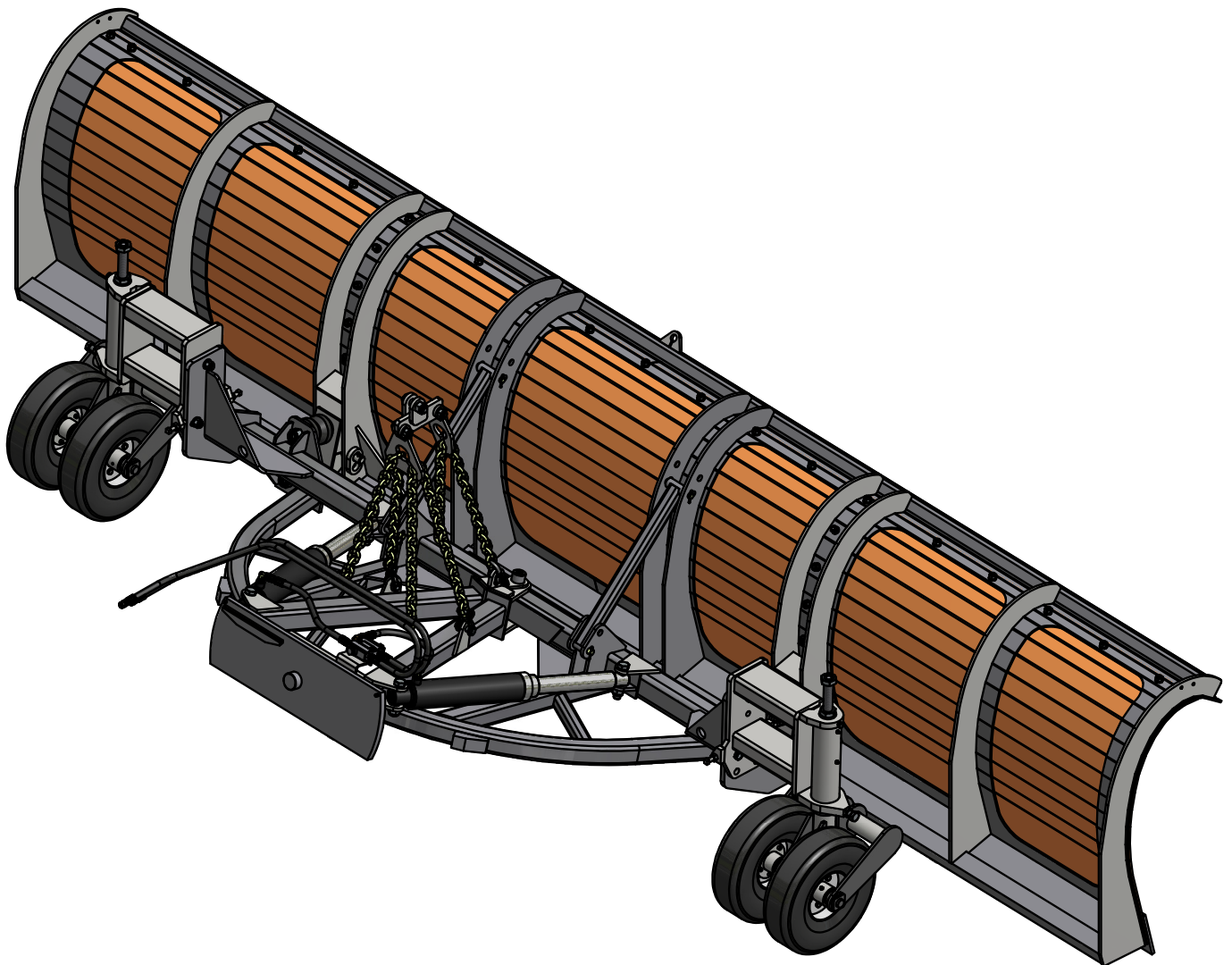




OWNER'S MANUAL

VCL POLY REVERSING AIRPORT PLOW



EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL.
TO MAINTAIN OUR ON-GOING PRODUCT DEVELOPMENT AND IMPROVEMENT PROGRAM, VIKING-CIVES LTD. RESERVES THE RIGHT TO CHANGE EQUIPMENT & SPECIFICATION WITHOUT NOTICE.



