Version 3.3.0 Companion Document

Update Type

V3.3.0T1-H1PFX.stf contains the following upgrade details.
1. Controller Firmware V3.3.0
2. HMI Touchscreen 3.3.0 (User Interface)
3. Pro-forma file to suit version 3.3.0
4. Powder.dbl file NEW to this packaging format

This update includes all the patches (if any) applied to previous versions.

Compatibility

- All SuperTricker Generations.
- A&D Balances FX/FZ 120i, FX/FZ 300i two decimal places at 0.02 grains resolution
- A&D Balances FX/FZ 104, FX/FZ 254 capable of two decimal places at 0.01 grains resolution or three decimal places at 0.002 grains resolution. See additional note below,
- Profile Versions from firmware V3.2.x however we recommend relearning these profiles via a **profile soft reset**. An automatic conversion to the V3.3.0 will take place seamlessly.
  💡 **Note**: The profiles are not backward compatible.

Purpose

This version represents a significant upgrade from previous versions in the follow areas.

1. On going general development to improve functionality and workflow.
2. The high-resolution support for the new A&D Balances FX/FZ 104, FX/FZ 254 scales.
3. Introduced infrastructure for future feature expansion purposed for the SuperTrickler.
4. Greatly improved self-learning, taken from information gained from the new Fine control introduced in the V3.2
5. The introduction of the Fine High-speed, Ramp-down & Final-phase (HRF) system to aid in the quick and easy to refine the fine operation.
6. introduction of the ability to disable Bulk and Fine stabilization times to reduce overall dispensing duration. This feature leverages new technology for real-time flow prediction.

Technical Notes

This version represents a significant software code upgrade to the SuperTrickler's scale capabilities. Previous versions were limited to a practical weight range due to 16-bit data technology. This release transitions to a 32-bit data platform—greatly expanding precision, range and scalability that will support the new range of A&D precision balances. The Self-learning AI engine has undergone a major upgrade along with many new general features.
Features specific to the intended infrastructure will remain hidden, ensuring compatibility without exposing unsupported functionality.

Expected Issue

Given the extensive changes and limited experience with the new A&D high-resolution scales, it is anticipated that multiple sub-versions of V3.3 will be required to address unforeseen issues and refine performance. 💡 **Special Warning:** If your system begins to behave unexpectedly after the upgrade—for example, if you're unable to correctly set the charge setpoint—you may need to perform a "Memory &

Default" restore. Navigate to:
System → System Core → Restore → Deep System,
then press and hold **Memory & Default** for a few seconds.

Important: Roll Back Strategy

As with any complex software system, each version upgrade may produce results that are not always desirable or beneficial. You may wish to roll back to a previous version that delivered more favorable outcomes. In general, rolling back is not problematic; however, Version 3.3 introduces changes to the existing profile structure that render it incompatible with earlier versions.

Before upgrading, please follow the instructions to back up your current profiles in case you choose to revert to a previous version.

TO SAVE YOUR CURRENT VERSIONS PROFILES BEFORE UPGRADING:
When you take your Micro SD card out to load the upgrade file on it (as described in the Install section below), make a copy of the BIN folder, either on your computer or on the SD card. You can name it anything OTHER than BIN (e.g., BIN220 or BIN310). **DO NOT REMOVE THE ORIGINAL BIN FOLDER**. Complete your upgrade. If you find you want to roll back, simply rename the existing BIN folder to BIN311 or delete it. Then, rename your BIN220/BIN310 back to BIN, perform the rollback update, and you will be back to your previous state before the upgrade.

Installation Instructions

DO NOT FORMAT or DELETE any file from your SD card other than that described in the roll back section.

⚠ Installing from firmware version 1 or 2 use method 1.
⚠ Installing from firmware version 3 use method 2.

Method 1. For existing firmware version 1 or 2

This method involves a two-part installation, the first part installs a primer firmware version, that has a dedicated job to install the special .ptf file (Primer Trickler File). During this process, the normal version number displays are not supported.

1. With the SuperTrickler® **powered on** and from the main sub menu, remove the Micro SD card (tweezers are a great help).

2. Download the V3.3.0T1-H1PFX.ptf and the auto_ptf_primer.stf files and **copy them both** to the root (top level) directory of the Micro SD card (not in any folders).

3. Reinsert the card back into the SuperTrickler®.

4. The system should automatically navigate to the Upgrade screen and begin loading the firmware. If it does not automatically start, press and hold the Start button for several seconds.

5. WAIT for it to finish, do NOT power off the device or do anything else!

6. Upon restarting, the Primer application will begin unpacking and installing the V3.3.0 Primer Trickler file. Wait for this process to complete before proceeding.

7. This is major upgrade to please check all your preferences and system settings.

Method 2. For existing firmware version 3 (standard upgrade)

This is a standard upgrade.

1. With the SuperTrickler® **powered on** and from the main sub menu, remove the Micro SD card (tweezers are a great help).

2. Download and copy the V3.3.0T1-H1PFX.stf file on the root (top level) directory of the Micro SD card (not in any folders).

3. Reinsert the card back into the SuperTrickler®.

4. The system should automatically take you to the Upgrade screen.

5. Press & Hold the Start button for several seconds until the process starts.

6. WAIT for it to finish, do NOT power off the device or do anything else!

7. This is major upgrade to please check all your preferences and system settings.

Changes from V3.2.x

What's New in V3.3.0

Version 3.3.0 introduces a wide array of improvements and refinements. While the full list of changes is extensive, this document highlights only the most significant updates to ensure clarity and relevance. There are also some undocumented features, such as USB flash drive support probably via the Auxiliary port. The basic code has been added; however, the details and final implementation are not yet resolved.

