SA Development Press Guard 1.00
Manual

Disclaimer:

Many things can go wrong during the reloading process and it is entirely your responsibility to load ammunition safely using proper reloading precautions. Reloading ammunition requires complete attention to detail. While it is reassuring that the Press Monitor will monitor your press actions electronically, any electronic device can fail. In addition, the Press Monitor can only monitor part of the process and is unable to detect if the wrong load information or wrong powder is used. To be used exclusively as industrial test equipment. For these reasons, SA Development makes no guarantees and is not liable for any issues that may arise from its use or malfunction.

Table of Contents:

Introduction **3**
Feature Summary **4**
Press Sensor Installation **5**
Recommended Sensor Locations **7**
First Use **11**
Operation **12**
Firmware Release Log: **14**

Introduction

First, Thank you for purchasing a Press Guard. We hope you enjoy it for many years to come!

Included is:

Press Guard with attacher Power Adapter and Wiring Harness
3 Press Sensors
Press Light LED
Press Light Mounting Tube
Press Light Mounting Wire
Cable Ties
Double Stick Tape
8 Heat Shrink Tubes

Please email us if you have any questions or issues we can help with!

Feature Summary

Press Monitoring: Watches the actions taken on the press and alerts the user if any action is incorrect or out of sequence. This will alert the user to mistakes such as the press handle is not cycled fully up or fully down. It will also alert the user to the very serious mistake of forgetting to rotate the shellplate. **Press Monitoring can prevent the user from loading a double charged or squib round by catching and reporting these types of errors.**

Press Light: Supports a light to illuminate where the bullets are seated so the user can see that the proper amount of powder is present. This light is also used as an error indicator (blinks) for users who are hearing impaired.

Diagnostics: Allows the user to see which press sensors and active, tests the outputs (3 LED's, Press Light, Beeper), indicates the firmware version, and indicates the serial number.

Press Sensor Installation

Three press sensors are provided. The wiring harness provided has been prepared by stripping off the outer insulation to expose 4 twisted pairs:

Orange Pair = Press Handle Down Sensor (Stripe=Ground, Solid=Sense)
Blue Pair = Press Handle Up Sensor (Stripe=Ground, Solid=Sense)
Green Pair = Shellplate Rotate Sensor (Stripe=Ground, Solid=Sense)
Brown Pair = LED Press Light (Stripe=Cathode, Solid=+5V)

The provided press sensors are microswitches that detect when the press is in a specific position. The striped wire is ground and needs to be connected to the "C #1" on the microswitch. The solid is the sense wire and should be connected to the "NO #3" on the microswitch.

Sensors can be attached with the included strong double stick tape. It is a good idea to clean the location where the tape will be used with a degreaser such as rubbing alcohol so that tape will stick well. Let it dry. The double stick tape's adhesive strength is increased considerably via pressure, so it is highly recommended that once the switches are stuck to the press that they are clamped with a small clamp for an hour or two. A small C-clamp or one of those squeeze clamps will do the job nicely. Make sure you use some material to keep the clamp from marring the press surface if the clamp is metal.

Properly installed and clamped, the tape will do the job; however, sensors can also be attached with #2 56tpi socket head bolts and nuts/tapping. These are quite tiny and only require a very small 3/32" drilled hole. It is recommended that the double stick tape is still used to test switch location before drilling the holes and using some small bolts.

It is best to solder the microswitches to the wiring harness, but if the user does not have a soldering iron (they aren't much to buy), they can always strip off 1 inch of wire, run it through the eyelet, and wrap it around the eyelet again and again tightly. Finally cover it up with a heat shrink tube and heat the tube with a lighter to shrink the tubing.

The orange pair (handle down) must be connected to a sensor that is hit when the press handle is down. It might seem like detecting this using a microswitch located near the shellplate when it is at its fully up position is a good place, but I don't advise this because the shellplate moves very little when at the top end of travel even when the handle has quite a bit more movement to go. A far better place to put this sensor is on the bottom of the press handle itself. See the sensor locations section for some pictures of an excellent handle down sensor location.

