Read This Entire Manual Prior To Installation. This Manual Must Be Given To And Reviewed By The Grower After The Unit Has Been Installed. This Manual Should Be Kept In A Safe, Readily Accessible Place For Quick Reference.

August 2008
GENERAL INFORMATION

Specifications

Power Requirements
All Ball Screw Power Units require either 110-120 VAC or 230-240 VAC depending on the electric motor (installed at the factory) powering the drive. Be sure to check the motor voltage ratings when making electrical connections. The Control Circuit connections in the Motor Compartment enable an external Control Unit to control the opening and closing of the Power Unit. The relays in the Motor Compartment can be matched to a different Control Unit voltage to operate the Power Unit motor. The Electric Motor and Relays are installed at the factory based on the costumer’s requirements.

The Ball Screw Power Unit is manufactured with an optional Power Fail feature. This feature enables curtains/inlets to drop automatically when electrical power is disabled. An external thermostat option provides a high-heat override also allowing curtains/inlets to drop automatically in high heat conditions.

Designation
BL  Ball Screw Power Unit with Lovejoy Coupling.
BP  Ball Screw Power Unit with Power Fail Clutch Coupling.
   -A  115 VAC Control Voltage
   -D  230 VAC Control Voltage
   -C  24 VAC Control Voltage

Motor Voltage and Speed: Rate of Travel:
N  115 VAC, 107 RPM 53 inches per minute
O  115 VAC,  40 RPM 20 inches per minute
P  115 VAC,  23 RPM 11 inches per minute
S  230 VAC, 107 RPM 53 inches per minute
R  230 VAC,  40 RPM 20 inches per minute

Model  Unit Description  Total Travel
1800  18 Inch 15 inches
3000  3 Foot 32 inches
4000  4 Foot 45 inches
5000  5 Foot 57 inches
6000  6 Foot 68 inches

Dimensions:

<table>
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<tr>
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<th>Width</th>
<th>Depth</th>
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<tr>
<td>1800</td>
<td>39”</td>
<td>48”</td>
<td>9”</td>
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</tr>
<tr>
<td>3000</td>
<td>57”</td>
<td>63”</td>
<td>9”</td>
<td>6”</td>
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<tr>
<td>4000</td>
<td>69”</td>
<td>75”</td>
<td>9”</td>
<td>6”</td>
</tr>
<tr>
<td>5000</td>
<td>81”</td>
<td>87”</td>
<td>9”</td>
<td>6”</td>
</tr>
<tr>
<td>6000</td>
<td>93”</td>
<td>99”</td>
<td>9”</td>
<td>6”</td>
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INSTALLATION

The Ball Screw Power Drive is capable of handling one or both sides of a curtain house, or all inlets of a static pressure house. All Ball Screw units are designed for ALL POSITION mounting. Units are to be installed by qualified personnel, and standard safety practices must be employed at all times.

There are various ways of installing power drive equipment: inside or outside the building, end wall, sidewall, ceiling, etc. The installer must evaluate the installation to suit the application. Other criteria to consider include: size and structure of building, weight of curtains and/or inlets, cabling and connections to the Power Drive, Power Drive placement and orientation, and so on.

Inlet boards have other considerations in addition to the above. Inlets come in various weights and sizes, may be installed with weights and/or springs, etc. The installer must determine what is necessary to enable the inlets to open when the optional Power Failure Ball Screw Power Drive is being used. Additional weights or springs may be necessary for the inlets, or a counter weight may be necessary to offset heavy inlet boards.

LIMIT SWITCH LEVER ARMS

Check the operation of the limit switches when installing. The limit switches are located in the motor compartment of the Ball Screw case, on the Electrical Plate. Changes in adjustment may have occurred due to shipping and handling. All limit switch arms should contact the lower portion of the plastic cam rod (see the illustration below) when the drive unit is between its end stops. The plastic cam may be adjusted by rotating it “up” or “down” the ¼ inch steel Control Rod using pliers. Check limit switch activation (“clicking” of the switch) by moving the Control Rod back and forth by hand. The limit switches should click when each switch lever arm is approximately halfway up or down the transition between the upper and lower portions of the plastic cam rod. It may be necessary to bend the limit switch lever arm to make adequate contact on the cam rod.

