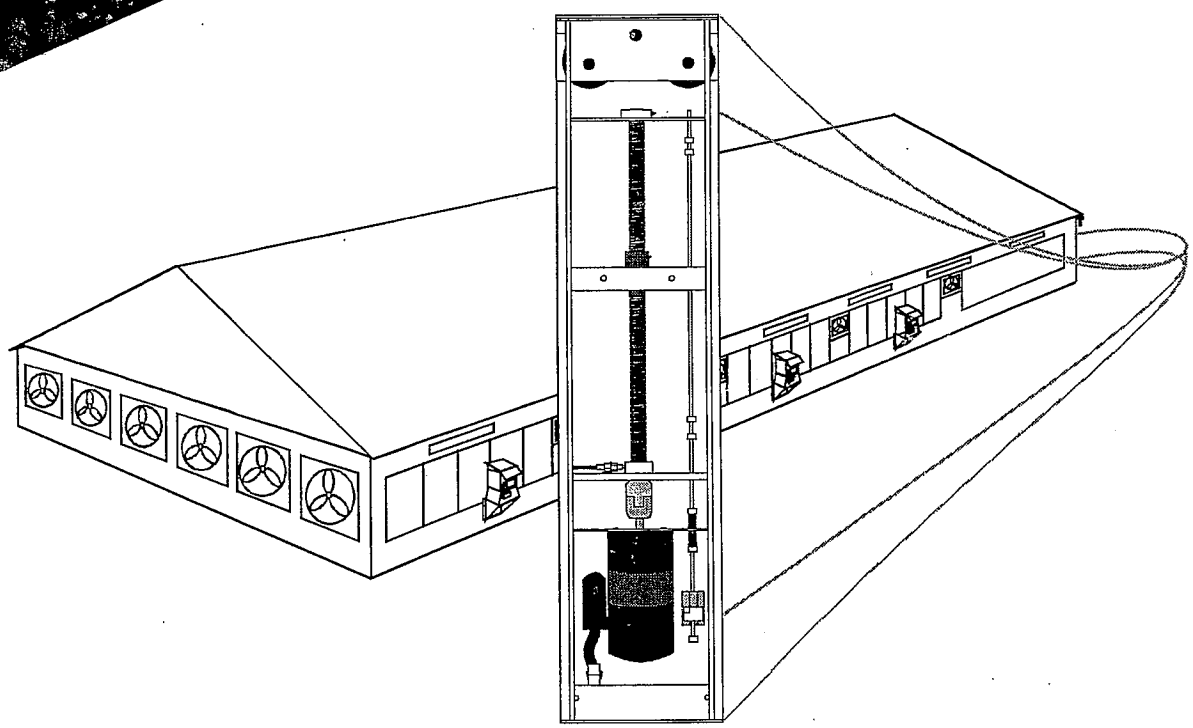
Old Style

HIRED-HAND®

PowerTrak™

Linear Drive Machine for Curtains, Vents, and Doors



4801-0100 7/17/96

Table of Contents

Physical Description 1
- Cabinet 1
- Pulley Assembly 1
- Load Block 3
- "SpringCam"™ Limit Switch Assembly 3
- Hall Effect Device 4
- Circuit Board 4

Installation 4
Simplified PowerTrak Wiring Diagram 9
Ratios 11
Operation 13
Troubleshooting 13
Limit Switch Wiring Diagrams 15
Maintenance 17
One Year Limited Warranty 18

Application Illustrations

Outside Endwall Mount 19
Outside Sidewall Mount 20
Outside Center Mount 21
Inside Center Mount 22
Inside Endwall Mount 23

PowerTrak™

Installation and Maintenance Manual

The PowerTrak is the second generation curtain machine from Hired Hand. This unit combines all the strength and reliability of our original Power Units with the following refinements:

- ⇨ Modular construction for ease of serviceability
- ⇨ Side swinging, removable door for easy access
- ⇨ 15% increase in load bearing support surfaces
- ⇨ New "SpringCam" limit switch system offers positive shutoff with easy adjustments
- ⇨ New Trakdrive cabinet captures load block

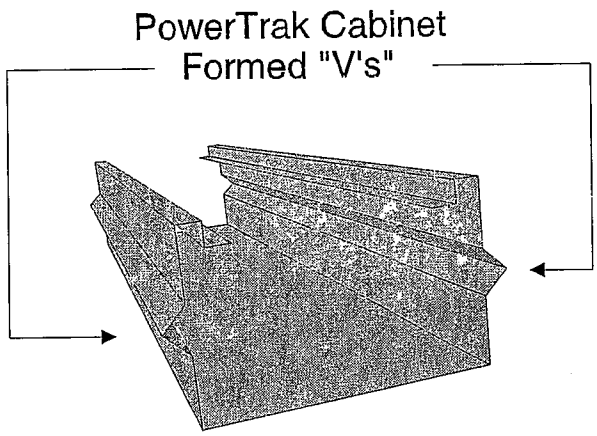
This manual is provided to offer an easy to use reference for familiarization, installation, operation, and maintenance. Be sure to read this manual and follow all safety instructions before installing or operating the PowerTrak.

Physical Description

The PowerTrak is a completely enclosed motor driven screw type linear drive machine designed to raise and lower curtains and vent doors in agricultural enclosures.

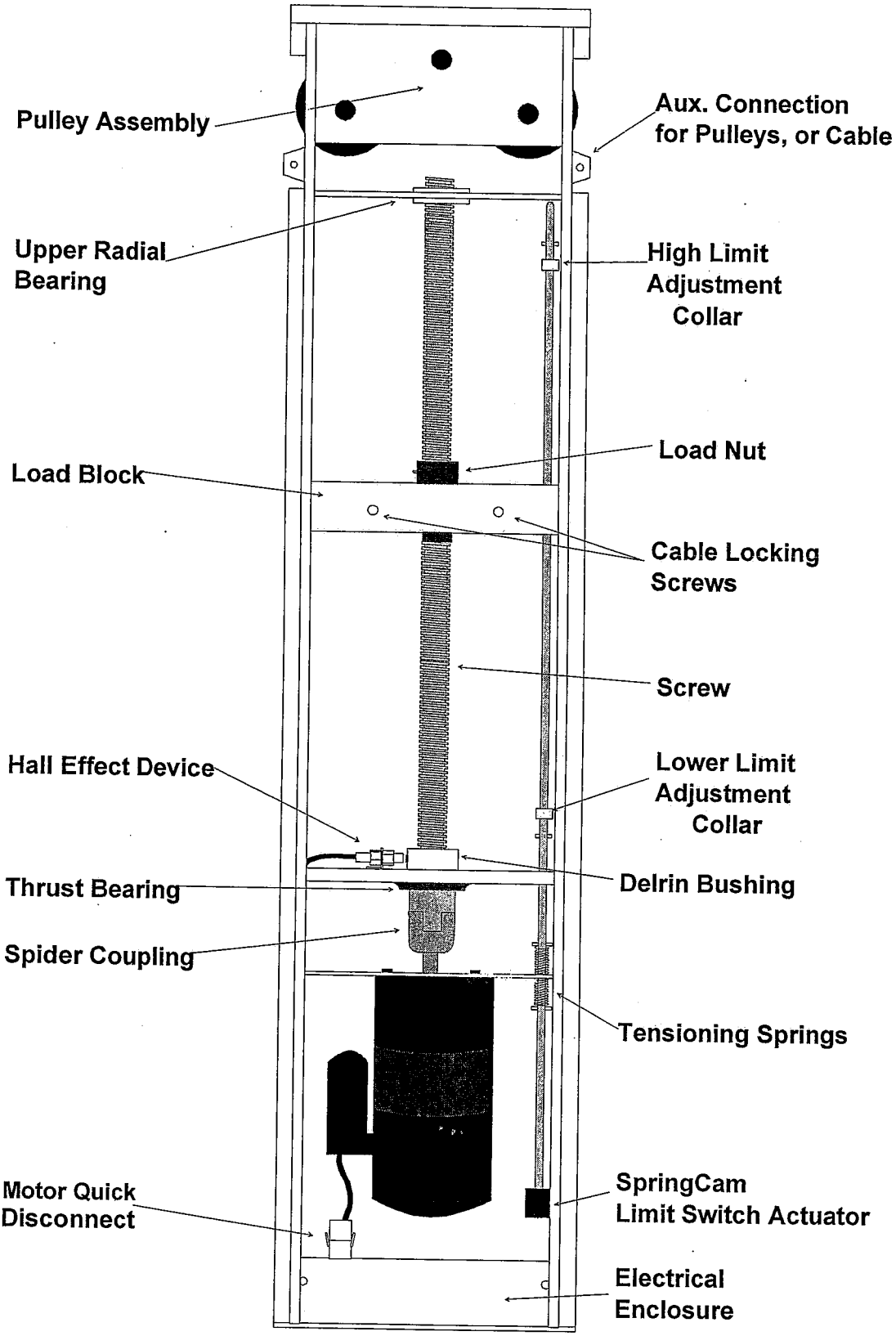
Cabinet

The enclosure is constructed entirely of 14 gauge galvanized steel. A single plate forms the back and two sides. A formed "V" or "Trak" on each side captures the load block giving exceptional strength to the machine. The lower plate contains two half inch strain relief's used to protect wires entering and exiting the PowerTrak electrical enclosure.