Menu System Enhancements

The menu system has been upgraded and streamlined across multiple areas to improve navigation flow. Users will notice a smoother, more intuitive experience when moving through options, with reduced complexity and clearer pathways to key functions.

Systems That Have Been Removed

Slow Instrument

The Slow instrument has been removed, as its functionality is now effectively replicated by extending the Fine low-speed final phase. This change simplifies the system without compromising precision.

Profile Exporting

The ability to export profiles has been discontinued. This feature proved impractical due to incompatibility across firmware versions and the highly variable nature of each SuperTrickler loading environment. Profiles that performed well on one machine often failed to translate reliably to others, leading to inconsistent results.
Note: The ability to export the profile as a text file has be retained.

Powder Database Profile Control.

This system was only used for a limited number of profiles. However, with the introduction of the A&D high-resolution scales, the existing system has become unworkable.

Option to change beeper tones.

Removed beeper tone customization to reduce memory usage; feature was seldom used.

Seamless automatic grams-to-grains conversion.

This functionality must now be explicitly enabled in the settings. The reason for this change is the need to support the new high-resolution A&S scales, which have several configurations resulting in a variety of data formats. This makes it impossible to reliably self-detect an inadvertent change from grains to grams. However, in such cases, an X-Error (configuration error) will be issued—see below for details.

New buttons & button types

In previous versions, many buttons supported two states: a configured **Value** or an **OFF** state. This was managed via the keypad—either by setting the value to zero or pressing the 'OFF' softkey to disable the associated functionality. However, this approach lacked intuitive feedback, and unless the user was particularly observant, they might not realize the OFF function was available for that button and no display prompts indicate the functionality.

Now, any button in the system that displays the international power icon in the top-right corner is a clearly defined two-state button: **OFF** or its configured **Value**

- To turn **OFF** – Press and hold the button for half a second, until a long beep is heard.
- To turn back **ON** – Simply press the button; the current value will be displayed.
- To edit the **Value** – Press the button again while the value is shown.

Pressing this selection-type button reveals a dropdown or list of choices.

Self-Learning screen.

This is a special kind of button used on the self-learning screen, ***heuristics buttons***.

Pressing it once will reset the self-learning heuristics. Pressing it again will allow you to set a new heuristics threshold.

Dispensing screen heuristics reset.

The monitor icon has been changed to a button, press and hold to activate; see below for more information.

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After monitoring, the monitoring button is replaced with a silhouette version that has identical functionality; see below for more information.

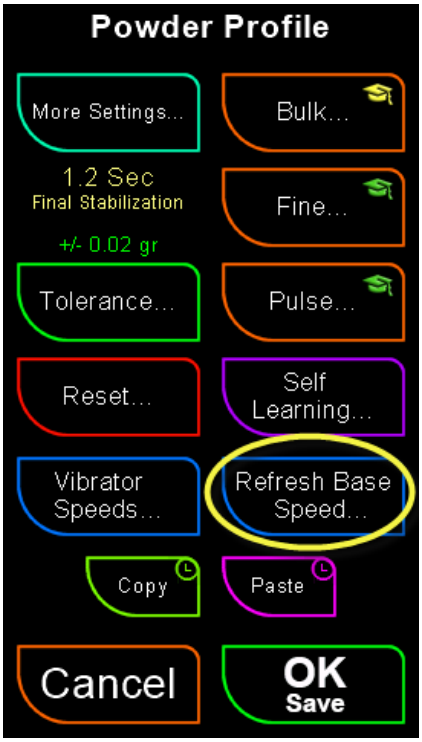
Profile Basic or Advances Settings

In previous versions, the "More Settings" page included a *Simple Mode* switch. This led to the mistaken belief that the unit would operate in a simplified mode. In reality, *Simple Mode* only affected the settings interface by disabling less commonly used controls and dimming their display.

In this version, the switch and its label have been replaced with a selector: ***Settings*** – ***Basic*** *or* ***Advanced***. In *Basic* mode, all advanced controls are now fully hidden, and the screen layout has been adjusted for a more visually natural presentation.

Functionality screenshots shown below are taken from Advanced mode.

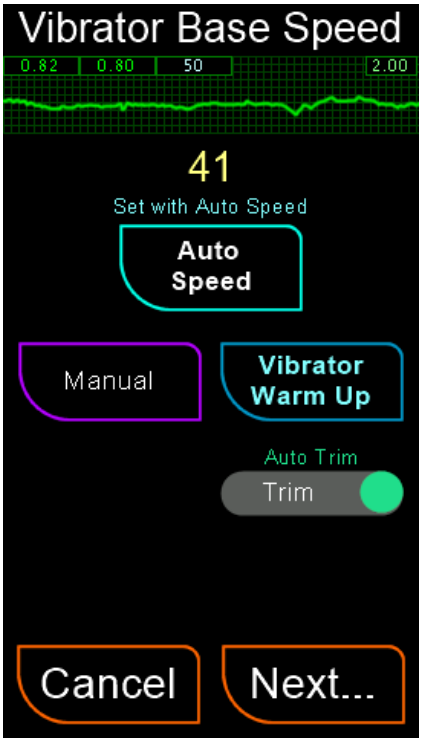
Vibrator Base Speed



Base Speed Refresh:
From the main profile screen, a new button allows you to refresh the base speed only (once set the high speed limit should not be changed). Pressing this button takes you to the standard base speed setting screen. If you press **Auto** upon completion, the system will return directly to the dispensing screen. This button will be disabled until the initial vibrator setting has been completed.

