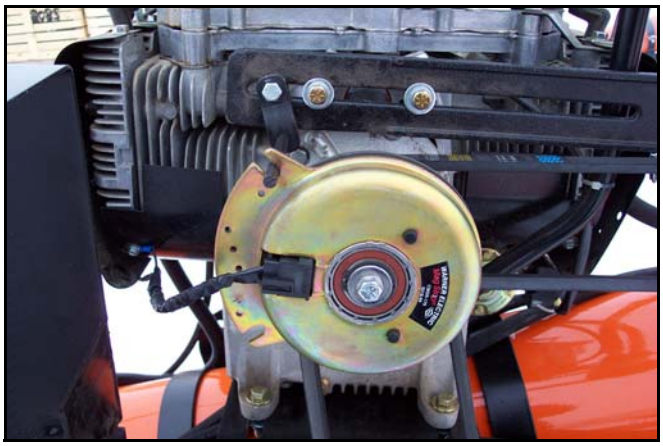


Figure 3.20

4. Fix the pump (29) to the small pump mount (6) with bolts and locknuts provided with the mount. See “Gear Pump Mount & Guard” on page 37 for details.
5. Inst all pump pulley (25) on pump (29).

6. Fasten plastic tank mounts (8) and u-clamps (9) to tube with 1/2” x 2-1/2” bolts (16) and locknuts (18).
7. Secure oil reservoir (5) to tank mounts (8) with clamp hoses (22).
8. Insert hose barb (27) and 1/2” straight swivel (28) in pump (29).
9. See hydraulic hose assembly section for hose connections.

Figure 3.21

3.4. GEAR PUMP MOUNT & GUARD

3.4.1. GEAR PUMP INSTALLATION

1. Install pump bracket and gear pump as illustrated in Figure 3.22, using the threaded holes on the blockof the gas engine. The over-center pump bracket shown in Figure 3.23, part A is pre-assembled.

Note: *The gear pump placement may be changed, but the pump MUST run counter-clockwise (when facing pump) at a maximum of 3500 RPM.*

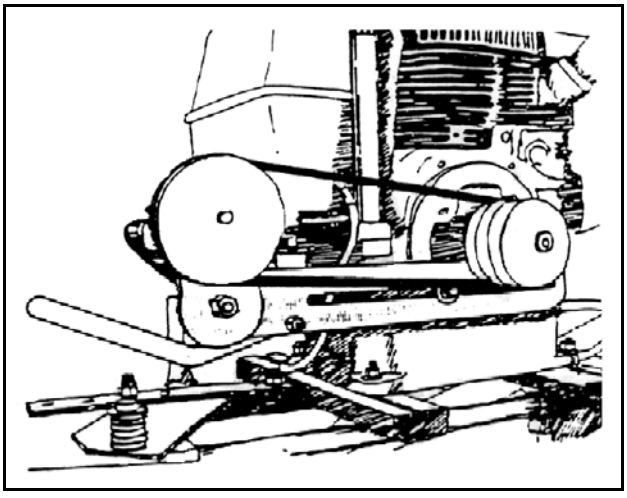


Figure 3.22

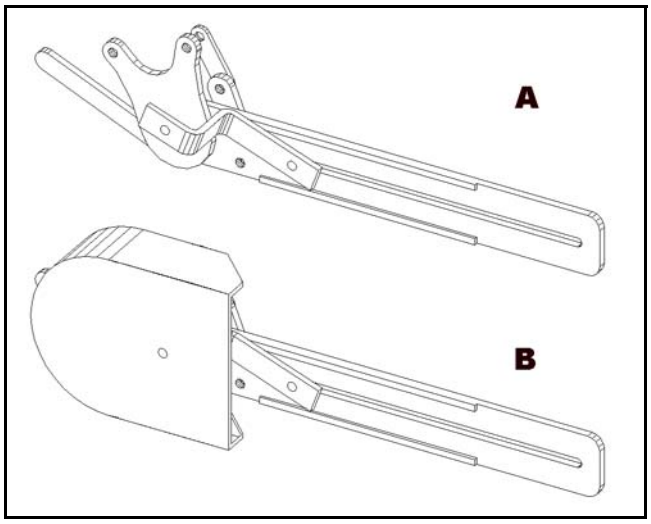


Figure 3.23

3.4.2. PUMP GUARD INSTALLATION

1. Bolt the pump guard bracket to the over-center pump bracket as shown in Figure 3.23, part B. The bracket should be installed at the pump end of the long, adjustable slot, through the middle of the over-center bracket (Figure 3.23, part A).
2. Place two washers between the pump guard bracket and the over-center bracket, so that the angle of the bracket may be adjusted to the belt.
3. Attach the pump guard to the pump guard bracket (Figure 3.23, part B). Align the pump guard with the belt that runs between the pump and the engine. The pump guard bracket may need to be adjusted to achieve the appropriate angle. Ensure that there is adequate clearance between the belt and the pump guard, with belt engaged and disengaged.

3.5. VALVE

3.5.1. RAM SPEED ADJUSTMENT

1. Adjust ram speed is regulated at the control panel. The adjustable stroke limiter screws and lock nuts set the speed of the ram travel individually in each direction.
2. Adjust the stroke limiter screws and lock nuts until the desired rate of travel is achieved.
3. Turning the screws inward results in a slower speed
4. Turning the screws outward results in a faster speed

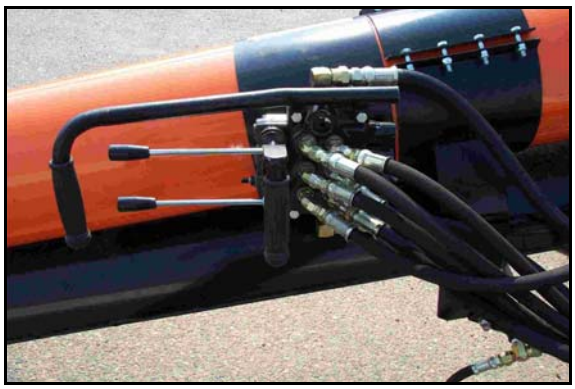


Figure 3.24

Note: *All spools are of a special metering design which allows more precision in maneuverability.*

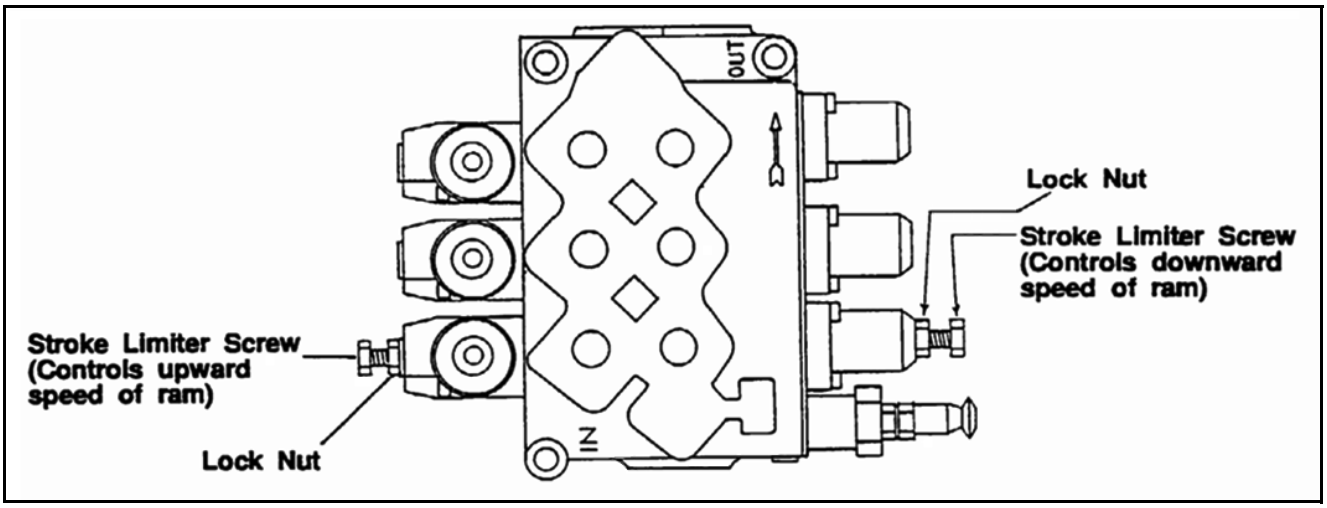


Figure 3.25

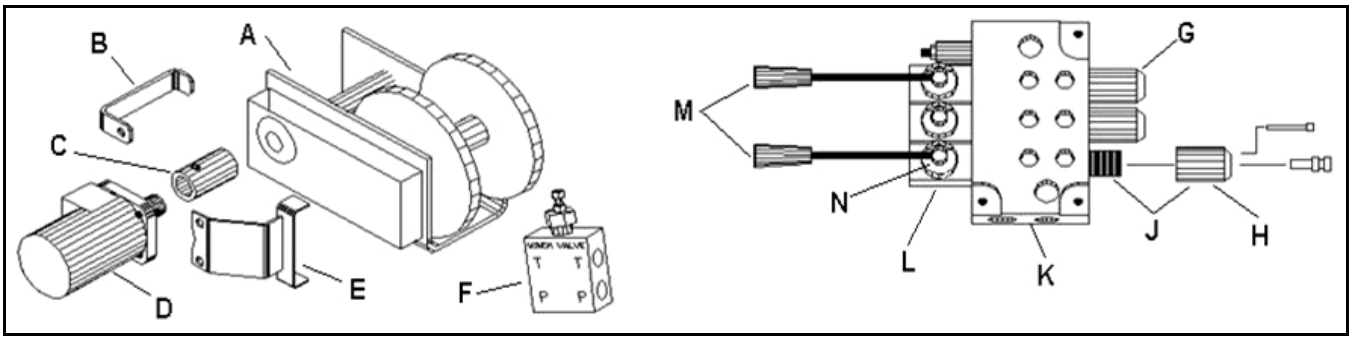


Figure 3.26

Table 3.6

Item	Description	Part No.	Qty
A	2503 WINCH	P020707001	1
B	SAFETY BRACKET	P020707003	1
C	MOTOR COUPLER	P020700001	1
D	ORBIT MOTOR	P021011312/ P029901001PRP	1
E	MOTOR BRACKET	P020707002	1
F	WINCH VALVE	P020700008	1
G	END CAP	P021600023	2
H	END CAP W/ BOLT	P021600024	1
J	CAP W/ SPRING	P021600008	3
K	THREE-SPOOL VALVE, COMPLETE (NO FITTINGS)	P021600006	1
L	LEVER PIVOT BOX W/ LEVER ARM, LEVER PIN, AND RUBBER BOOT	P021600026	1
M	CONTROL LEVERS FOR SPOOL VALVE	P021600007	2
N	BOOT, 3-SPOOL LEVER	P021600026B	3

