

PALM BUTTON INSTALLATION MANUAL

Standard



Light Push



Touchdown!™



Articulated



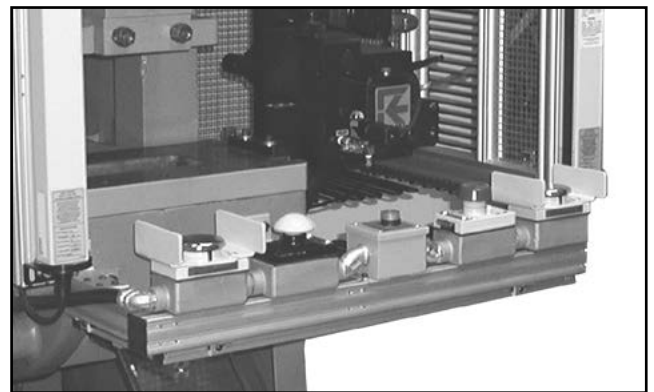
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Palm Buttons

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Touchdown!TM palm button assembly on a mechanical power press.



Articulated palm button assembly on a mechanical power press.

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.

CAUTION

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

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 in to your program include:

DANGER

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



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



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



Never operate this machine if it is not working properly—stop operating it 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 if 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 OEM'S (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.

(Continued on next page.)

SECTION 1—IN GENERAL

Palm Buttons

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

4. OSHA Publication (continued)

This publication can be obtained by contacting:

Superintendent of Documents
U.S. Government Printing Office
P.O. Box 371954
Pittsburgh, PA 15250-7954
Phone: (202) 512-1800
Fax: (202) 512-2250
www.gpo.gov

OTHER SAFETY SOURCES

This manual cannot cover all aspects or be considered all-inclusive of a safety program. There are many publications on the subject of safety. Some other publication sources for organizing and implementing a safety program for machines are as follows:

1. The most complete safety standards for machine tools are published in the ANSI (American National Standards Institute) B11 series. These standards can be purchased by contacting:

American National Standards Institute, Inc.
25 West 43rd Street
New York, New York 10036
Phone: (212) 642-4900 • Fax: (212) 398-0023
www.ansi.org

OR

AMT—The Association for Manufacturing Technology
7901 Westpark Drive
McLean, Virginia 22102
Phone: (703) 893-2900 • Fax: (703) 893-1151
Toll-Free: 1-800-524-0475
E-Mail: AMT@amtonline.org • www.amtonline.org

2. National Safety Council
1121 Spring Lake Drive
Itasca, IL 60143-3201
1-800-621-7619 ext. 2199 • Fax: (630) 285-0797
www.nsc.org

For additional safety information and assistance in devising, implementing or revising your safety program, please contact the machine manufacturer, your state and local safety councils, insurance carriers, national trade associations and your state's occupational safety and health administration.

SECTION 2—OSHA AND ANSI REQUIREMENTS

Palm Buttons

TWO-HAND CONTROL (PART-REVOLUTION ONLY)

(c)(3)(vii) The two-hand control device shall protect the operator as specified in paragraph (c)(3)(i)(e) of this section.

(a) When used in press operations requiring more than one operator, separate two-hand controls shall be provided for each operator, and shall be designed to require concurrent application of all operators' controls to activate the slide. The removal of a hand from any control button shall cause the slide to stop.

(b) Each two-hand control shall meet the construction requirements of paragraph (b)(7)(v) of this section.

(c) The safety distance (D_S) between each two-hand control device and the point of operation shall be greater than the distance determined by the following formula:

$$D_S = 63 \text{ inches/second} \times T_S; \text{ where:}$$

D_S = minimum safety distance (inches)

63 inches/second = hand speed constant; and

T_S = stopping time of the press measured at approximately 90° position of the crankshaft rotation (seconds).

(d) Two-hand controls shall be fixed in position so that only a supervisor or safety engineer is capable of relocating the controls.

(b)(7)(v) Two-hand controls for single stroke shall conform to the following requirements:

(a) Each hand control shall be protected against unintended operation and arranged by design, construction, and/or separation so that the concurrent use of both hands is required to trip the press.

(b) The control system shall be designed to permit an adjustment which will require concurrent pressure from both hands during the die closing portion of the stroke.

(c) The control system shall incorporate an antirepeat feature.

(d) The control systems shall be designed to require release of all operators' hand controls before an interrupted stroke can be resumed. This requirement pertains only to those single stroke, two-hand controls manufactured and installed on or after August 31, 1971. (Refer to (c)(5)(ii).)