Pulley Assembly

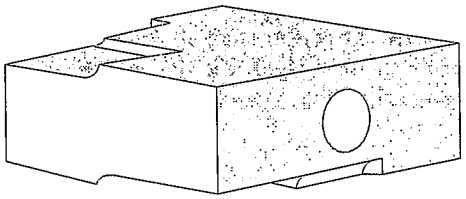
The pulley assembly is located at the inside top of the machine. This assembly consists of a bracket, and three cast iron, needle bearing pulleys. The pulleys guide the cables through the sides of the machine to the load block.


Pulley Assembly
Aux. Connection for Pulleys, or Cable
Upper Radial Bearing
High Limit Adjustment Collar
Load Nut
Load Block
Cable Locking Screws
Screw
Hall Effect Device
Lower Limit Adjustment Collar
Thrust Bearing
Delrin Bushing
Spider Coupling
Tensioning Springs
Motor Quick Disconnect
SpringCam Limit Switch Actuator
Electrical Enclosure

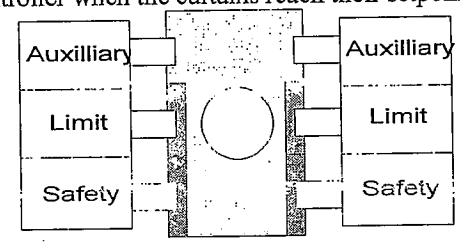
Load Block

A machined aluminum block, called the load block, is located across the middle of the machine. The load block houses the load nut, bolts for holding cables, and the limit switch actuating collar. The ends of the block fit into the "tracks" on the sides of the enclosure. This "captures" the load block, and dissipates the torque to the enclosure. The load nut has been increased in size to offer more support area. This reduces the stress felt on the screw by spreading out the force to a greater area.

"SpringCam"™ Limit Switch Assembly



The limit switch assembly includes the cam block, six switches, and the 3/8 inch steel rod down the left side of the enclosure. The switches protect the curtains and the PowerTrak, by disconnecting power when the load block reaches the high or low setpoints.
The cam block is machined to actuate the limit switches in sequence. The first switch to be opened is the auxiliary switch. This switch can be used to signal fans to come back on when the curtain reaches its high or low setpoint. The next switch will cut power to the motor in the direction it is going. This stops the controller when the curtains reach their setpoints.
The final switch in either direction is called the safety switch. The machine will not reach this switch if working properly. The safety switch keeps the machine from damaging itself by cutting off power to either directional windings, preventing motor motion, regardless of controller action. If this switch should be opened, the screw will have to be turned by hand to back the cam block off the safety switch before the motor will receive power.



There are two 3/8" aluminum collars clamped on the rod. These collars are adjustable with an allen wrench (Included in kit bag), but should only need adjusting once (during installation).

Hall Effect Device

Just above the motor on the thrust plate is a small white plastic electrical device with two white plastic nuts holding it in place. This is the Hall effect device. This device counts the number of rotations of the screw. The device uses a small magnet set into the white plastic collar on the screw. When this magnet passes by the sensor the hall effect device sends a signal to the controller. This signal is used to determine position of the curtains. The Hall effect device is only operable with a Hired Hand electronic curtain or vent controller.

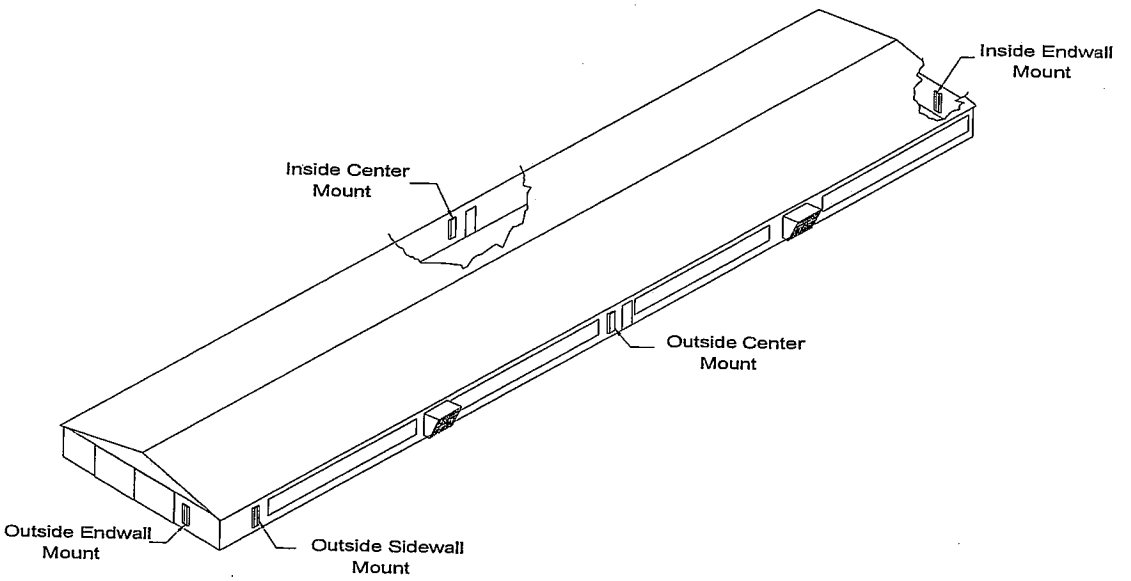
Circuit Board

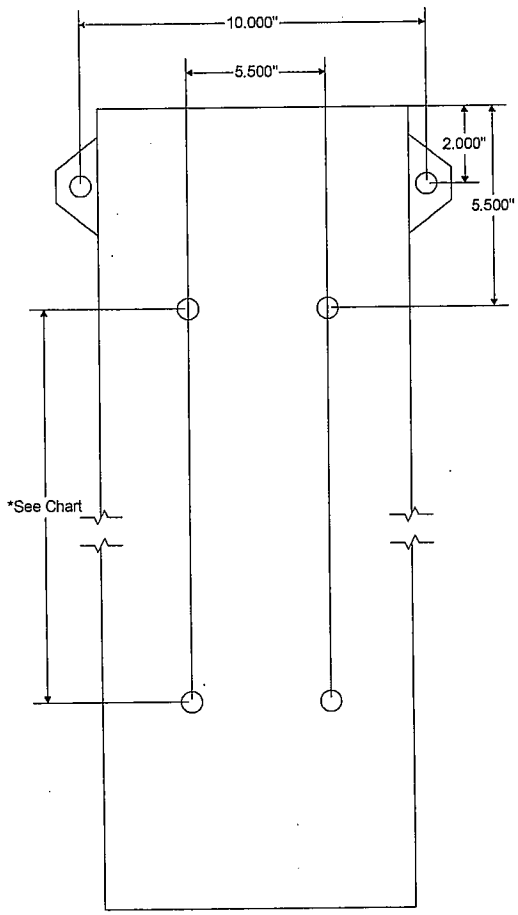
The circuit board contains all electrical connections for the machine. This includes limit switches, power to the motor, power into the machine, and the hall effect device. This board is located in an enclosure at the bottom of the machine. To gain access to the board, first ensure that all power to the machine is shut off, then remove the two screws and slide the enclosure straight out. This circuit board aids installation, and maintenance by bringing all electrical connections into a centralized location.

Installation

1. Unpack the PowerTrak and check the machine for any physical defects. Open door, then remove door by pulling up or down on the spring loaded hinge pins.

2. Select mounting configuration chart from back of this manual (outside endwall, inside center, etc.) which best fits your needs.