The two limit switches on the far side of the cam rod are the Primary switches. They should be at the edges of the lower portion of the cam rod. The third switch on the near side is the Fail-Safe switch. It should be midway between the higher portions of the cam rod. This switch will not activate when the Power Drive is functioning normally. It will function when a Primary limit switch fails, or if the Motor Brake does not stop the motor when the Pull Bar reaches the set collar limit stops. Both of these conditions will require servicing to restore proper operation.
POWER FAILURE CLUTCH

Upon installation, check the gap between the clutch and clutch disk on those units so equipped. Some shifting may have occurred in shipping. When the power is off, turn the screw shaft by hand using a cloth or paper towel. There should be a minimal distance of 0.003” between the clutch and disk that will allow the disk to turn freely, with slight or no rubbing between the two. There are 2 Allen/set screws on the clutch collar that must be loosened to adjust the clutch. See Diagram on P.18.

WINCHING PRECAUTIONS

DO NOT USE double back winching with the Ball Screw Power Drive unless approval is granted by the manufacturer. The performance and speed of the Ball Screw Power Drive eliminates the need for double back winching in most cases.

When integrating the Ball Screw Power Drive with an existing installation, all cables and pulleys should be examined to ensure ease of operation and adjustments made where necessary.

MOUNTING

The recommended mounting method is to fasten the unit to a 2”x10”x12’ (or larger) pressure treated board. The Ball Screw Case has predrilled holes to simplify mounting. The unit may be mounted directly to the 2”x10” mounting board using 3/8”x2” hex head lag screws.

The drive unit may be directly mounted to the ceiling joists or wall studs. Measure center to center of the joists and transfer the measurements to the back side of the Ball Screw unit housing. Drill ½” holes for mounting.

Caution!!! When drilling any mounting holes Do Not drill holes in the Ball Nut Guide Travel Path. Such holes and mounting screws will interfere with the travel path of the Ball Nut Guides and adversely effect the Ball Screw operation.
REGULAR SERVICE

LUBRICATION

The Ball Screw shaft requires periodic attention: Apply a small bead of white lithium grease (included with Power Unit) on the length of the screw shaft about every three months.

The Pull Bar Guides may rub along some of its travel along the Ball Screw Case when load is applied to the unit. Apply a small amount of grease with a cloth or a finger to the case where rubbing occurs.

The Ball Screw Power Drive is equipped with a heavy duty thrust bearing, located in the coupling portion of the Ball Screw case. This bearing has been pre-greased at the factory, and will not require further greasing for approximately 24 months. To prevent over greasing, the grease fitting on the thrust bearing has been turned away from the opening of the Ball Screw case. Over greasing may lead to grease contamination on the clutch coupling (for those units so equipped), resulting in clutch slippage.

ADJUSTMENTS

Periodically check the set collar positions on the limit switch rod and tighten thumb screws and set screws.

Check the gap between the clutch and clutch disk on those units so equipped. When the power is off, turn the screw shaft by hand using a cloth or paper towel. There should be a minimal distance, less than 0.003”, between the clutch and disk that will allow the disk to turn freely, with minimal or no rubbing between the two. There are 2 Allen/set screws on the collar of the clutch that can be loosened so that the clutch may be adjusted.

There are 2 basic types of motor brakes that are mounted on the end of the motor of the Ball Screw Drive. The Power On Brake has a Disk Collar fastened on the end of the motor shaft. With power off, the disk collar can be turned by hand: check that the two set screws are tight, and that the gap between the disk and the electromagnet is not greater then 0.005 inches. The Power Off Brake has a Nut that is hidden by the electromagnet.