3.6. WINCH

3.6.1. WINCH ASSEMBLY

1. Remove the hand winch and bolt on the hydraulic winch.
2. Angle the winch soit lines up with the cable wrapping around the track roller.
3. T ighten all nuts.
4. Position so that the cable pulls away from the drum and away from the winch body.

Figure 3.27

WARNING	
	The winch must ratchet when drawing the cable and raising the conveyor. Serious damage to equipment or injury to the operator could occur if the winch does not ratchet.

3.6.2. WINCH ALIGNMENT

1. Check the alignment of the winch by watching the cable wrapping on the drum as the conveyor is raised. Proper alignment is achieved when the cable indexes, filling each row on the drum evenly and not piling up against one side.
2. Lower the conveyor fully if the cable does not index properly until there is slack in the cable.
3. Loosen the nuts on the u-clamps, adjust the winch, retighten nuts and retest. For example, if the cable is piling up to the right hand side of the drum, move the U-bolt end of the winch to the left.

3.6.3. OPERATION AND ADJUSTMENT OF WINCH VALVE

Important: *The winch valve has a pressure kickout built into it. This kickout is designed to protect the operator and equipment in cases where the roller comes to the end stop of the track and the operator tries to go higher. In these instances the kickout will automatically internally bypass and will not reset until the valve is released. Without this protection, the hydraulic motor has the power to twist off winch shaft, allowing the cable to unwind and causing the conveyor to drop.*

1. Adjust the kick-out valve to obtain a higher or lower pressure setting.
2. Loosen the locknut on the outside body of the kickout (Figure 3.28). The kickout is screwed into the side of the winch valve block. After loosening the lock nut, decrease the pressure by turning out the stud. Increase the pressure by turning in the stud.
3. If the valve repeatedly kicks out when operating the winch, loosen the lock nut and turn in the stud – NO MORE THAN 1/8 OF A TURN!

Note: *Initial winch speed adjusted in shop. Cold temperatures may slow winch down.*

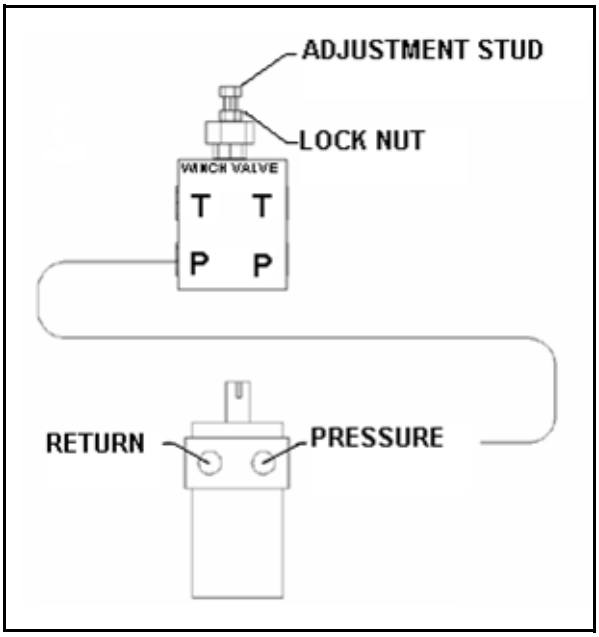


Figure 3.28 Hydraulic Motor

Table 3.7

Item	Description	Part No.	Qty
1	HYDRAULIC WINCH KIT W/ VALVE	P020707000	1
2	SWIVEL, 1/2” M X 3/8” F, STRAIGHT	P0821124	6

CAUTION

Do not adjust more than 1/8 of a turn at a time. Serious damage could result.

3.7. WHEEL MOVE DRIVE SYSTEM

Note: *Refer to Tables 3.8 and 3.9 for the quantity of each component used, and Figures 3.29 to 3.31 for the assembly of the wheel move drive system.*

Note: *Repeat the following section for each of the right and left side wheel move motor assemblies. The right and left sides are mirror images.*

1. Fasten motor arm to wheel move axle tab (on the axle) using a 1/2” x 2” bolt and locknut.
2. Connect 1/2 swivels to the hydraulic motor.
3. Insert pinion gear on hydraulic motor and lock with set screw.
4. Mount the hydraulic motor on the motor arm with 3/8” x 2” bolts and 3/8” lock washers (not shown).
5. Noting the orientation in Figures 3.30 and 3.31, install the wheel move spring and overcenter handle to the axle tab with 1/2” x 2” bolts, locknuts, and flat washers.
6. Fix the overcenter link to the wheel move handle with a 1/2” locknut, then attach to the spring.
7. Connect the overcenter link to the motor arm with a 1-1/2” locknut.
8. The cushion block installation is covered in the hydraulic hose assembly section. See “Hydraulic Hose Assembly” on page 48 for details.

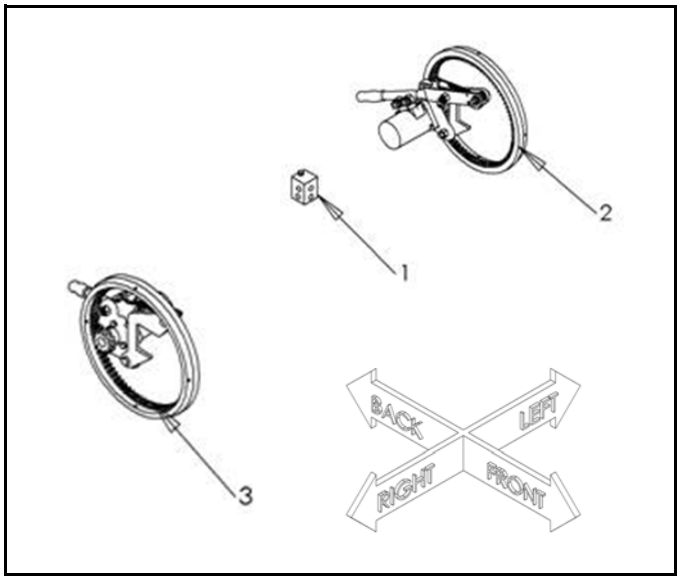


Figure 3.29

Table 3.8

Item	Description	Part No.	Qty
1	CUSHION BLOCK	P020200350	1
2	WHEEL MOVE MOTOR ASSY	-	1
3	WHEEL MOVE MOTOR ASSY	-	1

GEAR ALIGNMENT - DEPTH

The pinion gear should sit in the ring gear to ensure maximum contact between teeth. If the pinion gear does not mesh properly, adjust the overcenter handle.

- If the handle will not lock in the overcenter position, loosen the flange nuts and slide the slotted handle away from the tire.
- If the pinion gear does not mesh fully with the ring gear, loosen the flange nuts and slide the slotted handle toward the tire.

Table 3.9

Item	Description	Part No.	Qty
1	WHEEL-MOVE OVERCENTER HANDLE	P020200007	1
2	OVER-CENTER LINK SP WHEEL MOTOR	P020200008	1
3	WHEEL MOVE SPRING	P020200009	1
4	PINION GEAR	P020200333	1
5	RING GEAR	P020200334	1
6	MOTOR ARM	P020200338A	1
7	BOLT 1/2” X 2” GR8	P0118016	1
8	BOLT 1/2” X 2” GR8	P0118016	1
9	BOLT HEX 3/8” X 2”	P0115050	4
10	NUT NYLOCK 1/2”	P0134008	3
11	NUT FLANGE 1/2”	P0134108	2
12	FLAT WASHER 1/2 PLATED USS	P0151029	3
13	SWIVEL 90 1/2” M X 3/8” F	P0820013	2
14	HYD MOTOR, 5.9 H-C/HOLE	P0841012	1
15	WHEEL-MOVE AXLE TAB 3”	P020200340A	1

