Fill-570

Application Software

METTLER TOLEDO

Statement regarding harmful substances

We do not make direct use of harmful materials such as asbestos, radioactive substances or arsenic compounds. However, we purchase components from third party suppliers, which may contain some of these substances in very small quantities.

Warnings and Cautions

- READ this manual BEFORE operating or servicing this equipment and FOLLOW these instructions carefully.
- SAVE this manual for future reference.

	⚠ **WARNING**
	FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD CONNECT THE TERMINAL TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.
	⚠ **WARNING**
	ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THE TERMINAL. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.
	⚠ **WARNING**
	DO NOT INSTALL, DISCONNECT OR PERFORM ANY SERVICE ON THIS EQUIPMENT BEFORE POWER HAS BEEN SWITCHED OFF AND THE AREA HAS BEEN SECURED AS NON-HAZARDOUS BY PERSONNEL AUTHORIZED TO DO SO BY THE RESPONSIBLE PERSON ON-SITE.
	⚠ **WARNING**
	NOT ALL VERSIONS OF IND570 ARE DESIGNED FOR USE IN HAZARDOUS (EXPLOSIVE) AREAS. REFER TO THE DATA PLATE OF THE IND570 TO DETERMINE IF A SPECIFIC TERMINAL IS APPROVED FOR USE IN AN AREA CLASSIFIED AS HAZARDOUS BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES. TERMINALS THAT ARE NOT FACTORY LABELED AS DIVISION 2 OR EUROPEAN CATEGORY 3 APPROVED MUST NOT BE INSTALLED IN A DIVISION 2 OR ZONE 2/22 ENVIRONMENT.
	⚠ **WARNING**
	THE INTERNAL DISCRETE I/O <u>RELAY</u> OPTIONS MUST NOT BE USED IN AREAS CLASSIFIED AS HAZARDOUS BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES. FAILURE TO COMPLY WITH THIS WARNING COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.
	⚠ **WARNING**
	WHEN THIS EQUIPMENT IS INCLUDED AS A COMPONENT PART OF A SYSTEM, THE RESULTING DESIGN MUST BE REVIEWED BY QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF ALL COMPONENTS IN THE SYSTEM AND THE POTENTIAL HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.
	⚠ **WARNING**
	ONLY THE COMPONENTS SPECIFIED ON THE IND570 DOCUMENTATION CD CAN BE USED IN THIS TERMINAL. ALL EQUIPMENT MUST BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS DETAILED IN THE INSTALLATION MANUAL. INCORRECT OR SUBSTITUTE COMPONENTS AND/OR DEVIATION FROM THESE INSTRUCTIONS CAN IMPAIR THE SAFETY OF THE TERMINAL AND COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

> ⚠️ **CAUTION**
>
> BEFORE CONNECTING/DISCONNECTING ANY INTERNAL ELECTRONIC COMPONENTS OR INTERCONNECTING WIRING BETWEEN ELECTRONIC EQUIPMENT ALWAYS REMOVE POWER AND WAIT AT LEAST THIRTY (30) SECONDS BEFORE ANY CONNECTIONS OR DISCONNECTIONS ARE MADE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT AND/OR BODILY HARM.

> *NOTICE*
>
> OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

Disposal of Electrical and Electronic Equipment

In conformance with the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.

Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.

If you have any questions, please contact the responsible authority or the distributor from which you purchased this device.

Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.

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1   Introduction

The Fill-570 option is a specialized application solution focused on the needs of users with single or multiple material filling and/or dispensing requirements. When this special application is provided in the IND570 terminal, it is referred to as an IND570fill terminal. These applications are typically fixed sequences where containers are repeatedly filled with materials from supply hoppers and then dispensed. The filling and dispensing processes are controlled by the same weighing system (as opposed to one for filling and a different one for dispensing).

The IND570fill supports both a weigh-in cycle and a weigh-out cycle from the same weighing equipment. The Fill-570 provides the ability to combine both a weigh-in and a weigh-out cycle into complete sequences. Each of the weigh-in and weigh-out cycles is defined in Table 1-1.

Table 1-1: IND570fill Cycle Descriptions

Cycle	Description
Weigh-in: Fill	A fill cycle is defined as filling one material onto a scale, into a container on a scale or into a vessel such as a tank or hopper.
Weigh-in: Blend	A blend cycle involves filling from 2 to 6 materials into a vessel such as a tank or hopper in a fixed sequence without the flexibility of a recipe such as would be used in a batching application.
Weigh-out: Dump	In a dump cycle, all of the material that has been filled or blended into a tank or other vessel is completely emptied. Near the end of a dump cycle, the weight returns to within a small range of zero and the dump is completed.
Weigh-out: Dose	A dose cycle empties a preset target weight of material from the scale into a container. This cycle is repeated as multiple containers are filled with the same amount of material until the supply is depleted. At that time, the weigh vessel is refilled with either a Fill or Blend cycle or may be refilled manually.

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www.mt.com/IND570   www.mt.com/IND570xx

1.1. Specifications

The IND570fill has the same physical and electrical capabilities of the standard IND570. The application firmware is enabled through the use of an "application hardware key." This is inserted into a receptacle on the IND570 main board. It contains a specific code that enables access to the features and capabilities of this specific application solution.

Table 1-2 lists specifications of the IND570fill which expand or replace the basic functionality of the IND570.

Table 1-2: IND570fill Specifications

Function	Features and Options
Weigh-in Sequences	• None • Blend • Fill
Weigh-out Sequences	• None • Dose • Dump
Operating Modes	• Automatic transition • Semi-automatic transition
Cycle Transitions	• None • Hold • Weigh-in • Weigh-out
Timers	• Start delay • After weigh delay • After empty delay • Weigh-in complete • Weigh-out complete
Number of cycles	• Tracks number of cycles to alert operator when a job is complete
Formula Table	• Memory for 100 stored formulas for blending • ID, description, up to 6 material targets, number of weighments, accumulator, auxiliary on/off values
Container Tare Table	• Memory for 100 containers • ID, description, tare or tare range, number of weighments, accumulator
Interlocks	• OK to weigh-in permissive • OK to weigh-out permissive
Adjustments to weight	• Automatic or manual jog • Auto spill adjustment • Manual overfill adjustment • Learn mode to determine spill and fast feed values
Auxiliary output	• Independent discrete output signal that begins based on beginning weight value and ends based on either a second weight threshold or a preset time
Pac Statistics	• Detailed performance statistics for the selected weigh-in or weigh-out cycle

1.1.1.   Input / Output Control

The IND570fill adds several new functions to the discrete input and output signals of the standard IND570. The optional internal discrete I/O module provides connections for either two or five low voltage inputs, and either five or eight dry contact relay outputs. The inputs can be selected as active (for pushbutton operation) or passive (for control from a PLC or DCS). The outputs may be used for switching an AC or DC voltage (provided externally) to control valves and gates.

To expand the I/O control for the IND570fill, support for external ARM100 modules is provided. Each ARM100 module provides an additional four low-voltage passive inputs and six dry contact relay outputs. The ARM100 communicates serially (RS-485) to the IND570fill. Each module comes in a plastic enclosure intended for DIN rail mounting within a control cabinet. A maximum of 13 inputs and 20 outputs are supported by the IND570.

1.1.2.   SmartTrac™

The SmartTrac display is used with the various runtime screens generated by the IND570fill firmware. This provides a user-friendly bar graph display of the change in weight on the scale as compared to the programmed target and tolerance values. The size of the SmartTrac is selectable and each different size provides different target information for viewing.

1.1.3.   Basic Functionality

The Basic Functionality capabilities of the IND570 are accessible when using the IND570fill. Functions such as printing with templates, TraxDSP filtering, TraxEMT maintenance, diagnostic and logging capabilities and support for analog or IDNet scale bases are accessible through the IND570fill. Please consult the **IND570 User's Guide** for a full list of those capabilities and how to configure them.

IMPORTANT: When the Fill-570 is installed in the terminal, access to the terminal's basic material transfer functions is removed. For example, the Start ⟡ softkey used by the terminal's basic functionality is removed from selection for the home page. This function is replaced with the specific fill pac start keys such as the Start Weigh-in softkey 🖳 and the Start Weigh-out softkey 🖳.

1.1.4.   Target Table

The storage capability of the Target Table, a Basic Functionality feature, is 200 records. There is still only one Target Table, and it will hold all target records regardless of which cycle (Weigh-in or Weigh-out) in which they will be used. Since the Fill-570 allows users to combine a Weigh-in cycle with a Weigh-out cycle, an additional step is required when activating a Target Table record for weighing. Users must identify whether the target is to be used for the Weigh-in or Weigh-out process. This is accomplished using the Target Weigh-in 🖳 and Target Weigh-out 🖳 softkeys. Refer to Chapter 2 for instructions on how to use these softkeys to recall specific target records for the Weigh-in or Weigh-out cycle.

1.1.5.   Formula Table

The formula table stores up to 100 records for use in a blend cycle. The formula table is populated in setup mode and then a Formula selection softkey 🖳 must be added to the home page to select which formula is to be run. After a formula is recalled from the formula table, it is possible to rescale the formula to a new formula target keeping the same ratio of materials.

2   Operation

This chapter provides information about general operation of the IND570fill terminal. It is assumed that the user of this manual has reviewed and understands the operation of the standard IND570.

Operation of the terminal depends on enabled functions and setup parameters. Functionality and configuration parameters are programmed in Setup mode and can be modified as necessary by users with appropriate access levels.

2.1.   Security

The IND570fill supports multiple users/passwords for setup security. The terminal is pre-configured at the factory with two user names – "admin" and "anonymous." The factory default passwords are null (no password). The unit, as configured at the factory, requires no login or password entry to access the setup mode. Apart from adding or modifying a password, the pre-configured user (admin) cannot be changed. Be sure to remember the password. If the password is changed or forgotten, access to the setup menu will not be available. Be sure to protect the password from unauthorized personnel. The password provides access to the entire setup menu, unless the metrology switch is placed in the approved position. In this case access to the scale and other metrologically significant areas is not permitted. Please refer to the **IND570 User's Guide** for additional information concerning the use of Security and the multiple classes of users available with the IND570 terminal.

2.2.   Softkeys and Icons

The IND570fill builds upon the flexible softkey concept of the standard IND570 terminal by providing new choices for programming softkeys in the Terminal branch of setup. These softkeys can be added to the home screen to provide access to the IND570fill functionality. These new icons and an explanation of their use are shown in Table 2-1.

Table 2-1: Softkey Icons Available at the Home Screen

Icon	Name	Function
⭲T⭰	Active Container Tare Values	Provides a view of the container tare values that will be used in the weigh-in cycle. The values shown here can be selected from the Container Tare Table or entered manually by the operator. This includes either a tare value (which will be used in the process) or a tare range (that is used to confirm the current container is within a predetermined range.) Changes to these Active values do not affect the stored Container Tare Table record.