ANSI B11.1 SAFETY DISTANCE FORMULA

According to ANSI B11.1, the total stopping time of the press (for two-hand control) should include the total response time of the control system and the time it takes the press to cease slide motion. The following formula can be used when calculating the safety distance:

$$D_S = K (T_S + T_C + T_R + T_{spm}) \text{ where:}$$

K = hand speed constant (63 inches/second)

T_S = stop time of the press measured from the final deenergized control element, usually the air valve

T_C = reaction time of the control system

T_R = reaction time of the device and its interface

Note: $T_S + T_C + T_R$ are usually measured by a stop-time measuring device.

T_{spm} = the additional time allowed by the stopping performance monitor before it detects stop-time deterioration.

Note: When the press stroke STOP command or stopping performance monitor (brake monitor) timer or angle setting is changed, the safety distance should be recalculated.

TABLE FOR OSHA FORMULA

To establish the safety distance for two-hand control on part-revolution-clutch presses, the stopping time at 90° of crankshaft position must be obtained. Use the following time/distance table after determining the stopping time: T_S =Stopping Time (seconds); D_S =Safety Distance (inches).

Table 2.1

T_S	D_S^*	T_S	D_S^*	T_S	D_S^*	T_S	D_S^*	T_S	D_S^*	T_S	D_S^*	T_S	D_S^*
.055	—3½"	.126	—8"	.198	—12½"	.269	—17"	.341	—21½"	.412	—26"	.484	—30½"
.063	—4"	.134	—8½"	.206	—13"	.277	—17½"	.349	—22"	.420	—26½"	.492	—31"
.072	—4½"	.142	—9"	.214	—13½"	.285	—18"	.357	—22½"	.428	—27"	.500	—31½"
.079	—5"	.150	—9½"	.222	—14"	.293	—18½"	.365	—23"	.436	—27½"	.507	—32"
.087	—5½"	.158	—10"	.230	—14½"	.301	—19"	.373	—23½"	.444	—28"	.515	—32½"
.095	—6"	.166	—10½"	.238	—15"	.309	—19½"	.380	—24"	.452	—28½"	.523	—33"
.103	—6½"	.174	—11"	.246	—15½"	.317	—20"	.388	—24½"	.460	—29"	.531	—33½"
.111	—7"	.182	—11½"	.253	—16"	.325	—20½"	.396	—25"	.468	—29½"	.539	—34"
.119	—7½"	.190	—12"	.261	—16½"	.333	—21"	.404	—25½"	.476	—30"	.547	—34½"

*Based on the 63 inches/second hand-speed constant.

(Continued on next page.)

SECTION 2—OSHA AND ANSI REQUIREMENTS

Palm Buttons

TWO-HAND TRIP

When using these palm buttons as a point-of-operation safeguarding device on machines or equipment, the regulations state that they must be mounted at a safe distance from the point-of-operation hazard. The operator should not be able to get their hands into the pinch point before the hazardous motion becomes closed or stops, after initiating the cycle.

(c)(3)(viii) The two-hand trip device shall protect the operator as specified in paragraph (c)(3)(i)(e) of this section.

(a) When used in press operations requiring more than one operator, separate two-hand trips shall be provided for each operator, and shall be designed to require concurrent application of all operator controls to activate the slide.

(b) Each two-hand trip shall meet the construction requirements of paragraph (b)(6) of this section.

(c) The safety distance (D_m) between the two-hand trip and the point of operation shall be greater than the distance determined by the following formula:

$$D_m = 63 \text{ inches/second} \times T_m; \text{ where:}$$

D_m = minimum safety distance (inches);

63 inches/second = hand speed constant; and

T_m = the maximum time the press takes for the die closure after it has been tripped (seconds). For full-revolution-clutch presses with only one engaging point, T_m is

equal to the time necessary for one and one-half revolutions of the crankshaft. For full-revolution-clutch presses with more than one engaging point, T_m shall be calculated as follows:

$$T_m = \left[\frac{1}{\frac{1}{2} + \frac{1}{\text{Number of engagement points per revolution}}} \right] \times \text{time necessary to complete one revolution of the crankshaft (seconds)}$$

