

SafeTRAC

ACME (STA) & Ball Screw (STB) Actuators

Inlet, Sidewall and Tunnel Curtain Actuators

Operation, Installation and Maintenance Manual



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Support Information

The SafeTRAC Inlet, Sidewall and Tunnel Curtain Actuator is designed to open Ventilation Inlets, Sidewall curtains or Tunnel Curtains. Using this equipment for any other purpose not within the operating recommendations specified in this manual will void the warranty and may cause **personal injury and / or death.**

These instructions are designed to provide a general guide to planning, installation, wiring and operation. Nothing in this manual should be construed to supersede national or local codes in any way. Authorities having jurisdiction should be consulted before installation.

General Information

Authorized Sales Representative or Dealer _____

Address _____

Phone (____) ____ - _____ Date of Purchase _____

Name of Installer _____

Address of Installer _____

Installers Phone (____) ____ - _____ Date of Installation _____

Name Of Owner _____

Address of Owner _____

Owners Phone (____) ____ - _____

Model Information (circle)

Stroke Length: ☐ 3 Feet ☐ 4 Feet ☐ 5 Feet ☐ 6 Feet

RPM: ☐ 16 rpm ☐ 30 rpm ☐ 60 rpm

Options: ☐ Clutch ☐ Chain & Sprocket Drive

SafeTRAC Limited Warranty

Limited Warranty

Val Products, Inc. warrants the SafeTRAC to be free from defects in materials and workmanship under usual and customary service, including a reasonable maintenance program, for a period of one year from date of invoice by the original purchaser. Val Products, Inc. hereby warrants that should this product prove defective by reason of improper workmanship or material, Val Products, Inc. will, at its option:

- (A) repair or replace such product effecting all necessary parts replacements without charge, F.O.B. the factory of manufacture or:
- (B) Refund the original purchaser the original invoice price, in lieu of such repair or replacement.

Under no circumstances will Val Products, Inc be liable for any kind of direct, incidental or consequential damages, nor will the liability ever exceed the purchase price of the product.

Conditions

1. Product must be installed and operated in accordance with the instructions published by Val Products, Inc.
2. The product must not have been previously altered, modified, improperly installed or repaired by anyone other than Val Products, Inc. authorized Dealer or Representative.
3. This warranty does not cover product that has been damaged resulting from, but not limited to, negligent use, improper shipping and handling, misuse, alteration, lack of maintenance, accident, storage or installation other than published instructions. The opinion of Val Products with respect to these matters shall be final.
4. Val Products Inc. reserves the right to make design or specification changes at any time without notice and without any contingent obligation to purchasers or products already sold.
5. Warranty will be void if serial numbers or identifying markings are altered, defaced or removed. No product will be accepted for return until an inspection has been completed and/or a Return Materials Authorization (RMA) form has been issued.

What is not Covered

1. All labor, travel, supplies, freight and related expenses required to repair or replace the defective product.
2. Special conditions will apply when product is not distributed in the U.S.A. and Canada. Contact Val Products Inc. for details.

How to Obtain Warranty Service

Contact your authorized Sales Representative

Limitations of Damages and Implied Warranties

Val Products Inc. sole liability for any defective product is limited to the repair or replacement of the product, at our option. Val Products Inc. shall not be liable for:

1. Damage to other property caused by any defects in this product, damages based upon convenience, loss of the product, loss or time or data, or commercial loss.
2. Any other damages, whether direct, incidental, consequential, or otherwise. This warranty is exclusive and is in lieu of all other warranties, express or implied, including, but not limited to, the implied warranties or merchantable of fitness for a particular purpose. Some states do not allow the exclusion or implied warranties or the limitation or exclusion or liability for incidental or consequential damages. Therefore, the above exclusions or limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary, from state to state.

Safety Information

All persons Operating or Working Around Electrical Curtain Actuators should Read and Understand This Manual

General Safety: This manual must be delivered with the equipment to its owner.

Val Products Inc. principal concern is your safety and the safety of others associated with ventilation equipment. This manual is to help you understand safe operating procedures and common problems that may be encountered by the operator and other personal. As owner and operator, it is your responsibility to know what requirements, hazards, and precautions exist and inform all persons operating or working with this equipment. Avoid making any changes to the equipment. Such changes may produce dangerous conditions, where serious injury or death could occur.

Safety Alert: Caution – This machine may start automatically. Disconnect power before opening or servicing. Using this equipment for purposes other than specified in this manual may cause personal injury or damage to the equipment.

- ◆ Disconnect electrical power before inspecting or servicing equipment unless maintenance instructions specifically state otherwise.
- ◆ If possible, remove load from machine before working on or near drive mechanism.
- ◆ Ground all electrical equipment for safety.
- ◆ A qualified electrician must do all electrical wiring in accordance with local and National electrical codes.
- ◆ Ground all non-current carrying metal parts to guard against electrical shock.
- ◆ Motor overload protection, electrical disconnects and over current protection are not supplied with the equipment.
- ◆ **When working with Ball Screw machines with a clutch, be very careful of falling curtains and moving parts when disconnecting power.**

CAUTION !!

Read This Before Installing Your SafeTRAC

Safety Alert: Caution – Disconnect power before servicing machine

- ♦ *Under no circumstances should power be applied to any terminals on the circuit board other than the L2/N and L1.*

Setting up the SafeTRAC for use as a “Power Off Curtain Drop” STBxxx-C Series only (not for ACME screw machines)

