

Press Monitor III

SA Development Tech LLC
Version 1.31 *Preliminary Manual*

```
Press Monitor III
SA Development
Tech LLC
1.30 (s/n PM000400)
```

```
Pull Handle Down
127 Rnds 0:34 Time
373 RmRd 1:06 RmTm
271 RPHc 223 RPHT
```

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.

All press names are the trademark of their respective manufacturer.



Table of Contents:

1. Introduction	3
2. What's New in the Press Monitor III	4
3. Main Features	5
4. Press Sensor Installation	6
5. Dillon 550 Sensor Locations	9
6. Dillon 650 Sensor Locations	11
7. Press Configuration	13
8. First Use	18
9. Test Sensors	21
10. Button Usage	22
11. Errors	24
12. Statistics	26
13. Reminders	28
14. Specify Session	30
15. Setup	33
16. Factory Diagnostics	37
17. Factory LCD Contrast	38
18. Factory Reset	39
19. Version Notes	40

1. Introduction

Thank you for purchasing a Press Monitor III. We hope you enjoy your monitor for many years to come!

Included items:

Press Monitor III Main Unit
Power Supply
Power Supply Cable
Wiring Harness
4 Press Sensors
Press Light LED
Press Light Mounting Tube
Press Light Mounting Wire
Cable Ties
Double Stick Tape
Heat Shrink Tubes

The Press Monitor III uses USB for power, but it does not have USB communication capability. It is recommended that you use the provided USB power adapter. While it should work perfectly fine if you plug it into a PC or notebook for power, **SA Development is not liable for any issue that arises from doing so.** Another issue is that sometimes the USB port from a PC or notebook is not well regulated and you might see the backlight fluctuate as the voltage fluctuates.

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

2. What's New in the Press Monitor III

This Press Monitor III is about half the size of the Press Monitor II and will take up less bench space and be easier to mount.

Two case colors are now available, black and translucent blue as pictured on the top page.

It has an improved 4 line display.

Press monitoring has been enhanced to support up to 4 sensors. This now makes it possible to sense up, down, rotate, and prime on a manual indexing press like the Dillon 550. For other presses like the Dillon 650, 1050, or Hornadly LNL, the additional sensor could be used as an error sensor, that is a sensor that instantly generates an error. Press monitoring has also been enhanced to allow resuming from more states.

More press configurations have been added, and a new single letter press configuration makes configuration easier.

Sensor testing is now on a single screen and easily accessible by holding the minus button.

Reminders no longer interrupt instructions

Turret press support has been added.

3. Main Features

Press Monitoring: Watches press actions 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, or the user did not push forward to prime, or on manual indexing presses such as the Dillon 550 if the user forgot to rotate. **Press Monitoring can prevent the user from loading a double charged or squib round by catching and reporting these types of errors.**

Session Statistics: Up to eight statistics are available for the current session: Loaded Rounds (Rnds), Press Time (Time), Rounds per Hour Current (RPHc, last 3-15 rounds), Rounds per Hour Total (RPHT), Remaining Rounds (RmRd), Remaining Press Time (RmTm), Powder Measure Grains (PmGr), and Powder Measure Rounds (PmRd). Six of these can be displayed at any given time and if both the remaining and powder features are enabled, it will rotate between them automatically.

Total Press Statistics: Stores and displays three total press statistics: Total Rounds, Total Press Time, and Total Rounds per Hour.

Press Light: Illuminates the bullet seating station so the user can see that the proper amount of powder is present. Also used as indicator and will flash in an error situation or flicker when in ignore mode.

Reminders: Five built in reminders alert the user to conditions such as powder low, press maintenance due, take a break, operating too fast, a specific interval such as 95, 195, 295 that could be used as a resupply primers reminder. Reminders only occur on the bottom 2 lines of the display so a user can see them, but work right through them without interruption.

Powder Low Reminder: Powder tracking keeps track of the powder in the powder measure and issues a reminder if the level falls below a specific weight.

Press Maintenance Reminder: Keeps track of when maintenance is due on the press. The user can choose to monitor usage by rounds or hours. (optional)

Interval Reminder: Can be configured to issue a reminder every 5-1000 rounds. If set to 100 rounds for example, it will remind the user at 100, 200, 300, 400, and so on. Also has a leadoff feature so can make the alert 95, 195, 295, etc.

Break Reminder: Reminds the user to take a break periodically. Like all reminders it can be disabled.

RPHc Too Fast Reminder: Reminds the user if he is going too fast and exceeding a specific RPH.

Setup: One of the best features of the Press Monitor is that its easy to use menus are that are consistent and simple.

Test Sensors: Makes it easy to confirm that your sensors are setup properly and working. A new screen for testing shows all sensors at one time.

Easy To Use: Do not be overwhelmed by all the features; Usage is as simple as turning on the unit and beginning loading.

4. Press Sensor Installation

Step 1 – Understanding Press Sensors:

The next two chapters have pictures that show the best locations for these sensors on Dillon 550 and Dillon 650 presses.

The **Press Handle Up Sensor** must be positioned so that it is hit when the press handle is up. Care must be taken with this sensor because it needs to be active both when the press handle is up at rest and also when the press handle is being pushed forward to prime as well (if used on a press that primes this way). So it must be active in both states (up at rest and pushed forward to prime). Make sure it is mounted in a way that it is not crushed when the user pushes forward to prime.

The **Press Handle Down Sensor** must be positioned so that it is hit when the press handle is down. The best place to sense this is usually on the press handle somewhere because it moves a lot where other parts of the press move very little when the handle is down near the end of its travel.

The **Rotate Sensor** is only needed for manual indexing presses. The Press Rotate Sensor must be positioned so that it is hit when the press is indexed. The most common press this will be used with is the Dillon 550 and a press sensor is provided with half of the lever is cut off. This can be positioned so that the 550's star will press the lever as it goes by when being rotated.

The **Priming Sensor** can be implemented or not implemented. Unlike the Press Handle Up Sensor which, this sensor should only be hit or activated when the press handle is pushed forward to prime.

Step 2 – Electrical connections:

The wiring harness provided has been prepared by stripping off the outer insulation to expose 4 twisted pairs, orange, blue, green, and brown. Each pair has a solid color wire and a white wire with a corresponding colored stripe.

The brown pair is always for the press light LED. The solid brown wire is +5V (connect it to the anode or longer lead on the LED). The white wire with brown stripe is the cathode (connect it to the shorter lead on the LED).

This leaves the orange, blue, and green pairs which are used for press sensors. The solid colored wire in each pair is always a sense wire which is used to sense whether a switch is active or not. The white with colored stripe wire is usually a ground wire. When you connect a sense wire to a ground wire, you activate the sensor.

There are two wiring types, a 3 sensor mode and a 4 sensor mode. The 3 sensor mode is easier because each sensor has its own wire pair, each pair with a sense wire and a ground wire. The 4 sensor mode is more complicated because the green pair is split into two sense wires. The white with green stripe wire is no longer a ground, but used as the 4th sense wire. Both the green wire and white with green stripe wire still need to be connected to a ground to be activated, but ground can be easily jumpered from the white with orange or blue stripe wires. The next 3 chapters will detail which wires are used for which sensors.