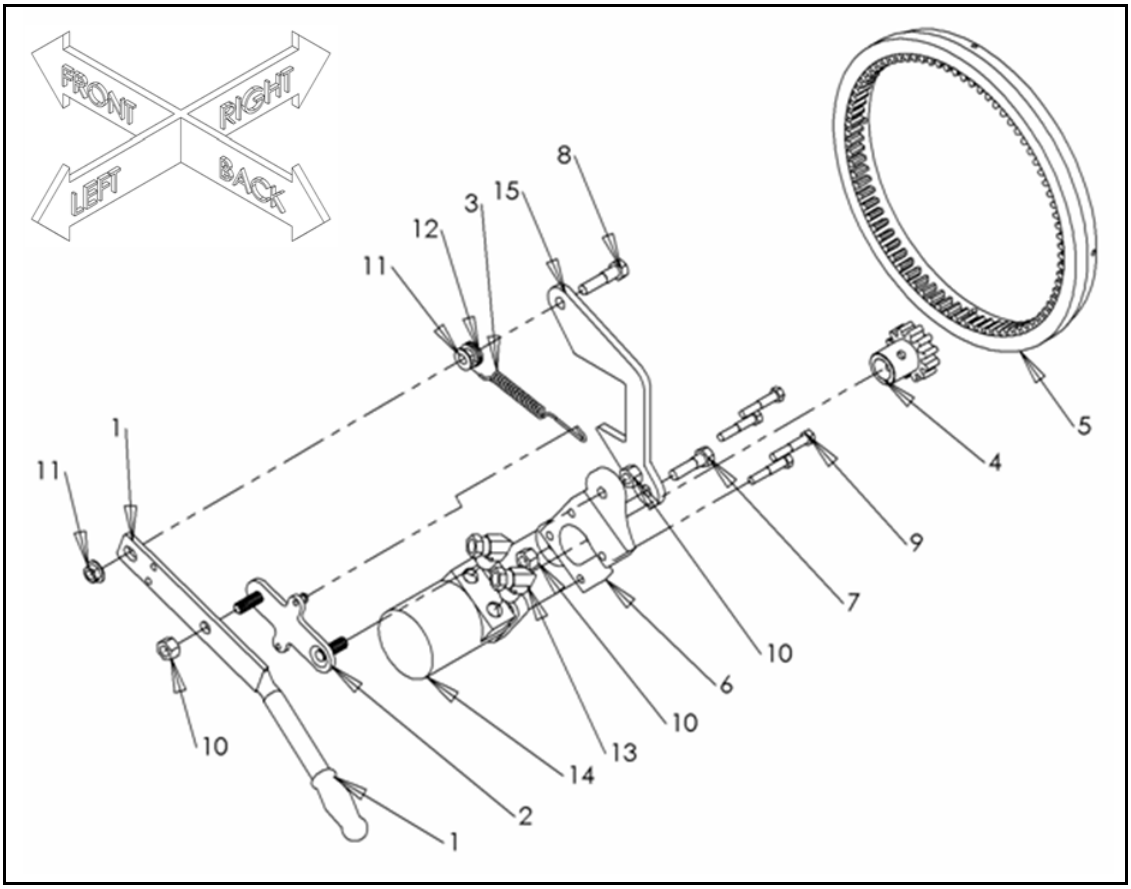


Figure 3.30

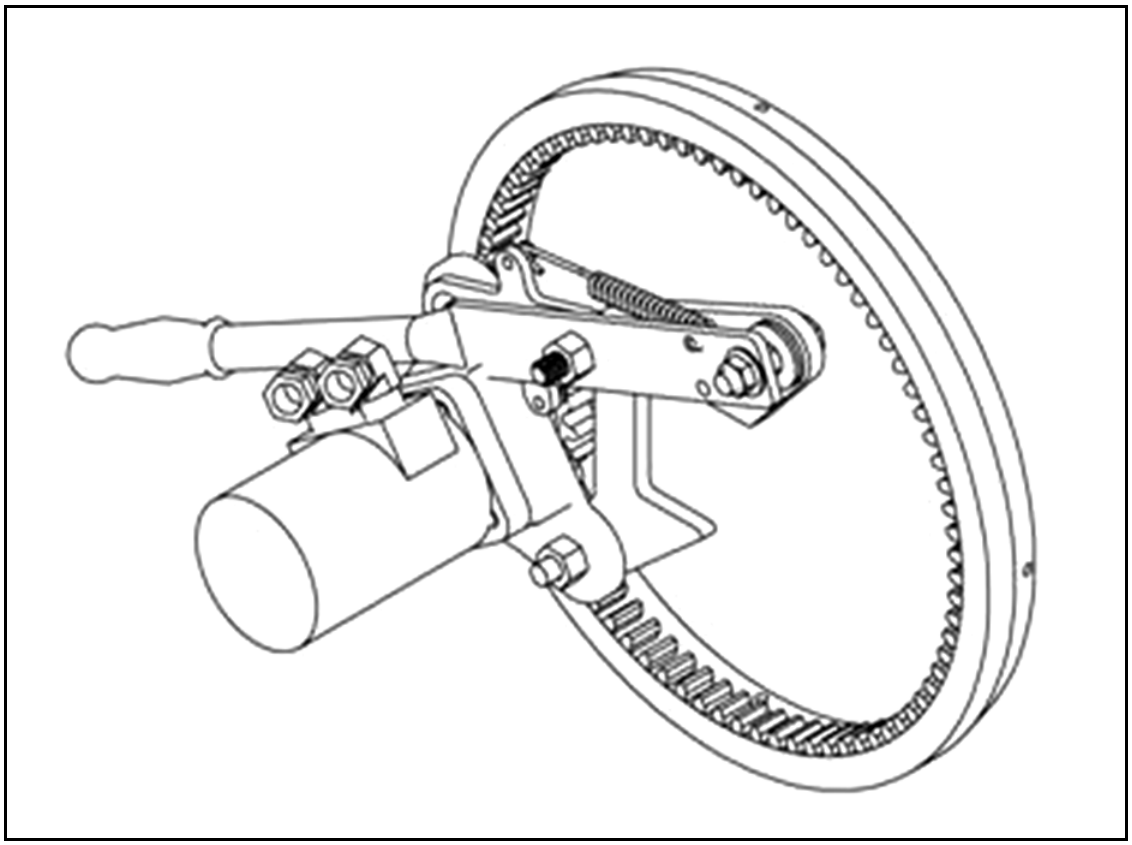


Figure 3.31

3.8. GEAR DRIVE

3.8.1. GEAR DRIVE INSTALLATION

1. Press ring gear into rim. Use a hammer to be sure the ring gear seats evenly into the rim. Tighten the 4 set screws in rotation to lock gear evenly into place.
2. Hit the ring gear with a hammer again at each set screw and retighten in rotation.
3. Use a hammer after tightening and punch to deep set the screws by giving a blow beside each screw. Then, retighten set screws.
4. Weld ring into position.

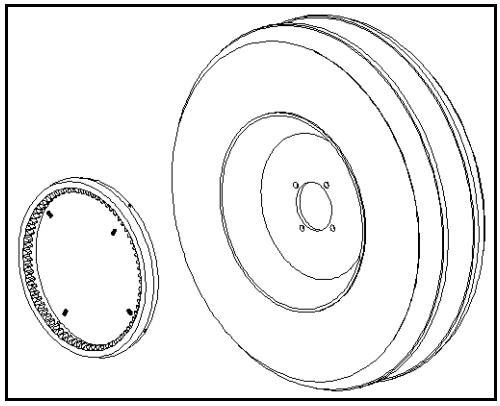


Figure 3.32

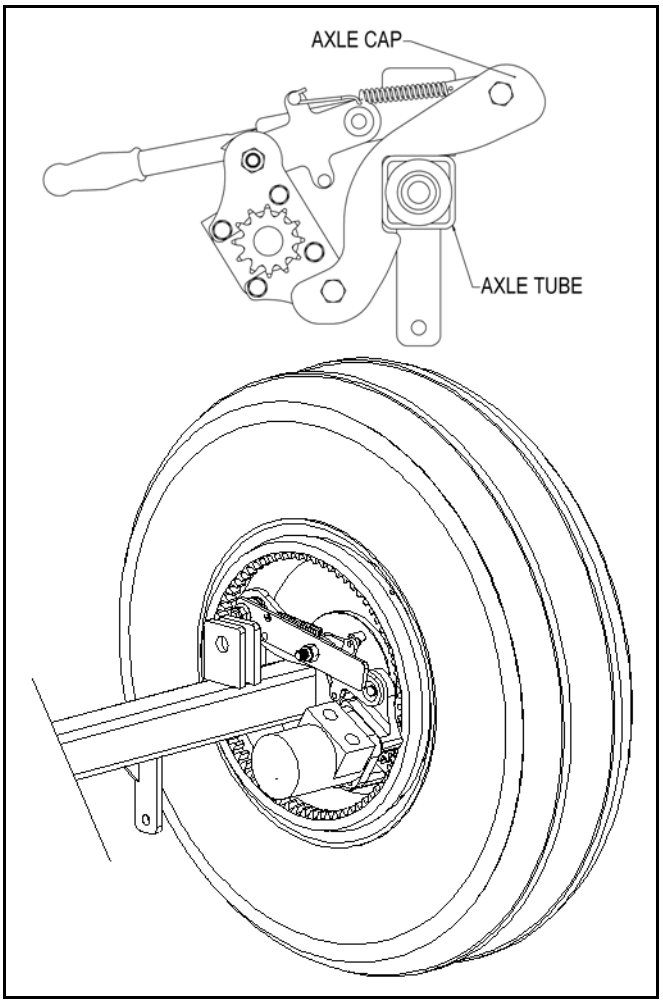


Figure 3.33

3.8.2. OVER-CENTER DRIVE INSTALLATION

Once the wheel is bolted to the hub the over-center drive assembly can be installed as follows:

1. Position the axle cap of the over-center drive assembly squarely on the axle tube as shown in Figure 3.32.
2. With the pinion gear flush with the ring gear, as shown in Figure 3.34, weld the axle cap to the axle tube.