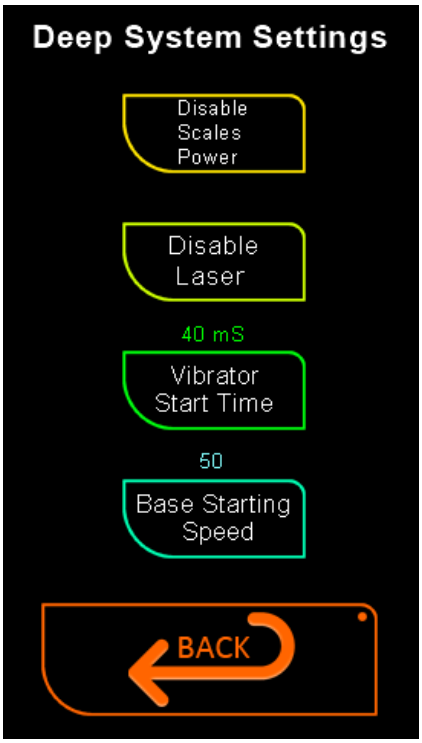
A **Reminder** option has been added to the Options Menu, allowing you to enable or disable periodic prompts to refresh the base speed setting. This helps compensate for changes in vibrator mount behaviour due to heating or cooling during use. More detail later in this document.

Automatic Trim, Base Speed Compensation



A new system has been introduced that monitors the dispensing process, looking for indicators that may be attributed to changes in the vibrator mounting rubber. If such changes are detected, the system will automatically adjust the Vibrator Base Speed value. If this feature is undesirable, it can be disabled on the Vibrator Base Speed screen, Auto Trim.

Base Starting Speed:

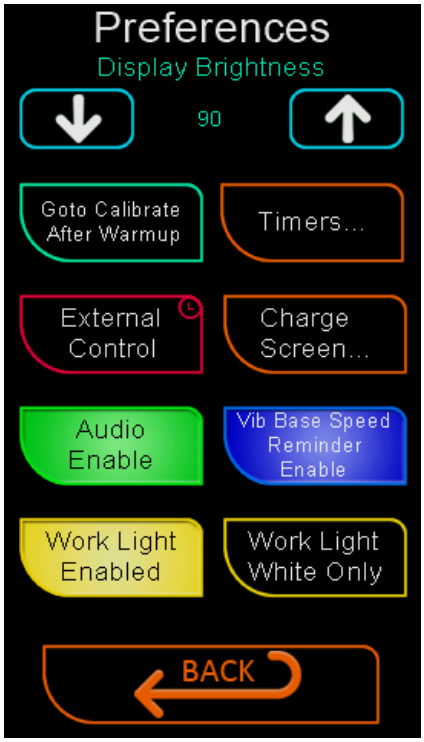


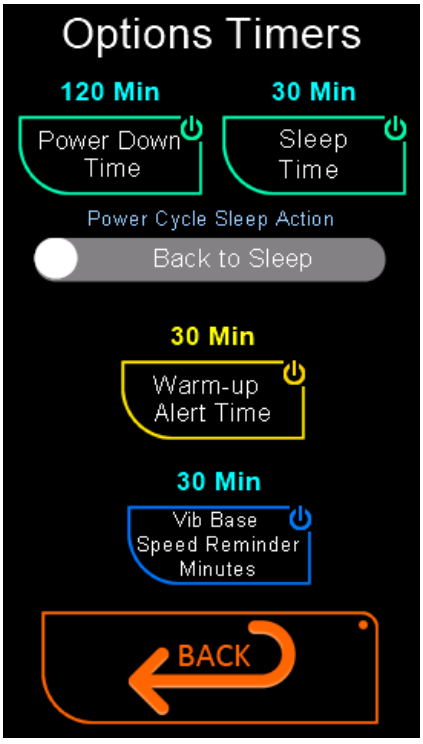
During the vibrator's automatic base speed cycle, the system initiates at the speed specified here. As a general guideline, this starting value should be set approximately 15–20 units higher than the typical final speed. This buffer allows the powder tube to fully charge, promoting a consistent flow before the trickling phase begins.

The Base Starting Speed can be set in the Deep settings to a more appropriate value if required.

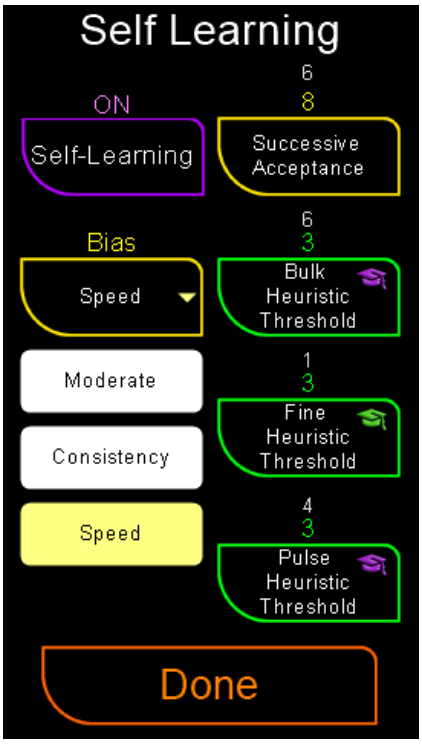
New Feature: Vibrator Speed Warning System

A configurable warning system has been introduced selectable under **Preferences**. At the start of each session—or after a period of inactivity following discharge cessation—an alert will remind you to verify and, if necessary, recalibrate the vibrator base speed. This helps maintain consistent performance and prevents drift over time.





AI Self-Learning



Self-Learning Bias Selection:

Note: *This is a self-learning tool intended for use during the initial learning phase only. Once monitor mode is activated, it no longer applies*.

The self-learning feature, now allows the operator to choose a preferred outcome prior to starting the process. The available options are **Moderate**, **Consistency** or **Speed**.