The provided press sensors are microswitches that detect when the press is in a specific position. The sense wire and should be connected to the "NO #3" on the microswitch (NO for normally open or disconnected when the switch is not pressed). The ground wire should be connected to the "C #1" on the microswitch (C is for common).

The switches can be soldered on the press or ahead of time, whichever is easier. It makes sense to bend the contacts on the back of the switch at an angle if it is put somewhere with limited clearance (like the Dillon 550 column). **Be sure not to bend them back and forth repeatedly** because they are copper and a few times back and forth and they will break off. Make sure the shrink wraps are put on the wire ahead of time so they can be slid down over the joint and shrunk into place with a lighter.

Step 3 – How to attach the sensors to the press:

Strong 3M double stick is provided for attaching the sensors to the press. It works very well for this as long as the surfaces of the press and sensor are prepared properly. The 3M technical contact recommended that both sides of the tape are completely "wetted" against the surface they are bonding to. He said to imagine putting a piece of transparent tape down on a table and then pressing it all around to make sure it is completely sealed against the table with no air gaps.

Press preparation: Clean the press surfaces where the tape will connect using a paper towel or q-tip and rubbing alcohol. It won't hurt to repeat with a new paper towel or q-tip again to make sure the surfaces are very clean and free of oil. Allow the rubbing alcohol to evaporate completely.

Sensor preparation: The side of the sensor that will attach to the press should be filed (preferably with a flat file) to give a nice flat rough surface without raised lettering, etc. The rough surface provides a better grip for the tape than the shiny factory surface. Follow up with the same cleaning with rubbing alcohol that was done on the press.

Oversize the tape slightly compared to the sensor size, this will give the tape more grip on the press surface. The sensors are a little smaller than 7/16" x 13/16". Cut the tape to 11/16" x 1 1/16" as this will give a 1/8" edge all around the switch to grab the press a little more. It may be necessary to do 9/16" x 1 1/16" for the Dillon 550 column (rotate and handle up sensors) since it is only 9/16" wide.

Figure out close to where the sensor will be on the press and figure out where to stick the tape. Stick the tape to the press first so it can be firmly pressed into the press surface. Get a paper towel and rub it into the press from all angles for the best bond. It would probably be easier to put the tape on the sensor first, but the press surface is textured and more difficult to bond to so doing it this way allows the tape to bond the best it can to the press surface.

Once the tape is pressed in good, remove the liner and lightly stick the sensor to it to test it. Don't worry if the sensor isn't centered on the tape as long as it is where it needs to be. Test it to make sure it is activated when it should be and not when it shouldn't by actuating the press. When it is in the right spot, press it firmly and give it a little push in all directions just to make sure it is stuck well. Clamp the sensor using a small clamp. Use some cardboard on the other side of the clamp so it doesn't mar the press. There is no need to apply a ton of pressure, just a little bit. The goal is to make sure it stays firmly put during the curing time and a clamp providing that little pressure will help.

Curing time is 72 hours according to 3M, but it will be pretty good in 24 hours. It is really tempting to get started and use the Press Monitor immediately, but allowing the tape to cure properly will really ensure a good long term bond.

Properly installed and clamped, the tape works very well. Experience has shown that a sensor will either stay on until you want it to come off, or it will come off fairly quickly usually in the first few days. If it does come off, resticking it with the same tape is sure to come off again although it may be the thing to do to finish a reloading session. If that happens, start over and clean the surfaces again and use new tape. 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. Even a mix of using the tape to keep the position of the switch fixed and a single #2 56tpi socket head bolt to keep it tight to the press can be a great compromise.

Step 4 – Press light attachment:

The Press Light will 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.** Attach the tube to the wire with the wire ties and feed the LED through the center of it. The other side of the wire needs to be attached to the press. On the 550 it can be folded into a spring that fits inside the hole in the left rear side of the press. 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 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 DC and will short to ground if allowed to.**

5. Dillon 550 Sensor Locations

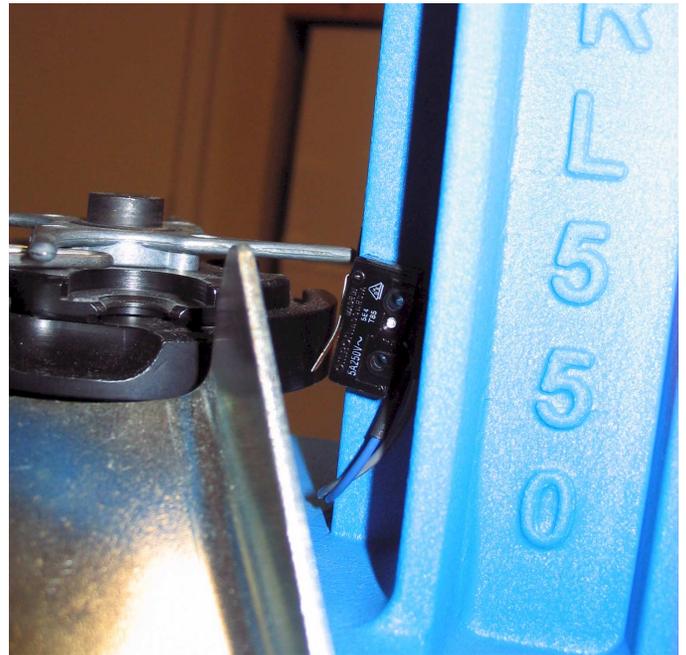
You can use any of these configurations for this type of press. The most common one to use for just up/down/rotate is configuration I. If you want priming sensing as well, configuration K. More details about configurations are in chapter 7.

Config	Description	Movement Sensors	Error Sensors	Orange	Blue	Green	White w/Green Stripe
A	Single Counting Only 3 Sensor Wiring	1	2	Error 1	Handle Up	Error 2	
B	Single Counting Only 4 Sensor Wiring	1	3	Error 1	Handle Up	Error 2	Error 3
I	Manual Indexing 3 Sensor Wiring	3	0	Handle Down	Handle Up	Rotate	
J	Manual Indexing 4 Sensor Wiring	3	1	Handle Down	Handle Up	Rotate	Error 1
K	Manual Indexing+Priming 4 Sensor Wiring	4	0	Handle Down	Handle Up	Rotate	Prime

Press Handle Up Sensor: 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 without the bottom of the lever coming over the top of the shellplate edge.

This sensor must be active both at rest and when pushed forward to prime.



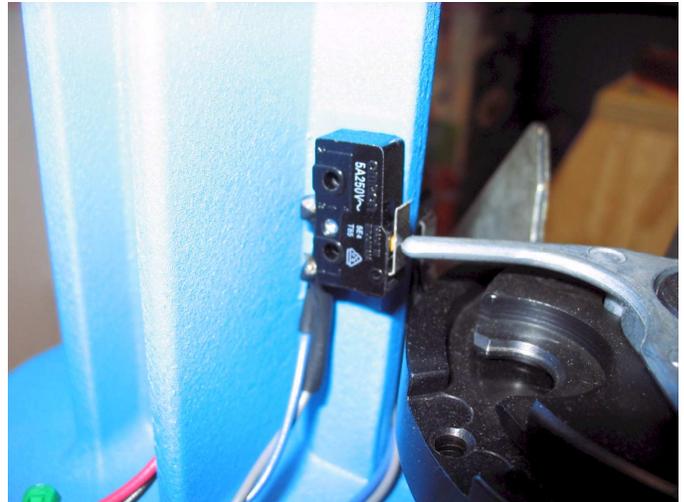
Press Handle Down Sensor: The best place to sense the handle down on the Dillon 550 is on the handle linkage itself.

