

Northwood SugarWorks LLC
Lunchbox™ Vacuum/Releaser
User Manual



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Warnings:

- Use only with clean dry air. Use a moisture trap if the releaser is at the bottom of a sloped section of air line.
- Oil-less compressors are recommended to prevent contamination of sap in the event of a diaphragm rupture.
- 80psi maximum air inlet pressure.
- For the air supply tubing, only use tubing rated for compressed air at the appropriate pressure. (suggested source automationdirect.com) pneumatic tubing.
- Always bleed air pressure before disconnecting air inlet supply and hold tubing firmly to avoid hose whip when disconnecting.
- Keep cooler box full of clean pure water, failure to do so will result in pump damage from freezing.

Compressor requirements:

- Almost any oil-less compressor with a pressure switch and adjustable regulator can be used. A 1hp compressor will run several Lunchbox™ releasers.

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Releaser Setup and operation:

1. Place the Lunchbox™ releaser in a flat location, do not install on snow, as the snow melts the releaser may tip, spilling the water out and losing its freeze protection.
2. Open the lid and fill the insulated base container with clean pure water. Do not use sap and do not add anything to the water that could lower its freeze point.
3. Check the water level a couple times during the season to make sure it is completely full. A water level that drops may indicate a leaking fitting on the vacuum side of the pump and should be fixed.
4. Close the lid snapping it shut, the tubes may rub when closing just fiddle them into place gently.
5. Connect the sap tubing system and a vacuum gauge, if desired, to the sap inlet.
6. Connect a tube to the sap outlet and arrange it so it pumps into your sap tank.
7. Connect the air supply tubing to the air inlet. Turn on air supply at source. The releaser will start operating, and will automatically turn itself on and off with sap flow, it can run unattended for the entire maple season. The pump may keep running if it is dry and the sap has not started to flow. In this case it is best to wait until there is a little sap flow to turn on the air supply. Once the valves in the pump are wet the air can remain pressurized the entire season. An air shutoff at the Lunchbox™ releaser is recommended for ease of service.
8. Keep your tubing system tight for best results. Vacuum leaks will cause the releaser to have low vacuum, and to make your compressor run a lot.
9. During cold periods there will be ice formation around the exhaust line, and between the pump and the lid. This is ok! The formation of ice takes a lot of energy and this is what protects the sap in the pump from freezing. Water ice forms at 32f sap ice forms at about 31.6f. This 0.4f temperature differential means the water ice will freeze before the sap freezes damaging the pump.
10. Freeze damage is never covered under warranty, so learn your releaser, if it is getting a very large amount of ice (2 inches or more below the lid) because it has been in the teens for a few days bring it inside for a warm up, or add some warm (not over 140F) water to the cooler chamber to melt the ice.
11. Recommended air pressure is 35-40psi. This is all the releaser needs for most installs, higher pressure increases the chance of ice damage to the diaphragm.
12. The sap inlet and outlet push-fit fittings will not be damaged if frozen. However, it is not possible to separate them while they are frozen.

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Transfer pump setup:

This is largely the same as releaser setup except that the pump inlet is plumbed to the remote sap tank and an air supply valve can be placed in the sugarhouse and controlled from there, With proper air supply and sap outlet plumbing the Lunchbox™ can be used as a remote pump station to pump sap from up to 750 trees.

Maintenance

Prior to storing for the off season:

1. Empty water from Lunchbox™ chamber.
2. Flush inlet and outlet with clean water.
3. Run pump dry for 30 seconds.
4. Prop lid open to help prevent mold/mildew from forming.

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FAQ

What is the Lunchbox™ releaser?

It's a fully freeze protected pump with:

- Up to 20 inches of vac at inlet
- Up to 60 psi pressure on outlet, although increasing the outlet pressure decreases the available vacuum level. Pumping sap up 30ft seems to drop the vac a couple of inches.
- Automatic start/stop with sap flow when used as a vacuum/releaser.

What can I use it for?

It can be used as a combination vacuum pump/ sap releaser/ sap pump.

How many taps?

We recommend 100 taps when used as vacuum/releaser. Some will have trouble maintaining vacuum at these numbers and some will add more and be successful. It's all about the vacuum leaks.

What else can it be used for?

As a sap transfer pump it can service approximately 750 taps. This depends on the static head and dynamic head loss of the plumbing and air systems. Call Northwood Sugarworks LLC for assistance in setting up a larger transfer pump system.

Why is the lunchbox better than a mechanical diaphragm pump?

- It can be placed remotely in the sugarbush and you don't have to bring it electricity, just an air line.
- It is completely freeze protected.
- Its diaphragm is not susceptible to ice damage like the mechanical pumps.
- It's automatic. The mechanical pumps run all the time, the Lunchbox™ turns itself on and off with the sap flow.
- It's efficient, it only uses as much energy as is required to pump the sap.
- You can get 2 Lunchbox™ releasers for about the cost of 1 mechanical diaphragm releaser.