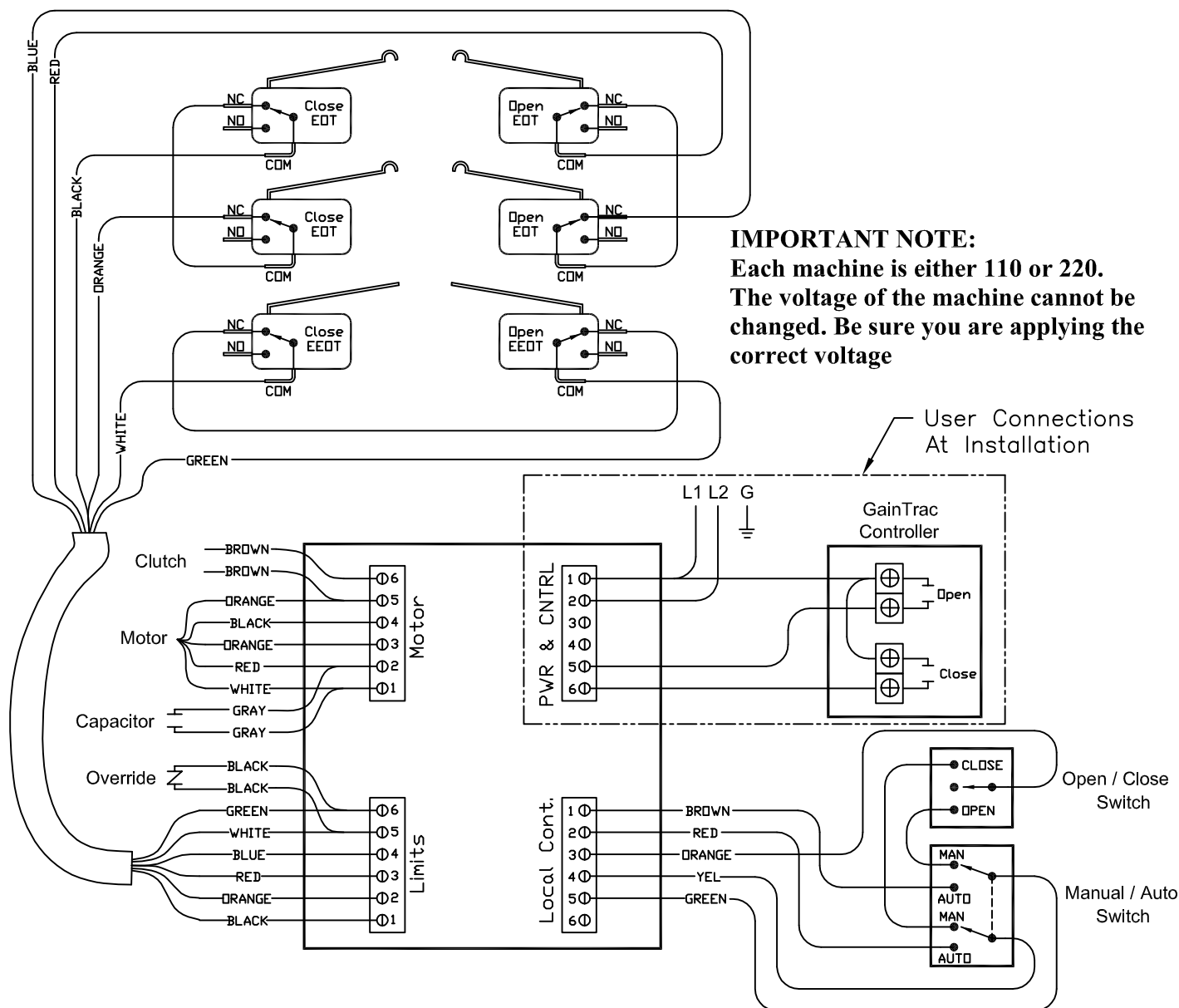
Setting up your SafeTRAC Inlet, Sidewall and Tunnel Curtain Actuator, and its optional clutch, for use as a “Power Off Curtain Drop” requires following a few important hints which are outlined below.

1. When setting up the machine, the load block should be positioned to the motor end of the machine with the curtains in their closed position. With the machine set up as described, upon power failure there will be enough travel for the load block to come to a stop without activating the Over-travel switch. In some instances, such as using a 3’ machine and a 3’ curtain, it may be necessary to either use a 4’ machine or a 1:2 cable set up to prevent the Open Position Over-Travel switch from being activated as there is a certain amount of coasting caused by the inertia of the falling load.
2. With the curtains in the fully open position, install a cable clamp on the cable at the point where the cable exit’s the machine, so that it stops against the top of the machine. This clamp will prevent the counter weights from constantly pulling on the machine and causing the emergency limit switch to be activated.
3. The controller should always be left in the “close” mode. In the event of power failure, the clutch will release and the curtains will fall. By having the controller left in the “close” mode, the curtains will close upon return of power.

SafeTRAC Universal Control Board Diagram

Wiring the SafeTRAC to your controller:

Val Products recommends using a certified electrician for installation.



Wiring a Backup Thermostat:

To set up your SafeTrac with a backup thermostant, wire the L1 input through the normally closed contact of a backup thermostat. Set the backup thermostat at a higher temperature than the main controller. In the event of a high temperature condition, the thermostat contact will open and cut the power to the machine. The curtains will then fall open. THIS IS ONLY POSSIBLE WITH A CLUTCH BASED MACHINE.

Installation Instructions

1. Unpack the machine, remove the machine's cover and inspect the machine for any visible defects. *The buyer accepts responsibility upon receipt of the equipment in the conditions described in line 3 of the conditions section of the Limited Warranty.*
2. Select the mounting location and identify the mounting diagram that will work best for your needs. See diagrams examples of side wall, end wall and ceiling mounts. The examples shown are recommendations only. The installer must determine the most suitable method for mounting and operation. Each SafeTrac unit is designed for all position mounting. Only qualified personal should attempt the installation.
3. Choose a mounting area that is supported by the structural frame of the building. Align the machine and drill pilot holes for mounting. Secure the machine to the mounting surface using a minimum of (8) 3/8" x 2-1/2" lag or machine bolts. Mount the machine using the predrilled holes located in the base plate of the unit. Always verify the structural strength of the mounting surface.
4. Connect electrical wiring as shown on the wiring diagram in this manual. *The wiring must comply with all National and local electrical codes.*
5. Install pulleys, brackets, hand winches etc. according to the proper mounting diagram shown in this manual. Mount the support brackets and pulleys so the curtain cable intersects the machine at the same angle on both sides to provide even wear on the carrier assembly.
6. With the carrier assembly located nearest to the open position and the curtains open, thread the cable through the pulleys, hand winches and miscellaneous hardware and connect the cable to the load block. Loop cable through the hole closest to screw, then out the outside hole. Add double cable clamps and verify that they do not contact the drive screw.
7. Ensure that both end-stop collars are in the extreme positions by sliding each collar against its respective hard stop (against the cotter pins).
8. Using your GainTRAC, ClimaTRAC or other controller in manual mode, raise the curtain to the fully closed position. *Be careful not to over tighten the cable or curtains, as the end-stop collars are not yet positioned.*
9. With the curtains to their closed position, slide the closed end-stop collar against the load block and tighten the set screw lightly. Back off machine, move collar 1/4" to 1/2" back towards load block to account for spring compression, tighten firmly.
10. Attach a cable clamp near the hand winch as a stop so you don't over tighten the curtains with the hand winch.
11. Lower the curtain to the full open position using the manual mode of your controller. Slide the open end-stop collar against the load block and tighten the set screw lightly. Back off machine, move collar 1/4" to 1/2" back towards load block to account for spring compression, tighten firmly.
12. Operate the machine in the manual mode and verify the desired open and closed curtain positions. *Check the machine to be sure that the curtains are not pulled to tight in the closed position. Likewise, check for excessive slack in the cable and curtains in the open position.*
13. Grease the drive screw and the thrust bearing with high quality lithium grease and re-install the machine cover.