INTRODUCTION - POLY REVERSIBLE AIRPORT PLOW

Congratulations and thank you for your purchase of new Viking-Cives Snow & Ice Control equipment. This manual has been created to provide you with installation, set-up, operation and maintenance information for the Viking-Cives **Poly Reversible Airport Plow**. It has been prepared to familiarize you or any other person who will be assembling, operating, maintaining, or working with this product with the design features, and to instruct you in the recommended operation and maintenance of the unit.

Read this manual carefully before you operate or service your **Poly Reversible Airport Plow**. Remember that you're working with heavy equipment that can injure you or someone else. You can help lessen the chance of injury by following the procedures in this manual, carefully.

DANGER: If incorrectly used, this equipment can cause severe injury. Your chance of injury can be greatly reduced by following all safety decal notifications. All decals must be kept clean and complete. Replace any decals that are unreadable. Decals may be purchased directly from Viking-Cives Group and/or your nearest authorized dealer. All Operator/Service people should review this manual carefully and become familiar with its contents. **If anyone else beside you operates or services this equipment, make sure they read this manual and are instructed to follow all the safety procedures related to this equipment. Keep this manual available for reference whenever this product is being handled or used. Provide this manual to any new owners and/or operators.**

INSTALLATION

TO CONNECT TO PRIME MOVER

During the initial installation of the plow to the vehicle, some adjustments will be necessary to insure proper operation of the plow and trip mechanisms. It is Viking-Cives recommendation that the plow is set to run at an approach angle of **105 degrees** with steel and carbide blades, as shown in figure 1. **NOTE: When plow is being raised, lowered or reversed - stand clear!**

1. Set plow unit on level surface with moldboard in the bulldoze position; adjust drive height to approximately 21" , as shown in figure 1, by adjusting the caster shoes up or down.
2. Drive the prime mover into position. connect the plow drive frame to the vehicle push harness. **NEVER stand between the prime mover and the plow drive frame when the vehicle is being moved into position.** Before connecting the drive frame to the push harness, shut the vehicle engine down and make sure that the auxiliary brake is engaged.

TO CONNECT HYDRAULICS FOR REVERSING CYLINDERS

Connect the hydraulic hoses leading from the cushion valve located on the plow drive frame to the quick disconnect couplers located on the prime mover. **NOTE: Normally one hose will have a male quick connect hose end and the other will have a female quick disconnect hose end.** This prevents the hoses from being coupled incorrectly. Also, when the hoses are disconnected from the prime mover this allows for them to be coupled together to prevent contamination from entering into the hydraulic system. Carefully raise the plow blade and cycle the reversing cylinders to check hose clearances and to check for any interference. Cycle the cylinders several times from fully retracted to fully extended position until all air has been completely removed from the cylinders.

NOTE: Plow lift and power reverse functions should be thoroughly tested BEFORE operating the plow in a working situation.