Note that when the handle is fully down, there is no pressure on the switch itself, just that the switch lever is activated.

Press Rotate Sensor: The best place to sense rotation on the Dillon 550 is on the left side of the rear column.

The switch for this has been cut so that only half of the lever is left.

It 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 nowhere near hitting the end of the lever.

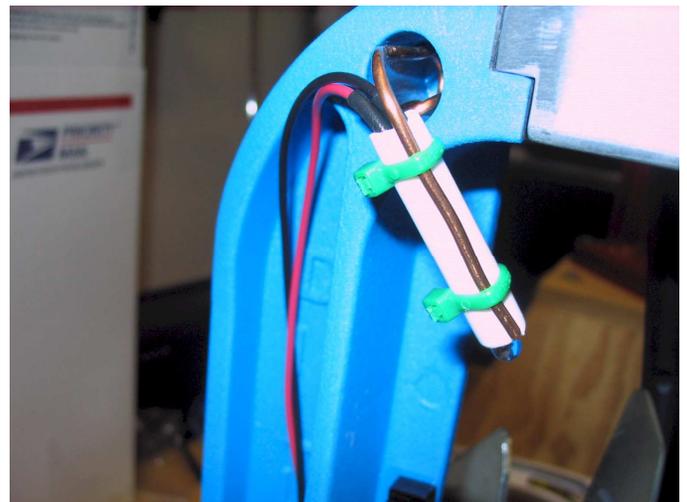


Press Priming Sensor: The best place to sense priming on the Dillon 550 is on the right side of the rear column.

You can just mount it right next to the Press Handle Up sensor.

***UPDATE PICTURE TO PRIMING SENSOR ***

Press Light: The best place to mount the press light on the Dillon 550 is this nice hole on the left side near the toolhead. Cable tie the plastic tube to the copper folded wire (now in a matching blue) and use the copper like a spring so that its tension will hold 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, in the picture it somewhat protruding.



6. Dillon 650 Sensor Locations

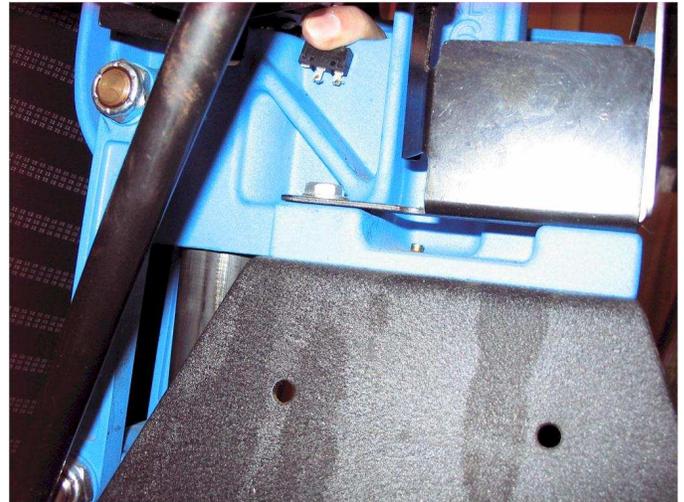
You can use any of these configurations for this type of press. The most common one to use for just up/down is configuration E. If you want priming sensing as well, configuration G. More details about configurations are in chapter 7.

Config	Description	Movement Sensors	Error Sensors	Orange	Blue	Green	White w/Green Stripe
A	Single Counting Only 3 Sensor Wiring	1	2	Error 1	Handle Up	Error 2	
B	Single Counting Only 4 Sensor Wiring	1	3	Error 1	Handle Up	Error 2	Error 3
E	Auto Indexing 3 Sensor Wiring	2	1	Handle Down	Handle Up	Error 1	
F	Auto Indexing 4 Sensor Wiring	2	2	Handle Down	Handle Up	Error 1	Error 2
G	Auto Indexing+Priming 3 Sensor Wiring	3	0	Handle Down	Handle Up	Prime	
H	Auto Indexing+Priming 4 Sensor Wiring	3	1	Handle Down	Handle Up	Prime	Error 1

Press Handle Up Sensor: The best place to sense the handle up on the Dillon 650 is on the right back side of the press where there is a nice flat surface to mount the sensor. It should be mounted so that the lever is pointing towards the user. There is something that comes down with the shellplate that will hit it in this location.

This sensor must be active both at rest and when pushed forward to prime.

It is recommended that the lever is bent in the middle perhaps 30 degrees so that it extends upward a little more.



Press Handle Down Sensor: The best place to sense the handle down on the Dillon 650 is on the right side of the press where the handle linkage travels.

Note that when the handle is fully down, there is no pressure on the switch itself, just that the switch lever is activated.



Press Priming Sensor: The best place to sense the handle up on the Dillon 650 is on the right back side of the press where there is a nice flat surface to mount the sensor. It should be mounted so that the lever is pointing towards the user. There is something that comes down with the shellplate that will hit it in this location.

You can just mount it right next to the Press Handle Up sensor.

***UPDATE PICTURE TO PRIMING SENSOR ***

7. Press Configuration

The Press Monitor III is very flexible in how you can connect it to your press. To make this simpler, a new letter system (A-K) is used to identify which configuration you are using.

See step 2 in chapter 4 above for the differences between 3 sensor mode and 4 sensor mode.

Complete Configuration Table:

Config	Description	Movement Sensors	Error Sensors	Orange	Blue	Green	White w/Green Stripe
A	Single Counting Only 3 Sensor Wiring	1	2	Error 1	Handle Up	Error 2	
B	Single Counting Only 4 Sensor Wiring	1	3	Error 1	Handle Up	Error 2	Error 3
C	Turret Counting Only 3 Sensor Wiring	1	2	Error 1	Handle Up	Error 2	
D	Turret Counting Only 4 Sensor Wiring	1	3	Error 1	Handle Up	Error 2	Error 3
E	Auto Indexing 3 Sensor Wiring	2	1	Handle Down	Handle Up	Error 1	
F	Auto Indexing 4 Sensor Wiring	2	2	Handle Down	Handle Up	Error 1	Error 2
G	Auto Indexing+Priming 3 Sensor Wiring	3	0	Handle Down	Handle Up	Prime	
H	Auto Indexing+Priming 4 Sensor Wiring	3	1	Handle Down	Handle Up	Prime	Error 1
I	Manual Indexing 3 Sensor Wiring	3	0	Handle Down	Handle Up	Rotate	
J	Manual Indexing 4 Sensor Wiring	3	1	Handle Down	Handle Up	Rotate	Error 1
K	Manual Indexing+Priming 4 Sensor Wiring	4	0	Handle Down	Handle Up	Rotate	Prime

Configuration A:

This configuration is used for counting only (no monitoring). It will drive all of the other features of the Press Monitor including statistics and reminders.

It uses the simpler 3 sensor wiring.

Orange pair → Error 1

Blue Pair → Handle Up

Green Pair → Error 2

Brown Pair → Press Light (solid brown wire is anode (LED longer lead), white wire with brown stripe is cathode)

Configuration B:

This configuration is used for counting only (no monitoring). It will drive all of the other features of the Press Monitor including statistics and reminders.