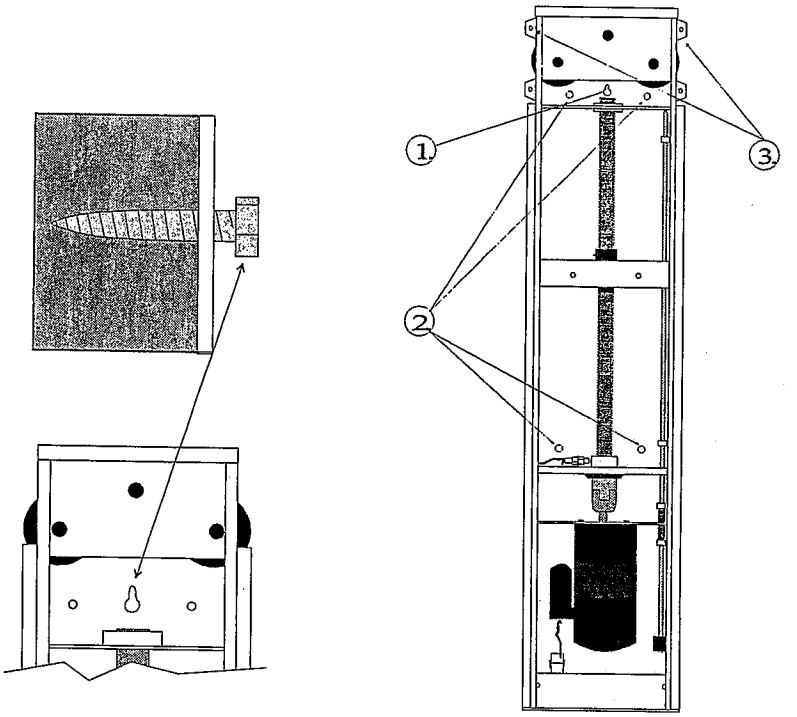




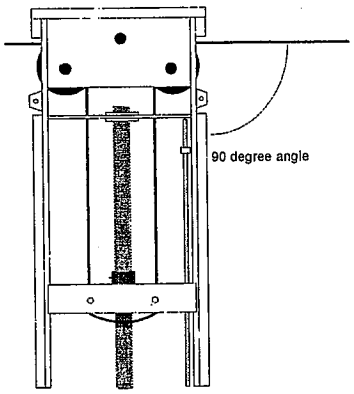
Distance between holes depends upon length of machine. For example· If you have a six foot machine, the holes should be placed 78.375" apart.

1'	18.375"
2'	30.375"
3'	42.375"
4'	54.375"
5'	66.375"
6'	78.375"

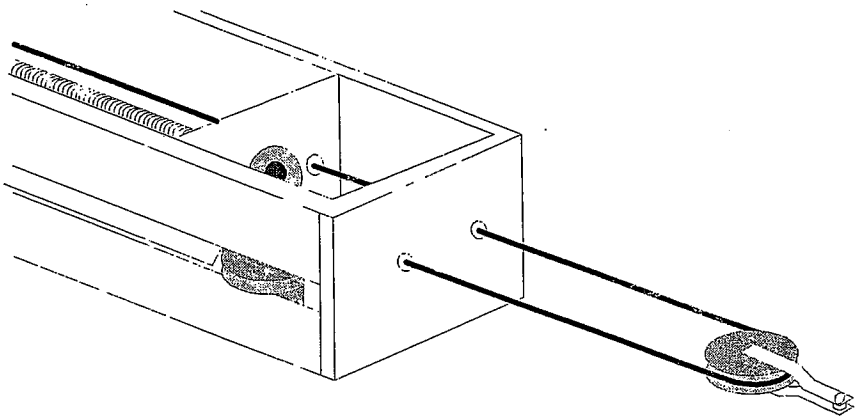
3. Drive one 3/8" lag bolt through the wall of the building in the desired location. Note: Place this bolt 5" below the desired height of the machine.
4.
4. Hang PowerTrak on the lag bolt through the slot near the top of the machine. (See number one below) *Note: This bolt is just for hanging the PowerTrak during installation. Do not attempt to operate the machine until it is fully secured.* To secure the PowerTrak, use the remaining six 3/8" lag bolts provided. Drive the bolts through the four holes in the back wall of the PowerTrak (Number two below), and the two flange holes near the top (number three below).



5. Install corner brackets, handwinches, thru-wall brackets, etc. as shown on the charts on page 13-17. Care should be taken when installing brackets, pulleys, etc. to ensure that cabling will not interfere with normal operation of doors, windows, etc. It is important to use only needle bearing pulleys on any "live" pulley (one that turns every time the curtain moves) as this will extend the life of the machine, and cables.
6. Run cabling through pulleys and brackets as shown on chart selected.
7. When hooking up the cables, leave the load nut near the closed position (The PowerTrak should have been shipped in this position). This guarantees that the manual winches will have enough cable to allow manual operation of the curtains.
8. Run ends of cables through the pulley assembly to the load block. Make sure ends of cable extend through the load block 1/2". Tighten the bolts on the face of the load block to lock down cables. A good method for securing cables to the load block is to loop through one hole, then pass in front of the screw and go back through the other hole from the bottom. Pull the cable through the pulleys as shown below. **Note:** The cables should come out of the pulleys at a right angle (90 degrees) with the cabinet. This ensures even wear on load block. Changing the exit angle of the cable changes the force seen on that side of the load block.



If for any reason it is necessary for you to mount the PowerTrak horizontally, punch the "Knock-outs" and run the cables straight through the top of the machine. It is very important to loop the cable around a **needle bearing pulley** as seen below to ensure even weight distribution on the Load Block. This pulley also acts as a spacer to keep the cables straight.



When one PowerTrak is used to pull two curtains loop the cables as shown in figure 1.

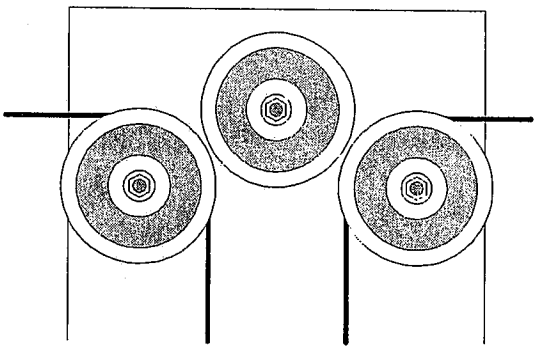


Figure 1

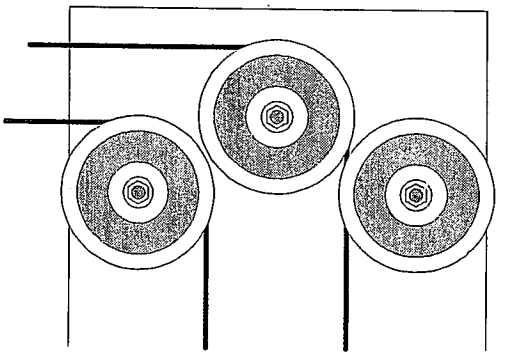


Figure 2

If the PowerTrak will only be pulling to the left side of the machine, loop the cables through the pulleys as shown in figure 2.

If the PowerTrak will only be pulling to the right, loop the cables through the pulleys as shown in figure 3.