- **Moderate** offers a compromise between the slower Consistency and Speed.
- **Consistency** favors stability and is slightly more conservative, sacrificing some speed to reduce overthrows.
- **Speed** prioritizes faster operation and is less conservative. When the system goes into monitoring, it disables Bulk and Fine stabilization times, gaining roughly an extra second or more.

If you initially select Speed but encounter poor results, try relearning with **Consistency**. Once the process completes, you can then explore opportunities to improve speed.

AI Self-Learning Enhancements:

In this version, the AI self-learning algorithms have been significantly enhanced. The system is now trained to fine-tune the **Fine High Speed, Ramp-Down**, and **Final Phase** parameters through a process of trial and error. **Pulse** learning has been made less aggressive to improve stability.

Additionally, **Bulk Speed** can now be adjusted automatically by the AI—based on known kernel weight—unless manually overridden in the Test screen.

Heuristics & Successive Acceptance buttons.

This is a special kind of button used on the self-learning screen, ***heuristics buttons***.

Pressing it once will reset the self-learning heuristics. Pressing it again will allow you to set a new heuristics threshold. Pressing any of the Green Button will also reset the Successive Acceptance heuristics.

Scholar's Hat

On the dispensing screen, the blue scholar's hat indicator, now show which instruments are still in learning mode. B for Bulk, F for Fine & P for Pulse.

The icon for the self-learning **monitor mode** has been replaced by a button that resets all instrument

heuristics, effectively re-enabling self-learning to continue without repeating the initial learning process. You must press and hold to activate. Depending on the depth of learning, the **scholar's hat** icon may appear in orange, indicating extended learning rather than a profile reset.

After monitoring and the self-learning is turned off, the monitoring button is replaced with a silhouette

version that retains identical functionality.

Aiming Point Target Calculation *(new technology)*:

Traditional control systems use the setpoint as a target and halt the process once the measured weight falls within the specified tolerance. However, due to the uneven flow characteristics of powder, this approach often performs unreliably. The situation is further complicated because the scale updates only every 50 milliseconds; a considerable amount of powder can be dispensed between these updates.

The SuperTrickler AI control system uses several methods to calculate and predict the powder weight and process status. To account for the inconsistent nature of powder flow, its calculations target an "aiming point" to achieve a more reliable outcome. It's important to note that this internal aiming point is generally not the final charge setpoint. Consequently, each instrument run concludes with a final weight that is on target, but that target was a calculated aiming point designed to compensate for system lag and powder behavior.

The Bulk utilizes a fixed target, which is set to the **Lower Tolerance** weight.
For the Fine and Pulse, the target is user-selectable between three options:

- **Low:** Lower Tolerance weight.
- **Middle:** The mid-point between the Upper and Lower Tolerance.
- **High:** Upper Tolerance weight.

The default configuration for Fine is **Low** and for the Pulse is **High**. This configuration generally performs well. However, occasional issues can persist, such as the Pulse regularly overshooting at the last moment or the Fine phase taking longer than expected to complete.
Adjusting these targets can help mitigate these specific issues. For example, if the Pulse frequently causes overthrows, try setting its target to **Low** or **Middle**.

⚠ **Important Note:** Adjusting these targets **does not** alter the final charge weight setpoint or the tolerance range. It only changes the internal aiming point used by the predictive algorithm to calculate when to stop each trickling phase, influencing the shutdown timing to improve accuracy.

Upgrade to the Inflight Tracking system:

The *Inflight Tracking* system has been completely overhauled to reduce both memory usage and operational complexity for the user.

Previous Behavior

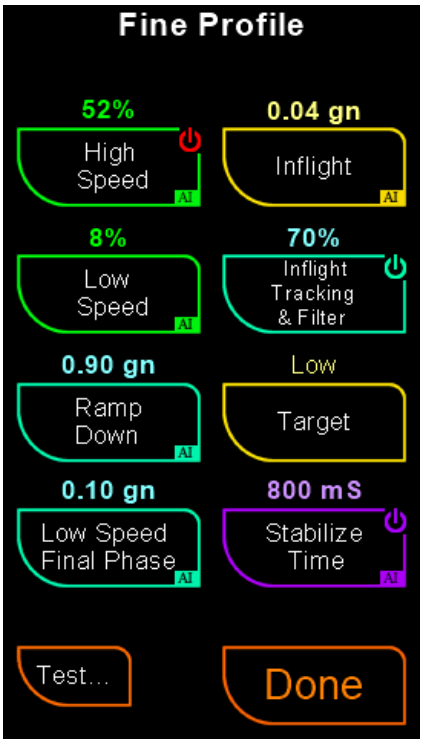
In earlier versions, the operator could toggle *Inflight Tracking* ON or OFF and select a filter type: *Agile* or *Sedate*. The tracking system operated independently from the main *Inflight* setting, resulting in two separate displays: one for *Inflight* and another for *Inflight Tracking* values.

What's Changed

Inflight Tracking now operates directly on the *Inflight* value. Any adjustments made through tracking immediately affect the main inflight value. This redesign offers several advantages:

- At the end of a session, inflight characteristics are preserved and restored in the next session.
- In previous versions, the system required multiple attempts to "relearn" the inflight amount at the start of each session.
- The user interface is now simpler, with only a single inflight value displayed—making it easier to interpret.

Filtering



With each drop, the inflight powder amount can vary—especially when using the Bulk Instrument. This variation is filtered (i.e., reduced in magnitude) and then applied to the inflight value to compensate for trends. This filtering is crucial for stabilizing the system and reducing extreme data swings that the AI must respond to.

