



# *Roll-Over*

CURTAIN

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## Installation Guide



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# Installation Preparation

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## Items Included

- Roll-Over Curtain System

## Before You Start

Before you start have you checked the following?

- Measure the length and height of the opening to be sure it corresponds to the size of the curtain ordered (height must be exact).
- Do you have a 2x8 above and a 2x10 below the opening, or larger?
- Check for solid blocking/lumber where corner wheels, actuators and pulleys are to be located.
- Is bird screen to be installed with your curtain? If required this must be installed prior to the installation of the header and sill framing. See the section detail below.

Exact Opening Height (X)	Exact Opening Height (X)
36"	RO36wr
42"	RO42wr
48"	RO48wr
54"	RO54wr
60"	RO60wr
66"	RO66wr
72"	RO72wr
78"	RO78wr
84"	RO84wr
90"	RO90wr
96"	RO96wr
104"	RO104wr
110"	RO110wr
114"	RO114wr

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## Signal Words

The signal words “Danger”, “Warning” and “Caution” used in this manual indicate the degree of hazard that may be encountered by the user. These words are defined as:

**Danger** - Indicates death or serious physical injury will result if proper precautions are not taken.

**Warning** - Indicates death, serious physical injury or property damage can result if proper precautions are not taken.

**Caution** - Indicates some injury or property damage may result if proper precautions are not taken.

## Qualified Persons

For the purposes of this manual and product labels, a qualified person is one who is familiar with the installation, construction, operation or maintenance of the equipment and the hazards involved. In addition this person has the following qualifications:

(a) is trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety practices.

(b) is trained in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, flash clothing, etc., in accordance with established safety practices.

## Important

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser’s purposes, the matter should be referred to the Sun-North Systems sales office.

## Safety

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### Electrical Safety



**DANGER!** Ignoring the following instructions can cause physical injury or death, or damage to the equipment.



**WARNING!** Only qualified personnel are allowed to install the drive and connections to the motor!

Never work on the drive, motor cable or motor when input power is applied. After disconnecting the input power, always wait for 5 minutes to let the intermediate circuit capacitors discharge before you start working on the drive, motor or motor cable.

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Do not work on the control cables when power is applied to the drive or to the external control circuits. Externally supplied control circuits may carry dangerous voltage even when the input power of the drive is switched off.

## General Safety



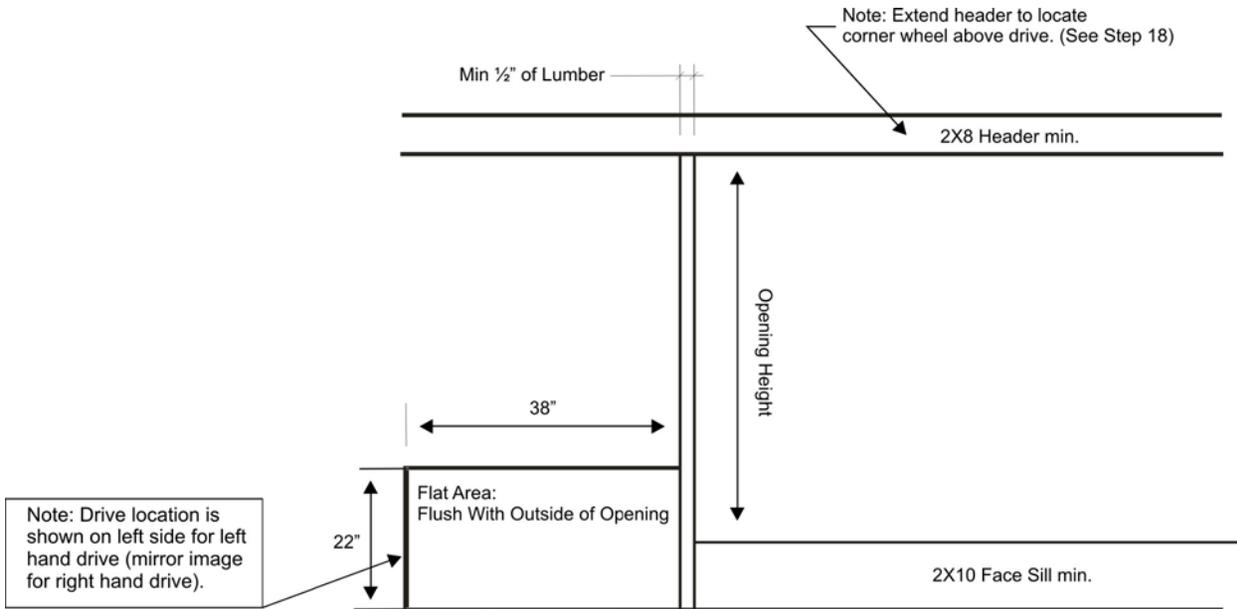
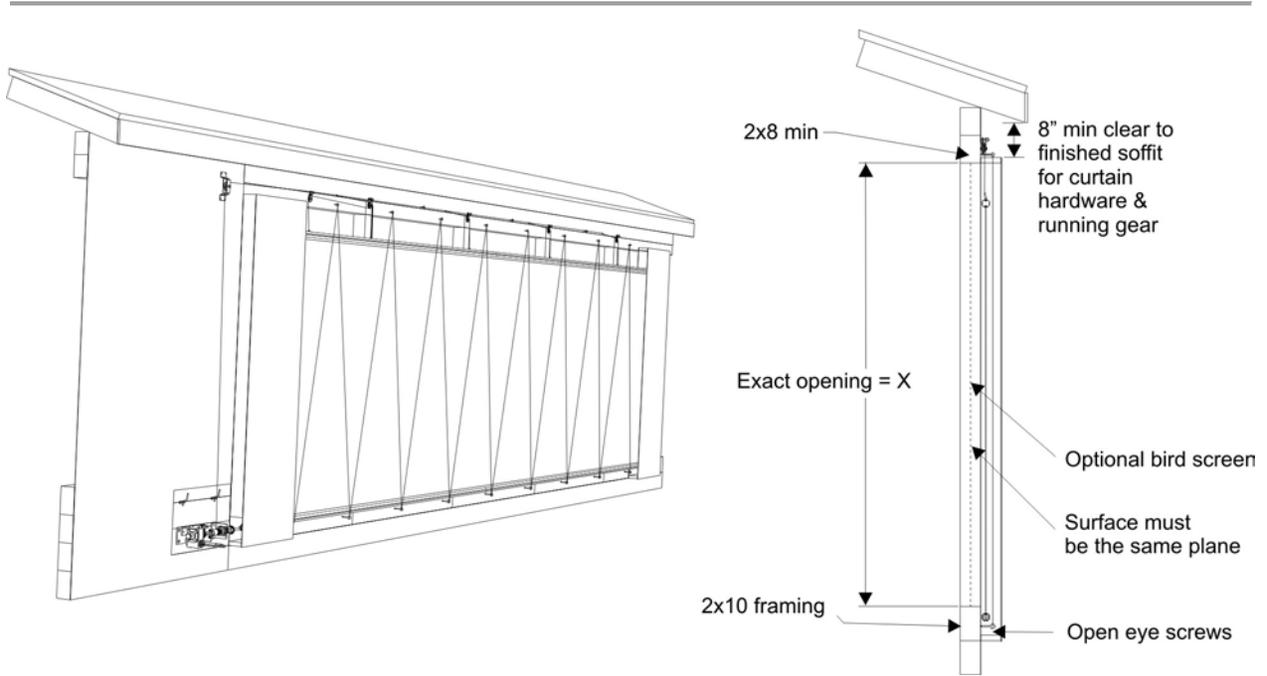
**WARNING! TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:**