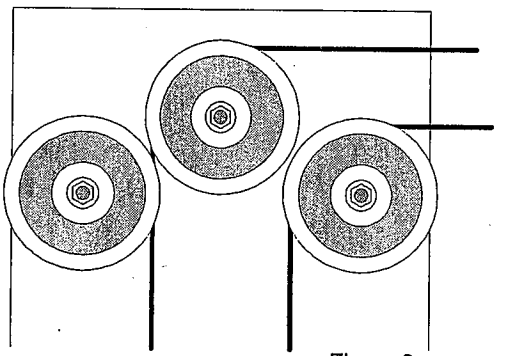
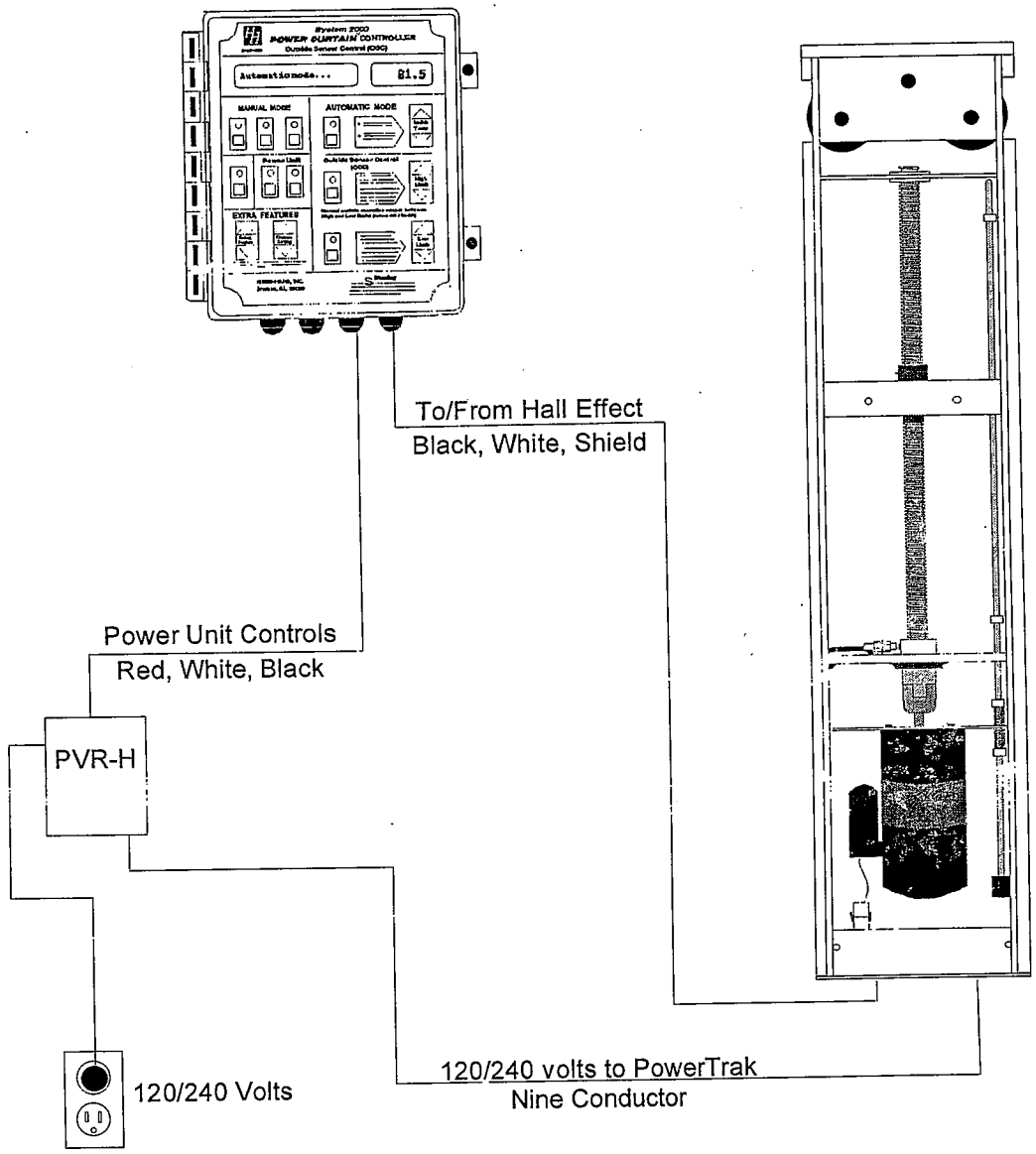


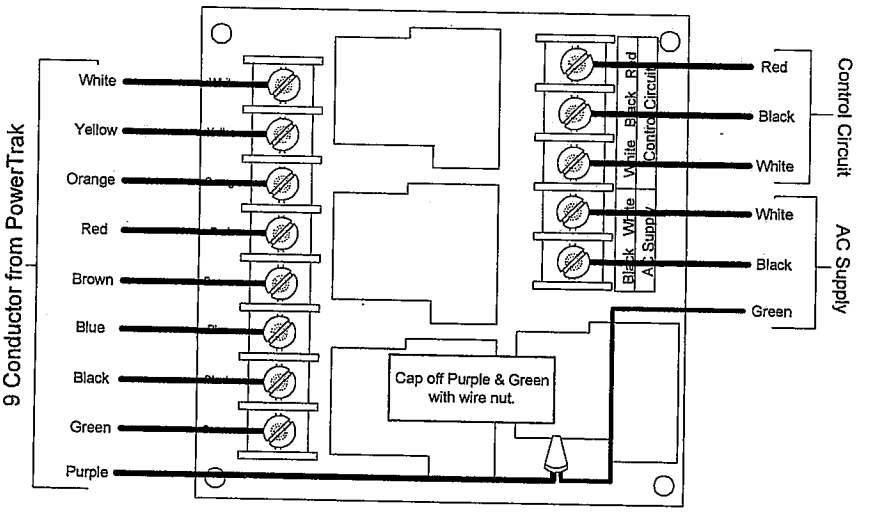
Figure 3

Simplified PowerTrak Wiring Diagram

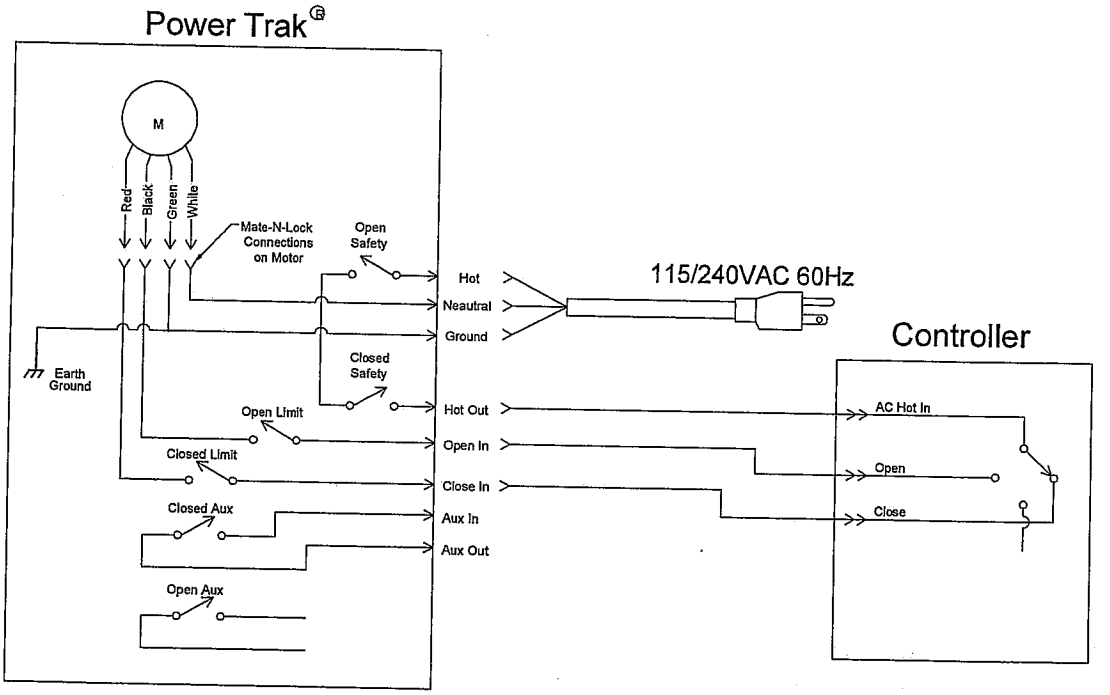


NOTE: To avoid the risk of electric shock, make sure all power supplies are disconnected before attempting electrical hookup, or entering electrical enclosure.

9. Open electrical enclosure and find circuit board.



Wiring Connections inside PVR-H



Wiring Connections for three wire unit.

10. Hookup the three-conductor wire from the controller to the terminals marked "red", "white", and "black" on PVR-H box.

11. Hookup the hall effect device 3 conductor from the controller to the terminals marked "black", "white", and "shield". (The shield wire is the uninsulated conductor.)

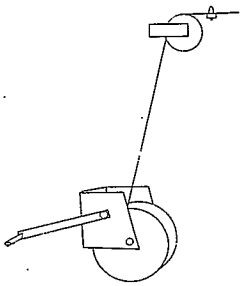
12. Hookup 8 conductor from PowerTrak to the PVR-H, by matching color to color with the terminals on the board.

13. Bring the power supply (120, 240V) to the PVR-H and hook up to the terminals marked "hot", "neutral", and "ground".

14. Ensure that all of the connections made in steps 10-13 are snug, and that no wires are shorted, Then replace electrical enclosure, and tighten down with the screws provided. When this is completed, you may apply power to the controller, and the PowerTrak.

15. With the controller in manual mode, close the machine fully. Then take up the slack on the cabling with the manual winch. (Note: With the PowerTrak you have the ability to adjust the lower limit switch setpoint, however, our factory setting should be sufficient for most applications.)

