



Smart Sifter Sifter

Instruction Manual



4002 Liberty Bell Road

Fort Scott, Kansas 66701

Toll Free: (800) 653-3147

Fax: (620) 223-3115

sales@norvellco.com

Table of Contents

Preparation Prior to Installing Sifter	3
Sifter Installation	4
Sifter Installation	5
Sifter RPM & Circle Diameter	6
Lubrication	7
Torque Specifications	9
Sieves, Doors & Press Top Maintenance	10
Miscellaneous Maintenance	11
Spare Parts List	12

To assure optimum performance and reliability of your sifter, careful consideration should be given to all information presented herein.

Preparation Prior to Installing Sifter

Location

Insure that the sifter is installed where the floor structure (or ceiling structure if hung on reeds) will properly support the sifter's weight and gyratory operation. The sifters should be installed in a location that will provide adequate room for operation and service to the unit. Allow space for your operator to be able to easily remove and service the sieves and drive.

Inspection

Examine each unit for possible shipping damage. If any damage is noted, advise Norvell immediately so they can assist in replacing damaged items. If Norvell arranged shipping, they will contact the transportation carrier in order to file a claim. If transportation was arranged by the customer then it is their responsibility to contact the carrier in order to file a claim.

Uncrating Sifter

1. Move the sifter and crates to the area where installation will be made.
2. Remove the top of the crates, which is stapled.
3. Remove the ends of the crates, which are stapled.
4. Remove the sides of the crates, which are stapled.
5. If your Smart sifter is enclosed on all four sides with louvered aluminum guard panels, remove the fasteners at the top corners of the guard panels and lift the guards off of the sifter frame. Place them safely to the side along with the fasteners, as you will need to reinstall them later.
6. Remove the lag bolts from the bottom of the frame that secure the sifter to its pallet and, using extended forks below the bottom frame rails, carefully lift and move the Smart Sifter into position with your forklift. **DO NOT LET THE FORKS COME INTO CONTACT WITH THE OUTLET HOPPERS OR THE HORIZONTAL CROSS-SHAFT BELOW THE SIFTER!**
7. Remove the two shipping stabilizer bars. One is on the front and the other is on the back of the sifter. Loosen the two bolts on the front and back of the sifter and remove the U-bolts on the frame and take the bars off. The bars and U-bolts may be discarded, as they are needed only to protect the sifter from moving during shipment. With the provided torque wrench tighten the two bolts on the front and on the back of the box to ninety (90) foot-pounds.
8. Some newer Smart Sifter models use four shipping brackets instead of two. These brackets must be unbolted from the frame and the sifter box in a similar manner as the one described above. Once the brackets are removed, the four bottom sifter box corner bolts, flat washers, & cast Ogee washers must be reinstalled and tightened to 90 foot-pounds.

WARNING! DO NOT ATTEMPT TO START THE SIFTER WITH THE SHIPPING BRACKETS BOLTED IN PLACE UNDER ANY CIRCUMSTANCES! To do so will immediately void the manufacturers warranty and could damage the sifter.

Sifter Parts

Power Requirements

The customer shall provide the power cable to the sifter's drive motor.

Size #3 & #4 Smart sifters have a 2hp Lafert IEC motor. Size #6 Smart Sifters have a 4hp Lafert 1200rpm IEC motor. Both 230/460 volt & 575 volt units are available.

Hooking up the Power

Attach the power cable to the motor and then up one support cable and then down the outside of the sifter frame post, leaving enough extra cable between the motor and frame to allow the sifter to swing freely without binding or stretching the cable. The cable can be attached with cable ties, electrical tape, or clamps, as preferred by the customer at the time of installation.

Bearings

Your sifter has four Rexnord MA2203 2-3/16" diameter pillow block bearings. A copy of the factory lubrication instructions is included.

Gear Boxes

Your sifter is equipped with two right-angle gearboxes. The factory lubrication instructions can be found in the Lubrication section of this manual.