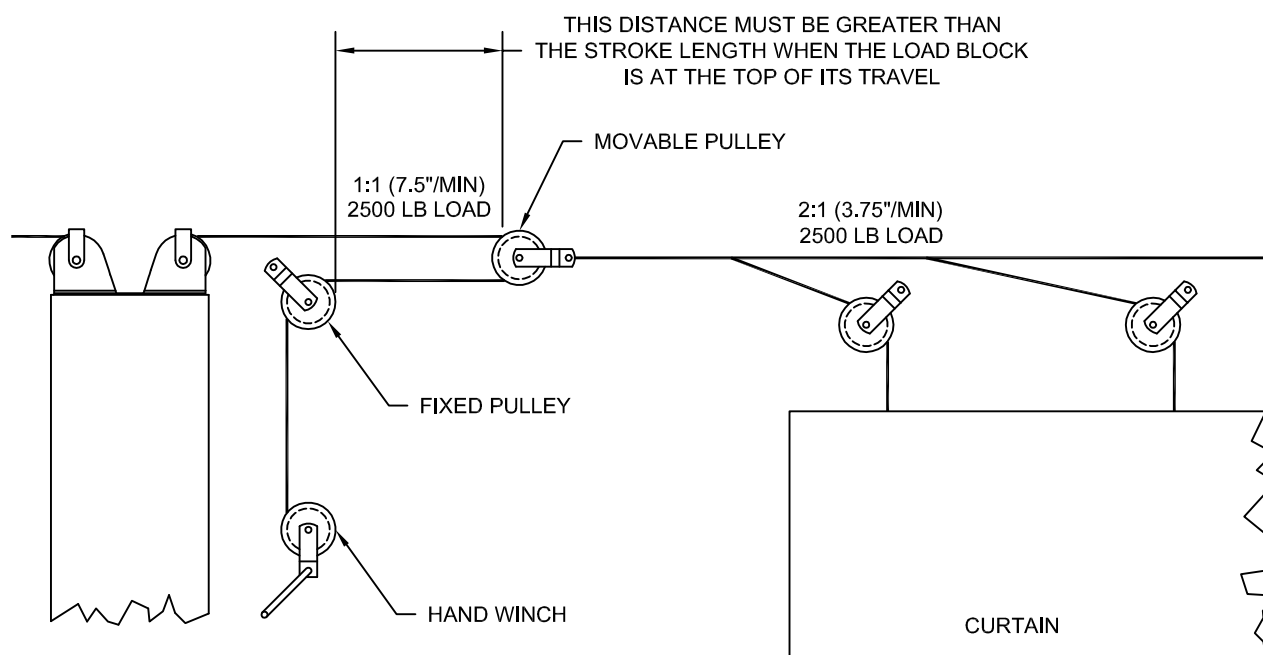
Warning: when this equipment is used in a life support ventilation system where failure could result in loss or injury, the user shall provide adequate personnel attention, back-up ventilation, supplementary natural ventilation and/or failure (alarm) system etc. necessary to control the operation or acknowledge willingness to accept the associated risks of such loss or injury. *This equipment is offered for sale specifically on the buyer's acceptance of the above condition and the manufactures warranty for this equipment. Acceptance, retention, installation, or operation of this equipment by the buyer shall be considered as acknowledgement and acceptance of the above conditions.*

Helpful Hints on Setting Up & Installing Your SafeTrac

Consumer Caution: System configuration, operator control of the system, and the application, among other things, effect product performance. While the product is considered compatible with its intended purpose, the specific functional implementation by the customers of the product may vary. Therefore, the suitability of the product for a specified purpose or application must be determined by the customer and is not warranted by the manufacturer.

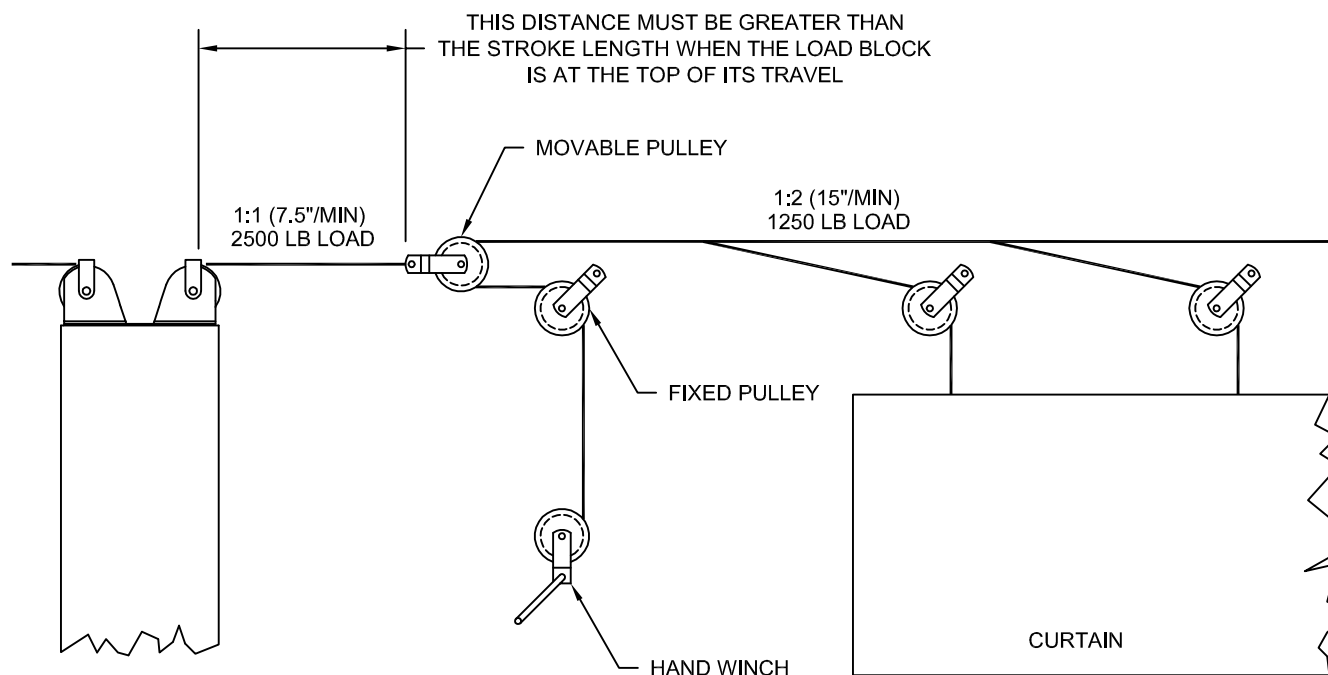
- ◆ After installation and setup, be sure when the machine closes the curtains there is not too much tension in the curtain. The Curtain Machine should not pull the curtain tight. If the close position end-stop collar is positioned incorrectly, the machine could go into a lock-rotor-current condition and burn out the motor.
- ◆ On **clutch based** models being used as a curtain drop only, position the open position end-stop collar at the farthest position open. In the event of a power failure, if the open end-stop collar is positioned to close to the actual travel distance of the curtains the inertia of the load could back-drive the screw past the open end-stop collar and actuate the over travel switch. The machine would then be inoperable until the over travel switch has been reset.
- ◆ In the event of an over travel condition, first determine the cause of the condition and correct the problem if necessary, then reset the over travel switch. To reset the over travel switch: 1) Verify that the set screw in the limit switch block has not vibrated loose. 2) Note which over travel switch has been activated and set the controller to run in the opposite direction. 3) Hold down the override toggle switch located near the rear of the motor until the limit switch block moves off the over travel switch and is centered over the limit switches.
- ◆ On **clutch-based** models, if there is excessive clutch slippage, adjust the air gap between the two clutch halves. The air gap should be .010" to .020". To adjust the air gap, Be sure all load is removed from the machine and that power has been removed. Loosen the two set screws on the rotor side of the clutch and slide the rotor into position. Use a feeler gauge to verify the air gap. Tighten down both set screws and test the machine. If the machine does not back drive now, the air gap is too small.
- ◆ On **clutch-based** models with the curtains in the fully open position, install a cable clamp on the cable at the point where the cable exit's the machine, so that it stops against the top of the machine. This clamp will prevent the counter weights from constantly pulling on the machine and causing the emergency limit switch to be activated.