16. Next, open the curtains with the manual controls. When the curtain reaches the bottom of the opening, or whichever point you choose, stop curtain motion, and set high adjustment collar (near the top of the machine) on limit switch guide rod to this point. There is a 3/32" allen wrench included in the kit bag for loosening and tightening the setscrew in the collar.



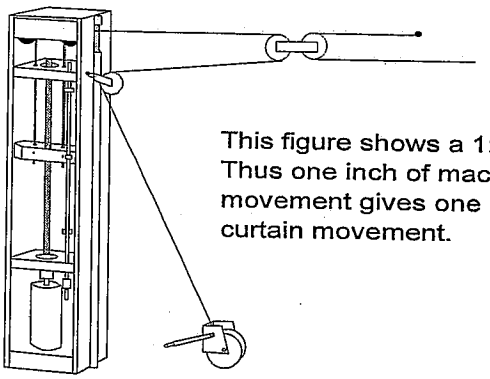
17. Attach a small cable clamp to the cable near the handwinch as a reminder not to wind the cables past this point.

18. Replace the door to protect the machine from the elements.

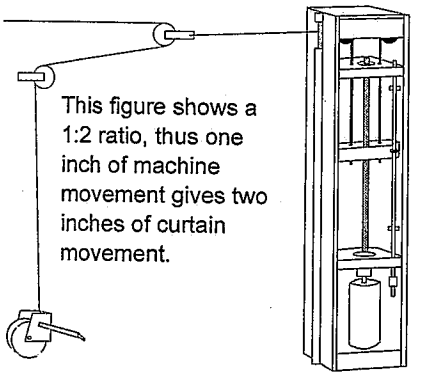
Ratios

Whereas each PowerTrak installation may vary as the user would like, the principle difference between installation setups is the ratio between machine movement, and curtain movement (or vent movement). These ratios are given as a number (i.e. 1:1, 1:2, etc.) 1:1 means that for every one inch of machine movement, the curtains move one inch. 1:2 would imply that for every one inch of machine movement, the curtains would move two inches. There are seemingly endless possible cabling options, giving a large variety of ratios. However, our electronic curtain controllers are only designed to operate on the following ratios.

The following charts show two different setups and give ratios for each:



This figure shows a 1:1 ratio. Thus one inch of machine movement gives one inch of curtain movement.



This figure shows a 1:2 ratio, thus one inch of machine movement gives two inches of curtain movement.

Due to the large amount of possible combinations of cable and pulley arrangements, it is not possible to list them all. However, we recommend using one of these two.

Operation

The PowerTrak is a versatile machine which can be adapted to many different uses. However, the machine was designed to operate curtains, doors, or vents in agricultural enclosures. Operation of the PowerTrak is dependent upon which Hired Hand controller you are using. To avoid misunderstanding, or misrepresentation, please see the owners manual included with your controller for operation of the PowerTrak.

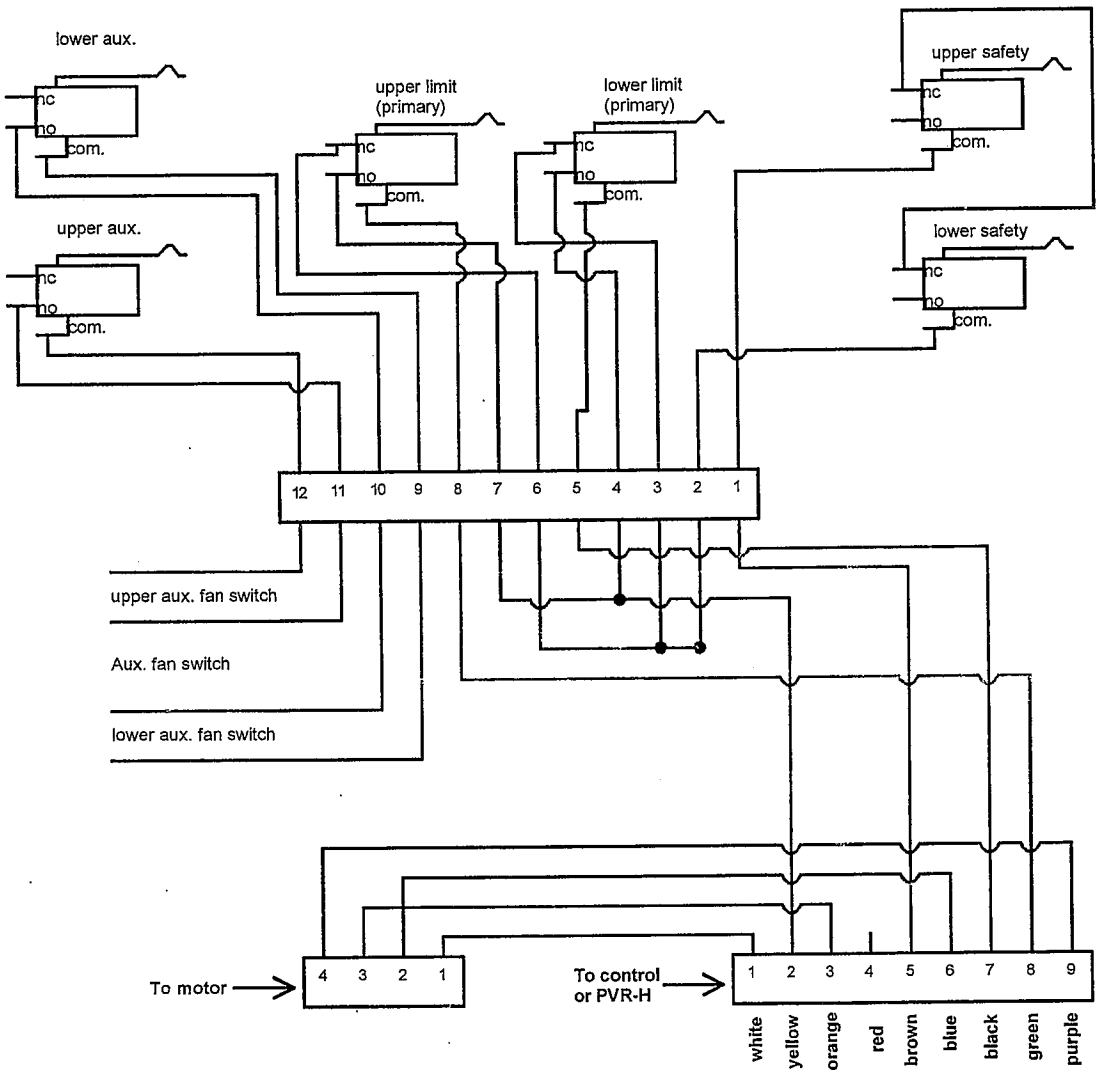
Important Warranty Information -- The PowerTrak is designed for use with Hired Hand controllers. Although other companies may build controllers they claim are compatible with our machine, we cannot verify this information, or guarantee proper performance when used. If you are operating a PowerTrak with any controller other than a Hired Hand controller, Hired Hand will not be responsible for any loss of Poultry, livestock, or property damage.

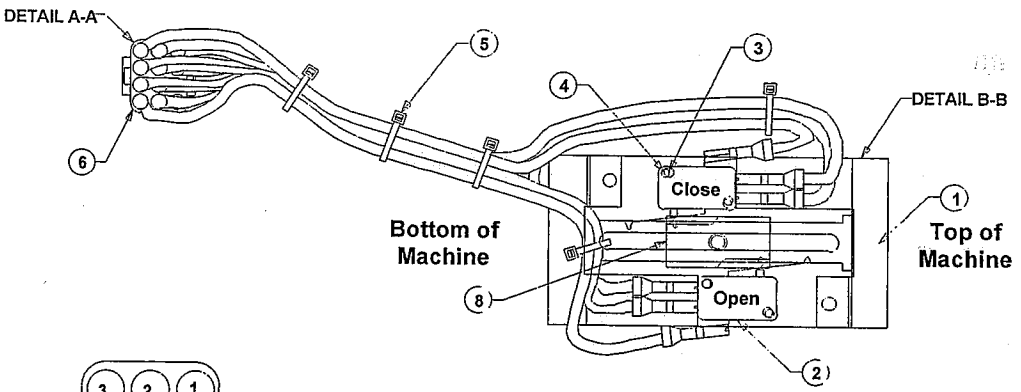
Troubleshooting

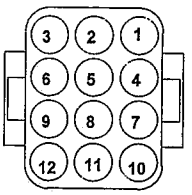
Problem	Possible Cause	Corrective Action
Power Trak will not open but will close	Primary limit open switch is bad	Replace switch
	Motor	Replace motor
Power Trak will not close but will open	Primary limit close switch is bad	Replace switch
	Motor	Replace motor
Power Trak will not move open or close	One of the safety switches are opened.	Back the machine off the safety switch by hand.
	One or both of the safety switches are bad	Replace the bad safety switch
	Damaged PCB 135 board	Replace PCB 135 board
	Motor	Replace motor
The close limit switch will stop the motor when it is moving in the open direction and vice-versa	Wires crossed on the limit switches	Check against wiring diagram to find which wires are crossed
	Limit switches backwards	Turn limit switches with bracket around 180 degrees

Limit Switch Wiring Diagrams

PCB 135 board with Limit Switches connected.