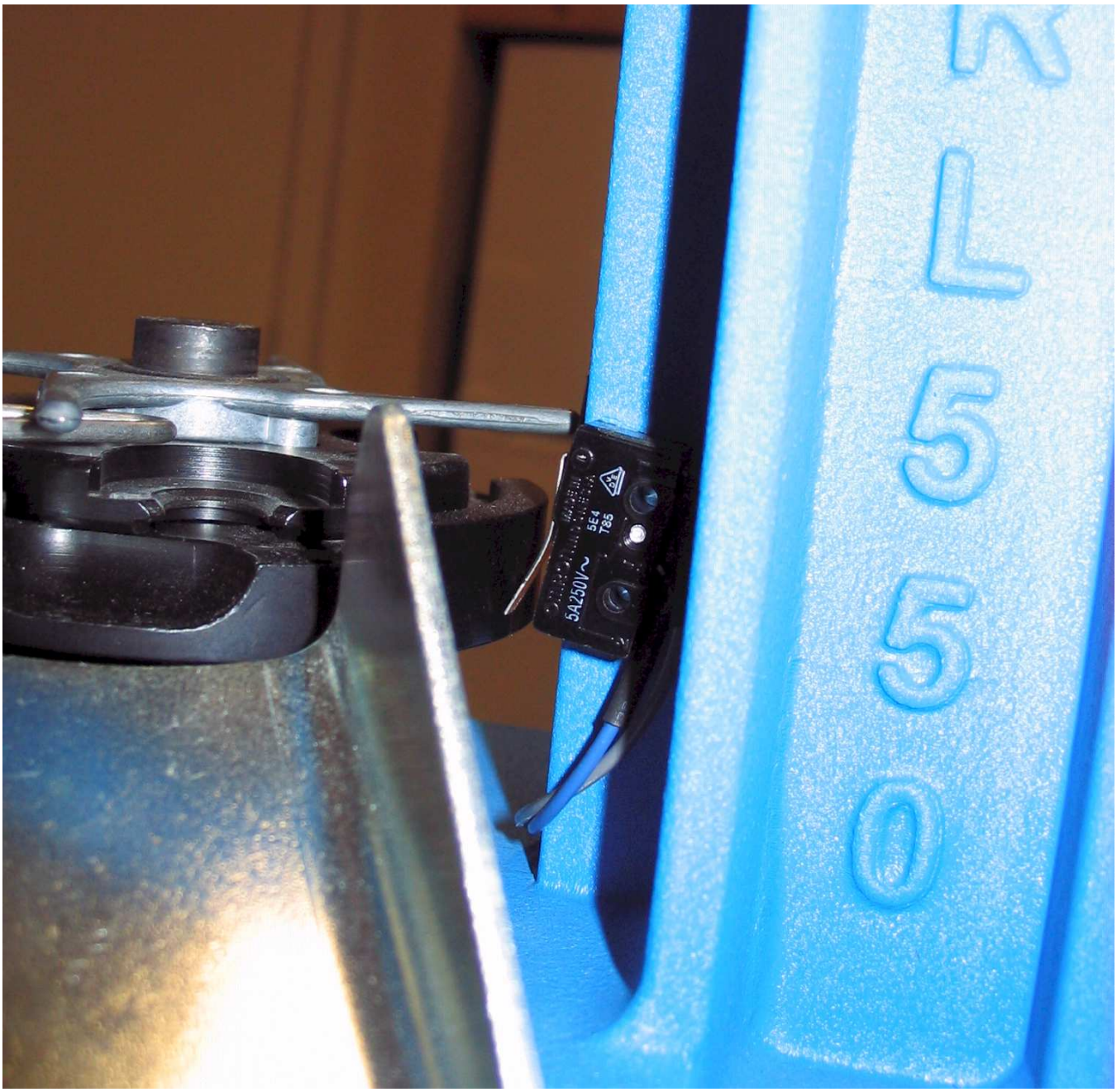
The blue pair (handle up) must be connected to a sensor that is hit when the press handle is up. A little care must be selected with this sensor because it needs to be hit both when the press is at rest with the handle up and it also needs to tolerate the handle being pushed forward to prime as well. The shellplate is a good place to detect this.