NOTE: Electrical components, clutches and brakes are energized at all times when the Drive Unit is powered. These become warm, even hot, to the touch under normal operation. Power must be disconnected and components allowed to cool prior to servicing in the electrical compartments.
# BALL SCREW ILLUSTRATIONS AND ASSEMBLIES

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Mounting Illustration #1
End Mount to Raise Curtains on Both Sides of Building.

Mount hand winch for each wall of curtain.

Corner Bracket with Pulley

Cables should be adjusted so that pulleys are at least the length of the drive travel plus 1 foot away from the Ball Screw when fully retracted.

When cabling is complete, adjust lower and upper limit stops to match curtain height. NOTE: On Power Failure units the upper (open) stop is pre-set at the factory and should not be changed.

NOTE: LOAD ON PULL BAR MUST BE EVENLY DISTRIBUTED ON BOTH SIDES OF BALL SCREW SHAFT.
Mounting Illustration #2

Ceiling Mount in Center of Building to Raise Curtains on Both Sides of Building.

Distance from Drive Pulleys (when drive unit is retracted) to first pulleys should equal the length of drive travel plus one foot.

NOTE: LOAD ON PULL BAR MUST BE EVENLY DISTRIBUTED ON BOTH SIDES OF BALL SCREW SHAFT.

One-to-one pulley and cable arrangement
Mounting Illustration #3
Exterior Mount, Middle of Side to Raise Curtains on Both Sides of Building.

Thru-wall pulleys and cables to other side of house.

When cabling is complete, adjust lower and upper limit stops to match curtain height.

NOTE: On Power Failure units the upper (open) stop is pre-set at the factory and should not be changed.

Cables should be adjusted so that pulleys are at least the length of the drive travel plus 1 foot away from the Ball Screw when fully retracted.

NOTE: LOAD ON PULL BAR MUST BE EVENLY DISTRIBUTED ON BOTH SIDES OF BALL SCREW SHAFT.

One-to-one pulley and cable arrangement
Illustration #4
Sample One-to-Two Pulley and Cable Arrangement

NOTE: LOAD ON PULL BAR MUST BE EQUALLY DISTRIBUTED ON BOTH SIDES OF BALL SCREW SHAFT.

Illustration #5
Ball Screw Power Failure Thermostat Override Connections

NOTE: LOAD ON PULL BAR MUST BE EQUALLY DISTRIBUTED ON BOTH SIDES OF BALL SCREW SHAFT.

115/230 VAC SUPPLY
Check that Load 1 and Load 2 are equally distributed on Pull Bar.

Be sure that distance to free floating pulley is enough to keep pulley from jamming against pulley bracket during operation.
BALL SCREW SHELL ASSEMBLY

1. Lid (length or unit size- 3', 4', 5', or 6')
   HexHead Tek Screw SM-8-.5HHT (9 per lid)

2. Pulley End Plate w/ stiffener (double plated)
   a. 5/16"x3/4" Bolt (BT-.312-.75G) (6 per plate)
   b. 5/16" Nut (NT-.312) (6 per plate)

3. Chain Bracket (BS-CB-1000) (2 per unit)
   Power Failure models only

4. Door Clasp-Latch & Hook (BS-LT-903B) (2 per unit)
   Pop Rivet (BSS42) (4 per clasp)

5. Bearing Thrust Plate w/ stiffener (Double plated)
   a. 5/16"x3/4" Bolt (BT-.312-.75G) (6 per plate)
   b. 5/16" Nut (NT-.312) (6 per plate)

6. Motor Plate
   a. 5/16"x3/4" Bolt (BT-.312-.75G) (4 per plate)
   b. 5/16" Nut (NT-.312) (4 per plate)

7. End Plate
   a. 5/16"x3/4" Bolt (BT-.312-.75G) (4 per plate)
   b. 5/16" Nut (NT-.312) (4 per plate)
5 1/2' PULLEY PLATE ASSEMBLY