Icon	Name	Function
	Container Tare Table	The container tare table contains up to 200 container tare records. Each record has an ID, tare value, minimum and maximum tare values, and a description. In addition, each record is associated with an individual accumulator and consecutive number that can track the number of times the container has been used.
	Start Weigh-in	Starts the selected weigh-in cycle if all parameters have been programmed correctly.
	Start Weigh-out	Starts the selected weigh-out cycle if all parameters have been programmed correctly.
n	Number of Cycles	Allows tracking of a certain number of cycles before an operator message is shown indicating the number of cycles has been completed. Values from 1 to 64,999 can be entered as the number of cycles.
	Weigh-in Active Target	Provides a view of the target values that will be used in the Weigh-in cycle for a fill. The values shown here can be selected from the Target Table or entered manually by the operator. Manual changes to these values do not affect the record stored in the Tare Table.
	Weigh-out Active Target	Provides a view of the target values that will be used in the Weigh-out dose cycle. The values shown here can be selected from the Target Table or entered manually by the operator. Manual changes to these values do not affect the record stored in the Tare Table.
	Formula Values	Provides access to the page where the multiple material blend formulas are selected. The values shown here are taken directly from the formula table and individual material targets cannot be entered manually by the operator.
		NOTE: The weight unit is selectable in material #1 only. Only units that have been set up as primary, secondary or third units are available for selection.
		Any formula record that is retrieved from the formula table must match the units for 1st, 2nd or 3rd units in the IND570 terminal. If the unit does not match, an invalid unit error will be shown.
		When exiting the formula view, the terminal confirms that the sum of the material targets is not greater than the programmed scale capacity. If it is, an error message is displayed and one of the target values in the formula must be reduced.
		The Fill-570 stores up to 100 material formulas. A formula can only be created within the Formula table inside setup.

In addition to the new softkeys available at the home screen, there are a few new softkeys that are shown within sequences. These are shown in Table 2-2.

Table 2-2: Softkey Icons Available Within a Sequence

Icon	Name	Function
	Manual Jog (Weigh-In)	Starts a manual jog cycle at the end of the selected weigh-in cycle if the weight is below tolerance and manual jog has been enabled.

Icon	Name	Function
	Manual Jog (Weigh-Out)	Starts a manual jog cycle at the end of the selected weigh-out cycle if the weight is below tolerance and manual jog has been enabled.
+/−	Rescale Formula	Allows rescaling of the original formula keeping the same ratio of materials as the original formula. Rescaling can be based on a % of the active formula, the total formula target or based on material 1 target. Rescaling can be disabled in setup.
	Formula Table	Shown on the Active Formula page to allow selection of a new formula from the formula table.
i	Info	Provides access to view details of a formula including total target, material numbers, material descriptions, material targets and auxiliary output values (if enabled).
+/− OK	Accept Off Tolerance	If enabled in setup, permits acceptance of an out-of-tolerance condition.
OK	OK	Acknowledges the end of a step in a semi-automatic sequence or the completion of a manual overfill adjustment.
	Pause	Pauses the sequence and provides softkey choices of either RESUME or ABORT.
	Resume	When a sequence is paused, pressing this softkey will resume the sequence where it was stopped.
	Abort or Stop	When a sequence is paused, pressing this softkey will abort the sequence.

2.2.1.1.1.   Customizing Softkeys

All the softkeys available for assignment to the IND570fill home screen can be replaced with customized bitmap images.

The bitmaps must measure no more than 48 pixels wide by 24 pixels high. Each graphic must have a white border at least one pixel wide at left, right and top – see Figure 2-1.

Figure 2-1: Softkey Graphic Dimensions

Graphics may be uploaded to the IND570fill terminal using an ftp connection via Ethernet, or through a serial port. Refer to Appendix C, **Communications** or Chapter 2, **Configuration**, in the **IND570 User's Guide**, for details on this procedure.

New bitmap graphics must have the same filename as the graphic they replace and they must be loaded into the flash2:\\ directory of the IND570. Table 2-3 lists the Fill-570 specific softkey graphics that can be replaced with customized images. Bitmap graphic files common to both the IND570 and IND570fill can be found in the **IND570 User's Guide**.

Table 2-3: Bitmap Graphic Filenames

Softkey	Default Image	Graphic File Name
Container Tare		Cntnr_tr.bmp
Number of Cycles		Cycles.bmp
Formula		Formula.bmp
Weigh-in Start		Weigh_in.bmp
Weigh-out Start		Weigh_out.bmp
Target Weigh-in		targ_in.bmp
Target Weigh-out		Targ_out.bmp
Container Tare Table		Cntnr_m.bmp

2.3.   Weigh-in Cycles

A weigh-in cycle is defined as a material transfer operation that adds weight to the scale. The IND570fill can be configured for either no weigh-in control, a single material fill or a multiple material blend weigh-in cycle as described below. The weigh-in cycles are described in detail in Chapters 4 and 5.

2.3.1.   None

When **None** is selected as the weigh-in cycle, the IND570 will not provide any control for the weigh-in process. This is selected when there is no weigh-in process or when the weigh-in process is controlled manually or by other equipment outside the control of the IND570 terminal.

2.3.2. Fill

In this case, the IND570 controls the filling process onto the scale connected to the terminal. This selection provides one-speed or two-speed feed control for a single material being added to the scale. Some application features that could be used in a Fill cycle include:

- Timing intervals
- Tracking cycles
- OK to weigh-in interlock
- Zero tolerance check
- Material tolerance checking
- End of cycle transition

- Auto jog
- Fill adjustments
- Learn mode
- Auxiliary output
- Automatic tare
- Confirmation of correct container

2.3.3. Blend

If blend is selected for the weigh in cycle, the IND570 controls the multiple material filling process onto the scale connected to the terminal. This selection provides one-speed or two-speed feed control for from two to six materials. Some application features that could be used in a Blend cycle include:

- Timing intervals
- Tracking cycles
- OK to weigh-in interlock
- Zero tolerance check
- Material tolerance checking
- End of cycle transition

- Auto jog
- Fill adjustments
- Learn mode
- Auxiliary output
- Automatic tare
- Material transitions

2.4.   Weigh-out Cycles

The IND570fill can be configured for various weigh-out cycles as described below. A weigh-out cycle is defined as a material transfer operation that removes weight from the scale. The weigh-out cycles are described in detail in Chapters 6 and 7.

2.4.1.   None

When **None** is selected as the weigh-out cycle, the IND570 will not provide any control for the weigh-out process. This mode is selected when there is no weigh-out process (filling or blending only) or when the weigh-out process is controlled manually or by other equipment outside the control of the IND570 terminal.

2.4.2.   Dose

Dosing is the process of dispensing a specific amount of material from a weigh vessel into multiple containers, one after the other. This process typically occurs from a larger tank or supply vessel that can hold sufficient material to fill several containers. Some application features that could be used in a dose cycle include:

- Timing intervals
- Tracking cycles
- OK to weigh-out interlock
- Auto jog
- Heel weight
- Manual or automatic refill
- End of cycle transition

- Fill adjustments
- Learn mode
- Auxiliary output
- Tolerance checking
- Automatic tare
- Material conservation

2.4.3. Dump

If the entire contents of the weigh vessel are to be emptied in one cycle, the process is known as a dump (to empty). This cycle could be used in applications where several scales are each used to each pre-weigh a certain amount of material that will all be added into another larger vessel or to add several materials together (blend) then dump the mixture to another process. Some application features that could be used in a dump cycle include:

- Timing intervals
- Tracking cycles
- Heel weight

- OK to weigh-out interlock
- Auxiliary output
- End of cycle transition

2.5. Sequences: Combinations of Cycles

The power of the IND570fill comes from the combination of a weigh-in cycle with a weigh-out cycle. This allows the IND570fill terminal to control a complete weigh-in / weigh-out sequence. The seven combinations that the IND570 will support are:

- Fill / None
- Fill / Dump
- Fill / Dose
- None / Dose

- Blend / None
- Blend / Dump
- Blend / Dose

2.6. Special Features

Several special features available in the IND570fill are designed to make the weigh-in and weigh-out cycles operate properly for specific applications. These features are described next.

2.6.1. Target Comparison Parameter Entry

Since the Fill-570 allows users to combine a Weigh-in cycle with a Weigh-out cycle, an additional step is required when manually creating Active Target values or when activating a record from the Target Table. Users must identify whether the target is to be used for the Weigh-in process or the Weigh-out process.

2.6.1.1. Direct Editing of Active Records

2.6.1.1.1.   To edit an active record for the Fill Weigh-in cycle directly

1. Press the WEIGH-IN TARGET softkey ⌖. The Active Weigh-in Values screen displays. Use the UP and DOWN navigation keys to scroll through the fields available for editing. In the Units field, only units that have been set up as primary, secondary or third units will be available for selection.

2. Press the ENTER key to select a field to edit. Press the OK softkey ᴼᴷ✓ to accept the edits to the active record. Press the ESCAPE softkey (Esc) to return to the weighing operation screen without saving the active record edits.

2.6.1.1.2.   To directly edit an active record for the Dose Weigh-out cycle

1. Press the WEIGH-OUT TARGET softkey ⌖. The Active Weigh-out Values screen displays. Use the UP and DOWN navigation keys to scroll through the fields available for editing. In the Units field, only units that have been set up as primary, secondary or third units will be available for selection.

2. Press the ENTER key to select a field to edit. Press the OK softkey ᴼᴷ✓ to accept the edits to the active record. Press the ESCAPE softkey (Esc) to return to the weighing operation screen without saving the active record edits.

2.6.1.2. Loading Records from the Target Table

The WEIGH-IN TARGET ⌖ and WEIGH-OUT TARGET softkeys ⌖ can also be used load records from the Target Table via Quick Access or List Selection. Only Target Table records with units that match the primary, secondary or third units established in the terminal will be available for selection.

2.6.1.2.1.   Quick Access to Records

Use the Quick Recall mode when the ID of the Target Table record to be loaded is known. First, press either the WEIGH-IN TARGET ⌖ or WEIGH-OUT TARGET softkey ⌖. Use the numeric keypad to enter the ID and then press the TARGET TABLE softkey ⊕ that now appears in the softkey tray to load the record. If the record is available, the data is loaded. If the record is not found, an "ID not found" error displays.

2.6.1.2.2.   List Selection

Use the List Selection mode when the ID of the Target Table record is unknown. To use the List Selection mode:

1. Press the TARGET MEMORY softkey ⊕ without any preceding data entry. The Target Search screen displays.

2. Enter any search restrictions required or leave selections as they are to retrieve all records.

3. Press the SEARCH softkey 📖 to view the selected records in the table.

4. Use the UP and DOWN navigation keys to scroll through the list until the desired record is highlighted.

5. Press the OK softkey ᴼᴷ✓ to load the selected record from the list.

6. Press the ESCAPE softkey **Esc** to return to the weighing operation screen without loading the record.

2.6.2.   Formula Table

The formula table is used to store up to 100 material formulas for the blend weigh-in cycle. The formulas are created and stored in setup at **Application > Pac > General > Formula Table**. Each formula contains a formula ID, from 2 to 6 target table IDs, auxiliary output values, a totals field to accumulate how much of a formula has been processed, and a counter for the number of times a formula is used.

