

# PANTONE®

# Formula Scale 2

*Printshop LC*

## Operating Manual

Models:

**PFS2-1-12**

**PFS2-1-22**

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# Introduction

The PANTONE Formula Scale is a microprocessor controlled digital weighing scale, specifically designed for fast, accurate mixing of printing inks to match PANTONE Colors. It comes ready programmed for all of the colors found in the PANTONE formula guide printer edition (and PANTONE formula guide designer edition) that can be mixed from the 15 standard PANTONE Basic Color inks.

The **Printshop LC** models are specifically designed for weighing out smaller ink mixes with high accuracy.

The formulation for each PANTONE Color is contained in the scale memory. Once the PANTONE Number and Ink Quantity have been entered using the keyboard, the scale computes the amounts of each of the PANTONE Basic Color inks needed.

The weight of each of the constituent bases required for the mix is shown as an amount to add. By following the simple weighing sequence, an accurate formulation is assured.

The PANTONE Formula Scale is ruggedly constructed and will withstand the wear and tear of normal use. However, as with all precision weighing instruments, reasonable care should be exercised to ensure long and trouble free operation.

## Model Information

Two models are available, with power supply requirements to suit different areas of the world. Both models can be switched to operate either in g (grams) or in lb (pounds) as required.

<b>Model</b>	<b>PFS2-1-12</b>		<b>PFS2-1-22</b>	
<b>Weighing Capacity</b>	1200 g	2.5 lb	1200 g	2.5 lb
<b>Ink Mixing Capacity</b>	1000 g	2.0 lb	1000 g	2.0 lb
<b>Scale Division</b>	0.1 g	0.0002 lb	0.1 g	0.0002 lb
<b>Power Supply</b>	120V 60Hz 0.25A <i>(U.S.A. &amp; Canada)</i>		230V 50Hz 0.25A <i>(Europe &amp; R.O.W.)</i>	

# Preparation for Use

## Unpacking and Installation

Unpack the instrument carefully, and retain the special carton in case it should be needed again.

Locate the weighpan on the four rubber mounts protruding through the top of the scale case.

It is important that there is no direct contact between the scale case and the weighpan. The use of protective film directly under the weighpan is not recommended since it may touch either the rubber mounts or the weighpan causing erratic weight readings and incorrect formulations.

## Siting

For best results the scale should be placed on a work surface that is free from vibration, away from strong air currents and sources of heat.

As with all precision weighing scales, best results are obtained after the unit has been switched on for a period of time. It is therefore good practice to leave the scale switched on between periods of use.

## Weighing Units

The scales can be set to operate either in g (grams) or in lb (pounds). Set the switch at the rear of the scale to the required units before switching on.

## Electrical Connection

Check that the electrical supply meets the specifications shown at the rear of the scale before connecting to the supply. The power outlet must be of the 3-pin type, having a safety grounding connection.

**IMPORTANT - THIS EQUIPMENT MUST BE EARTHED**

## USA & Canada – Model PFS2-1-12

Supply requirements are 120 Volts, 60 Hz, 0.25 Amps. Use the detachable power lead supplied. Should it ever become necessary to replace the plug, it must be wired according to the following convention:

Black	-	Live
White	-	Neutral
Green	-	Ground

## FCC Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## UK & Europe – Model PFS2-1-22

Supply requirements are 230 Volts, 50 Hz, 0.25 Amps. Use one of the detachable power leads supplied, either the UK (square pin) or European (round pin) type, as appropriate. The plug fitted to the UK lead must be fused at 3 Amps. Should it ever become necessary to replace the plug, it must be wired according to the following convention:

Brown	-	Live
Blue	-	Neutral
Green and Yellow	-	Earth

## CE Notice

The **CE** mark on this equipment indicates compliance with the Electrical Equipment (Safety) Regulations 1994 (S.I. 1994/3260) and Electromagnetic Compatibility Directives EN 50081-1 (Emissions) and EN 61000-6-2 (Immunity).

# Operation

Switch on the scale using the power ON/OFF switch. The scale will go through an initial start-up sequence, during which information screens will be displayed. The scale will automatically set zero weight and display the PANTONE Number screen. You will then be ready to start mixing a PANTONE Color.