Instead of choosing between Agile or Sedate filtering modes, the new system uses a simple percentage-based filter:

- 0% = no filtering (all variation passes through)
- 100% = full filtering (no variation allowed)

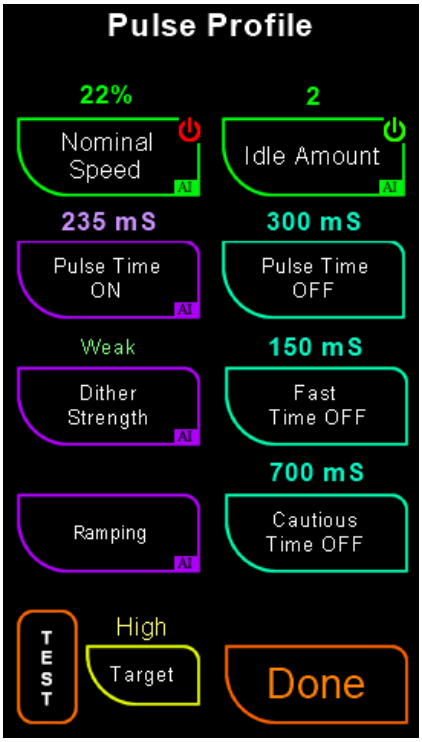
In general, a setting around **80%** works well.

- If the instrument seems unresponsive or slow to adapt, try reducing the filter to 75% or lower.
- If the inflight behavior appears erratic or overcompensating, increase the filter to 85% or higher.

Disabling Inflight Tracking

If inflight tracking is not required, press and hold the button to disable the feature.

Pulse Instrument



Disable / Enable

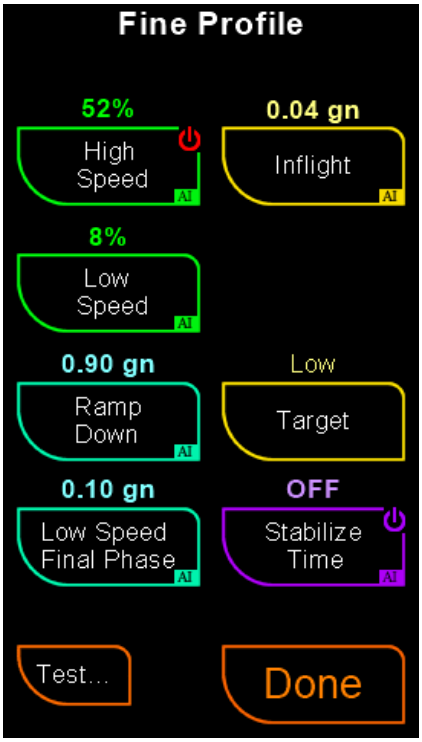
Turning the Pulse instrument OFF is now more intuitive—simply hold the Nominal Speed button for approximately one second and touching it once to reenable.

Special Note: When Pulse is off, Fine Low Speed defaults to its minimum setting and is restored upon reactivation. If Fine Stabilise Time is also disabled, manual tuning of Fine Inflight may be required to achieve stable behavior without overshoot or undershoot

Target

Target adjustment added, default is Mid.

Fine Instrument.



Disable / Enable

Turning the Fine instrument OFF is now more intuitive—simply hold the High Speed button for approximately one second and touching it once to reenable.

Target

Target adjustment added, default is Low.

Stabilize Time OFF:

Stabilize Time OFF is a specialized mode designed to reduce cycle time. When enabled, it disables the stabilization delay and deactivates the inflight tracking system described earlier.
To maintain accuracy without stabilization, the AI compensates for residual Fine powder still in motion ("inflight") as the Pulse instruments begin dispensing. The degree of compensation is governed by the *Inflight* setting:

To turning the Stabilization OFF — simply hold the button for approximately one second and touching it once to reenable.

⚠ **Important**: Do not disable *Stabilize Time* while the system is in *Self-Learning* mode. The AI requires stabilization to accurately assess powder behavior during its learning phase.

Fine HRF

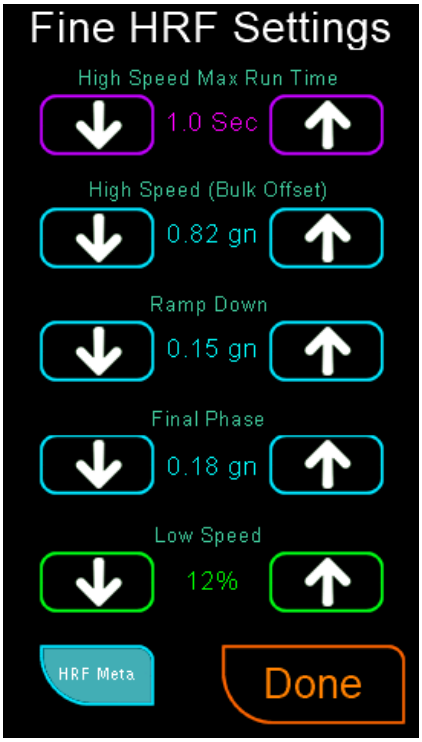
HRF = High-speed, Ramp-down & Final-phase.
Consistency vs Speed – Key Influencing Factors:
The core of consistency or speed is fundamentally shaped by the following factors:

- Bulk stability
- High Speed run time
- High Speed starting point (Bulk Setpoint Offset) *** **Bulk offset has changed see below**
- Ramp-down time (Fine Ramp-Down)
- Final Phase duration (Fine Low Speed Final Phase)

Getting these parameters right sets the foundation for reliable throws. When combined with the ability to disable Bulk and Fine stabilization times—and optionally disable the Pulse, allowing the Fine Final Phase to bring the powder precisely to the setpoint—you're well on your way to achieving fast, consistent throws.

Quick Access and HRF Meta-Data Display:

To simplify setup, a shortcut has been added to the Charge screen—hold the Profile button to activate it. Additionally, a dedicated meta-data display can be accessed via the F-key, showing only HRF data in relation to time.
For fast throws, aiming for an average of approximately 1 second for each stage of the HRF process is a good starting point. If the Fine Instrument begins to overshoot, extending these durations can often resolve the issue quickly.



