SuperTrickler®

When True Precision Matters

ST101 Generation 1, 2 & 3

Owners Manual – Installation

V3.3.1

With Automated Scale Programming

Important Safety Instruction

Thank you for purchasing your Petersen Kowald SuperTrickler® ST101 smokeless gunpowder dispensing unit. We want you to get the best out of this easy to use and feature rich unit. Taking a small amount of time to read this manual will greatly benefit you in getting the SuperTrickler working for you and getting the most from its benefits and functionality.

The manual contains important safety, installation, and operating instructions for the SuperTrickler and compatible A&D balance (scale). Do not operate the SuperTrickler or balance unless you have read and understood the specifics of the instructions.

Petersen Kowald is a collaboration between Rex Petersen & Peter Kowald for the development of the SuperTrickler®. The manufacturing, ownership, sales, and support is the responsibility of Modgunn Security ApS (Denmark).

Disclaimer

Gunpowder is a dangerous material and before using this equipment and before reloading, we recommend that you seek expert advice on the proper use of all products, handling, procedures, and charge quantities. Rex Petersen, Peter Kowald, SuperTrickler® & Modgunn Security ApS take no responsibility for any harm or damage that may result from use of the SuperTrickler® and the reloading process.

General Safety

Failure to adhere to the following safety rules can result in property damage and/or serious personal injury. Read and understand the safety rules before attempting to reload ammunition.

Only reload ammunition when you can give your full and undivided attention. Avoid distractions such as television, visitors, or any other factors that may adversely affect your concentration.

NEVER attempt to reload while under the influence of alcohol, drugs or medications that may affect concentration or judgment.

Thoroughly read and understand all reloading equipment instructions before using that equipment. If you do not understand the written instructions, contact the manufacturer of the piece of equipment for clarification before proceeding.

Wear approved safety glasses during all reloading operations and make safety glasses available to any approved visitors to your loading area.

Make certain that all equipment is appropriately anchored to, or placed on, a solid work surface during use. Follow the tools manufacturer's instructions for safely mounting of all equipment.

Observe good housekeeping in the reloading area. Clean up spills promptly and limit the components on the bench to only those required for the immediate task at hand.

Keep accurate and legible records; the SuperTrickler can log and track powder batches, however, it is up to the operator to ensure the correct information is entered into the system. Label everything so there is no confusion regarding the ammunition or components.

Store and keep powder and primers away from sources of heat, open flame and out of the reach of children and follow your country's legal requirements for storage.

Do not smoke, eat, or drink in the loading area.

Keep powder and primers in their original, factory-marked containers. Discard any components that lose their identification information. If you must remove any components from their factory containers during loading, return them to their proper containers as soon as the dispensing session ends to prevent the ingress of moisture or other contaminates.

Keep no more than one container of propellant on the bench at a time. Store other powders away from the bench to avoid mistakes or mixing.

Carefully read and follow published reloading data. Verify that your loading manual is open to the correct page for the cartridge you are loading.

The SuperTrickler is designed exclusively for the FZ/FX series of balances (scale); never attempt to use the SuperTrickler with any unapproved brands or models. The balance must be warmed up for at least the manufacturer's recommended period of time and calibrated before reloading commences.

Keep the balance (scale) clean and remove the powder cup, dust & debris before calibration.

Calibration weights must be accurate and clean. It is recommended that the weights are never touched with bare hands and the use of thin cotton gloves, or a lifting tool, should be used.

The balance is a sensitive piece of equipment and care must be taken not to drop the unit or drop anything onto the unit. In the event that the unit has been (or has potentially been) damaged, it must be returned to the manufacturer or approved repairer.

Avoid locating balance within three feet (one meter) of fluorescent lights. The electromagnetic fields generated by such lights can cause weighing errors.

Never use damaged equipment, contaminated, or damaged products for the reloading process.

It is not recommended to have transmitting equipment such as cell phones or other strong transmitters near your reloading equipment. This type of equipment can interfere with the data communications between the scale and the SuperTrickler and may also interfere with the scale operation and calibration.

Cell phones and other devises with batteries are a fire risk and it is not recommended to have such devices present in the vicinity of gunpowder.

The SuperTrickler is equipped with a touchscreen display; the screen is designed to be operated with your finger or soft blunt pointer only. Do not use a hard or sharp object to operate the touchscreen.

Warnings

DO NOT USE WITH BLACK POWDER: This equipment is designed and approved for smokeless gunpowder only.

Do not remove the bulk trickler tube with powder in the hopper. Doing so will allow powder into the body of the unit and will require cleaning from an authorised service center, at your cost.

Micro SD Card: The unit must not be used, filled, or emptied without the Micro SD card installed, as the location of the card prevents the ingress of material into the electronics bay.

Use only an appropriate power supply.

- Do not use the A&D balance power supply with the SuperTrickler.
- The balance receives power directly from the SuperTrickler.
- Power requirements:
  Gen 1 & 2 units; use only the supplied 15Volt 4 Amp, PSU
  Gen 3; 12Volt 2 Amp (30W) USB-C PD Charger.
  It's important that the charger support 12V.
  Some chargers only support 5V, 9V, 15V and 20V. They will NOT work with the SuperTrickler.

Scales/Balance

Scales and balances are both weighing machines. They are different in that a scale measures weight while a balance measures mass. Weight is the force of gravity on an object and a balance compares the mass of two different objects. The term 'scale' or 'scales' historically has been used in reloading to describe the weighting device and as such will be used throughout this document.

General Terminology

Scale: The A&D FZ/FX series balance.
Weight: The amount of powder as weighed by the scale.
Powder: refers to smokeless gunpowder.
Load, Charge and Drop: refers to powder dispensed for the purposes of loading a bullet.
AI: is the acronym for Artificial Intelligence.
SD card: refers to the Micro SD Card.

Warranty

The SuperTrickler® is covered by a two (2) year comprehensive warranty. This Warranty covers all components supplied with the SuperTrickler (Main unit, Power Supply, MicroSD Card, cables and accessories.) Shipping in both directions for warranty repairs (once approved) is also covered. For any warranty claims, please contact services@supertrickler.com.au

The Warranty period starts on the date of the supplied Invoice from Modgunn Security ApS and is transferable to second and future owners.

IMPORTANT: YOU MUST KEEP A COPY OF THE SUPPLIED INVOICE, AS THIS IS YOUR ONLY PROOF OF PURCHASE AND IS YOUR WARRANTY REGISTRATION. IF YOU SELL YOUR UNIT, YOU MUST PROVIDE A COPY OF ORIGINAL INVOICE TO THE NEW OWNER FOR THEM TO HAVE A VALID TRANSFERRED WARRANTY. WITHOUT PRESENTING THE ORIGINAL INVOICE YOUR WARRANTY MAY BE INVALIDATED. COPIES/IMAGES OF THE ORIGINAL INVOICE ARE ACCEPTABLE.

Limitations:

- Removal of any security/warranty stickers on the unit will void all warranties.
- Connecting any unapproved device, wiring, connectors etc to the 25-pin expansion port, or 9 pin Scales port will void all warranties.
- Damage caused by loading powder without the large rotation bulk tube in place is not covered under warranty.
- The use of an unapproved power supply unit (PSU) will void all warranties.
- General physical abuse (as evaluated by Modgunn Security ApS) is not covered under warranty and may void all warranties.
- If you purchased your A&D Scale from Modgunn Security ApS, you should register it online with A&D at https://weighing.andonline.com/support/warranty.

This Document

This document was specifically written for the SuperTrickler® ST101 and forms part of a three-part manual set. The **Owner's Manual – General** contains broad information about the SuperTrickler®. The **Owner's Manual – Installation** covers scale setup and basic configuration. The **Owner's Manual – Profile** focuses on powder and preset profile settings, as well as detailed dispensing operations.

SuperTrickler & Modgunn Security ApS, maintain the right to change this document and or the firmware at any time without notification.