■ **IMPORTANT:** Formulas can only use materials that have been defined and saved in the IND570 Target Table.

The number of materials to be used in a formula can be programmed from two to six in setup. It is important that this setting correspond to the maximum number of materials that a formula will use.

■ **IMPORTANT:** All materials in a formula must use the same weight unit. If an attempt to add materials with different units into a formula is made, a unit mismatch error will be shown and the material with the mismatched unit will not be accepted.

2.6.2.1.   Loading Records from the Formula Table

The FORMULA softkey ⌦F⌦ is used load the active formula record from the Formula Table via a List Selection.

2.6.2.1.1.   List Selection

After opening the view of the active formula record, the Formula Table softkey is available to select a new formula from the Formula Table. It is not possible to edit the formula in the active formula view. Only new formulas can be selected or a formula may be rescaled. The procedure to select a new formula is listed next.

1. Press the FORMULA MEMORY softkey ⌦⌦ and the Formula Search screen displays.

2. Enter any search restrictions required or leave selections as they are to retrieve all records.

3. Press the SEARCH softkey 🔍 to view the selected records from the table.

4. Use the UP and DOWN navigation keys to scroll through the list until the desired record is highlighted.

5. Press the OK softkey OK to load the selected record from the list.

6. Press the ESCAPE softkey **Esc** to return to the weighing operation screen without loading the record.

2.6.2.1.2.   Viewing Formula Details

When viewing the results of the Formula Table search, there will be an INFO softkey **i** shown. Pressing this softkey will provide details of the formula currently in focus. Use the UP and DOWN navigation keys to scroll through all the details.

The details include the formula ID number, formula description, the total formula weight, material target ID numbers with descriptions and targets, and if enabled, the auxiliary output operating values.

To return to the Formula Table search results page, press the ESCAPE softkey $\boxed{\text{Esc}}$.

2.6.3. Formula Rescale

A rescaling feature allows the user to alter the total weight of a selected Formula. Changes made to selected formulas are kept in memory for multiple cycles but are not updated to the record stored in the Formula Table.

The Formula Rescaling feature is accessed by first pressing the Formula softkey $\boxed{\text{F}}$ and then pressing the Formula Rescale softkey $+/-$. The method of rescaling is selected in setup. Choices include total formula target, total formula percent, or material 1 target. Once the rescaling parameter has been selected in setup, all formulas are rescaled using the same method.

The Rescale display will show the original formula ID number and the original formula target weight. Focus is on the Formula Rescale label. To rescale the formula:

1. Press the ENTER key to move focus into the rescale entry box, enter the rescale value then press ENTER.

2. After rescaling, the formula ID will include the letter "R" after it for viewing and printing to indicate it has been rescaled.

3. If the auxiliary output is enabled, the auxiliary output values for the original formula are shown and the operator has an opportunity to accept the same values or to modify the values to better match the rescaled formula.

   ■ **IMPORTANT:** This is the only opportunity provided to modify the auxiliary output values for the rescaled formula. After the rescaled formula is accepted, the auxiliary output values cannot be edited.

4. After confirming the rescale value and the auxiliary output values, press the OK softkey $\overset{\text{OK}}{\checkmark}$ to accept the rescaled formula and move it into the active formula.

5. Note that the active formula now shows the letter "R" after the formula ID to indicate is has been rescaled and all target values have been automatically rescaled.

   ■ **IMPORTANT:** A formula can only be rescaled once. If a different rescale for a formula is desired, the original formula must be recalled from the formula table and rescaled for the new values.

2.6.4. Cycle Transitions

The Fill-570 application can be programmed to continue between the weigh-in and weigh-out cycles automatically or semi-automatically. The selections for the type of weigh-in and weigh-out cycles affect how the sequence operates based on this parameter. A transition is selectable for both the weigh-in and weigh-out cycles. Each transition is explained next. "Home" refers to the IND570fill home screen.

2.6.4.1. Transition Disabled

At the end of the weigh-in or weigh-out cycle, the sequence stops and returns to the Home screen.

2.6.4.2. Transition to Hold

Sequence holds at the end of the completed cycle and waits for operator to press the OK softkey OK before continuing. After operator acknowledgement, sequence continues to the next cycle. After a fill or blend, the sequence will continue to the weigh-out cycle. After a dump, the sequence will continue to the fill or blend cycle. After a dose, another dose will be started.

2.6.4.3. Transition to Weigh-in

After the completion of the current cycle, a weigh-in cycle will automatically be triggered. If this transition is selected for the weigh-out cycle, a continuous weigh-out/weigh-in sequence can be created.

2.6.4.4. Transition to Weigh-out

After the completion of the current cycle, a weigh-out cycle will automatically be triggered. If this transition is selected for the weigh-in cycle, a continuous weigh-in/weigh-out sequence can be created.

2.6.5. Sequence Tare

This feature provides a trigger to perform an automatic tare during the sequence such as before a filling cycle, between materials in a blend or before a dose. To make the sequence operate automatically without operator intervention, this parameter should be enabled.

If this parameter is disabled in setup, tare can still be taken manually before a fill cycle – but **not** between materials in a blend. Disabling this feature also allows a formula for a blend to be set up in gross instead of net mode. In this case, the target values in the formula must be selected such that the target for each material includes with the sum of the previous materials weighed plus the target for that material. This is an unusual application.

2.6.6. Refill Mode

When in Blend/Fill-Dose sequence, the way the IND570fill refills the supply vessel can be specified. Two Refill Modes are available – Automatic and Manual.

In Automatic mode, the IND570 performs the refilling under the direction of the operator. In Manual mode, the IND570 does not control the refilling.

In both modes, when the supply vessel does not contain enough material for the required dose, the following message will be displayed:

> MATERIAL LOW
> ATTENTION!
> Supply material less than Dose target value.

Three softkeys are available to the operator – Start Weigh-In (Refill), Pause, and Start Weigh-Out (Dump). In Automatic mode, the operator presses the desired softkey and the IND570fill performs the action automatically. In Manual mode, if the Start Weigh-In (Refill) softkey is pressed, the following message appears:

> ATTENTION!
> Fill supply container then press OK.

The operator can press either Pause or OK. If the supply vessel will be emptied, refilled or replaced manually, press Pause. In this case, the Resume and Abort/Stop softkeys will be displayed. The operator can either manually refill the supply vessel and press Resume, or press Abort/Stop to end the process. The Abort/Stop softkey is useful if the operator needs to return to the home screen to view the actual weight of the supply vessel as it is being filled. If the operator does not need to see the weight display, once the supply vessel has been filled or replaced OK is pressed to continue the process.

In both Manual and Automatic modes, if the Start Weigh-Out (Dump) softkey is pressed, the supply vessel is automatically emptied.

2.6.7. Material Conservation Mode

When Dose is selected as the weigh-out cycle, a material conservation mode can be enabled. This feature activates at the Material Low message and allows the operator to dump the remaining amount of material from the supply vessel into the dose container as the first step of a two-step dose process.

Then, after the supply material has been refilled, the terminal will adjust the target for the second step of this dose to reflect **only** the amount of material needed to complete the original dose target value – i.e., the target of the second dose step will be the original dose target, less the amount dumped in the first step.

After this partial or two-step dose cycle is completed, the dose target will revert to the original dose target amount for all following dose cycles.

Material conservation mode can be disabled in setup.

2.6.8. Timed Intervals

Five timing intervals can be programmed in the IND570fill. These are Start Delay, After Weigh Delay, After Empty delay, Weigh-in Complete and Weigh-out Complete.

The **Start Delay** initiates a timer that begins when the respective "START" key is pressed and delays the actual start of the feeders for a programmed amount of time. During this time, the display will show the active target description, the target value and the tolerances, along with the timer countdown. If the time is programmed as "0", then there will be no delay and the target values will not display. A Start Delay discrete output is turned "on" during the start delay time.

The **After Weigh Delay** provides some additional time after the feeder stops before a tolerance check is made. The status of the sequence remains as Running during this time. This can provide some additional time to account for environmental effects such as pressure equalization in enclosed weigh vessels. There is an After Weigh Delay discrete output that is turned "on" during the after weigh delay time.

The **After Empty Delay** is used with the Dump weigh-out cycle. When the gross weight reaches the programmed Heel weight, the After Empty Delay timer starts and runs for the programmed time. After the programmed time has been reached, the weigh-out feeders are turned off. This is used to keep the feeders from running continuously when the weigh vessel does not return to zero after a Dump cycle.

The **Weigh-in Complete** and **Weigh-out Complete** timers are available to indicate to external devices that a cycle has ended. The Weigh-in Complete timing interval allows you to program an amount of time that the Complete: Weigh-in discrete output will be active once the weigh-in cycle is completed. This timer does not enact a physical pause in the sequence itself.

The Weigh-Out Complete timing interval allows you to program an amount of time that the Complete: Weigh-out discrete output will be active once the weigh-out cycle is completed. This timer does not enact a physical pause in the sequence itself.

When the weigh-in or weigh-out transition is set to Hold, the Complete: Weigh-in and Complete: Weigh-out discrete outputs will remain on while the sequence is holding, until the operator acknowledges by pressing the OK softkey OK.

2.6.9. Tracking Number of Cycles

This feature is used to track the number of cycles completed and then trigger an operator message when the programmed number of cycles have been met. At this point, additional weigh-in and weigh-out cycles are prohibited until the number of cycles has been reset. The display message is shown in Figure 2-2.
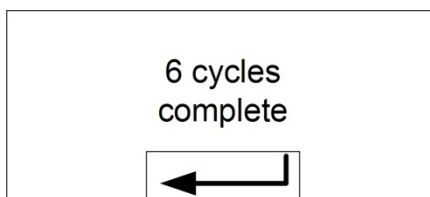
Figure 2-2: Cycles complete message

This message is cleared by pressing ENTER. After it is cleared, all status outputs are turned off indicating an "unready" state. The number of cycles must be reprogrammed or reset before the status will change to Ready.

The discrete output, Complete Cycles, is initiated simultaneously with the display message.

Depending upon the combination of weigh-in and weigh-out cycles selected, different criteria is used to determine a completed "cycle". Next, each combination is defined:

Sequence	Description
Fill / None	Each successfully completed fill cycle triggers the cycle counter.
Fill / Dump	Each successfully completed dump sequence triggers the cycle counter.
Fill / Dose	Each successfully completed dose cycle triggers the cycle counter.
None / Dose	Each successfully completed dose cycle triggers the cycle counter.
Blend / None	Each successfully completed blend cycle triggers the cycle counter.
Blend / Dump	Each successfully completed dump sequence triggers the cycle counter.
Blend / Dose	Each successfully completed dose cycle triggers the cycle counter.