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NORTHWOOD SUGARWORKS, LLC

LIMITED WARRANTY

The warranty obligations of Northwood SugarWorks, LLC (“Northwood Sugar”) for this product are limited to the terms set forth below:

This limited warranty covers defects in materials and workmanship in this product at the date of purchase.

The product manual contains instructions for safely, operation and maintenance. Prior to assembly, setup or use, it is essential to read and follow all instructions and warnings in the manual in order to operate correctly and avoid damage or injury. This product is not intended for use by children.

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, negligence, modification of or to any part of the product, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), improper installation, operation, lightning, power surges, or other acts of God or nature. This limited warranty does not cover freeze damage unless Northwood Sugar determines, in its sole discretion, that the freeze damage is a direct result of defects in materials or workmanship. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Northwood Sugar to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Northwood Sugar does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

This limited warranty lasts for one (1) year from the date of original purchase of this product.

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to any subsequent purchasers or owners of this product.

Northwood Sugar will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

- 1.** Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Northwood Sugar will also pay the shipping costs necessary to return this product once the repair is complete.
- 2.** Replace this product with a direct replacement or with a similar product deemed by Northwood Sugar to perform substantially the same function as the original product. Returns for replacement must be authorized in writing in advance of shipment by Northwood Sugar.
- 3.** Issue a refund of the original purchase price less depreciation to be determined based on the age of the product

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at the time remedy is sought under this limited warranty.

Northwood Sugar reserves the right to inspect any and all equipment involved in a warranty claim.

If this product is returned to Northwood Sugar or the authorized Northwood Sugar dealer from which it was purchased or any other party authorized in writing to repair Northwood Sugar products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Northwood Sugar will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Northwood Sugar will not be responsible for any costs related to any setting up or breaking down of this product, any adjustment of user controls or any programming required for a specific installation of this product.

To obtain a remedy under this limited warranty, you must contact either the authorized Northwood Sugar reseller from whom you purchased this product or the Northwood Sugar office nearest you. For a list of authorized Northwood Sugar resellers and/or Northwood Sugar authorized service providers, please visit our web site at www.NorthwoodSugarWorks.com or contact the Northwood Sugar office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Northwood Sugar reseller. If it is decided by Northwood Sugar that this product is to be returned under this limited warranty, a return authorization number, obtained from Northwood Sugar, will be required or the shipment will be refused. You may also be directed to an authorized reseller or a person authorized by Northwood Sugar to repair the product. If it is decided by Northwood Sugar that this product should be returned directly to Northwood Sugar, this product should be properly packed, preferably in the original carton, for shipping.

Limitation on Liability

THE MAXIMUM LIABILITY OF NORTHWOOD SUGAR UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, NORTHWOOD SUGAR IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL, LOSS OF PROFITS, OR PRODUCTION OR COMMERCIAL LOSS OR DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. AS NORTHWOOD SUGAR HAS NO CONTROL OVER THE USE, SETUP, FINAL ASSEMBLY MODIFICATION OR MISUSE OF THE PRODUCT, NO LIABILITY SHALL BE ASSUMED OR ACCEPTED FOR ANY RESULTING DAMAGE OR INJURY BY THE ACT OF USE, SETUP OR ASSEMBLY, THE USER ACCEPTS ALL RESULTING LIABILITY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply.

Exclusive Remedy

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS LIMITED WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED BY LAW, NORTHWOOD SUGAR SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF NORTHWOOD SUGAR CANNOT LAWFULLY DISCLAIM OR EXCLUDE IMPLIED WARRANTIES UNDER APPLICABLE LAW, THEN ALL IMPLIED WARRANTIES COVERING THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY TO THIS PRODUCT AS PROVIDED UNDER APPLICABLE LAW.

IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A "CONSUMER PRODUCT"

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UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPLICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

Other Conditions

The Terms of this limited warranty are governed by New Hampshire law.

In the event that a dispute arises between Northwood Sugar and you, except for injunctive type of relief, the sole method for settling the dispute will be binding arbitration in the state of New Hampshire or another location mutually agreeable to the parties. The arbitration shall be conducted on a confidential basis pursuant to the Commercial Arbitration Rules of the American Arbitration Association. Any decision or award as a result of any such arbitration proceeding shall be in writing and shall provide an explanation for all conclusions.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Northwood Sugar or (iii) this product is not purchased from an authorized Northwood Sugar reseller. If you are unsure whether a reseller is an authorized Northwood Sugar reseller, please visit our web site at www.NorthwoodSugarWorks.com or contact Northwood Sugar at: 978-500-0082.