- Installation work and electrical work must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
- The installation is to be in accordance with the National Electrical Code, CSA C22.1, ANSI/NFPA 70, and local codes.
- **CAUTION!** This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been supervised or instruction concerning use of the appliance by a person responsible for their safety.
- Check drawings and layouts provided to locate where the equipment is to be installed.
- Ensure work area is safe and that all security, policies and procedures for the facility are met.
- Inspect the lift device or mobile platform.
- Each person installing the equipment with a lift device or mobile platform must use a safety harness at all times.
- Other safety requirements may be required for installation.
- All workspace safety requirements, lock out procedures and hoarding of construction zone for the assembly and installation must be met and followed.



**WARNING!**

- Never remove or disable a machine guard or use a machine that has a missing or disabled guard.
- Never reach around, under, or through a guard.
- Report guards that are missing or not working properly.



# Hardware Included



• SN020X2102  
Galv. Mall Wire Clips 3/16"



• SN020X2233  
Steel Pulley 2 1/2" Bearing



• SN022X4120:  
White Wood Grips 1"



• SN020X9603  
Large Keder Tube 2.1875" x 18'



• SN020X2202:  
Medium Lag Eye Bolt



• SN020X6905:  
Small Keder Tube  
1.25" Diameter x 18'9"



• SN020X2221  
SS Cable Thimble 1/8"



• SN119X3001-3120  
Double Keder Curtain



• SN020X2103  
Galv. Mall Wire Clips 1/8"



• SN020X9607 Weight Strip for  
Small Keder Tube



• SN020X2203  
Large Lag Eye Screw



• SN020X9622  
Keder Hem Locking Angle



• SN020X2204



• SN020x6910



• SN020X2230

5" Heavy Pigtail Eye Screw



• SN019X9620  
Keder Pick Up Tab

Aluminum Keder Strip 9'10"



• SN021X1214  
ESD1 Extended Single  
Drop Corner

Cable Keeper For  
2.5" Pulley



• SN020X2009  
Nylon Rope #6



• SN020X2270  
White Plastic Strip 7/8" x 8'



• SN022X0403  
Pan soc tek screw  
Z 10 x 1/2"



• SN021X1999  
Roll-Over Power Drive  
c.w Drum, Bearing - Right



• SN021X1998  
Roll-Over Manual Drive 16:1



• SN021X2001  
Roll-Over Power Drive  
c.w Drum, Bearing - Left



• SN020X2002  
Stainless Steel cable  
3/16" Diam.



• SN022X0402  
Hex Head Tek Screw #10 x 3/4"



• SN022X8008  
Aluminum Rivets AB6-2A



• SN022X4020  
Hex Lag Screws  
Z 3/8" x 2 (038-147)



• SN022x4210  
Roofing Nails Galv. 1-1/4"



• SN022X4004  
Hex Lag Screws Z 1/4 X 3



• SN022X8006  
SS Rivets 3/16" x 3/8"



• SN020X2280  
Boot Pipe Brackets



• SN020X2004  
Stainless Steel cable  
3/32" Diam.



• SN022X4008  
1/4" x 5" Lag



• SN022X0701  
1/4" Flat Washer



• SN021X2009  
Roll-Over Shaft Hanger



• SN021X2008:  
Roll-Over Drive Enclosure Peg



• SN021X2006  
Roll-Over Drive Enclosure



• SN021X2007:  
Roll-Over Drive Flashing

## Tools Required

- Electric or cordless drill
- Cable Cutters
- Circular Saw
- 7/16" socket (required for 1/4" lag)
- Utility knife
- Common hand tools
- Hack Saw / Sawzall
- 7/8" socket (6 point)
- 5/16" socket (required for small cable clamps)
- 11/16" socket (required for double back pulley assembly)
- 9/16" socket
- Heavy duty rivet gun
- Stapler and staples

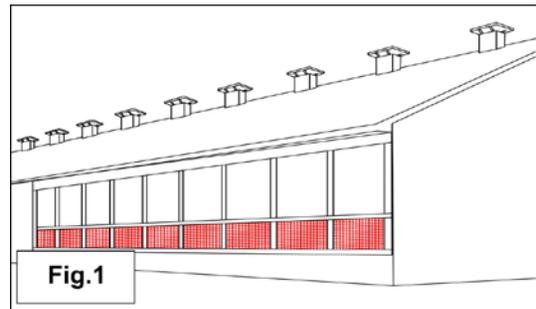
**NOTE:** Illustrations/images may be changed without notice. All dimensions and specifications are approximate and drawings are not to scale.

# Procedure

1. Take a look at the existing structure where you plan to install the new curtain and ensure that the frame opening confirms to framing detail:

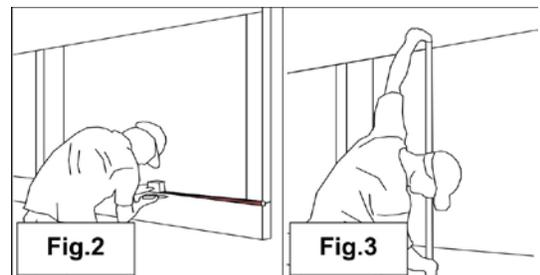
Check the spacing of the structural columns along the entire opening of the barn. Note that birdscreen or livestock barrier should be installed prior to the curtain installation if the project calls for this type of product. The image shown here has metal screen installed on the lower half of the opening as a livestock barrier.

(Fig.1)



2. Rear boot fabric installation:

Both ends of the opening will require an end boot. The rear fabric of each end boot must be installed. Measure and mark 30" along the sill and header of the opening. (Fig.2)



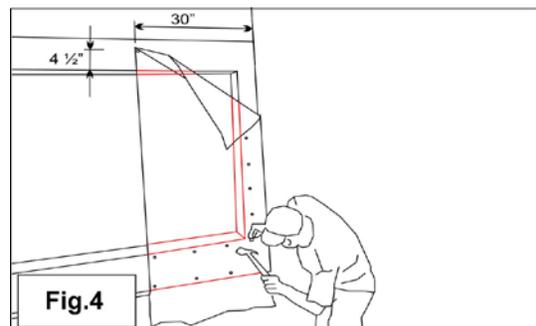
3. Measure and cut to size the rear boot material:

Measure from the top of the header frame to the lower edge of the sill frame. This is the maximum length of rear boot material that will be required. It is best to provide yourself with a little extra length and trim this off when finished. (Fig.3)

4. Tack the boot material up with roofing nails:

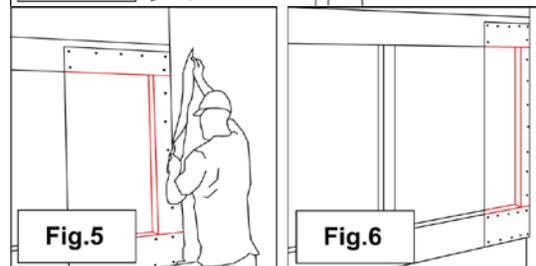
It is important to install the material as tight and wrinkle free as possible. Tack the top corner of the boot material 4 1/2" up from the bottom of the header 30" out from the end of the framing. Tack the material up in place using flat top roofing nails 6 to 8 inches on center. You will see that two rows of nails are used along the bottom sill. This is done so that the bottom of the inside boot material will not fill with debris.