The green pair (rotate) detects rotation of the shellplate. This sensor looks different than the other two as it has been prepared by cutting half of the lever off. See the sensor location section for the best place to detect shellplate rotation.

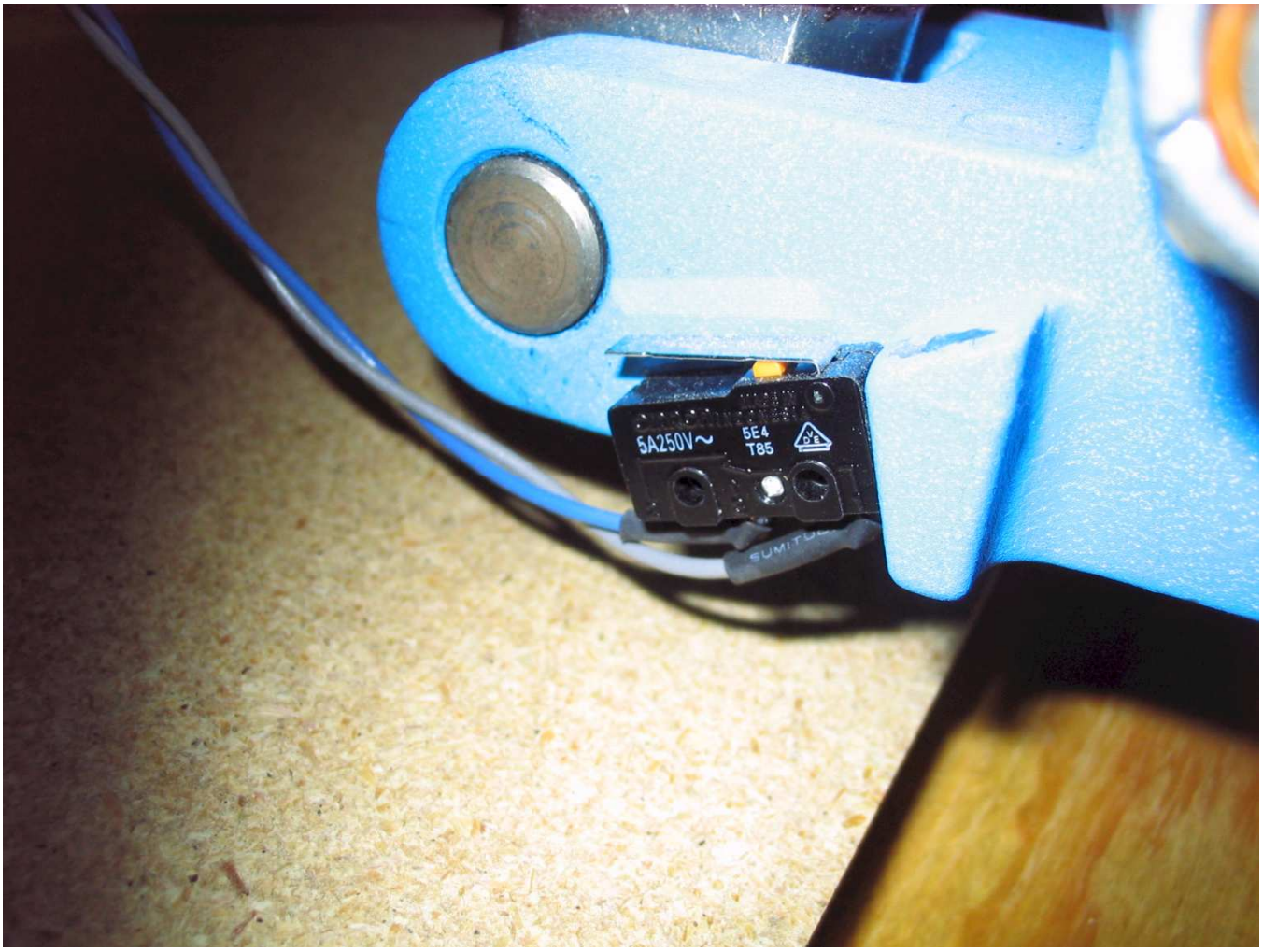
The Press Light should light up the charged case at the bullet seating station so the user can clearly see if about the correct amount of powder is present or not. **This is one of the most important reloading safety rules: look into each case before putting the bullet on it to make sure it has about the right amount of powder**. These parts are included: LED, Plastic Tube, and a couple of wire ties. The plastic tube is to block light coming from the side of the LED and focus it on the bullet seating station. Fasten some 16 gauge copper wire to the plastic tube and the other end of the wire to the press. The wire can be folded into a spring that allows the user to push it into the hole in the left rear top of the 550, or just attached with a cable tie. LED's have an anode and a cathode. Polarity is important for these two wires, the solid brown wire must go to the longer lead on the LED. The striped brown goes to the shorter lead. If the leads have been trimmed to the same length, looking at the base of the LED can indicate which lead is which: The larger metal surface inside = shorter lead = striped brown. **If the user does not implement the Press Light, make sure the solid brown wire is taped off and not allowed to connect to ground because it is +5V.**