SafeTRAC Cable Ratio Diagram



Speed Down (Ratio 2:1)

12 inches of cable movement at the machine equals 6 inches of cable movement at the curtain

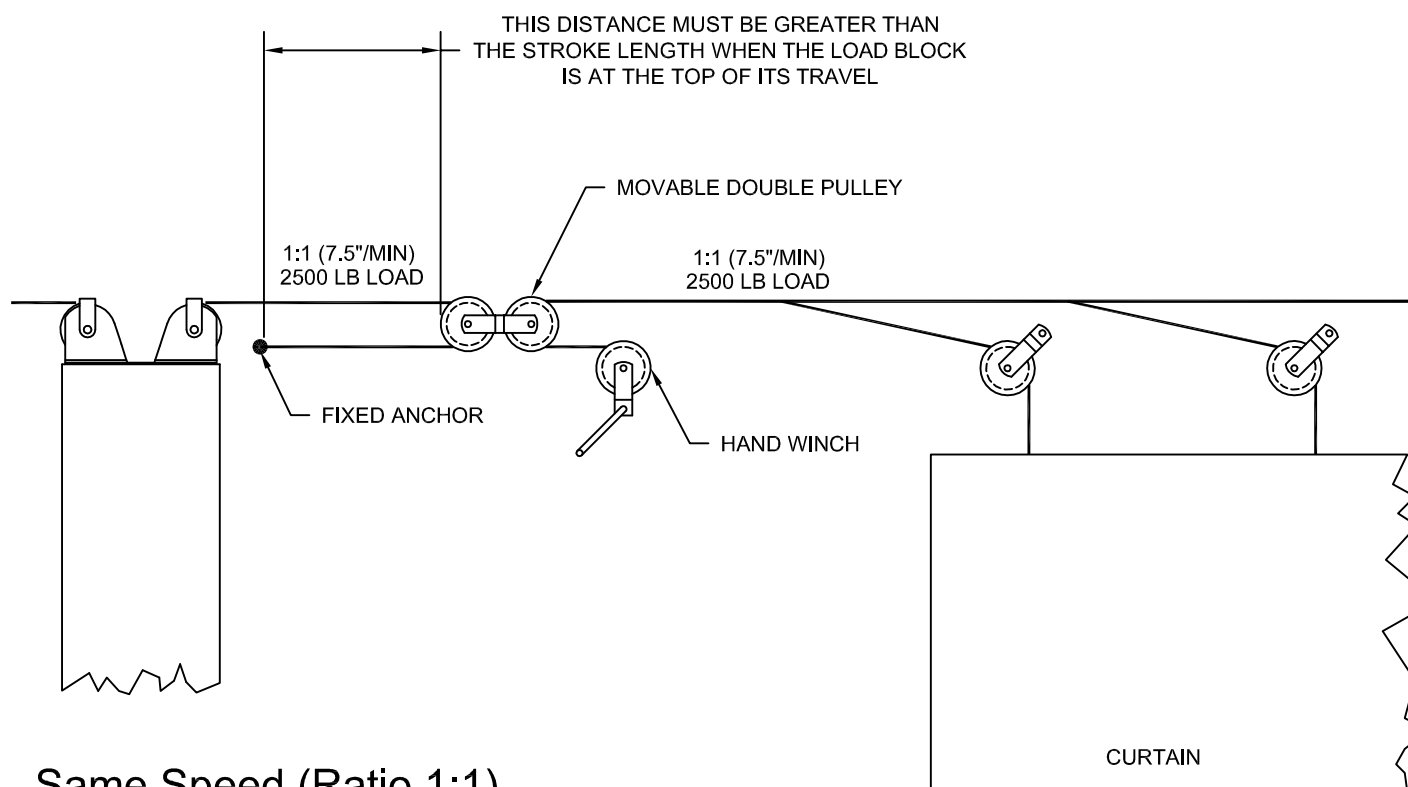


Speed Up (Ratio 1:2)

12 inches of cable movement at the machine equals 24 inches of cable movement at the curtain

Note: This configuration reduces the load capacity of the machine by 50 %

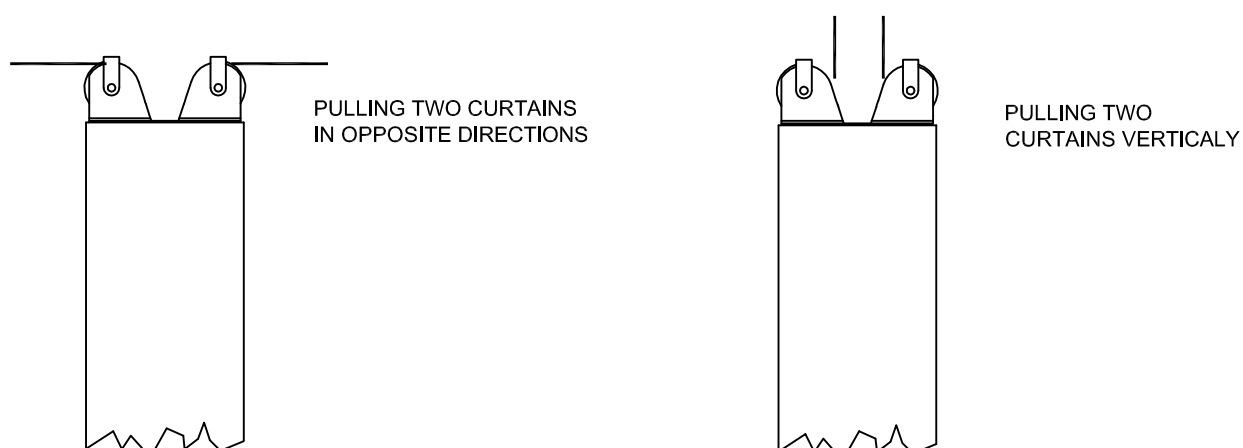
SafeTRAC Cable Ratio Diagram



Same Speed (Ratio 1:1)

12 inches of cable movement at the machine equals 12 inches of cable movement at the curtain