(Fig.4)



5. Trim off extra material:

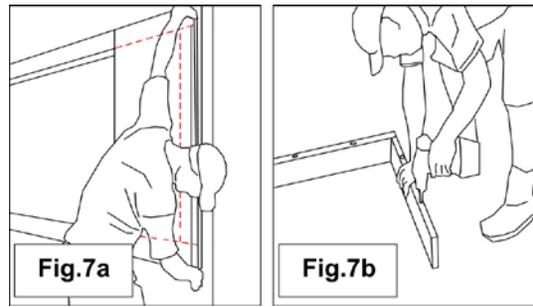
Take a knife and trim off the extra length or width of material that extends beyond the header, sill and side framing of the opening. (Fig.5)



6. Both ends of the opening:

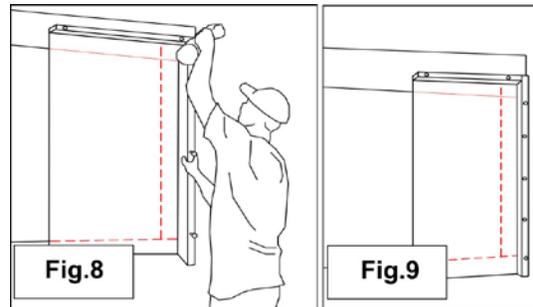
You should now have both ends of the wall opening capped with rear boot material as shown. (Fig.6)

**7.** Measure and cut the required lengths of framing for the boot: Cut a 2x4 so that you have one piece at this measured length and one more piece cut to a length of 30", this is done for each end. This is required for the top and side of the boot to provide the depth required to clear the curtain and possible running gear. Nail the 3 pieces together so that the frame is 31.5" wide. Pre-drill 5/16" holes approx 32" o.c. and place 5" lags with washers in these holes. These lags are what will hold the boot frame to the barn. (Fig.7a)(Fig.7b)



**8.** Install the boot frame:

Place the boot frame into position and drive the lags through the boot frame and into the perimeter frame. Keep the bottom of the boot flush with the lower edge of the sill framing and to the outside edge of the jamb framing. (Fig.8)



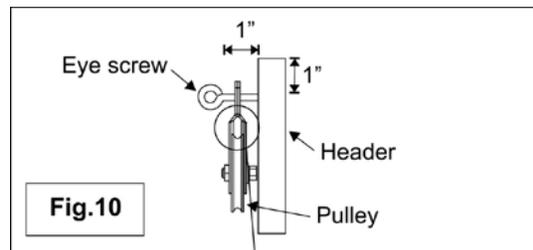
**9.** Boot frame:

You should now have a boot frame installed as shown. Each end of the opening along the barn must have this installed. (Fig.9)

**10.** Install the cable keeper:

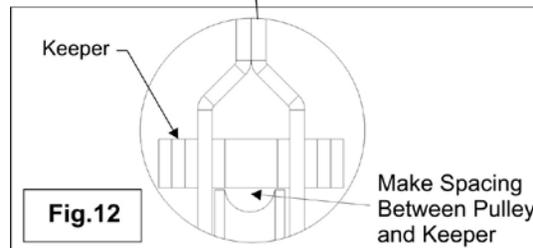
Take the keeper and push them onto the pulley just so the wheel can rotate. Check its free operation. (Fig.10)

**11.** Measure 1" down from the top of the header and scribe a line. All eye screws will be placed along this line. Start at both ends of the rough opening and measure in 33" to locate the first eye screws. Next measure along the line and locate the balance of the eye screws using a spacing of 8'-0" on center for curtains up to 90" opening height (use 10'-0" O.C. for curtains with an opening over 90" high). The height of 1" is critical to ensure that the curtain follows the contour of the opening and also allows the main lift cables to travel freely through the eye screws.

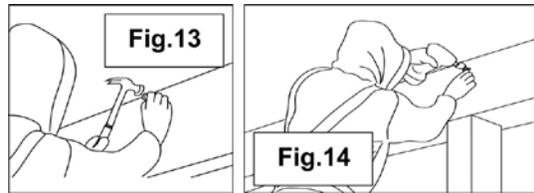


**12.** At these measurements screw in 3"x1/4" eye screws with a steel pulley hanging from the shaft.

Screw it until there is 1" of shaft remaining out from the face of the header. Doing this allows the pulley to swing freely. (Fig.12)

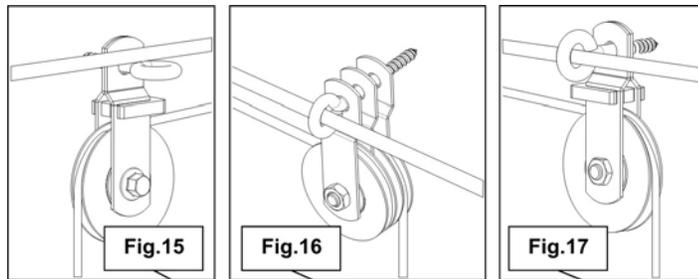


**13.** Installing the pulley wheels and eye screws:  
Start the installation of each eye screw by breaking the surface using a hammer as shown in figure 13. The hammer is only used to start the eye screw into the material.

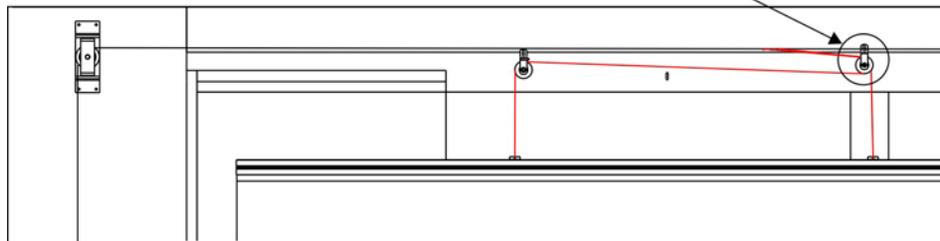
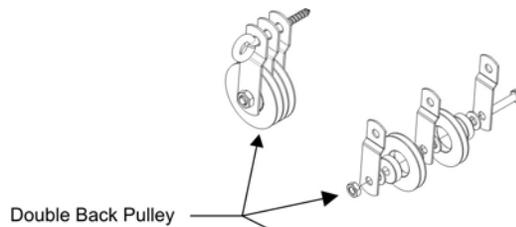
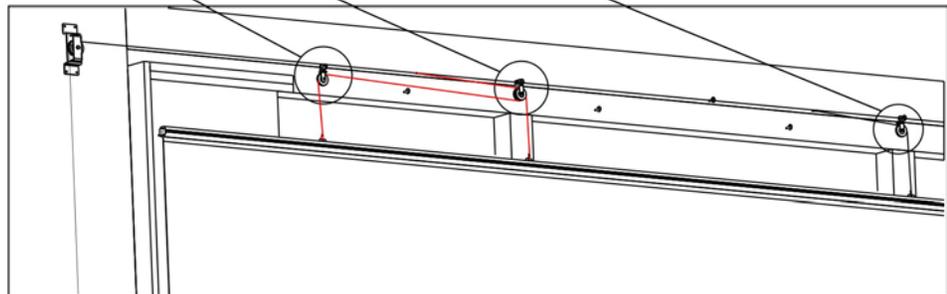


