



**Energy Recovery Wheel
Operation and Maintenance Manual**

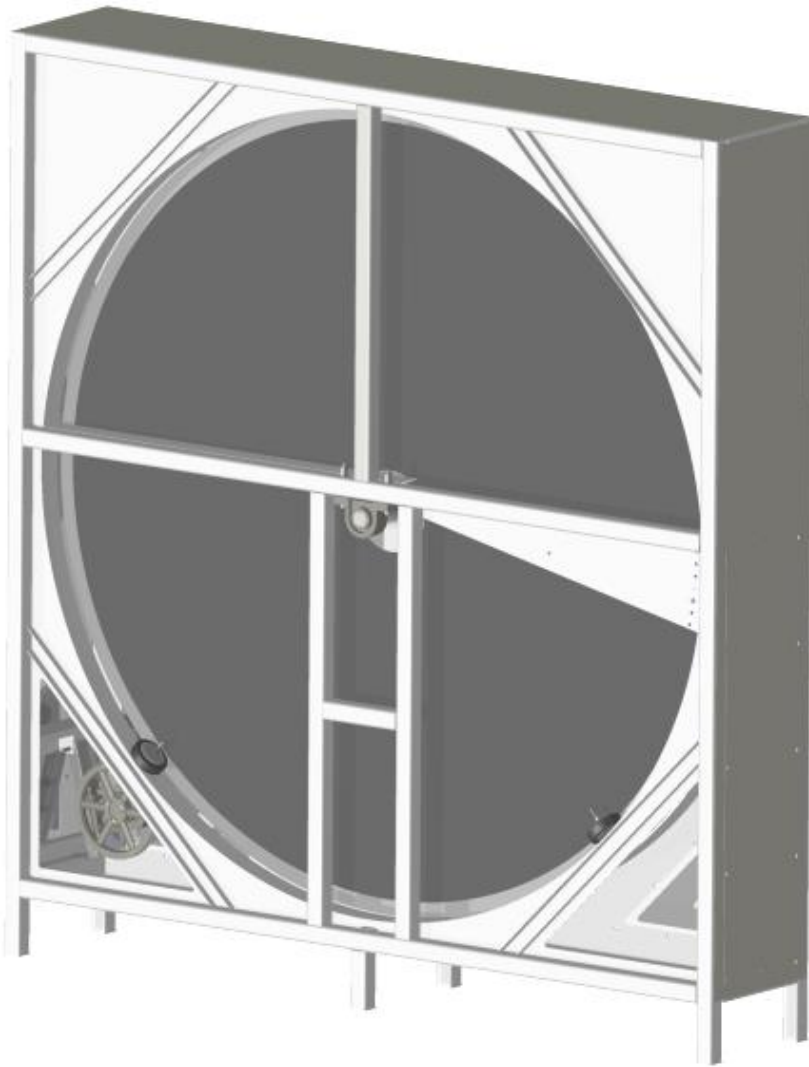


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Installation and Storage

In most cases, the energy recovery wheel will come pre-installed in your Haakon air handling unit. For air handling units requiring a horizontal split, Haakon will provide customized installation instructions.

For times when the energy recovery wheel is not in use, it must be manually rotated 180° once per week to avoid developing flat spots on the bearings.

Scheduled Maintenance and Inspections

See the following table for all regularly scheduled maintenance and inspections. These tasks should be performed more frequently if operating conditions dictate.

Caution

- Keep clear of all moving parts while the energy recovery wheel is rotating. Lock out power and wait for the wheel to come to a complete stop.
- All electrical work to be performed by a qualified electrician.
- Read any other instruction manuals included with this energy recovery wheel before attempting to operate it.

Period	Maintenance / Inspection Items
Initial startup	Initial startup items, wheel surface, casters, drive belt, gearmotor, seals
24 hours after initial startup	Grease/inspect bearings, wheel surface, casters, drive belt, gearmotor, seals
1 week after initial startup	Grease/inspect bearings, wheel surface, casters, drive belt, gearmotor, seals
1 month after initial startup	Grease/inspect bearings, wheel surface, casters, drive belt, gearmotor, seals
3 months after initial startup	Grease/inspect bearings, wheel surface, casters, drive belt, gearmotor, seals
Every 6 months, continuous	Grease/inspect bearings, wheel surface, casters, drive belt, gearmotor, seals

