

Service Instructions

Conductor 420



Listed, File No. E195547

Input: 480 VAC, 50/60 HZ.

(Operating range 340-480 VAC)

Single Unit Fuse Size: 20 AMP MAX OUTPUT W/25 AMP FUSE

Output: 0-90% of Input Voltage

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Important

This service manual is provided to assist in the operation and maintenance of your Syntron Material handling equipment.

Please see contact information on the last page of this manual to request additional manuals or replacement parts.

Please be sure to include the following information when ordering replacement parts:

1. Machine model name _____.
2. Factory order number _____.
3. Quantity of parts required
4. Syntron Material Handling part number (from manual)
5. Description of part
6. Shipping instructions

Syntron Material Handling reserves the right to alter at any time, without notice and without liability or other obligations on its part, materials, equipment specifications, and models. Syntron Material Handling also reserves the right to discontinue the manufacture of models, parts, and components thereof.

Your satisfaction is very important to us. Please direct any comments, questions, or concerns to our Marketing Communications Department.

SAFETY INSTRUCTIONS

The purpose of safety symbols is to attract your attention to possible danger. Safety symbols, and their explanations, deserve careful attention and understanding. The safety warnings do not by themselves eliminate any danger. The instructions or warnings they give are not substitutes for proper safety procedures.

SYMBOL

MEANING



NOTE

Safety Alert Symbol: Indicates **DANGER, WARNING, or CAUTION.**

Attention is required in order to avoid serious personal injury. This symbol may also be used in conjunction with other symbols or pictographs.

Notes advise you of information or instructions vital to the operation or maintenance of the equipment.

IMPORTANT SAFETY INFORMATION

READ ALL INSTRUCTIONS BEFORE OPERATING

- Upon receipt, unpack and inspect the unit for damages that may have occurred during shipment. If damage is found, contact the shipping carrier and Syntron Material Handling immediately.
- Read instructions carefully. Be familiar with the controls and proper use of the unit.
- Do not operate the unit when tired, ill or under the influence of alcohol, drugs or medication.

Product safety labels must remain highly visible on the equipment. Establish a regular schedule to check visibility. If you need to replace safety labels, contact Syntron Material Handling for an additional supply free of charge.

The instructions and data in this instruction manual are vital to the proper installation and operation of this equipment. In order to avoid delays due to faulty installation or operation, please see that these instructions are read by the persons who will install, operate and maintain this equipment.

NOTE: Supporting information, such as drawings, may be attached to the manual. The information contained therein takes precedence over corresponding information printed in this manual.

INTRODUCTION

The CONDUCTOR 420 Controls provide flexible and concise solid-state power control for inductive and resistive loads below control current rating. They are used with Syntron® electromagnetic vibratory equipment including light-duty feeders and electromagnetic type bin vibrators.

The standard CONDUCTOR 420 Control features adjustable soft-start, 50/60 Hz operation, and half-wave operation. CONDUCTOR 420 Controls also feature minimum and maximum operation windowing adjustments (permitting greater linearity for specific applications).

The control board contains a manual potentiometer for controlling output from the vibrating equipment. If desired, a 0-5 volt Analog input signal may be applied in the place of the Main Control dial at H1. The 0-5 VDC input is transformer isolated from the power line. See “Setup Procedure” for additional information on these features.

INSPECTION AND LONG-TERM STORAGE

Upon receipt, unpack and inspect the control for any damage that may have occurred during shipment. If damage is found, contact the shipping carrier and Syntron Material Handling immediately.

If the control must be stored for an extended period of time, it must be stored indoors in its original shipping container, in an area safe from water damage. Plug all openings in the control box to prevent dirt, rodents, and insects from entering. Syntron Material Handling advises placing a corrosive preventive inside the control box. Be careful not to drop the control because the impact could damage components.

