

# VPF Mark 6

## Installation & Setup Guide

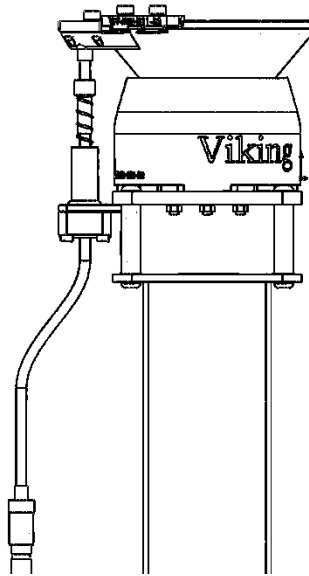
### Safety Notes

Handling ammunition and its constituent parts carries an inherent risk. The VPF is no exception, and the same precautions that are taken for reloading are applicable here.

To protect yourself and your property, please ensure that you have at least the following precautions in place;

- Always use in conjunction with a suitably designed and installed blast shield. We recommend that the VPF is installed behind its own blast shield, separate from the powder supply for the machine.
- Keep the work area clean and free from loose items.
- Never store primers or propellants in the work area.
- Keep the number of primers in the bowl as low as is practically possible. The more primers in the bowl, the higher the risk to life or property if a detonation was to occur.

- When installing the VPF, ensure that there is a slight misalignment between the primer infeed on the press, and the primer outfeed of



*Figure 1 - Primer Tube Offset*

the VPF (see figure 1). This will allow the flexible tube to easily detach in the case of a detonation at the press.

- Regularly clean the bowl, outfeed tooling and flexible tube regularly to remove dirt and any build-up of primer 'dust'.
- Utilise a static dissipating spray on all working surfaces of the VPF. Apply and reapply in accordance with the manufacturer's directions.

- Never try and force a primer out of the VPF. If you suffer a jam, stop and disassembly the unit, and carefully poke the primer loose with a 'soft' material. Bamboo skewers work well here. Primers jammed in the soft tube can usually be blown out.
- Ensure that the appropriate power supply and plug is used for the machine. The electrical connection must be done by a competent person and done in accordance with local regulations. THIS IS A 230V AC DEVICE.
- Ensure that your reloading operation complies with all local regulations for the handling of dangerous goods.
- Always ensure the feeder is firmly mounted in a way that it cannot be knocked over.
- These safety notes are a guide and reminder of important details. Your own risk assessment and safety measures should always be applied.

By using this product, you acknowledge and assume all risks, and cannot hold Viking Machinery Ltd. or any associated reseller responsible for any harm or damages resultant from use of this machinery. If you do not accept these terms, you may return the unused machinery to your reseller for a full refund (please note that some resellers may require a re-stocking fee).

## Specifications

- Supply Voltage: ~220-250VAC (Brown wire phase, blue wire neutral, green/yellow wire protective earth)
- Maximum Controller Power: 1,100VA
- Fuse: 6A Maximum
- Typical operating power: 50 Watts
- Feed Rate: 3,600 Primers per Hour
- Maximum Primer Capacity: 2,000
- Weight: 5.75kg
- Made in New Zealand

## Unboxing

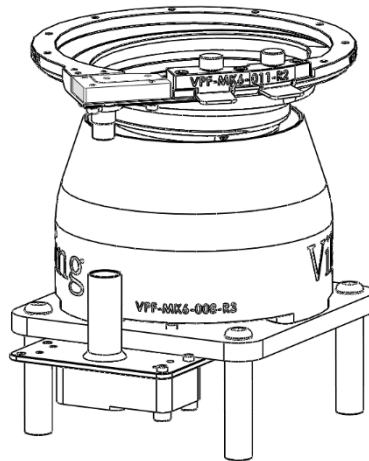
- When you receive your feeder, inspect the packaging for damage prior to acceptance from the courier. If there is damage, note this with the courier and alert your reseller immediately.
  - Open the box from the top. Use a box cutter or sharp knife to slit the tape, but be careful not to cut too deep as this can damage the flexi-feed tubes.
  - Lift the flexi-feed tubes out and place aside in a safe place. These are reasonably fragile, so avoid placing objects on them.
  - Remove the box insert, and then take out the quick start guide and the accessories package.
  - Carefully remove the feeder from the packaging. The gold controller box is tucked into the packaging, so be careful not to drop this.

- Remove the twist ties holding the cables in place for shipping.