High Speed Max Run Time:
This new feature includes a special function not available in the standard profile settings due to space limitations. If the Bulk phase stops early—typically because the prediction algorithm misjudges the flow rate (the powder exits faster than the scale can respond) — the Fine High Speed phase may run for an extended period until the ramp-down point is reached. This extended duration can overload the tube with powder, often resulting in overthrows as it overwhelms both the ramp-down and final phase.

To prevent this, High Speed is capped with a maximum run time. Once this limit is reached, the speed is automatically reduced until the ramp-down point is achieved. A typical value of approximately 1 second is usually sufficient. However, if overthrowing persists, consider reducing this time—for example, to 0.6 seconds.

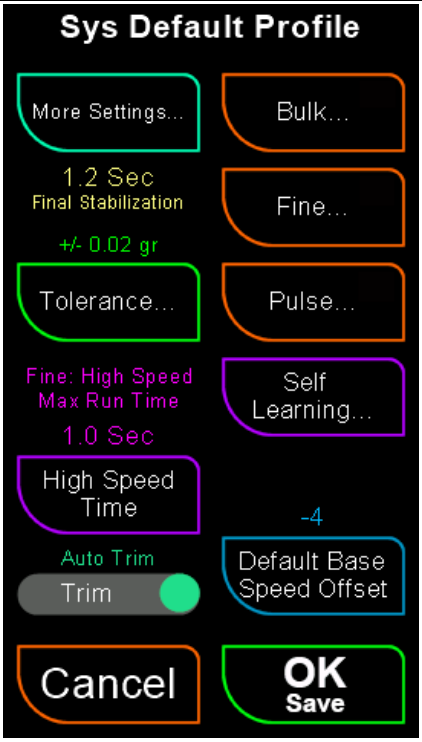
Note: This setting is distinct from the overall High Speed operational duration, which typically averages around 1 second or more. Be careful not to confuse the two.

Other Arrow Button:
These buttons offer a quick way to adjust the standard profile settings, conveniently increasing or decreasing values by one unit. Holding the arrow key enables rapid changes.

Example Usage:
If HRF metadata shows that the Ramp Down phase is too short and overthrows are occurring, press and hold the Profile button, then tap the Ramp Down Up arrow a few times to shift the target point and extend the ramp-down duration.

HRF Meta Button:
This button provides a convenient way to toggle the metadata between the option selected via the F-key (default: Inflight) and the HRF metadata

Default profile in relation to the High Speed Max Run Time

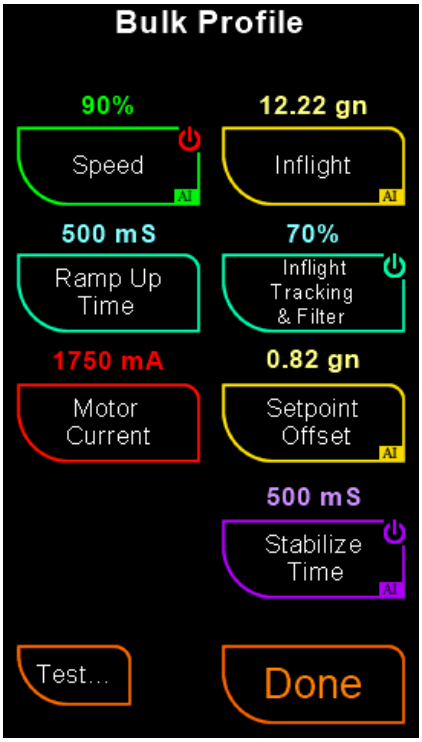


As there is no room on the Fine screen for this control, the ability to change its default value will be available in the Default Profile settings.

Also Note: The default base speed offset has been relocated from the deep settings to the default profile screen and also the vibrator Auto Trim selector is available on this screen.

Bulk Instrument.

A new feature that allows us to turn off the Bulk Stabilize Time.



Disable / Enable

Turning the Bulk instrument OFF is now more intuitive—simply hold the High Speed button for approximately one second and touching it once to reenable.

Stabilize Time OFF:

Stabilize Time OFF is a specialized mode designed to reduce cycle time. When enabled, it disables the stabilization delay and deactivates the inflight tracking system described earlier.

To maintain accuracy without stabilization, the AI compensates for residual bulk powder still in motion ("inflight") as the Fine or Pulse instruments begin dispensing. The degree of compensation is governed by the *Inflight* setting:

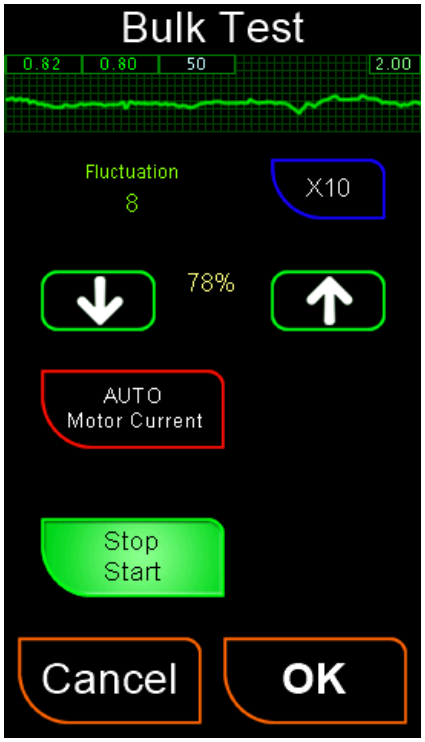
- If the inflight value is **too large**, the Fine instrument may start, pause, and enter *Analysis* mode prematurely—just after the bulk finishes.
- If the inflight value is **too small**, the Fine instrument may misjudge its operation and overshoot the target.