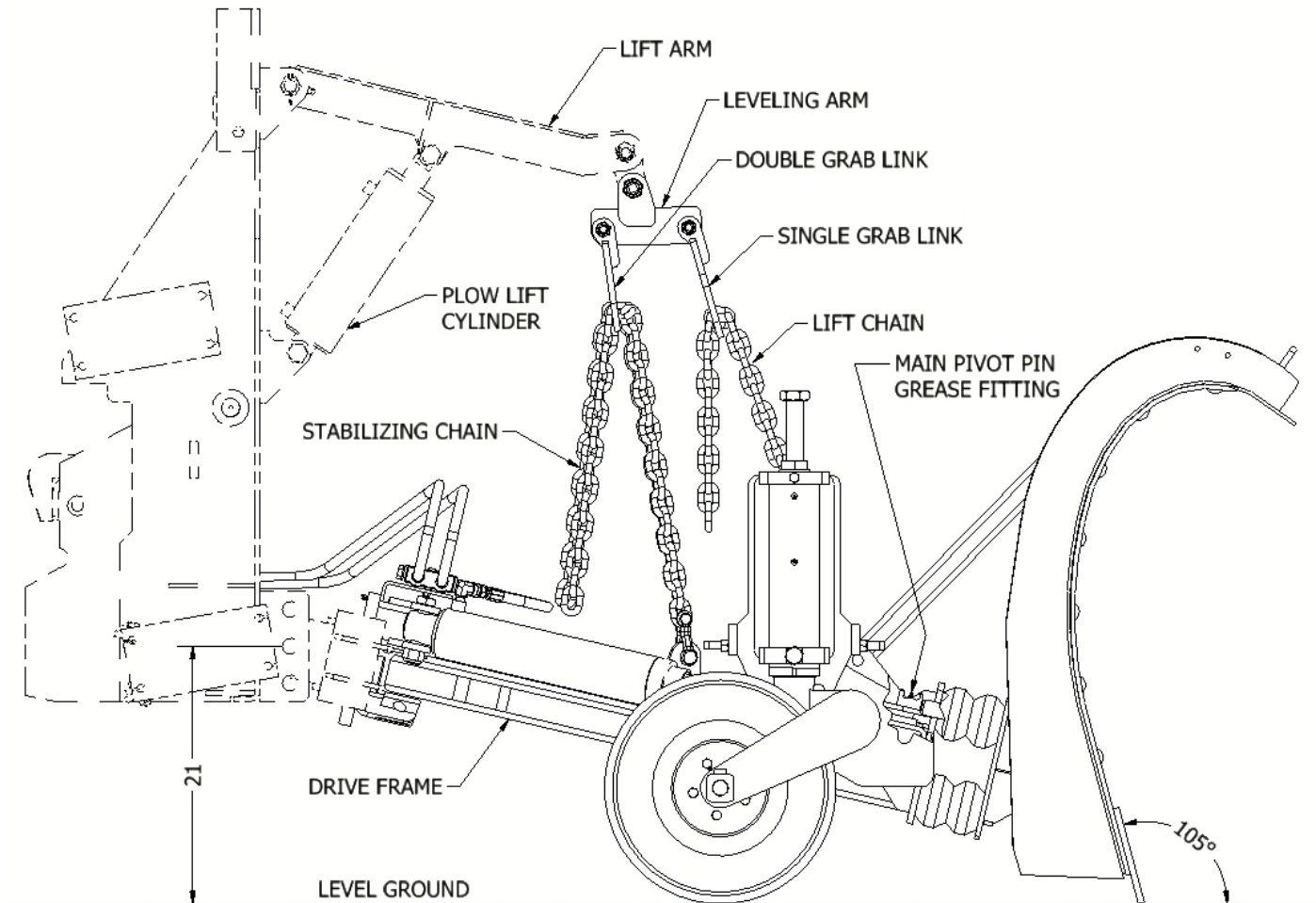


FIGURE 1: DRIVE HEIGHT AND LIFT CHAIN SETUP

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TO INSTALL THE LIFT CHAIN

1. With the plow lift cylinder fully collapsed, put a few links of the lift chain through the grab links on the leveling arm. Leave some slack to allow the plow to follow the contour of road, but also insure adequate carrying height with the plow lift cylinder fully extended.
2. Raise plow to maximum height (plow lift cylinder fully extended) and check position of drive frame. The plow drive frame should be parallel (level) with the ground in the carry position. Readjust lift chain length if necessary. Once the desired chain length has been determined mark the appropriate link with paint or a zip tie.
3. With plow in raised position (plow lift cylinder fully extended) determine approximate length of stabilizing chains and mark the appropriate link with paint or a zip tie.
4. Lower the plow and connect stabilizing chains to lift arm. Ensure that both chains are equal in length.
5. Raise the plow and check that all lifting is done with the lift chain and not the stabilizing chains. The stabilizing chains should be slack until the plow lift cylinder is fully extended. When properly positioned all three "legs" of chain will be taut only when the plow lift cylinder is fully extended. **CAUTION!** Do not adjust the stabilizing chains too short. Damage can occur (grab link or cylinder lug can bend or chain can break) if the stroke of the plow lift cylinder exceeds the travel length of the stabilizing chain.