1. 1/2" Jam Nut (NT-.500J)  
   (2 per pulley)
2. "C" Bracket  
   (2 per assembly)
3. 3/4"x1 1/2" Hollow Bolt  
   (BT-.750-1.5H)  
   (1 per pulley)
4. 1/2" Flat Washer (WA-.500S)  
   (2 per pulley)
5. 5 1/4" Pulley w/ Grease Hub  
   (1026)  
   (2 per assembly)
6. "L" Bracket  
   (2 per assembly)
7. Pulley End Plate w/ Stiffener
8. Rod Bushing (BS-3001)
9. 3/4" Jam Nut (NT-.750J)  
   (2 per assembly)
10. Pulley Bracket Assembly
1. 1/2" Jam Nut (NT-.500J)  
   (2 per pulley)
2. Tri-pulley "C" Bracket
3. 3/4"x1 1/2" Hollow Bolt  
   (BT-.750-1.5H)  
   (2 per assembly)
4. 1/2" Flat Washer (WA-.500S)  
   (2 per pulley)
5. 3" Pulley (1018)  
   (3 per assembly)
6. Tri pulley "L" Bracket
7. Pulley End Plate w/ Stiffener
8. Rod Bushing (BS-3001)
9. 3/4" Jam Nut (NT-.750J)  
   (2 per assembly)
10. Pulley Spindle (HH-1004)
1 - 5/8" Stover Nut  
   (LN-.625FS)  
2a - Bearing Washer  
   (BS-TRB-1018)  
2b - Disc Bearing  
   (BS-NTA-1018)  
2c - Bearing Washer  
   (BS-TRC-1018)  
3 - Spring washers (6)  
   (BS-Z-15)  
4 - Ballnut (BS-RF-0372)  
5 - Pullbar (Center Guide)  
   (BS-3003)  
6 - Pullbar Guides (2)  
   (BS-SGB-L &  
   BS-SGB-R)  
7 - Ballscrew Rod  
   (BS-3004)  
8 - Brush  
9 - Reducing Washer  
   (HW-RW-0012)  
10 - 10/24" x 1/2" PHM screw  
   (MS-1024-.5PHP)  
11 - 1/4 x 1-1/2 hexhead bolt  
   (BT-.250-1.5G2)  
12 - 1/4" nut (NT-.250)  
13 - #8 Washer (WA-8)
1. Plastic Cam Rod
2. Limit Switch Rod SS (BS-SS-1414)
3. Washer 5/16" Flat (WA-.500S)
4. Control Rod Spring (BS-SP-7153)
5. Cotter Pin SS (CP-.125-1S)
6. Set Collar 3/8" (SC-.375)
7. Thumb Screw (TS-.250-.5)
8. Control Rod Bracket
9. Ball Nut (BS-RF-0372)
11. Pull Bar Guide (right) (BS-SGB-R)
12. Pull Bar (BS-3003)
13. 1/4"x1-1/2" bolts with nuts (BT-.250-1.5G) (NT-.250)
CONTROL ROD ASSEMBLY FOR BALL SCREW LOVEJOY MODEL

1. Plastic Cam Rod
2. Limit Switch Rod SS (BS-SS-1414)
3. Washer 5/16" Flat (WA-.500S)
4. Control Rod Spring (BS-SP-7153)-2
5. Cotter Pin SS (CP-.125-1S)-2
6. Set Collar 3/8" (SC-.375)-4
7. Thumb Screw (TS-.250-.5)-2
8. Control Rod Bracket
9. Ball Nut (BS-RF-0372)
11. Pull Bar Guide (right) (BS-SGB-R)
12. Pull Bar (BS-3003)
13. 1/4"x1-1/2" bolts with nuts (BT-.250-1.5G) (NT-.250)
POWER FAILURE MODEL CLUTCH & CENTRIFUGAL BRAKE ASSEMBLY