This manual should be read and understood before operating the SuperTrickler. If you have questions, or are having difficulty understanding any of this documentation, please contact our support desk: support@supertrickler.com.au

To find the latest version of this document, and all applicable downloads, please go to one of the applicable places on our website:
Home: https://supertrickler.com.au
Documentation: https://supertrickler.com.au/documentation/
Firmware Downloads: https://supertrickler.com.au/files/
Powder Database file: https://supertrickler.com.au/powder-database/

Also, there are several Facebook groups related to the SuperTrickler®:
SuperTrickler FB Group: https://www.facebook.com/groups/174920460551694
SuperTrickler FB Owners Group: https://www.facebook.com/groups/1226539671258233 (you will need your order number to join this group) The owners group is where you will find the best support, only owners are in this group so that questions can be asked freely without outside interference.

Splash Screen background designed by coolvector / Freepik

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General

Introduction

The **SuperTrickler®** is the most advanced and unique gunpowder dispenser available on the market. Here's why:

It took many years to develop this highly sophisticated, user-friendly, fast, and accurate dispenser, designed for both novice and experienced home users.

The SuperTrickler uses an external laboratory balance from A&D, boasting an accuracy of 0.02, 0.01 or 0.002 grains depending on the balance model. Delivery from its generous hopper is managed by a two-tube system: a rotating tube for fast bulk delivery and a fine vibrating tube for the final touches. The result is a quiet, fast, and precise charge that saves valuable time and ensures precision.

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 firmware update 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.

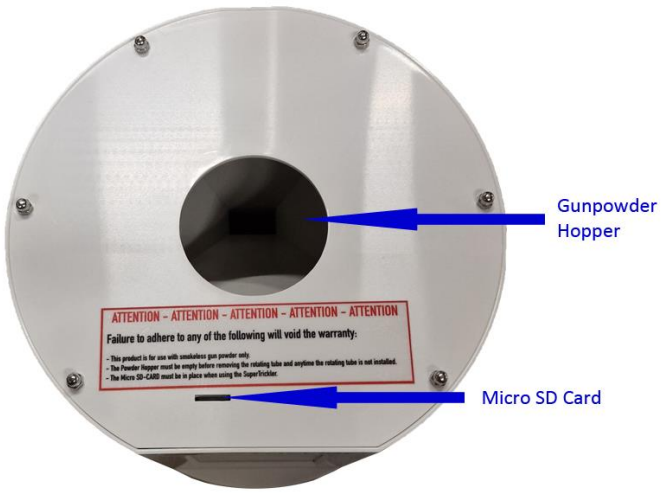
Key Components

Front

💡 **PLEASE NOTE:** The SuperTrickler has two separate dispensing tubes; the large lower bulk rotating tube and the small upper fine vibrating tube (this tube does not rotate).

⚠ **Important Warning**: The vibrating trickler tube is a delicate component and must not be pushed, pulled or flexed, gently pulling it to ensure it is in the full forward position is acceptable. Harsh manipulation can destroy the tube and is not covered under Warranty.

Top

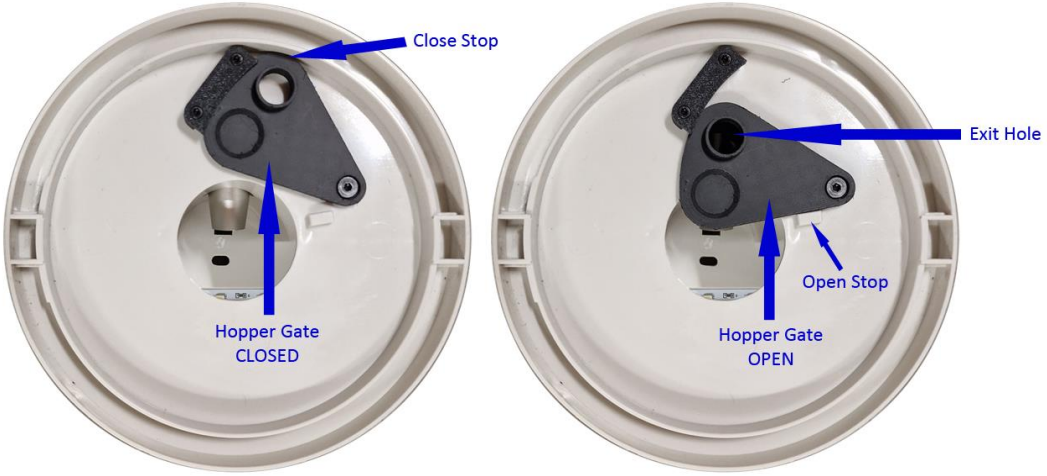


💡 **Note 1**: It is normal that the inside of the Gunpowder hopper will discolor over time.

💡 **Note 2**: The hopper does not have a cover; this is intentional as the SuperTrickler is not a storage container. Gunpowder is hydroscopic and can absorb moisture if not stored properly; for safety reasons, the powder should ***always*** be stored in its original container.

💡 **Note 3**: Do not pour gunpowder into the hopper without the Micro SD card installed. The card acts as a seal to the electronics bay and doing so will void your Warranty.
In the event that you accidently spill powder into the electronics bay, do not operate the SuperTrickler and contact support@supertrickler.com.au for advice.

Bottom

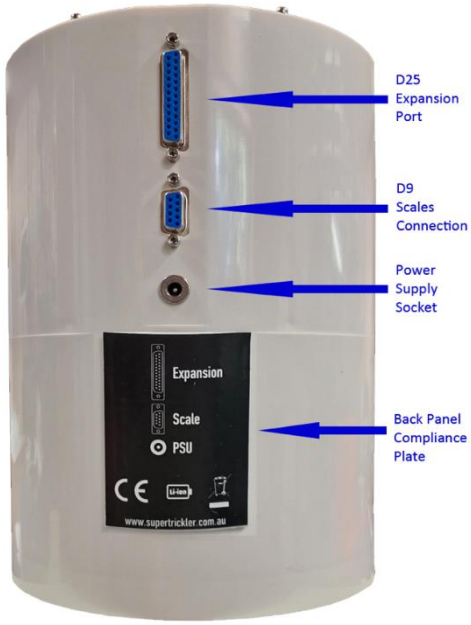


The SuperTrickler will not seat into position on the scale if the hopper gate is not fully closed, to prevent accidental spillage of powder.

⚠ **Warning**: Do not force SuperTrickler onto the scale. If the hopper gate is not fully closed, you may damage your scale.

Rear

The rear view will be slightly different with a Gen 3 machine, which features a USB-C power connector and a USB memory stick port.



Installation

Scale

The scale is a precision instrument. Unpack it carefully. It is recommended to keep the packaging materials. **DO NOT** set it up as per the A&D FX/FZ series owner's manual, as the SuperTrickler requires a different arrangement.

The following standard A&D balance components are **NOT** required for use with the SuperTrickler:

- Wind shield
- Scale plate and top plate
- The power supply once the SuperTrickler is attached (The SuperTrickler will supply power to the scale via the 9-pin cable).

Only the main scale unit is required for use with the SuperTrickler.
Please heed any precautions specified in the A&D owner's manual.
https://weighing.andonline.com/sites/default/files/documents/FX_FZ-i_Instruction%20Manaul.pdf

SuperTrickler

Unpack the SuperTrickler carefully, it is recommended to keep the packaging materials.

1. Carefully install the SuperTrickler's custom scale plate into the scale plate slot, taking care not to press it in too hard (your scale is an expensive and delicate instrument).

Wrong: The original scale plate must be removed. **Correct**: the SuperTrickler scale plate is installed.

2. Place the SuperTrickler onto the scale, locating it such that it sits flat on the scale (note the locating slots to the left and right of the scale).

3. Plug the 9-pin cable into both the SuperTrickler and the scale; finger-tighten all the locking screws firmly. This is the communications & scale power source – if the scale standard power supply is attached, please remove it.