The Press Monitor is very flexible in its inputs. A user can use the supplied microswitches, or even use a variety of other types of sensors: magnetic, proximity, optical, etc. Some of these sensor types will require a voltage and ground and both of these are provided in the wiring harness.

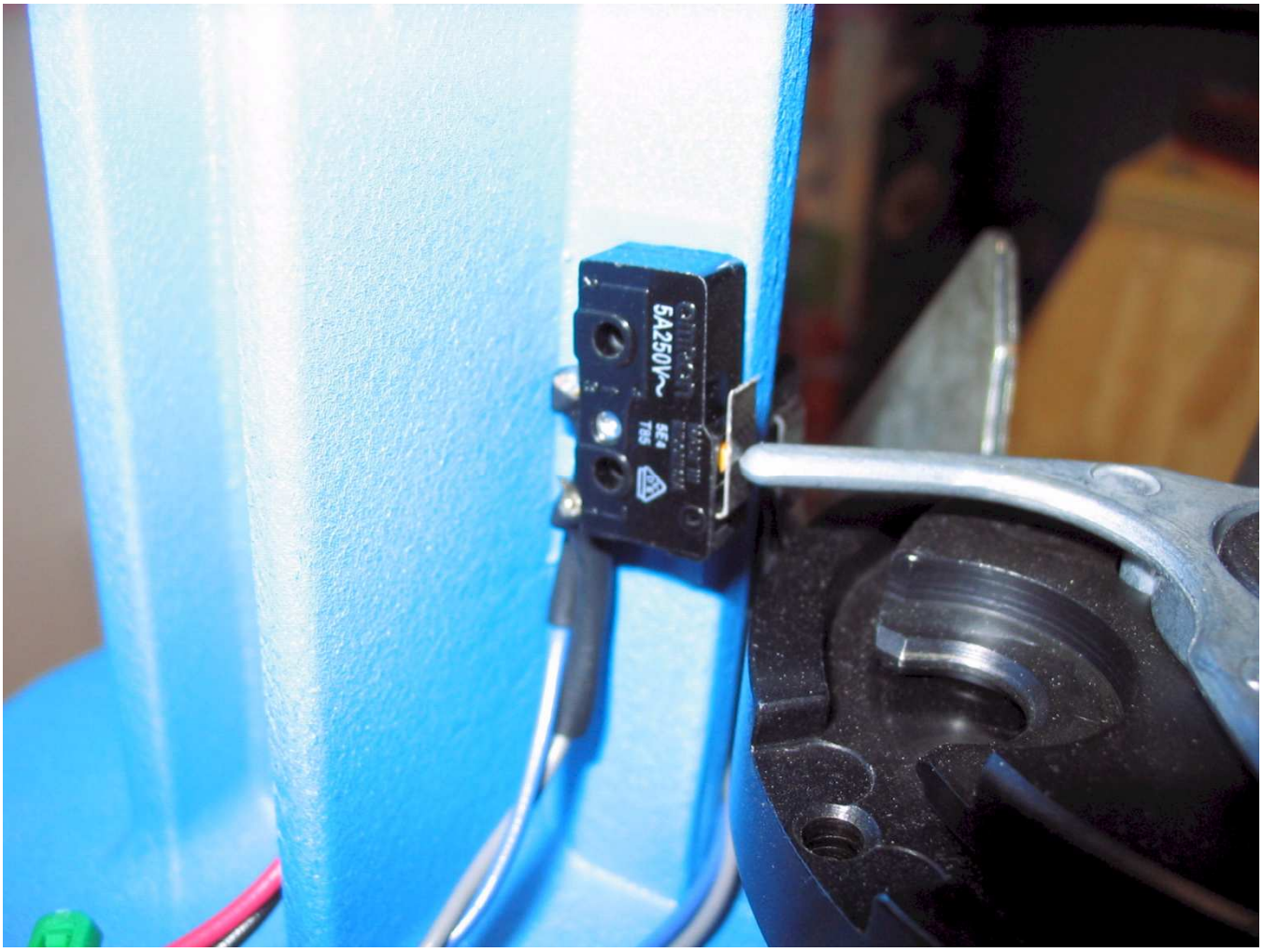
Recommended Sensor Locations



The best place to sense the handle up on the Dillon 550 is on the right side of the rear column. Note that this shellplate is at rest and that the end of the lever is near the bottom of the shellplate. This allows the shellplate to drop slightly further when priming is occurring and still the end of the lever will be activate and will not reach the top of the shellplate.