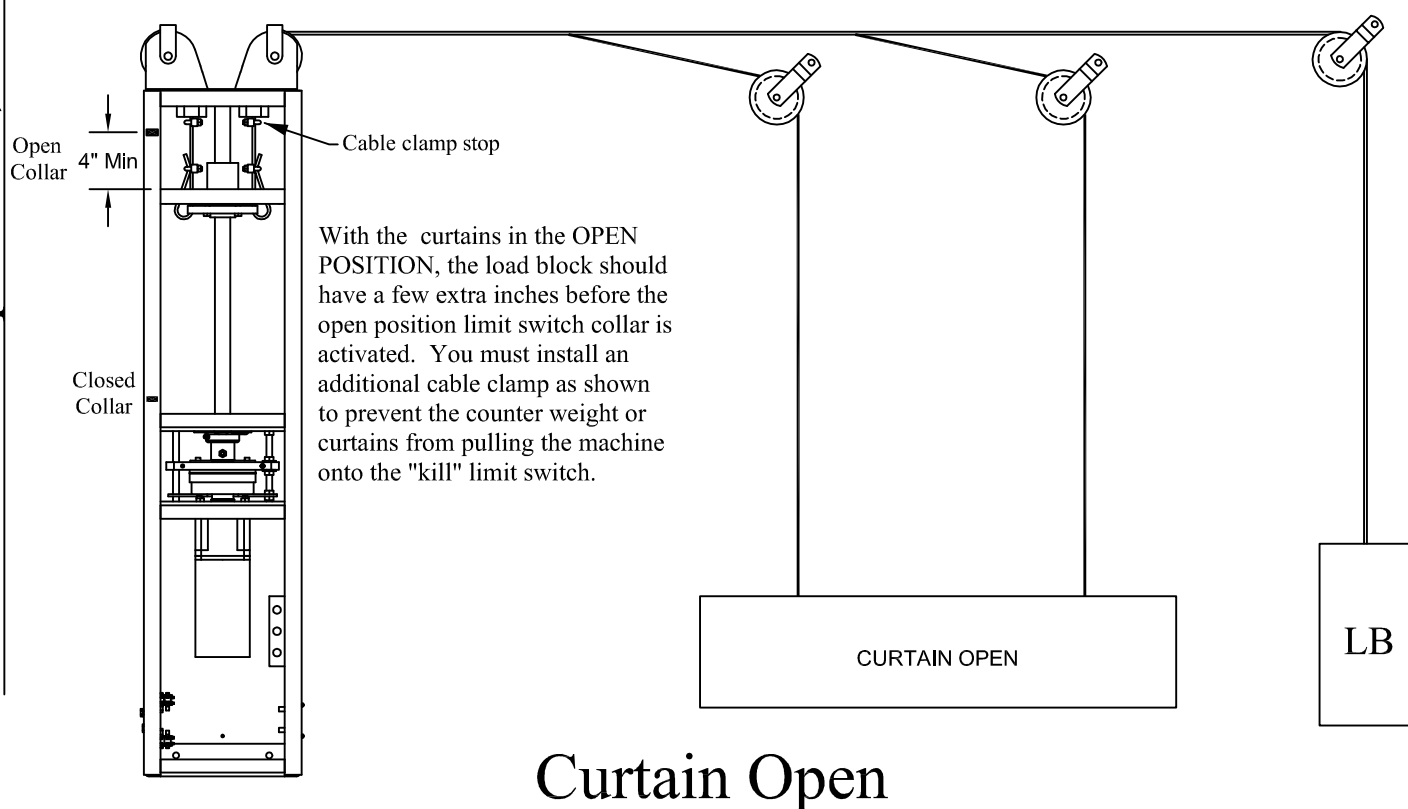
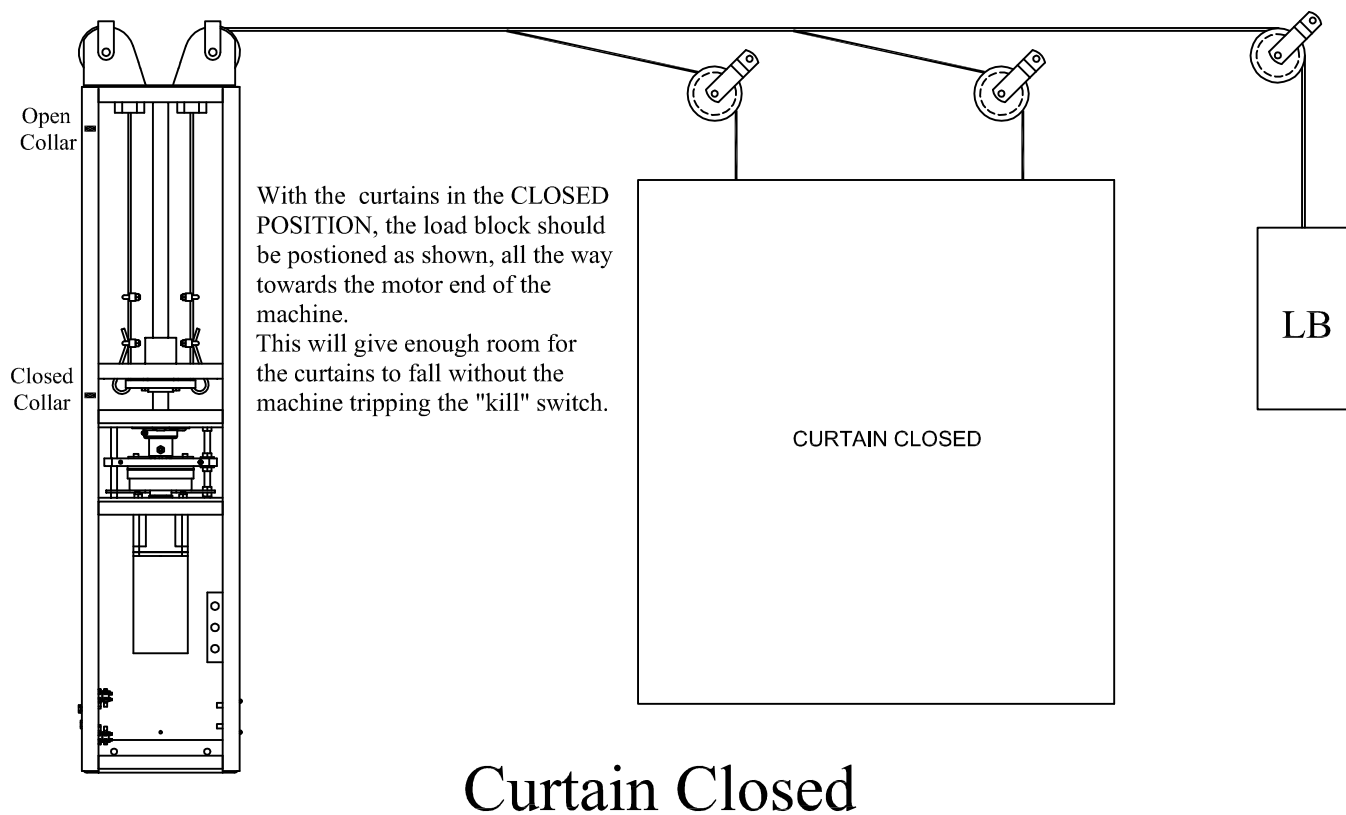
SafeTRAC Header Pulley Configurations



Note: Each pulley can be rotated independently of the other to pull in any direction. Loosen the large nut and rotate the pulley bracket into position. Be sure to re-tighten the large nut.

