

# Instruction Manual

## Chicken Switch® PB16 Pushbutton Actuator



**Model: PB-16**

\*\* Chicken Switch is a registered trademark of MarTek Limited.

## Table of Contents

---

1.0	Introduction.....	1
2.0	General Safety Information.....	1
2.1	Arc-Blast Hazards.....	1
2.2	Use of PB16 to Operate Close Button.....	2
2.3	Battery Hazards.....	2
2.4	Magnet Hazards.....	3
2.5	Pinch Point Hazards.....	3
3.0	Battery Information .....	4
3.1	Removing and Replacing the Batteries .....	4
4.0	Operation.....	5
4.1	Mounting Footprint and Adjustability Dimensions.....	5
4.2	Installing and Operating the PB16 Actuator.....	6
4.3	Removing the PB16 Actuator.....	9
5.0	Storage .....	9
6.0	Troubleshooting .....	10
7.0	Specifications .....	10
8.0	Contacting the Manufacturer .....	11

# **Use and Operation Instructions**

---

## PB16 Pushbutton Actuator

### 1.0 Introduction

The PB-16 is designed to remotely operate a single pushbutton that is flush or surface mounted. It is adjustable so that it can work in a variety of applications, but is only “universal” within certain dimensional and mechanical limits. See Sections 4.0 and 4.1 for more information on these limitations.

### 2.0 General Safety Information:

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- This equipment must only be installed by qualified personnel.
- Only use this equipment after reading and understanding all of the instructions contained in this manual.
- Follow electrical safe work practices. See NFPA 70E or CSA Z462

**FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN DEATH OR SERIOUS INJURY**

### 2.1 Arc-blast Hazards

The hazards associated with electrical arc-blasts are well documented. Studies conducted by numerous industries and professional organizations have sought to quantify the intensity of arc blast, the risks to personnel, and various methodologies for mitigating the risks.

Without a doubt, increasing the distance between the arc and a human is the single greatest favorable factor in reducing injuries. Remote operation of electrical equipment is not a cure-all, but rather one more tool available for protecting workers while they are performing electrical switching.

Using the PB16 remote operating device may not negate the need for additional personal protective measures. The user is ultimately responsible for evaluating each situation to determine if additional protective measures are needed.

## 2.2 Use of PB16 to Operate a CLOSE button

### WARNING

#### MISAPPLICATION OF SINGLE PUSHBUTTON ACTUATOR CAN BE HAZARDOUS

- **When closing a breaker with a single button actuator, always have a method available to remotely open the breaker quickly.**

The PB16 has been designed to operate a single pushbutton. It is particularly useful as an alternative method to trip a breaker where the trip coil inside the breaker has failed. In this situation, the PB16 is well suited to press the mechanical Trip button on the front the breaker from a safe distance.

However, when CLOSING a breaker, additional hazards are presented. There can be unexpected conditions arise that the breaker may need to be re-opened quickly. In this type of situation, it is also likely that re-opening the breaker will be particularly hazardous from an arc-flash potential perspective and MarTek does not recommend that a person be required to enter the Arc Flash Boundary in order to re-position the PB16 over the Trip button.

For this reason, the PB16 **MUST NOT** be used to close a breaker unless there are alternative means available to also remotely trip the breaker. This can be accomplished through the use of two PB16's or, preferably, utilize an actuator that is designed with the capability of operating both close and trip buttons without the need to re-approach the breaker.

## 2.3 Battery Hazards

### WARNING

#### THIS EQUIPMENT CONTAINS ALKALINE BATTERIES

- **All Federal and State regulations must be followed for disposal, transport, and shipment of the batteries and equipment.**
- **Do NOT attempt to recharge the batteries.**

The PB-16 is battery powered by standard AA batteries contained in the hand-held controller. The total maximum voltage is less than 12VDC. Although this is below the recognized threshold for a shock hazard, there can be significant energy stored in the battery pack. Care must be taken to properly handle the battery pack.

The batteries provided with the PB-16 are of the alkaline type. Care must be taken when handling the batteries and federal regulations must be followed when disposing of the batteries.