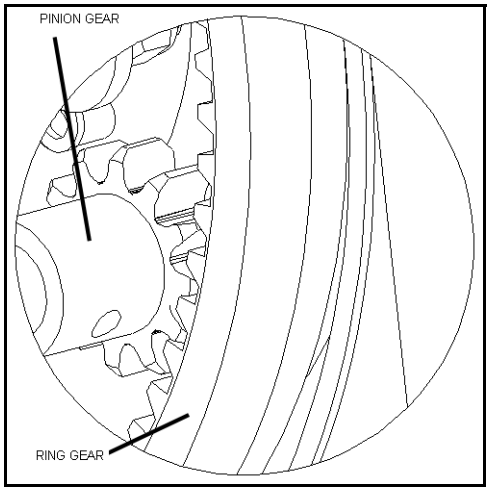


Figure 3.34

3.8.3. PINION GEAR ADJUSTMENT

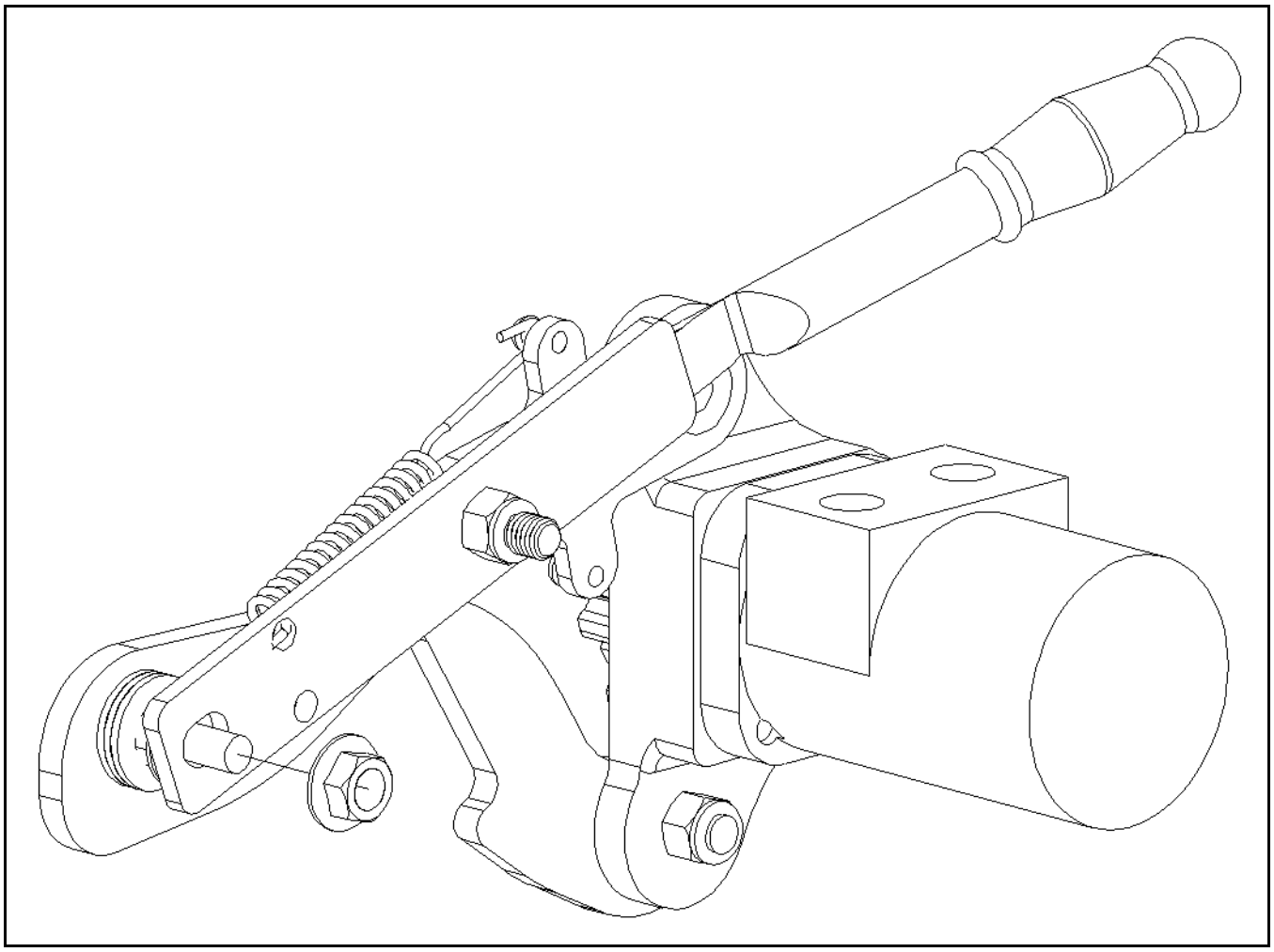


Figure 3.35

GEAR DEPTH ALIGNMENT

Refer to Figure 3.35. The pinion gear should mesh with the ring gear to provide maximum tooth contact. If the pinion gear meshes incorrectly, adjust the handle slot bolt (which bolts to the drive mount clamp) so full meshing of pinion gear is achieved when handle is in over-center position.

GEAR TEETH BINDING

The handle will not “lock” into the over-center position. Loosen the slot bolt nuts and slide the handle away from the tire.

INSUFFICIENT MESHING

The pinion gear will barely mesh with the ring gear. Loosen the slot bolt jam nuts and slide the handle towards the tire until the pinion gearteeth mesh with the ring gear teeth without binding.

3.8.4. CUSHION VALVE ASSEMBLY & OPERATION

ASSEMBLY

1. Connect hoses as shown in Figure 3.36.

CAUTION
Do not overtighten hoses. Over tightening hoses can crack the motor body or cause the fittings to leak and will void the motor warranty.

CAUTION
The conveyor **must** move in the direction that the handle is moved. Serious operator injury could occur if the transport unit and hydraulic hoses are not assembled correctly. If necessary, disconnect the hoses, and re-assemble.

Important: *Before disassembling the hoses, relieve oil pressure as the oil may be hot enough to cause serious burns.*

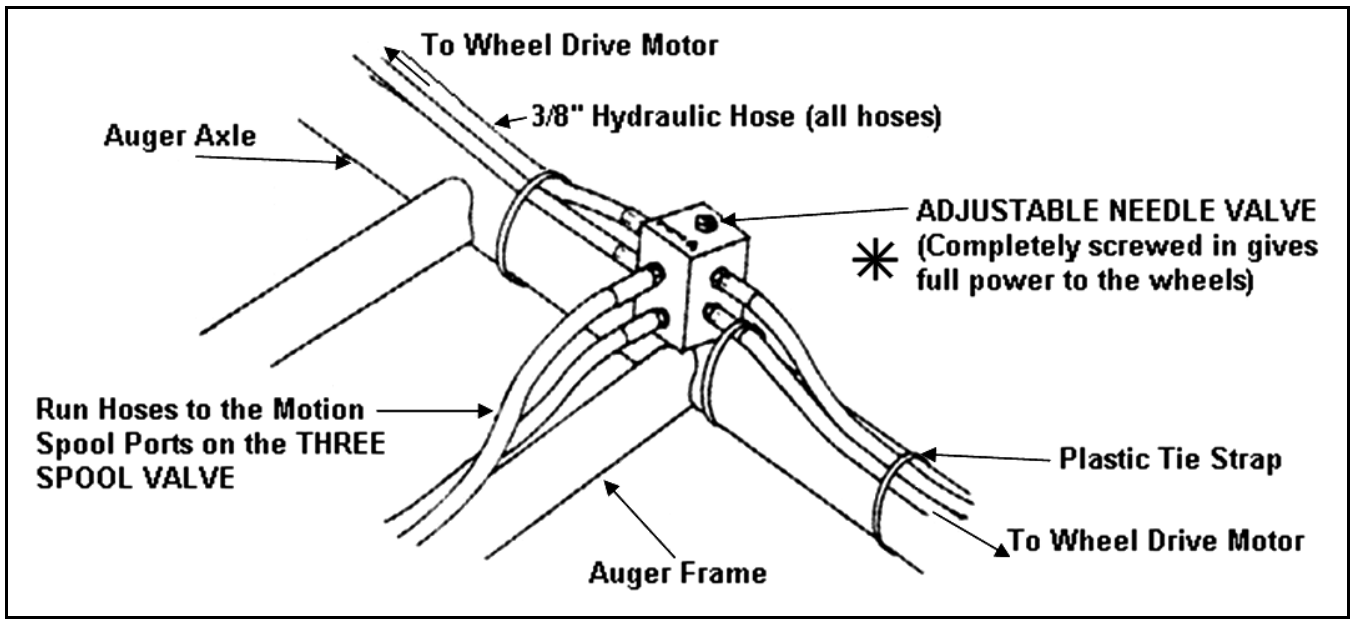


Figure 3.36

OPERATION

To control the speed of the wheel move, the adjustable needle valve can be:

- screwed in for full speed
- screwed out for a slower speed

3.9. HYDRAULIC HOSE ASSEMBLY

Note: *Refer to Table 3.10 for the quantity of each component used and Figures 3.37 and 3.38 for hydraulic hose assembly.*