**14.** Installing the pulley wheels and eye screws:  
Using a 7/8 socket and drill, screw the eye screw in until all threads are into the lumber, leaving 1”.

**15.** The first pulley is generally kept an inch or two below the other pulleys and may be placed 4” away from the boot material.



**16.** The second pulley closest to the motor side is the double back pulley. It is made from two regular pulleys and a longer bolt.



**17.** Install the typical or standard pulleys along the opening. (The typical/ standard pulley wheel must be spaced at a greater distance than the curtain opening.)

**18.** Install the drive unit on the flat area at one end of the opening. The center on the shaft, drum, bearings etc. should be 3" down from the top of the lower face plate lumber. The edge of the drive back plate closest to the wood end boot frame should be approximately 12" away from the inside of the wood end boot framing. This ensures that the 12 hole adjustable shaft plates will be easily accessible. Install the corner wheel on the header so it will head towards the drum vertically, approximately 1½" away from the motor end of the drum

**19.** Running the main cable:  
The 3/16" cable can now be pulled from the drive end through the eye screws as shown in figure 19-A. Place 1 3/16" clamp onto the cable before pulling it through each eye screw (these will be used for hooking up the secondary cables). At the last pulley (at the end of the opening) run the main lift cable through the eye screw and fasten with a cable clamp, as shown in figure 20.

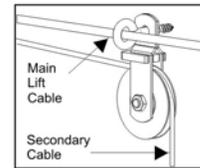
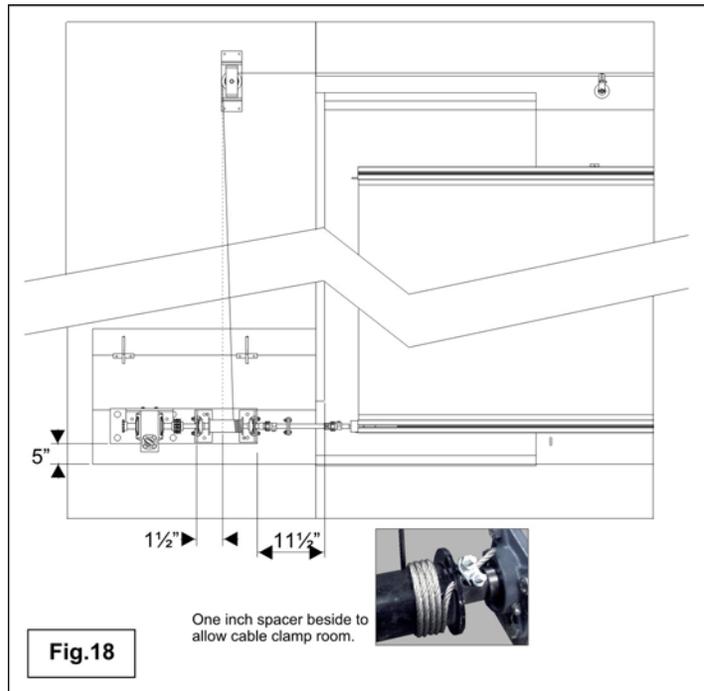


Fig.19-A  
(Above - Correct installation)

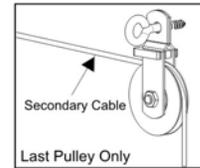


Fig.19-B  
(Above - correct installation of last pulley)

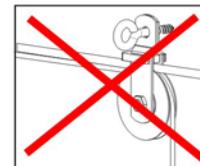
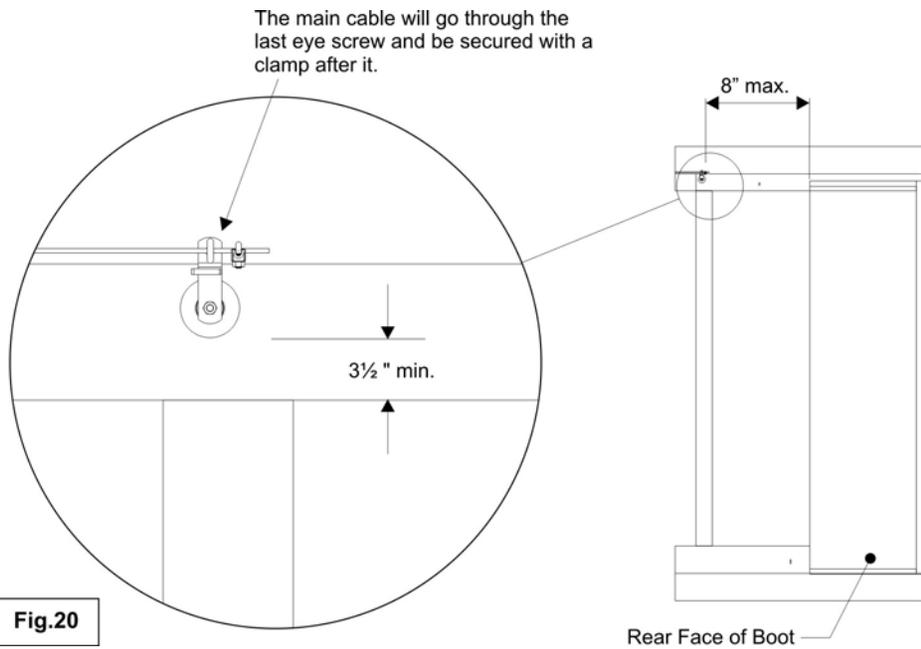


Fig.19-B  
(Above - wrong installation)

**20. Hooking up the main cable:**

At the drive end, ensure the cable is through the corner drop pulley and run down to the drive. Cut the cables so that it hangs 15" past the drum. Run the cable down behind the drum then wrap all around the drum. Now pass the tail end through the hole in the end plate of the curtain

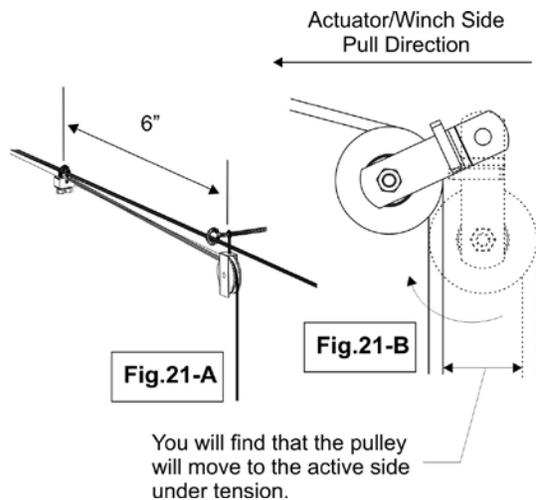


side of the drum and tighten a clamp onto it so as to stop it from going back. Put the main lift cable under tension with the drive, making sure not to over tighten it, i.e. pulling out the last eye screw. The cable should be taught.