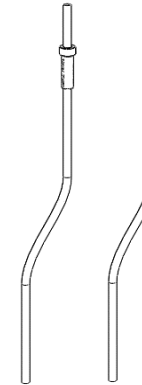
## Inspection

Check your package contents for completeness. Your feeder kit will include;

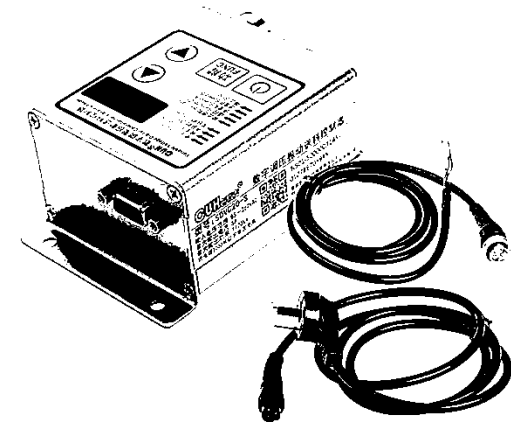
### 1pcs Feeder



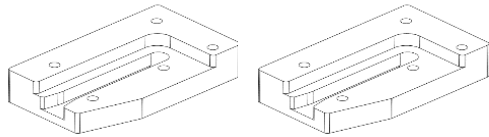
### 1pcs Small Primer Flexi-Feed Tube 1pcs Large Primer Flexi-Feed Tube



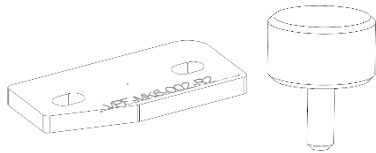
### 1pcs Feeder Controller 1pcs Main Power Cable 1pcs Drive Cable (Attached to feeder)



**1pcs Small Primer Tooling Block**  
**1pcs Large Primer Tooling Block**



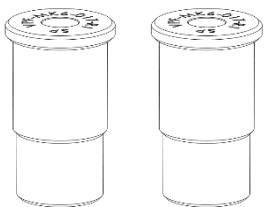
**1pcs Outfeed Cap**  
**1pcs M3 Thumb Screw**



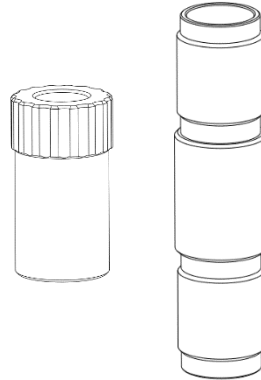
**1pcs Spring**



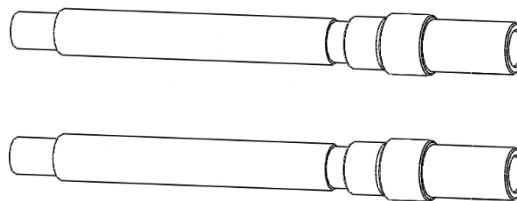
**1pcs Small Primer Tube End Bush**  
**1pcs Large Primer Tube End Bush**



**1pcs Fancy Nut**  
**1pcs Low Profile Main Tube**



**1pcs Small Primer Tube Assembly**  
**1pcs Large Primer Tube Assembly**



## Mounting

Your feeder uses a vibration system to advance primers up the feed ramp. This is precisely tuned for optimum performance. To ensure consistent vibration transfer, the feeder needs to be rigidly mounted. Mounting options will be covered in detail in Technical Bulletin TB001 to keep this document concise.

### Step 1 – Install the Low Profile Main Tube

Unscrew the black primer tube shield from your machine (note: some presses, particularly Dillon models, have a small grub screw that needs to be removed to allow removal of this part). Now screw the Low Profile Main Tube into this socket. Screw it in tightly by hand (there is no need to use a wrench).