Initial Startup Items

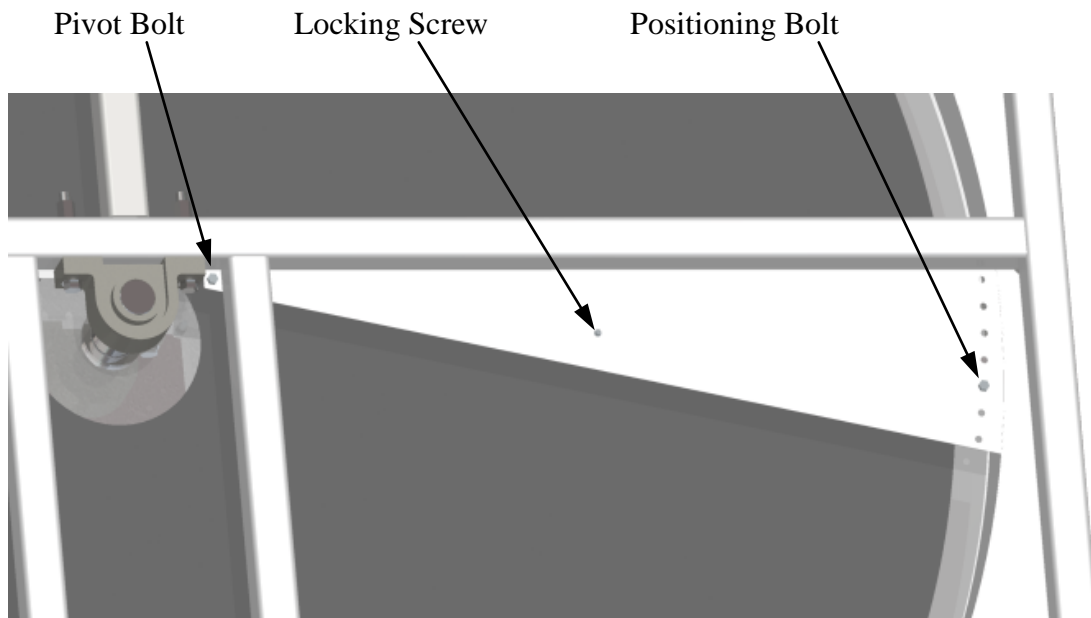
Before commencing operation, inspect the energy recovery wheel for any signs of damage that may have occurred during shipping and/or installation. Check that the adjustable purge arm (if equipped) is securely fastened and that all bolts are tight. Rotate the wheel by hand through at least one full rotation to ensure all parts are able to rotate freely before attempting to operate the energy recovery wheel.

Once power has been connected, check that the heatwheel rotates in the direction indicated by the arrow decals. “Bump” the power briefly to see which direction the wheel rotates, and then reverse any two power wires to change direction if necessary. If the energy recovery wheel is powered from a VFD, switch any two wires on the load side of the VFD to reverse direction.

It is the responsibility of the customer to ensure that the VFD is programmed such that the energy recovery wheel will rotate at no less than $\frac{1}{4}$ rpm and no more than 20 rpm.

Adjustable Purge

The adjustable purge on your energy recovery wheel has been factory preset based on the expected operating conditions of your Haakon air handling unit. The adjustable arm of the purge section is held in position with a bolt at either end and one or more locking sheet metal screws along its length.

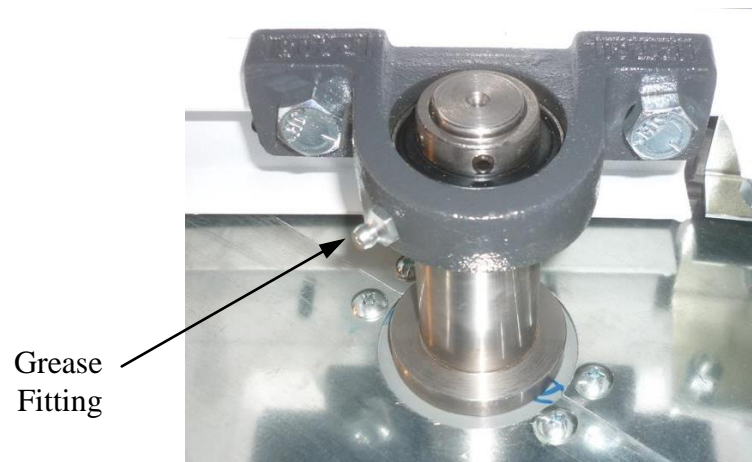


Adjustable Purge

To reposition the adjustable arm, remove the positioning bolt and all locking screws, and loosen the pivot bolt. Rotate the arm to the desired position and secure in place using all factory supplied hardware (this will require re-drilling the triangular purge plate when re-installing the sheet metal screws). Adjust all seals mounted on the adjustable arm as required. Rotate the wheel by hand to ensure the seals will not bind against the wheel face before resuming operation.

Bearings

Your energy recovery wheel will be equipped with either an externally mounted pillow block bearing housing or a bearing insert integrated into the hub of the wheel.



Pillow Block Bearing Housing

For units with pillow blocks, refill the bearing grease through the grease fittings provided on the pillow block housing. It is recommended to use only lithium based NLGI #2 grease. The pillow block units are factory pre-lubricated and thus do not require additional grease before initial startup. Units with integrated bearing inserts do not require relubrication. Inspect the bearings for any excessive or abnormal heat, noise, and vibration. If any is discovered, it may be necessary to replace both bearings. When replacing the bearings, inspect the shaft for any damage and replace it at the same time as the bearings if necessary.

Wheel Surface

Inspect the surface of the wheel to ensure it is free from dust, dirt, or any other foreign material that could impede airflow. Light dust can be removed with an industrial vacuum cleaner. If there is a heavy accumulation of dust it may be necessary to increase the frequency of the wheel surface inspections and/or install higher efficiency filters upstream of the wheel surface. A heavy accumulation of dust can be removed using a brush and vacuum, or by blowing compressed air from the other side of the wheel. Take care to avoid damaging the corrugated structure of the wheel surface during cleaning.