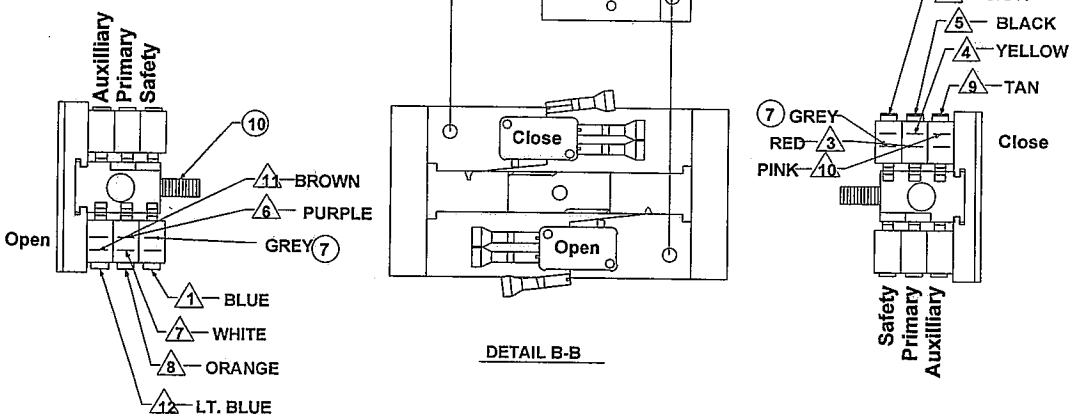


DETAIL A-A

△N REPRESENTS HOLE NUMBER ON CONNECTOR

(N) REPRESENTS ITEM NUMBER IN MATERIALS LIST

△1 — BLUE
△2 — GRAY
△3 — RED
△4 — YELLOW
△5 — BLACK
△6 — PURPLE
△7 — RED\WSTRP
△8 — ORANGE
△9 — TAN
△10 — PINK
△11 — BROWN
△12 — LT. BLUE



QTY.	ITEM	PRT. NO.	DESCRIPTION
2	11	1004-2138	SCREW 8-32 X 1/2 PAN PHIL ty
1	10	1004-0111	SCREW SET 1/4 20 X 3/4 SOC
1	9	0404-3389	FAB GS BRACKET SWITCH ALIGNMENT PT
1	8	0401-5027	FAB ALUMINUM CAM LIMIT SWITCH PT
1	7	1901-3082	WIRA W#1702-0223 C1#3006-0136 C2#3006-0136 GREY
1	6	1902-0202	CABLASY FOR POWERTRAK
5	5	1007-2299	TIE Nylon 3-3/4
4	4	1001-1452	NUT LOCK 4-40 N/I hx Z
4	3	1004-0100	SCREW MACH 4-40X1-1/2 rnd sl Z
6	2	3004-1570	SWITCH MICRO SHORT 022
1	1	0404-5026	FAB GS 14GA. LIMIT SWITCH BRKT.

Maintenance

The PowerTrak is designed to operate with a minimum of maintenance. However, The following steps must be performed on a regular basis to ensure peak performance over the unit's lifetime.

The most crucial maintenance item is lubrication. We recommend using Valvoline Val-Plex EP™ wheel bearing grease for this purpose. The full length of the screw, and the "V shaped" tracks on the sides of the cabinet (where the load block runs) should be wiped from top to bottom with grease. There are two grease fittings provided on the PowerTrak, one on the load nut, and one on the thrust bearing (just above the spider coupling). Each bearing should receive two pumps with a grease gun (or until grease appears on both sides of the bearing) at least every 3 months.

To grease the screw, hookup grease gun to the fitting on load nut. Then use the manual setting on the controller to move load nut from one end of the screw to the other while applying grease. This ensures that the full range of the load nut is well lubricated.

Important: Do not use WD-40™ or other similar products for lubrication or cleaning of this machine. Products of this nature will remove grease from the unit, causing excessive wear on load bearing surfaces and increasing the possibility of binding.

It is also important to keep debris out of the enclosure. The door on the unit should be sufficient, but it is still recommended that you do a visual inspection and clean out any wasp nests, etc. It is acceptable to blow debris out of the unit with pressurized air, but never spray the internals with water unless power is completely disconnected from the unit.

Inspect cables periodically, especially at the onset of cold weather. Damaged cables can break, and the risk is higher in colder temperature. Replace any badly frayed or excessively worn cables.

One Year Limited Warranty

All products are warranted to be free from defects in material and workmanship for a period of one year from the date of purchase if installed and used in strict accordance with the installation instructions. Liability is limited to the sale price of any products proved to be defective or, at manufacturers option, to the replacement of such products upon their return. No products are to be returned to the manufacturer, until there is an inspection and/or a return-goods authorization (RGA) number is issued.

All complaints should be directed first to the authorized distributor who sold the product. If satisfaction is not obtained or the name of the distributor is not known, write the manufacturer that appears below, directed to the attention of Customer Service Manager.

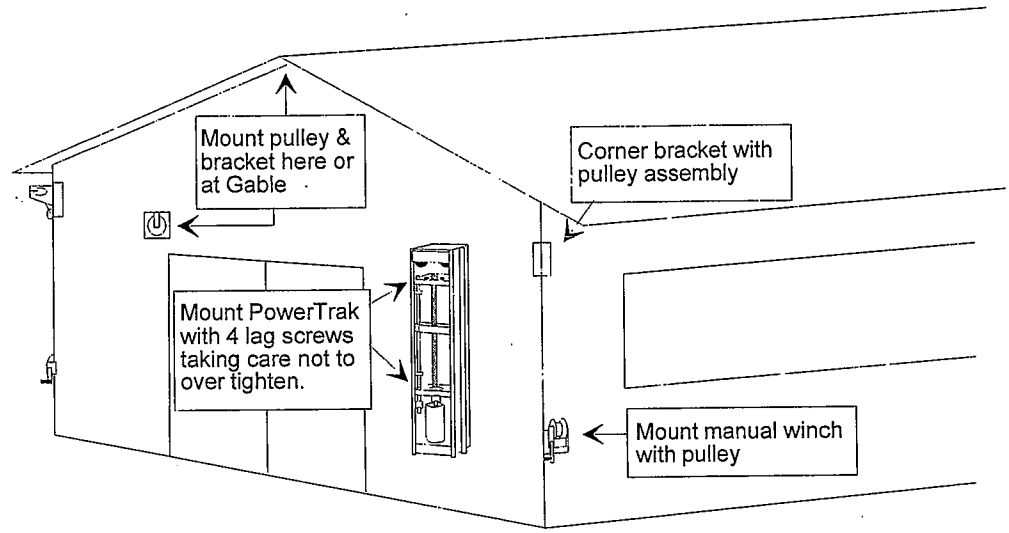
This limited warranty is expressly in lieu of any and all representations and warranties expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose. The remedy set forth in this limited warranty shall be the exclusive remedy available to any person. No person has authority to bind the manufacturer to any representation or warranty other than this limited warranty. The manufacturer shall not be liable for any consequential damages resulting from the use of our products or caused by any defect, failure or malfunction of our products. (Some areas do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.)