It uses the 4 sensor wiring. The green pair are split into two independent sense wires. To activate them, they need to use a ground wire from the orange or blue pair (white wire with orange or blue stripe).

Orange pair → Error 1

Blue Pair → Handle Up

Green Wire → Error 2

White Wire with Green Stripe → Error 3

Brown Pair → Press Light (solid brown wire is anode (LED longer lead), white wire with brown stripe is cathode)

Configuration C:

This configuration is used for counting only (no monitoring) on turret style pressed where it takes multiple press cycles for a single round. It will drive all of the other features of the Press Monitor including statistics and reminders.

It uses the simpler 3 sensor wiring.

Orange pair → Error 1

Blue Pair → Handle Up

Green Pair → Error 2

Brown Pair → Press Light (solid brown wire is anode (LED longer lead), white wire with brown stripe is cathode)

Configuration D:

This configuration is used for counting only (no monitoring) on turret style pressed where it takes multiple press cycles for a single round. It will drive all of the other features of the Press Monitor including statistics and reminders.

It uses the 4 sensor wiring. The green pair are split into two independent sense wires. To activate them, they need to use a ground wire from the orange or blue pair (white wire with orange or blue stripe).

Orange pair → Error 1

Blue Pair → Handle Up

Green Wire → Error 2

White Wire with Green Stripe → Error 3

Brown Pair → Press Light (solid brown wire is anode (LED longer lead), white wire with brown stripe is cathode)

Configuration E:

This configuration is used for monitoring up and down on auto indexing presses.

It uses the simpler 3 sensor wiring.

Orange pair → Handle Down

Blue Pair → Handle Up

Green Pair → Error 1

Brown Pair → Press Light (solid brown wire is anode (LED longer lead), white wire with brown stripe is cathode)

Configuration F:

This configuration is used for monitoring up and down on auto indexing presses.

It uses the 4 sensor wiring. The green pair are split into two independent sense wires. To activate them, they need to use a ground wire from the orange or blue pair (white wire with orange or blue stripe).

Orange pair → Handle Down

Blue Pair → Handle Up

Green Wire → Error 1

White Wire with Green Stripe → Error 2

Brown Pair → Press Light (solid brown wire is anode (LED longer lead), white wire with brown stripe is cathode)

Configuration G:

This configuration is used for monitoring up, down, and priming on auto indexing presses.

It uses the simpler 3 sensor wiring.

Orange pair → Handle Down

Blue Pair → Handle Up

Green Pair → Prime

Brown Pair → Press Light (solid brown wire is anode (LED longer lead), white wire with brown stripe is cathode)

Configuration H:

This configuration is used for monitoring up, down, and priming on auto indexing presses.

It uses the 4 sensor wiring. The green pair are split into two independent sense wires. To activate them, they need to use a ground wire from the orange or blue pair (white wire with orange or blue stripe).

Orange pair → Handle Down

Blue Pair → Handle Up

Green Wire → Prime

White Wire with Green Stripe → Error 1

Brown Pair → Press Light (solid brown wire is anode (LED longer lead), white wire with brown stripe is cathode)

Configuration I:

This configuration is used for monitoring up, down, and rotation on manual indexing presses.

It uses the simpler 3 sensor wiring.

Orange pair → Handle Down

Blue Pair → Handle Up

Green Pair → Rotate

Brown Pair → Press Light (solid brown wire is anode (LED longer lead), white wire with brown stripe is cathode)

Configuration J:

This configuration is used for monitoring up, down, and rotation on manual indexing presses.

It uses the 4 sensor wiring. The green pair are split into two independent sense wires. To activate them, they need to use a ground wire from the orange or blue pair (white wire with orange or blue stripe).

Orange pair → Handle Down

Blue Pair → Handle Up

Green Wire → Rotate

White Wire with Green Stripe → Error 1

Brown Pair → Press Light (solid brown wire is anode (LED longer lead), white wire with brown stripe is cathode)

Configuration K:

This configuration is used for monitoring up, down, rotation, and priming on manual indexing presses.

It uses the 4 sensor wiring. The green pair are split into two independent sense wires. To activate them, they need to use a ground wire from the orange or blue pair (white wire with orange or blue stripe).

Orange pair → Handle Down

Blue Pair → Handle Up

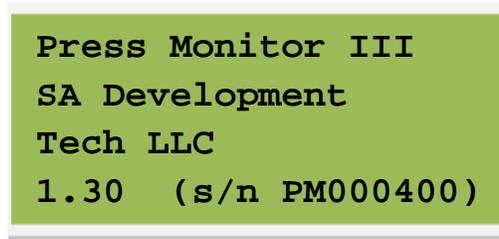
Green Wire → Rotate

White Wire with Green Stripe → Prime

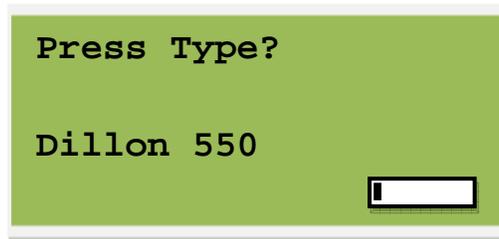
Brown Pair → Press Light (solid brown wire is anode (LED longer lead), white wire with brown stripe is cathode)

8. First Use

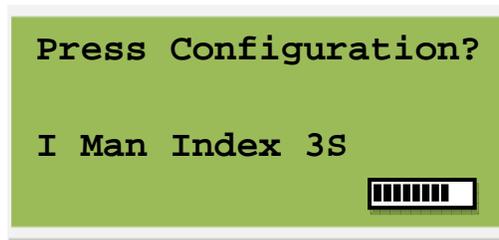
To Press Monitor III will turn on when you first plug it in. To turn it off hold down the minus and plus buttons together for 3 seconds. To turn it back on just tap any button on the front.



When first turned on, the Press Monitor always displays the product name, version, and company name for 3 seconds. You do not need to wait the 3 seconds on any of the startup messages, you can just press ignore to skip by them more quickly.



When unconfigured, it will prompt for the Press Type. Many prompts will be similar to this one. A question is being asked on the top two lines and the answer or selection is on the bottom two lines. There is also a graph at the end of the last line that shows where the current setting is compared to all choices. In this case the lowest option is the Square Deal B and the highest option is Other 9 Station. **Use the plus and minus buttons to select the right press, and then press ignore to continue.** The Press Monitor has a selection for these 10 popular reloading presses: Dillon Square Deal B, Dillon 550, Dillon 650, Dillon 1050, Hornady Lock N Load, Lee 3 Station Turret, Lee 4 Station Turret, Lee Load Master, Lee Pro 1000, and RCBS Pro 2000. It also has a generic Press Type of Other 1 Station through Other 9 Station.



It will also prompt for the Press Configuration when one hasn't been selected. Press Configurations have been simplified to a letter code from A to K. The above is Press Configuration I which is a manual index using 3 sensor mode (3S). As above, **use the plus and minus buttons to select the right press, and then press ignore to continue.** More information can be found in the Press Configuration chapter.