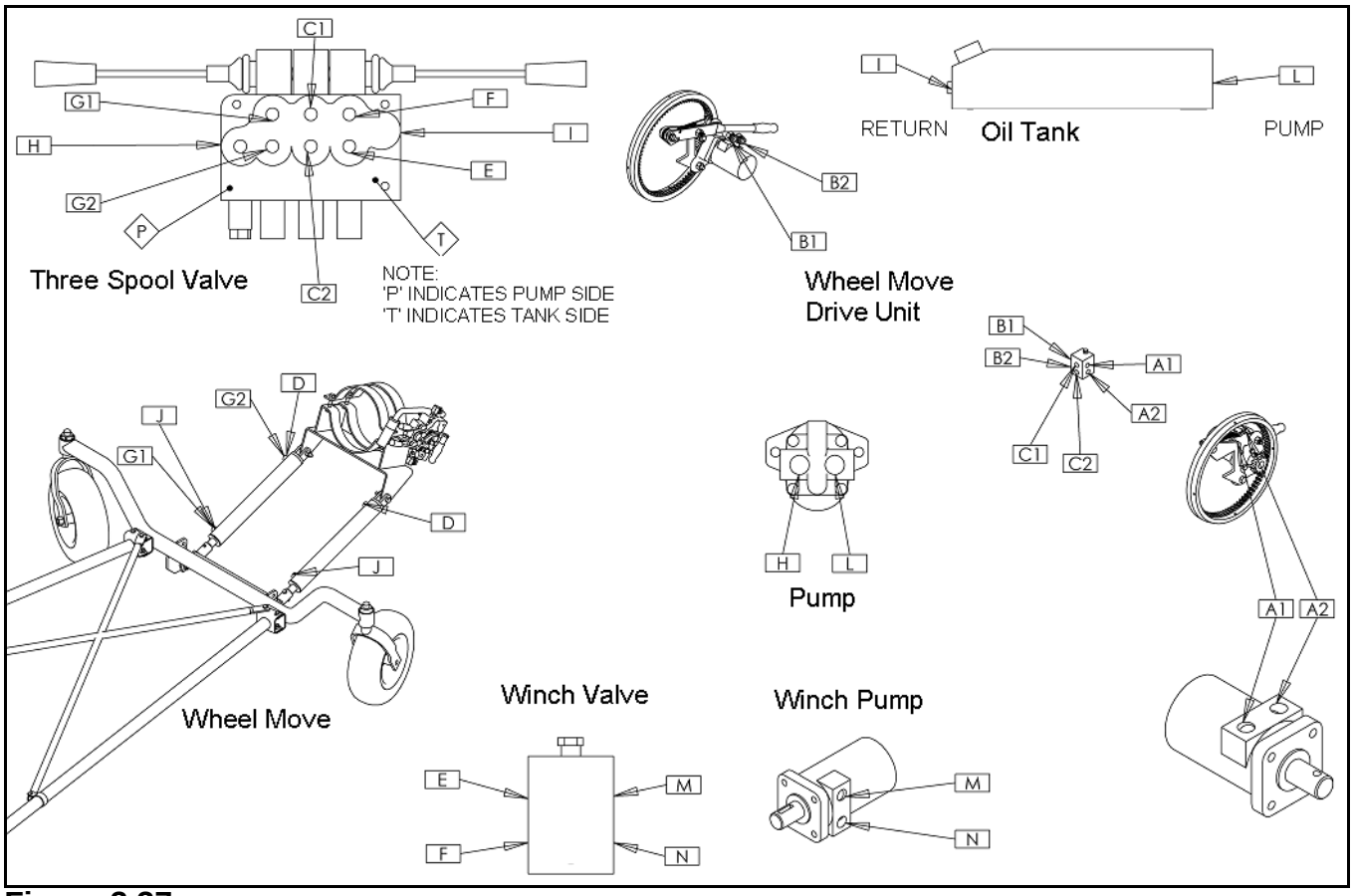


Figure 3.37

1. Place cushion block approximately as shown in Figure 3.38 and attach two 3/8” swivels to the front.
2. Att ach hydraulic fittings (1) to the wheel move hydraulic cylinders.
3. Connect each hose as labeled in Figure 3.37 and Table 3.10. For example, connect hydraulic hose A1 in the table to each of the locations marked A1 in Figures 3.37 and 3.38.
4. Install hose clamps as required along axle, axle arms, etc. Use Figure 3.38 as a guide.

Note: *The 3/4” hose (L) installs from tank to pump with two hose clamps listed in the gas wet kit assembly.*

Table 3.10

Item	Description	Fitting	Fitting	Hydraulic Hose Lengths by Conveyor Type and Size						Qty
				13000164 35 STD/FL HGM P/P	160001631 45 FL STR DD	13000166 45 FL STR HGM	13000166 45 STD STR HGM	130001661 45 FL STR P/P	13000167 45 STD STR HGM	
A1, A2	3/8” HOSE	3/8 MPT	3/8 MPT	1’9”	1’8”	1’8”	1’9”	1’9”	1’8”	2
B1, B2	3/8” HOSE	3/8 MPT	3/8 MPT	5’6”	5’	5’	5’6”	5’6”	5’	2
C1, C2	3/8” HOSE	3/8 JIC	3/8 MPT	9’6”	12’6”	12’6”	9’6”	9’6”	12’6”	2
D	3/8” HOSE	1/2 MPT	1/2 MPT	2’6”	2’6”	2’6”	2’6”	2’6”	2’6”	1
E	3/8” HOSE	1/2 MPT	3/8 JIC	7’6”	30’	30’	7’6”	7’6”	30’	1
F	3/8” HOSE	1/2 MPT	3/8 JIC	7’6”	30’	30’	7’6”	7’6”	30’	1
G1	3/8” HOSE	3/8 MPT	3/8 JIC	4’	25’6”	25’6”	4’	4’	25’6”	1
G2	3/8” HOSE	3/8 MPT	3/8 JIC	3’6”	25’6”	25’6”	3’6”	3’6”	25’6”	1
H	1/2” HOSE	1/2 MPT	1/2 MPT	12’	30’6”	30’6”	12’	12’	30’6”	1
I	1/2” HOSE	1/2 MPT	1/2 MPT	9’6”	33’6”	33’6”	9’6”	9’6”	33’6”	1
J	3/8” HOSE	3/8 MPT	3/8 MPT	2’6”	2’6”	2’6”	2’6”	2’6”	2’6”	1
L	3/4” HOSE	-	-	10’	2’	10’	10’	10’	10’	1
M	3/8” HOSE	1/2 MPT	1/2 MPT	1’6”	1’6”	1’6”	1’6”	1’6”	1’6”	1
N	3/8” HOSE	1/2 MPT	1/2 MPT	1’6”	1’6”	1’6”	1’6”	1’6”	1’6”	1
1	TEE 3/8” (P029900791)	-	-	-	-	-	-	-	-	2
2	SWIVEL 3/8” STRAIGHT	-	-	-	-	-	-	-	-	2

Figure 3.38

3.10. WIRING - DIRECT DRIVE WHEEL MOVES

Refer to Table 3.11 for the quantity of each component used and Figures 3.39 to 3.46 for the wiring assembly.

Note: Cover wire with shrinkable tube.

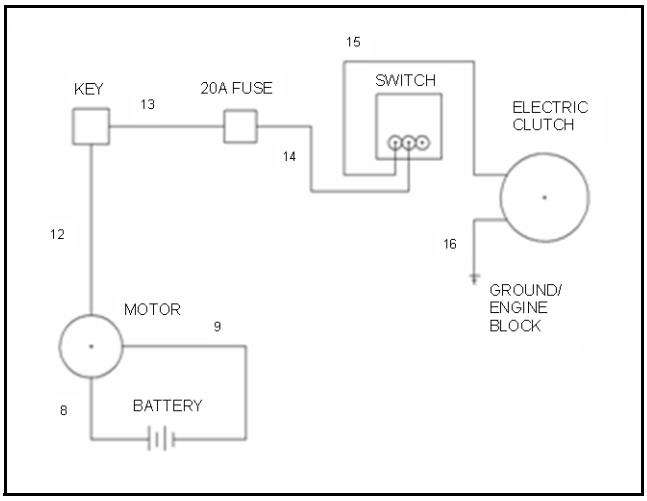


Figure 3.39 Onan/Linamar

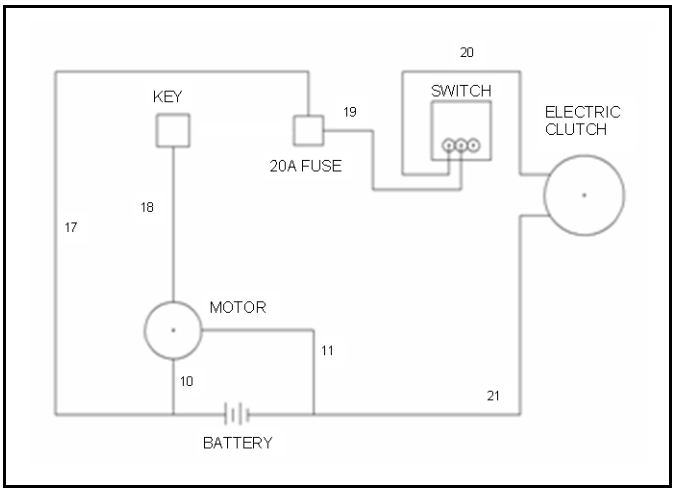


Figure 3.40 Honda

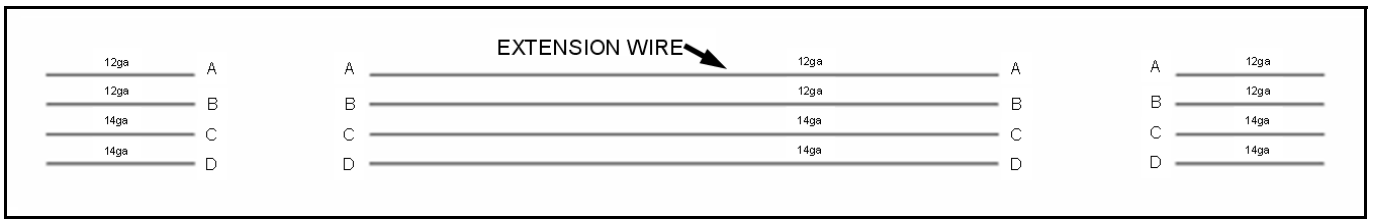


Figure 3.41

Table 3.11

Item	Description	Qty
1	STARTER PALTE CLAMP	1
2	BRACKET	1
3	WHEATHEART SWITCH	1
4	FUSE 20A	1
5	SHRINKABLE TUBE	1
6	PLASTIC TIE STRAPS	10
7	BATTERY	1
8	BATTERY CABLE (POS)	1
9	BATTERY CABLE (NEG)	1
10	BATTERY CABLE (POS)	1
11	BATTERY CABLE (NEG)	1
12	14 GA WIRE	1
13	14 GA WIRE	1

Item	Description	Qty
14	14 GA WIRE	1
15	14 GA WIRE	1
16	14 GA WIRE	1
17	14 GA WIRE	1
18	14 GA WIRE	1
19	14 GA WIRE	1
20	14 GA WIRE	1
21	14 GA WIRE	1
A, B	14 GA WIRE	1
C, D	14 GA WIRE	1
23	WHEATHEART SWITCH BRACKET	1
24	BOLT HEX 5/16” X 1”	1
25	NUT NYLOCK 5/16”	1

3.10.1. ONAN/LINAMAR ENGINE

Refer to Figure 3.39 for the appropriate wiring diagram.