## 2.4 Magnet Hazards

### **⚠ DANGER**

**THIS EQUIPMENT UTILIZES A POWERFUL MAGNET TO HOLD IT ON THE CUSTOMER'S EQUIPMENT**

Care must be taken to prevent injury when handling the equipment

The magnet that is used on the PB-16 to attach it to the customer's equipment produces a strong magnetic field. Care must be taken when handling the PB-16. The following steps should be followed to assure safe handling:

- The magnet needs to be kept at a safe distance from all magnetic storage devices, electronics, credit cards, etc.
- The PB-16 should be stored with the magnet in the "OFF" position. If left in the "ON" position and brought close to ferromagnetic materials, there will be a sudden and powerful attraction that could present a pinch hazard or equipment damage.
- Do not use the PB-16 if the magnet has been damaged.
- Do not attempt to service the magnet. There are no user serviceable parts inside the device.
- The magnet contains PTFE lubricant. Contact MarTek Limited for MSDS information. Always keep the bottom of the magnet free of debris and rust. If needed, wipe with WD40 or light oil.

## 2.5 Pinch Point Hazards

### **⚠ DANGER**

**THIS EQUIPMENT HAS MOVING PARTS AND A MAGNET THAT PRESENT PINCH POINT HAZARDS**

Care must be taken to prevent injury when handling the equipment.

The PB-16 is a motorized device with moving parts and a strong magnet that will produce the opportunity for pinch point hazards. In order to prevent a pinch point injury, the following procedures should be followed:

- Be sure that the magnet is ALWAYS in the OFF position unless it is being held against a ferrous surface. The magnet is very strong and will be attracted to any nearby ferrous material and could unexpectedly cause a pinch point hazard.
- Turn the magnet to the OFF position before removing it from a ferrous material.
- Store the PB-16 actuator with the magnet in the "OFF" position.

## 3.0 Battery Information

### **⚠ WARNING**

**THIS EQUIPMENT USES 'AA' ALKALINE BATTERIES.**

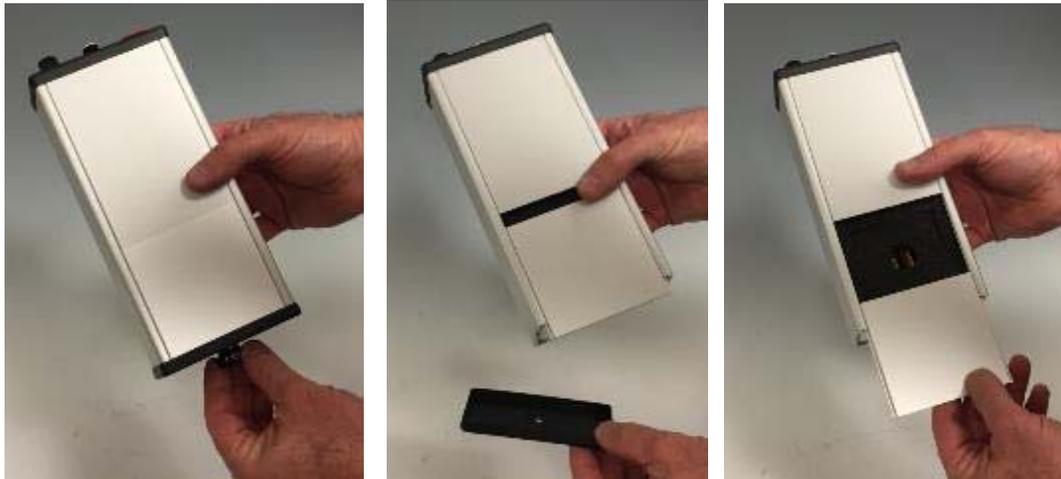
**DO NOT attempt to utilize batteries other than the type AA.**

The PB16 uses common alkaline AA batteries. Rechargeable AA batteries will also work as will Energizer Lithium AA batteries. Do not attempt to use batteries other than AA.

## 3.1 Removing and Replacing the Batteries

Remove the thumbscrew on the bottom of the hand-held controller and remove the battery cover to access the batteries. Install 8 – AA batteries.

Replace the battery cover and thumbscrew.





## 4.0 Use and Operation of the PB16

The PB-16 can be used to operate a single pushbutton in most applications.

Two significant factors that will affect whether it will work in your application are 1) is there enough clear space for the mounting magnet, and 2) is the surface suitable for attaching magnet to successfully hold the actuator in place. In determining suitability of the surface, one must consider the following:

- Is the mounting surface is ferrous?
- Is the mounting surface material thick enough? This is sometimes difficult to determine without experimentation. We have tested the magnet successfully on material as thin as 0.062" which should apply to most installations.
- Is the mounting surface clean, flat, and clear of any obstructions? A mounting surface that has depressions, raised areas, holes, labels, or is just dirty may not be able to allow the magnet to adequately attach.

For detailed information on the amount of space required to mount the actuator, see Section 4.1.