CASTER ADJUSTMENT

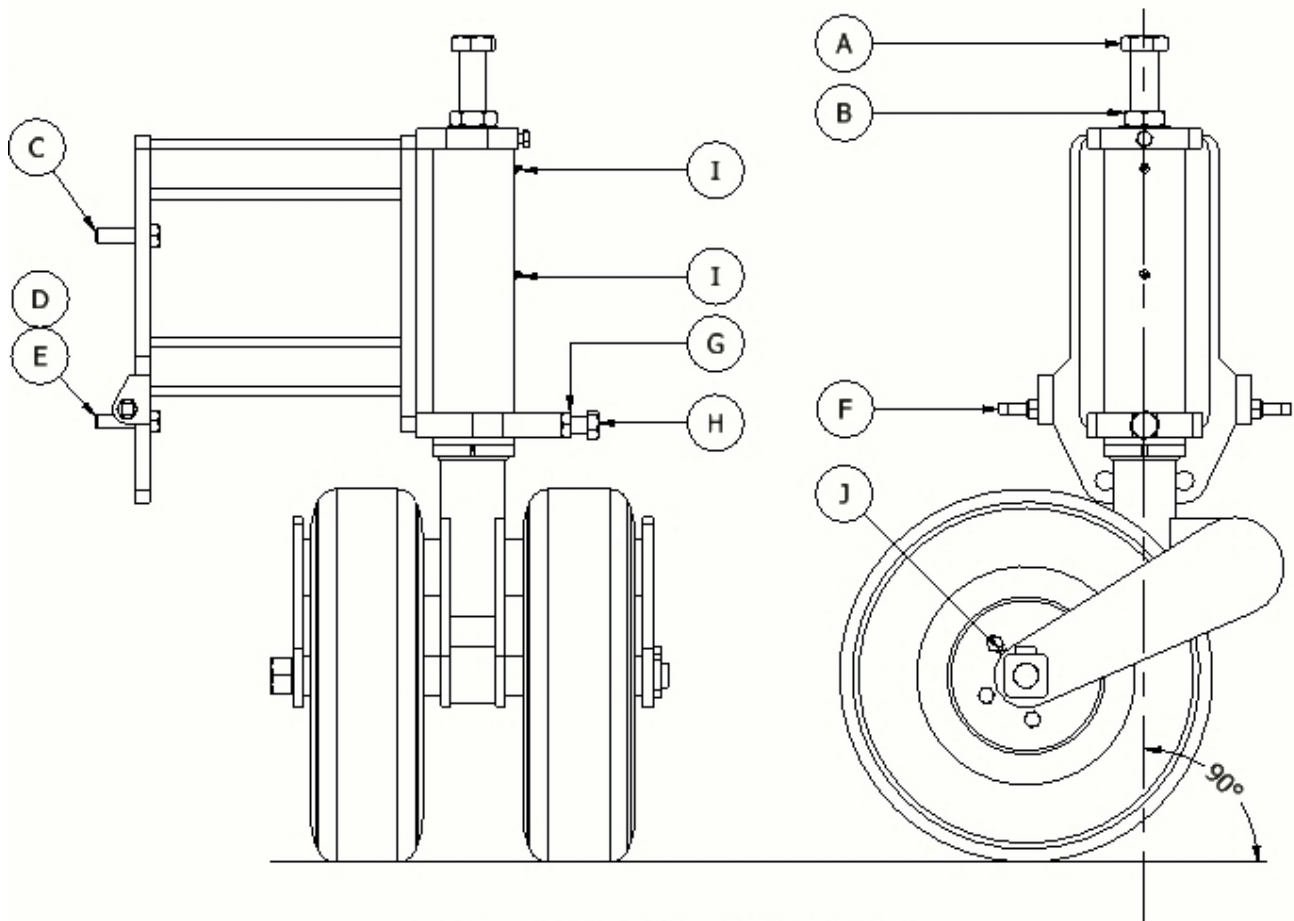


FIGURE 2: CASTER ADJUSTMENT

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For proper performance of the casters it is important that the adjustment caster housing is perpendicular to the plowing surface as illustrated in Figure 2. To make this adjustment:

1. Raise the caster wheel off the plowing surface to allow the caster mounting bracket to be pivoted on the top bolt (Item C). To raise the caster wheel turn the caster adjustment screw (Item A) clockwise.
2. Once the caster is off the plowing surface loosen all 3 bolts (Items C, D & E).
3. Adjust caster bracket assembly so that it is perpendicular to the plowing surface. Adjusting screws (Item F) are provided to make fine adjustment possible.
4. Tighten all bolts (Items C, D & E) and lock adjusting screw (Item F) with jam nuts.
5. Lower caster wheel back to the plowing surface by turning caster adjustment screw (Item A) counter clockwise and lock with jam nut (Item B).

NOTE: The caster mounting plate has been provided with two sets of mounting holes which allows lowering of the caster assembly by 3".



CASTER SHIMMY

The caster assembly has been adjusted at the factory to prevent caster shimmy and initially it should not be necessary to make any adjustments. If caster shimmy becomes evident during plowing due to wear, a simple adjustment will eliminate this problem.

To adjust caster shimmy, proceed as follows (Refer to Figure 2):