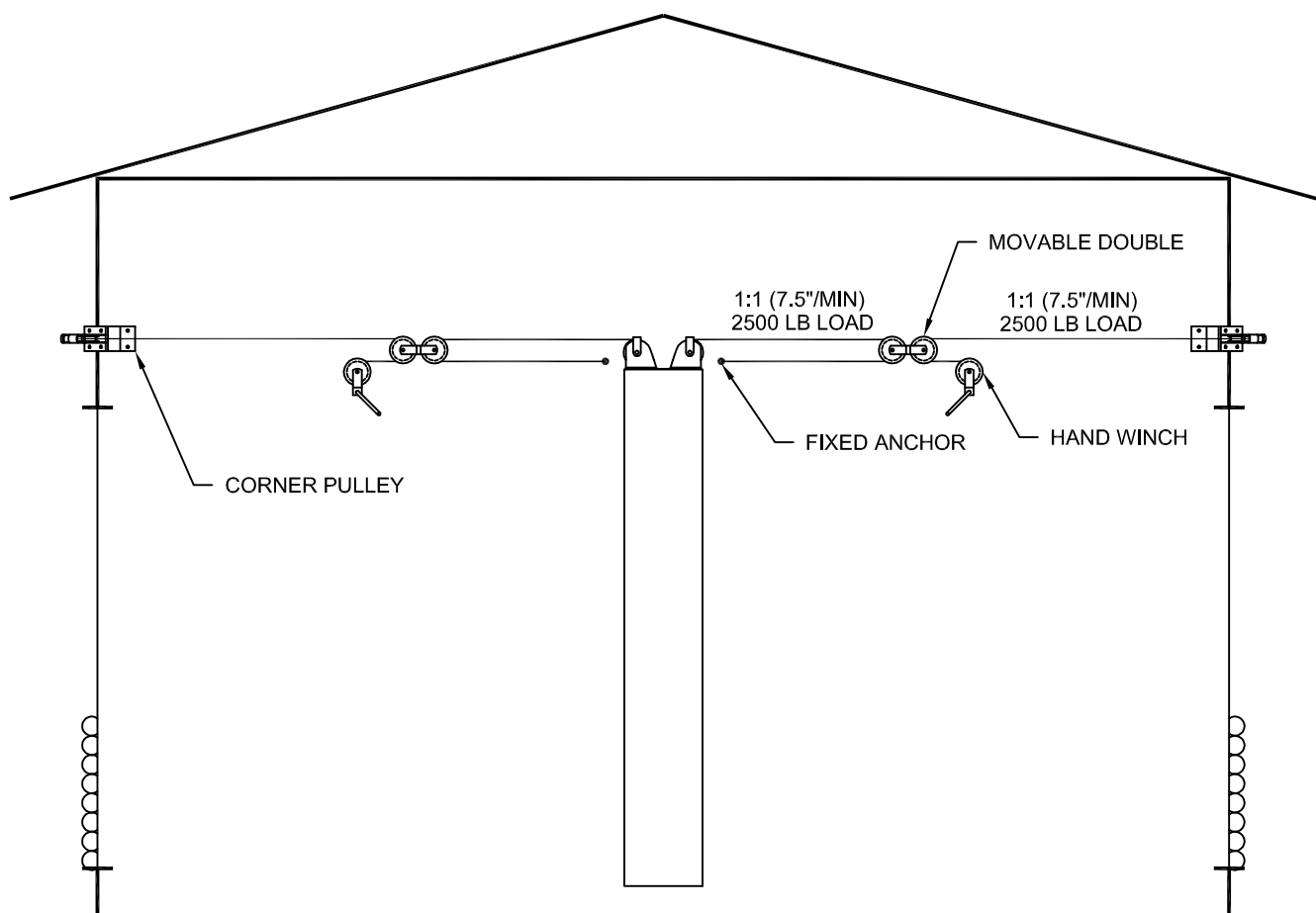
SafeTRAC Curtain Drop Set-up

Clutch-Based Machines Only



Building Layout Diagrams & Cabling Options

VERTICAL END WALL MOUNTING (1:1 RATIO)



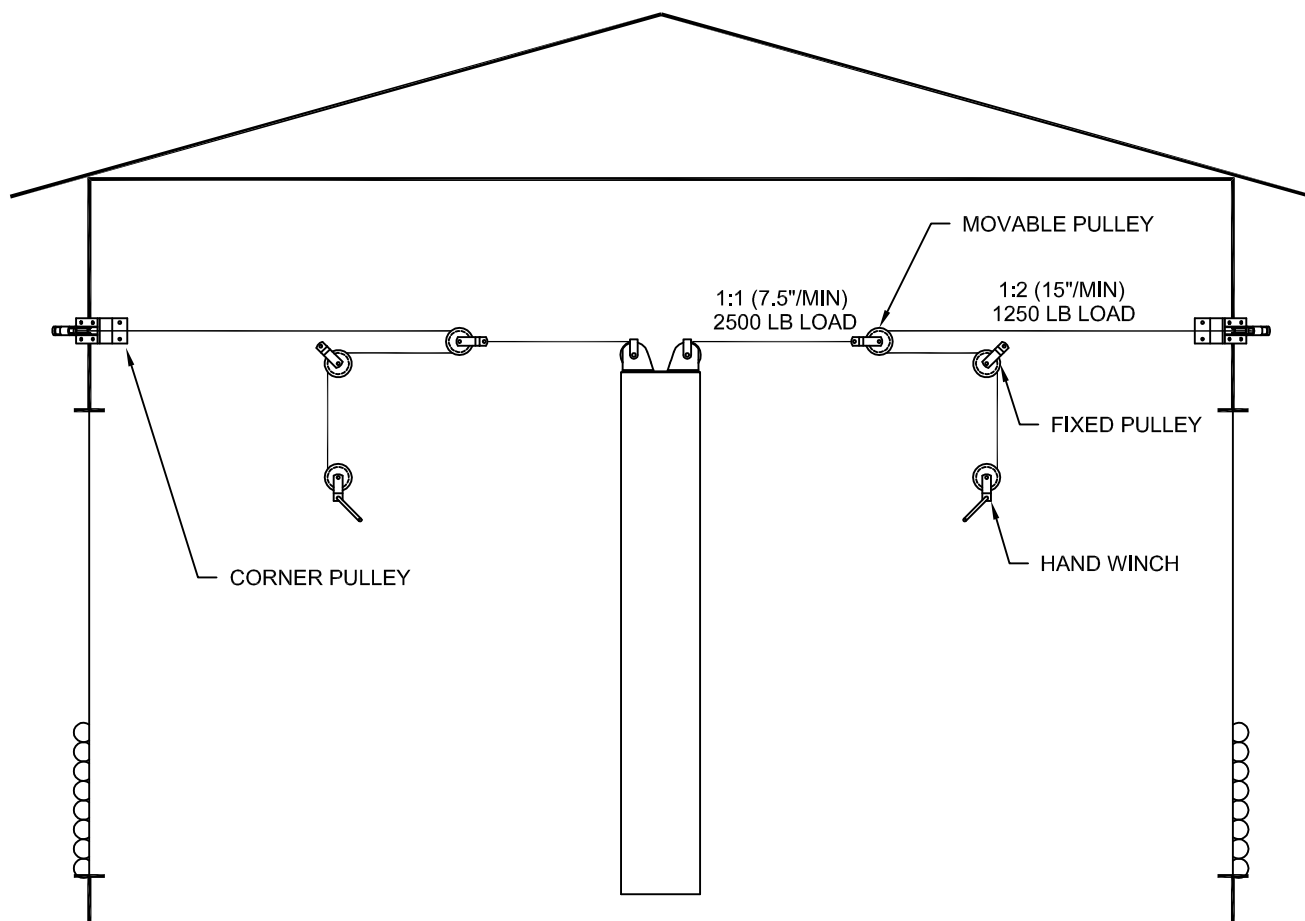
12" of cable movement at the machine equals 12" of movement at the curtain

Note: The distance between the top pulley mount of the machine and the moveable pulley must be greater than the travel length of the machine.

