



OWNER'S MANUAL
VCL ONE-WAY 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 - VCL ONE-WAY 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 **One-Way 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 **One-Way 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.**

The one-way plow is one of the most common pieces of snow removal equipment available. The one-way plow can be described as a tapered moldboard, contoured to lift and throw the snow as far as possible, with the least amount of power from the truck. It is angled to push the snow to one side as the truck advances.

The Viking-Cives LTD one-way plow has been engineered and built with durability and safety of operation in mind. It has inherited a compression spring trip mechanism to cushion sudden shock, in the event contact between the plow cutting edge and an obstruction such as railway tracks, manhole covers, etc occurs.

Viking-Cives LTD will not recommend any modifications to its products without prior written approval. Any modifications carried out without prior approval from VCL will **VOID ALL WARRANTY**, and will become the responsibility of the party who completed the modifications.

To ensure safe and trouble free operation of the one-way plow, careful attention must be given to the critical adjustments during the initial installation and set-ups, as well as following periodic maintenance and inspection schedules.



INSTALLATION

Viking-Cives LTD manufactures various models of front one-way plows. While each of these plows vary in style from one model to the next, the basic installation process remains the same for all models.

NOTE: These installation instructions are intended as a guide to aid in the mounting of your Viking-Cives **One-way Plow**. All dimensions provided in these instructions are approximate and could vary due to variables such as: chassis make and model, tire size, type of suspension, customer preference, and/or unknown interference caused by immovable attachments. Viking-Cives LTD assumes no responsibility/liability for improper plow installation, unless installed by Viking-Cives LTD.

ATTACHMENT 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. **WARNING: When plow is being raised, lowered or reversed – STAND CLEAR!**

The proper installation and setup of the one-way plow is critical in order to achieve the desired plowing results. The installation of the plow on the truck and the adjustment of the moldboard must be performed on a flat, level, hard surface, such as a concrete garage floor or paved area as follows.

Snow Plow Mounting

1. Set plow unit on a firm, level surface (such as a concrete garage floor or paved area) that is large enough to safely accommodate this product.
2. Drive the prime mover into position. Connect the plow drive frame to the vehicle push harness; this is done by inserting the drive pins/bars (which are chained to the push harness) through the holes in the drive swivel, secure with lynch pins. **DANGER: 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 parking brake is engaged.
3. The drive lugs of the plow swivel are to be pinned to the set of mounting holes in the vehicle push-plate which are closest to 21 inches +/- 1.5 inches, as shown in Figure 1.), greater height variances should be corrected prior to plow hookup. Before measuring push height, it is important to ensure that the plow unit is properly ballasted. If the plow is equipped with a Quick-tack swivel, drive height will have been pre-selected for you.
4. With the lift cylinder fully retracted, attach the appropriate links in the lift chains to the grab links on the lifting arm. Adjust the chains to ensure that the plow lifts with the intake nose slightly higher than the discharge end of the plow. *When the plow lift has been properly adjusted, the cable/chain links should be marked with paint to ensure quick and easy remounting of the plow when required.*
5. Adjustable push-frame shoes are provided to stabilize the plow and carry the drive frame when trip action takes place. With the plow down and the lift chains slack, ensure that the drive frame shoes are adjusted so that both the shoes and the cutting edge contact the road surface at the same time. Although under some plowing conditions other settings may be required. **WARNING: Improperly adjusted or missing shoes can render the trip mechanism ineffective, which can lead to an extremely dangerous condition.**
6. The push frame shoes should be mounted in such a way that the shoe tips up at the front when the plow is raised. The shoe-mounting bracket may be offset in order to accomplish this requirement.
7. Adjusting the cutting edge attack angle is accomplished using the pinning holes in the telescopic moldboard standoff arm. Lengthening the arm will increase the attack angle, while shortening the arm will decrease the attack angle. Approved cutting angles are 50-degrees from horizontal for tungsten carbide blades and 45-degrees for standard or hardened steel blades. **NOTE: For tungsten carbide blades, any other attack angles may cause the inserts to “chatter” and break prematurely.** A simple magnetic angle gauge is used for measuring these angles. Refer to Figure 2.
8. The compression trip assemblies should be pre-assembled with an initial compression or spring pre-load factory set. If adjusting or repairing the spring assemblies the spring cap should be tightened until the compressed spring length is 12-3/4 inches. The spring free length under no compression is approximately 14 inches.