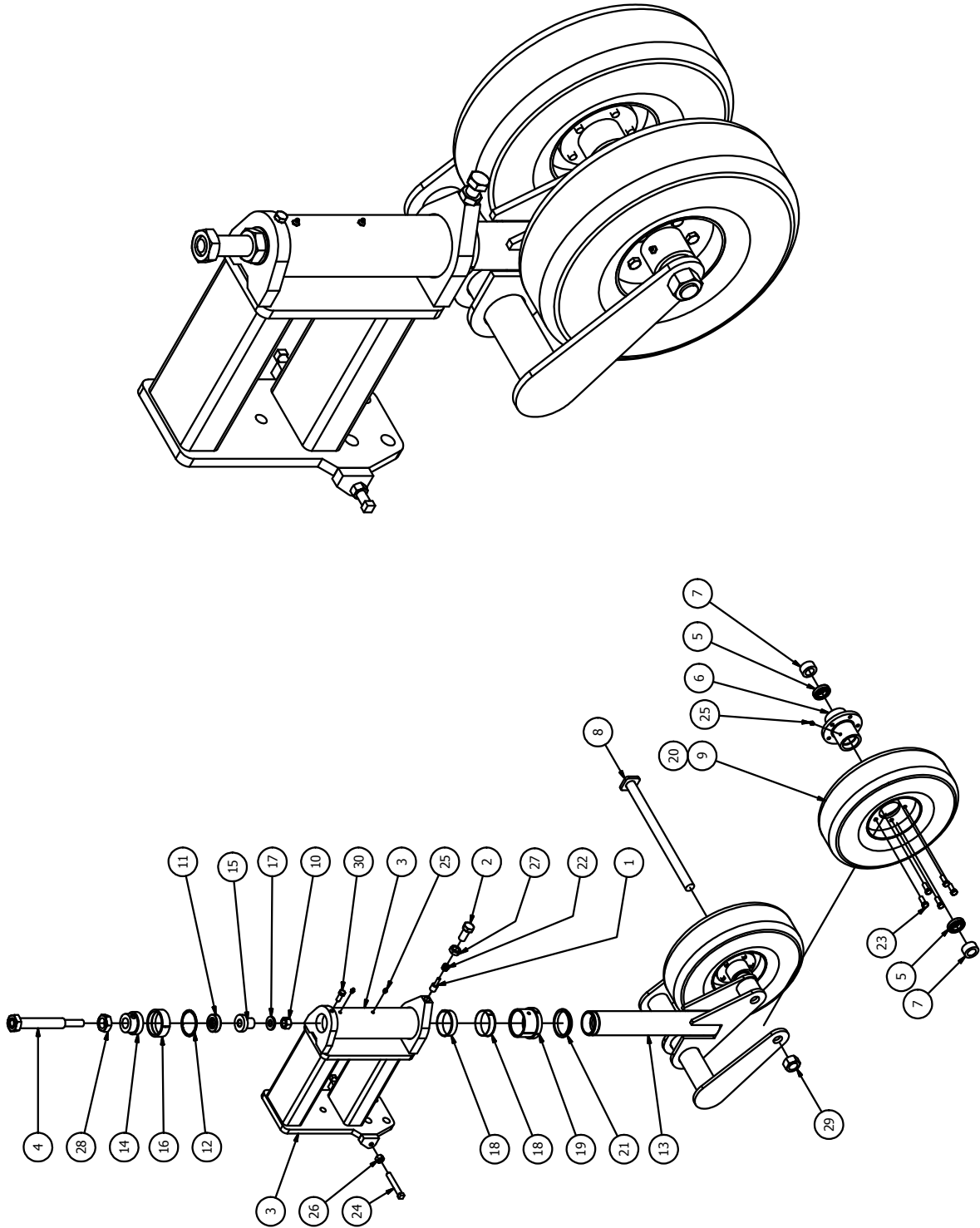
1. Raise caster assembly off the plowing surface until the tires are free to rotate without contacting the ground.
2. Back off jam nut (Item G) and turn adjusting screw (Item H) clockwise until it is snug. Then back off one half turn counter-clockwise. This will provide sufficient drag between the spring loaded split bushing and the fork tube assembly.
3. Rotate fork and wheel assembly by hand. You should be able to rotate the fork without applying excessive pressure.
NOTE: Too much drag will result in caster wheels not trailing properly and scuffing of tires. Insufficient drag will cause caster shimmy.
4. Once satisfactory drag has been obtained, lock adjusting screw (Item H) with jam nut (Item G).
5. Return caster wheel assembly to plowing surface.



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CASTER WHEEL ASSEMBLY PNEUMATIC KESSEL

ITEM ID	ITEM NO.	DESCRIPTION	QTY REQ
1	02301175	PLUNGER	1
2	02301176	BOLT HEX 7/8 X 2 UNF ZINC DRILLED	1
3	02301177	CASTER MOUNTING BRACKET	1