1. Remove starter plate from engine and construct a starter plate clamp similar to one shown in Figure 3.42 using one supplied 2” u-clamp. Moving the starter plate allows easy access to controls when conveyor is elevated.

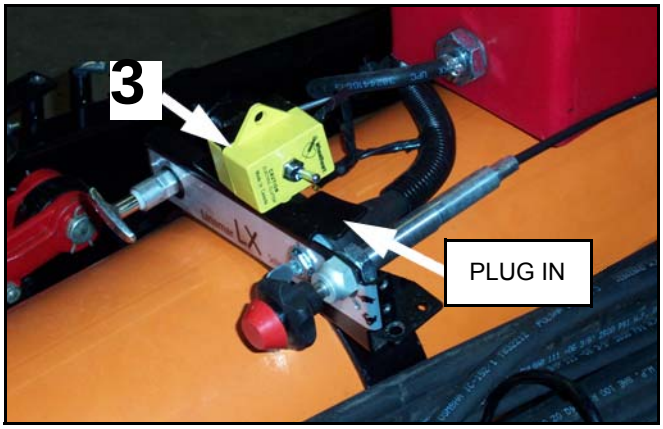


Figure 3.42

2. Attach starter plate clamp to tube with a 2” u-clamp and 1/2” x 2-1/2” grade 8 bolts and locknuts.
3. Wire a 20A fuse and connector (Figure 3.43) to switch middle port and extra port at key (Figure 3.39).

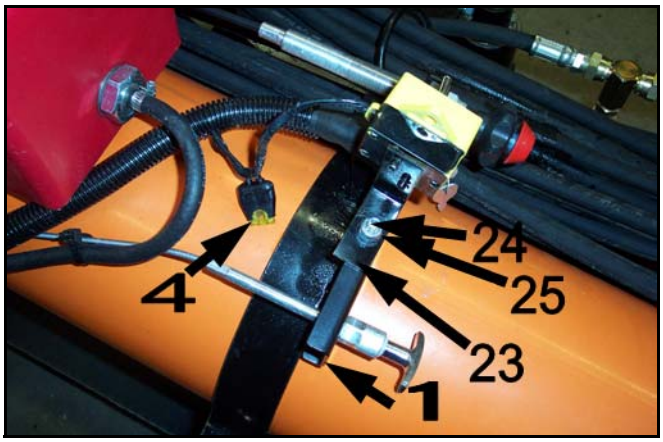


Figure 3.43

4. Connect wire from one of the two remaining ports on switch to the electric clutch.

5. Attach a wire from the electric clutch to the motor ground (Figure 3.44).

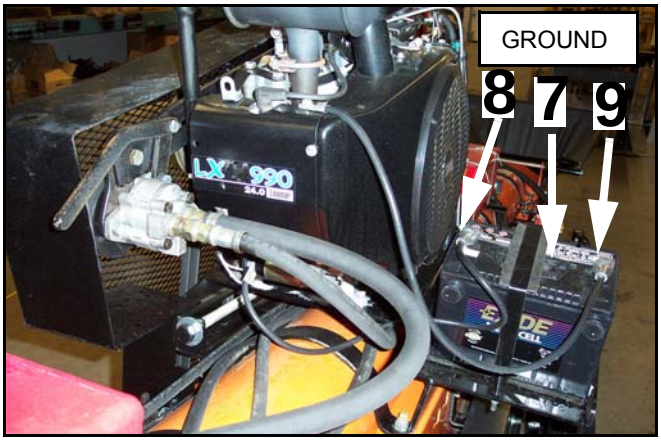


Figure 3.44

6. Add 6-1/2 feet wire to the wire connecting the motor to the key (Figure 3.41). Mark each wire A,B,C,D in two spots, cut, and connect appropriate gauge of extension wire with butt connectors. For example, connect A to A with 6-1/2 feet of extension wire.

Note: *Two wires are 12 ga and two are 14 ga. Ensure extra wire used is the same gauge as its mate.*

7. Plug extended wire into connectors on key and motor as illustrated in Figures 3.45 and 3.42.

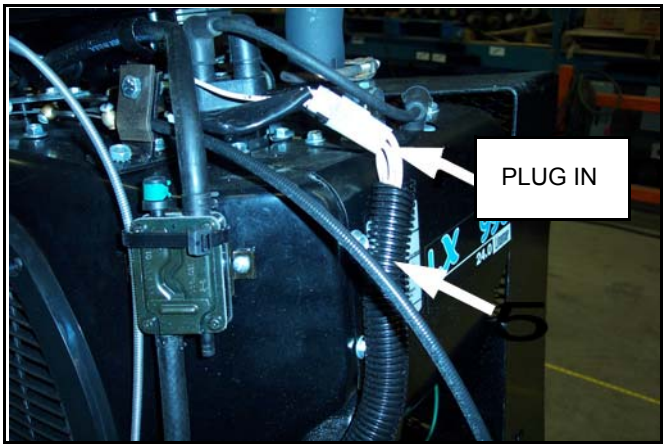


Figure 3.45

8. Install wires in switch as noted in Figure 3.39.
9. Connect switch and bracket to starter plates with 5/16” x 1” size bolt and locknut.
10. Connect battery cables from motor to battery, noting the orientation in Figure 3.44.

11. Secure wires with tie straps; see Figure 3.46.

Figure 3.46

12. If unit does not start check/try:
    a. all wires are securely connected.
    b. reversing connections on electric clutch.
    c. battery terminals caps are removed.

3.10.2. HONDA ENGINE

Refer to Figure 3.40 for the appropriate wiring diagram.

1. Remove starter plate from engine and construct starter plate clamp similar to one shown in Figure 3.42 using one supplied 2” u-clamp. Moving the starter plate allows easy access to controls when conveyor is elevated.
2. Attach starter plate clamp to tube with a 2” u-clamp and 1/2” x 2-1/2” grade 8 bolts and locknuts.
3. Wire a 20A fuse and connector to battery positive terminal, and other end to switch (Figure 3.40).
4. Connect wire from one of the two remaining ports on switch to the electric clutch.
5. Attach a wire from the electric clutch to the battery negative terminal.
6. Add 6-1/2 feet wire to the wire connecting the motor to the key (Figure 3.41). Mark each wire A,B,C,D in two spots, cut, and connect appropriate gauge of extension wire with butt connectors. For example, connect A to A with 6-1/2 feet of extension wire.

Note: *Two wires are 12 ga and two are 14 ga. Ensure extra wire used is the same gauge as its mate.*

7. Plug extended wire into connectors on key and motor as illustrated in Figure 3.40.
8. Install wires in switch as noted in Figure 3.40.
9. Connect switch and bracket to starter plates with 5/16” x 1 “bolt and locknut.
10. Connect battery cables from motor to battery, noting the orientation in Figure 3.44.
11. Secure wires with tie straps; see Figure 3.46.

4. Transport & Placement

WARNING *Before continuing, ensure you have read and understand the relevant information in the safety section. Safety information is provided to help prevent serious injury, death, or property damage.*

4.1. TRANSPORT PROCEDURE

Note: *Use only a tractor or towing vehicle of adequate power and capacity to transport the machine.*

Follow all safety precautions when transporting the conveyor and follow this procedure when placing the unit into its transport position:

1. Clear the area of bystanders, **especially children**, before starting.
2. Be sure there is enough clearance from overhead obstructions, power lines, and other equipment to move the machine into its transport position.
3. Attach the conveyor intake to the towing vehicle with a minimum 3/4" diameter pin with retainer clip and safety chain.
4. Fully raise the wheel move assembly by retracting the hydraulic cylinder.
5. Before transporting, disengage the over-center handle at each wheel by pulling up on the handle (Figure 4.1).

NOTICE

Ensure that the over-center bolts are tight enough to prevent the handle from engaging. If they are not tight enough, damage to the gears and motor will result.

