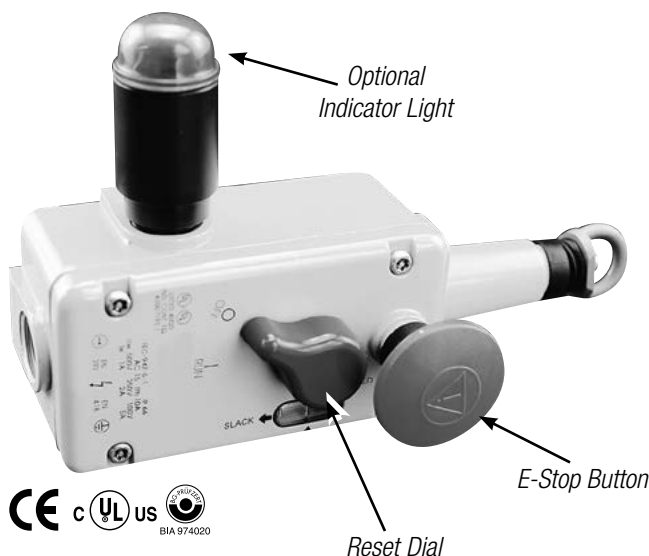




CABLE AND PUSH-BUTTON E-STOP INSTALLATION MANUAL



INTRODUCTION

This switch is a cable and push-button emergency-stop device. At the same time, it used to provide an awareness means and emergency stopping device on exposed machinery, such as conveyors, packaging machinery, assembly lines, process equipment, and transfer lines.

The switch has a unique cam operation of the contact mechanism to give rapid, positive operation of the contacts. This mechanism also provides a failure to the safe condition if the cable goes slack or is cut, but is immune to nuisance tripping due to machine vibration. Should the cable be pulled, the contacts are opened, isolating machine power, and the latch engages. The machine cannot restart until the hazard has been corrected and the switch is reset. The switch is reset by turning the blue reset dial from the off position to the run position. This switch also incorporates a cable-tension indicator. This indicator assists in installation and maintenance of the switch. A red mushroom-head emergency-stop button is provided on each switch. Optionally available is an indicator light as shown.

A cable tension kit, which includes thimbles, cable clamps and a turnbuckle, must be used with this switch. This kit includes the components to properly tension the cable. The cable should be supported by eye bolts every 6½ to 10 feet (2 to 3 m) along its length. An eye bolt should also be used about one foot from the switch to ensure that all emergency-pull movement is transmitted to the unit in a linear fashion (see Figure 1). If this assembly is to go around a corner, free-moving pulleys should be used (see Figure 2).

Figure 1

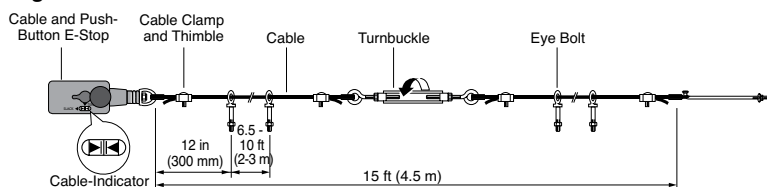


Figure 2

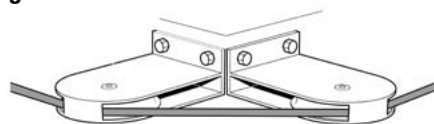


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SECTION 2—IN GENERAL

Cable and Push Button E-Stop

SAFETY PRECAUTIONS

“ ⚠ DANGER ” Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

“ ⚠ ” THIS SAFETY ALERT SYMBOL IDENTIFIES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL ⚠, BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY, AND CAREFULLY READ THE MESSAGE THAT FOLLOWS.

Efficient and safe machine operation depends on the development, implementation and enforcement of a safety program. This program requires, among other things, the proper selection of point-of-operation guards and safety devices for each particular job or operation and a thorough safety training program for all machine personnel. This program should include instruction on the proper operation of the machine, instruction on the point-of-operation guards and safety devices on the machine, and a regularly scheduled inspection and maintenance program.