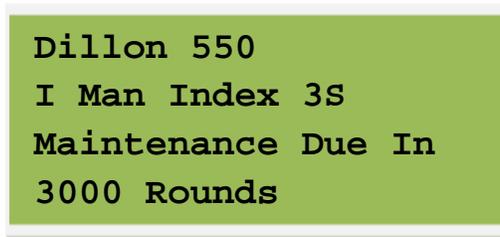


At the end of any section where options are being prompted, the user will be asked if they wish to reenter that section again to make any changes. This allows the user to correct any answer if necessary. Pressing ignore here will accept the press settings, but if the user needs to go back they could press plus to change it to yes and then press ignore to go back into the press settings.

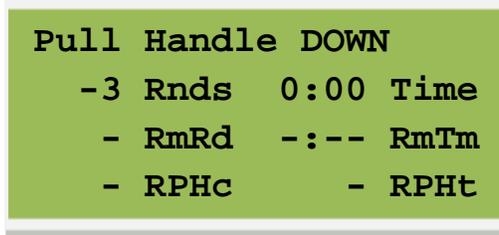
Once the initial press settings have been set, the Press Monitor now displays messages it normally does when turned on. Each one is displayed for 3 seconds. The user can press the ignore button to skip by these more quickly if desired.



The press totals display shows the total number of rounds, hours, and rounds per hour for all loading sessions. The Rounds Per Hour statistic is not displayed in the above example because there is no data yet.

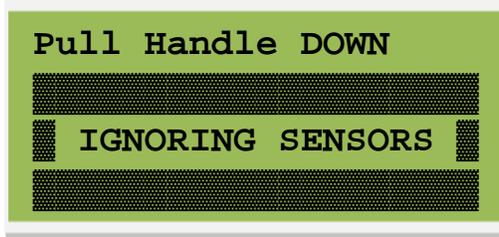


The press configuration display shows the press type, press configuration, and maintenance status. The user can change the number of rounds between maintenance in setup. When maintenance is due, it will be indicated on this screen and as a reminder in the main screen.



This screen indicates the unit is monitoring the press and the user can begin loading. Line 1 shows what the next action should be and Lines 2-4 show statistics.

The rounds loaded (Rnds) begins at a negative number based on the number of stations. This is done so that when the first round hits the finish bin, it will read 1. Please see the Statistics chapter for information on the other statistics.



The  symbol above blinks to get the user's attention. This is called ignore mode and it allows the user to correct any issues while the monitoring is disabled. Pull Handle DOWN means that the unit thinks this is the next step. If this is not the next step the user can press plus or minus to change it to what the next step should be. The options the user has are based on the current condition of the press. Press ignore again to leave ignore mode and resume normal operation. The press light also has a quick flicker in this mode to indicate to the user that they are in ignore mode and not monitoring mode.



This unit also has a screen saver that will lower the brightness of the display and/or backlight. A block like the above will move all around the screen in such a way as to make sure that the screen is kept from burning in on any particular pattern or display. You can easily leave the screen saver by operating the press or pressing a front panel button. The unit is fully functional during this time so any buttons you press will do what they would even if the screen saver was not displayed. If you don't want the front panel button to do anything just press a button combination that never does like the plus and ignore button at the same time.

9. Test Sensors

Holding down the minus button for 3 seconds will take you into test sensors.

ORN Down	Off
BLU Up	Off
GRN Rotate	Off

It shows the wire color along with the type of sensor based on the press configuration and is very useful for testing sensors. Activating a sensor will activate the beeper and change the screen from off to active. Press the ignore button to leave the test sensors screen.

ORN Down	Off
BLU Up	Off
GRN Rotate	Off
GRN/WHT Prime	Off

This shows a test sensor screen in 4 sensor mode.

10. Button Usage

The buttons perform differently depending on whether they are pressed and released, or held down.

Minus Button:

In normal mode, the minus button changes the Rnds statistic by decreasing it. This can be used if a round was destroyed or lost during the reloading process.

Holding the minus button enters the test sensors screen. See chapter 9.

As mentioned above, while in ignore mode, the minus button may be used to change the next action on some press types. If the prompt is Pull Handle DOWN, but the user wants the next action to be rotate, just press the minus (or plus) button and it will change to ROTATE.

If a prompt requests a value or setting, the minus button will make the setting less. Holding the minus button changes the setting faster, and the longer the button is held the faster it changes.

Plus Button:

In normal mode, the plus button changes the Rnds statistic by increasing it. This can be used if a round was completed when the Press Monitor was in ignore mode or if the user pressed the minus too many times.

Holding the plus button in normal mode enters specify session where the user can reset the current session, specify the rounds to load, specify the charge weight, and add powder to the powder measure tracking. See below for these prompts in detail.

As mentioned above, while in ignore mode, the plus button may be used to change the next action on some press types. If the prompt is Pull Handle DOWN, but the user wants the next action to be rotate, just press the minus (or plus) button and it will change to ROTATE.

If a prompt requests a value or setting, the plus button will make the setting more. Holding the plus button changes the setting faster, and the longer the button is held the faster it changes.

Ignore Button:

In normal mode, pressing the ignore button enters or leaves ignore mode.

Holding down the ignore button will enter setup where the user can change press settings, change reminder settings, and view or reset statistics. See below for these prompts in detail.

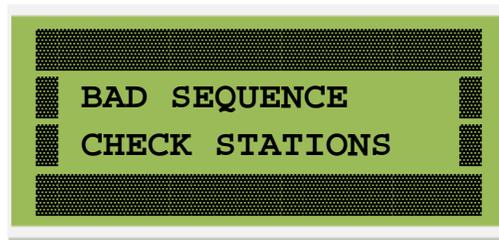
Pressing the ignore button at a prompt tells the monitor to accept the value and continue.

11. Errors

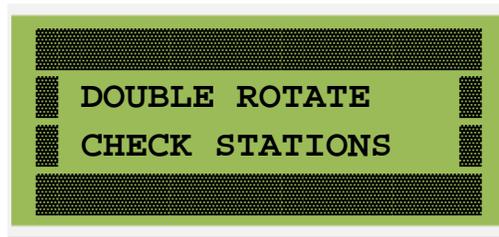
When out of ignore mode, the user can begin loading. All the press actions are monitored and if the Press Monitor detects an incorrect action, it will alert the user with an error. This activates the beeper, displays the error message, and flashes the press light.

To stop the beeper and cancel the error, press ignore. This takes the user immediately to ignore mode. The press should be checked and any issues should be corrected. After verifying all stations are ok and ready to resume, the user can press ignore again to leave ignore mode and resume normal monitoring. If a round was finished up when ignore mode was enabled, press the plus button to add that round to the rounds counter. Similarly, the minus button can be used to adjust for a damaged round when the sensors were not being ignored.

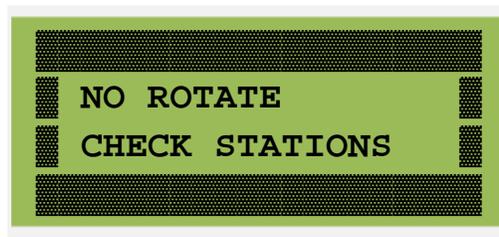
Here is a list of possible errors that might be reported:



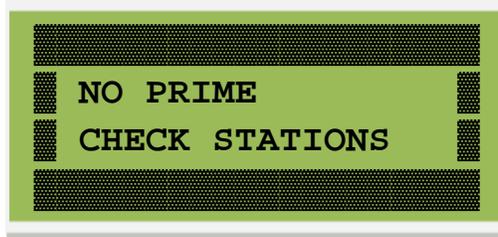
BAD SEQUENCE: Displayed when any unexpected action occurs. The Press Monitor expects a very specific sequence of actions and if the actions deviate at all, this error is generated.