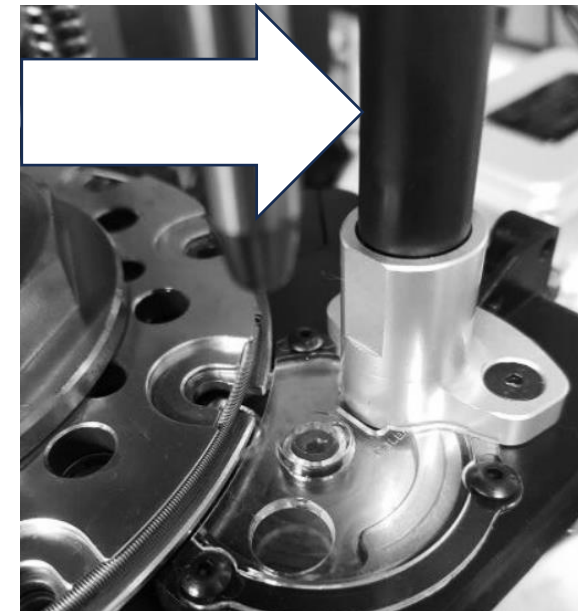


Figure 2 - Primer Tube Shield

## Step 2 – Install the Primer Tube Assembly

Drop the correct size of Primer Tube Assembly into the Low Profile Main Tube. It will locate at the bottom exactly the same way as the factory primer tubes. Install the Fancy Nut over the top and screw down lightly.

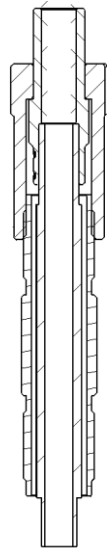


Figure 3 - Primer Tube Assembly Sectional View

## Step 3 – Mount the Feeder

Using an appropriately stiff mounting, position the feeder so that there is a slight offset between the feeder output and the primer tube. We recommend using about 12" of height and 1" of offset as shown in Figure 4. We recommend allowing some vertical adjustment in your mounting set up to accommodate errors when trimming the Flexi-Feed Tube to length.

Note that while a slight horizontal offset is required, too great of an offset will impede the free flow of primers.

The height of the feeder above the primer tube should be as great as is practically possible to ensure a good buffer of primers is maintained.

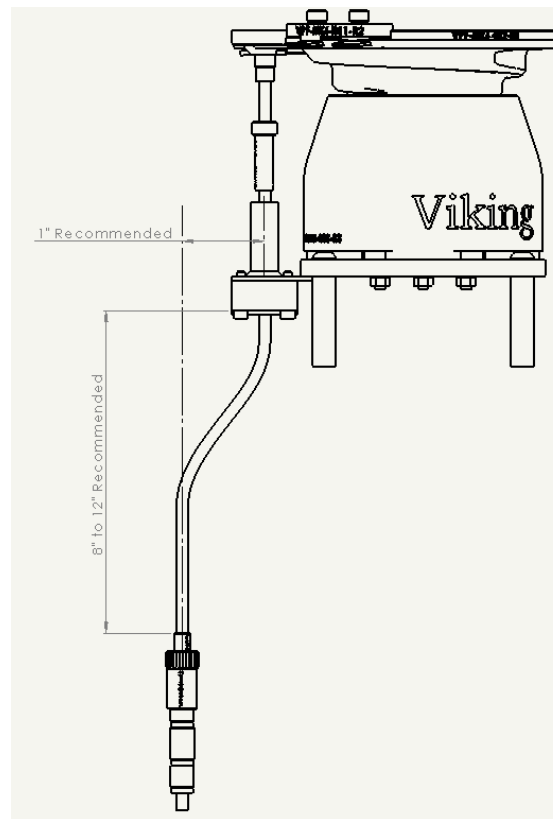


Figure 4 – Feeder Offset Dimension

## Step 4 – Fit & Trim the Flexi-Feed Tube

The Flexi-Feed Tube is supplied over length, so you will need to trim it to suit your exact set up.

**IMPORTANT:** Only use a high quality pneumatic tube cutter to trim your Flexi-Feed Tube. Side cutters or knives will deform the tube end and cause jams.

Start by threading the Flexi-Feed Tube down through the spring and spring socket. Lightly compress the spring and 'duck' the end of the

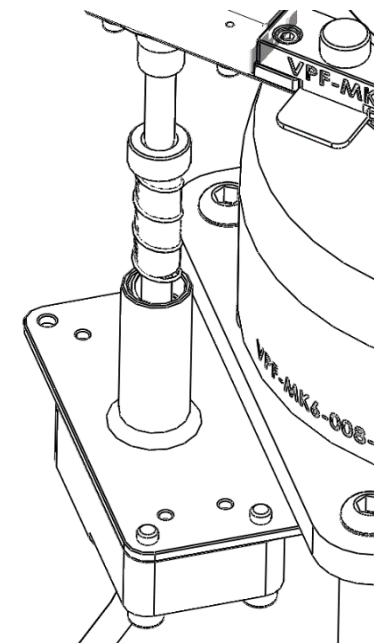


Figure 5 – Flexi-Feed Tube Top Mounting

Flexi-Feed Tube under the Primer Tube End. Let the Flexi-Feed Tube Spring up into the Primer Tube End. There is a slight lip inside the Primer Tube End, so ensure that the Flexi-Feed Tube has cleared this and is seated all the way up. See Figure 5.