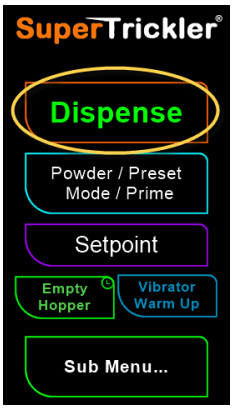
4. Plug the SuperTrickler's power supply unit in and turn it on. This will power up the SuperTrickler and power up the scale in warm up mode.

5. By default the SuperTrickler will start up with the scale in warm up mode. However, so that we can program the scale, we must first bypass the warmup timer and turn the scale on fully via the SuperTrickler.

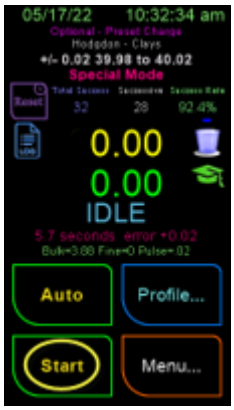
6. When the SuperTrickler is first powered up, it will display a splash screen showing the firmware version number for a few seconds. It will then display the warm-up screen, giving instructions to ensure the scale plate is clean and clear.

7. **If the scale is new** or has been reset to factory settings, after the splash screen has ended, you will be taken directly to the Program Scales screen so that you can automatically program all of the scale's settings with the touch of a button.
If the scale is pre-programmed, the warmup screen will be shown. Touch anywhere on the Clean & Clear screen to take you to the Main Menu.

By now the scale should be on and displaying a weight value.



8. Touch the Start button to take you to the charging screen.



9. Touch the Start button to override the warmup timer.

10. Once the warmup timer has been overridden, the scale may be fully turned on and ready for programming. If the scale is not on, then press the ON-OFF button on the scale to turn on the scale.

11. The correct configuration is critical for communications and optimisation of the data exchange between the SuperTrickler and the scale. If your scales were supplied with your SuperTrickler, it will be pre-programmed, and you can skip the follow section and continue at 'Testing the communications'.

11. If the scale is displaying a weight, then skip down to the Programming the Scale section below.

12. If your scale is displaying an error -E then the scale will require calibration before programming.

- **FZ** series scales, just press the CAL button on the scale.
- **FX** series, You will need a 100 gram precision standard weight for this process, then continue with step 13 through 17.

13. On the scale, press the CAL button for 2 seconds and the display should read cal 0 after you remove your fingers.

14. Press PRINT to set the zero and the display should change to 100

15. Place a 100 gram weight on the new SuperTrickler plate

16. Press PRINT and wait for the display to read end

17. Remove the 100 gram weight and the scale should display 0.000

Programming the Scale

This one-time procedure is required to configure your precision balance to communicate with the SuperTrickler and to operate in the most practical way for precision charge loading.

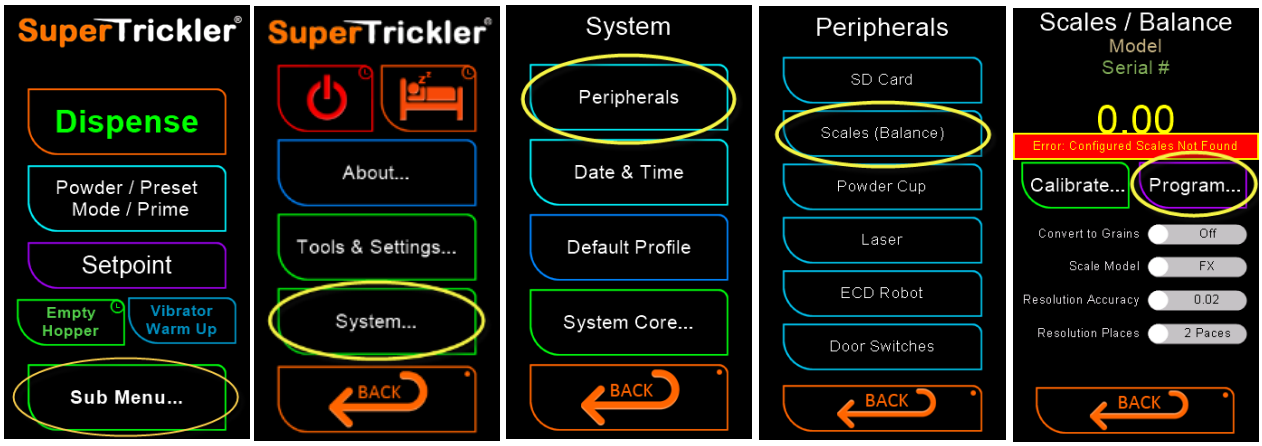
If your scale has a nonstandard configuration to suit another device, or is a brand new scale with the factory settings, then it will need to be programmed. The programming can be carried out automatically or entered manually. It is highly recommended to use the automatic programming method to reduce the chances of error; however, not all scales are supported, and some firmware variations may not be supported by the automatic process.

The following scales with standard firmware supporting 'g' (grams) and 'GN' (grains) can be programmed automatically.
A&D: FX/FZ120i, FX/FZ300i, FX/FZ104 & FX/FZ254

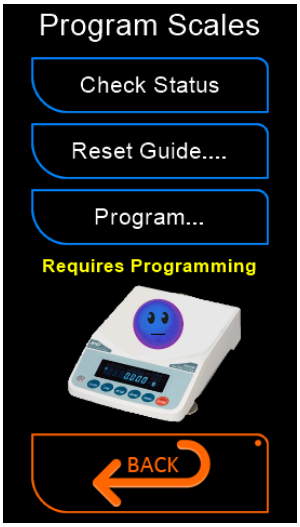
Please Note: Should the scale have factory settings (new or reset), upon power-up with the scale connected to the SuperTrickler, the system will detect this and take you directly to the scale programming screen.

Automated Programming of the Scale

If the system does not automatically take you to the Program Scales screen, follow the steps below to get to this screen.



Program Scales



For new or reset scales, the screen should display as shown. If not, press "Check Status." Should this still not display the screen, then use the "Reset Guide…" to step you through the process of resetting your scales.

Note: The depicted scales display may be slightly different depending on the scale model; however, the steps remain the same.

Program… – Only enabled (else greyed out) when the scale is determined to be in an appropriate state to program. Pressing this button will take you to a screen instructing you on how to set the scale into a programming-ready state.

Status description & Icon displays

Not Found: The scale was not found or could not be read.
Check the cable between the SuperTrickler and the scale.

Status Check: The system is asking you to press the Check Status button again, as the current information is unclear.

Please Reset: The system can read the scale and has found that a reset is required for the configuration to be compatible with the SuperTrickler. Press the Reset Guide… for instructions.

Special Note: If your scale does not support Grains (GN) as a unit of weight, this message will appear even after programming. Manual setting of at least the units will be required, as the programming process may have corrupted the unit settings.

Required Programming: The system has found that the scale is now ready for programming, and the Program… button will be enabled — ready to start the process. (See below for more details.)

Programmed & Ready: The system has queried the scale and found that it appears ready for use with the SuperTrickler.

OK but Grams only: The system found the programming correct; however, it cannot set the weight units to GN (grains). (This may be possible with manual settings.)
The "Convert Grams to Grains" switch will be turned on, and it should be OK to run on the SuperTrickler.