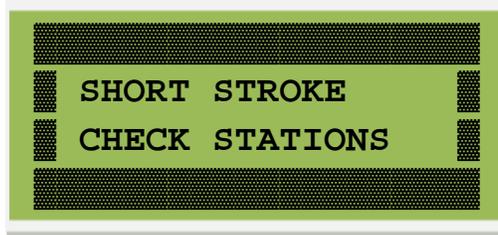
DOUBLE ROTATE: Displayed when the shellplate is rotated twice by mistake on a manual indexing press. **This is a very dangerous condition as it usually leads to a no charge event.**



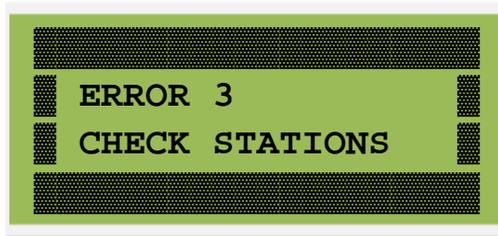
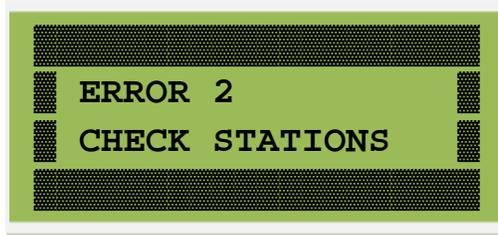
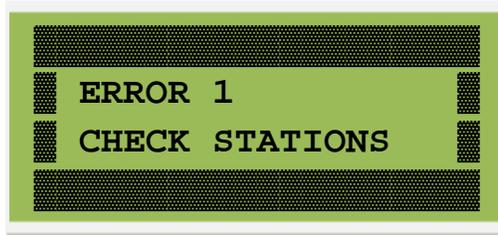
NO ROTATE: Displayed when the press handle is cycled twice without rotating the shellplate on a manual indexing press. **This is a very dangerous condition as it usually leads to a double charge event.**



NO PRIME: Displayed the prime action was missed.



SHORT STROKE: Displayed when the press handle is not pulled fully down. Can cause a round to not have any powder or in it, or less powder that desired if the powder measure was not fully activated.



ERROR 1, 2, or 3: Displayed when any sensor is configured as an error sensor and that sensor is activated.

12. Statistics

Pull	Handle	Down	
127 Rnds	0:34	Time	
373 RmRd	1:06	RmTm	
271 RPHc	223	RPHt	

There are a total of eleven statistics automatically calculated for the user. Eight of them are session statistics and three of them are total statistics.

Loaded Rounds (Rnds): Keeps track of the number of rounds loaded. The user can press the minus or plus buttons to change this value if a round is lost or finished during ignore mode.

Press Time (Time): This timer starts and stops automatically based on press sensor activity. If the press does have any activity for 30 seconds, this timer stops. If the colon between the hours and minutes is blinking, then the press timer is running, otherwise it is stopped. Press Time is used for calculating total rounds per hour (RPHt). If the user walks away for the press for a period of time such as 10 minutes, this timer will stop and it will not affect the total rounds per hour calculation.

Current Rounds Per Hour (RPHc): Calculates a rounds per hour value for the last 3 to 15 rounds loaded. If no changes are detected in 30 seconds, it goes to a dash and needs 3 loaded rounds to begin calculating again. There is a reminder that can be set to warn the user if this statistic is too high (they are going too fast).

Rounds per Hour Total (RPHt): Calculates a rounds per hour value for the entire session by dividing the loaded rounds (Rnds) by the press time (Time).

The next two statistics requires the user to specify the number of rounds being loaded using specify session.

Remaining Rounds (RmRd): Indicates how many rounds are remaining.

Remaining Time (RmTm): Calculates how much time is remaining based on the overall speed and how many rounds are remaining.

The next two statistics requires the user weigh their powder container before and after dumping powder into the powder measure. The Press Monitor uses these two values to calculate how much powder is in the measure. There is no sensor on the powder measure, but the Press Monitor will keep track based on the information provided to it.

Powder Measure Grains (PmGr): Displays how many grains are in the powder measure.

Powder Measure Rounds (PmRd): If there is powder in the powder measure and the user has specified the charge weight, this statistic will calculate how many rounds could be loaded until running out of powder.

The Rnds, Time, RPHc, and RPHt statistics are always displayed. If the rounds to load are specified, RmRd/RmTm will be displayed. If the charge weight is specified, PmGr/PmRd will be displayed. If both the rounds to load and charge weight are specified, it will rotate between RmRd/RmTm and PmGr/PmRd every 5 seconds automatically.

The final 3 statistics are total statistics and are displayed at power on and also can be viewed in setup:

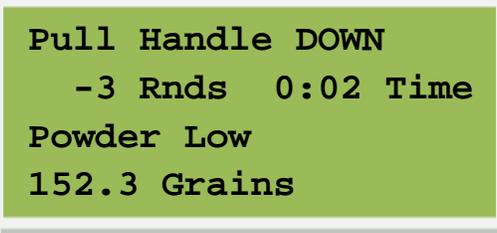


Line 2 is the total rounds for all sessions, line 3 is the total press time for all sessions, and line 4 is the total rounds per hour for all sessions. These values are stored even when the unit is turned off or unplugged, unlike the session statistics which are cleared when the unit is turned on or the user resets the session in specify session.

13. Reminders

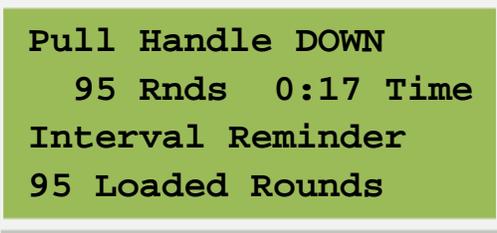
Reminders are different than errors because they do not interrupt press operation. The user is free to continue working right on through a reminder without stopping. Press actions remain fully monitored during a reminder. A very short beep sounds and press light flickers just to let the user know a reminder will be on the display for 5 seconds.

There are 6 reminders currently available: Powder Low, Interval, Specified Rounds Loaded, RPHc Too Fast, Break, and Press Maintenance.



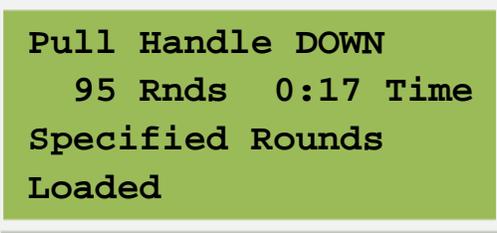
Pull Handle DOWN
-3 Rnds 0:02 Time
Powder Low
152.3 Grains

The Powder Low reminder indicates the powder remaining in grains has fallen below the setting in setup. This reminder will repeat every 60 seconds until the powder is no longer below the threshold. The user can add more powder to the measure or go into setup to increase the threshold.