Rules and procedures covering each aspect of your safety program should be developed and published both in an operator's safety manual, as well as in prominent places throughout the plant and on each machine. Some rules or instructions which must be conveyed to your personnel and incorporated into your program include:

⚠ DANGER Never place your hands or any part of your body in this machine.

⚠ DANGER Never operate this machine without proper eye, face and body protection.



Never operate this machine unless you are fully trained, instructed, and have read the instruction manual.



Never operate this machine if it is not working properly – stop operating and advise your supervisor immediately.



Never use a foot switch to operate this machine unless a point-of-operation guard or device is provided and properly maintained.



Never operate this machine unless two-hand trip, two-hand control or presence sensing device is installed at the proper safety distance. Consult your supervisor should you have any questions regarding the proper safety distance.



Never tamper with, rewire or bypass any control or component on this machine.

A company's safety program must involve everyone in the company, from top management to operators, since only as a group can any operational problems be identified and resolved. It is everyone's responsibility to implement and communicate the information and material contained in catalogs and instruction manuals to all persons involved in machine operation. If a language barrier or insufficient education would prevent a person from reading and understanding various literature available, it should be translated, read or interpreted to the person, with assurance that it is understood.



FOR MAINTENANCE AND INSPECTION ALWAYS REFER TO THE OEMs (ORIGINAL EQUIPMENT MANUFACTURER'S) MAINTENANCE MANUAL OR OWNER'S MANUAL. If you do not have an owner's manual, please contact the original equipment manufacturer.

Safety References

OSH ACT AND FEDERAL REGULATIONS

Since the enclosed equipment can never overcome a mechanical deficiency, defect or malfunction in the machine itself, OSHA (Occupational Safety and Health Administration) has established certain safety regulations that the employers (users) must comply with so that the machines used in their plants, factories or facilities are thoroughly inspected and are in first-class operating condition before any of the enclosed equipment is installed.

1. U.S. Government—An Act—Public Law 91-596, 91st Congress, S. 2193, December 29, 1970:

Duties

SEC. 5. (a) Each employer—

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;

(2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

2. OSHA 29 CFR Sections that an employer (user) must comply with include:

1910.211 Definitions.

1910.212 General requirements for all machines.

1910.217 Mechanical power presses.

1910.219 Mechanical power-transmission apparatus.

3. OSHA 29 CFR 1910.147 The control of hazardous energy (lockout/tagout).

4. OSHA Publication

“General Industry Safety and Health Regulations Part 1910,” Code of Federal Regulations, Subpart O

This publication can be obtained by contacting:

U.S. Government Printing Office
P.O. Box 371954
Pittsburgh, PA 15250-7954
Phone: (202) 512-1800
<http://bookstore.gpo.gov>

ANSI Safety Standards for Machines

The most complete safety standards for machine tools are published in the ANSI (American National Standards Institute) B11 series. The following is a list of each ANSI B11 Standard available at the printing of this publication.

B11—2020	Safety of Machinery
B11.1	Mechanical Power Presses
B11.2	Hydraulic & Pneumatic Power Presses
B11.3	Power Press Brakes
B11.4	Shears
B11.5	Ironworkers
B11.6	Manual Turning Machines (Lathes) w/ or w/o Auto Control
B11.7	Cold Headers and Cold Formers
B11.8	Manual Milling, Drilling, & Boring Machines
B11.9	Grinding Machines
B11.10	Sawing Machines
B11.11	Gear and Spline Cutting Machines
B11.12	Roll Forming and Roll Bending Machines
B11.13	Single & Multiple-Spindle Automatic Bar and Chucking Machines
B11.14	Withdrawn (See ANSI B11.18)
B11.15	Pipe, Tube and Shape Bending Machines
B11.16	Powder / Metal Compacting Presses
B11.17	Horizontal Hydraulic Extrusion Presses
B11.18	Machines Processing or Slitting Coiled or Non-Coiled Metal
B11.19	Performance Requirements for Risk Reduction Measures (Safeguarding)
B11.20	Integration of Machinery into a System
B11.21	Machine Tools Using Lasers for Processing Materials
B11.22	Turning Centers and Automatic Numerically Controlled Turning Machines
B11.23	Machining Centers & CNC Milling, Drilling & Boring Machines
B11.24	Transfer Machines
B11.25	Large Machines
B11.26	Functional Safety for Equipment / Machine Control Systems
B11.27	Electro-Discharge Machines
B11.TR1	Ergonomics
B11.TR2	Metal Working Fluids
B11.TR3	Withdrawn (See ANSI B11.0)
B11.TR4	Selection of Programmable Electronic Systems (PES/PLC)
B11.TR5	Noise Measurement
B11.TR6	Withdrawn (See ANSI B11.26)
B11.TR7	Integration of Lean and Safety
B11.TR8	Guide to Inspection of Risk Reduction Measures
B11.TR9	Cybersecurity
B11.TR10	Guidance on Artificial Intelligence into Machinery Safety Applications
ANSI/ISO 12100	Safety of machinery (identical adoption of ISO 12100-2010)