**21. Installing the drop cables:**

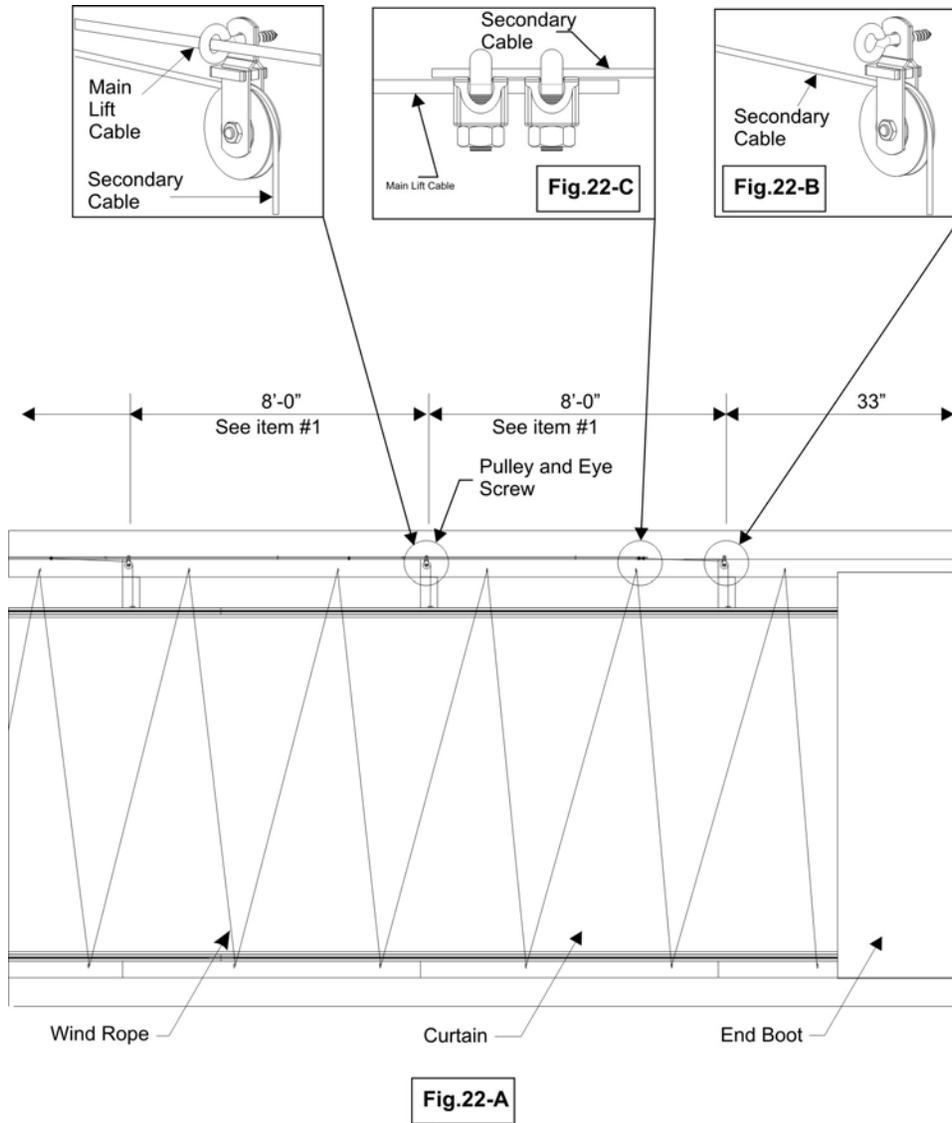
The length of the secondary cable is determined by the opening height + 18". To install secondary cables, measure 6" from each eye screw towards the drive, attach the cable at this point using cable clamps that are already strung on the cable. Run the secondary cable through the pulley then down to the sill.

NOTE: the pulley wheels are free to swivel and will tend to pull toward the drive side. If curtain clamps may need to be kept a little closer to the eye screw closer to the screw.



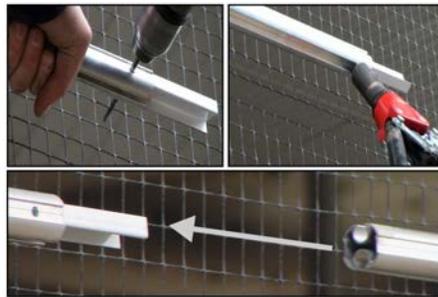
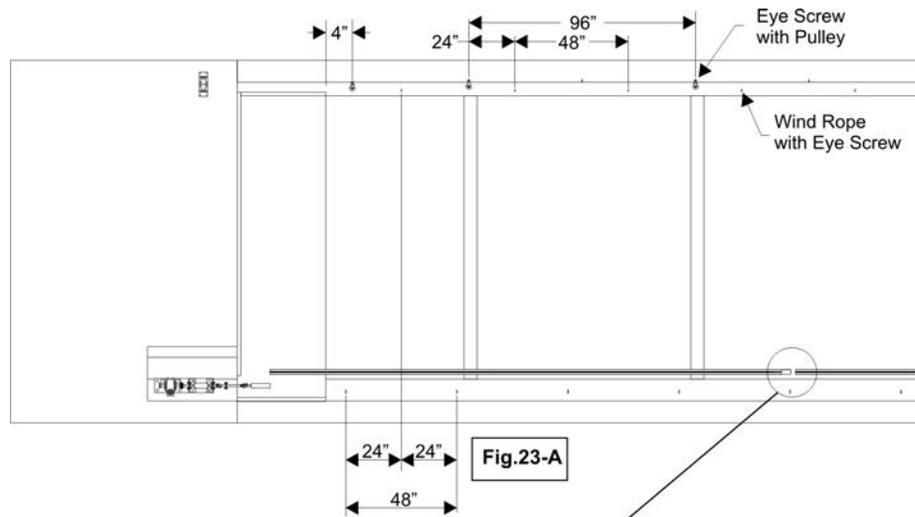
**22. Set out top pipe:**

Place nail in the face plate every 8" or so along an even line to set the retainer pipe onto. Insert joiner halfway into one pipe, drill 3/16" holes and with rivets join the pipes. The pipe should be no shorter than 10' to make room for flat bar weights later.