Next, insert the Flexi-Feed Tube into the socket at the end of the Primer Tube Assembly (Figure 6). Again, ensure it is properly seated.

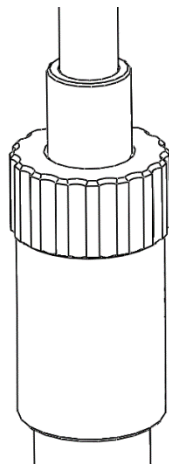


Figure 6 – Flexi-Feed Tube Bottom Mounting

You will need to assess the extra length you have in the Flexi-Feed Tube at this point. Mark the approximate trim length, and cut LEAVING EXTRA LENGTH. Test the fit again, and trim again as required. It is better to trim several times to get it right rather than over cutting.

#### Step 5 – Mount & Connect the Controller

Mount your controller in a suitable location where you have good access to it. Connect the cables into

the appropriate sockets. If you have purchased this product outside of NZ/AUS you will need to have an appropriate mains power plug installed.

**You have now completed the mounting procedure.**

## Changing and Adjusting Tooling

Changing tooling between small and large primers is a relatively simple process. We will cover the details here, but recommend that you view the instructional videos we have published on YouTube here;



#### Step 1 – Remove the Flexi-Feed Tube

Pull the Flexi-Feed Tube out of the bottom Primer Tube socket.

Pull the Flexi-Feed Tube down from the Primer Tube End bush. Move it to the side, and pull up and out of the spring holder.

Set the Flexi-Feed Tube aside somewhere safe.

#### Step 2 – Remove the Outfeed Cap

Unscrew the thumb screw and the outfeed cap and set aside.

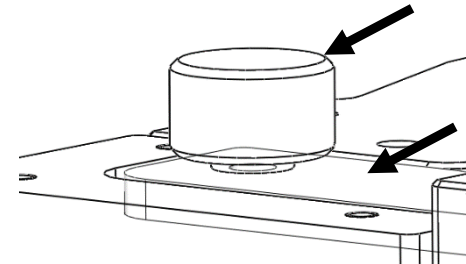


Figure 7 – Outfeed Cap Removal

#### Step 3 – Remove the Tooling Block & Primer Tube End Bushes

Unscrew the three M3 cap screws from under the outfeed portion of the feeder. Lift the tooling block off, and place aside.

Press the Primer Tube End bush upwards and out of its socket.

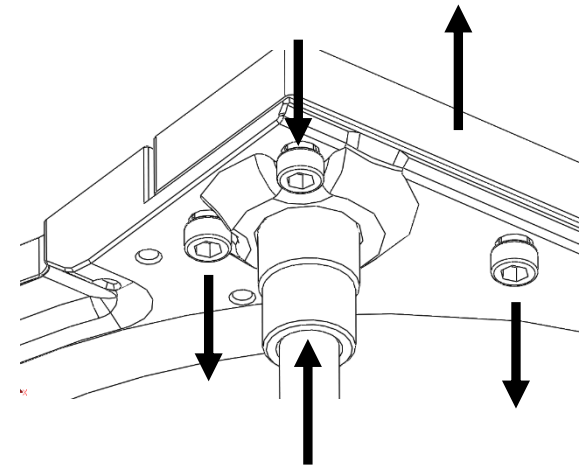


Figure 8 – Outfeed Tooling Removal

#### Step 4 – Reinstall the Tooling Block, Primer Tube End Bush & Outfeed Cap

Reverse the process in step 3, BUT do not tighten the cap screws yet.

Slide either a gauge pin or the back of a drill bit into the primer hole, making sure it passes through both the tooling block AND the Primer Tube End Bush (see Figure 9)

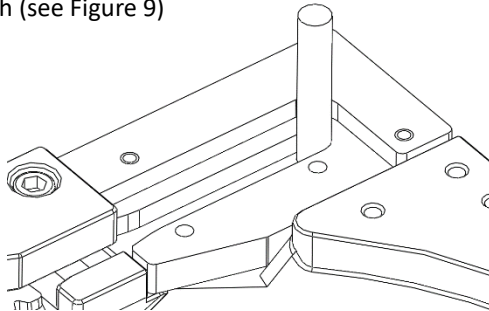


Figure 9 – Outfeed Tooling Alignment

Tighten the M3 cap screws from under the bowl.