## PANTONE Color Ink Formulation

The following instructions illustrate a typical operating sequence for the formulation of 600 g of PANTONE 123. The operation of scales measuring in lb is identical except that all references to g should be replaced with lb.

### 1. Place Empty Container onto the Scale Pan

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### 2. Press 'PANTONE Number' key



The LED indicator in the key and the legend 'NUMBER' in the main display will be illuminated. For reference, the previously entered number will be displayed, and the ink indicator LEDs corresponding to that number will be illuminated.

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### 3. Press 'CE' key



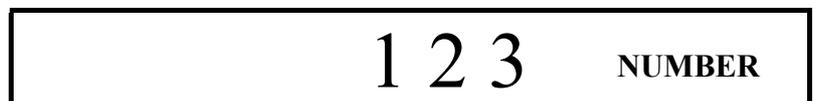
The main display will show Zero, and the LED indicators in the keys marked 'C' and 'W' will be extinguished.

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### 4. Key in the new PANTONE Number



The new PANTONE Number will be shown on the main display as it is entered.



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### 5. Press 'Quantity' key



The LED indicator in the key and the legend 'g' in the main display will be illuminated. Ink indicator LEDs will show the components of the formulation, and the previously entered Quantity will be shown.

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6. **Key in the new Quantity required in g**



The new Quantity will be shown on the main display as it is entered.

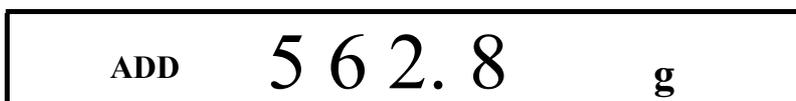


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7. **Press 'Ink Select' key**



The LED indicator in the key and the Ink Indicator LED corresponding to the first component ink will be illuminated, i.e. PANTONE Yellow. The legend 'ADD' and the amount of ink to add will be shown on the main display.



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8. **Add PANTONE Yellow until the display shows zero**

As ink is added, the amount required will decrease, and the display will be updated accordingly. If too much ink is added, the legend will change from 'ADD' to 'REMOVE'.

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9. **Press 'Ink Select' key again**



The next component ink, i.e. PANTONE Warm Red, and the amount to add will be shown.



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10 **Add PANTONE Warm Red until the display shows zero.**

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11. **Finished**

600g of PANTONE 123 has been weighed out.

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For formulations requiring more components, steps 9 and 10 should be repeated until all the inks have been added.

At the end of the weighing sequence, the 'Ink Select' key may be pressed to step through the components to check that all have been reduced to zero.

## PANTONE Black Color Range

The range of formulations for PANTONE Black 2 to PANTONE Black 6 may be selected by entering the corresponding PANTONE Number between 2 and 6, as described at step 4 above. Note that PANTONE Black 7 cannot be selected, as this requires the addition of PANTONE 877.

## PANTONE Cool Grays and PANTONE Warm Grays

At step 4 above press either the key marked 'C' to select the PANTONE Cool Gray range, or the key marked 'W' to select the PANTONE Warm Gray range. The LED indicator in the key will be illuminated to confirm the selection. Enter the PANTONE Number in the range 0 to 11 using the number keys. Note that PANTONE 0 will select the formulation for PANTONE Cool Gray Base or PANTONE Warm Gray Base.

## Correcting Operator Errors

Sometimes too much of a PANTONE Basic Color Ink may be added in error. The scales will display the message 'REMOVE' together with the excess amount to be removed. Often the excess can be removed, but this may not always be possible.

To correct this type of error, the scale can be made to recalculate new quantities for each of the component inks required, both to use up the excess and maintain the correct proportions for the mix.

Press the 'Quantity' key once and the scale will show the original total quantity of ink entered. Press the 'Quantity' key a second time and the display will show the message 'CALC' to indicate that the recalculation is in progress. After a few seconds, the new total quantity will be displayed.

To continue the mixing sequence, press the 'Ink Select' key and add the new amounts for each of the PANTONE Basic Color Inks as indicated. Remember to step through all of the component inks.