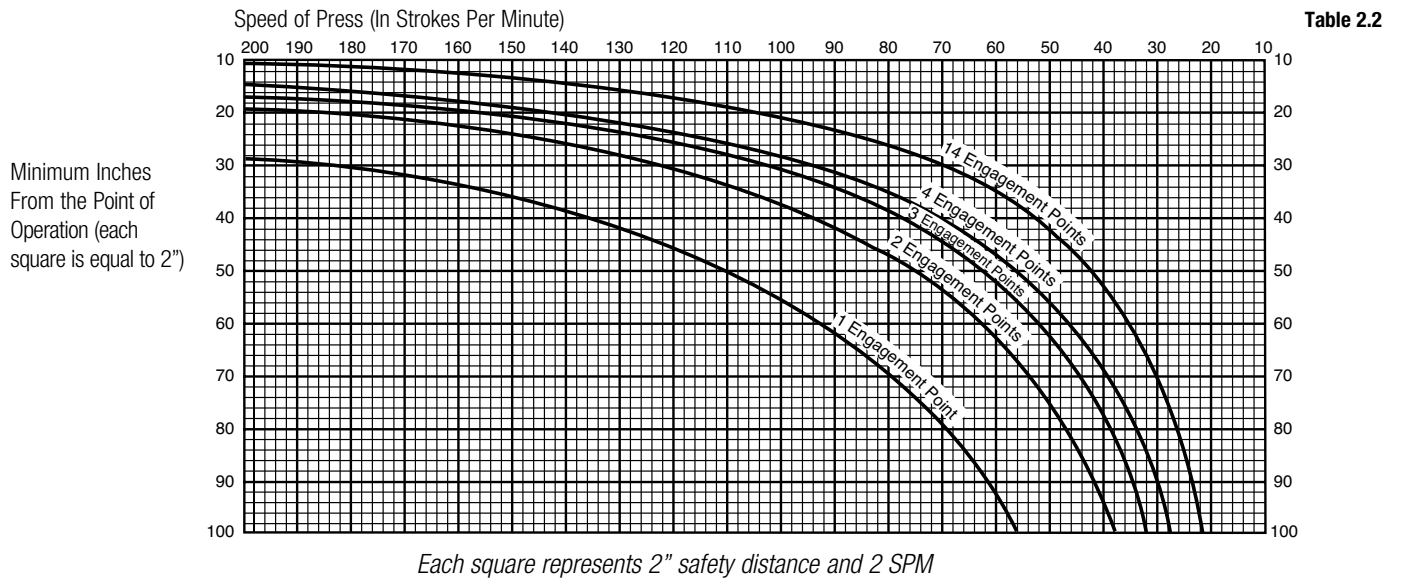
(d) Two-hand trips shall be fixed in position so that only a supervisor or safety engineer is capable of relocating the controls.

(b)(6)(i) A two-hand trip shall have the individual operator's hand controls protected against unintentional operation and have the individual operator's hand controls arranged by design and construction and/or separation to require the use of both hands to trip the press and use a control arrangement requiring concurrent operation of the individual operator's hand controls.

(ii) Two-hand trip systems on full-revolution-clutch machines shall incorporate an antirepeat feature.

(iii) If two-hand trip systems are used on multiple operator presses, each operator shall have a separate set of controls.

To establish the safety distance for two-hand trip on a full-revolution-clutch press, first determine the speed of the press in SPM (strokes per minute) when running in the continuous mode and also the number of engagement points in the clutch mechanism. Then determine the safety distance from the following table.



Two-Hand Trip or Two-Hand Control As Safeguarding Devices

When applying two-hand trip or control as a safeguard to any machine, fixture, device, etc., the palm buttons must be installed at the proper safety distance. Please be sure that the appropriate OSHA regulation or ANSI standard for the machine on which they are to be installed has been reviewed.

For example, when applying them to mechanical power presses that have a part-revolution clutch, the two-hand physical design and clutch/brake control circuits must have the following features:

- Protected from unintended operation
- Concurrent operation of both buttons
- Holding time during die closure
- Antirepeat feature
- Nonresumption of interrupted stroke feature
- Control system reliability
- Stopping performance monitor
- Separate set of buttons for each operator
- Mounted at proper safety distance

If you are not sure your machine or device has these features, you may want to contact our sales department for assistance. Also available is our monthly machine safeguarding seminar that includes details about two-hand control. For additional details, please contact us by using the address, phone, or fax on the front cover of this manual.



This product is recognized under standard UL 491 "Standard For Power Operated Machine Controls and Systems." (palm button only)



This product is certified under CSA Standard C22.2 No. 14-M91 "Industrial Control Equipment." (palm button only)

(Continued on next page.)

SECTION 3—ASSEMBLIES

Palm Buttons

Standard Assemblies

ASSEMBLY PART NUMBER CTL-501 CONSISTING OF:

Part No.	Description	Quantity
CTC-726	Black Run/Inch Palm Button	2
CTK-006	Palm Button Guard	2
CTK-003	Mounting Box (Double Hub)	1
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-507 CONSISTING OF:

Part No.	Description	Quantity
CTC-726	Black Run/Inch Palm Button	2
CTC-736	Red Emergency-Stop Palm Button	1
CTK-006	Palm Button Guard	2
CTK-003	Mounting Box (Double Hub)	2
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-502 CONSISTING OF:

Part No.	Description	Quantity
CTC-726	Black Run/Inch Palm Button	2
CTC-736	Red Emergency-Stop Palm Button	1
CTC-727	Yellow Top-Stop Palm Button	1
CTK-006	Palm Button Guard	2
CTK-003	Mounting Box (Double Hub)	3
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-525 CONSISTING OF:

Part No.	Description	Quantity
CTC-726	Black Run/Inch Palm Button	2
CTC-736	Red Emergency-Stop Palm Button	1
CTC-740	Yellow Return/Inch Up Palm Button	1
CTK-006	Palm Button Guard	2
CTK-003	Mounting Box (Double Hub)	3
CTK-004	Mounting Box (Single Hub)	1



ELECTRICAL RATINGS (FOR ABOVE BUTTONS)—HEAVY-DUTY ANSI 600/NEMA 300		
Normal Potential	Normal Current	Inrush Current
110 to 120 V AC*	6.0 A	60.0 A
115 to 125 V DC**	2.2 A	—
230 to 250 V DC**	1.1 A	—

Contacts 1 NO and 1 NC
 (All Buttons)
 Operating Force 4.3 lb (CTC-726,
 CTC-727, & CTC-740)
 12.5 lb (CTC-736)

*Power factor of .035 or less

**Inductive loads as specified in Section 125 of Industrial Control Devices, Controllers and Assemblies, ANSI/NEMA ICS 2-1998

Light-Push Assemblies

ASSEMBLY PART NUMBER CTL-532 CONSISTING OF:

Part No.	Description	Quantity
CTC-737	Chrome Run/Inch Palm Button	2
CTK-006	Palm Button Guard	2
CTK-003	Mounting Box (Double Hub)	1
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-533 CONSISTING OF:

Part No.	Description	Quantity
CTC-737	Chrome Run/Inch Palm Button	2
CTC-736	Red Emergency-Stop Palm Button	1
CTK-006	Palm Button Guard	2
CTK-003	Mounting Box (Double Hub)	2
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-534 CONSISTING OF:

Part No.	Description	Quantity
CTC-737	Chrome Run/Inch Palm Button	2
CTC-736	Red Emergency-Stop Palm Button	1
CTC-727	Yellow Top-Stop Palm Button	1
CTK-006	Palm Button Guard	2
CTK-003	Mounting Box (Double Hub)	3
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-538 CONSISTING OF:

Part No.	Description	Quantity
CTC-737	Black Run/Inch Palm Button	2
CTC-736	Red Emergency-Stop Palm Button	1
CTC-740	Yellow Return/Inch Up Palm Button	1
CTK-006	Palm Button Guard	2
CTK-003	Mounting Box (Double Hub)	3
CTK-004	Mounting Box (Single Hub)	1



ELECTRICAL RATINGS (FOR ABOVE BUTTONS)—HEAVY-DUTY ANSI 600/NEMA 300		
Normal Potential	Normal Current	Inrush Current
110 to 120 V AC*	6.0 A	60.0 A
115 to 125 V DC**	2.2 A	—
230 to 250 V DC**	1.1 A	—

Contacts	1 NO and 1 NC
.....	(All Buttons)
Operating Force	2.5 lb (CTC-737)
.....	4.3 lb (CTC-727
.....	and CTC-740)
.....	12.5 lb (CTC-736)

*Power factor of .035 or less

**Inductive loads as specified in Section 125 of Industrial Control Devices, Controllers and Assemblies, ANSI/NEMA ICS 2-1998

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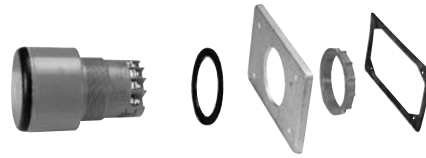
SECTION 3—ASSEMBLIES

Palm Buttons

Touchdown!™ Assemblies

ASSEMBLY PART NUMBER CTL-555 CONSISTING OF:

Part No.	Description	Quantity
CTL-554	Touchdown Palm Button with Nut and Gasket	1
CTK-024	Box Cover Plate	1
CTK-023	Plate Gasket	1
FSK-028	Screws	4



ASSEMBLY PART NUMBER CTL-561 CONSISTING OF:

Part No.	Description	Quantity
CTL-555	Black Run/Inch Palm Button	2
CTK-006	Palm Button Guard	2
CTK-039	Mounting Box (Double Hub)	1
CTK-038	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-562 CONSISTING OF:

Part No.	Description	Quantity
CTL-555	Black Run/Inch Palm Button	2
CTC-736	Red Emergency-Stop Palm Button	1
CTK-006	Palm Button Guard	2
CTK-039	Mounting Box (Double Hub)	2
CTK-038	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-563 CONSISTING OF:

Part No.	Description	Quantity
CTL-555	Black Run/Inch Palm Button	2
CTC-736	Red Emergency-Stop Palm Button	1
CTC-727	Yellow Top-Stop Palm Button	1
CTK-006	Palm Button Guard	2
CTK-039	Mounting Box (Double Hub)	3
CTK-038	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-566 CONSISTING OF:

Part No.	Description	Quantity
CTL-555	Black Run/Inch Palm Button	2
CTC-736	Red Emergency-Stop Palm Button	1
CTC-740	Yellow Return/Inch Up Palm Button	1
CTK-006	Palm Button Guard	2
CTK-039	Mounting Box (Double Hub)	3
CTK-038	Mounting Box (Single Hub)	1



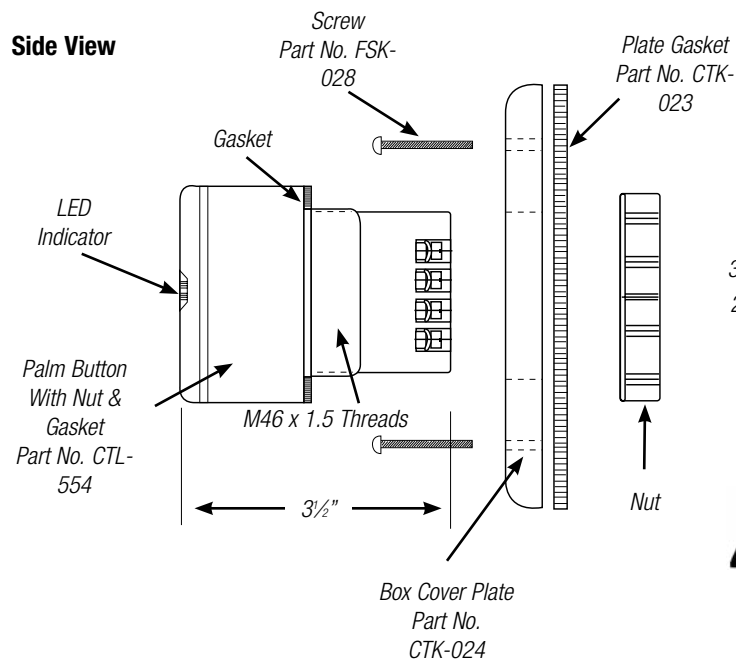
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Touchdown!™ Assemblies (continued)

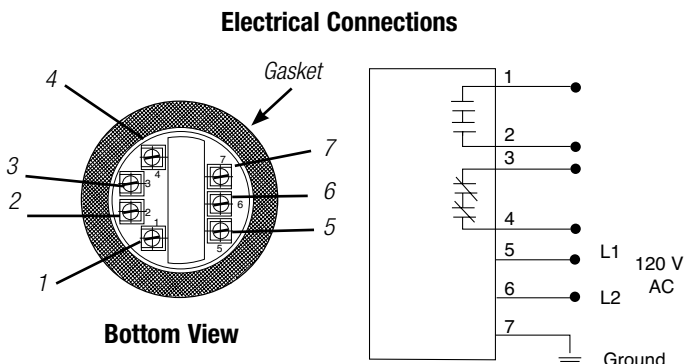
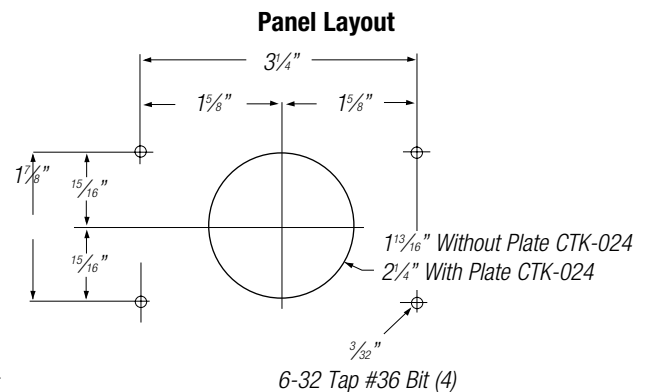
SPECIFICATIONS

Actuation	Handsensitive
.....	—requires no physical pressure to initiate.
.....	Works with and without gloves
Power Supply	120 V AC 45-60Hz
Current Consumption	≤1W
Functionality Indication	Flashing red LED
.....	indicates energized output relays
Output Relay	1 NO and 1 NC
Reaction Time	ON delay ≤ 60 ms
	OFF delay ≤ 80 ms
Current Rating	1 A, AC or DC
Voltage Rating	250 V AC max.
Temperature Rating	0° to 122°F (32° to 50°C)
Mechanical Stock	45g for 2 ms
NEMA Rating	1,2,3,3R, 12, 13
Voltage Isolation	2000V Burst
Transient Noise	500V Spike
Electrostatic Field	8000V
Weldfield Immune	Resistive welding to 50 kA
	AC/DC
Radio Frequency Immunity	10V/m
Protection (IEC)	IP64

TOUCHDOWN™! PALM BUTTON ASSEMBLY CTL-555



When installing these capacitive-style palm buttons, the following information should be considered. Do not increase the sensitivity of these buttons. This will increase the sensing distance of the buttons. Increased sensitivity of a button can cause it to detect unwanted target materials. The sensitivity setting is arranged to sense the human touch at the button surface. These buttons will sense a high dielectric material, such as a human hand, through a low dielectric material like gloves or through most clothing. Be sure to mount the buttons so they will not activate the machine if someone leans against them or inadvertently touches them. This has to be a consideration during production operations, and also during machine setup and maintenance.