Weight Buckets

Your Smart Sifter is designed to operate with the weight buckets rotating in a simultaneous motion. Therefore, when looking down from the top of the sifter when one bucket is at 12:00 the other bucket should be at 12:00.

Sifter Installation

Your Smart Sifter has been test run in our factory and has passed our internal quality control specifications before we shipped it to you. It should be ready for you to operate however we recommend that you do the following during installation and prior to operation:

- Double-check that your sifter is level. If not, please see the included Leveling Instruction Manual.

Trial Run

1. Wire the motor on temporary basis for a trial run.
2. Attach the airline to the sifter. Please see the diagram included in your manual packet.
3. Be certain that the sifter door is locked in and secured with the door locking clamps. Also check that the Air Cylinders are tightened to compress your sieves properly.
4. If the sifter has louvered aluminum guard panels, reinstall them now and tighten the ¼-20 fasteners to 35 inch-pounds.
5. Start up the sifter for a trial run and run empty for several hours. Your Norvell Smart Sifter is designed and built to operate with a 2” to 4” diameter gyratory circle. It may take a few minutes to settle down to a smooth circle after startup. This is normal for a cable-hung sifter.
6. If the sifter is operating correctly, it is now ready to be wired for permanent use. If the sifter is not operating correctly, please contact Norvell at 800-653-3147.

Congratulations!

Your new Norvell Smart Sifter is now ready
to be put into production!



RPM & Circle Diameter

To Increase or Decrease Circle Diameter

Should you desire a larger or smaller circle diameter, please contact Norvell so that we may assist you.

If you are able make the adjustments on your own, we would appreciate it if you could still contact Norvell so that we may keep a record of it.

To Increase or Decrease Sifter RPM

To change the sifter RPM, the drive and driven sheaves can be replaced with the necessary sized sheaves in order to achieve the desired limits. The v-belts will also need to be changed. Again, please contact Norvell so that we may assist you.

<u>Circle Diameter</u>	<u>Recommended RPM</u>
2"	250 – 280
2 ½"	240 – 265
3"	220 – 240
3 ½"	190 – 220
4"	180 – 190

Lubrication Instructions

The Norvell Smart Sifter drive is equipped with four (4) long life grease lubricated bearings, two (2) gearboxes, and two (2) splined vertical couplers. Before installing the bearings and gearboxes, they are carefully checked, cleaned, and then lubricated with Conoco Multiplex Red #2¹ grease, unless otherwise specified by the customer, using a hand pump gun system.

Compatible vs. Comparable

Please Note: The Conoco Multiplex Red # 2 grease furnished by Norvell is lithium based. Please do not mix this grease with one of a different base. While you may find *comparable* greases, **NOT ALL GREASE IS COMPATIBLE**. Should your facility require a Food Grade grease, completely purge bearings, gear boxes, & couplers prior to use. Incompatible greases will starve the bearing for lubrication, and can potentially ruin the sifter.

Each bearing compartment contains a zero pressure grease release zerk. The installed zerk contains no spring or ball within its structure to trap built up pressures or overflowing grease. This protection is a definite over-lubrication safety factor, assuming that no leaks occur at the oil seals; and providing the zerk fitting opening is maintained and not plugged.

Recommendation

- After the initial 30-day period of operating the sifter, check your bearing lubrication.
- When applying grease, apply two to four strokes.²
- On a 24 hour per day application, add eight pumps of our recommended grease³ per month per bearing.
- Every precaution should be taken to avoid over-greasing. This could damage the sifter bearing grease seals.
- Bearings should be checked occasionally for damaged grease seals causing leaks. If the seal leaks, grease bearings as often as necessary until damaged seals can be replaced at a convenient time.
- The vertical couplers have been pre-lubed at our factory and should be checked quarterly (every 3 months). Norvell has provided a needle point coupler and grease cartridge to access the couplers grease fitting. The fittings can be found through the top hole in the gearbox cover plate.