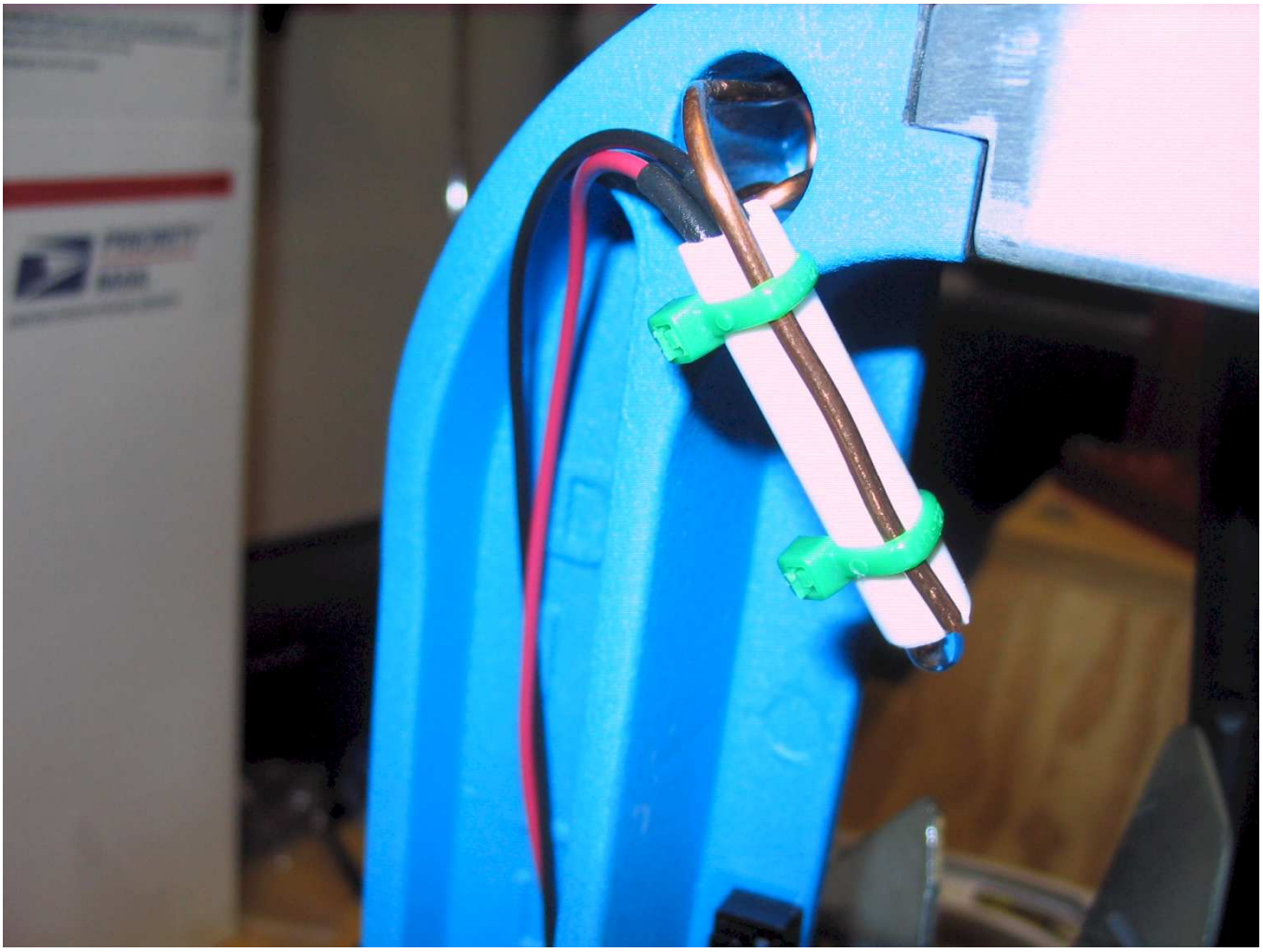


The handle down sensor senses when the handle is down and on the Dillon 550, the best place to sense this is on the handle linkage itself. Note that when the handle is fully down, there is no pressure on the switch itself, just that the switch lever is activated.



This is the switch that detects the star movement when the shellplate is rotated. It should be mounted on the left of the column so that the lever points up so that the star hits it as it goes by. Put the switch in place when the star is contacting it (like in the picture above). A very slight amount of counter clockwise skew helps. Just make sure that when the shellplate comes back down it is no where near hitting the end of the lever.

If you go with the bolted mounting method you will note that these two switches are directly across from each other. If you are using double stick tape this is no issue. With bolts you have a couple of options. Option 1 is to simply attach each switch with a single bolt and skip the two that overlap. This option works best with double stick tape because that will keep the switch from rotating and the bolt will keep it from coming off. Option 2 is to line up the overlapping holes with each other and use a single longer bolt to attach both switches. Use the rotation sensor to choose the location of this hole as it is the more sensitive switch to its position. The handle up sensor is more flexible and you can adjust its angle or even bend its lever to make it work properly.



This is an easy way to attach the Press Light on a Dillon 550. Cable tie the plastic tube to the copper and use the copper like a spring so that its tension will hole it in the hole on the top left side of the press. The copper can be adjusted to that the tube aims perfectly at station 3 where the bullet is seated. The LED simply hangs in the tube and you can see it somewhat protruding.

First Use

When first plugged in, the Press Guard will flash all lights and the beeper twice. Make note of this because if the user is in the middle of a reloading session and experiences the double beep/flash, this is an indicator that power was lost and that the unit will need to be turned back on.

After the double beep, the unit is in off mode. All LED's and the press light will be off. The user can leave it like this or unplug the power adapter if desired.

From OFF mode, there are two options:

Press the ignore/select/on button to turn the unit on and begin monitoring.
Hold the ignore/select/on button to enable diagnostics.

Since this is the first use, it is recommended that diagnostics are used to verify the press sensors and press light are connected properly. So, HOLD the ignore/select/on button for 3 seconds. There will be a triple beep/flash indicating that diagnostics mode has been entered.