1. Bolt 3/8x1-1/2" (BT-.375-1.5G)-2
2. Ball Screw Rod (BS-3004-x)
3. Bolt 3/8x3" (BT-.375-3.0G)-2
4. Bearing Plate (Double Plated)
5. Thrust Bearing 5/8" (BS-NTA-1018)
6. Brake Drum Spacer (BS-BR-1005)-2
7. Split Bushing-2 halves (BS-3002)
8. Centrifugal Brake Drum (BS-BR-1001)
9. Nut 3/8" (NT-.375)-4
10. Brake Shoe Spring (BS-36-0926)-3
11. Brake Arm (BS-BR-1003)-3
12. Hex Head Bolt 10/32x1/2" (HW-HX-1032)-6
13. Brake Shoe (BS-BR-1002)-3
14. Clutch Unit
   a. Clutch Disk
   b. Clutch Electromagnet
      90 VDC (BS-0717-1712)
      190 VDC (BS-0717-0009)
15. Clutch Restraining
    Bolt 8/32x1-1/2" (BT-.375-1.5G)
16. Motor Shaft
17. 8/32 Nut (NT-832)
18. Motor Plate
19. GearMotor

This gap should be 0.003 inch between the electromagnet and disc.
LOVEJOY COUPLING ASSEMBLY

1. Ball Screw Rod (BS-3004-x)
2. Nut 3/8" (NT-.375)-4
3. Bearing Plate (Double Plated)
4. Thrust Bearing 5/8" (BS-NTA-1028)
5. Bolt 3/8x1-1/2" (BT-.375-1.5G)-4
6. Split Bushing-2 halves (BS-3002)
7. 5/8" Lovejoy Coupling (DR-LJ-0000)-2
8. Urethane Spider (DR-LJ-000U)

9. Motor Shaft
10. Motor Plate
11. Franklin Motor
12. Mounting Bolts (1/4"x1/2")
BALL SCREW MOTOR MOUNT ASSEMBLY

1. Bolt 1/4"x1/2" (HW-BT-2050)-4
2. Motor Plate (BS-3005)
3. Franklin Motor
4. Motor Brake (see following pages)
5. Electric Plate (see following pages)
The Motor Brake is mounted on the rotor end of the gearmotor, away from the output shaft/ballscrew. The Electromagnet is mounted first, adjacent to the motor end cap. The Brake Disc is mounted next to the Electromagnet, but with a gap of 0.005 inches between the two. A smaller gap is acceptable, provided that there is no drag of the Disc on the Electromagnet. This allows the Disc to rotate freely when the power is off to the electromagnet such as when the motor is given a signal to run in either direction, or when the electric power is off to the Ballscrew Drive Unit. When the power is off, the weight of curtains and the low resistance of the Ballnut on the Shaft will allow the curtains to freely fall open. When power is restored, the Drive Unit will return to normal operation without the need to reset the curtains with hand winches.
POWER OFF BRAKE ASSEMBLY

1 - Garmotor
2a - Brake Hub (Nut)
2b - Brake Electromagnet
   90 V - BS-BR-0090
   190 V - BS-1904-0053
3 - 8/32" x 3/8" Machine Screw (4)
   (MS-832-.375PHP)
4 - Snap Ring
   (BS-SN-1440)
SECTION 6
ELECTRICAL ASSEMBLY CONFIGURATION

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<td>BP-xx-x016</td>
<td>Delay Power Fail configuration: Clutch, 2 relays, 2 Bridge Rectifiers, Manual control switches, PowerOff Motor Brake, 3900 UF/ 450V Capacitor (240VAC system) or 12,000 UF/ 200V Capacitor (120VAC system).</td>
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ELECTRIC PLATE ASSEMBLY

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## ELECTRICAL PLATE ASSEMBLY

Diagram #’s refer to diagram on facing page.