The number of cycles may be set to any value from 1 to 64,999, by accessing the CYCLES softkey from the home position.

■ **Cycles that have been aborted manually** are not considered complete, and are not included in the total cycle count. The weight values associated with aborted cycles are not accumulated in any totals register.

■ **Out-of-tolerance cycles** are considered complete, and are included in the total cycle count. The weight values associated with out-of-tolerance cycles are accumulated in totals registers.

2.6.10.   Active Container Tare Record

When the programmed weigh-in sequence (Fill or Blend) involves placing an empty container onto the scale before it is filled, the weight of the empty container can be evaluated to confirm that the correct container has been placed on the scale. This is done by enabling Container Tare in setup and adding the CONTAINER TARE softkey 🖹 to the home screen.

When this softkey is pressed, the active container tare record is available for editing. The fields in this record include: tare value, minimum value, maximum value, and description. If a non-zero tare value is entered into the record, this weight is used as the tare weight for the container. If the tare value field is "0" and values are entered into the minimum value and maximum value, then container tare checking is enabled. The gross weight of the container on the scale must be greater than the minimum value field and less than the maximum value field or an "Invalid tare" error will be displayed. This error is shown in Figure 2-3.

Figure 2-3: Invalid Tare Message

This message is cleared by pressing ENTER. When cleared, the cycle is aborted and the alarm output is turned on.

2.6.11.   Container Tare Table

There is a container tare table available that stores up to 200 records that can be recalled to populate the active container tare values. When a container tare record is recalled from memory, it places the stored values into the active tare container record. A container tare record can be recalled from the Container Tare Table by use of the CONTAINER TARE TABLE softkey 🖹. This softkey can be used to select a record from a view of the entire table or, when preceded by a numeric ID value, can access a stored record quickly.

If the weigh-in cycle is Fill, the container tare table can be "linked" to the target table. . If the container tare table is enabled as "Linked", when a target record is recalled from the target table the container tare table record with the same ID as the target table record is automatically recalled and used for the next fill cycle. This provides recall of both a target ID and container ID with just one ID entry. Even when the table is "linked", a new container tare record can be manually recalled and the active container tare record can be edited.

2.6.12. Interlocks

The IND570fill provides both weigh-in interlock and weigh-out interlock signal control. These signals can be used to prevent the start of a weigh-in or weigh-out cycle if required containers or control measures are not in place. If the interlocks are enabled and the required discrete input signal is not present, an error message such as shown in Figure 2-4 will be displayed and the sequence will be paused. The sequence will not continue until the problem has been fixed and the interlock input is received by the terminal.
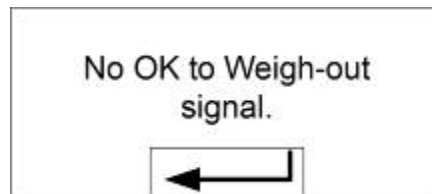
Figure 2-4: "No OK Signal" Message

The operator must press the ENTER key to clear the message and then press the RESUME softkey ◇ to continue the cycle again.

These two interlocks can be enabled or disabled independently in setup depending upon the application requirements.

2.6.13. Jog

Either an automatic or manual jog process can be enabled in setup. If the programmed spill value is too large and the Feed output turns off too soon, the final weight will not be within tolerance. In this case, the jog function can be used to slowly feed additional material to reach the tolerance value.

If automatic jog mode is enabled, the feed output is pulsed on and off automatically per programming in setup when the final weight is below the lower tolerance limit. If manual jog is selected, this procedure is performed manually by pressing the weigh-in MANUAL JOG softkey ⌁ or the weigh-out MANUAL JOG softkey ⌁ provided or by programming a discrete input as a jog function. Each time the manual jog function is initiated, it runs one pulse on/off cycle. Multiple presses of the softkey may be required to reach the lower tolerance level.

2.6.14. Target Tolerance Check

A tolerance check is performed at the end of each weigh-in cycle and each weigh-out cycle to confirm that programmed target and tolerance requirements have been met. The IND570fill provides various controls based on this tolerance check. The terminal can be programmed to abort the current cycle if an out of tolerance condition is determined or it can allow the operator to make this decision.

If a tolerance check is not required for an application, it can be disabled if both the + Tolerance and - Tolerance values are programmed as "0". If either of the tolerance parameters have values entered for them, a tolerance check will automatically be performed.

Other features that are associated with the tolerance check are automatic and manual jog, and overfill adjustment. If a tolerance check is not required, the tolerance values for a specific material can be programmed as "0" and the tolerance check will be skipped.

2.6.15. Zero Tolerance Check

The Zero Tolerance Check feature is disabled by default, but can be enabled for use in weigh-in cycles only. Typically, the zero tolerance checking feature is used to make sure that a large vessel is empty (within a certain tolerance) before it is filled again.

When a container tare is used, the zero tolerance checking feature should be disabled. Instead, the Minimum and Maximum values in the Container Tare Active Values are used to detect the correctly sized container.

2.6.16. Overfill Adjustment

In certain applications, a manual adjustment of an overfill condition may be desirable while the final filled container (final weight) is still on the scale. If Overfill Adjustment is enabled and the final weight is above the over tolerance, the system line will indicate a "Manual adjust" condition in the system line and an OK softkey $\overset{OK}{\swarrow}$ will be shown. After the manual adjustment, the operator must acknowledge the completion of the adjustment by pressing the OK softkey $\overset{OK}{\swarrow}$. The tolerance is then retested.

2.6.17. Automatic Spill Adjustment

If the final weight of a weigh-in cycle or weigh-out cycle repeatedly fails to reach the exact target value, the Automatic Spill Adjustment feature can be used to calculate a new spill value continuously to improve the accuracy of the process. The number of cycles to average and a percentage of error to apply are programmable in the setup mode. After re-calculation, the new spill value can be kept in the active target record. Alternatively, a programmable option permits the value to be stored in the permanent Target Table record.

Averaging the error over several cycles and taking a smaller percentage of adjustment will provide a more accurate result over a period of time. For quicker results, fewer cycles can be averaged and a higher percentage of the error can be applied.

2.6.18. Learn Mode

If the fine feed and spill values for a material are unknown, the IND570fill can use Learn Mode to determine what values to use during the active weigh-in or weigh-out cycle. This is useful if the flow characteristics of a material are unknown or if a particular material changes characteristics (clumps or thins) when environmental conditions change.

To use this feature, first enable the Learn Mode in setup. Then, program the fine feed and spill values as "0" in the active target record or formula. During the sequence, the IND570 terminal will turn the fast feed and feed outputs off to determine what these values should be, populate the active record with these values then turn the feeds back on to finish the cycle. After calculation, these values are kept in the active record. If the active record was populated from the Target Table, then these learned values can be stored back into the Target Table.

When enabled, the Learn Mode can operate in both weigh-in and weigh-out cycles. The Learn Mode runs automatically whenever the fine feed and spill values are "0". For one-speed control (where there is no fine feed value), only the spill value is checked for a value of "0". If non-zero values are in the fine feed and spill fields, then these values will be used and the Learn Mode will not operate.

2.6.19. Auxiliary Output

A separate, Auxiliary, output signal can be triggered in either the weigh-in cycle or the weigh-out cycle (but not both). This signal can be used as a control for external devices such as a mixer or heater. The Auxiliary output signal can be configured in setup to activate within a programmed weight range or for a certain amount of time after passing a programmed weight threshold.

This output is always based on the gross weight on the scale. It is not interrupted when the sequence is paused. However, if the sequence is aborted, the Auxiliary output does terminate. In either automatic or semi-automatic mode of operation, when the sequence is complete, the Auxiliary output will not turn off automatically when the cycle ends. It will continue until its programmed values are met. If a new cycle is started before the Auxiliary output completes its cycle, the Auxiliary output will be turned off, its trigger will be reset and it will begin operating again within its programmed values.

Each stored formula contains its own auxiliary output values which are used when that formula is recalled and used in a blend. If a formula is rescaled, the start and ending values stored in the formula are not automatically used. The rescaling procedure allows entry of new start and end values for the auxiliary output.

2.6.20. Pac Statistics

The IND570fill can be programmed to calculate statistics for either the weigh-in or weigh-out cycle. Statistics will be kept for a maximum of 50 weigh-in or weigh-out cycles. Additional cycles beyond 50 can still be run, but statistics will not be kept for those. No operator message is given when the maximum number is reached. Any of the four cycles can be selected as the weigh cycle to trigger the statistics. The statistical information available includes:

Statistic	Description
Minimum weight	The smallest weight of all weighments
Maximum weight	The largest weight of all weighments
Average weight	The mathematical average of all weighments
Median weight	The final weight most often reached
Standard deviation	The standard deviation of all weighment values
Minimum cycle time	The shortest weigh cycle time
Maximum cycle time	The longest weigh cycle time
Average cycle time	The mathematical average of all cycle times
Total weight	The total of all weighments
Cycle count	The number of weighments
Out of tolerance -accepted	The number of out of tolerance weighments that were accepted
Out of tolerance	The total number of weighments that were out of tolerance
Aborted	The number of cycles that were aborted

The statistical information can be viewed, printed, exported to a USB flash drive or exported using FTP or serial file transfer. More details can be found in Appendix D, **Pac Statistics**.

3 Setup Parameters

This chapter provides information about how to configure the IND570 terminal's operating system with Fill-570 functionality. It describes access to the setup mode, where functions can be enabled, disabled, or defined by entering parameter values in specific setup screens.

3.1. Entering Setup Mode

The configuration of the IND570fill terminal is accessed through the SETUP softkey ⚡◇. If security has not been enabled, pressing the SETUP softkey will provide direct access to the setup menu tree. If password security has been enabled, a login screen displays and the user must enter the correct password in order to advance into setup. (See the Security section in Chapter 2, **Operation**, in the standard **IND570 User's Guide** for further information about password setup and security.) When the login screen is shown, pressing the ESCAPE softkey [Esc] exits to the home screen without entering any login information.

3.2. Exiting Setup Mode

To exit the setup mode, select Home from the setup menu tree and press ENTER. The default weighing operation screen displays.

🔹 As an alternative, press the first softkey at any time the menu tree is displayed to exit the menu tree.

3.3. Setup Menu Tree

After pressing the SETUP softkey ⚡◇, the IND570fill menu tree will be displayed. The menu tree of the IND570fill is similar to the standard IND570 with the addition of a new branch under Application, called "Pac". This is the branch that provides access to most of the programming steps for the Fill-570 functionality. Other leaf nodes, such as Softkeys, are also modified. Figure 3-1 shows an expanded menu tree with focus on the Pac branch.
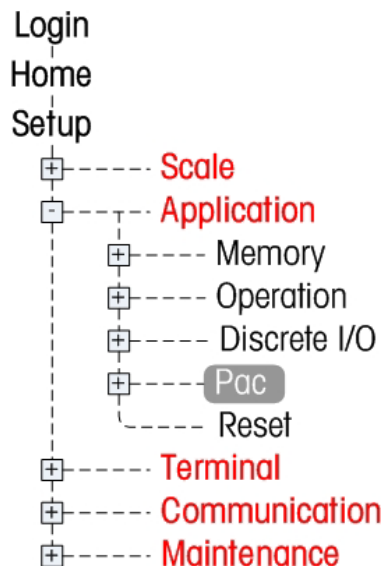
Figure 3-1: Setup Menu Tree with Pac Branch in Focus

Navigation in the menu tree is the same as the standard IND570 terminal:

- Use the UP and DOWN navigation keys to move focus through the branches of the setup menu tree.