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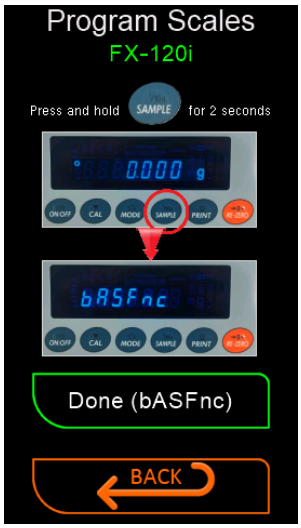
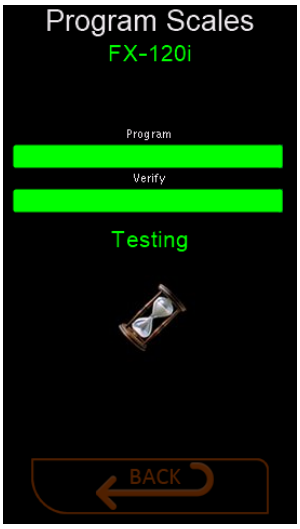
Programming Screen

Initial Screen: This instructs the user how to set the scale into a mode ready for programming by holding the Sample button on the scale for 2 seconds. Once this has been completed and the scale reads bASFnc, pressing the Done (bASFnc) button will start the programming process.





Once programming has started, the screen will display "Program" and a progress bar during the programming cycle.
It will then display "Verify" and a progress bar during this cycle.
Finally, it will display "Testing" when the scale is power-cycled and tested to confirm that programming has been successful.
Upon completion of the testing, the system will return you to the main Program Scales status screen.

The Next Step

The screen should now be displaying "**Programmed & Ready.**" Or "**OK but Grams only**" so its time to go back to the Scales/Balance screen and set the SuperTrickler configuration to suit the scale and settings.

You can skip the next section (**Manual Programming of the Scale**) and jump down to the "**Scale Communications and Matching Configuration**" section below.

Oh No, something is wrong.

If, for some reason, the scale will not program correctly or the status display does not allow the Program button to be enabled, then you may have an unsupported scale or unsupported scale firmware. In this case, you will have to manually program the scale. See instructions below.

Manual Programming of the Scale

A&D has several compatible scales; however, some firmware will vary from time to time, and new models may be released that the SuperTrickler does not yet support. In these cases, manual programming will be required. It is always advisable to start the programming with the scale in a new or reset state. See below for how to reset your scale to factory conditions.

Manually programming your scale can be confusing, and it is beyond this document's ability to define the exact procedure for your specific scale. This is a guide only and is based on the FX/FZ120i and FX/FX300i range of scales. However, in most cases, the A&D range of scales is reasonably similar to program. Should you find it too difficult to get through this step, please contact your dealer, the Facebook SuperTrickler Owners group, the SuperTrickler group, or our support team at support@supertrickler.com.au

Programming Goals

The first thing we want to achieve is setting the primary weight unit to Grains (**GN**) and the secondary weight type (for calibration) to Grams (**g**).

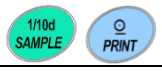
After that, we aim to set the following fields:

Cond – Conditions set to "**0**" (Fast - read the weight fast)
SPd – Display refresh rate set to "**2**" (20 times a second)
dout – Data output, set to "**3**" (continuous stream
bPS – Baud rate set to "**5**" (data rate of 19200 BPS
CrLF – Terminator set to "**1**" (CR - carriage return only)
tYPE – Data Format set to "**4**" (number format)

Scale Factory Reset

You MAY choose to do this to get your scale back to a known state. It will reset ALL settings.

To perform a factory reset: YOUR SCALE SHOULD BE OFF TO START THIS PROCEDURE

Steps	Button	Instruction	Display	Information
1	On/OFF	To turn the scale OFF		Display off, just the little arrow in lower left
2		Press ***BOTH and HOLD***		While holding, go to next step
3	ON/OFF	Press ON/OFF	PS	Scale displays PS
4		Press ***SAMPLE***	CLr	Scale displays CLr
5		Press ***PRINT***	CLr no	To cancel, press ***CAL***
6		Press ***RE-ZERO***	CLr Go	Changes to Go/Yes
7		Press ***PRINT***	End	Scale reset!

Programming Buttons

1/10d SAMPLE	To enter the configuration menu, press and hold for 2 seconds. This button is also used to scroll between classes (areas) and item parameters.
→0/T← RE-ZERO	Changes the parameters (setting).
⊙ PRINT	When a class is displayed, moves to an item in the class. When an item is displayed, store the new parameter and display the next class.
▼ CAL	Exits the configuration mode.

Step 1 – setting the units ('GN' grains are not supported by all units)

A. Press and **hold** the Sample (1/10d SAMPLE) button for 2 seconds until bASFnc is displayed.
Info: This puts the scale into programming mode.

B. Repeat pressing (short presses) the Sample (1/10d SAMPLE) button until Un it is displayed.
Hint: Generally, this is 6 or 7 times.

C. Press the Print (PRINT) button to enter the Units Menu.
Info: The default weight units will be displayed: **g**

D. Repeat pressing (short presses) the Sample (1/10d SAMPLE) button until GN is displayed.
Hint: Generally, this is 9 or 10 times.
Info: we want to set the primary weight units to Grains (GN)

E. Press the Re-Zero (→0← RE-ZERO) button to lock in Grains as the primary units.

F. Repeat pressing (short presses) the Sample (1/10d SAMPLE) button until g is displayed.
Hint: Generally, this is 2 or 3 times.
*Info: we want to set the secondary weight units to Grams (***g***), this is so the scales can be calibrated.*

G. Press the Re-Zero (→0← RE-ZERO) button to lock in Grams as the secondary units.

H. Press the Print (PRINT) button to save all the change and exit the Units menu.

I. Press the Cal (▼ CAL) button to save the changes into working memory and exit the programming menu.

Step 2 – configuration & communication protocol

A. Press and **hold** the Sample (1/10d SAMPLE) button for 2 seconds until bASFnc is displayed.
Info: This puts the scale into programming mode.

B. Press the Print (PRINT) button to enter the Base Function Menu - Cond Is displayed
Info: Condition, how fast the scale will operate.

C. Repeat pressing the Re-Zero (→0← RE-ZERO) button until 0 (zero) is displayed "RESPONSE FAST"
Hint: Generally, this is about 2 times.
Info: This sets the condition to Fast response

D. Repeat pressing the Sample (1/10d SAMPLE) button until SPd is displayed (Speed – refresh rate).
Hint: Generally, this is about 4 times.
Info: Set the Display refresh rate & communication update Speed.

E. Repeat pressing the Re-Zero (→0← RE-ZERO) button until 2 (two) is displayed "20/second"
Hint: Generally, this is about 2 times.
Info: This sets the speed to update to 20 times a second. (Not fast enough but it will do)

F. Press the Print (PRINT) button to save all the change and exit the Basic Function menu.
Info: Returns you to the programming menu options.

G. Repeat pressing the Sample (1/10d SAMPLE) button until dout is displayed (data output).
Hint: Generally, this is about 4 times.

H. Press the Print (PRINT) button to enter the Data Output Mode, Prt is displayed.

I. Repeat pressing the Re-Zero (→0← RE-ZERO) button until 3 (three) is displayed, "Stream"
Hint: Generally, this is about 3 times.
Info: This sets the communication mode to continuously stream the weight to the SuperTrickler.

J. Press the Print (PRINT) button to save all the change and exit the data output menu.
Info: Returns you to the programming menu options.

K. If S iF is not display press the Sample (1/10d SAMPLE) button until it is.
Info: Serial Interface.

L. Press the Print (PRINT) button to enter Serial Interface options.

M. f bPS is not display press the Sample (1/10d SAMPLE) button until it is.
Info: Baud Rate in bits per second.

N. Repeat pressing the Re-Zero (→0← RE-ZERO) button until 5 (five) is displayed, "19200"
Hint: Generally, this is about 3 times.
Info: This sets the baud rate to 19200 bps.

(1/10d SAMPLE)

O. Repeat pressing the **Sample** button until bEPr is displayed (parity).
Hint: Generally, this is about 1 time.

P. If the value is not 0 (zero), press the Re-Zero RE-ZERO button until it does.
Info: this is the data bits parity bit and generally is the default for this field.