SECTION 2—IN GENERAL

Cable and Push Button E-Stop

R15.06	ROBOTIC SAFEGUARDING
B15.1	MECHANICAL POWER TRANSMISSION APPARATUS
B56.5	GUIDED INDUSTRIAL VEHICLES AND AUTOMATED FUNCTION OF MANNED INDUSTRIAL VEHICLES
B65.1	PRINTING PRESS SYSTEMS
B65.2	BINDING AND FINISHING SYSTEMS
B65.5	STAND-ALONE PATTEN PRESSES
B151.1	HORIZONTAL (PLASTIC) INJECTION MOLDING MACHINES
B152.1	HYDRAULIC DIE CASTING PRESSES
B154.1	RIVET SETTING MACHINES
B155.1	PACKAGING MACHINERY
01.1	WOODWORKING MACHINERY

These standards can be purchased by contacting:
ANSI—American National Standards Institute
25 West 43rd Street, 4th Floor
New York, New York 10036

Warranty

9. Limited Warranties.

9.1. (i) Subject to Section 8.1(ii) below, Rockford Systems makes to Customer the following sole and exclusive warranties with respect to Goods:

(a) with respect to Goods that are manufactured based on Customer specifications, at the time of shipment by Rockford Systems, the Goods sold under the Agreement that are manufactured by Rockford Systems pursuant to such specifications conform to such specifications set forth in the applicable Order Documentation; and

(b) at the time of shipment by Rockford Systems, the Goods sold under the Agreement that are manufactured by Rockford Systems are free from defects in material and workmanship.

(c) Rockford Systems's warranty is for a period of 1 year, and begins from date of shipment from Rockford Systems to the original purchaser.

This warranty does not include accessories, parts or equipment sold hereunder that are manufactured by someone other than Rockford Systems.

(ii) Every claim by Customer against Rockford Systems for breach of warranty with respect to the Goods shall be deemed waived by Customer unless written notice thereof is received by Rockford Systems within fifteen (15) days after discovery.

9.2. If Rockford Systems breaches either of the warranties set forth in Section 8.1(i) above, and written notice thereof is received by Rockford Systems from Customer within the applicable time period specified in Section 8.1(ii) above, Customer's sole and exclusive remedy and Rockford Systems's only obligation shall be, as Rockford Systems in its sole and exclusive judgment shall determine, the replacement of the nonconforming Goods, or an adjustment to the purchase price for the nonconforming Goods or the repair of the nonconforming Goods. All transportation charges related to replacement or repair of Goods shipped to Rockford Systems's plant or facility (or other place at

NATIONAL SAFETY COUNCIL SAFETY MANUALS

Other good references for safety on machine tools are the National Safety Council's Safety Manuals. These manuals are written by various committees including the Power Press, Forging and Fabricating Executive Committee. Copies of the following publications are available from their library:

- POWER PRESS SAFETY MANUAL - 5TH EDITION
- SAFEGUARDING CONCEPTS ILLUSTRATED - 7TH EDITION
- FORGING SAFETY MANUAL

These manuals can be obtained by contacting:

National Safety Council
1121 Spring Lake Drive
Itasca, IL 60143-3201
1-800-621-7615
www.nsc.org

Rockford Systems's direction) shall be prepaid by Customer. Rockford Systems shall be responsible for reasonable transportation charges back to Customer for Goods that have been replaced or repaired by Rockford Systems. Any replacement Goods or repaired Goods shall be subject to these Terms and Conditions.