Winching Ratio: The standard speed of the SafeTRAC is either 4, 7.5 or 15 inches per minute. The actual speed may vary depending on load weight and other factors

Building Layout Diagrams & Cabling Options

VERTICAL END WALL MOUNTING (1:2 RATIO)



12" of cable movement at the machine equals 24" of movement at the curtain

Note: The distance between the top pulley mount of the machine and the moveable pulley must be greater than the travel length of the machine.

Winching Ratio: The standard speed of the SafeTRAC is either 4, 7.5 or 15 inches per minute. The actual speed may vary depending on load weight and other factors

Capacity Reduction: This configuration reduces the load capacity of the machine by 50 %

Maintenance

It is recommended that the end user practice a monthly inspection and maintenance of the machine and all items used in combination with the machine (cables, pulleys, brackets and hand winches). The SafeTrac is designed to operate with a minimum amount of maintenance, however the following steps must be performed on a regular basis to ensure peak performance and maximum life.

Caution: Disconnect electrical power and remove all load from machine before servicing or maintaining machine. Remember: Clutch based machines will drop the curtains or inlets when power is disconnected BE CAREFULL.

- ◆ Inspect the drive screw and nut. Val Products strongly recommends greasing the unit every one to two months. Lubricate the entire length of the screw with high quality lithium grease.
- ◆ Grease the zirc fitting on top of the bearing block until fresh Grease comes out of the thrust bearing.
- ◆ Grease the zirc fitting on both header pulleys until fresh grease comes out of the sides. The SafeTrac uses high quality needle bearing pulleys that require periodic maintenance.
- ◆ Inspect and tighten the *end-stop collars* and *limit switch actuation block* on the limit switch rod to insure proper operation of the safety limit switches.
- ◆ Inspect cable, pulleys, brackets, hand winches etc. for alignment and premature wear, especially at the beginning of cold weather. Damaged cables can break, and the risk is higher in cold temperatures. Re-align or replace won parts as needed.
- ◆ Inspect bearing by listening for abnormal sound and watching for smooth rotation. Listen to the motor for any abnormal sounds.
- ◆ Inspect and tighten all set screws. Apply a thread-locking compound and re-tighten any screws that have vibrated loose.
- ◆ Run the machine in manual mode in both directions to insure positive shut off and unrestricted cable movement.
- ◆ It is important to keep debris out of the machines enclosure. The cover plate on the machine should be tightly secured at all times. Periodically inspect the drive screw for dust or debris. You may blow debris off the screw with pressurized air to prevent premature wear. Never clean the screw with water or any type of solvent.

Trouble Shooting Guide

Problem	Possible Cause	Corrective Action
Machine will not run in manual mode.	Control switch not in manual mode	✓ Switch control to manual mode
	Switch failure	✓ Check for loose wire connections, replace switch
Machine operates in opposite direction in response to temperature change.	Control wired incorrectly, open and close inputs reversed	✓ Check wiring and Re-wire per wiring schematic instructions
Machine will not run in either direction (manual or automatic mode)	No power (circuit breaker or fuse) tripping may indicate machine overload or electrical wire short. Repair or replace before re-energizing circuit.	✓ Check main panel circuit breaker or fuse. ✓ Check control circuit breaker of fuse
	Limit switches activated.	✓ Check the limit switches and limit switch trigger. In free position (half way between full open and full close) the limit switch block should be centered between the open and closed limit switches. ✓ Check all limit switches by lightly pressing on each with a screwdriver and listening for a “click”. If no click, may indicate a stuck or jammed switch, try to gently pull up on switch arm. ✓ Check set screw in trigger and screws securing limit switches to the enclosure. ✓ Check for bent limit switch lever arm. ✓ Check for any loose connections.