- Press the RIGHT navigation key to expand a branch and the LEFT navigation key to collapse a branch. When the focus is on a sub-branch, focus can quickly be moved back to the main branch by pressing the LEFT navigation key.

- When a leaf node (singular, non-expandable) branch such as Device or Display is in focus, press the ENTER key to display the setup screen for that function.

3.4. Overview of Configuration

The setup menu tree can be expanded to show every branch and leaf node in the terminal's configuration. Use the navigation keys to select the desired setup screen.

The five major branches in the setup menu tree are shown in green in Figure 3-2:

- Scale
- Application
- Terminal
- Communication
- Maintenance

New branches or existing branches with new parameters for the Fill-570 functionality are shown in red in Figure 3-2.
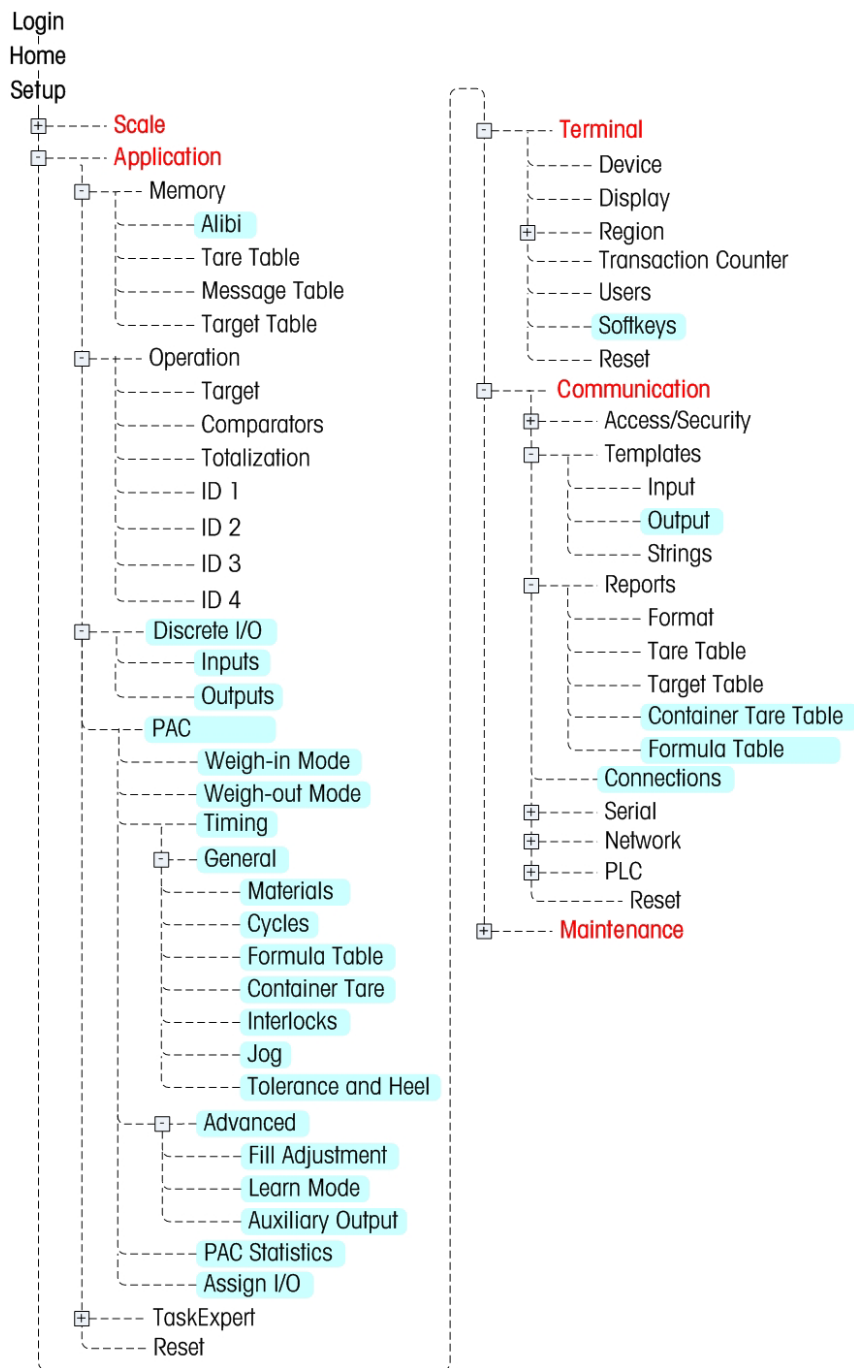
Figure 3-2: The IND570fill Menu Tree

3.4.1. Configuring Setup

Configure the IND570fill terminal options on the setup screens that are available under the Alibi, Discrete I/O, Pac, Softkey, Output templates, Reports and Connections sub-branches of the setup menu. These are described next.

■ Note: If the metrology switch is in the approved position (SW1-1 = ON), parameters in the Scale branch cannot be changed.

3.5. Scale

The IND570fill adds no new setup parameters or selections to the Scale branch. Refer to the standard **IND570 User's Guide** for setup information.

3.6. Application

Most of the IND570fill setup is located in this branch of the setup menu tree. New selections are added to the Alibi, Discrete Inputs, and Discrete Outputs sub-branches, and a new Pac sub-branch is shown.

- Alibi
- Discrete I/O
- Pac
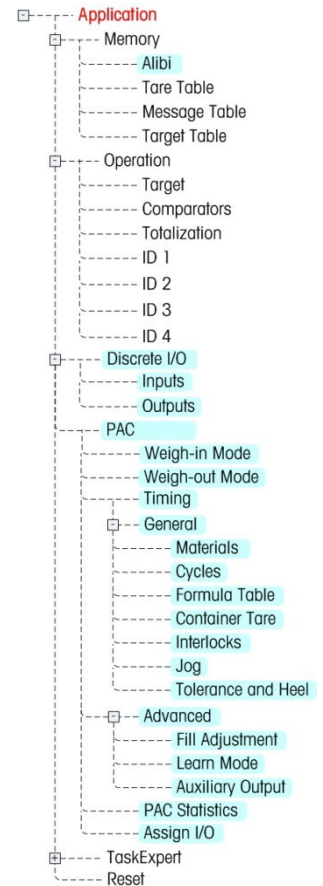
3.6.1. Alibi

A new parameter is added to the selection box for Alibi memory. In the standard IND570, Alibi memory can either be enabled or disabled. The IND570fill also has an Action Log option. When Action Log is enabled, actions that occur during the weigh-in and weigh-out sequences in the Fill-570 are recorded in the Action Log. The file can be extracted from the terminal via USB flash drive or the Action Log can be sent out a port as each record occurs. More details on the Action Log can be found in Appendix A.

Since they both use the same memory space, the Alibi memory and Action log cannot be used simultaneously.

Enter the Alibi selection box and choose Disabled, Alibi Memory or Action Log.

3.6.2. Discrete I/O

Discrete I/O setup screens include:

- Inputs
- Outputs

3.6.2.1. Inputs

The Discrete Inputs screen displays discrete input assignments, including the input assignment address, polarity, and function. Only records with non-null values display.

Press the CLEAR softkey **C** to clear the entire table.

Press the UP and DOWN navigation keys to scroll up and down the screen in order to view all of the possible discrete input assignments.

3.6.2.1.1. To modify or add discrete inputs

1. Press the UP and DOWN navigation keys to select (highlight) a discrete input.

2. Press the EDIT softkey ✎ to open the setup screen for editing an input assignment or press the INSERT softkey ▯ to open the setup screen to create a new input assignment.

   A. Enter the input assignment address. The input address is shown as [x.y.z] where x indicates the input location, y indicates the slot address of the I/O option, and z indicates the input position. The input address digits are:

   - Location—The first digit represents whether the I/O is local (0) or remote (ARM100 module #1–#3).
   - Slot Address—The second digit will always be a 1 for the IND570 internal I/O and a 0 for the remote I/O (ARM100 modules).
   - Position—The third digit refers to the position (1–5) of the discrete input option (internal or remote) that is being assigned to a function.

   Valid address numbers are:

   - Local—0.1.1, 0.1.2, 0.1.3, 0.1.4 , 0.1.5
   - Remote #1—1.0.1, 1.0.2, 1.0.3, 1.0.4
   - Remote #2—2.0.1, 2.0.2, 2.0.3, 2.0.4
   - Remote #3—3.0.1, 3.0.2, 3.0.3, 3.0.4

   Examples:

   - Address 0.1.1 = Local discrete board , position 1.
   - Address 1.0.3 = Remote ARM100 address #1, position 3.

   B. The inputs can be programmed to accept either a + True or − True polarity level as "ON". Use the Polarity selection box to select + True or − True.

   C. Use the Assignment selection box to select an input assignment. The new selections for the Fill-570 application include:

• Jog	• OK to Weigh-in	• Target Resume
• NO key	• OK to Weigh-out	• Weigh-in start
• OK key	• Silence Alarm	• Weigh-out start

   D. Other control inputs (from the standard IND570) that might also be used for control from a remote location include:

   - ENTER key - acknowledges error conditions.
   - Target Pause/Abort - pauses and aborts any cycle.
   - Target Resume - resumes any cycle after a pause. Note that the standard Target Start/Resume selection has been replaced with the Target Resume selection.

   E. Press the OK softkey ✓ to accept the entry.

F.   Press the ESCAPE softkey [Esc] to return to the Discrete Inputs screen.

3.6.2.1.2.   To delete a discrete input

With the input assignment highlighted (selected), press the DELETE softkey ✐.

3.6.2.2.   Outputs

The Discrete Outputs screen displays discrete output assignments, including the output assignment address and function. Only records with non-null values display.

Press the CLEAR softkey **C** to clear the entire table.

Press the UP and DOWN navigation keys to scroll up and down the screen in order to view all of the possible discrete output assignments.

3.6.2.2.1.   To modify or add discrete outputs

1.   Press the UP and DOWN navigation keys to select (highlight) a discrete output.

2.   Press the EDIT softkey ✎ to open the setup screen for editing an output assignment or press the INSERT softkey ☐ to open the setup screen to create a new output assignment.

a.   Enter the output assignment address. The output address is shown as [x.y.z] where x indicates the output location, y indicates the slot address of the I/O option, and z indicates the output position. The output address digits are:

- Location—The first digit represents whether the I/O is local (0) or remote (ARM100 module #1–#3).
- Slot Address—The second digit will always be a 1 for the IND570 internal I/O and a 0 for the remote I/O (ARM 100).
- Position—The third digit refers to the position (1–8) of the discrete output option (internal or remote) that is being assigned to a function.