9.3. THE EXPRESS WARRANTIES SET FORTH HEREIN ARE THE ONLY WARRANTIES APPLICABLE TO THE SALE OF GOODS BY ROCKFORD SYSTEMS TO CUSTOMER PURSUANT TO THE AGREEMENT, AND THEY EXCLUDE ALL OTHER EXPRESS, ORAL OR WRITTEN WARRANTIES, AS WELL AS ANY WARRANTIES IMPLIED BY LAW WITH RESPECT TO THE GOODS, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PURPOSE, NOTWITHSTANDING ANY DISCLOSURE TO ROCKFORD SYSTEMS OF THE INTENDED USE OF THE GOODS.

9.4. Rockford Systems's warranties under Section 8.1(i) are void if repairs or modifications of the Goods are made by anyone other than Rockford Systems. Without limitation of the foregoing, Rockford Systems assumes no responsibility for and shall have no obligations to Customer because defects in any materials furnished by, or any faulty workmanship provided by, any party other than Rockford Systems.

9.5. Rockford Systems reserves the right to improve its products through changes in design or material without being obligated to incorporate such changes into products of prior manufacture. Customer cannot rely on any such changes as proof of insufficiency or inadequacy of prior designs of the Goods or material contained in the Goods.

9.6. If Customer grants to an end user of the Goods (or any other customer of Customer) any warranty that is greater in scope or time than the warranty and claims period stated herein, Rockford Systems shall not be liable beyond the scope of the limited warranty, the claim period, the damages and the remedies provided for under this Section.

9.7. Solely to the extent transferable, Rockford Systems assigns and transfers to Customer the original manufacturer's warranty on Goods sold hereunder that are not manufactured by Rockford Systems.

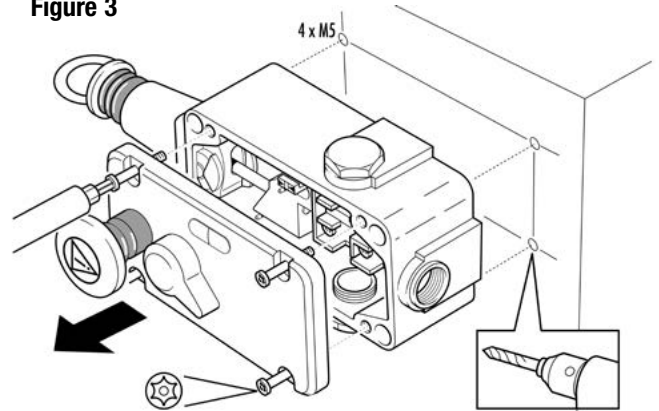
SECTION 3—INSTALLATION

Cable and Push Button E-Stop

SWITCH INSTALLATION

1. Determine the mounting position for the switch.
2. Loosen and remove all cover screws using the furnished Torx bit. See Figure 3.
3. Drill and tap holes where the switch(es) will be mounted. Mount the switch(es) using four fasteners (not furnished). See Figure 3.
4. With the blue reset knob in the off position, replace the cover.
5. Push the red emergency-stop button. The switch should lock out. Reset the switch by turning the blue reset button on the cover to the run position (see Figure 4).

Figure 3



CABLE INSTALLATION

1. Pass a thimble through the eye of the switch.
2. Thread one end of the PVC-covered cable through a cable clamp.
3. Wrap the cable around the thimble and back through the cable clamp. See Figure 5. Lock the cable in position by tightening the cable clamp.
4. Install an eye bolt 12 inches from the end of the switch and one eye bolt every 6½ to 10 feet after that.
5. Extend the adjusting eyes on the turnbuckle. At approximately half the total cable span, mount the turnbuckle to the cable. Thread the cable through a cable clamp, through one end of the turnbuckle, and back through the cable clamp. Lock the cable in position by tightening the cable clamp.
6. Repeat steps 1-5 at the other end of the installation using a hook bolt.
7. Tension the cable. The turnbuckle has a left-hand thread at one end and a right-hand thread at the other. When rotating the turnbuckle body, the cable will slacken or tighten at both ends simultaneously. The black tension mark within the red arrows should be in the center of the window on each switch when the switch is tensioned properly. See Figure 6.
8. Set the blue reset knob to the run position. Perform a test procedure by pushing the red emergency-stop button and then resetting the reset button (blue button) before putting the switch into operation.