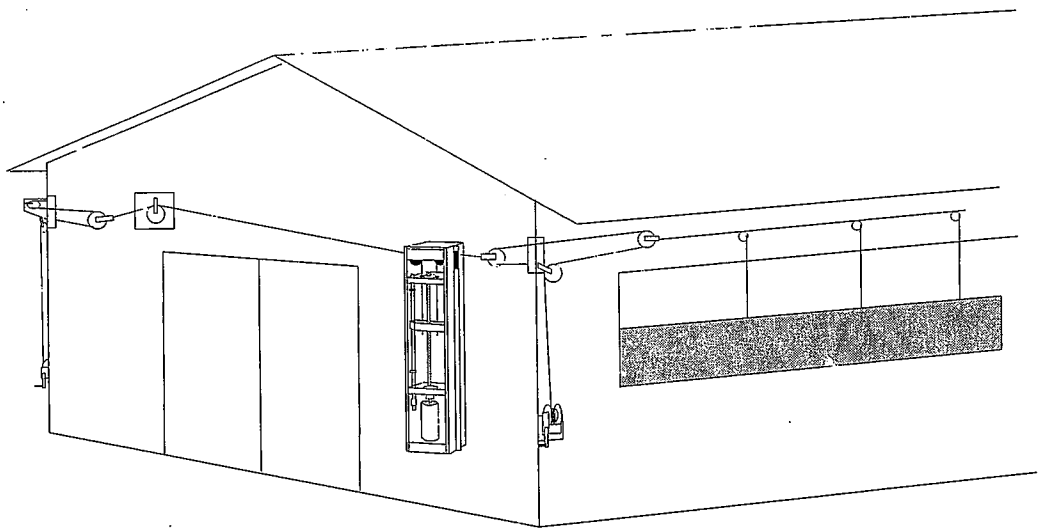
This warranty gives you specific legal rights and you may also have other rights that vary from area to area.

Warrantor:

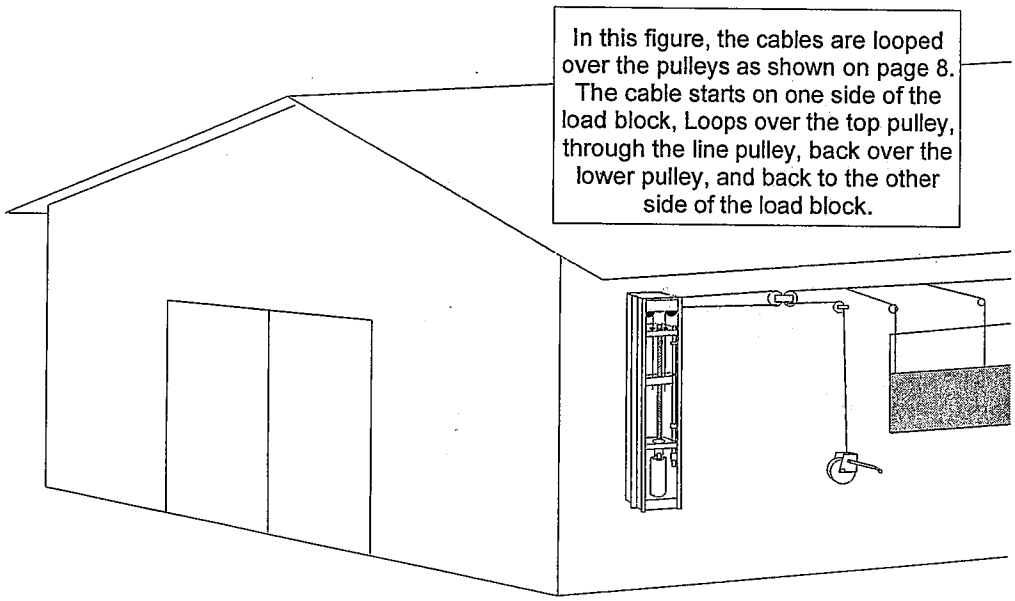
Hired-Hand, Inc.
1733 Co. Rd. 68
PO Box 99
Bremen, AL 35033

Outside Endwall Mount

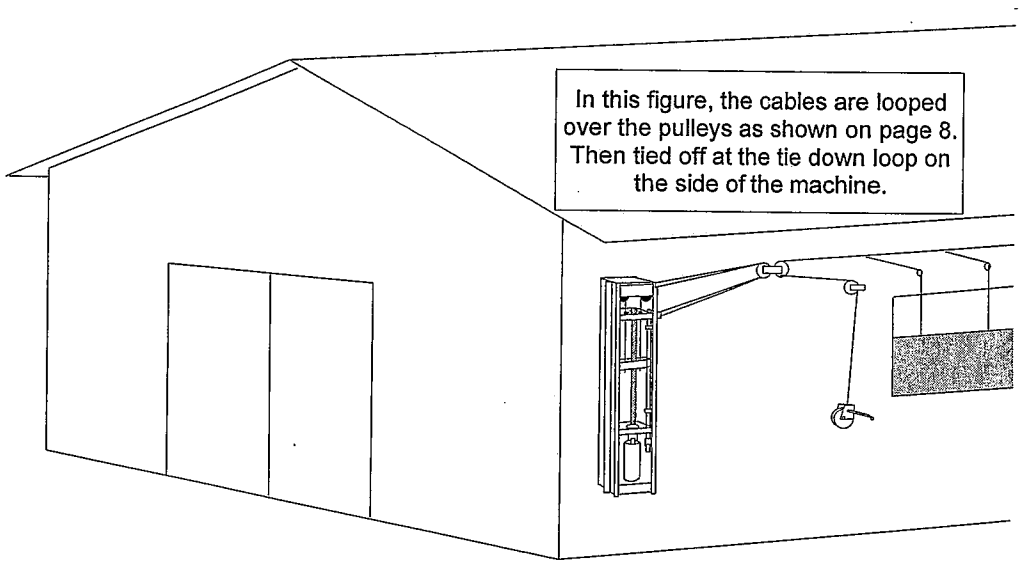




Outside Sidewall Mount

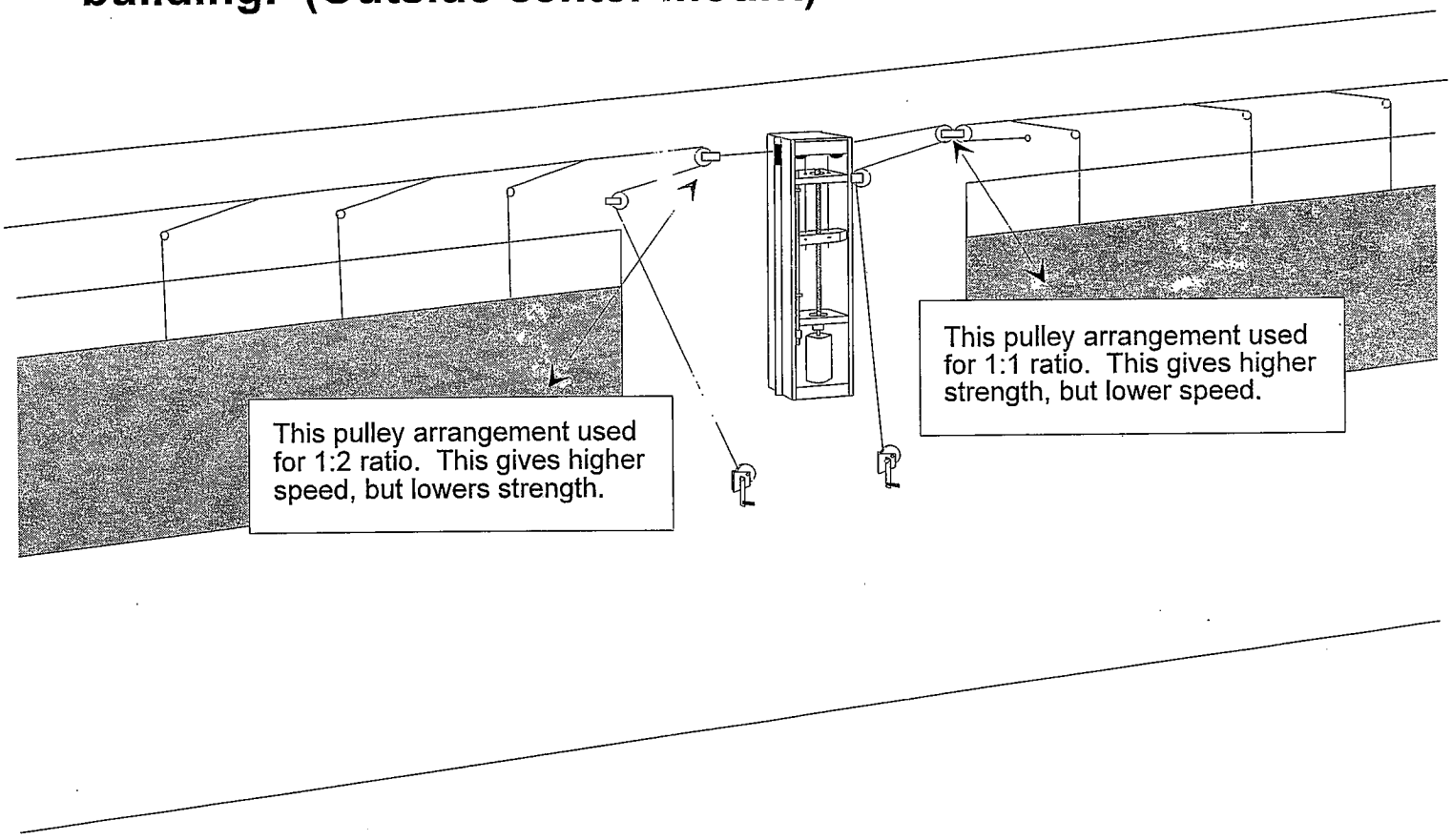


This drawing shows a 1:2 ratio.