4	02301185	ADJUSTING SCREW WELDMENT	1
5	0510041	TIMKEN BEARING CUP CONE & SEAL	4
6	0510042	TRAILER HUB WELDED 5 BOLT PNEU WHEEL	2
7	0510043	SPACER PNEUMATIC WHEEL ASSY	4
8	0510044	AXLE ASSEMBLY	1
9	0510045	CARLISLE 570-8 TIRE AND TUBE	2
10	0510050	7/8-14 NF STOVER LOCK NUT - THIN	1
11	0510051	TIMKEN T139 THRUST BEARING	1
12	0510052	SPIROLOX RETAINING RING	1
13	0510053	FORK WELDMENT	1
14	0510054	NUT - KESSEL CASTER	1
15	0510055	INSIDE SUPPORT BUSHING	1
16	0510056	OUTSIDE SUPPORT BUSHING	1
17	0510057	WASHER - KESSEL CASTER	1
18	0510058	INNER GUIDE RING LINER	2
19	0510059	GUIDE SLEEVE	1
20	0510072	8GA 2PC SPLIT RIM AND FLAP	2
21	0510085	WIPER RUBBER	1
22	0510086	SCHNORR DS-90 DISC SPRING	18
23	0510087	WHEEL BOLT	10
24	0510088	5/8-11UNC X 4 SQ HD SET SCREW	2
25	HW29A-02	GREASE FITTING 1/8 NPT STR	4
26	HW30A-10	NUT HEX 5/8 UNC ZINC	2
27	HW30B-14	NUT HEX JAM 7/8 UNF ZINC	1
28	HW30B-22	NUT HEX JAM 1 3/8 UNC ZINC	1
29	HW31D-20	NUT HEX STOVER 1 1/4 UNF ZINC	1
30	HW41A-0810	BOLT HEX 1/2 X 1 1/4 UNF ZINC	1