**23. Pick up points:**

After joining pipe, assemble the pick-up tabs with thimbles and place in top of pipe for every pulley.



**Fig.23-A**

**Fig.23-B**

After two pieces are put together you must drill 3/16" hole on each side of the joint, then secure using rivets.

**24. Hook up top pipe:**

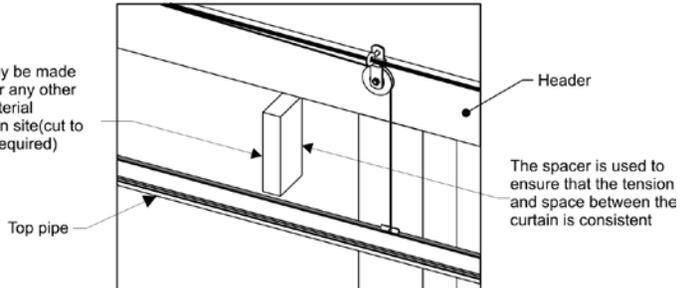
When starting to hang the retainer pipe off the secondary cables one must start at the pull end (winch or actuator) of the barn. Pull down the secondary cable to locate the position of the pick up tabs. Remember to keep the cable vertically level and note that the pulley location above will change under tension, as shown in figure 21-B. Pass cables through a small cable clamp, the thimble on the pick up tab and back up through the cable clamp. (Fig.25) The length of spacing is equal to the distance between the top pipe and header. Hold the spacer between the bottom of the header and the top of the pipe, then pull up on the cable thus pinching the spacer in place, now tighten the cable clamp up.



Thread the cable through the clamp then the thimble and the pick-up tab

Bring the cable back through the clamp

Keep tension on the secondary cable and ensure the cable is vertically level before locating position on the galvanized retainer pipe

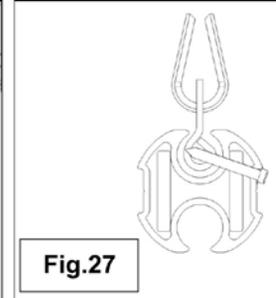
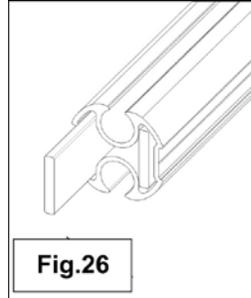


**25.** It is important at the end in which the secondary cable installation begins is secured by an extra 3/2" nail into the building structure (in two hookups). This will keep the retainer pipe from shifting sideways during installation. Complete all cable hookups. Finally remove the clamp after the last eye screw that is holding the tension on the main cable.

**26.** Add weights:

Place two 10' pieces of flat bar vertically into each side on the pipe at both ends

**27.** Make sure the cables are vertical then place a hex head self-tapper into each pick up tab through the face of the pipe on an upward angle. This will stop them from shifting. Remove the nails holding the pipe to the structure.



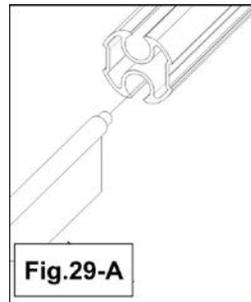
**28.** Now lift the system to a point where running the curtain through the top pipe will be easy. Temporarily attach the pipe to the boot so that it is easy to pull curtain through the pipe.

**29.** Insert curtain:

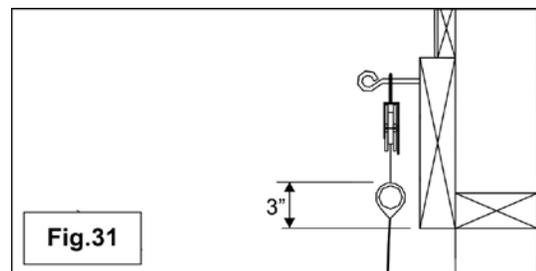
From the end that was nailed down, have one person unroll the curtain, and have the other person pulling it through. (You may have to file the end of the pipes to prevent tears)

**30.** Tension curtain horizontally:

Once the curtain is pulled through, you need to pull it tight. Put a self-tapping screw through the curtain into the pipe at the other end. Pull the curtain tight so there is no slack, then put a self-tapping screw in while there is no slack.



**31.** The curtain can now be raised until the top limit is reached. This is achieved when 3" of the curtain overlaps the header using an electric drive. The limit switch will be set.



**32.** Now install the bottom pipe on the curtains sliding the pipe together using plastic joiners and 16 S.S rivets, eight per side as shown below. Cut the pipe to length so that it stops about 3" inside each boot frame. Once the bottom pipe is installed make sure the curtain is "stretched" to ensure no wrinkles. Then secure the curtain to the pipe with two rivets at each end through the spline/kerf.



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**33. Wind Rope:**

2'-0" O.C. zigzag weave horizontally across the opening using wind rope (item #3) and eye screws (items #7 & #8).

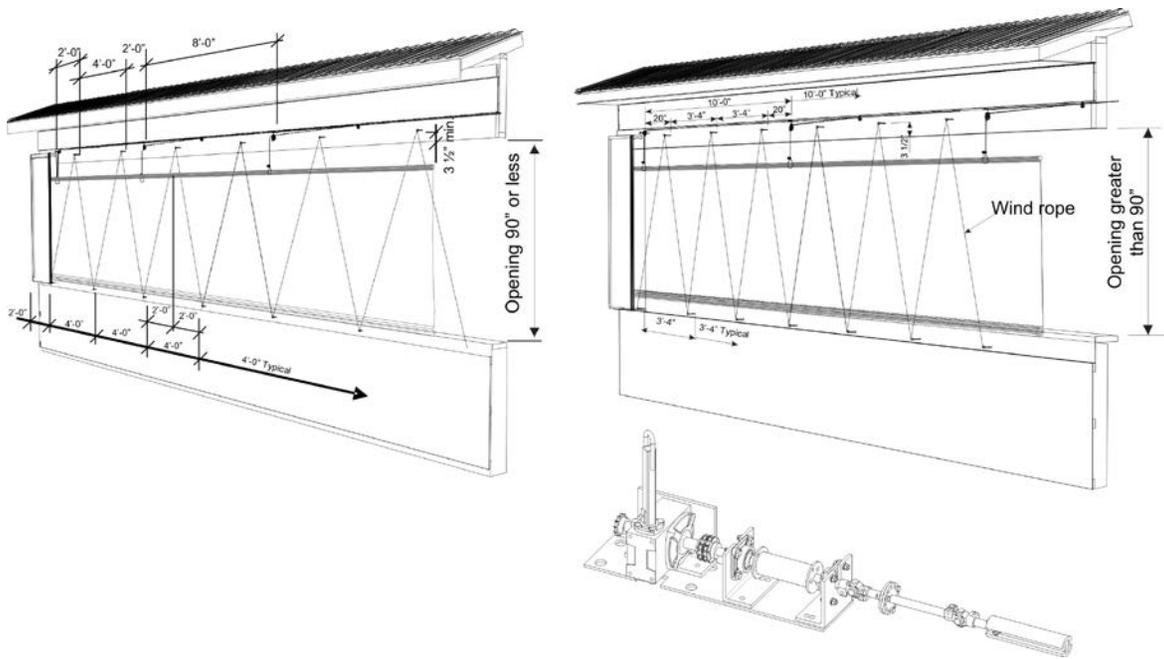
NOTE: top and bottom rows of eye screws are at 4'-0" O.C and are offset by 2'-0" from each other. The top row must also be offset from the cable drops so that the cables do not cross the rope when the curtains open as shown below. Install the top eye screws first and layout as described. Screw the medium eye screws in 3½" up from the bottom of the header and until there are two threads still showing, you can pull the rope through these as you go, do not cut the rope.