Remove the alignment pin. Drop a single primer down the hole to ensure it slides freely and doesn't stick on the transition between the parts.

Reinstall the Outfeed Cap & Thumb Nut.

NOTE: The preferred alignment pin sizes are  $\varnothing 4.6\text{mm}$  for small primers,  $\varnothing 5.5\text{mm}$  for large primers.

#### Step 5 – Change the Primer Tube Assembly

Unscrew the Fancy Nut, remove the current Primer Tube Assembly and replace with the new size. Reinstall the fancy nut as per Figure 3.

#### Step 6 – Reinstall the Flexi-Feed Tube

Reverse the procedure in Step 1.

#### Step 7 – Adjust the Selector Slides

Loosen the two M4 thumb screws. Leave just enough tension to stop the slides falling out.

Slide the selector slides in or out as required to adjust the sensitivity to inverted primers. Correctly oriented primers should not fall off, and inverted primers should. This can be a bit fiddly the first few times, but you will soon learn the correct positions and will be able to do this by eye.

Refer to Figure 10.

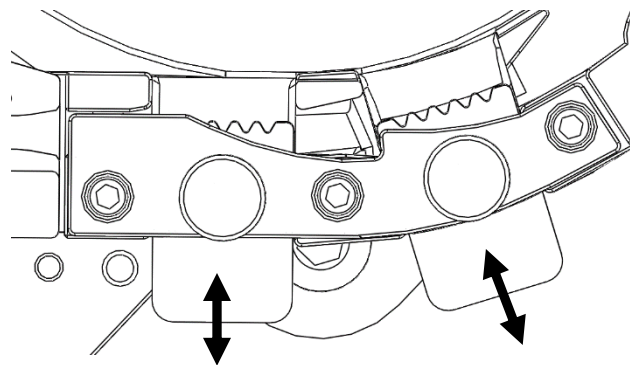


Figure 10 – Selector Slide Adjustment

## Controller Settings

The controller on your feeder is a standard industrial model used on thousands of machines worldwide. It is a powerful and versatile unit that supports extensive integration with other automation systems, but this does mean there are a great many settings that are unused in this application.

#### Controller Overview

The key parts of the controller are as marked in Figure 11 (next page):

- A – Start / Stop
- B – Function Button
- C – Select Up / Down Buttons
- D – Display
- E – Status Indicators
- F – Function Indicators

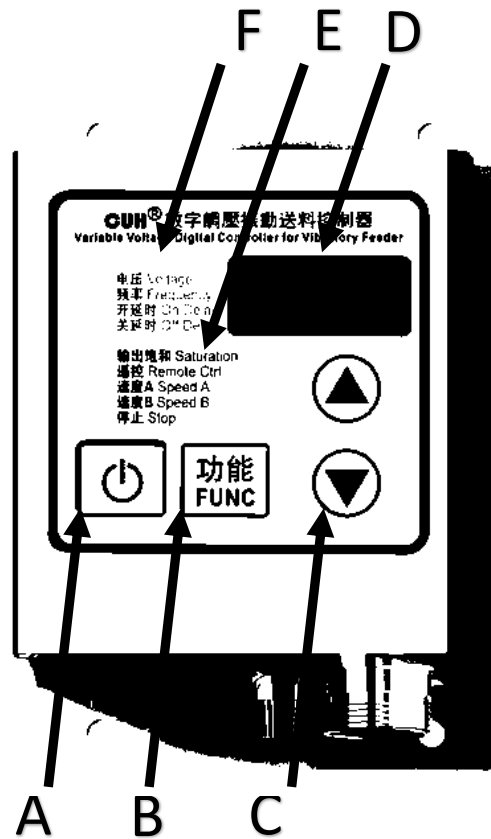


Figure 11 – Controller Buttons

### Basic Operation

When the unit is powered on, it will automatically enter run mode. Pressing the Start / Stop (A) button will toggle between running and stopped stated. In STOP, the red LED in the Status Indicator field (E) will light. If an external input (such as the primer level sensor) is triggering a STOP condition, the LED will light just like a manual stop.

To adjust the vibration amplitude (and correspondingly the speed of the feeder), use the UP/DOWN arrow buttons (C). If you have exceeded the maximum available speed, the SATURATION LED will illuminate in the Status Indicator Area.