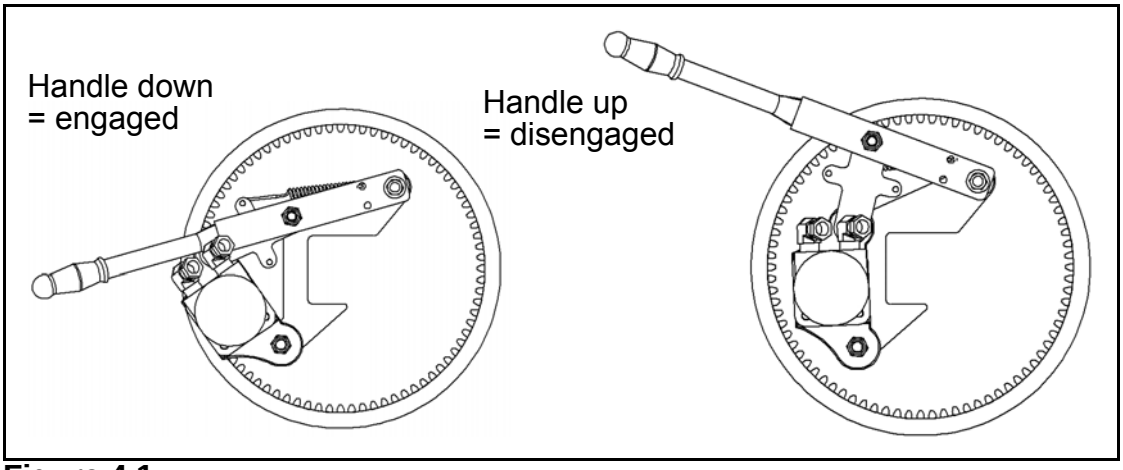


Figure 4.1

6. For transportation on public roadways, secure the wheel move frame to the conveyor tube to prevent it from accidentally dropping. This can be done by attaching a strap/chain/cable from one side of the mover frame up over the top of the conveyor tube and back onto the other side of the conveyor frame.

7. Make sure the SMV (Slow Moving Vehicle) emblem and all the lights and reflectors that are required by the local highway and transport authorities are in place, are clean, and can be seen clearly by all overtaking and oncoming traffic.
8. Consult with local authorities regarding transport on public roads. Obey all applicable laws and regulations.
9. Pin castors into lock position so that walking beams do not tip.

WARNING	
	Use extreme care and use minimum ground speed when operating or transporting on hillsides, over rough ground, or near ditches or fences.

DANGER	
	Stay away from overhead power lines. Arcing and possible electrocution can occur without direct contact. Consult local utility companies before operating machine near power lines.

4.2. PLACEMENT PROCEDURE

Follow this procedure when placing the machine into its working position:

1. Be sure there is enough clearance from overhead obstructions, power lines, or other equipment to move the machine into its working position.
2. Position the machine in the desired area. For operation instruction, see Section 5.3.

WHEN PLACING UNDER HOPPER BOTTOM BINS:

1. The conveyor hopper is centered between the hopper bin vertical legs.
2. Conveyor's engine will not make contact with the hopper cone when in its final position.
3. Collapse the cloth hopper until it is positioned under the bin.
4. Raise conveyor spout to desired height and close ball valve.

NOTICE
Ensure that gravel is not jammed against the belt under the hopper. It is possible that the rocks may cut or tear the belt. It is good practice to remove all foreign material from the belt path to ensure no damage to the belt occurs.

BEFORE FILLING THE BINS:

1. Ensure that the bin lid is open.
3. Ensure that the engine is at idle. A slower mover speed allows for easier positioning.
4. Position the conveyor spout over bin and it is in the bin's fill hole.
5. Lower the wheel move frame until hopper is on the ground.
6. Check spout and lower further into the bin's fill hole if necessary.
7. Ensure that the plastic hood is not resting on the bin's fill hole and ensure that the conveyor is not making contact with the bin roof. Raise the spout if necessary or reposition the conveyor.
8. Ensure the ball valve is closed.
9. Start up the conveyor and engage the belt drive to ensure everything is positioned correctly before unloading grain.

5. Operation

WARNING *Before continuing, ensure you have read and understand the relevant information in the safety section. Safety information is provided to help prevent serious injury, death, or property damage.*

5.1. PRE-OPERATION CHECKLIST

Efficient and safe operation of the equipment requires that each operator read and understand the operating procedures and all related safety precautions outlined in this manual. A pre-operation checklist is provided for the operator. It is important that this checklist is followed for both personal safety, and maintaining the mechanical condition of the conveyor.

Before initially operating the conveyor, and each time thereafter, the following areas should be checked:

- Service the machine as outlined in the schedule in the Maintenance section.
- Check that all guards are installed, secured, and functioning as intended. Do not operate with missing or damaged guards.
- Inspect all hydraulic lines, hoses, fittings, and couplers for tightness. Use a clean cloth to wipe any accumulated dirt from the couplers before connecting to the hydraulic system of the tractor.
- Visually inspect the unit for damage to components. Replace or repair any damaged or questionable parts.
- Check hydraulic system oil level.
- Consult local utility companies to identify the location of overhead power lines.
- Check work site. Clean up working area to prevent slipping or tripping.
- Machine must be securely attached to the towing vehicle or tractor.

WARNING	
	Shut off and remove key or lock out power source before inspecting or servicing the machine.

5.2. START-UP & BREAK-IN

Although there are no operational restrictions on the conveyor when used for the first time, it is recommended that the following mechanical items be checked.

BEFORE STARTING:

1. Read the conveyor operation manual.

DURING THE FIRST FEW MINUTES:

1. Check belt alignment to ensure preset alignment does not vary under loaded conditions. See conveyor operation manual for correct alignment conditions.
2. Some air may still be trapped in the hydraulic system; slowly activate all hydraulic control valves to ensure that all the air is out of the system.

AFTER TRANSPORTING OR OPERATING FOR 1/2 HOUR:

1. Retorque all wheel bolts, fasteners, and hardware.
2. Check that all safety decals are installed and legible. Apply new decals if required.
3. Check that all guards are installed and are working as intended.

AFTER OPERATING FOR 3 HOURS:

1. Change oil in the system for best results.

AFTER OPERATING FOR 5 AND 10 HOURS:

1. Retorque all wheel bolts, fasteners, and hardware.
2. Check that safety decals are intact and legible. Install new ones if required.
3. Check that all guards are installed and working properly.
4. Check all hydraulic hoses and fittings for leaks. Tighten fittings where required. Replace worn or damaged hoses.

Continue with normal servicing and maintenance schedule as defined in the Grain Conveyor Operation manual.

5.3. OPERATING PROCEDURE

Important: *Ensure the over-center handle at each wheel is fully engaged by pushing down on the handle at each wheel and checking that the gears fully mesh. See Section "Over-Center Drive Installation" on page 45 for adjustment (if necessary).*

1. With the engine at idle, use the hydraulic controls to fully lower the conveyor with the **scissor lift** lever on the valve before moving the conveyor into position.
2. Raise the conveyor intake end off the ground using the **hydraulic ram control** lever on the valve.
3. Move the conveyor into place by moving the **wheel move control** forward or backward to control the direction of travel. Steering is accomplished by grasping the **handle bar** and turning it. Steering is easier if the conveyor is in motion.
4. When unloading a bin, aim the conveyor intake into the bottom of the center of the bin. Use the **scissor lift** lever and **hydraulic ram control** lever to help position the conveyor.
5. When loading a bin, use the **scissor lift** to raise the conveyor to the desired height. Use the **hydraulic ram control** to raise the intake of the conveyor off the ground as the conveyor is winched up. Turn the **wheel move control** to change the direction of travel. Leave extra clearance for making wide turns.

Note: *Refer to "Cushion Valve Assembly & Operation" on page 47 for cushion valve adjustment and "Ram Speed Adjustment" on page 38 for adjustment of the ram speed.*

CAUTION	
	Do not attempt to move the conveyor on uneven or hilly terrain. The mover will not perform well under these conditions and could damage the machine or injure the operator.

5.4. WEATHER

Important: *When running the conveyor in colder temperatures, you should always disengage the pump when starting the motor cold. This will put less pressure on the starter and allow the motor to turn over easier, helping it to start..*

NOTICE
The hydraulic oil should be checked periodically to ensure that the levels are correct. Running the machine on low oil will overheat the system causing components to break down and eventually fail.

CAUTION	
	Do not attempt to move the conveyor on uneven or hilly terrain. The mover will not perform well under these conditions and could damage the machine or injure the operator.

CAUTION	
	The pump should be disengaged to take the strain off the belt, and the wheel move motors should also be disengaged to take the strain off of the springs.

6. Maintenance and Storage

WARNING *Before continuing, ensure you have read and understand the relevant information in the safety section. Safety information is provided to help prevent serious injury, death, or property damage.*

6.1. MAINTENANCE PROCEDURE

Before performing any maintenance on this unit, shut off and remove key or lock out the power source.

1. Periodically check for wear and proper meshing of the ring gear and pinion.
2. Change oil annually to remove any accumulation of dirt or condensation in the system. Replace with Type A automatic Transmission oil. Do not over-fill reservoir. Leave 1/2 quart (0.47 L) space to allow for level fluctuation.
3. Inspect hoses and fittings. Replace as required.
4. Inspect ring and pinion gears. Replace if worn.

6.2. STORAGE PROCEDURES

For long, trouble-free life, prepare unit for storage after the season's use.

- Lock out all power.
- Store the machine on a level surface, free of debris, and in an area away from human activity. Store in a dry place, or use a tightly secured tarp to protect the equipment from the weather.
- Place unit in transport position.
- Remove all residual material and clean the machine thoroughly.
- Inspect the unit at stress points for cracks.
- Repair or replace any worn or damaged components to prevent any unnecessary downtime at the start of the next season.
- Touch up paint nicks and scratches to prevent rusting.
- Check hydraulic fittings, hoses, lines, couplers, and valves. Tighten any loose fittings. Replace any hose that is badly cut, nicked, abraded, or is separating from the crimped end of the fitting. Secure the hoses to the machine.
- Inspect and tighten all fasteners; replace fasteners if required.
- Check tire inflation.
- Retract all cylinders or grease exposed shafts.
- Inspect hydraulic cylinders for leaks; replace seals if necessary.

7. Troubleshooting

The Batco Carriage-Style Wheel Move is a simple and reliable system that requires minimal maintenance. In the following section, we have listed many of the problems, causes, and solutions to the problems that you may encounter.

If you encounter a problem that is difficult to solve even after reading through this troubleshooting section, please call your local Batco dealer or distributor. Before you call, please have this manual and the serial number from your machine ready.