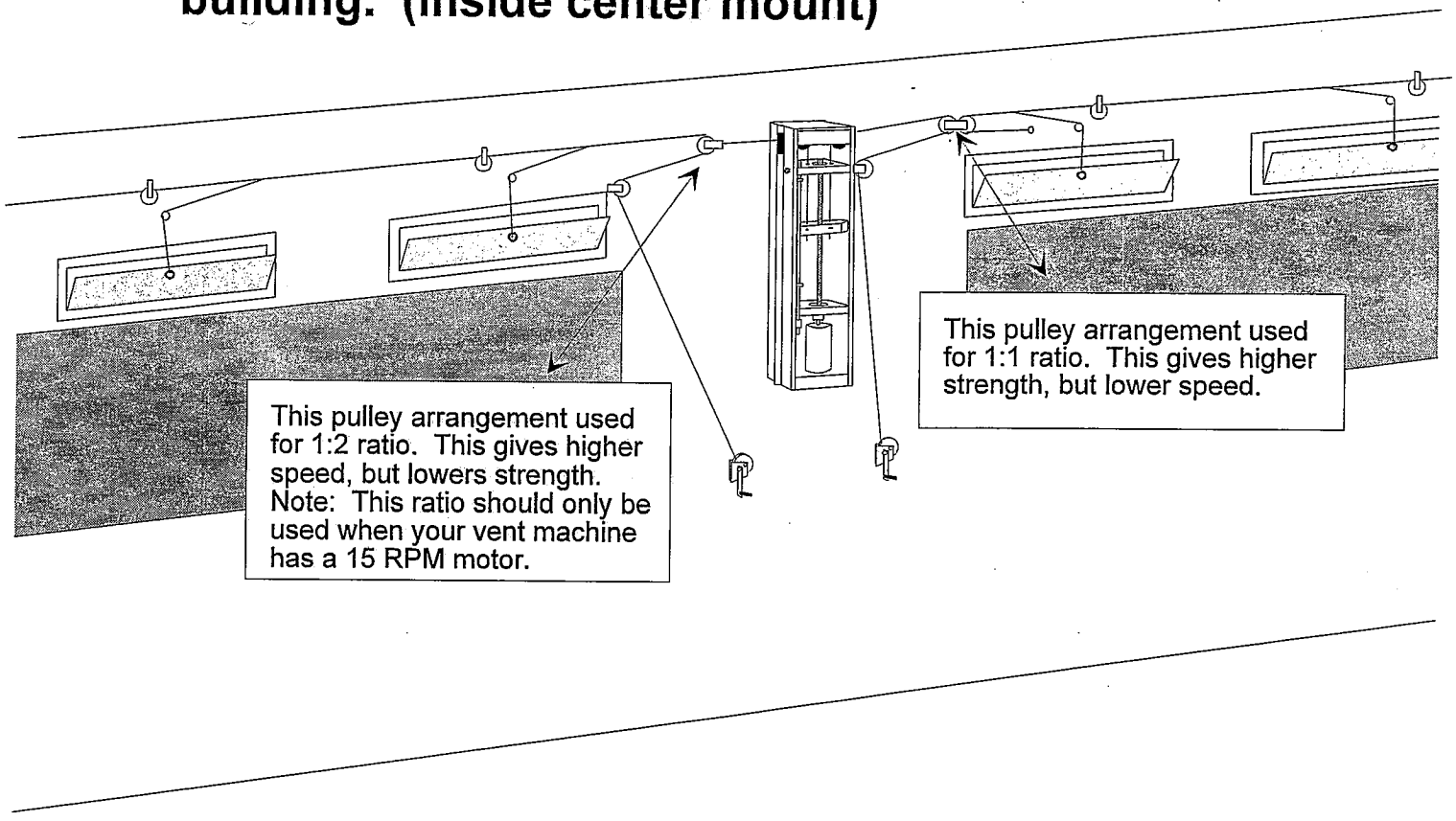
This drawing shows a 1:1 ratio.

PowerTrak operating Curtains on one side of building. (Outside center mount)



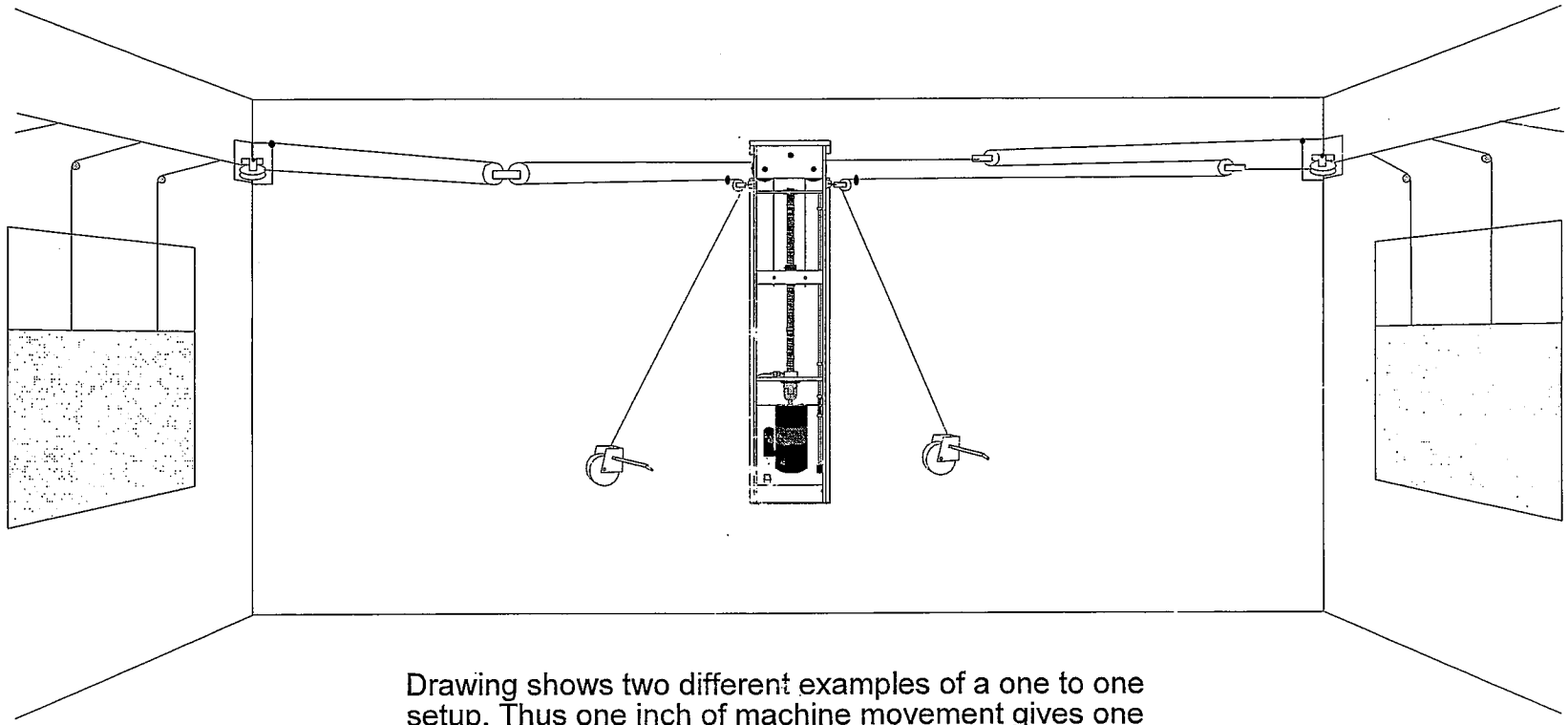
NOTE: Although this drawing shows the two methods of arrangement, ensure that both sides are arranged the same way in your application.

PowerTrak operating vents on one side of building. (inside center mount)



NOTE: Although this drawing shows the two methods of arrangement, ensure that both sides are arranged the same way in your application.

Inside Endwall Mount



Drawing shows two different examples of a one to one setup. Thus one inch of machine movement gives one inch of curtain movement.