Valid address numbers are:

- Local—0.1.1, 0.1.2, 0.1.3, 0.1.4, 0.1.5, 0.1.6, 0.1.7, 0.1.8
- Remote #1—1.0.1, 1.0.2, 1.0.3, 1.0.4, 1.0.5, 1.0.6
- Remote #2—2.0.1, 2.0.2, 2.0.3, 2.0.4, 2.0.5, 2.0.6
- Remote #3—3.0.1, 3.0.2, 3.0.3, 3.0.4, 3.0.5, 3.0.6

Examples:

- Address 0.1.1 = Local discrete board , position 1.
- Address 1.0.3 = Remote ARM100 address #1, position 3.

b.   When the Fill-570 application software is added, new selections for output assignments are added to the choices of the standard IND570. These new selections for the Fill-570 application are listed below.

• After Weigh Delay	• Material 4
• Alarm	• Material 4 Fast Feed
• Auxiliary output	• Material 4 Feed
• Before Weigh Delay	• Material 5

- Complete: Cycles
- Complete: Weigh-in
- Complete: Weigh-out
- Holding
- Material 1
- Material 1 Fast Feed
- Material 1 Feed
- Material 2
- Material 2 Fast Feed
- Material 2 Feed
- Material 3
- Material 3 Fast Feed
- Material 3 Feed

- Material 5 Fast Feed
- Material 5 Feed
- Material 6
- Material 6 Fast Feed
- Material 6 Feed
- Out of Tolerance
- Ready
- Running
- Weigh-in Fast Feed
- Weigh-in Feed
- Weigh-out Fast Feed
- Weigh-out Feed

    c. Press the OK softkey $\overset{OK}{\checkmark}$ to accept the entry.

    d. Press the ESCAPE softkey $\boxed{\text{Esc}}$ to return to the Discrete Outputs screen.

3.6.2.2.2.   To delete a discrete output

With the output assignment highlighted (selected), press the DELETE softkey ✎.

3.6.3. Pac

The Pac setup sub-branches include:

- Weigh-in Mode
- Weigh-out Mode
- Timing
- General

- Advanced
- Pac Statistics
- Assign I/O

3.6.3.1. Weigh-in Mode

The Weigh-in Mode screen displays selections for the weigh-in cycle. The parameters shown will depend on previous selections in this setup sub-branch.

3.6.3.1.1.   Weigh-in

The weigh-in selection box provides three choices for the weigh-in cycle.

- None: no weigh-in cycle supported
- Blend: the weigh-in cycle will be blending of from one to six materials from a stored formula.
- Fill: the weigh-in cycle will be programmed for a fill of a single material.

3.6.3.1.2.   Material Transition

The Material Transition selection box is shown only if Blend is selected as the weigh-in cycle and determines if the material feed moves automatically through all materials or if it holds at the end of each material feed and must be acknowledged before continuing. Choices are:

- Automatic

- Semi-automatic

3.6.3.1.3.   Cycle Tare

This selection determines if the IND570fill will perform an automatic tare before starting the sequence or between multiple materials of a blend. Normally this parameter will be enabled but if you have a blend weigh-in cycle and want to create the formula using additive gross weight values, this can be disabled.

Enter the selection box and select either Disabled or Enabled.

3.6.3.1.4.   Clear Tare

This step determines if the tare will be cleared at the end of the weigh-in cycle before triggering the weigh-in transition selection. If enabled, a tare taken during the weigh-in cycle will be cleared at the end of the cycle and the gross weight will be shown.

Enter the selection box and select either Disabled or Enabled.

3.6.3.1.5.   Weigh-in Transition

This selection determines what will happen at the conclusion of the weigh-in cycle. Not all selections will be available based on the weigh-in and weigh-out cycle selections made previously. Choices include:

- Disabled: display will return to the home screen

- Hold: cycle will hold and wait for an operator acknowledgement

- Weigh-in: another weigh-in cycle will be triggered

- Weigh-out: the sequence will trigger the selected weigh-out cycle

After the operator acknowledgement at the hold, the sequence continues to weigh-out cycle.

3.6.3.2.   Weigh-out Mode

The Weigh-out Mode screen displays selections for the weigh-out cycle. The parameters shown will depend on previous selections in this setup sub-branch.

3.6.3.2.1.   Weigh-out

The weigh-out selection box provides three choices for the weigh-out cycle.

- None: no weigh-out cycle supported

- Dose: the weigh-out cycle will be a dose or dispensing operation

- Dump: the weigh-out cycle will be a dump (to empty)

3.6.3.2.2. Clear Tare

This step is shown only if Dose is selected as the weigh-out cycle and determines if the tare will be cleared at the end of the dose before triggering the weigh-out transition selection. If enabled, a tare taken during the dose cycle will be cleared at the end of the cycle and the gross weight will be shown.

Enter the selection box and select either Disabled or Enabled.

3.6.3.2.3. Refill Mode

This parameter is shown only if Dose is selected as the weigh-out cycle. In this case, the weigh-in cycle (blend or fill) must be selected as either automatic or manual.

In automatic mode, the IND570fill can control discrete output signals used to refill the container when there is insufficient material to complete the next dose.

In manual mode, the IND570fill does not provide any control. If there is insufficient material in the supply vessel for the next dose, an operator message is displayed to prompt the operator to manually refill the supply vessel.

Enter the selection box and select either Automatic or Manual.

3.6.3.2.4. Refill Tare

This parameter is shown only if the Refill Mode (previous step) is selected as manual. In the case where the supply vessel for a dose is a movable IBC or tote and the operator is manually replacing it when it is empty, it is necessary that the IND570fill know the tare weight of the vessel to accurately determine the weight of the supply available for a dose. If this step is programmed as enabled, the operator will be prompted to enter the tare weight of the new container after it has been changed. If disabled, it is assumed the supply vessel is a hopper to tank that does not have a tare value.

Enter the selection box and select either Disabled or Enabled.

3.6.3.2.5. Supply Material Conservation

This selection is shown only if Dose is selected as the weigh-out cycle. In the case of insufficient material for a full dose, it provides the ability to empty the supply vessel as a partial dose, refill the supply vessel and then complete the dose cycle.

Enter the selection box and select either Disabled or Enabled.

3.6.3.2.6. Weigh-out Transition

This selection determines what will happen at the conclusion of the weigh-out cycle. Not all selections will be available based on the weigh-in and weigh-out cycle selections made previously. Choices include:

- Disabled: display will return to the home screen
- Hold: cycle will hold and wait for an operator acknowledgement
- Weigh-in: a weigh-in cycle will be triggered

Weigh-out: another weigh-out cycle will be triggeredAfter the operator acknowledgement to the hold, the sequence continues to the next cycle. After a dump, the sequence will continue to the weigh-in cycle. After a dose, another dose will be started.

3.6.3.3. Timing

The Timing screen displays selections for the start delay, after weigh delay, after empty delay, weigh-in complete and weigh-out complete timers. The timers available for programming depend on the type of weigh-in and weigh-out sequence selected.

3.6.3.3.1. Start Delay

A start delay can be programmed to delay the start of the cycle after the START WEIGH-IN or START WEIGH-OUT softkey has been pressed. The same delay value is used for both the weigh-in and weigh-out cycles and before each material in a blend. During this time, the material description, target value and target tolerances will be displayed for viewing by the operator and the system line will count down the remaining time delay.

Program the number of seconds for the start delay or enter 0 to start immediately. Values from 0 to 999 seconds may be entered. If a Start Delay is programmed, the Before Weigh Delay discrete output (if programmed) will turn "on" during the start delay time.

3.6.3.3.2. After Weigh Delay

An After Weigh Delay can be programmed to delay the tolerance test at the end of a weigh cycle. This could be used to allow pressure to equalize in a sealed vessel or to allow some extra settling time for unstable weigh vessels. During the delay, the system line will count down the remaining delay time.

Program the number of seconds for the After Weigh Delay or enter 0 to start the tolerance check immediately after turning the feed signal off. Values from 0 to 999 seconds may be entered. If an After Weigh Delay is enabled, there is an After Weigh Delay discrete output that turns "on" during the start delay time (if programmed).

3.6.3.3.3. After Empty Delay

This parameter will be shown when Dump or Dose is selected as the weigh-out cycle. The After Empty Delay timer is used only in the Dump cycle and starts when the gross weight on the scale falls below the Heel Weight value. (The Heel Weight parameter is entered on the Tolerance & Heel setup page at **Application > Pac > General)**. The weigh-out fast feed and weigh-out feed outputs remain "on" until the After Empty Delay times out then they turn "off". The combination of the After Empty Delay and Heel Weight provide control so that the weigh-out feeders don't run continuously when the weigh vessel does not completely empty during the Dump cycle. During the delay, the system line will count down the remaining delay time.

This same function is used when insufficient material is detected at the start of a dose cycle and the DUMP softkey is pressed.

Program the number of seconds for the After Empty Delay or enter 0 to turn the weigh-out fast feed and weigh-out feed signals immediately when the gross weight falls below the Heel Weight value. Values from 0 to 999 seconds may be entered.

3.6.3.3.4.   Weigh-in Complete

The Weigh-in Complete timer is used only to designate an amount of time that the Complete: Weigh-in discrete output will be turned on after the completion of the weigh-in cycle. Programming a value into this timer does not put a physical pause into the sequence. Values of 0 to 99 seconds may be entered.

3.6.3.3.5.   Weigh-out Complete

The Weigh-out Complete timer is used only to designate an amount of time that the Complete: Weigh-out output will be turned on after the completion of the weigh-in cycle. Programming a value into this timer does not put a physical pause into the sequence. Values of 0 to 99 seconds may be entered.

3.6.3.4.   General

The General branch provides setup pages for:

- Materials
- Cycles
- Formula Table
- Container Tare
- Interlocks
- Jog
- Tolerance & Heel

3.6.3.4.1.   Materials

The Materials setup page provides selections for the number of materials in the Blend/Fill, the number of speeds for each material and the number of speeds for the dosing control.

Materials Weigh-in

If a single material Fill was selected as the weigh-in cycle, a value of "1" will be shown and it cannot be changed. If Blend was selected as the weigh-in cycle, enter the number of materials (2 – 6) that will be used.

#1 Feed Speeds

Select the feed control for material #1 as either "1" for single-speed control or "2" for two-speed control. If one-speed is selected, a fine feed value will not be used to determine the cutoff point to reach the target. If one-speed is selected, only the Weigh-in Feed signal (Fill and Blend) and Material 1 Feed signal (Blend) will be turned on during the weigh-in cycle - the Weigh-in Fast Feed signal and Material 1 Fast Feed signal is not used. If two-speed control is selected, both the Fast Feed and the Feed control signals will be used.