INSTALLATION

While installing the control, be careful to maintain its NEMA or IP rating integrity. Power supply voltage and frequency requirements are designated on the control nameplate. If remote mounting is necessary, the control should be installed close to the equipment where it is easily accessible and within sight of the operator. Installation on a wall in a vibration-free location is recommended. Ambient temperature should not exceed 105°F (40°C).



WARNING: The power supply voltage and frequency must match the requirements indicated on the nameplate.



WARNING: The electrical power supply to the Syntron Material Handling-supplied control must be made through a customer-supplied safety disconnect switch mounted next to the control. All installation wiring must adhere to local electrical codes.



WARNING: The control must be properly grounded.



CAUTION: Follow the wiring diagram furnished with the control when making electrical connections.



CAUTION: A fuse (maximum of 25 amps) must be installed between the power supply and the printed circuit board connection. Syntron Material Handling recommends a “Fast Acting” type fuse.

OPERATION



WARNING: The control cover must be closed and secured while the control is in operation.

If the control needs to be adapted to the feeder or vibrator, follow the setup procedure below.



WARNING: Disconnect and lock out the power supply at the safety disconnect switch before performing any maintenance or operation adjustments.

SETUP PROCEDURE

(Refer to the wiring diagram while performing the setup procedure.)

1. Set the “main” control pot (connected to 3 prong plug terminal) to 0 percent.
(NOTE: A 0-5VDC Analog input signal may be applied in place of the “main control pot at H1. The 0-5VDC input is transformer isolated from the power line.)

DIP SWITCH MODULE (S1) settings - Note: (VPM = vibrations per minute). Fluctuations in the line voltage can cause a vibrator to vary its vibration. The line voltage compensation feature adjusts the control's output to help compensate for fluctuations in the supply voltage. Use the accompanying chart to set the line voltage compensation to match the line voltage. If it becomes necessary to disable this feature, set to “no LVC” from the S1 Line Voltage Chart.

2.

S1 Line Voltage Chart			
RC Operation only 50 Hz: 3000 vpm 60 Hz: 3600 vpm			
Line Voltage	S1 Switch Positions		
	SW1	SW2	SW3
480 volts	0	0	0
440 volts	0	0	1
415 volts	0	1	0
400 volts	0	1	1
380 volts	1	0	0
277 volts	1	0	1
no LVC	1	1	1

3. Make the power, load, and (if required) DC input connections to their respective locations, as shown in the wiring diagram.
4. Apply power to the control at the safety disconnect switch, and then turn the control power on.
5. For optimal performance of your Vibrator / Feeder, make the following trimmer pot adjustments (located on the printed circuit board).

MAX:	<p style="text-align: center;"><u>MAXIMUM FEEDER OUTPUT</u></p> <p style="text-align: center;">Set the main control pot to its maximum setting.</p> <p>With the proper size screwdriver, adjust the ‘MAX’ trimmer pot until the desired feeder stroke is achieved without exceeding the rated feeder current. Adjust the “main” control pot from 0 to 100 percent to verify the ‘MAX’ trimmer pot setting.</p> <p>Fully Counter Clockwise: Minimum Feeder Output Fully Clockwise: Maximum Feeder Output</p> <p style="text-align: center;">(Factory Default: Fully Clockwise)</p>
MIN:	<p style="text-align: center;"><u>MINIMUM FEEDER OUTPUT</u></p> <p>With the vibratory feeder nearly empty, turn the “main” control pot to “1” and adjust the MIN trim pot to just below the slowest speed that provides the proper feed rate.</p>
SOFT:	<p style="text-align: center;"><u>FEEDER RAMP-UP TIME</u></p> <p>With the proper size screwdriver, adjust the ‘SOFT’ trimmer pot to the desired output ramp-up time, from 0-10 seconds at the start-up of the feeder.</p> <p>Fully Counter Clockwise: 0 second ramp-up time Fully Clockwise: 6 second ramp-up time</p> <p style="text-align: center;">(Factory Default: Fully Counter Clockwise)</p>

6. **REMOTE OFF/ON CONTROL** Low voltage DC can be used to turn the control **ON** and **OFF**. Move the wire from the circuit board terminal 7 to terminal 5 (terminal 6 remains the same). Then connect the positive signal (+10 to 30VDC @ 10mA) to terminal 12 and the negative to terminal 11 of TB2. The control will now turn **ON** when the DC signal is present at terminals 11 and 12 of TB2. This input is optically isolated.