The power connection to Terminals 5 and 6 in the button **MUST** be a direct connection from the fused 120 V AC control power supply. Do not wire any other device in series with the power connection to Terminals 5 and 6.

(Continued on next page.)

SECTION 3—ASSEMBLIES

Palm Buttons

Articulated Assemblies

Low Voltage

ASSEMBLY PART NUMBER CTL-540 CONSISTING OF:

Part No.	Description	Quantity
CTC-751	Chrome Run/Inch Palm Button With Guard	2
CTK-003	Mounting Box (Double Hub)	1
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-541 CONSISTING OF:

Part No.	Description	Quantity
CTC-751	Chrome Run/Inch Palm Button With Guard	2
CTC-736	Red Emergency-Stop Palm Button	1
CTK-003	Mounting Box (Double Hub)	2
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-542 CONSISTING OF:

Part No.	Description	Quantity
CTC-751	Chrome Run/Inch Palm Button With Guard	2
CTC-736	Red Emergency-Stop Palm Button	1
CTC-727	Yellow Top-Stop Palm Button	1
CTK-003	Mounting Box (Double Hub)	3
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-544 CONSISTING OF:

Part No.	Description	Quantity
CTC-751	Chrome Run/Inch Palm Button With Guard	2
CTC-736	Red Emergency-Stop Palm Button	1
CTC-740	Yellow Return/Inch Up Palm Button	1
CTK-003	Mounting Box (Double Hub)	3
CTK-004	Mounting Box (Single Hub)	1



Contacts 1 NO and 1 NC

Minimum Voltage DC 5 V, 1 mA

Maximum Voltage DC 48 V, 0.1 A

Maximum Voltage AC 240 V, 0.4 A

Should only be used with resistive loads

Typical Operating Force 3.7 lb (center), 2.7 lb (perimeter)

(Continued on next page.)

Articulated Assemblies

Standard Voltage

ASSEMBLY PART NUMBER CTL-546 CONSISTING OF:

Part No.	Description	Quantity
CTC-746	Chrome Run/Inch Palm Button With Guard	2
CTK-003	Mounting Box (Double Hub)	1
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-547 CONSISTING OF:

Part No.	Description	Quantity
CTC-746	Chrome Run/Inch Palm Button With Guard	2
CTC-736	Red Emergency-Stop Palm Button	1
CTK-003	Mounting Box (Double Hub)	2
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-548 CONSISTING OF:

Part No.	Description	Quantity
CTC-746	Chrome Run/Inch Palm Button With Guard	2
CTC-736	Red Emergency-Stop Palm Button	1
CTC-727	Yellow Top-Stop Palm Button	1
CTK-003	Mounting Box (Double Hub)	3
CTK-004	Mounting Box (Single Hub)	1



ASSEMBLY PART NUMBER CTL-550 CONSISTING OF:

Part No.	Description	Quantity
CTC-746	Chrome Run/Inch Palm Button With Guard	2
CTC-736	Red Emergency-Stop Palm Button	1
CTC-740	Yellow Return/Inch Up Palm Button	1
CTK-003	Mounting Box (Double Hub)	3
CTK-004	Mounting Box (Single Hub)	1



Contacts 1 NO and 1 NC

Maximum Voltage AC 600 V AC/DC

Typical Operating Force 3.7 lb (center), 2.7 lb (perimeter)

(Continued on next page.)

SECTION 4—INSTALLATION

Palm Buttons

Mounting Considerations

Please remove all components from the shipping boxes and containers. Make sure that all the items for each assembly are present before attempting to install them. Install the mounting boxes (if provided) to the machine. They can also be installed on a special plate or apparatus. Make sure the nipple (not furnished) length is proper between the mounting boxes. If the palm buttons will be mounted on the same plane, make sure they are far enough apart. The operator should not be able to bridge the distance with the elbow and fingers of the same arm. Common practice is to mount them 27" apart from the insides of the palm buttons.

The standards and regulations do not require the palm buttons to be mounted on the same plane. For ergonomic reasons, you may want to mount them on an angle or almost back-to-back. The safety standards are mainly concerned that the buttons are separated to require the use of both hands and are at the proper safety distance. Sometimes these buttons may be included in special control bars, consoles or other enclosures. Simply mount the box where the operator can conveniently reach the buttons while keeping the safety requirements in mind.