Figure 4

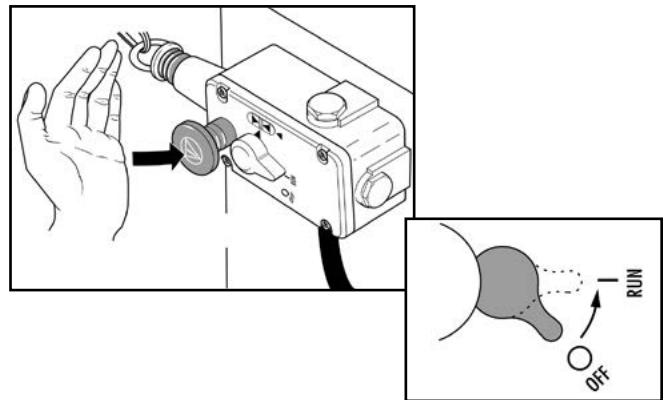


Figure 5

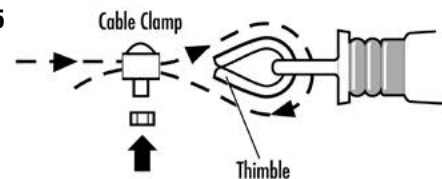


Figure 6



SECTION 4—TECHNICAL SPECS & ORDERING INFO

Cable and Push Button E-Stop

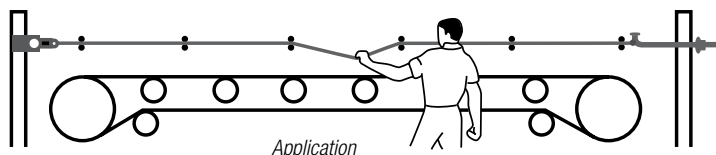


Make sure the system is correctly installed and working before the machine is put back into production.

TECHNICAL SPECIFICATIONS

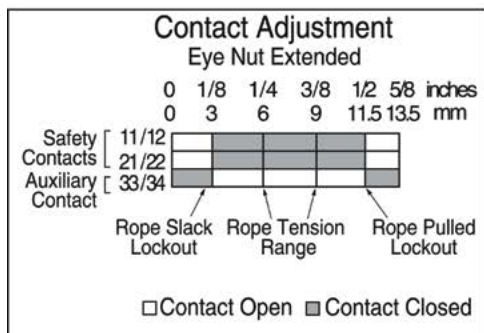
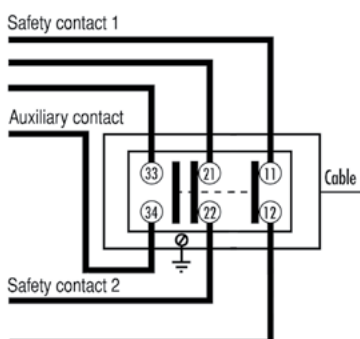
Safety Contacts	2 NO
Auxiliary Contacts	2 NC
Switching Ability	1 A @ 500 V AC, 2 A @ 250 V AC 5A @ 100 V AC, 0.5 A @ 250 V DC 1 A @ 125 V DC, 2 A @ 24 V DC
Case	Heavy-Duty Die-Cast Alloy
Operating Temperature	-13° to 176°F (-25° to 80°C)
Operating Force	< 28 lb (12 in deflection)
Tensioning Force to Run Position	23 lb Typical
Tensioning Force to Lockout	42 lb Typical

Safety contacts are NO when the E-stop button is pushed, or if the cable is slack or pulled as shown in the illustration below.