STATUS LEDs:

RUN: Indicates the board is functional and all input conditions are met.

DIRECT: Is ON when the inhibit jumper is connect at the Main terminal strip.

INTERLOCK: Is ON when terminal TB2-5 is connected to TB2-6.

EXTERNAL: Is ON when a signal is present at terminals TB2-11 & 12.

During the initial operation of the control on the machine it is important to monitor the temperature of the coils on the vibratory feeder. If the coils become too hot to touch, the coil current is too high. Decrease the MAX pot setting and re-apply power after the coils have cooled. Overheating the coils will eventually cause them to short circuit and fail.



CAUTION: Do not make any alterations to the control without first contacting Syntron Material Handling Service Department. Unauthorized alterations will void the warranty. Syntron Material Handling will not assume responsibility for damage that may occur due to **unauthorized alterations to the control**. **Any alterations will void the UL and cUL rating of the control.**

MAINTENANCE



WARNING: Disconnect and lock out the power supply at the safety disconnect switch before performing any maintenance work.

The only maintenance required is that the control be kept reasonably clean.

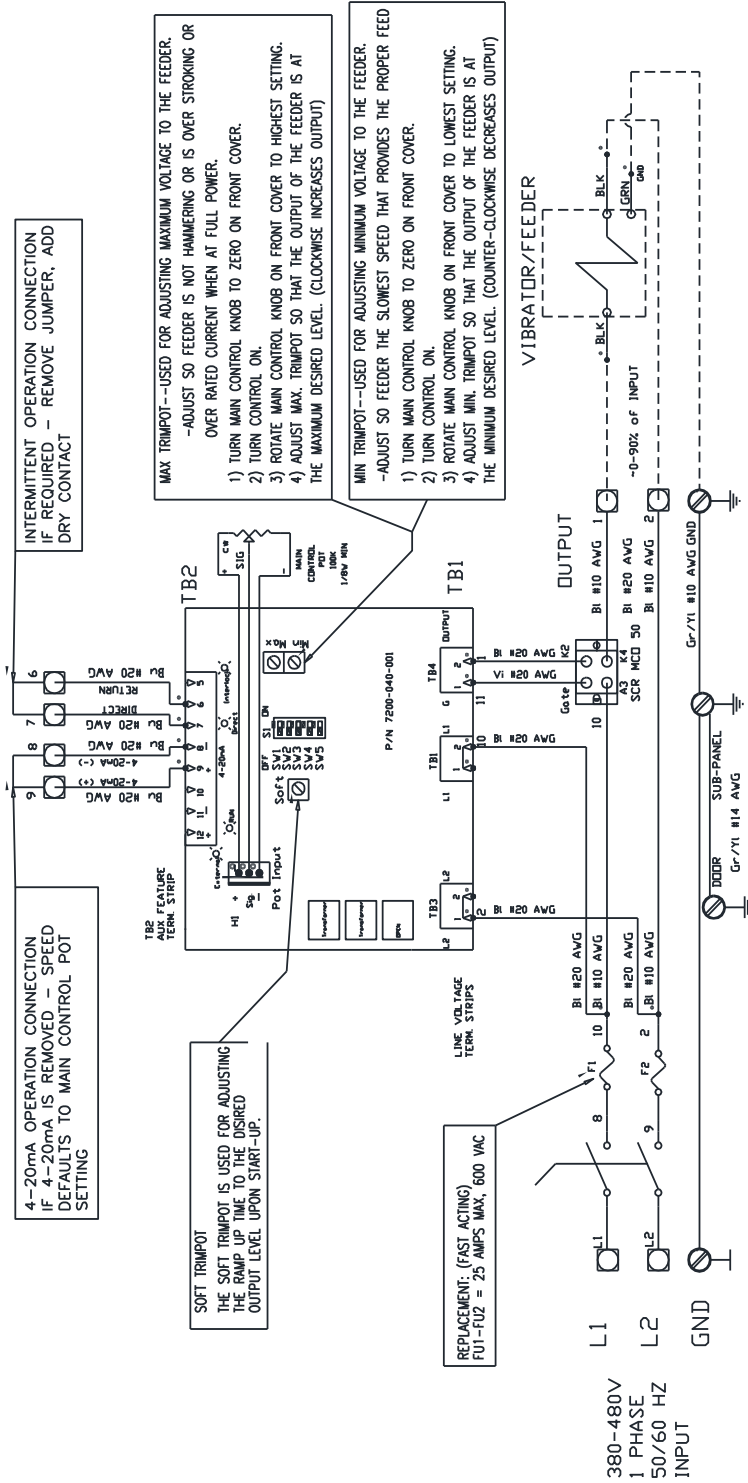


WARNING: Do not use water or a damp cloth for cleaning. Clean, dry compressed air is recommended.

TROUBLESHOOTING

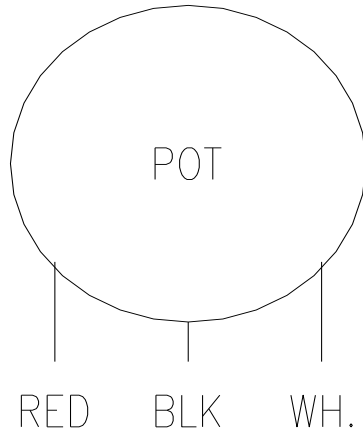