Table 7.1

Problem	Cause	Solution
Intake does not lift.	• blockage in pressure line	• locate blockage and remove
	• valve malfunctioning	• adjust stroke limiter screws or replace/repair valve.
	• cylinder (s) bypassing internally	• replace cylinder seals
Conveyor lifts but drops slightly before lifting.	• worn valve due to oil contamination	• replace valve, check and replace oil if dirty
Discharge does not lift.	• cable broken	• replace cable
	• blockage in pressure line	• locate blockage and remove
	• relief valve malfunctioning	• fine tune adjustment stud (see “Winch” on page 40)
	• coupler stripped/broken	• replace coupler
	• worn valve due to oil contamination	• replace valve • check and replace oil if dirty
Intake lift cylinders over-center and carriage cannot come down.	• bracket has slid up tube	• loosen bracket and reposition (see Appendix for bracket locations)
	• conveyor parked on steep slope	• move to level ground, undo pins at hydraulic lift cylinders, lower cylinders, and re-attach cylinders with pins
Conveyor will not move.	• block in front of tire	• remove block
	• blockage in pressure line	• locate and remove
	• relief valve (cushion block) malfunctioning	• adjust or replace if required (see “Gear Drive” on page 44)
	• motor worn/damaged	• check and replace oil if dirty • replace hydraulic motor
	• pinion gear not making contact	• adjust positioning (see “Gear Drive” on page 44)
	• pinion gear stripped	• replace gear (“Gear Drive” on page 44)

Table 7.1

Problem	Cause	Solution
No working functions.	• loose belt on pump	• tighten belt
	• key broken	• replace key
	• pump not working	• repair/replace pump
	• engine not working	• consult engine operation manual • call dealer/distributor
Pump makes noise.	• air in hydraulic system	• check level, add if required
	• low on fluid	• check level, add if required
	• loose suction line	• tighten suction line at hydraulic tank
Pump does not run.	• blockage in pressure line	• locate blockage and remove
	• belt loose/broken	• tighten/replace belt
	• pump seized (oil contamination)	• replace hydraulic oil / replace pump

8. Appendix

8.1. BRACKET LOCATIONS

Bracket locations on the Batco Carriage-Style Wheel Move are shown in Figure 8.1 and Table 8.1 below. The dimensions are measured from the flange of the field loader hopper to the far edge of the bracket.

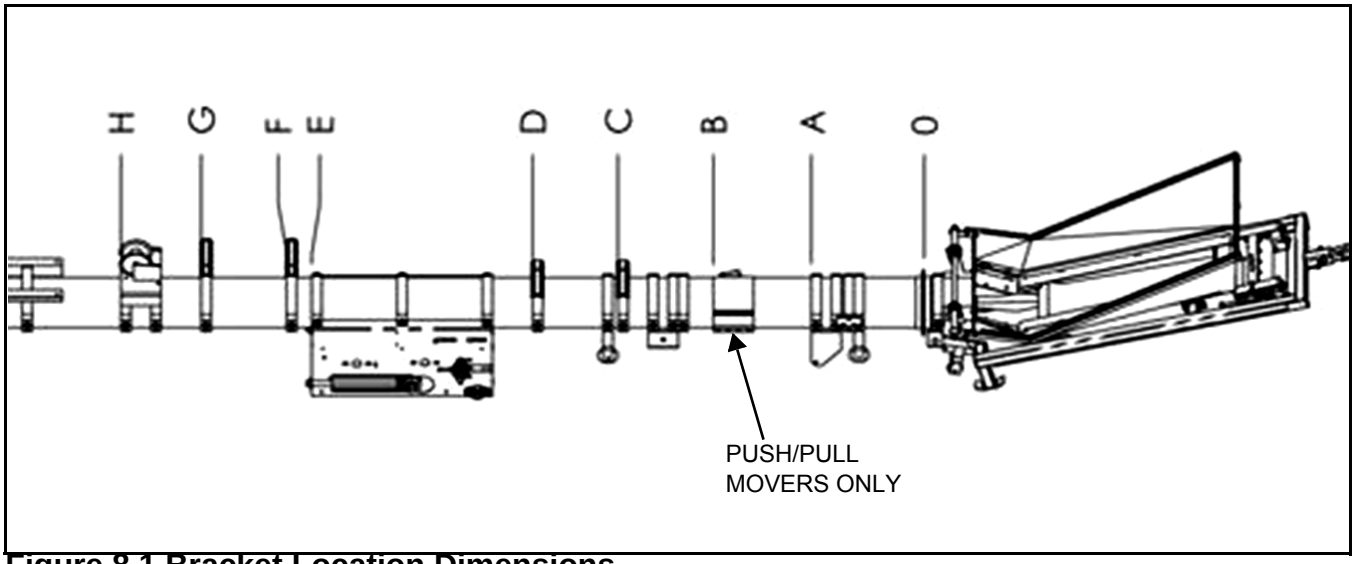


Figure 8.1 Bracket Location Dimensions

Table 8.1 Bracket Location Dimensions According to Model and Type

Bracket Location		1335 FL		1345 FL	
		HGM[a]	DD[b]	HGM	DD
A	WM Suspension Bracket	1’10-1/2”	1’10-1/2”	6’	6’
B	Ring Bottom w/ Cylinder Mount	3’6”	3’6”	3’6”	3’6”
C	Plastic Tank Mount	-	4’7”	-	10’5”
D	Plastic Tank Mount	-	5’10”	-	11’8”
E	S-Drive	10’2”	10’2”	15’3”	15’3”
F	Gas/Hydraulic Tank Side Mount	7’4”	10’7”	12’5”	17’9”
G	Gas/Hydraulic Tank Side Mount	8’9”	11’10”	13’10”	18’
H	Winch Bracket	13’4”	13’4”	19’	19’

a. HGM - Hanging Gas Mount
b. Direct Drive

8.2. BOLT TORQUE

Table 8.2 gives correct torque values for various hardware. Tighten all bolts to the torque specified, unless otherwise noted. Check tightness periodically, using Table 8.2 as a guide. Replace hardware with the same strength bolt.

Table 8.2 Recommended Bolt Torque

Size	Dry or Lubricated	Threads per inch (Course/ Fine)	Recommended Torque									
			Area of Bolt		Grade 2		Grade 5		Grade 8		8.8S/S	
			Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine
1/4	Dry	20/28	0.0318	0.0364	5.5	6.3	8	10	12	14	6.3	7.8
	Lubricated				6.3	4.7	6.3	7.2	9	10	-	-
5/16	Dry	18/24	0.0524	0.058	11	12	17	19	24	27	11	11.8
	Lubricated				8	9	13	14	18	20	-	-
3/8	Dry	16/24	0.0775	0.0878	20	23	30	35	45	50	20	22
	Lubricated				15	17	23	25	35	35	-	-
7/16	Dry	14/20	0.1063	0.1187	32	36	50	55	70	80	31	33
	Lubricated				24	27	35	40	50	80	-	-
1/2	Dry	13/20	0.1419	0.1599	50	55	75	85	110	120	43	45
	Lubricated				35	40	55	65	80	90	-	-
9/16	Dry	12/18	0.182	0.203	70	80	110	120	150	170	57	63
	Lubricated				55	60	80	90	110	130	-	-
5/8	Dry	11/18	0.226	0.256	100	110	150	170	210	240	93	104
	Lubricated				75	85	110	130	160	180	-	-
3/4	Dry	10/16	0.334	0.373	175	200	260	300	380	420	128	124
	Lubricated				130	140	200	220	280	310	-	-
7/8	Dry	9/14	0.462	0.508	170	180	430	470	600	670	194	193
	Lubricated				125	140	320	350	180	180	-	-
1	Dry	8/14	0.606	0.679	250	280	640	720	910	1020	287	289
	Lubricated				190	210	480	540	680	760	-	-
1-1/8	Dry	7/12	0.763	0.856	350	400	790	890	1290	1440	288	290
	Lubricated				270	300	590	670	970	1080	-	-
1-1/4	Dry	7/12	0.989	1.073	500	550	1120	1240	1820	2010	289	291
	Lubricated				380	420	840	930	1360	1510	-	-
1-1/2	Dry	6/12	1.405	1.581	870	960	1950	2200	3160	3560	-	-
	Lubricated				650	730	1460	1640	2370	2670	-	-

NEW EQUIPMENT WARRANTY

Batco Manufacturing Ltd. will warrant each new conveyor to be free from factory defects in material and workmanship under normal use and service when set up and operated in accordance with factory instructions.

Commercial applications will reduce the warranty period to 90 days from the original date of delivery.

This warranty will apply under the following conditions:

- The warranty will be limited to one year from the date of purchase.
- A “Warranty Registration Form” and “Inspection Report” must be filled out and returned to Batco Manufacturing Ltd. at the time of sale in order to qualify for replacement of defective parts.
- The warranty is void on any unit that has been tampered with or has been subject to misuse, negligence, or accident.
- The warranty is limited to the supplying of replacement parts in exchange for parts defective due to material or factory workmanship.
- The warranty covers material only, unless expenditures are pre-authorized by Batco Manufacturing Ltd. in writing.
- A reasonable allowance may be charged to cover labor for replacement of damaged parts at the discretion of the Batco Warranty Department.
- Normal wear and service items such as belts, hoses, flashing, etc., will only be considered warranty at the discretion of the Batco Warranty Department.

All warranty repairs must be performed at an authorized Batco dealership in order to receive credit.

Returned parts must be sent to the factory freight prepaid in order to qualify for warranty replacement, and will be returned freight collect.

Please direct all claims to the attention of the Warranty Department at Batco Manufacturing Ltd. (306-773-7779)

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