To turning the Stabilization OFF — simply hold the button for approximately one second and touching it once to reenable.

⚠ **Important**: Do not disable *Stabilize Time* while the system is in *Self-Learning* mode. The AI requires stabilization to accurately assess powder behavior during its learning phase.

⚠ ***Important Change:*** The Bulk Offset no longer dictates the stopping aim point of the Bulk Instrument. It now defines the offset at which the Fine Instrument should begin. As a result, the value in the Bulk Offset is significantly lower than what was previously used

Bulk Speed AI:



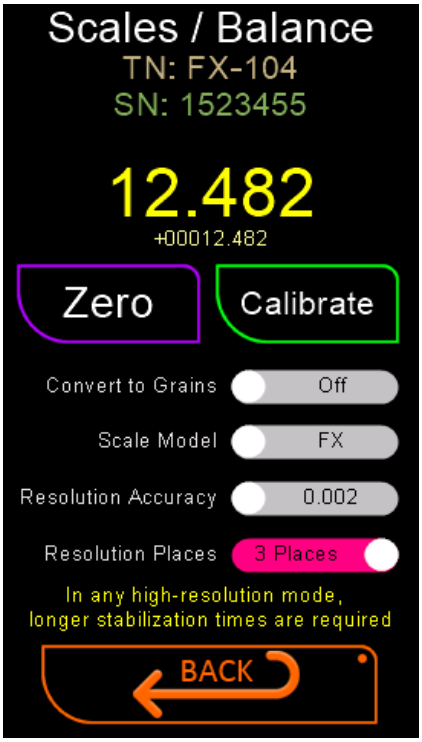
Bulk speed is often overlooked, yet it can be a critical factor in achieving optimal performance. If set too high, the powder may tumble rather than flow, resulting in unstable output. Conversely, if set too low, the powder fails to flow smoothly. Depending on kernel weight, the AI may adjust this speed automatically, but manually setting it from the test screen before initiating self-learning is usually the best approach.

Bulk Test Speed: Run the bulk at various speeds to identify the setting that produces the least fluctuation within the first two to three seconds. Use the X10/X1 button to adjust the step size and fine-tune the speed for optimal stability.

⚠ **Important**: The Bulk motor is a stepper motor, which are notoriously noisy at certain speeds—typically in the range of 40% to 85% of its maximum speed.

Scale Setup.

The entire weighing platform has been moved from 16 bit to 32 bit to enable the ability to handle three digit (grains) scale resolutions.



⚠ Warning: A&D FX/FZ 104 and FX/FZ 254 High-Resolution Balances

When using these high-resolution scales, both resolution accuracy and decimal places settings must be configured appropriately. Additionally, these models require longer stabilization times to achieve an accurate weight.

As a result:

You will need to increase Final and other **stabilization times**

- **Pulse durations** might also require adjustment for optimal performance

🛠 Fine-tuning these settings ensures reliable dispensing and accurate measurements at higher precision.

Recommendation:

After enabling any high-resolution option, it is recommended that you navigate to **System > System Core > Restore > Profile**, and restore the default profile. This will help ensure that many of the infl settings are correctly applied.

Note:

Do not select a resolution beyond the scale's capabilities. These settings are intended to *match* the scale's configured resolution—they do **not** define or override it. Selecting an unsupported resolution may result in inaccurate readings, communication errors and will generally yield a **X Error** warning.

⚠ **Scale Error Codes**

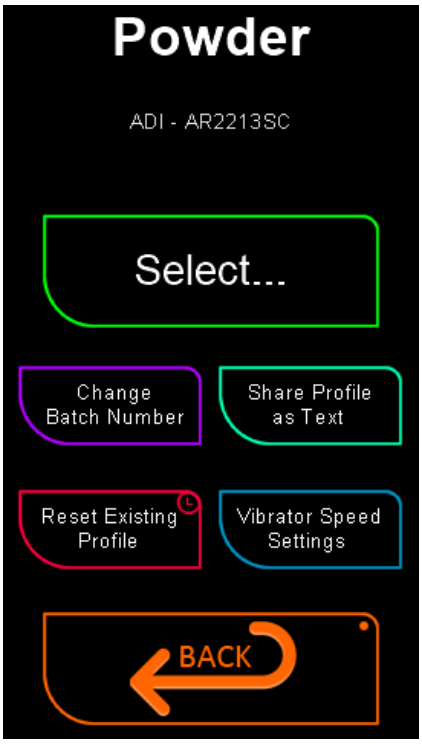
When detected, error codes are reported in the standard weight value field. Each code indicates a specific protocol or data integrity issue during communication with the scale:

- **-E, Generic:** is a generic error indicator shown when the scale cannot stabilize or process a valid weight reading. It often appears when:
  - The weighing environment is unstable (vibration, drafts, temperature fluctuations, static, or magnetic interference).
  - The tare or calibration process fails.
  - The load cell is overloaded or the platen is obstructed.
  - The scale is powered on with a load already on the pan.

  First try removing the cup and re-zeroing the scale, or power-cycle the scale with the cup removed from the platen, or perform a full calibration to reestablish correct framing.
- **T-Error, Timeout:** The scale failed to transmit a complete data packet within the expected time window. This may indicate a communication delay, disconnection, or hardware fault.
- **D-Error, Data Length Mismatch:** The received data packet length does not conform to the expected byte count defined by the current scale configuration. This maybe associated with a generic -E error displayed on the scale.
- **X-Error, Unexpected Format:** The data stream contains values or structure inconsistent with the configured scale settings. Ensure the scale settings are matching the scale type and configuration.
- **R-Error, Out-of-Range Value:** The parsed weight value falls outside the valid operational range defined by the system. This could indicate a corrupted packet, sensor fault, or miscalibration.