PROBLEM	CAUSE	SOLUTION
No output from control	Brief utility power interruption	<ul style="list-style-type: none"> • Turn control off for 5 seconds, then restart; if problem persists, call Syntron Material Handling. • Establish input power • Check fuse and switch • Close contacts or install jumper • Change switch position • Turn pot clockwise • No 5 to 30 VDC signal to terminals #11 & 12 if jumper is across terminals 5 & 6
	No AC line voltage	
	No AC voltage on TB1	
	Contacts or jumper missing at TB2 between 6 and 7	
	MAX pot turned full counter-clockwise	
Feeder hums or does not move parts	Thyristor is shorted (RC)	<ul style="list-style-type: none"> • Replace Thyristor
Maximum output with no main pot control	Brief utility power interruption	<ul style="list-style-type: none"> • Turn control off for 5 seconds, then restart; if problem persists, call Syntron Material Handling. • Replace Thyristor • Signal to terminal 8 & 9 at 20 mA
	SCR is shorted (RC)	
Output speed won't change or changes erratic	MAX trim pot incorrectly adjusted	<ul style="list-style-type: none"> • Adjust correctly • Connect pot cable • Ensure shielded cable is run separate from main conduit. (Never run shielded cable with AC power lines.) • Replace main pot
	Pot cable is unplugged	
	Lack of shielded cable for "main" control pot	
	Damaged main pot	

WIRING DIAGRAM



Follow drawing below to solder “main” pot to shielded cable.