This is all you need to know when running your feeder. All other points mentioned below are for reference, and should already be correctly set from the factory.

### High Level Function Adjustments

There are four high level functions that can be easily adjusted. The currently displayed function has a green LED lit next to it in the Function Indicators area (F). Short pressing the FUNC button cycles through these.

#### Function 1 – Voltage

As discussed above.

#### Function 2 – Frequency

This is used to select between a half wave and full wave rectification of the drive. There are only two

choices here – 50 and 100. The higher frequency will feed smoother, but requires higher voltages to achieve maximum feed speed. If you are on a 230V supply, this is probably the setting for you. If you are in a 110V zone, the lower is probably the correct setting for you.

As a general rule of thumb, choose the option that allows your voltage setting to be as close to the line voltage as possible.

#### Function 3 – On Delay

This is the amount of time that the controller waits after the primer full sensor is cleared. If this is too low, you will find that the feeder starts and stops more than it needs to, which can slow down the feed rate. We recommend between 1.0 and 2.0 seconds.

#### Function 4 – Off Delay

This is the length of time that the controller waits to turn off after the primer full sensor is activated. If this is too high, the primers will overflow the tube. Too low and you get the same jerky stop/start mentioned above, as well as erroneous stops when primers are passing the sensor. Again, we recommend 1.0 to 2.0 seconds.

### Detailed Function Adjustments

There are a great number of ‘behind the scenes’ functions available that are predominantly used to integrate with automation systems. These will be correctly set from factory (the default settings are used for the most part).



To enter the detailed function settings, press and hold the FUNC button until the display changes into the settings menu. From here, short click the FUNC button to cycle through menu items. The UP and DOWN arrows are used to change the settings of the currently selected menu item. To save your changes and return to the run screen, press and hold the FUNC button again until the display flashes back to the run screen. If you do not wish to save your changes, don't press any buttons and the settings menu will time out, discard changes, and then return to the run screen.

The function codes are shown in Figure 12.

Setting	Notes
H888	Current output voltage
E888	Output frequency
t888	Soft start time (0.5 sec)
J888	Intellegent sensor on delay (0.5 sec)
J-888	First sensor on delay (0.5-1.0 sec)
J888	Second sensor on delay (0.5-1.0 sec)
L888	Intellegent sensor off delay (0.5-1.0 sec)
L-888	First sensor off delay (0.5-1.0 sec)
L888	Second sensor off delay (0.5-1.0 sec)
f188	First sensor logic direction
f288	Intellegent sensor logic direction
f388	Second sensor logic direction
f488	Control output logic direction
H888	Maximum allowable output voltage
n888	Logic relationship of control signals
0000	Restore factory settings
- - - -	Factory reset successful
E r r o	Controller error

Figure 12 – Function Codes

#### Current output voltage

Adjust to suit your feeder's performance

#### Output frequency

Select either 50 or 100 as your setup prefers

#### Soft start time

Generally, 2.0 seconds. This is the ramp up time when the controller starts. Too short will give aggressive operation, too long slows the machine down.

#### Intelligent sensor on delay

Unused. Leave set to 0.5 seconds.

#### First sensor on delay

1.0 seconds to 2.0 seconds to achieve optimum performance

#### Second sensor on delay

Unused. Leave set at 0.5 seconds to 1.0 seconds.

#### Intelligent sensor off delay

Unused. Leave set to 0.5 seconds.

#### First sensor off delay

1.0 seconds to 2.0 seconds to achieve optimum performance

#### Second sensor off delay

Unused. Leave set to 0.5 seconds to 1.0 seconds.

#### First sensor logic direction

Choose NORMAL graphic as show in Figure 13.