#2 Feed Speeds

Select the feed control for material #2 as either "1" for single-speed control or "2" for two-speed control.

#3 Feed Speeds

Select the feed control for material #3 as either "1" for single-speed control or "2" for two-speed control.

#4 Feed Speeds

Select the feed control for material #4 as either "1" for single-speed control or "2" for two-speed control.

#5 Feed Speeds

Select the feed control for material #5 as either "1" for single-speed control or "2" for two-speed control.

#6 Feed Speeds

Select the feed control for material #6 as either "1" for single-speed control or "2" for two-speed control.

Dose Speeds

This parameter is shown only when Dose is selected as the weigh-out cycle. Select the number of speeds of control for the dose cycle as either "1" for single-speed control or "2" for two-speed control. If single-speed is selected, a fine feed value will not be prompted in the active weigh-out target record and only the Weigh-out Feed signal will be turned on during the weigh-out cycle - the Weigh-out Fast Feed signal is not used. If two-speed control is selected, both the Weigh-out Fast Feed and the Weigh-out Feed control signals will be used.

3.6.3.4.2.   Cycles

The Cycles setup page provides a selection to enable or disable tracking based on the number of cycles run. One complete "cycle" is determined based on the weigh-in and weigh-out cycles selected. Refer to Chapter 2, Operation; Features; Number of Cycles for more details on what determines a "cycle".

Track Cycles

If tracking of cycles is enabled, the Number of Cycles softkey **n** must be added to the Home page to program the number of cycles to be tracked.

Enter the selection box and select either Disabled or Enabled.

3.6.3.4.3.   Formula Table

Parameters for the formula table are shown on this setup page. This page is only available if Blend is selected as the weigh-in cycle.

Auxiliary Out

The Auxiliary Output is fully enabled/disabled at **Application > Pac > Advanced > Auxiliary out.** After is has been enabled there, it can be specifically enabled or disabled or use in a formula at this step.

Enter the selection box and select Disabled or Enabled.

Totalization

Totalization within the formula table is enabled or disabled using this parameter. Totalization includes both a counter and total weight fields. If totalization is disabled, these fields are not shown in the formula view.

Choices for totalization are Disabled, All weighments or only In tolerance weighments.

Rescale

The rescale feature for formulas is programmed in this step. If Material Target is selected, an additional setup parameter for the material number is shown. The choices are:

Disabled, Formula %, Formula Target, and Material Target.

Material Number

Select the material number from the formula that the rescaling will be based on. Other materials will be adjusted to keep the material ratios the same to the material selected here.

Enter the selection box and select material $1 - 6$. Only the number of materials selected for use in a formula are available.

To view Formula Table records

1. Press the VIEW TABLE softkey 🔍. The Formula Search screen displays.

2. Use the selection boxes and associated fields to enter specific search information to limit the search, or do not enter any search limits to view all Formula Table information.

3. Press the START SEARCH softkey 🔍. The Formula Search View screen displays with the search results. Only records with non-null values display. Records are ordered by ID, with the lowest ID number shown first.

4. Press the UP, DOWN, LEFT, and RIGHT navigation keys to scroll up and down and across the screen in order to view all data and all records listed.

To modify or add Formula Table records

1. Press the UP and DOWN navigation keys to select (highlight) a record in the table.

2. Press the EDIT softkey ✎ to open the setup screen for editing a record or press the INSERT softkey 🗋 to open the setup screen to create a new table record.

   A. Press the UP and DOWN navigation keys to move the focus to the field name to be edited or inserted.

   B. Press the ENTER key to select a field value to edit or insert.

   C. When focus is moved to any of the materials, the Target Table softkey ⬦ is shown.

   D. All materials in a formula must be selected from the target table. Press the Target Table softkey ⬦ to select a material.

   E. The Target Search screen is shown allowing entry of search parameters. Use the selection boxes and associated fields to enter specific search information to limit the search, or do not enter any search limits to view all Target Table information.

   F. Press the START SEARCH softkey 🔍. The Target Search View screen displays with the search results. Only records with non-null values display. Records are ordered by ID, with the lowest ID number shown first.

   G. Use the UP and DOWN navigation keys to move focus to the correct record from the target table and then press the OK softkey ✓ to select it.

   H. The view returns to the Formula Edit screen to allow additional selections or changes.

I.   Press the OK softkey OK to accept the modifications or additions to the Formula Table record.

J.   Press the ESCAPE softkey [Esc] to return to the Formula Search View screen without saving modifications or additions.

To delete a single Formula Table record

Press the DELETE softkey ✐ to delete a tare record in the list.

To print the displayed Formula Table records

Press the PRINT softkey 🖶 to print the list.

To exit the edit screen

Press the EXIT softkey ↖ to return to the Formula Search screen.

3.6.3.4.4.   Container Tare

Parameters for the container tare table are shown on this setup page.

Container Tare

The container tare table can be disabled, enabled or programmed as linked. In the linked mode, a container tare record is automatically recalled when a target ID is recalled.

Enter the selection box and select Disabled, Enabled or Linked. Linked is only available for a Fill weigh-in cycle.

Description

The Description parameter will be shown only if the container tare table is enabled or linked. This choice determines if the description field will be shown when the container tare table is viewed.

Enter the selection box and select either Disabled or Enabled.

Totalization

The Totalization parameter will be shown only if the container tare table is enabled or linked. This choice determines if a total register with counter will be active for each of the container tare records. If activated, these fields can be viewed in the active record and edited in setup.

Enter the selection box and select either Disabled or Enabled.

To clear all Container Tare Table records

Press the CLEAR softkey ↻ to reset the table.

To view Container Tare Table records

1.   Press the VIEW TABLE softkey 📖. The Container Tare Search screen displays.

2.   Use the selection boxes and associated fields to enter specific search information to limit the search, or do not enter any search limits to view all Container Tare Table information.

3.   Press the START SEARCH softkey 🔍. The Container Tare Search View screen displays with the search results. Only records with non-null values display. Records are ordered by ID, with the

lowest ID number shown first.

4. Press the UP, DOWN, LEFT, and RIGHT navigation keys to scroll up and down and across the screen in order to view all data and all records listed.

To modify or add Container Tare Table records

1. Press the UP and DOWN navigation keys to select (highlight) a record in the table.

2. Press the EDIT softkey ✎ to open the setup screen for editing a record or press the INSERT softkey ▯ to open the setup screen to create a new table record.

   A. Press the UP and DOWN navigation keys to move the focus to the field name to be edited or inserted.

   B. Press the ENTER key to select a field value to edit or insert. The alpha keys display.

   C. Use the alpha keys and the numeric keypad to edit or enter the desired value.

   D. When focus is inside the tare entry box, press the TARE softkey →T← to capture the current live scale weight and unit, which will display in the Tare field.

   E. Press the OK softkey ᴼᴷ✓ to accept the modifications or additions to the Tare Table.

   F. Press the ESCAPE softkey [Esc] to return to the Tare Search View screen without saving modifications or additions.

To delete a single Container Tare Table record

Press the DELETE softkey ⌫ to delete a tare record in the list.

To print the displayed Container Tare Table records

Press the PRINT softkey 🖨 to print the list.

To exit the edit screen

Press the EXIT softkey ↖ to return to the Container Tare Search screen.

3.6.3.4.5.   Interlocks

Two interlock selections provide additional control for the weigh-in and weigh-out cycles.

OK to Weigh-in

If enabled, the OK to Weigh-in discrete input must be "on" in order to operate the weigh-in cycle. If the OK to Weigh-in signal is not present, an error display is shown and the sequence is paused. If disabled, no check of the OK to Weigh-in discrete input is made.

Enter the selection box and select either Disabled or Enabled.

OK to Weigh-out

If enabled, the OK to Weigh-out discrete input must be "on" in order to operate the weigh-out cycle. If the OK to Weigh-out signal is not present, an error display is shown and the sequence is paused. If disabled, no check of the OK to Weigh-out discrete input is made.

Enter the selection box and select either Disabled or Enabled.

3.6.3.4.6.   Jog

This setup page allows programming of how the jog feature will operate. It includes selecting the mode, the on pulse time and the off pause time.

Mode

If enabled, the jog feature can operate in the manual or automatic mode. In manual mode, one jog cycle is completed each time the jog is initiated. In automatic mode, when a weight is below the low tolerance range, the jog function will be initiated automatically and repeat until the weight is within tolerance.

Enter the selection box and select Disabled, Automatic or Manual.

Pulse Time (on)

This parameter controls how long the jog pulse will be turned on. This value should be short enough so that one cycle does not take the weight through the complete tolerance range and create an overfill condition.

Enter the data entry box and enter a time value from 0.1 to 9.9 seconds.

Pause Time (off)

This parameter controls how long of a pause there will be between jog pulses. In manual jog, the jog key will not work again until this time has expired. The value should be short enough so that it does not delay the cycle but long enough to reach no motion so a tolerance check can be made to determine if another jog cycle is required.

Enter the data entry box and enter a time value from 0.1 to 9.9 seconds.

3.6.3.4.7.   Tolerance & Heel

All parameters related to tolerance and heel programming are shown on this page including enabling a zero tolerance check, the zero tolerance value and the heel weight.

Manual Accept

The IND570fill can be programmed to allow the operator to determine if an out of tolerance weight condition is to be accepted or not. If Manual Accept is disabled, the cycle will automatically abort when an out of tolerance condition is determined. If enabled, an out of tolerance display is shown and the operator must either accept the out of tolerance weight or reject it. If accepted, the cycle continues. If rejected, the cycle will abort.

Note that if auto jog is enabled, it will operate before the manual accept display is shown. If manual jog or overfill adjustment is enabled, the operator has a chance to adjust the weight to bring the weight within tolerance range before having to accept an out of tolerance weight.

Enter the selection box and select either Disabled or Enabled.

Zero Tolerance Check

This parameter disables or enables the zero tolerance check function. It is typically used in applications where there is no tare value present such as a tank or hopper to make sure the vessel is empty (within the zero tolerance value) before beginning a weigh-in cycle.

Enter the selection box and select either Disabled or Enabled.

Zero Tolerance Value

This step is shown only if the Zero Tolerance Check parameter is enabled. This sets the weight value that the weight must be within (from gross zero) to start a weigh-in cycle.

Enter the data entry box and enter a weight value from 0 to scale capacity (in primary units).

Heel Weight

This setup step is shown only when the weigh-out cycle is selected as either Dose or Dump. It is used to indicate the amount of material that might remain in the weigh vessel when it is considered empty. For example, material left below the level of the outlet in a tank or stuck to the sides of a hopper.

When Dump is selected as the weigh-out cycle, and the gross weight falls below this value, the After Empty Delay timer starts. After the timer completes, the weigh-out discrete outputs are turned off. When Dose is selected as the weigh-out cycle, this value is added to the dose target value to determine if there is sufficient material for another dose cycle.

Enter the data entry box and enter a value between "0" and scale capacity as the heel value.