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<td>MS-632-.375P</td>
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<td>NT-632</td>
<td>Hex Nut 6/32 (2 per bracket)</td>
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<td>EP-SW-10G4</td>
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<td>MS-440-1PHP</td>
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<td>Spacer 1/8” (2 per switch)</td>
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<td>NT-632</td>
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<td>NT-632</td>
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<td>11</td>
<td>EP-FR-2102, or</td>
<td>20 MFD Capacitor, for 115 VAC/ 23 RPM Motor, or</td>
</tr>
<tr>
<td></td>
<td>EP-FR-2103, or</td>
<td>30 MFD Capacitor, for 115 VAC/ 40 RPM Motor, or</td>
</tr>
<tr>
<td></td>
<td>EP-FR-2104, or</td>
<td>40 MFD Capacitor, for 115 VAC/107 RPM Motor, or</td>
</tr>
<tr>
<td></td>
<td>EP-FR-2007, or</td>
<td>7 MFD Capacitor, for 230 VAC/ 40 RPM Motor, or</td>
</tr>
<tr>
<td></td>
<td>EP-FR-2010</td>
<td>10 MFD Capacitor, for 230 VAC/107 RPM Motor</td>
</tr>
<tr>
<td></td>
<td>EP-WT-014W</td>
<td>Wire Tie, 14 inch</td>
</tr>
<tr>
<td>116-WIRE</td>
<td>Wire, 16 AWG stranded for assembly</td>
<td></td>
</tr>
</tbody>
</table>
BP-xx-x010

Model AO: 115 VAC/ 40 rpm Motor
90 VDC Clutch & PowerOn Brake
R=8.2 K ohm       150 MOV
115 VAC LY2 Omron Relays

Model DR: 230 VAC/ 40 rpm Motor
190 VDC Clutch & PowerOn Brake
R=16 K ohm       250 MOV
230 VAC LY2 Omron Relays

update 10/1/02
Model AO: 115 VAC/ 40 rpm Motor
90 VDC PowerOff Brake
2-8.2 K ohm 2 Watt Resistors
2-115 VAC LY2 Omron Relays

Model DR: 230 VAC/ 40 rpm Motor
190 VDC PowerOff Brake
2-16 K ohm 2 Watt Resistors
2-230 VAC LY2 Omron Relays

update 10/1/02
BP-xx-x016

Model AO: 115 VAC/ 40 rpm Motor
90 VDC PowerOFF Brake
R=8.2 K ohm  150 MOV
115 VAC LY2 Omron Relay
CAP (capacitor)=565K

Model DR: 230 VAC/ 40 rpm Motor
190 VDC PowerOFF Brake
R=16 K ohm  250 MOV
230 VAC LY2 Omron Relay
CAP (capacitor)=125K