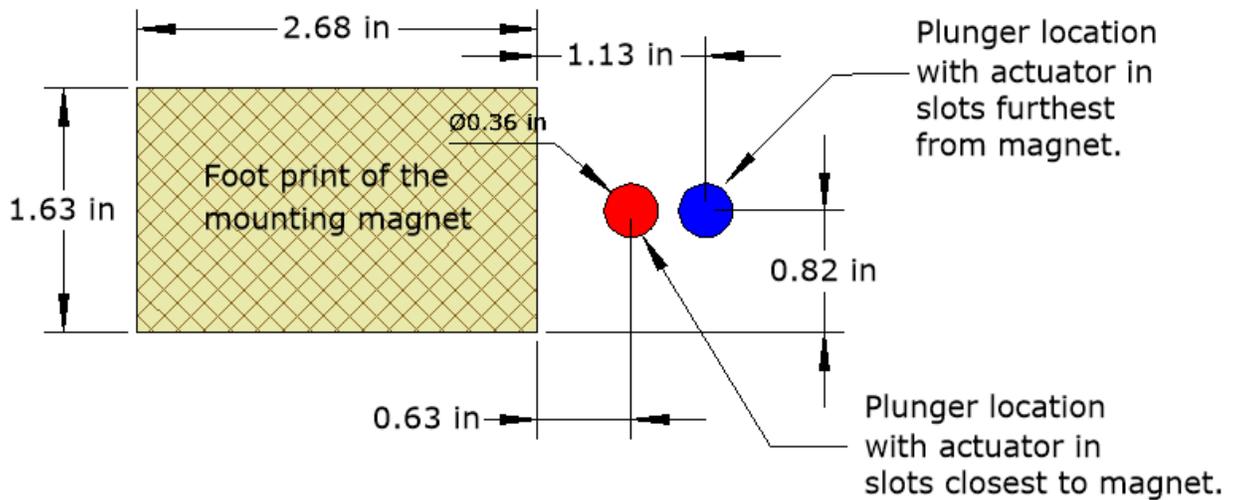
### 4.1 Mounting Footprint and Adjustability Dimensions

The PB-16 is designed to have some dimensional adjustability so that it can be adapted for use in various pushbutton layouts. The following dimensions are adjustable:

- Reach from the edge of the magnet
- Plunger height above the pushbutton
- Stroke is 2" maximum. Actuator will press with up to 22 lbs of force. The plunger will stop moving once 22 lbs is reached (stall) or it reaches its full 2" stroke. We have found that 22 lbs is adequate force requirement for most pushbuttons but also it not so great that it will damage your button or push the actuator off the door. Additional force pressures are available and may work

satisfactorily in your installation. If you feel that you have a unique application, please contact MarTek Limited for more information.

The following picture shows the foot print of the mounting magnet that attaches the PB-16 to your equipment. This foot print is the area that touches your equipment which is the area on your equipment that must be clear of anything that could obstruct mounting the PB-16.



With the plunger in the retracted position, the actuator can be infinitely adjusted so that the plunger is anywhere from 0.30" to as much as 1.40" above the magnet mounting surface (which is normally the surface of your equipment). The plunger can extend up to 2".

Therefore, in the lowest position (0.30"), the plunger can push into a recessed hole as far as 1.70". In the highest setting (1.40"), the plunger can push into a recessed hole as far as 0.60"

## 4.2 Installing and Operating the PB-16 Actuator

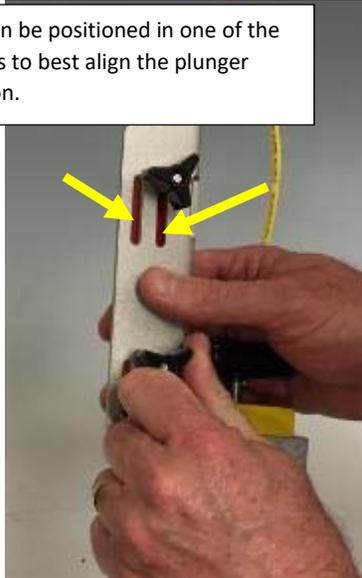
**STEP 1** – Be sure the magnet is in the OFF position.



**STEP 2** – Determine which slots that the plunger should be in for your application and adjust plunger to those slots. Also, determine the starting height of the plunger and tightened the thumbscrews.