Q. Repeat pressing the **Sample** 1/10d SAMPLE button until CrLF is displayed.
Hint: Generally, this is about 1 time.

R. Repeat pressing the Re-Zero RE-ZERO button until 1 (one) is displayed, "CR"
Hint: Generally, this is about 1 time.
Info: This sets the end if the data packet transmission terminator to Carriage Return only.

S. Repeat pressing the **Sample** 1/10d SAMPLE button until tYPE is displayed (type).
Hint: Generally, this is about 1 time.

T. Repeat pressing the Re-Zero RE-ZERO button until 4 (four) is displayed, "NU"
Hint: Generally, [illegible] about 5 times.
Info: This sets th[illegible] PRINT format type to number.

U. Press the Print button to save all the change and exit the serial interface menu.
Info: Returns you to the programming menu options.

V. Press the Cal CAL button to save the changes into working memory and exit the programming menu.

Done

At this stage, the programming should be completed. For additional information, we have included an excerpt from the FZ/FZ120i owner's manual.

You should now be able to continue to the "**Scale Communications and Matching Configuration**" section below, or you may first choose to set up the calibration range for the FX series. Normally, this defaults to 100 grams, but you may choose to change this to 50 grams if that is the only precision weight you have.

How to set the scale for a 50 gram precision standard weight.

Steps	Button	Instruction	Display	Information
1	CAL	Press ***Cal*** for 2 seconds	cal 0	Calibration
2	1/10d SAMPLE	Press ***SAMPLE***	100.000	100 gram weight
3	MODE	Press ***Mode***	50.000	50 gram weight
4	PRINT	Press ***PRINT***	cal 0	Save change
5	CAL	Press ***Cal***		Exit calibration change

Scale Table of Changes

The following table shows the changes to the standard configuration. If you are unsure of the settings or should your scale have a nonstandard configuration to suit another device, please check the settings against this table. Check that all settings are as per the settings marked in yellow and unmarked settings are the factory defaults. If the information does not appear to be the same as shown please constult your orginal A&D balance hand book.

Class	Item and Parameter		Description	
bASFnc Environment Display	Cond Condition	0	Fast response, sensitive value FAST	With "HoLd 1", sets the averaging time.
		▪ 1	MID.	
		2	Slow response, stable value SLOW	
	St-b Stability band width	0	Stable range is ±1 digit	The stabilization indicator illuminates when the display fluctuation is within the range. With "HoLd 1", sets the stabilization range.
		▪ 1		
		2	Stable range is ±3 digits	
	HoLd Hold function	▪ 0	OFF	Holds the display when stable in animal mode. With "HoLd 1", ANIMAL turns on.
		1	ON	
	trc Zero tracking	0	OFF	Keeps zero display by tracking zero drift.
		▪ 1	Normal	
		2	Strong	
		3	Very strong	
	SPd Display refresh rate	▪ 0	5 times/second	Period to refresh the display
		1	10 times/second	
		2	20 times/second	
	Pnt Decimal point	▪ 0	Point (.)	Decimal point format
		1	Comma (,)	
	P-on Auto display-ON	▪ 0	OFF	Turns on the weighing mode display when the AC adapter is connected.
		1	ON	
	PoFF Auto display-OFF	▪ 0	OFF	Turns off the display after 10 minutes of inactivity.
		1	ON (10 minutes)	
	rnG Display at start	▪ 0	Displays	Select whether or not to display the minimum weighing value at weighing start.
		1	Does not display	
	bEEP Beep	0	Does not sound	Select whether or not to sound the beep when operating on keys.
		▪ 1	Sounds	
CL AdJ * Clock			Refer to "10-9 Clock and calendar function".	Confirms and sets the time and date. The time and date are added to output data.
CP Fnc Comparator	CP Comparator mode	▪ 0	No comparison	
		1	Comparison, excluding "near zero" when stable value or overloaded	
		2	Comparison, including "near zero" when stable value or overloaded	
		3	Continuous comparison, excluding "near zero"	
		4	Continuous comparison, including "near zero"	
	bEP_ LO buzzer	▪ 0	OFF	
		1	ON	
	bEP- OK buzzer	▪ 0	OFF	
		1	ON	
	bEP¯ HI buzzer	▪ 0	OFF	
		1	ON	

CP Hi Upper limit		Refer to "10.10. Comparator Function".		
CP Lo Lower limit				
dout Data output	Prt Data output mode	▪ 0	Key mode	Accepts the PRINT key only when the display is stable.
		1	Auto print mode A (Reference = zero)	Outputs data when the display is stable and conditions of AP-P, AP-b and the reference value are met.
		2	Auto print mode B (Reference = last stable value)	
		3	Stream mode	Outputs data continuously.
		4	Key mode B (Immediately)	Accepts the PRINT key regardless of the display condition.
		5	Key mode C (When stable)	Accepts the PRINT key immediately when the display is stable, or waits for the display to be stable when not.
		6	Interval output mode	Uses interval output mode.
	AP-P Auto print polarity	▪ 0	Plus only	Displayed value>Reference
		1	Minus only	Displayed value<Reference
		2	Both	Regardless of displayed value
	AP-b Auto print difference	▪ 0	10 digits	Difference between reference value and displayed value
		1	100 digits	
		2	1000 digits	
	int Interval time	0	Every measurement	Interval time for the interval output mode (With Prt 6)
		▪ 1	2 seconds	
		2	5 seconds	
		3	10 seconds	
		4	30 seconds	
		5	1 minute	
		6	2 minute	
		7	5 minute	
		8	10 minute	
	S-id ID number output	▪ 0	No output	Selects whether or not the ID number is output.
		1	Output	
	S-td* Time/Date output	▪ 0	No output	
		1	Time only	
		2	Date only	
		3	Time and date	
	PUSE Data output pause	▪ 0	No pause	Selects the data output interval.
		1	Pause (1.6 seconds)	
	At-F Auto feed	▪ 0	Not used	Selects whether or not automatic feed is performed.
		1	Used	
	inFo GLP output	▪ 0	No output	Selects GLP output method.
		1	AD-8121 format	
		2	General data format (output time and date using the built-in clock)	
		3	General data format (output time and date using the clock of the external equipment)	
	Ar-d Zero after output	▪ 0	Not used	Adjusts zero automatically after data is output
		1	Used	