**34.** You can now install the bottom eye screws (typically when there is not another curtain to be installed under header). You will use the 5" open eye screws laid out as described and down from the bottom of the opening by MIN. 8". These eye screws need to be screwed in about 1½", leave the open part of the eye screw facing down

**35.** Some systems require a 2x3 bottom sill extension (eg. If there is a bottom roll up curtain underneath) these 2x3's need 5/16" holes pre-drilled at every 2'-0" o.c. Each hole requires a ¼" lag with a ¼" washer. Mount 2x3 as low as possible on face plate preferably on bottom 1½". Install medium eye screws as the layout along the front face of the 2x3. Screw them in until the shaft is almost all gone, leave the end of the eye down. These can be easily be opened with a claw hammer so the rope can be woven through.

**36.** Secure the rope at the end farthest from the rope spool. Pull down on the rope between each upper eye screw and hook it into the lower eye screws. Tension rope as you proceed, rope may need to be tensioned again. Cut the rope to separate it from the spool, and secure end.

**37.** At the drive unit, unbolt the 12 hole plates on the drive unit to separate the plastic pipe adaptor and sub shafts. Now fix the tube adaptor in the pipe with four rivets. The bolts can now be reinstalled in the 12 hole plate as it sits naturally. The system is now ready to be opened. Run the system to fully open, it should be stopped 3" before the top pipe reaches the bottom pipe (use the limit switches as before to stop the auto drive). As it rolls, pull down the 2" aluminum pipe every 8-10' or so to ensure the curtain is rolled evenly (you should only need to do this once). If the bottom pipe has risen more than 3" take a note of the distance and direction. If it has risen or fallen, close the curtain, then unbolt the 12 hole plate and advance or retard the bottom pipe by rotating the pipe and bolting the 12 hole plate at a different position to accommodate for the movement it has seen. Now re-run the curtain after any adjustments to check it and see if the limit switches are set correctly. This adjustment procedure may need to be run a second time so that the curtain runs smoothly.



**38.** Attach bracket to wall (just under main corner wheel bracket) and shim as necessary. Make sure main cable is not dragging on back side of bracket.

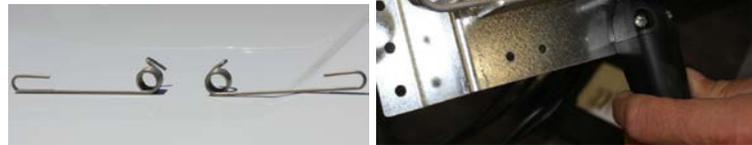


**39.** Hook split pulley up to cable.

**40.** Attach bolt to the pulley of the bracket arm. Do not over tighten bolt to ensure that the pulley is still fully moveable.

**41.** Attach spring to unit.

The image to the right shows the Left and Right spring. Which spring you have will depend on if you are installing a left or right side unit.



**42.** Fasten wire to building making sure not to interfere with main cable or any other moving parts. Wire must be fastened within 12" of each end.



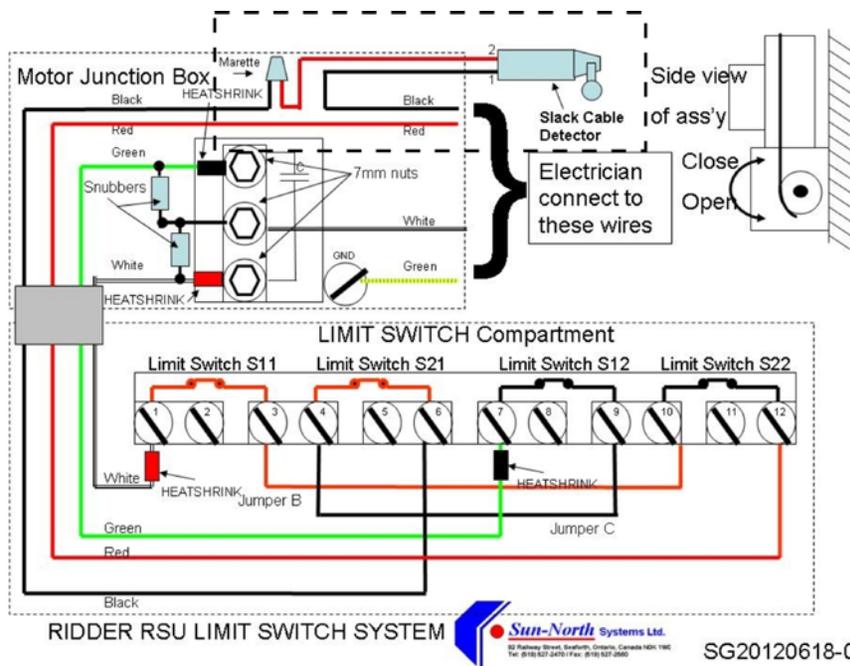
**43. MAKE SURE POWER IS DISCONNECTED BEFORE PROCEEDING.**

**44.** Place weatherproof (liquid-tight) box connector in hole and feed wire into box.



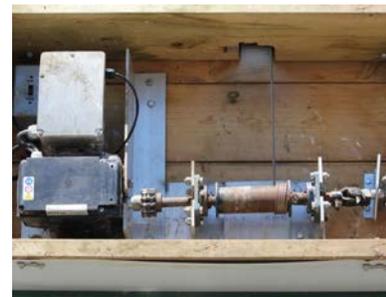
**45.** This is what connection should look like.