There are four phases to diagnostics:

Input Testing. The left LED will light up when the press handle down sensor is active. The middle LED will light up when the press handle up sensor is active. The right LED will light up when the rotation sensor is active. This is a great way to test the sensors to verify they are all working correctly.

Output Testing. The Press Guard has 5 outputs, three LED's on the face, the press light, and the beeper. It will automatically cycle through each output enabling it for ½ second and then repeating.

It will first flash the firmware version on each LED. For example, each LED will flash the number of times for the version. The first version is 1.00 so the left LED will blink once and the middle and right LED's will not blink at all. It will repeat this over and over again.

It will first flash the serial number on each LED. Works the same way as the firmware except that it is blinking out the serial number.

To switch between each phase simply press the ignore/select/on button. When it switches to the next phase it will do a single beep/flash. Finally, to exit diagnostics simply hold the ignore/select/on button for 3 seconds and a triple beep/flash will confirm leaving diagnostics and return to off mode. The user could also unplug the unit, wait 5 seconds, and then plug the unit back in.

With the press sensors testing and working, it is time to turn it on and use it!

Operation

The Press Guard is very easy to use and only needs a single button to control it. If the user presses and releases the button this is a single press, but if the user holds the button for 3 seconds this is a held press.

Press the ignore/select/on button to turn the unit on.

A single beep/flash will indicate the unit is on and the press light will turn on.

If the state of the press is known (either handle up or handle down) it will immediately detect the mode and enter the monitoring state.

If the state of the press is unknown (such as the handle is not fully up or down, etc.) it will flash all three LED's until the press is put into a known state. Once the press is put into a known state, such as the press handle put up at rest, it will enter the monitoring state. This flashing and looking for a known state is called Press Detection and is used everytime the unit is turned on or cancelling an alert.

The monitoring state will show one of the three LED's on. The lit LED indicates which action the Press Guard expects next.

Pull Handle DOWN
Push Handle UP
ROTATE

This is an important time to mention that when first turned on, the Press Guard does not know if your next expected action is Pull Handle DOWN or ROTATE. This is why it is always recommended that you start at the beginning of a cycle because Press Guard will assume Pull Handle DOWN is next unless you press ignore/select/on to change it.

When the press handle is up, the next action could either be Pull Handle DOWN or ROTATE. If the user wishes to change which mode the Press Guard is in, simply press ignore/select/on and it will switch between them.

At this point the Press Guard will follow the users actions and as long as everything happens in the correct sequence, it will go through its LED's indicating the next action again and again.

If an error is made, it will go into alert mode. The beeper will beep and the press light will flash. The expected action LED will blink indicating that this was the action that was expected, but not detected.

It is important to note that in alert mode, the Press Guard is no longer monitoring. If the user sees their mistake and performs it while the unit is alerting, the unit will not know this. It is recommended that the user first clears the error by pressing ignore/select/on and then perform the action that was missed.

For example; if the user forgets to rotate and begins to pull the press handle when the unit expected a rotate, the unit will go into alert mode and the ROTATE LED will blink. The user should note the alert, realize their mistake, hopefully before they even partially activated the powder measure. In this case, they can return the handle up and press ignore/select/on. Press Detection will occur and return the unit back to ROTATE. Then the user can rotate and continue.

A mistake can happen if the user realizes their mistake, but corrects it while the unit is alerting. In this case, let's say the user returns the handle back up and then rotates before hitting ignore/select/on to cancel the alert. The Press Guard will not see the rotate and when they finally do press ignore/select/on it will indicate ROTATE because that was the action it expected but did not get. In this case the user can simply press ignore/select/on to switch to Pull Handle DOWN, but this brings up an important point: **The Press Guard only knows the sequence of the actions, but at startup or after an alert, the user needs to verify that the next expected action is correct based on the state of the shellplate.**

Finally to turn the unit off, simply hold the ignore/select/on button for 3 seconds and the unit will turn off the press light and all LED's and enter off mode.

Firmware Release Log:

Version 1.00:

Initial release.