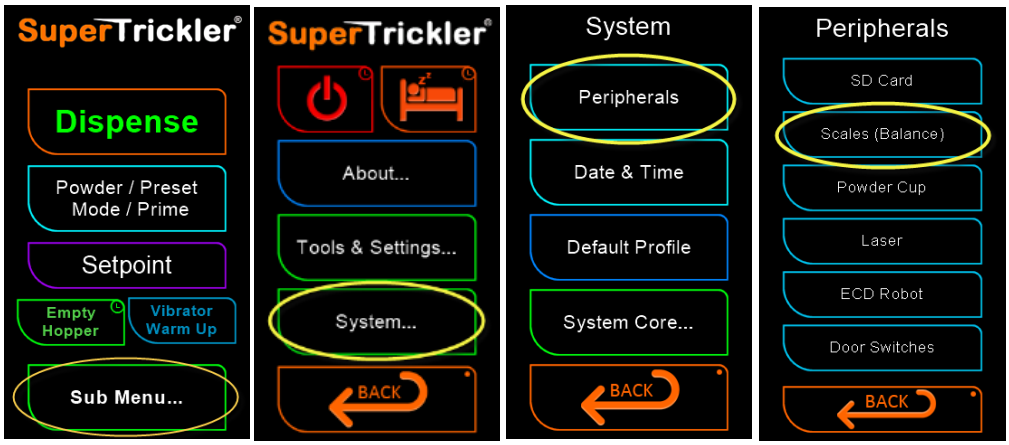
SiF Serial interface	bPS Baud rate	0	600 bps	
		1	1200 bps	
		▪ 2	2400 bps	
		3	4800 bps	
		4	9600 bps	
		5	19200 bps	
	btPr Data bit, parity bit	▪ 0	7 bits, even	
		1	7 bits, odd	
		2	8 bits, none	
	CrLF Terminator	▪ 0	CR LF	CR: ASCII code 0Dh LF: ASCII code 0Ah
		1	CR	
	tYPE Data format	▪ 0	A&D standard format	Refer to "10.6. Description of the Item "Data Format"".
		1	DP format	
		2	KF format	
		3	MT format	
		4	NU format	
		5	CSV format	
	t-UP Timeout	0	No limit	Selects the wait time to receive a command.
		▪ 1	1 second	
	ErCd AK, Error code	▪ 0	No output	AK:ASCII code 06h
		1	Output	
nLt Programmable-unit (Multi-unit)		Sets an arbitrary coefficient.		Available only when programmable- unit mode is selected.
Unit Unit		Refer to "5. WEIGHING UNITS".		
id ID number		Refer to "11. ID NUMBER AND GLP REPORT"		
APFnc Application	APF Application function	▪ 0	Normal weighing mode	
		1	Capacity indicator	
		2	Statistical calculation mode	
	StAF Statistical function mode output items	▪ 0	Number of data, sum	
		1	Number of data, sum, maximum, minimum, average, range (maximum-minimum)	
		2	Number of data, sum, maximum, minimum, average, range (maximum-minimum), standard deviation, coefficient of variation	
		3	Number of data, sum, maximum, minimum, average, range (maximum-minimum), standard deviation, coefficient of variation, relative error	
LocFnc	PASS	▪ 0	OFF	Refer to "14. PASSWORD LOCK FUNCTION".
		1	ON (limits weighing operations)	
		2	ON (enables basic weighing)	
	Loc no.	AdmIN	Administrator password input	
		USEr01 ~ USEr10	User 1 password input ~ User 10 password input	

∗: Only for the FZ-*i* /FZ-*i*WP /FZ-GD series ▪: Factory settings.

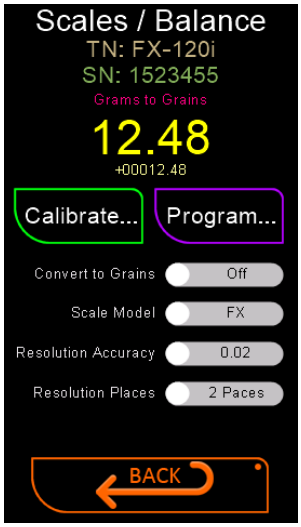
Scale Communications and Matching Configuration.

If you are not currently in the Scales/Balance screen (from the Automated Programming), you will need to navigate to this screen.

If the SuperTrickler is still warming up, or on the warmup ready screen, simply touch the screen to get the main menu.



If communications are successful, you should see a screen similar to this.



Applying a small force to the scale plate should duplicate the scale value on the SuperTrickler display.

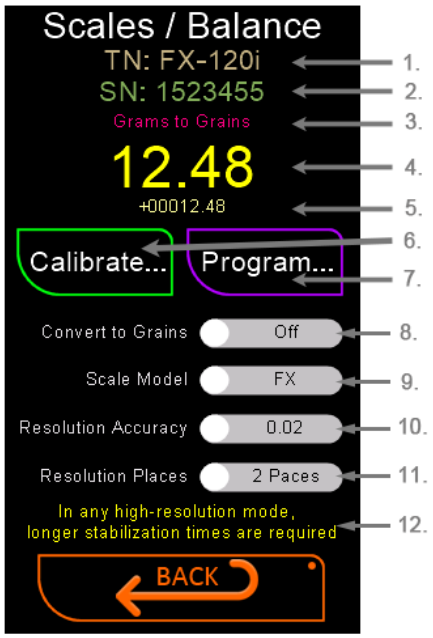
In the unlikely event that communications are not established, please check the serial communications setup/programming and the cable for damage or correct installation.

In the event unlikely event that you are unable to establish communications please contact your local dealer, the Facebook SuperTrickler Owner or SuperTrickler groups or our support team at support@superTrickler.com.au (please allow up to a few days for the support team to respond as this service in not manned 24/7).

If communications are working, the systems should autodetect if you have a FZ series scale and choose the appropriate mode for calibration. If it does not, you may have to turn it on using the FZ Internal Calibration Mode button.

Scales / Balance Screen

This screen does not dictate how the scale will work; its function is to match the type and configuration of the scale to the SuperTrickler. This is an overview of the screen and its functionality to match your scale with the SuperTrickler.



1. A&D model type number.
2. A&D serial number.
3. Shows if the display has been converted from Grams to Grains (see button 8 just below).
4. The scale value.
5. The data stream sent from the scale to the SuperTrickler. This can be critical information when trying to diagnose a communications error.
6. 🕷 This will re-zero the scale.
7. 🕷 This button takes you to the scales programming page. For details on how to program the scales, please see the installation manual.
8. 🕷 As some A&D models only work in Metric Grams, turning this on will convert the weight from the scale into Grains.

9. 🕷 Toggle FZ Calibration mode on/off (should be auto selected if you have an FZ series scale.) If the system detects the FZ type then this option will be automatically turned on.

10. 🕷 This button selects on the resolution accuracy and allows selection of 0.01 rather than the standard 0.02 grains. Warning: Do not set this to 0.01 unless your scale supports 0.01 or 0.001 resolution.

11. 🕷 This button selects the support two or three decimal place resolution. Do not turn this on unless the scales support and is set for three decimal resolutions.

12. ⚠ **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.

💡 **Important:** For more information and recommendations, it is advised to read the "Scales" section in the General Owner's Manual. This is especially important if you are using high-resolution scales such as the FX/FZ104 or FX/FZ254.

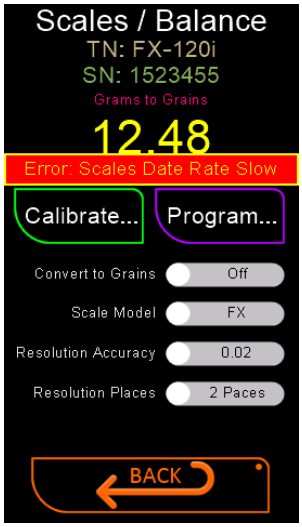
⚠ Scale Error Codes

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.

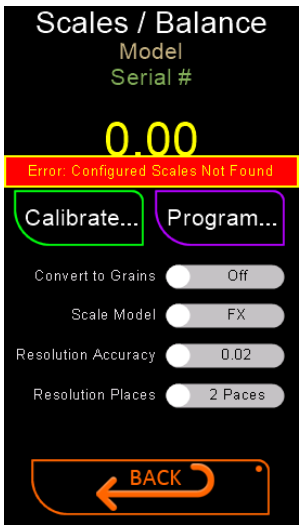
  First try removing the cup and re-zeroing the scale, or power-cycle the scale with the cup removed from the platen, or perform a full calibration to reestablish correct framing.
- **T-Error**, **Timeout:** The scale failed to transmit a complete data packet within the expected time window. This may indicate 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.

Incorrect scale speed setting



In the event you see “Error: Scales Date Rate Slow”, revisit the scale settings: Base Functions, Display Refresh Rate and ensure its set to 20 times/second.

Configured Scales Not Found



This message will be shown when the scale is not found or is not programmed with the correct configuration. To resolve this issue, press the Program button. See the Installation manual for more details on programming the scale..

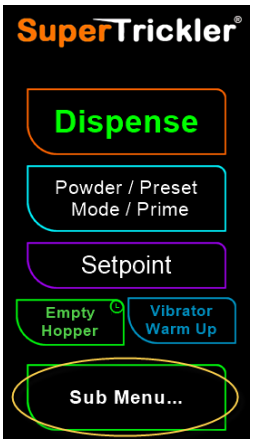
Level & calibrate the scale

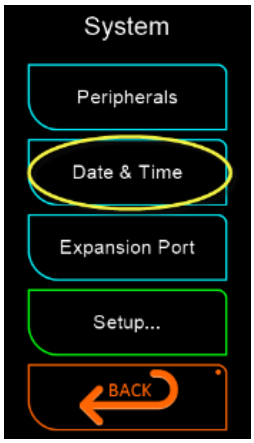
At this point, it is recommended to place the scale on a solid base, level it, and calibrate it as per the installation and calibration guide in the A&D Precision Balance manual. Alternatively, you can use the SuperTrickler's calibration interface button on the Scales / Balance screen.