POT SHOWN FROM BACK SIDE

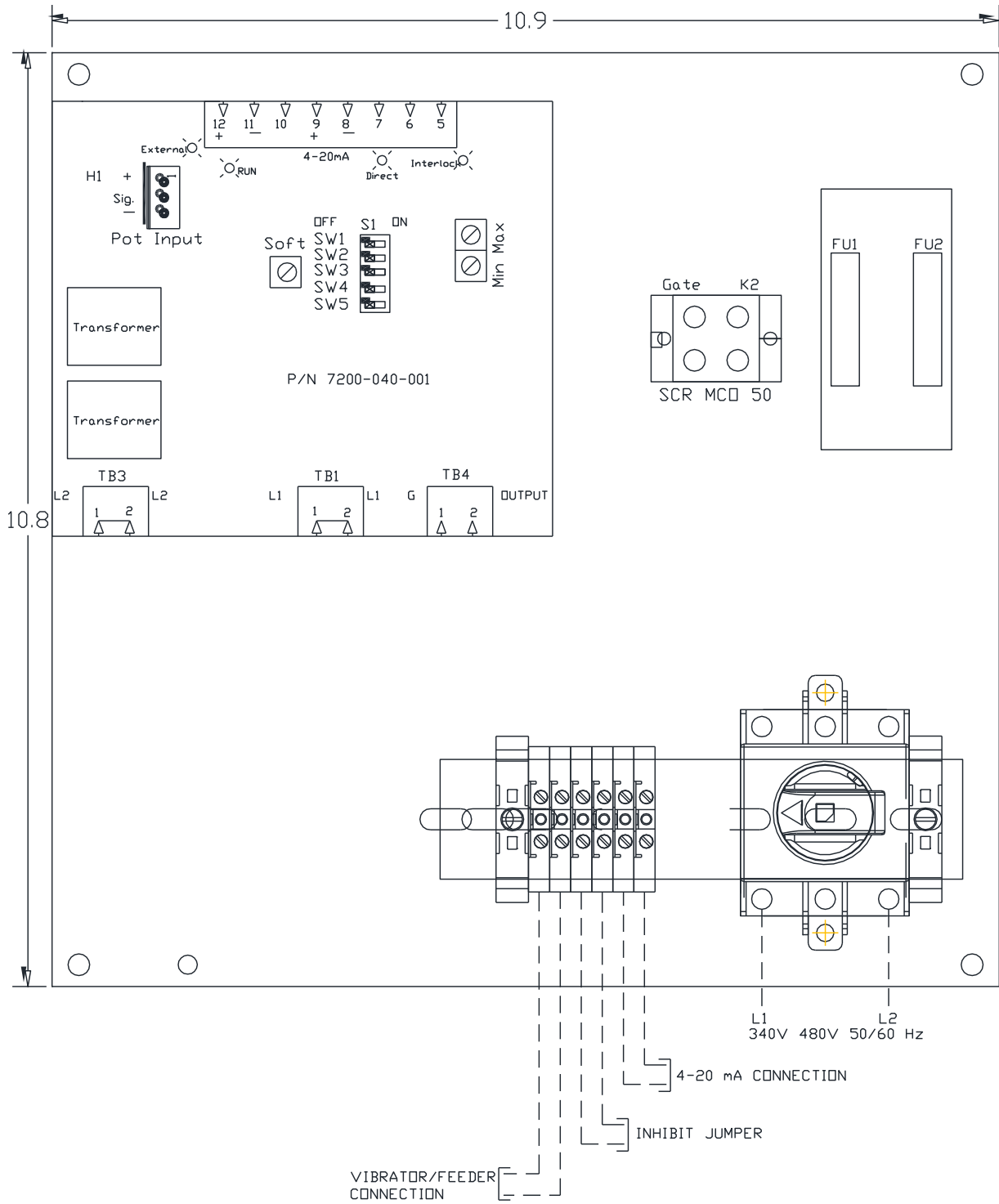


PARTS

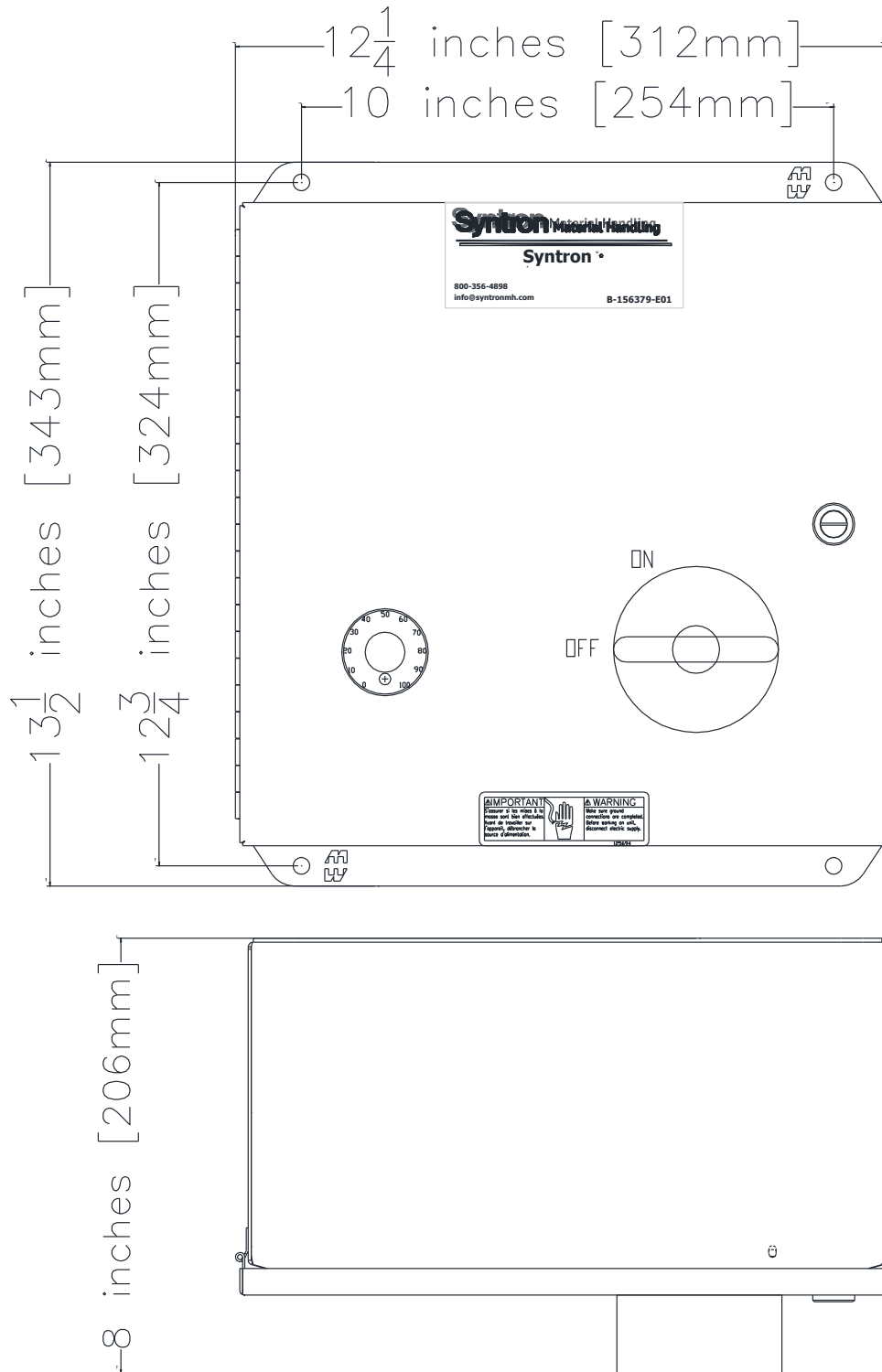
DESCRIPTION	PART NUMBER
Potentiometer 100K w/cable *	7200-040-011
PC Board Assembly*	7200-040-001
Thyristor Module	7200-040-006
Disconnect Switch 30A *	7200-040-008
Fuse 4A thru 25A *	FAST ACTING, 600V, TYPE CC
Warning Label	125694
Warning Label	128494

*Recommended Spare Parts

BOX LAYOUT



BOX DIMENSIONS



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