Pull Handle DOWN
95 Rnds 0:17 Time
Interval Reminder
95 Loaded Rounds

The Interval reminder can be set to remind the user when they reach specific intervals of loaded rounds. The user can specify 100 for the interval and get a reminder at 100, 200, 300, etc. There is also an interval leadoff the user can specify which will warn a number of rounds before the interval. For example, with a interval leadoff of 3, the user will get a reminder at 97, 197, 297, etc. This is very useful and can be used as a primer low reminder for example.



Pull Handle DOWN
95 Rnds 0:17 Time
Specified Rounds
Loaded

The Specified Rounds Loaded reminder occurs when the specified number of rounds to be loaded is reached. If the user tells the Press Monitor they want to load 500 rounds, then this reminder will fire when the user hits 500 rounds.

Pull Handle DOWN
95 Rnds 0:17 Time
RPHc Faster Than
1200 RPH

The RPHc Too Fast reminder will occur if the rounds per hour current statistic (last 15 loaded rounds) is too fast. The threshold (in this case above 1200) can be set in setup. This can remind the user to slow down and take more time to watch what is going on. This reminder will repeat every 60 seconds until the rounds per hour current is no longer above the threshold.

Pull Handle DOWN
95 Rnds 0:17 Time
Break Reminder

The Break reminder reminds the user to take a break periodically to keep sharp. It can be disabled or set to 30 to 120 minutes in 15 minute increments. If there is no press activity for 10 minutes during a session, the Press Monitor will assume the user took a break and restart the count.

Pull Handle DOWN
95 Rnds 0:17 Time
Press Maintenance
Is Due

The Press Maintenance reminder occurs when the press has loaded the number of rounds or has been operated the number of hours in the Press Maintenance Amount value in setup. This reminder will repeat every 60 minutes until the Press Maintenance is reset. To reset Press Maintenance, go into setup and reset it.

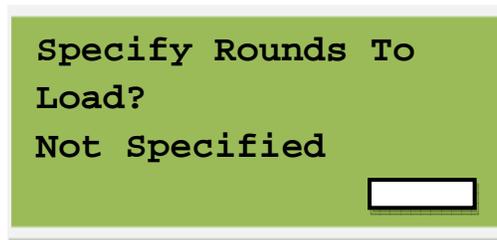
14. Specify Session

Holding down the plus button for 3 seconds will take you into specify session. It is divided into sections, with a single question asking if the user wishes to enter that section.



Reset Current
Session?
No

Reset current session will clear all of the session statistics and start over as if the unit were turned off and back on. All the current statistics will be reset and ready for a new session.



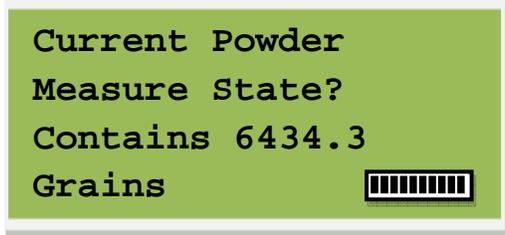
Specify Rounds To
Load?
Not Specified

Specify rounds to load allows the user to tell the unit how many rounds they wish to load. This is optional, but if entered, the unit can then calculate remaining rounds (RmRd) and remaining time (RmTm). In addition to that, it will also generate a specified rounds all loaded reminder when the number is reached. The user can specify not specified or 1-5000 rounds.

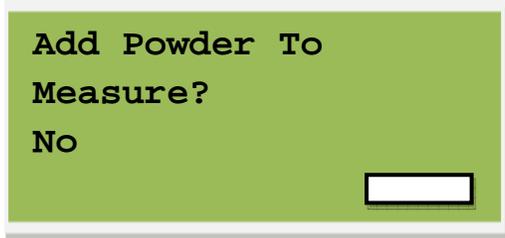


Specify Charge
Weight?
Not Specified

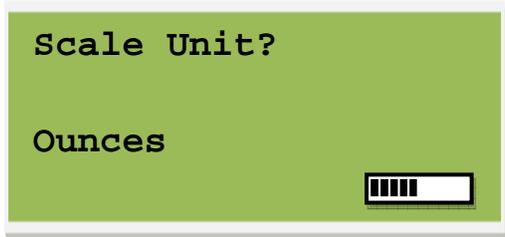
Specify charge weight allows the user to tell the unit the charge weight. This is optional, but if entered, it enables powder tracking. Powder tracking keeps track of how much powder is in the measure and calculates powder measure grains (PmGr) and powder measure rounds (PmRd). In addition to that, it will also generate a low powder reminder when the powder measure grains fall below a threshold.



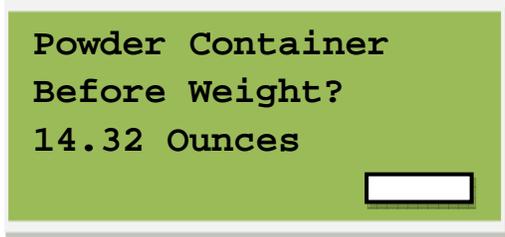
If the unit thinks there is powder in the powder measure, it will ask if the powder is still present or has it been emptied. It will remember how much powder in the measure even when turned off. This question will be asked even if the charge weight is not specified if there is powder still in the measure.



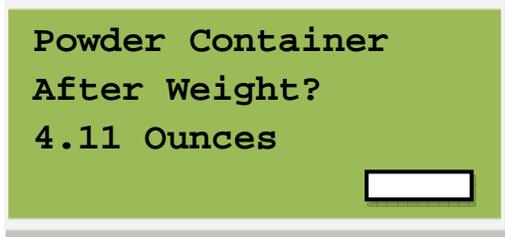
The next question is whether the user wants to add powder to the powder measure. If the user specifies yes, further questions will be asked.



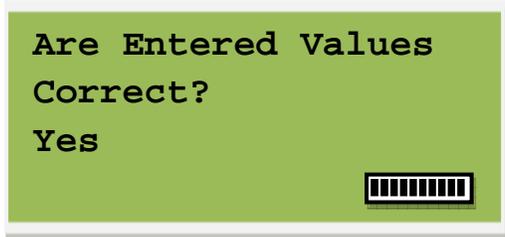
Select the unit of weight that will be used. A scale that can handle the weight of a powder container and has good accuracy is best. Many reloading scales can't handle this much weight, but often a kitchen scale will work very well. It supports grains, grams, ounces, pounds, and kilograms.



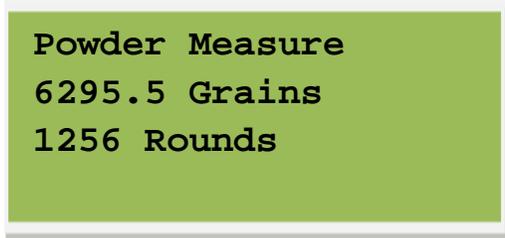
Specify the before weight of the powder container and powder.



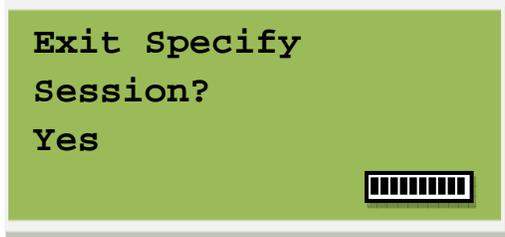
Specify the after weight of the powder container. It should weigh less now that some of the powder has been poured into the powder measure.



If the entered values are correct, select yes, otherwise select no and then re-enter them.