For a guideline on properly mounting two-hand control on machinery, please reference ANSI B11.TR1 **Ergonomic Guidelines for the Design, Installation and Use of Machine Tools**. This standard can be purchased from AMT—The Association for Manufacturing Technology, 7901 Westpark Drive, McLean, Virginia 22102.

Finalizing Installation

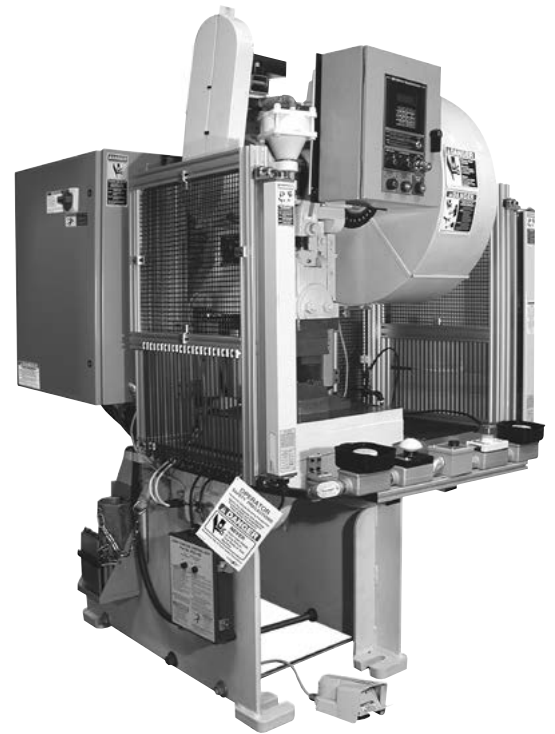
After the palm button mounting boxes have been installed, pull the necessary wires for connecting the palm buttons. Connect the wires to the appropriate contacts. The contact arrangement for all palm buttons is 1 NO and 1 NC.

When attaching the ring guards to the run/inch buttons, be sure each ring guard is placed on top of the button housing and then fastened with screws. The button head must be flush or recessed from the ring guard surface to protect the button from accidental operation. Red and yellow stop buttons should not have ring guards.

Red and Yellow Buttons

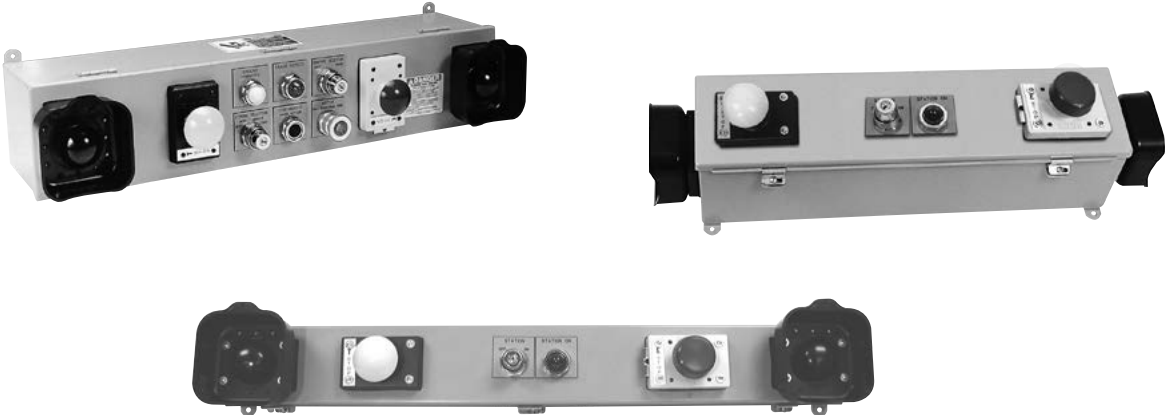
The red emergency-stop (E-stop) button must override any other control and should be conveniently mounted within easy access of the operator. On multiple operator machines, each operator should have an emergency stop. According to NFPA 79 and the ANSI B11 series standards, the red palm button must be wired so it shuts the motor off when it is pushed. It has a spring latch that keeps the button latched down when pushed. A release is incorporated in the latch. To release the button, push the latch in. This can also be used to attach a padlock for lockout/tagout.

The yellow top-stop button or the yellow return/inch up button is usually furnished if the machine has a continuous or automatic mode of operation. The yellow button stops the machine at top dead center or in the open position.