⚠ ***Important Change:*** Seamless automatic grams-to-grains conversion is no longer supported. This functionality must now be explicitly enabled in the settings.

Powder Profile Reset

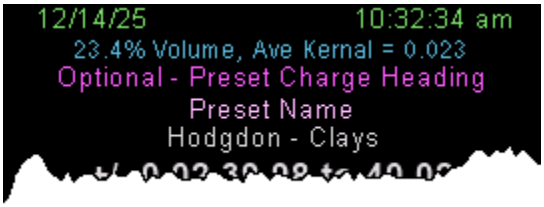


The ability to reset the powder profile back to its original settings from the Powder.dlb database has been added to the Power Selection screen. If a power contains special settings that are modified within the profile, this new button allows you to fully restore the profile to its default state, with all parameters from the database reapplied to the profile.

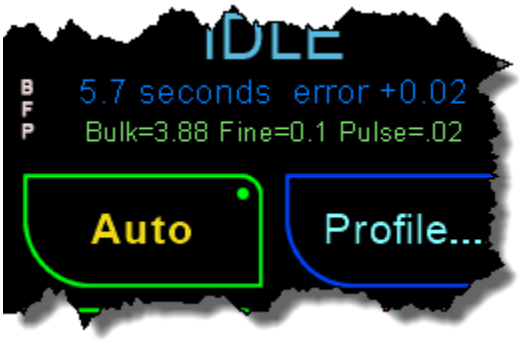
This functionality previously existed under the Profile Reset option; however, it has been moved and simplified because some users found the profile selection confusing

Dispensing Screen data

Added Average Kernel Weight, if available to the top and below the clock.



Added instrument indicators to the left side of the screen. This is especially useful when HRF metadata is active, as it shows which instruments were used.



Statistical Information

During the early stages of self-learning, the statistics are disabled. A message will now flash on the screen to indicate this. 

Owners Manual Documentation

To better accommodate the expanding size of the Owner's Manual, it has been decided to split the content into three distinct sections:

- **Setup**
- **General**
- **Profile** – separated from the General section so operators can keep it readily accessible.

Tips for Speed

For those seeking speed: be aware that increased speed may lead to occasional overthrows. If this trade-off is acceptable, the following tips can help you achieve significantly faster operation—especially with the slower 104 scale. These adjustments should be made after self-learning has completed, or after you've disabled it when monitoring begins.

1. Set the self-learning bias to "Speed." This helps the AI understand your preference. Note: this does not aim for maximum speed, but will conservatively bias toward faster performance.
2. Use the Bulk Test to find the optimal speed with minimal fluctuation. This improves system stability.
3. Disable Bulk Stabilize Time by pressing and holding the Stabilize button.
4. Disable Fine Stabilize Time by pressing and holding the Stabilize button.
5. Disable Pulse (if possible) by pressing and holding the Nominal Speed button.

Next, use the HRF controls (press and hold the Profile button) to fine-tune the Fine control for stable results. This typically involves adjusting the Final Phase and Low Speed settings.

Notes on the New A&D High-Resolution Balances (Scales)

The new A&D scales are an impressive piece of technology; however, it's important to understand that they come at both a financial cost and a speed cost. These balances offer fast stabilization times and remarkable accuracy, making them incredibly stable.

However, when used for automation—such as with the SuperTrickler—it can be more challenging to achieve the speeds that are typically acceptable in manual operation. In practice, the FX/FZ-104 and FX/FZ-254 balances exhibit noticeably slower stabilization times when considering inflight and drop resonance. That said, by applying the above *Tips for Speed*, you can still achieve drop times around and below the 10-second mark.

- If extreme accuracy is your priority and you're comfortable with slightly longer drop times, the FX/FZ-104 or FX/FZ-254 is ideal.
- If faster drop speed is more important to you, the FX/FZ-120i or FX/FZ-300i remains a very good choice.

Notes on adding more and the number of controls.

The SuperTrickler isn't "hard to use." It's **deeply configurable**. There's a big difference.

- For the **novice**, it offers an AI-driven, self-learning mode that works brilliantly out of the box for most situations.
- For the **expert**, it offers unparalleled control to squeeze out every last drop of performance and handle any powder on the market.

The criticism often arises from a misunderstanding of the product's dual nature. It is not a kitchen appliance with a single button; it is a professional instrument. The device's perceived difficulty is the price of admission for its flexibility and ability to be optimised for any powder. Users who read the manual will achieve excellent results; fiddling without understanding the controls leads to poor outcomes. Read the manual.

A Friendly Note on Support

We understand that seeking support can sometimes be frustrating—especially when things aren't working as expected. However, we've found that many support requests stem from users not having read the companion document or the Owner's Manual. This often becomes clear when there's confusion around basic concepts or terminology, with questions like "How do I do that?" highlighting a lack of familiarity with the system.

This can place unnecessary strain on our support team, who must spend time explaining fundamental operations and navigating terminology mismatches. Users may describe features using their own terms, which can make it challenging to communicate effectively—especially when those terms differ from the standardized language used in the manual.

We fully acknowledge that the Owner's Manual is comprehensive, and it may seem like a lot to take in. That said, it's an essential resource designed to help you get the most out of your SuperTrickler. One of our common support questions is, "Have you read the manual?"—and while the answer is often "Yes," it's sometimes clear that key sections have been missed.

To ensure we can provide the most efficient and helpful support possible, our team may ask you to review relevant sections of the manual before proceeding with troubleshooting. If you truly want to unlock the full potential of your SuperTrickler, we strongly encourage you to read the Owner's Manual—especially the Profile section.

Thank you for your understanding and for being part of the SuperTrickler community.

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