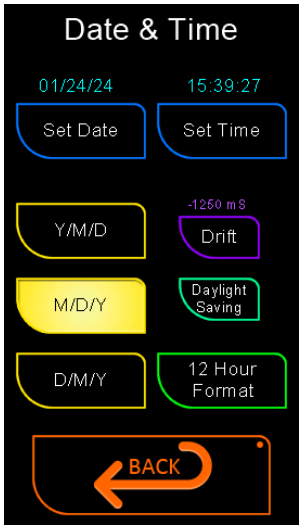
💡 **Note:** A 50 or 100-gram precision weight will be required. It is recommended that the precision weight not be touched with bare skin and should be handled and placed with great care.

Setting the clock

Before we have some fun, let's set the clock so that data logging and records will be accurate.







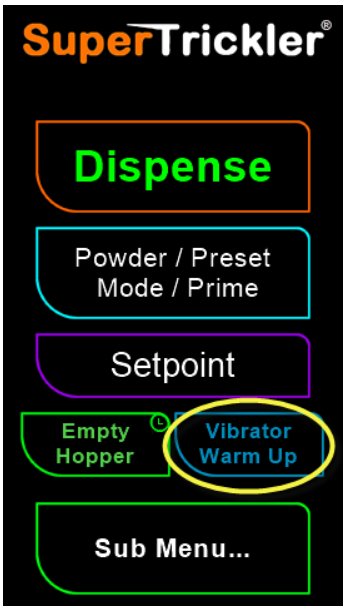
First select your preferred 'yellow' Date Format button,
then your preferred 'green' 12- or 24-hour time format,
then the 'Aqua' daylight saving button should your area currently be in daylight saving time.

Now press the 'blue' **[Set Date]** button to set the current date,
then the 'blue' **[Set Time]** button to set the current time.

When completed, press the **[Back]** button 3 times to get back to the main menu.

For additional information also see: System ↗ Date & Time

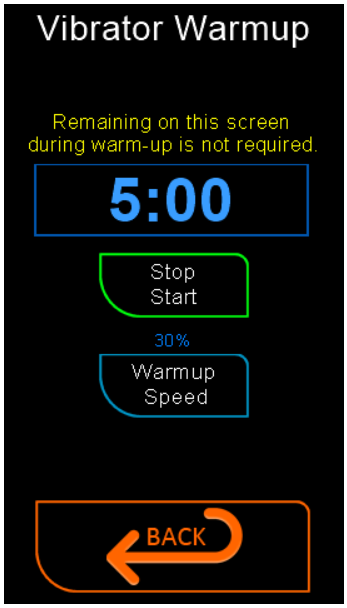
Vibrator Warmup Option



Before Filling with Powder, It is recommended to use this option to run the vibrator without powder in order to warm up the rubber mount. This can lead to more stable operation. The warm-up process can be started and run on a background timer while other tasks are being carried out.

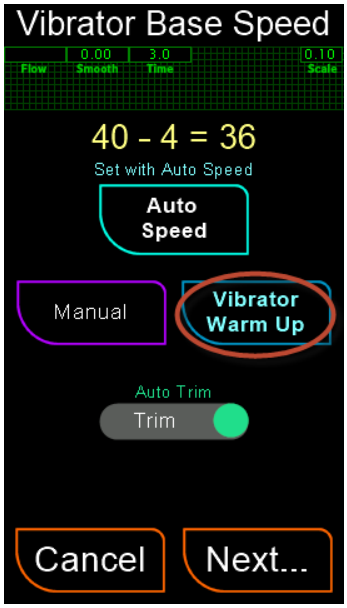
We recommend **120 seconds** (two minutes) without powder at the start of a loading session.

⚠ **WARNING:** To avoid a powder spill, ensure there is no powder in the hopper before running the warm-up.



Use the green button to start or stop the operation. If a timer is set, the vibrator will run for the specified duration—remaining on the screen is not required. To stop the vibration before the timer expires, simply touch the green Start/Stop button again.

Vibrator Base Speed Calibration



Before calibrating the vibrator base speed, it is recommended to run the vibrator with powder, if the tube has not been used for some time. Please ensure the cup is emptied before commencing the calibration.

Filling and Emptying the Gunpowder Hopper.

When changing powder, be sure that any spilled powder is removed from the scale and all the powder is removed from the SuperTrickler before new powder is added. Never mix different gunpowder.

Filling

It is not recommended to load the hopper with more powder than is approximately required. You may choose to use a short funnel in the gunpowder hopper opening to aid the process.

1. Ensure the Micro SD card is installed, to stop any spilled powder entering the electronics bay.

2. Pour only smokeless gunpowder into the hopper. Do not fill the powder past the opening of the hopper.

3. If a short funnel was used, it may remain in the hopper if so desired.

Emptying

You do not need to turn off or unplug the SuperTrickler to carry out this operation. You may also prefer to empty into a catching bowl, or you can empty the gunpowder directly into the original container with the aid of a funnel.

💡 **Note**: The rotating bulk tube must remain in the SuperTrickler while emptying it.

1. Ensure the Micro SD card is installed.

2. REMOVE THE POWDER CUP.

3. Gently lift the SuperTrickler up from the scale (do not lift the scale). The cables are long enough to allow reasonable mobility of the SuperTrickler, but do not manipulate it to the point where it is tugging on the connections.

4. Tilt the SuperTrickler backwards to around 45^{O} to expose the bottom and the hopper gate.

5. Place the SuperTrickler over a catch bowl or directly over the original container with a funnel.

6. Open the hopper gate fully and the gunpowder will begin to flow out.

7. Once no more powder is flowing, close the hopper gate and keep the unit angled backwards to around 45^{O}.

8. Rotate the large bulk tube clockwise several times by hand, while gently shaking the SuperTrickler. Be careful not to touch the top vibrating tube (this needs no additional purging process).

9. Then again, repeat the process of opening the hopper gate to release the powder into the catch bowl or original container until no more powder flows.

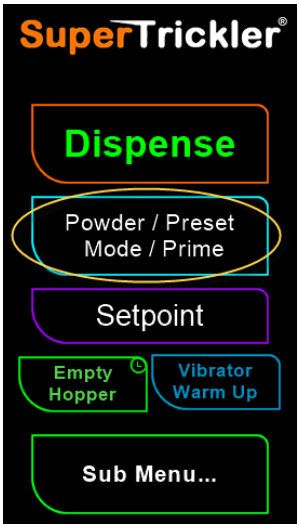
10. Close the hopper gate and place it back onto the scale, ensuring that it is aligned and seated properly. **Note**: The SuperTrickler is designed so it cannot be seated back on the scale unless the hopper gate is fully closed.
⚠ **Warning**: Do not force SuperTrickler onto the scale. If the hopper gate is not fully closed, you may damage your scale.

Quick Start – let's have some fun.

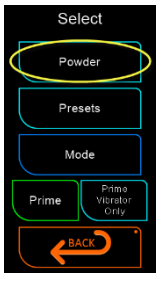
The **SuperTrickler** is not like other automatic dispensers in its operation or characteristics. Please read the entire manual to gain a full understanding of how it works and to get the most benefit from your investment.

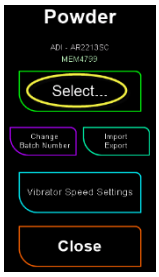
Important: Do not load any bullets with powder dispensed by the SuperTrickler until you have read and understood this owner's manual.