Caution:

Keep in mind that during periods of operation, expansion and contraction takes place within the sifter bearing compartments. This causes pressure which may result in excessive grease discharging through the grease zerk. Norvell sifter drive bearings are designed to operate at 180-degree temperatures. The neoprene grease seals are designed to accept temperatures up to 250 degrees. Sifter bearings may run hot during their first 48 hours of operation and will taper down in heat as they are run.

Gear Boxes

Your sifter is equipped with two right-angle gearboxes. The factory lubrication instructions are as follows:

- The gearboxes must be filled to the proper level with recommended grease before operation. Remove the filler plug and level plug (where provided) at horizontal shaft centerline. Fill the gearbox until lubricant flows out of the level plughole.
- Service life and efficiency of gears and bearings will be affected by oxidation or contamination of the lubricating grease. Improved performance will be obtained by periodic re-lubrication.
- Under normal conditions, the drive should be re-lubricated at intervals of approximately 700 hours of operation or every month. NOTE: 15 pumps of grease with a standard grease gun.
- Re-lubricate more frequently if unit is operated in abnormally high ambient temperatures or unusually contaminating atmosphere.
- Inspect units for extensive noise or backlash to determine if factory replacement parts may be needed.

- 1 *Conoco Multiplex Red #2 is a high-quality, multipurpose, extreme-pressure, lithium based grease. This grease is recommended for heavy-duty, heavily loaded anti-friction and plain bearings.*
- 2 *Please note that every grease gun is different and there are multiple variables to be taken into consideration; such as ambient temperature, humidity, continuous hours of operation, etc.; that will affect how much grease your bearing will require.*
- 3 *Norvell recommends using Conoco Multiplex Red #2 or an equivalent lithium based grease.*

Torque Instructions

This preventive maintenance procedure will insure longer sifter life by guarding against loose bolts resulting from normal wood shrinkage caused by plant temperature or humidity changes, etc.

Norvell recommends that you tighten your sifter bolts with a **torque** wrench to the below specifications every 90 days¹:

- 5/8” bolts – 15/16” socket – 90 foot-pounds
 - *Sifter Box*
 - *Sifter Drive to Box*
 - *Side Channel & Tie Bar Plate*
- 1/2” bolts – 3/4” socket – 70 foot-pounds
 - *Reed Caps (Ceiling & Side Channel)*
 - *Weight Plates²*
- 1/2” bolts - 3/4” socket – 90 foot-pounds³
 - *Grade 8 Cable Clamp Brackets (Ceiling & Side Channel)*

DO NOT use a hammer to tighten the door handle nuts. The door handle nuts are to be tightened only enough to press the door firmly against the sieves and to hold the sieves firmly against the internal plush strips. The door handles must be tightened evenly on both sides.

1. *On new sifters, Norvell recommends checking the torque every two weeks for the 1st month, and then once a month for the next three month allowing for a break-in period.*
2. *This only applies to sifters manufactured after September 2015.*
3. *The only exception to this are the 1/2” bolts on the side panel covers enclosing the weight bucket drive. These should be tightened enough to hold the side panel cover in place securely, over-tightening these bolts could severely damage the side panel covers.*

Preventative Maintenance for Sieves, Doors, and Press Tops

This preventive maintenance procedure will insure longer sieve and sifter life by maintaining a tight stack of sieves and eliminating any movement of the sieves within the sifter.

Periodically remove the sieves and inspect the clothing for wear.

Check the machinery plush on the following:

- Sifter door & Doorway
- The inside sifter wall corner plush strips
- Sieves
- Press Top

Replace the plush whenever it becomes worn. The principle use of the plush is to seal and cushion the sieves and door within the sifter.

To prevent sieve leakage do the following prior to operating the sifter:

- Double check the hold down screws, Pressure Regulators, or Air Cylinders to be sure that the Press Tops are down securely against the sieves.
- Check that the sifter door is locked in and secured with the door locking clamps.
 - **Never** try to open the door by “wedging” out the door with a screwdriver. Always use a **Duck Billed Sifter Pry Bar**^{1,2} on the pry bar plates when opening the doors to avoid damaging the doors.

Insure that the tie-rods spanning the door sections of the sifter are tightly fastened.