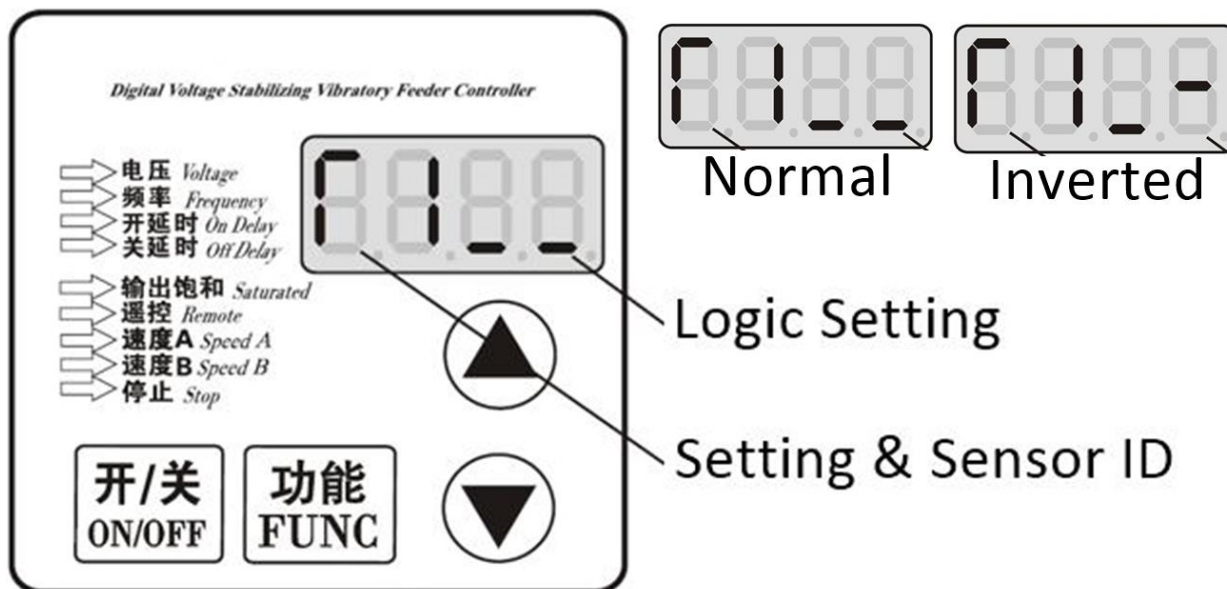


Figure 13 – Logic Setting

#### Intelligent sensor logic direction

Unused. As per above.

#### Second sensor logic direction

Unused. As per above.

#### Control output logic direction

Unused. As per above.

#### Maximum allowable output voltage

Set to the AC supply voltage to the controller, PLUS any allowable variation as per your local supply (usually 5%).

#### Logic relation of control signals.

Unused. Leave at default (Figure 14).

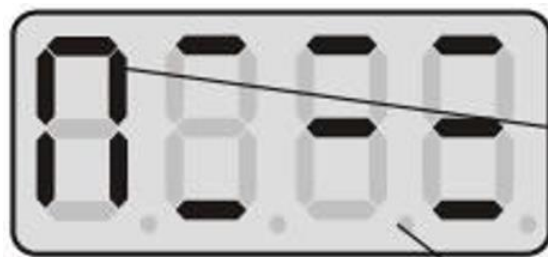


Figure 14 – Logic relation

#### Factory reset

Use to reset the controller to the factory defaults. Note that your controller comes with it's values

pre-adjusted to suit your feeder and a factory reset will overwrite these.

On the reset function menu item, the 0000 symbol will flash. Press and hold the FUNC key until the ---- symbol is displayed, indicating a successful reset. Refer to Figure 15.

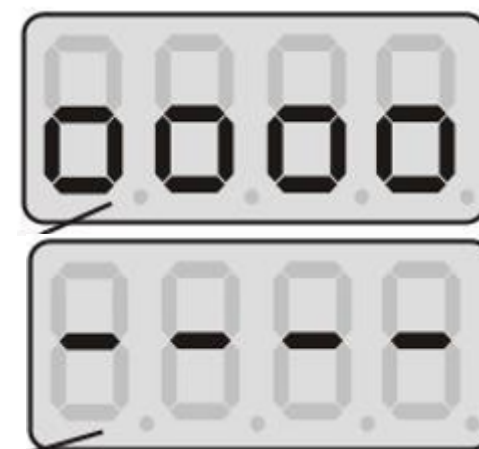


Figure 15 – Factory reset

#### Error

If you see an error symbol, there is an electrical problem with your controller. Turn power off, check all electrical connections and turn on.

Check that the input voltage does not exceed the set value for maximum allowable voltage.

If the problem persists, have a competent person check for short circuits, open circuits and grounding problems.

### Notes on advanced functions

The advanced functions allow the controller to interface with various external control systems if required. There are spare inputs to allow the feeder to be stopped by a second input, and also a relay signal output that can be used to signal when the feeder is stopped. These functions will be discussed in detail in Technical Bulletin TB004.