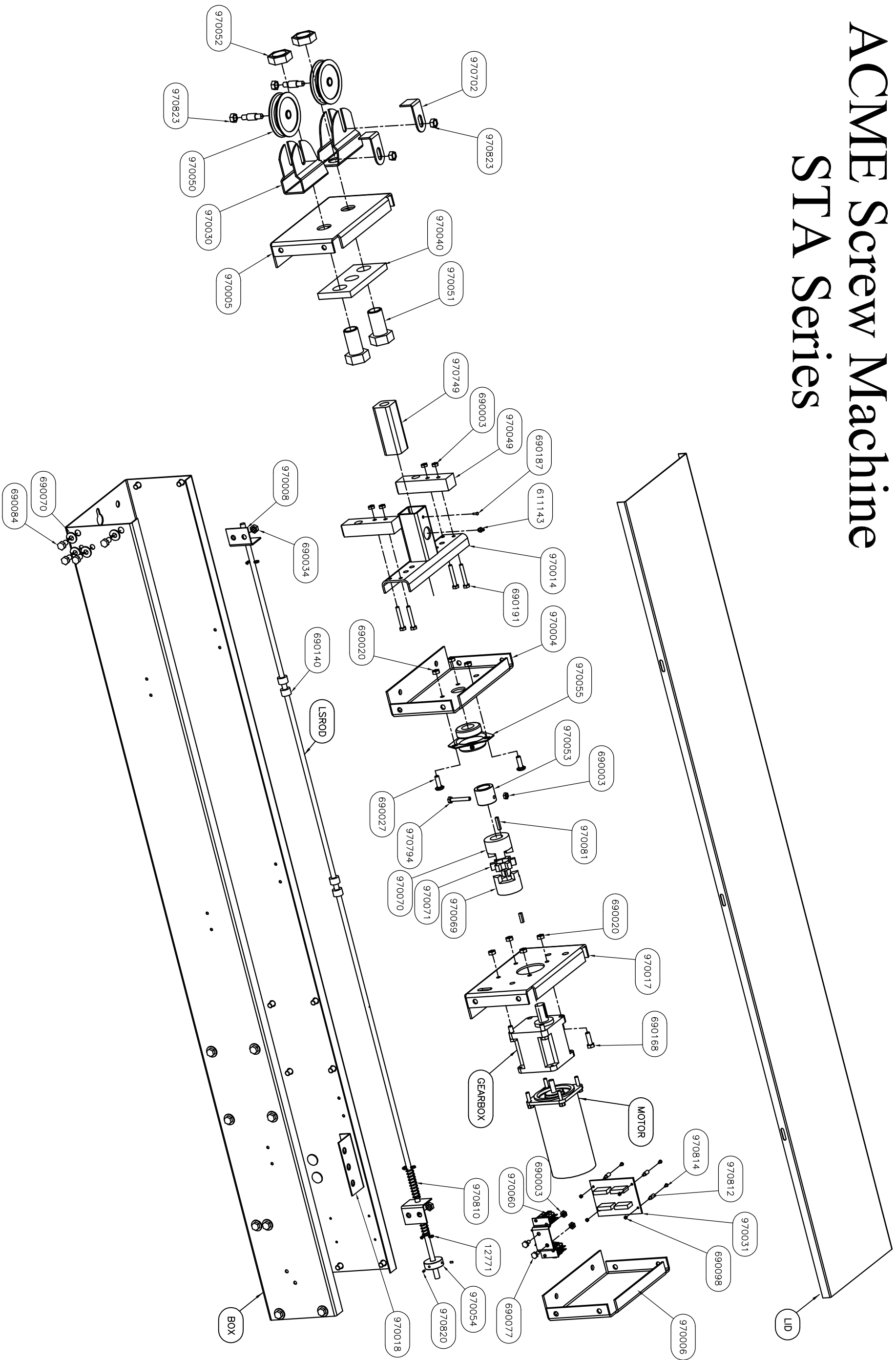
Trouble Shooting Guide

Problem	Possible Cause	Corrective Action
Machine will not run in either direction (manual or automatic mode)	Motor failure	✓ Check fuse on Universal Circuit Board. May indicate machine overload. ✓ Repair/replace motor.
Machine will not run in automatic but will run in manual mode.	Control switch not in automatic mode	✓ Change control switch to automatic mode.
	Control Failure	✓ Repair/Replace Control
Machine will only run in one direction (manual & automatic)	Broken or loose wire	✓ Repair broken or loose wire
	Limit switch catching on limit rod mechanism	✓ Free switch and adjust as needed
	Limit switch failure	✓ Replace Universal Control Board
	Control Failure	✓ Repair/Replace control
Machine will not back-drive (clutch models only)	Not enough load	✓ If load Is Less than 200 lbs., add counterweight
	Improper air gap adjustment in clutch	✓ Adjust air gap to .010" to .020"
	Something jammed or out of alignment in cabling or pulleys	✓ Check for any obstructions or resistance in curtain cables and accessories.
Clutch is slipping and machine will not shut off	Improper air gap.	✓ Adjust air gap to .010" to .020"
	Close position end-stop collar not positioned properly & curtains are pulled to tight	✓ Adjust close position end stop collar as described in installation instructions.
	Curtains adjusted unevenly	✓ Readjust all curtains so that the fully closed positions are all the same

SafeTRAC Parts List

P/N	Description	P/N	Description				
12771	PIN, COTTER 3/32 X 3/4	970065	NUT, BALL LOCKING, DRILLED(ROTON)				
611143	FITTING, GREASE, ¼-28 STR THD	970069	HUB, LOVEJOY, L095, ¾” W/KW				
690003	NUT, KEP 1/4-20 ZP	970070	HUB, LOVEJOY, L095, 1” W/KW				
690020	NUT, KEP 5/16-18 ZP	970071	SPIDER, L/AL090/095				
690027	SCREW, 5/16-18 X 3/4 CRG SH NK	970081	KEY, SQ 1/4 X 3/4				
690034	NUT, KEP 3/8-16 ZP	970084	WASHER				
690070	WASHER, LOCK, 3/8 ZP	970702	CABLE GUIDE BRACKET				
690077	SCREW, 1/4-20 X 1/2 HHCS, ZP	970749	NUT, ACME				
690084	SCREW, 3/8-16 X 3/4, HHCS, ZP	970775	DRUM, BRAKE, TOP				
690093	WASHER, FLAT 3/8 USS ZP	970776	DRUM, BRAKE, BOTTOM				
690098	NUT, KEP 6-32 ZP	970777	SHOE, BRAKE				
690133	SCREW, 1/4-20 X 1-1/4 HHCS ZP	970794	SCREW, 1/4-20 X 1-3/4				
690140	COLLAR, SET, 3/8 SS	970800	NUT, BALL SCREW (#19197)				
690168	SCREW, 5/16-18 X 1 HHCS ZP	970810	SPRING, 5/8" X 3-1/4"				
690168	SCREW, 5/16-18 X 1 HHCS ZP	970811	SCREW, 3/8-16 X 5-1/2 TAP ZINC				
690187	SCREW, NO. 8 X 3/8 PH TYP B	970812	SCREW, #6-32 X 1/2"				
690187	SCREW, NO. 8 X 3/8 PH TYP B	970814	SCREW, #6-32 X 1/4"				
690191	SCREW, 1/4-20 X 1-1/2 HHCS ZP	970820	SCREW, 10-32 X 1/2 SHSS BLK				
690195	SCREW, 8/32 X 1/4 RH-SEM SP	970822	SCREW, 1/4" X 5/8" SHOULDER				
910273	SCREW, #8 X 3/8	970823	NUT, ½-13 , THIN NYLOK				
970004	BEARING BLOCK WELD ASSEMBLY	970880	SCREW, #10-24 X 3" PHMS				
970005	PLATE, TOP	Motors					
970006	PLATE, BOTTOM	970032	MOTOR, 220v, for BALL SCREW MACHINE				
970007	BLOCK, BALL LOAD	970119	MOTOR, 110v, for BALL SCREW MACHINE				
970008	SUPPORT, LIMIT SWITCH ROD	970033	MOTOR, 220v for ACME SCREW MACHINE				
970014	ACME LOAD BLOCK WELD ASSEMBLY	970118	MOTOR, 110v, for ACME SCREW MACHINE				
970017	PLATE, MOTOR MOUNT	Gearboxes					
970018	BRACKET, TOGGLE SWITCH	970057	GEARBOX, 15 rpm,				
970019	MOUNT, CLUTCH	970034	GEARBOX, 30 rpm, #VAC5GU60KHA				
970030	BRACKET, SWIVEL	970058	GEARBOX, 60 rpm,				
970031	CONTROL BOARD + TOGGLE SWTCHS	Clutches					
970040	BUSHING, CABLE (BLACK PLASTIC)	970059	CLUTCH, 220V				
970049	BEARING, SLIDING (WHITE PLASTIC)	970808	CLUTCH, 110V				
970050	PULLEY	Length Specific Items					
970051	BOLT, PULLEY 1.125	36486072					
970052	NUT, PULLEY 1.125	BOX	BOX	970000	970001	970002	970003
970053	COLLAR, LOAD	LID	LID	970010	970011	970012	970013
970054	TRIGGER, LIMIT SWITCH	BSCREW	SCREW, BALL	970041	970042	970043	970044
970055	BEARING, THRUST W/FLG & ZIRK	ASCREW	SCREW, ACME	970045	970046	970047	970048
970060	HARNESS, LIMIT SWITCH INCL BRKT + SW	LSROD	ROD, LIMIT SW	970035	970036	970037	970038

ACME Screw Machine STA Series



Ball Screw Machine STB Series