We understand it's nice to familiarize yourself with the device before diving into the comprehensive manual. So let's begin by loading the hopper with gunpowder, then selecting a powder and dispensing a charge.



From the main menu press the **[Power / Preset / Mode / Prime…]** button,
then again, the **[Powder…]** button,
then the **[Select…]** button,
find the powder brand in the list – use the scroll **[Next]** & **[Back]** button to find more selections. Once the powder brand has been found, press that button to select the type of powder in the same manner.





If you like, you can also enter the powders batch number for the record.

After selecting a powder, press **[Back]** two or three times to get back to the main menu.
From the main menu, press the **[Setpoint]** button to set the desired charge – this will take you directly to the dispensing screen.

The scale value is shown in yellow, and the charge set point is shown in green.

Vibrator Speed Settings

You will see the **Profile** button flashing, indicating that something needs attention—in this case, it is the vibrator speed settings.

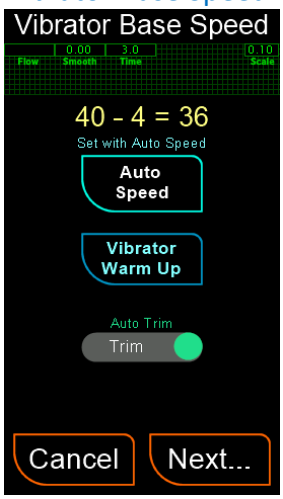
Press **[Profile…]** and the system will take you directly to the vibrator speeds screen (normally pressing the Profile button takes you to the main profile screen).

Very Important: The correct setup of the vibrator speed settings is critical. Failure to do this correctly may result in the artificial intelligence self-learning being unable to achieve stable results.

Each powder and preset will need to have the vibrator settings calibrated to suit the powder characteristics. If you learn nothing else, you must learn how to complete this task correctly. I recommend you read the **Vibrator Speed Settings** in detail, located under the profile section.

⚠ **Vibrator Base Speed Calibration is a critical stage in the process**. It is imperative, especially near the end, that there are **no drafts** (such as open doors or windows, movement by people or animals, or breathing near the scale) **and no movement** (including vibrations or shifting items on the same table). Any disturbance can dramatically affect the accuracy of this critical setting.

Vibrator Base Speed



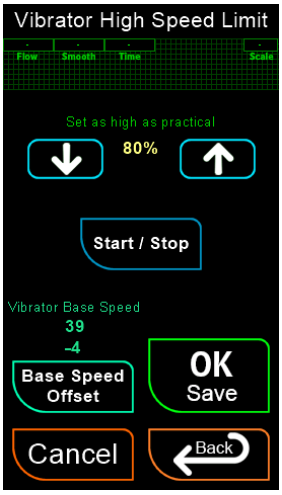
The adjustment range available is between 1 and 255 units. This value represents 1% speed for all the vibrating instruments.

STEP 1. Ensure the hopper has an adequate amount of powder and the powder cup is in position under the trickler tubes.

STEP 2. Press the 'Auto Speed' button; this will initiate an operation that will start the vibrator tube. Initially ramping up and priming the tube and then it will begin reducing the speed until the flow rate is around the 3 seconds between kernel drops. Wait for the system to stop by itself.

STEP 3. Once step 2 has been completed the system will automatically take you to the next screen to set the Vibrator High Speed Limit.

Vibrator High Speed Limit



This is not a critical process close enough is good enough. The job of the vibrator high speed limit is exactly what is says: to limit the speed that any of the vibrator instruments can go. This setting has a range between 1% to 100% in steps of 5%.
The reason we have a limit is to prevent running the vibrator too fast, which may result in powder bouncing out of the cup and creating a mess and inaccurate readings from the scale.

STEP 4. Press the Start/Stop button to start the vibrator and adjust the vibrator high speed limit up or down, such that it is going as fast as possible without powder jumping out of the cup.

STEP 5. Once you are happy with the setting (and this maybe 100% or just leave at the default) then press Start/Stop again to stop the vibrator motor.

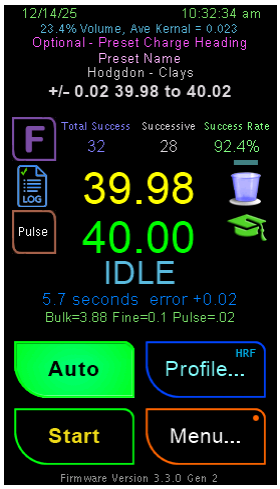
STEP 6. Press OK Save to record the settings and return to the profile main screen.

STEP 7. Again, press OK Save to save the profile settings and return to the dispensing screen.

💡 **NOTE**: Temperature and other factors can change the vibration characteristics, so you can revisit these settings as often as you like (see vibrator settings on the profile main screen).

Press the main profile button OK Save button to return to the dispensing screen.

Lets drop some powder



Place an empty powder cup on the scale plate.
Press the **[Auto]** button if you like (this will save hitting start for every run).
Then press Start.
The **SuperTrickler** will begin trying to dispense powder. However, the trickler tubes will most likely be un-primed (we will learn how to do this later), so you may find that after about 5 seconds, a **DISCARD** error will appear with a "No Weight Detected" message. Just press **Start** again and repeat until the powder begins to flow from the bulk tube.

As there is no profile, nothing is known about the characteristics of the powder. At this stage, the simplest solution is to let the Artificial Intelligence (AI) work it out by trial and error. The first several attempts will most likely fail as the AI discovers the powder's dynamics. All loads can simply be poured back into the powder hopper.

After a few tries, the AI will have figured out the powder dynamics and will continue to do so until (by default) 10 successful charges have been produced in a row. Then the self-learning will be disabled, and the little scholar's hat will disappear from the dispensing screen.

Congratulations—you just discovered how easy the SuperTrickler is to use! Had the scale been warmed up correctly, levelled, and calibrated, your load would be good to go.

Legal Reminder: Do not load any bullets with powder dispensed by the SuperTrickler until you have read and understood this owner's manual.

The trade-off between speed and failures.

Powder and granules are notoriously difficult to dispense. Given enough time, you can slowly trickle the powder for an accurate charge every time. However, is this the best approach?

The Trade-off: You can go fast and have a few failures every now and then, or go slow and rarely have a failed charge. We are all different, so the choice is yours. You may prefer to charge fast and discard overcharges, or you may prefer to charge slower and rarely discard overcharges.

Do not expect 100% successful charges unless you are willing to trade dispensing speed for time.

For example, if you were to do 100 charges with no failures, but each charge took 20 seconds, the total time would be 33 minutes and 20 seconds.

Now, let's look at the same scenario if each charge took only 6 seconds, but with a 1 in 10 failure rate. The total time would be 11 minutes, a saving of 22 minutes and 20 seconds.

Even if the charge time were 10 seconds, with a 1 in 10 failure rate, the total time would still only be 18 minutes and 20 seconds. This is a 15-minute saving in time for the sake of a few rejected overshoots.

Do not be concerned with a few overshoots if you can save considerable time, but the decision is yours.

Overwhelm

The SuperTrickler can feel overwhelming at first, with many controls that may not be immediately clear in purpose or use. With practice, however, the system becomes much easier to understand. To start with stick with the basic controls and then move on the advanced control as required.

Why so many controls?

The SuperTrickler® has been criticized for its complexity, but this design allows it to handle a wide range of powders without mechanical changes, shims, or part swaps. It is not hard to use - it is deeply configurable, and that distinction is important.

Temptation

The temptation is to jump right in and start dropping powder; however, to get the best out of the SuperTrickler, we recommend reading both the General and Profile parts of the owner's manual. Furthermore, we highly recommend that over time you keep reviewing the Profile manual section by section to build your knowledge and understanding. This will put you in good stead to master the SuperTrickler and achieve the type of performance you are looking for. Please do not be shy about asking for help.