1 Please be sure and use the Duck Billed Sifter Pry Bar supplied by Norvell, as any other Duck Billed / Pry Bar will cause damage to the Sifter Door.

2 These Duck Billed Pry Bars also make great back scratchers; however, Norvell is not responsible for damage caused to body parts or time lost due to enjoyment.

Miscellaneous Preventative Maintenance

- Check the condition of your drive v-belt monthly and replace it after it has become excessively worn. Be sure to maintain the proper tension on the belt as it will wear excessively if improperly tensioned.
- Inspect the ½” cables for excessive wear.

Spare Parts List

Norvell carries spare parts in stock. There are times that a slight delay may occur due to a production run, shortly exhausting the items in stock. We recommend stocking a minimum amount of spare parts for emergencies when any amount of down time is critical to production.

Drive Parts

<u>Description</u>	<u>Part Number</u>	<u>Quantity</u>
Right Angle Gear Box "FG"	Gear Box FG	1
Right Angle Gear Box "BC"	Gear Box BC	1
2 HP Lafert Motor	150-300-080	1
Goodyear Blackhawk Belt	150-300-070	1
Drive Sheave	150-300-050	1
Drive Bushing	150-300-055	1
Driven Sheave	150-300-060	1
Driven Bushing	150-300-065	1
Pillow Block Bearing	150-300-027	4
Vertical Shaft <i>(Sifter Serial Number Required)</i>	150-300-009	2
Drive Shaft Coupling, 1" to 1" i.d.	150-300-010	2
Vertical Coupler, SS-250-14	150-300-007	2
Horizontal Shaft <i>(Sifter Serial Number Required)</i>	150-300-011	1

Sifter Box Hardware

<u>Description</u>	<u>Part Number</u>	<u>Quantity</u>
Door Clamps	G3171	Varies
½" Door Handle Nuts	Handle Nut ½"	Varies
Pry Bar Plates w/ Screws	120-100-030	4
Mending Plates	Mending Plates	Varies
Sieve Guide		2
Inlet Baffle <i>(Sifter Serial Number Required)</i>		1
Plush Strips <i>(see Exhibit A)</i>		6
HDPE Product Deflectors	HDPE 1-1/2" Strips	
Door Handle Pull	Handle 6" Grab	Varies

Air Cylinder Parts

<u>Description</u>	<u>Part Number</u>	<u>Quantity</u>
Air Cylinder	Air Cylinders	Varies
Air Line	120-100-097	1
Air Line Filter/Regulator	120-100-138	1
Control Box	120-100-154	1

Additional Items

Description

Duck Billed Sifter Pry Bar

Door *(Sifter Serial Number Required)*

Support Cables *(Sifter Serial Number Required)*

Outlet Hoppers *(Sifter Serial Number Required)*

Stockings *(Sifter Serial Number Required)*

Part Number

120-100-030

Quantity

1

1

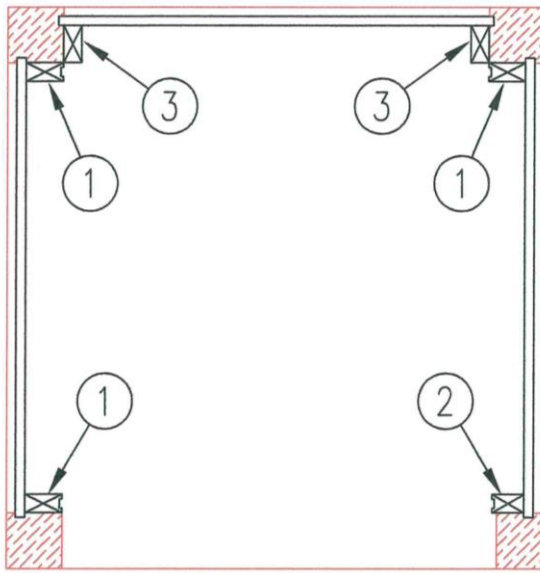
Support Cable 1/2"

1 set

Varies

Varies

“Exhibit A”



DOOR SIDE