If more than one PANTONE Basic Color Ink has been added to excess, the scale will calculate the minimum total quantity of ink required to use up all of the excess.

Sometimes, the calculated total quantity of ink will exceed the weighing capacity of the scale. In this case the message 'FAIL' will be displayed, accompanied by a long warning tone. The ink quantities will not be changed.

Should the 'Quantity' key be pressed twice when none of the PANTONE Basic Color Inks has been added to excess, the total quantity will remain unchanged after the 'CALC' message disappears. Mixing can then continue as normal.

## Re-initialisation

In normal operation, the formulation sequence will be initialised whenever new values of either PANTONE Number or Quantity are entered.

The current PANTONE Number or Quantity may be checked at any time by pressing either the 'PANTONE Number' or 'Quantity' key. If this is done during mixing, the formulation sequence may be continued by pressing the 'Ink Select' key.

If you wish to mix a second batch of the same color, the formulation sequence may be re-initialised with the current values by pressing the 'PANTONE Number' key a second time, when the PANTONE Number is displayed.

## Other Features

### Weighing

Press the 'Weigh' key to use as a conventional digital scale, or for mixing non-standard formulations.

In this mode, the 'Set Zero' will be active, and may be used to reset zero weight or tare any weight on the scale pan. The LED indicator in the 'Set Zero' key will be illuminated when the scale is at the defined zero weight.

### Keyboard Operation

When a valid key entry is made, the scale responds with a short, audible tone. In some circumstances, particular key operations may be ignored, for example numerical key entries are only valid for PANTONE Number or Quantity entry. Selection of the main functions is confirmed by illumination of the LED in that key.

Response to some keys may require that the scale is stable. If this condition is not satisfied the scale display will blank temporarily until the required operation can be carried out. If this is common and lasts for more than a fraction of a second, then the scale is probably being subjected to excessive vibration.

### Ink Indicator LEDs

The ink indicator LEDs illuminate to show the PANTONE Basic Color Inks used in the selected PANTONE Formulation. All component inks are displayed when 'PANTONE Number' or 'Quantity' keys are pressed. Individual LEDs are illuminated when the 'Ink Select' key is pressed.

If a formulation requires a small amount of ink which is less than can be weighed to the required degree of accuracy, then the LED corresponding to that ink will flash.

## Error Checking

When power is first applied, the scale will perform a short self test routine. All displays will be illuminated, and then blanked so that their operation may be checked. The scale then performs an internal test, and a fault is indicated by the message 'Err 1' being displayed.

New values for PANTONE Number or Quantity are tested automatically for validity and if invalid or out of range, the message 'Error' will be displayed. The error condition MUST be cleared by making a new valid numeric entry before operation can proceed.

Whenever the 'Ink Select' key is pressed, a check is made to ensure that the scale will remain within its operating capacity. For example, if 1000g of ink is to be mixed on a 1200g capacity scale and the container weighs 400g, then the total weight of 1400g would be greater than the scale capacity. Under these conditions the message 'Error' will be displayed and the quantity of ink required, or the weight of the container MUST be reduced.

At the other extreme, a formulation may require the addition of an amount of a PANTONE Basic Color Ink, which is too small to be weighed with the required degree of accuracy. This will depend on the PANTONE Number and Quantity of ink selected. If this occurs, the message 'Add' will be displayed when 'Ink Select' is pressed at the start of a mixing sequence. A second press of the 'Ink Select' key will clear the warning message and allow the quantities of the component inks to be examined. The operator may then decide whether to proceed, or to increase the quantity.

If the weight on the scale is outside the weighing range, then the main display digits will be blanked. When the weight is too low, for example with the pan removed, the legend 'ADD' will be illuminated. Conversely, if the weight is more than the scale weighing capacity, the legend 'REMOVE' will be shown.

## Maintenance

The scale has no moving parts, and requires no routine maintenance.

To clean, first disconnect from the mains supply, then wipe with a soft cloth which has been lightly moistened with white spirit. **NO OTHER SOLVENTS SHOULD BE USED.** The use of aggressive solvents may permanently damage the keyboard and case.



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**02/06**