OPERATION

When all conditions of installation have been met, the plow is ready to operate. This plow was designed to operate in the forward plowing direction only. **NOTE: Always lift the plow before reversing the prime mover.** The levers for controlling the plow lift and reverse functions are located in the cab of the prime mover.

TO LIFT THE PLOW

The plow lift lever activates a three-position valve. Normally to raise the plow, pull the plow lift lever. When you release the lever the valve will return to a neutral hold position and the plow will remain in that position. To lower the plow, push the plow lift lever. When you release the lever, the valve will return to a neutral hold position. **NOTE:** For plows with this lift valve arrangement, it is necessary to hold the plow lift lever in the down position for a few moments while plowing to allow the plow to seek its lowest level. After this has been accomplished you can release the lever and the plow will be properly set to follow the contour of the plowing surface. However, some units are equipped with a three-position plow lift valve with a detent in the down position. This valve will lock in a float position when the plow is lowered. The plow will then automatically seek its lowest level allowing it to follow the contour of the plowing surface.

TO REVERSE THE PLOW

Normally the plow reverse lever activates a three-position valve. If you push or pull this lever, the plow will reverse to the left or right accordingly. When you release the lever the valve will shift to a neutral hold position. Therefore, you have an infinite variety of plowing angles at your disposal. When setting the plow in either the right or left position, raise the plow above the plowing surface and push or pull the lever accordingly until the cylinder bottoms out, then back it off slightly to allow the valve cushion to work properly. **Do not run the plow with cylinders fully retracted.**

MAINTENANCE

In preparation for the snowplowing season and **after every eight (8) hours of operation**, a visual equipment inspection must be performed. Look for any damaged components, bends, cracked welds, hydraulic leaks, etc. Inspect all fasteners; tighten any that have loosened and replace any that are damaged. Check all hydraulic hoses for cuts, cracks and/or leaks. Check plow chains for wear and ensure chain shackles are not loose. On plows with pushframe mounted casters, check all caster assembly mounting bolts for tightness and/or proper adjustment. Correct caster height setup is critical for plow operation and performance. Check casters for proper vertical alignment and adjust if necessary, following the procedure outlined in the Caster Adjustment section of this manual. Inspect tires for wear.

Periodically during plowing, stop to inspect plow cutting edges and moldboard/pushframe casters for wear. At the first sign of excessive wear, discard and replace with new parts.

There are 4 grease fittings on the caster assembly and one on the pushframe. Lubricate the main pivot pin, see figure 1 for location, and caster tube assembly, (Item I in figure 2). To lubricate wheel hubs (Item J in figure 2) use a hand grease gun to prevent applying excessive pressure on the seal and dust cap. Dust caps are fitted with 5 psi pressure plugs to prevent pressure build up and allow excess grease to escape.

When the plow is disconnected from the prime mover, be sure to couple the hydraulic hoses together, to prevent damage to the quick disconnect hose ends and to help prevent the introduction of foreign material into the hydraulic system.