**46.** Connect red wire from slack detector to black power wire. Connect other black wire to motor side.



**47.** Replace unit cover.

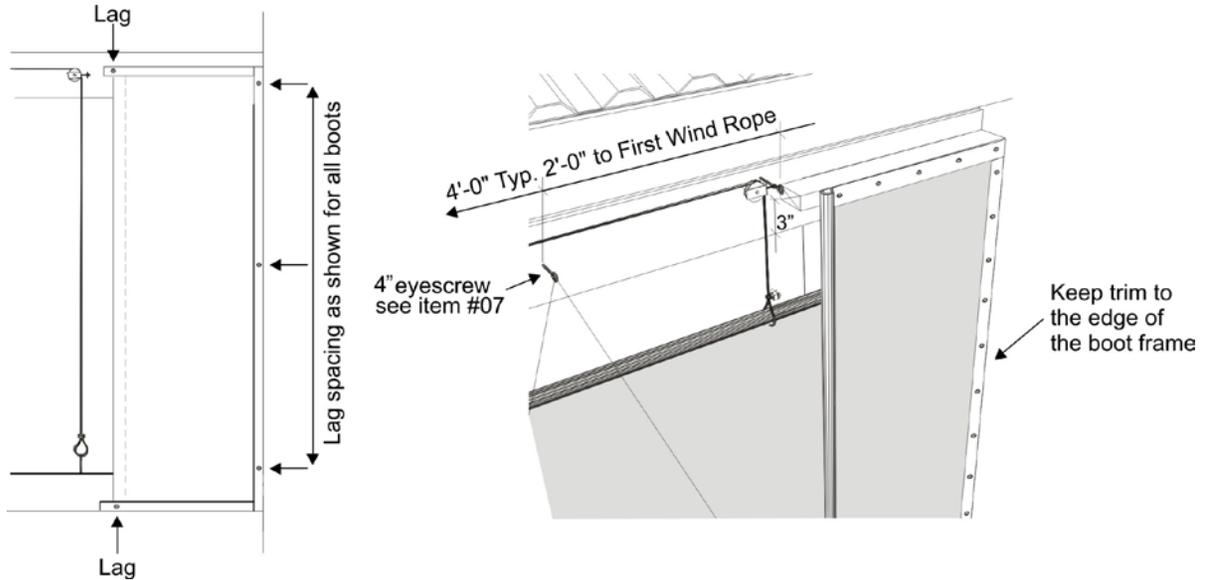
**48.** Ensure slack detector control arm is just making contact with the pulley arm. If control arm is pushed too far down it will disconnect the power. You will hear a click when the switch is disconnected. Use a screwdriver to adjust.



**49. Test unit.**



**50.** You will now finish the boot covers by installing their front panels. This is much the same as in step #5 (back side of boot covers). Take the seamed edge of the boot material and you need to insert a piece of 1" retainer pipe and fasten the top and bottom corners of the boot 2'-6" out from the side of the opening using 2½" lags through the pipe into 2x4 edge. Pull the boot material tight for a smooth surface and tack the other two corners to the frame. Now nail every 8" to secure. To give the boot a finished clean look and to protect the edge of the material, install puck board (1" vinyl strip) around the outer face of the boot frame (see fig. 38) using 1" white wood grips every 6". Trim the fabric as needed.



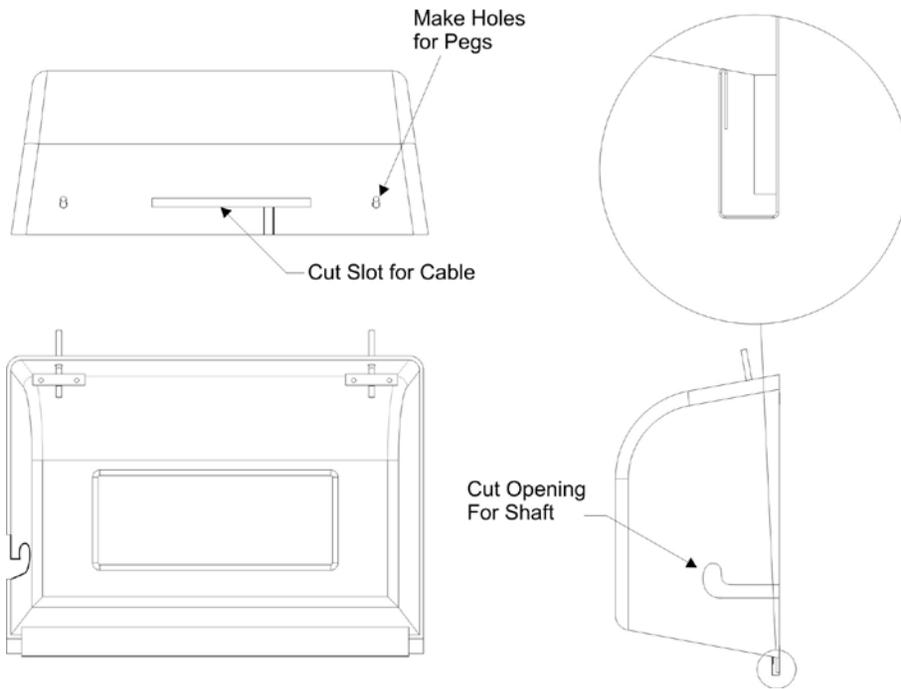
**51. Install drive cover:**

Hold cover over motor to set a feel for where it's going to sit, pre-mark the area where it's going to sit. Pre-mark the areas where notches need to be cut for proper operation (i.e. where the cable comes in, or where the drive shaft operates).

**52.** Notches should remain as small as possible, to keep out weather and pests.

**53.** A 26" piece of "J" trim is to be mounted along the bottom of the framed area.

**54.** Mount two pegs near the top of motor blocking, measure true distance between the pegs and drill corresponding holes. (In the top of the cover)



**DECLARATION OF CONFORMITY**

...according to the  
**Safety of Machinery Directive (2006/42/EC),**  
**the EMC Directive (2004/108/EC), the Low Voltage Directive (2006/95/EC),**  
**and including amendments by the CE Marking Directive, 93/68/EEC**

Type of equipment: *Roll-Over Curtain System*  
 Type designation: *Series #SN019X20XXX*  
 Manufacturer: *Sun-North Systems Ltd.*  
 Address: *92 Railway Street, Box 668  
 Seaforth, ON N0K 1W0  
 Canada*

Sun-North Systems Ltd.'s representative within the EEA (for manufacturers outside EEA): *N/A*

The following harmonized European standards or technical specifications have been applied:

<u>Standard</u>	<u>Subject</u>
ISO/TR 12100-1: 2010	Safety of Machinery - Basic Concepts, General Principles for Design - Part 1: Basic Terminology, Methodology

**With reference to the Safety of Machinery Directive:**

The product complies with good engineering practice in safety matters within EU, even though it may not fully comply with the safety standards/specifications listed above, (see Technical File). The product is CE marked in year 2011. Sun-North Systems Ltd. has an internal production control system and formal quality control system that ensures compliance between the manufactured products and the technical documentation.

**With reference to the EMC Directive:**

The product complies with the essential requirements of the EMC Directive, 2004/108/EC, as shown in the Technical Construction File. Sun-North Systems Ltd. products are in accordance with the product for which the Technical Construction File has been obtained from a competent body.

**With Reference to the Low Voltage Directive:**

Compliance to the Low Voltage Directive, 2006/95/EC, applies only to the applicable control circuitry and is 'addressed only' otherwise.

As manufacturer/manufacturer's authorized representative, we declare under our sole responsibility that the equipment follows the provisions of the Directives stated above (this Declaration of Conformity and its associated Technical Construction Files shall be retained and valid for a minimum of ten years following the below Date).

CE

11 Signing Authority: \_\_\_\_\_

Date: \_\_\_\_\_

Philip Ashwin  
 Vice President  
 Sun-North Systems Ltd.

Prepared By: \_\_\_\_\_

Date: \_\_\_\_\_

Paul M. Johnson, C.E.T., ASQ  
 President  
 Neoteric Enterprises Inc.