Casters

Your energy recovery wheel may be equipped with casters on the downstream faces of the wheel to help maintain the proper gap between the wheel flange and the labyrinth seal. If these casters are present, ensure that they are positioned such that they are barely in contact with the wheel flange without any airflow across the wheel. The casters can be repositioned by loosening the nuts located above and below the caster assembly. After repositioning the casters, rotate the wheel through one full rotation by hand to ensure the casters will rotate freely. In the event of excessive wear, the casters should be replaced.



Adjustable Caster Assembly

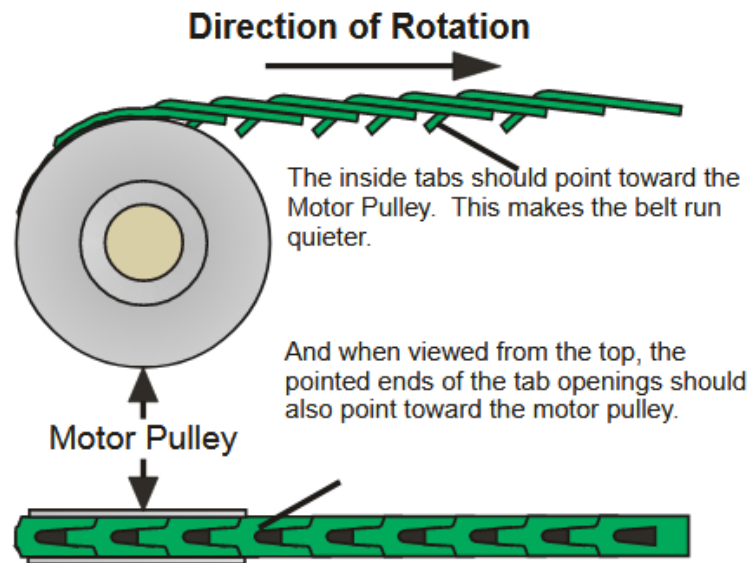
Drive Belt

Check the entire length of the drive belt for any signs of wear (fraying or cracking) and replace the belt if necessary. Check the belt tension and adjust as necessary using standard practices for belt driven equipment. Belt tension can be adjusted either by repositioning the motor on the pivot base, or by removing links to shorten the belt.



Typical Belt Drive Arrangement

To install a new belt, secure one end of the belt to the outside of the wheel and rotate it by hand until the secured end returns. Remove links to achieve the desired belt length and connect the two ends before engaging it with the sheave mounted on the drive motor. Ensure the belt orientation is as shown in the following figure.



Proper Drive Belt Orientation

Adjust the drive motor position on the pivot base or add/remove links as necessary to fine tune the belt tension. Rotate the wheel by hand to ensure that check the tracking of the belt before resuming operation.

Gearmotor

Please refer to the gearmotor instruction manual included with the heatwheel for all required maintenance procedures.

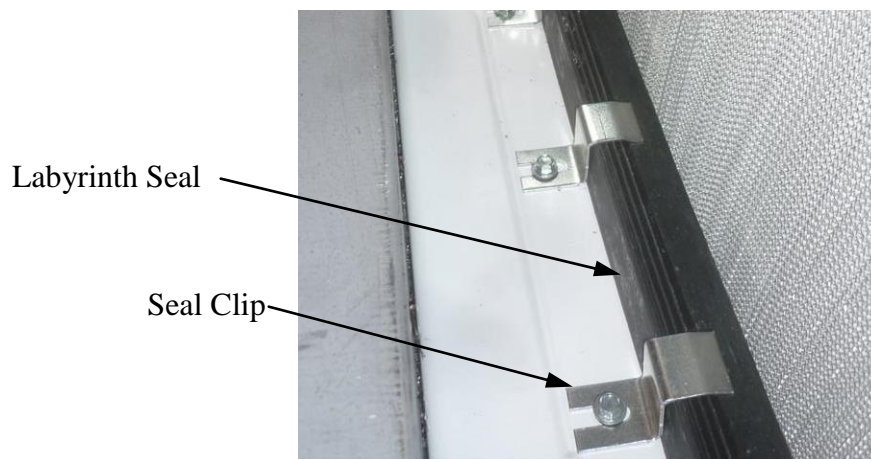
Seals

Your energy recovery wheel will be equipped with either a full contact brush seal or a non-contact labyrinth seal. For units with a brush seal, first check to see if the rubber or brush portion of the seal appears worn, and replace if necessary. Rotate the wheel by hand to check that the brush is making good contact with the inside of the housing or wheel face throughout an entire rotation of the wheel and adjust as necessary.



Full Contact Brush Seal

For units with the labyrinth seal installed, check for any signs of wear and replace if necessary. Ensure that the gap between the labyrinth seal and the face of the wheel is set to a minimum close running gap of 2-3 mm. For convenience, a seal clip can be used as a gauge.



Non-Contact Labyrinth Seal