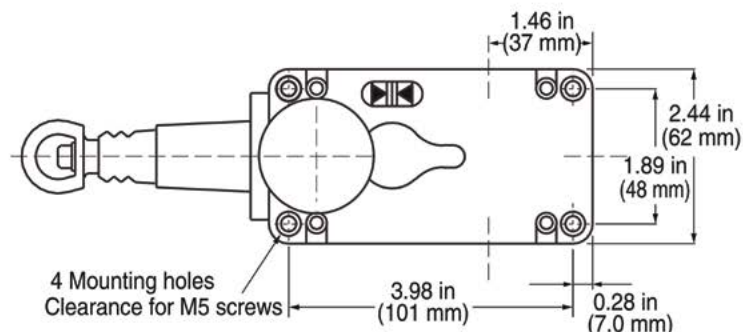
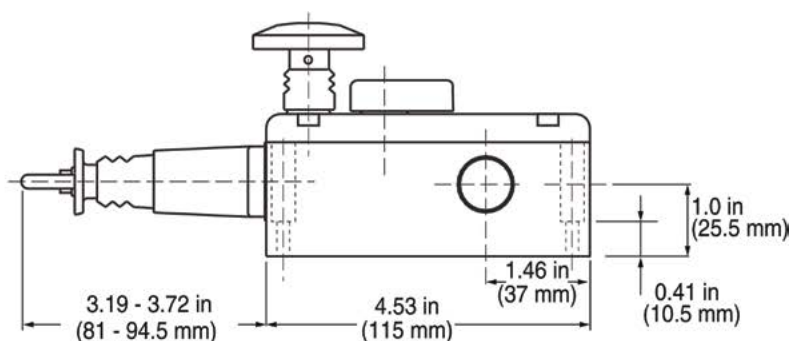
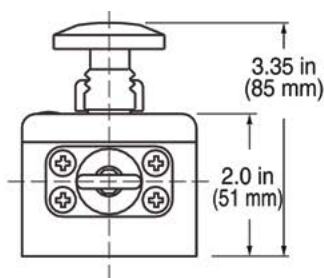
Connection details

Run condition



ORDERING INFORMATION

Part No.	Description
6024884	Cable and Push-Button E-Stop Device Only
CML510	Cable and Push-Button E-Stop Assembly (Consists of cable and push button e-stop, indicator light, 115-V AC bulb, 7 yards of red PVC-covered steel cable, turnbuckle, hook bolt, 4 cable thimbles, and 4 cable clamps)



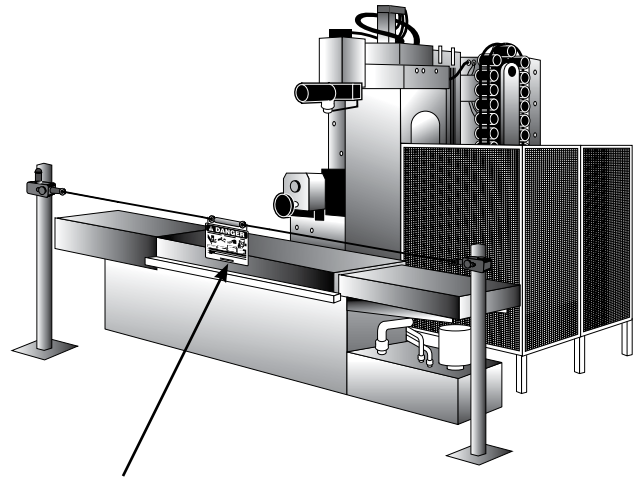
(Continued on next page.)

SECTION 5—ACCESSORIES

Cable and Push Button E-Stop

OPTIONAL ACCESSORIES

Part No.	Description
CMK039	Tension Kit (Consists of 1 turnbuckle, 1 hook bolt, 4 cable thimbles, and 4 cable clamps)
CMK064	Indicator Light Without Bulb
CTT335	24 V AC/DC Bulb for CMK064 Indicator Light
CTT336	115 V AC Bulb for CMK064 Indicator Light
5312998	M20 to 1/2" Conduit Adapter
FSL024	Red PVC-Covered Steel Cable/Yard
FSL028	Pulley
KSC056	Danger Sign for Miscellaneous Machines
KSC064	Danger Sign for Down-Acting Machines



*Danger Sign KSC056
10" x 12" x .055" Thick
for Miscellaneous Machines*

OR



*Danger Sign KSC064
10" x 12" x .055" Thick
for Down-Acting Machines*