Generally, if you have a button that extends from your switchgear door, you will need to slide the plunger to be closer to the 1.40" height so that it can clear the button. If you have a recessed button, you may find that the lower setting of 0.30" works best as it allows the most stroke below the switchgear surface. **See Section 4.1 for more information on mounting dimensions and adjustability.**

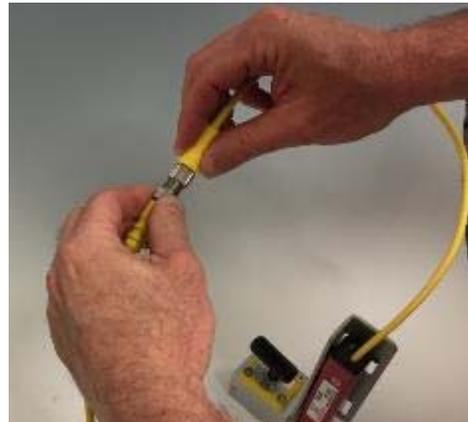
The actuator can be positioned in one of the two sets of slots to best align the plunger over your button.



Position the actuator within the slots to best align the plunger height to your button and tighten the thumbscrews.



**STEP 3** – Connect the cable to the hand-held controller and the other end to the PB-16 actuator.



**STEP 4** – Carefully position the PB-16 over your button, hold the magnet firmly against the switchgear door, and then rotate the magnet lever clockwise to the ON position.



**STEP 4** – At this point the actuator should be firmly attached to the switchgear door with the plunger tip over your button.



The magnet should be firmly against the switchgear door. If the magnet is not set firmly against the door, it will likely not have enough holding power to stay on the door when actuated.

**STEP 5** – When ready to operate, stand away at a safe distance, turn the power switch on the hand-held controller to the ON position, hold the “ENABLE” button, and push and hold the “ACTIVATE” button on the controller to extend the plunger. Release the button and the plunger will retract.

The green “Enabled” LED should light when the “ENABLE” button is held. The “Moving” LED should light when the actuator is being commanded to move. If the battery voltage is low, the yellow “Low Bat” LED will flash and the actuator will not operate.

The LED on the actuator will light “Red” when it is extending and “Green” when it is retracting.

## 4.3 Removing the PB-16 Actuator

**STEP 1** – Firmly hold onto the PB-16 actuator.

**STEP 2** – Turn the magnet lever counter-clockwise to the OFF position.

**STEP 3** – The actuator can now be moved away from the door.

**Do not attempt to remove the actuator without turning the magnet OFF. Doing so can be difficult and dangerous.**

## 5.0 Storage

The PB-16 is provided with a heavy duty carrying case that can be used to conveniently store the actuator and its necessary components. The carrying case and complete unit should be stored in a clean and cool environment.

If it is stored for longer than 30 days without being used, the batteries should be removed.

## 6.0 Troubleshooting

SYMPTOM	SOLUTION
The yellow LED flashes and the actuator won't operate.	The batteries in the PB-16 are low and must be replaced
The PB-16 won't stay on the switchgear door.	<ul style="list-style-type: none"> <li>• Magnet is not set to ON position</li> <li>• Magnet is not clean</li> <li>• Magnet mounting surface is not clean or clear of obstructions</li> <li>• The door you are mounting it to is not ferrous</li> <li>• The door you are mounting it to is made from metal too thin for the magnet to firmly hold.</li> </ul>

## 7.0 Specifications

Voltage	12VDC, (8) AA Alkaline Batteries (located in the hand-held controller)
Magnet	400lbs/181kg magnet strength, 20lbs/9kg sheer load.
Projected Life	10,000+ operations
Carrying case	<p>Manufactured by Pelican with the following features:</p> <ul style="list-style-type: none"> <li>Two Press &amp; Pull Latches</li> <li>Double-layered, Soft-grip Handle</li> <li>Two Padlockable Hasps</li> <li>Vortex® Valve</li> <li>Flush Powerful Hinges</li> <li>Lightweight Strong HPX® Resin</li> <li>Watertight</li> <li>Meets airline regulations for carry-on luggage</li> <li>Exterior Dimensions 16.20" x 12.70" x 6.60" (41.1 x 32.2 x 16.8cm)</li> </ul>
Weight	<p>PB-16 Actuator – 2.7lbs / 1.22kg</p> <p>Complete Kit with carrying case – 11lbs / 5.0kg</p>

## 8.0 Contacting the Manufacturer

For any questions, repairs, or parts replacement please contact the manufacturer using any of the methods below.

MarTek Limited  
4782 Chimney Drive  
Charleston, WV 25302

Phone: 304-965-9220  
Toll Free: 800-248-4958  
Fax: 304-965-9221

email: [sales@marteklimited.com](mailto:sales@marteklimited.com)