Disconnecting The Plow:

Disconnecting the plow can be accomplished easily by reversing the procedure set out in the mounting instructions previously mentioned as follows:

1. Transport plow to an accessible location.
2. Block pushframe.
3. Lower lifting arm.
4. Remove drive pins connecting pushframe to vehicle push-plate.
5. Disconnect lift chains (ensure that the links have been marked to facilitate easy future hook-up).
6. Back vehicle away from plow.

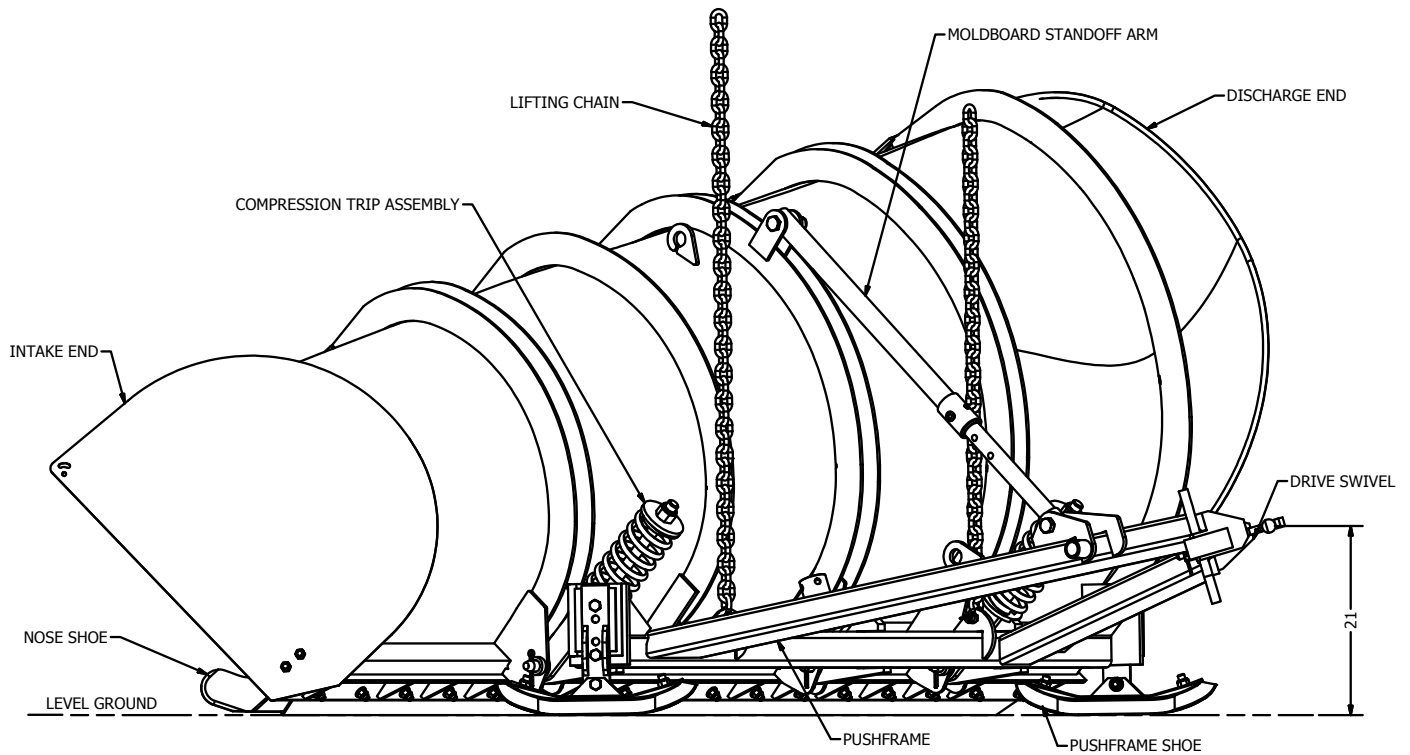


FIGURE 1: VCL ONE-WAY PLOW COMPONENTS

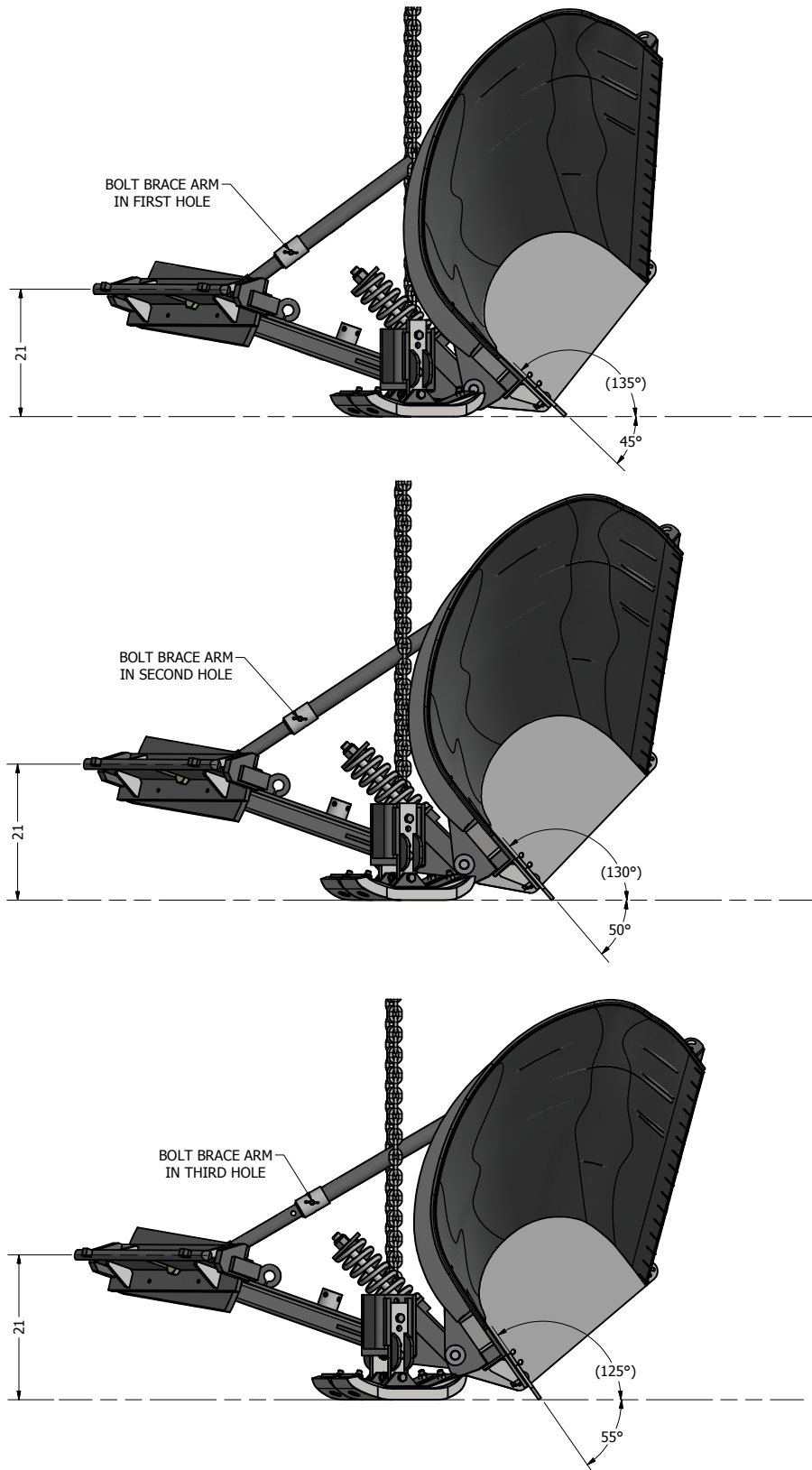


FIGURE 2: DRIVE HEIGHT SETTINGS



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.

REPLACEMENT OF CUTTING EDGE

1. Park the prime mover/vehicle on a level surface (such as a concrete garage floor or paved area) that is large enough to safely accommodate unit with the plow attached.
2. Place the vehicles transmission in "Park" and set the parking brake.
3. Lower the plow onto suitable blocking, which are positioned immediately behind the moldboard. This blocking must be of sufficient height to hold the cutting edge approximately 6" to 8" above the level surface.
4. Shut off the prime movers engine, remove the starter key, wait for all moving parts to come to a stop, and relieve all pressure in the hydraulic lines.
5. Loosen the nuts on all the cutting edge bolts; remove all nuts and bolts except the bolts on each end of the cutting edge.
6. While holding up the end of the cutting edge, remove the nut and bolt from that end and allow the cutting edge to pivot down to the level surface.
7. Repeat Step 6 for the other end of the cutting edge. If using a standard center punched reversible cutting edge, flip the edge from top-to-bottom and reinstall. Properly dispose of worn-out edges and all bolts and nuts.
8. Reinstall a new wear edge by reversing the procedures in steps 7 thru 5; tightening all nuts to recommended torque values.



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. Check all pushframe shoe mounting bolts for tightness and/or proper adjustment. Correct shoe height setup is critical for plow operation and performance.

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



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