## Periodic Maintenance

Like all precision machinery, periodic maintenance is required for optimum performance. Fortunately, the VPF is designed to be robust and extremely simple to maintain.

### Cleanliness

Primarily, you will need to clean the machine. The Alignment Tooling blocks are CNC machined to precise tolerances, so dirt or debris will dramatically impact performance.

We recommend using lukewarm water and common dish soap to clean all parts that contact primers. Be very gentle cleaning the inside of the Flexi-Feed Tubes as these are easy to damage. We use a piece of cotton with a small piece of pull through cloth on the end to swab the tube.

Reapply antistatic spray after cleaning. You may also wish to use a dry glide lubricant (silicon or graphite) inside the flexi tube.

### Springs

Eventually, the bowl drive springs will weaken and fail. This happens after thousands of hours of operation, so it is safe to only change these when required. Details of this process are covered in Technical Bulletin TB002.

## Trouble Shooting

### Controller not showing lights or data in display

- Check power connection & cables
- Check power switch
- Check fuse

### Controller lights showing, no drive movement

- Check drive power cable connection
- Check for STOP input from external sensor(s)
- Check start stop button is in correct setting
- Check drive settings

### Bowl buzzes, but primers not advancing properly

- Incorrect controller settings
- Feeder not rigidly mounted
- Bowl is obstructed and not bouncing freely
- Bowl to drive screw is loose

- Lightly sanding the bowl track will help if the mount is not rigid

### Primers bunching at a certain point of the track

- Feeder not level
- Bowl track rough or damaged. Lightly sand areas where primers are bunching.
- Spring failure

### Primers sticking in tooling block

- Dirt build up
- Primers over toleranced height / out of spec. and jamming under outfeed cap. Loosen outfeed cap (space up if needed)
- Tooling Block misaligned with Primer Bowl
- Not enough primers in bowl to push through the tooling block
- Vibration level too high

### Primers not dropping from Tooling Block into Primer Tube End Bush

- Misalignment between parts
- Dirty parts
- Worn parts
- Outfeed cap incorrectly installed

### Primers not dropping from Primer Tube End Bush into Flexi Feed Tube

- Incorrectly inserted Flexi-Feed Tube. Ensure it is seated at the top of the bush and not hanging on the lip
- Misalignment between Flexi-Feed Tube and Primer Tube End bush. Confirm no slop in

connection. Try rotating flexi feed tube relative to bush (this usually fixes this)

- Damaged Flexi-Feed Tube

#### **Primers sticking in Flexi-Feed Tube**

- Dirt build up in tube
- Moisture in tube
- Damaged tube

Damaged tube repairs are covered in Technical Bulletin TB003 and also in the video playlist linked above.

NOTE: Some customers report using a dry lubricating spray inside the tube to improve performance. The factory has not investigated this yet, but it is mentioned as an FYI.

#### **Primers not dropping from Flexi-Feed Tube into Primer Tube Assembly**

- Dirt / debris build up
- Flexi-Feed Tube not correctly seated in Primer Tube Assembly
- Misalignment between Flexi-Feed Tube and Primer Tube Assembly. Try rotating relative to each other
- Primer Tube Assembly end piece and tube not seated together fully
- Primer Tube Assembly end piece and tube misaligned. Try rotating relative to each other
- Fancy Nut overtight and deforming the Primer Tube Assembly

#### **Primers not dropping from Primer Tube Assembly into Press**

- Dirt / debris build up
- Misalignment of parts

#### **A full stack of primers is not stopping the feeder**

- Sensor cable is unplugged
- Sensor is incorrectly adjusted (refer to video playlist for adjustment details)
- Damage to the wire, or loose connection within the plug
- Incorrect controller settings

## **Further Resources**

Check our YouTube videos regularly for new 'how-to' videos. If you are having trouble or don't understand how to do something, let your reseller or the factory know so we can produce the technical resources you need.

Be safe, have fun!

## **Useful Links**

[www.vikingmachinery.co.nz](http://www.vikingmachinery.co.nz)

[www.youtube.com/@vikingmachinery](https://www.youtube.com/@vikingmachinery)

<https://www.facebook.com/VikingMachineryNZ>

[https://www.instagram.com/viking\\_ae/](https://www.instagram.com/viking_ae/)

[Sales@vikingmachinery.co.nz](mailto:Sales@vikingmachinery.co.nz)

## **Change Log**

V1.0 Jan 24 – Initial Release

V1.1 Dec 24 – Added wire colour details, reformat.