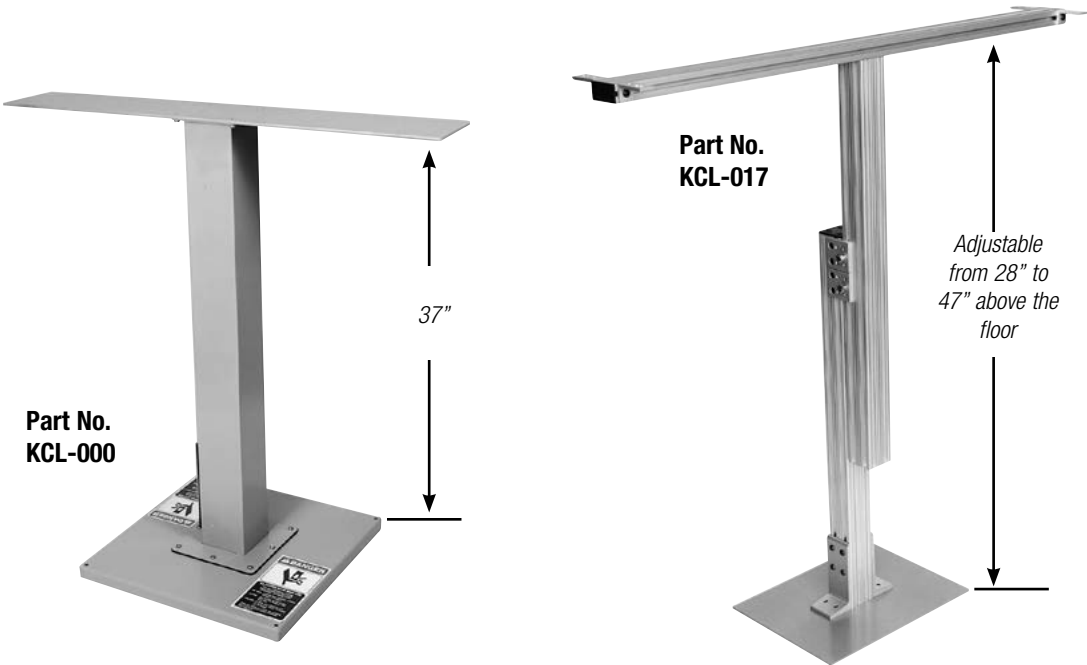
Control Bars

Control bars that include palm buttons shown in this manual are also available. Any control bar can include the red or yellow palm buttons as well as the prior-action push button. The following are examples of control bars.



Floor Stands

Palm button assemblies or control bars can be mounted on a floor stand. An optional 45° adapter can be added to the nonadjustable stand so the palm button assembly or control bar will sit at a 45° angle. An adjustable floor stand is also available.



(Continued on next page.)

SECTION 6—WARRANTY, DISCLAIMER, AND LIMITATION OF LIABILITY

Palm Buttons

Warranty, Disclaimer, and Limitation of Liability

WARRANTY

Rockford Systems, LLC warrants that this product will be free from defects in material and workmanship for a period of 12 months from the date of shipment thereof. ROCKFORD SYSTEMS LLC'S OBLIGATION UNDER THIS WARRANTY IS EXPRESSLY AND EXCLUSIVELY LIMITED to repairing or replacing such products which are returned to it within the warranty period with shipping charges prepaid and which will be disclosed as defective upon examination by Rockford Systems, LLC. This warranty will not apply to any product which will have been subject to misuse, negligence, accident, restriction and use not in accordance with Rockford Systems, LLC's instructions or which will have been altered or repaired by persons other than the authorized agent or employees of Rockford Systems, LLC. Rockford Systems, LLC's warranties as to any component part is expressly limited to that of the manufacturer of the component part.

DISCLAIMER

The foregoing Warranty is made in lieu of all other warranties, expressed or implied, and of all other liabilities and obligations on the part of Rockford Systems, LLC, including any liability for negligence, strict liability, or otherwise, and any implied warranty of merchantability or fitness for a particular purpose is expressly disclaimed.

LIMITATION OF LIABILITY

Under no circumstances, including any claim of negligence, strict liability, or otherwise, shall Rockford Systems, LLC be liable for any incidental or consequential damages, or any loss or damage resulting from a defect in the product of Rockford Systems, LLC.

SECTION 7—RETURN MATERIALS AUTHORIZATION REQUEST FORM

Palm Buttons

To return material for any reason contact the sales department in our organization at 1-800-922-7533 for an RMA Number. All return materials shipments must be prepaid. Complete this form and send with material to Rockford Systems, LLC, 5795 Logistics Parkway, Rockford, IL 61109. Make sure the RMA Number is plainly identified on the outside of the shipping container.

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____ Fax _____

Contact Name _____ Representative _____

Items Authorized To Return on R.M.A. No. _____ Original Invoice No. _____ Date _____

Part No.	Serial No.	Description
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Service Requested: Full Credit 25% Restocking Repair & Return Warranty Replacement

Reason for return (describe in detail):

Return Materials Authorized by _____ Date _____