update 1/31/08
# TROUBLESHOOTING GUIDE

<table>
<thead>
<tr>
<th></th>
<th>Symptom</th>
<th>Cause</th>
<th>Remedy</th>
<th>See Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unit will not run</td>
<td>Fail safe switch activated</td>
<td>Turn off power &amp; turn screw shaft by hand to get off fail safe switch</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Power to unit</td>
<td>Check input voltage, breaker</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No control signal</td>
<td>Check manual operation at unit &amp; control</td>
<td>26-28</td>
</tr>
<tr>
<td>2</td>
<td>Motor hums but won’t run</td>
<td>Motor brake not releasing</td>
<td>Check voltage to brake: 90vdc for 120V unit, 200vdc for 240V unit</td>
<td>24-28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No voltage, bad rectifier</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Brake coil may be shorted</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Both relays activated (trying to run both directions)</td>
<td>Activate open or close limit switch to see if motor will run (relay sticking, or control sending both signals)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24-28</td>
</tr>
<tr>
<td>3</td>
<td>Clutch slips (Power Fail models) – Ballscrew shaft will not turn with motor</td>
<td>Gap too large</td>
<td>With power off, check gap between electromagnet &amp; disc – adjust as necessary</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dirt or grease on clutch</td>
<td>The electromagnet must be adjusted toward (or away from) the disc. There are 2 allen/set screws holding electromagnet in place.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Curtain load too great</td>
<td>Clean clutch surfaces using a rapid evaporating solvent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No or low voltage to clutch</td>
<td>Check for binding cables, pulleys, etc.</td>
<td>7-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Check voltage to electromagnet: 90vdc for 120V unit, 200vdc for 240V unit</td>
<td>26,28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No voltage, bad rectifier</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clutch coil may be shorted</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Unit runs only one direction</td>
<td>Sticking relay</td>
<td>Interchange relays; replace faulty relay</td>
<td>24-28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sticking or faulty limit switch</td>
<td>Lever arm of limit switch may need to be adjusted (always on no matter position on cam); replace limit switch</td>
<td>3</td>
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<tr>
<td>5.</td>
<td>Clutch growls</td>
<td>Electromagnet &amp; disc are out of alignment</td>
<td>With power off, loosen bolts for thrust bearing (#5), and adjust bearing to center disc to electromagnet</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Curtains will not drop (Power Fail models)</td>
<td>No clutch gap</td>
<td>With power off, check that ballscrew shaft is free to turn. Check gap (see item 3 above)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Centrifugal brake sticking</td>
<td></td>
<td>Check that arms and shoes of centrifugal brake move freely</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Ballnut fails, loses bearings</td>
<td>Ballscrew shaft not greased</td>
<td>Replace ballnut, and check for wear and galling on ballscrew shaft</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Curtain, or cable load not balanced</td>
<td></td>
<td></td>
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<tr>
<td>8.</td>
<td>Motor not running, but hot</td>
<td>Thermal overload switch tripped</td>
<td>Motor ran excessively: check control settings to see if they are too tight. Brake failure causes unit to drift off close limit switch and run repeatedly. Brake not releasing (see item 2 above) Relay sticking, runs past close limit, hits failsafe switch, drifts backwards and runs repeatedly.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Unit repeatedly runs to and drifts off close limit switch</td>
<td>Brake failure (Power On)</td>
<td>Bridge rectifier not supplying required voltage (see item 2) Brake electromagnet failed (coil bad)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Power Off)</td>
<td>Brake failure (Power Off)</td>
<td>Fiber disc in brake electromagnet damaged</td>
<td></td>
</tr>
</tbody>
</table>


LIMITED WARRANTY

If it appears within one year from the date of invoice between the Purchaser and Agri Ventilation Systems, LLC, that any products or component parts do not conform to the specifications and physical descriptions given to the Purchaser, or that such products or component parts do not perform the function for which they were intended, the Purchaser, at their expense, shall return the products or component parts to the Seller, as prescribed in the AVS Return Materials Policy, with a RGA number, and a written report of defects or failed performance. The Seller shall review the report and inspect the items, and shall determine warranty status, and shall authorize, where applicable, either the repair or replacement of any non-conforming, or non-functioning product or component parts. The liability of the Seller to the Purchaser arising out of the supply of, or use of the product or component parts, whether such liability shall arise during the warranty period, shall in no case exceed the amount paid by the Seller in the repair or replacement of non-conforming, or non-functioning product or component parts. Upon the expiration of the warranty period, all liability of the Seller shall terminate.

Any warranty will be terminated if any product or component parts are installed improperly, misused, misapplied, tampered with, abused, modified, or altered without authorization from Agri Ventilation Systems, LLC. Warranty will not apply to defects of failures caused by, or due to Acts of God, or nature.

WARNING: WHEN THE PRODUCT OR COMPONENT PARTS ARE USED IN A LIFE SUPPORT VENTILATION SYSTEM, WHERE FAILURE COULD RESULT IN LOSS OR INJURY, THE USER SHALL PROVIDE ADEQUATE PERSONAL ATTENTION, BACK-UP VENTILATION, SUPPLEMENTARY NATURAL VENTILATION, OR FAILURE SYSTEMS, ETC., NECESSARY TO CONTROL THE OPERATION, OR ACKNOWLEDGE WILLINGNESS TO ACCEPT THE ASSOCIATED RISKS OF SUCH LOSS OR INJURY.

This equipment is offered for sale specifically on the Purchaser's acceptance of the above condition and the manufacturer's warranty for this equipment. Acceptance, retention, installation, or operation of this equipment by the Purchaser shall be considered as acknowledgment and acceptance of the above conditions.

AGRI VENTILATION SYSTEMS, LLC
P. O. Box 40, Dayton, VA 22821