Finally, the powder measure status will be displayed. It shows the current grains in the measure and the number of rounds that can be loaded with the amount of powder. The message stays on the display until the ignore button is pressed.



Exit specify session gives the user a change to select no and go through specify session again.

15. Setup

Holding down the plus button for 3 seconds will take you into setup. It is divided into sections, with a single question asking if the user wishes to enter that section.



Change Press
Settings?
No

Press settings are covered in chapters 4-8.



Change Reminder
Settings?
No

Change reminder settings allows the user to adjust all reminders, select yes to access this section.



Press Maintenance?
3000 Rounds

Press maintenance specifies the number of rounds until the press requires maintenance. The range is off or 1000-63000 rounds.

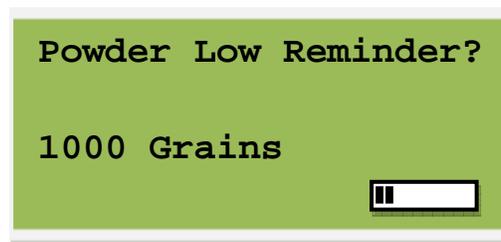


Break Reminder?
60 Minutes

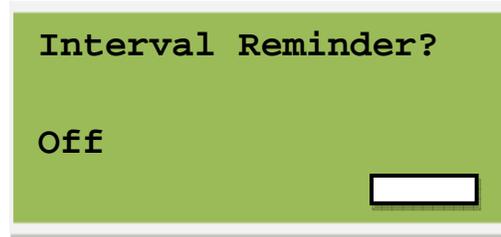
Break Reminder issues a single reminder to take a break. Unlike all of the other reminders, the break reminder only occurs once and will not occur again until another break is due. The range is off or 30-120 minutes. It will reset if no press activity occurs for 10 minutes assuming the user took a break.



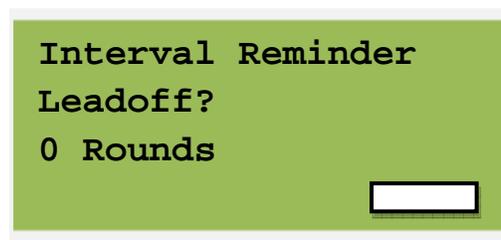
RPHc too fast reminder issues a reminder when the current rounds per hour goes above this value. The range is off or 100-6450 rounds.



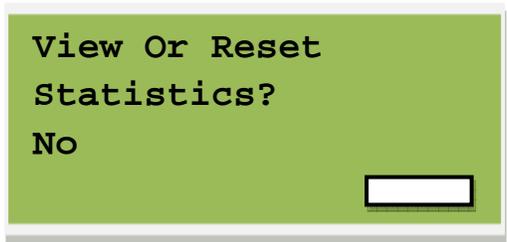
Powder low reminder will issue a reminder when the powder measure falls below this value. The range is off or 500-3500 grains.



Interval reminder will issue a reminder every time the interval occurs. If the value is 100, it will issue a reminder at 100, 200, 300, 400, 500, and so on.



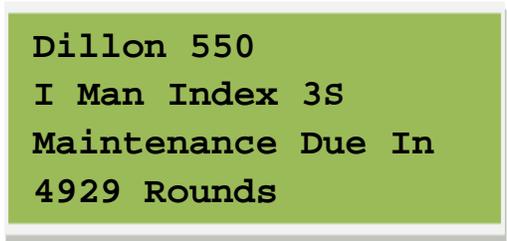
Interval reminder leadoff will modify the interval reminder by subtracting from it. If the interval reminder is 100 and the leadoff is 5 for example, a reminder will be issued at 95, 195, 295, 395, 495, and so on. This is great to remind the user to replenish primers before they run out for example.



Press totals will be displayed. The message stays on the display until the ignore button is pressed.



Reset press totals allows the user to reset these statistics.



Press Maintenance will be displayed. The message stays on the display until the ignore button is pressed.



Reset press maintenance allows the user to reset press maintenance.



Exit setup gives the user a change to select no and go through setup again.

16. Factory Diagnostics

The user does not need to normally use factory diagnostics, but they can be useful in troubleshooting any sort of issue with the unit.

To enter factory diagnostics follow these steps:

Unplug the unit.

Hold down the minus button.

Plug the unit in while holding down the minus button.

A single beep will be heard.

Continue holding down the minus button for 5 seconds.

The unit will then prompt for each of the factory diagnostics.

Test buttons will test the front panel buttons. To exit this diagnostic the user must press all three buttons at the same time.

Test sensors is similar to the test sensors in normal mode except that it does not take any configuration into account so only wire colors are shown. Use plus or minus to switch between 3 and 4 sensor mode, use ignore to exit.

Test outputs will test the beeper, the press light, and the backlight. To exit this diagnostic the user must press all three buttons at the same time.

Test display will identify the type of display (LCD, OLED, or VFD) and perform a diagnostic on it. Press ignore to continue through the testing which will show all pixels on and all pixels off.

Test FRAM will test the fram memory which is used for storing information when the unit is turned off. It will run until stopped and show how many passes have occurred. Press ignore and then wait for the pass to complete to exit.

Test CPU will test flash memory and perform crc calculations. It will run until stopped and show how many passes have occurred. Press ignore and then wait for the pass to complete to exit.

Test Clock will test the oscillator by providing a clock. Pressing plus or minus will reset the clock and pressing ignore will exit.

At the end the user will be prompted to exit factory diagnostics. The unit will restart.

17. Factory LCD Contrast

The user does not need to normally use factory LCD contrast, but can use it to adjust the contrast of the display if necessary. This only applies to units with a LCD display.

To invoke the factory LCD contrast follow these steps:

Unplug the unit.

Hold down the plus button.

Plug the unit in while holding down the plus button.

A single beep will be heard.

Continue holding down the plus button for 5 seconds.

The unit will then show the factory LCD contrast screen.

Release the plus button and it will enter auto contrast mode where it changes the contrast automatically in 5% increments. This is because the screen may not be visible if the contrast is set too far in one direction or the other. If the screen is not readable, press and release the plus and minus buttons at the same time and it will reenter auto contrast mode. Then just wait until the screen is readable.

Once the screen is readable and the user wishes to tweak the contrast, press the minus or plus button just once. This will leave auto contrast mode and stay at one contrast setting. Use minus or plus to change the contrast percentage between 0% and 100%.

The display has moving text so the user can balance the contrast so that characters can change quickly without leaving a shadow of the old character or not being dark enough. A blinking cursor should look even between on and off.

The standard setting for the LCD display we use currently is 12%.

Press ignore to leave factory LCD contrast. The unit will restart.

18. Factory Reset

The user does not need to normally use factory reset, but it can be useful to start fresh.

To invoke the factory reset follow these steps:

Unplug the unit.

Hold down the ignore button.

Plug the unit in while holding down the ignore button.

A single beep will be heard.

Continue holding down the ignore button for 5 seconds.

The unit will then erase all memory and beep 5 times and restart.

It will automatically enter factory diagnostics (see chapter 16), but the user can skip through them with the ignore button. The unit will restart.

19. Version Notes

Version 1.31:

A bug in the specify rounds option would push the final line one character to the right on the display. This would cause the t from RPHt to show up as the first character of the time line. This has been corrected.

A bug in the test sensor screen switches prime and error 1 for configurations J and K. This has been corrected.

Version 1.30:

Initial release.