3.6.3.5. Advanced

In this sub-branch of the Pac setup, the more advanced features of the Fill-570 can be programmed such as auto spill adjustment, learn mode and the auxiliary output.

3.6.3.5.1. Fill Adjustment

Setup parameters for manual overfill adjustment and auto spill adjustment are located on this page.

Overfill Adjustment

The IND570fill can be programmed to allow manual adjustment of an overfill condition. If this step is enabled, when an out of tolerance condition exists above the upper tolerance limit, the operator will be prompted to make a manual adjustment to the material. After the adjustment, the operator must acknowledge completion of the task and the tolerance is tested again. If disabled, an out of tolerance condition will occur when the final weight is beyond the upper tolerance limit.

Enter the selection box and select either Disabled or Enabled.

Auto Spill Adjustment

This feature allows the IND570fill to make adjustments to the spill value after running a certain number of cycles to make the final weight more accurate compared to the target.

Enter the selection box and select either Disabled or Enabled.

Cycles Averaged

If Auto Spill Adjustment has been enabled, this parameter determines how many cycles should be averaged to determine the adjustment to the spill value. After an adjustment, this number of cycles must be run again before another adjustment is made.

Enter the data entry box and enter a value between "1" and "9" as the number of successful cycles to be averaged for a spill adjustment.

Adjustment Factor

If Auto Spill Adjustment has been enabled, this parameter determines what percentage of the calculated error will be applied to the spill value. For example, if the error is determined to be 0.1 kg after averaging 3 cycles, and the adjustment factor was programmed as 50%, then the spill value would be adjusted by 50% of the error or 0.05 kg.

Enter the data entry box and program a value between "1" and "99" percent as the adjustment factor for the spill adjustment.

Update Table

If Auto Spill Adjustment has been enabled, this parameter determines whether the adjustments made to the spill value will be saved to just the active record or also to the Target Table. Select Enabled to save adjusted spill values into the Target Table. If Disabled, the adjusted spill values are only saved in the active target record.

3.6.3.5.2.   Learn Mode

Parameters that affect the Learn mode of the IND570fill are programmed on this setup page.

Enabling the Learn mode in the IND570fill allows the terminal to "learn" the best possible fine feed and spill values (or spill value in a single-speed control). Learn mode is actually run during a typical weigh-in or weigh-out cycle. A series of starts, stops and restarts are used to measure the output characteristics of the filling system.

In order to run this process when Learn Mode is enabled, the fine feed and spill values in the active record must be "0" and the Learn mode must be enabled.

Enter the selection box and select either Disabled or Enabled.

Test Point

If the Learn mode is enabled, this parameter determines at what point in the weigh-in or weigh-out cycle the learning process will start. If 30% is entered, the learning process will start at 30% of the target weight. In this example, the IND570 fill will turn off the feed and/or fast feed outputs at 30% of the target.

Enter the entry box and program a value from 10% to 90% in 10% increments.

Feed Time

When the Learn mode is enabled, this parameter determines how long the feed (only) output will run when turned back on after the test point is reached.. After the period of time set in Feed Time, the feed output will again turn off so that the IND570fill can learn the new spill value.. The value entered here should be long enough to realize a constant flow at the feed rate but not long enough to allow the weight to approach the target value.

Enter the entry box and program a value from 0.1 to 9.9 seconds in 0.1 second intervals.

Update Table

If Learn Mode has been enabled, this parameter determines if these "learned" values will be saved to just the active record or also to the Target Table. These new values will be saved back into the Target Table if this parameter is Enabled. If Disabled is selected, the new "learned" values are only saved in the active target record.

3.6.3.5.3.   Auxiliary Out

This setup page provides access to the programming parameters for the Auxiliary output such as the method of operation, the active cycle, the trigger on weight and either the weight limit or the time to turn off. The Auxiliary output compares the gross weight of the scale to these values - never the net weight. In order to program different auxiliary output values for each formula, the Auxiliary Output must be enabled here first. When the auxiliary output feature is enabled for use in a formula, the values in the formula are used to control the operation and not the values entered here.

Operation

If enabled, the Auxiliary output can operate based on time or on the weight being within a certain weight range. Depending upon the selection to this step, either the Time (off) parameter or the Weight Limit (off) parameter will be displayed below.

Enter the selection box and select Disabled, Time or Weight Range for the operating mode of the Auxiliary output.

Active Cycle

When enabled, the Auxiliary output can be programmed to operate in either the weigh-in or the weigh-out cycle but not both.

Enter the selection box and choose either the Weigh-in cycle or the Weigh-out cycle.

Trigger Weight (On)

This is the weight value that will trigger the start of the Auxiliary output.

Enter the data entry box and enter a value between "0" and scale capacity as the trigger point to turn on the Auxiliary output.

Time (Off)

If the operation was selected as Timed, this value will determine how long the Auxiliary output will remain on.

Enter the data entry box and enter a value between "0" and "999" seconds.

Weight Limit (Off)

If the operation was selected as Weight Range, this value will determine the weight that will turn the Auxiliary output off. When used in a weigh-in cycle, this value must be greater than the trigger weight. If used in a weigh-out cycle, this value must be less than the trigger weight.

Enter the data entry box and enter a value between "0" and scale capacity as the trigger point to turn off the Auxiliary output.

3.6.3.6. Pac Statistics

These parameters determine whether the Fill-570 will track statistics during the weigh-in or weigh-out cycle. In this sub-branch, statistics can be enabled or disabled and the cycle for which statistics are calculated is selected. Pac statistics can be viewed, printed, transferred to USB flash drive or exported with FTP or serial file transfer.

3.6.3.6.1. Statistics

This step determines if statistics for the weigh-in or weigh-out cycle will be kept by the IND570fill. If enabled, a statistics will be calculated during the selected cycle and are viewable/printable with the REPORTS softkey ▭.

Enter the selection box and select either Disabled or Enabled.

3.6.3.6.2. Trigger

The weigh-in or weigh-out cycle for which statistics are calculated is selected here. Choices include all four cycles: Blend, Fill, Dose and Dump. Select the cycle in the selection box then press ENTER to exit.

3.6.3.6.3. To view Pac Statistics

1. Press the VIEW TABLE softkey 🗐. The Pac Statistics screen displays.

2. Press the UP and DOWN navigation keys to scroll up and down to view all the statistics.

To clear the Pac Statistics

1. While viewing the Pac Statistics page, press the RESET softkey ↺.

2. A confirmation message with "Yes" in focus will be displayed asking if the statistics should be cleared.

3. To clear the statistics, press the ENTER key. To exit without clearing the statistics, press the LEFT or RIGHT navigation keys to move focus to the "No" choice then press ENTER.

3.6.3.7. Assign I/O

This sub-branch provides automatic assignment of the discrete I/O. It will override any existing discrete I/O assignments and assign the discrete I/O per the Mode selection. A warning page is shown as an extra precaution when this sub-branch is accessed. When the warning page is shown, press the ESCAPE [Esc] softkey to escape without making any assignments or press the OK softkey ⨯ to assign the discrete I/O per the Mode selection.

After this step, these assignments can be edited or added to in the Discrete I/O block under the Applications branch. This step just provides a beginning point for the Fill-570.

3.6.3.7.1. Mode

There are three choices for automatically assigning the discrete I/O. They include:

• Fill-560: matches the I/O assignment from the IND560 terminal defaults

• Fill-690: matches the I/O assignments from the IND690fill terminal

• Demo Case: assigns I/O to operate the METTLER TOLEDO filling demo case

Each selection provides a different set of I/O assignments as shown in Table 3-1, Table 3-2, and Table 3-3.

Table 3-1: Fill-570 Discrete I/O Assignments

Inputs		Outputs	
0.1.1	Weigh-in Start	0.1.1	Weigh-in Fast Feed
0.1.2	Weigh-out Start	0.1.2	Weigh-in Feed
0.1.3	Jog	0.1.3	Weigh-out Fast Feed
0.1.4	Silence Alarm	0.1.4	Weigh-out Feed
		0.1.5	Alarm
		0.1.6	Tolerance - OK

🔹 Note: This configuration requires the internal 5/8 discrete I/O option

Table 3-2: Fill-690 Discrete I/O Assignments

Inputs		Outputs	
0.1.2	Weigh-in Start	0.1.1	Weigh-in Feed
0.1.3	Target Pause/Abort	0.1.2	Auxiliary output
0.1.4	OK	0.1.3	Weigh-in Fast Feed
0.1.5	Weigh-in Interlock	0.1.4	Out of tolerance
1.0.1	Disable Keypad	0.1.5	Tolerance OK
		0.1.6	Weigh-in complete
		0.1.8	Ready

🔹 Note: This configuration requires the internal 5/8 discrete I/O option and one ARM100 remote module

Table 3-3: Demo Case Discrete I/O Assignments

Inputs		Outputs	
1.0.1	Weigh-in Start	1.0.1	Weigh-in Feed
1.0.2	Target Pause/Abort	1.0.2	Weigh-in Fast Feed
1.0.3	Target Resume	1.0.3	Weigh-out Feed
1.0.4	Silence Alarm	1.0.4	Weigh-out Fast Feed
2.0.1	Weigh-out Start	1.0.5	Alarm
2.0.2	Ok to Weigh-in	1.0.6	Out of Tolerance
2.0.3	OK to Weigh-out	2.0.1	Ready
2.0.4	Jog	2.0.2	Running
3.0.1	OK key	2.0.3	Holding

Inputs		Outputs	
3.0.2	No key	2.0.4	Tolerance OK
3.0.3	Enter key	2.0.5	Auxiliary Out
		3.0.1	Material 1
		3.0.2	Material 2
		3.0.3	Material 3
		3.0.4	Material 4

■ Note: The demo case includes three ARM100 remote modules.

3.7. Terminal

The IND570fill adds new selections to the Softkey sub-branch of setup. This is the only addition in the Terminal branch of the setup menu tree.
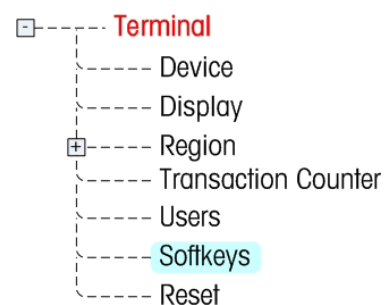
• Softkeys

3.7.1. Softkeys

Add or rearrange the softkeys on the terminal's main menu on the softkeys setup screen. Chapter 3, **Configuration**, in the standard **IND570 User's Guide** provides a more detailed explanation of the softkeys.

Adding a softkey to the home pages of the terminal does not automatically enable the softkey's function. Most functions associated with softkeys must also be enabled in setup. For instance, adding the CYCLE softkey ⬚ does not automatically enable cycle tracking — tracking cycles must also be enabled in setup.

New softkey assignments that are added when the Fill-570 application software is installed include:

- • Container Tare
- • Container Tare Table
- • Formula
- • Number of Cycles

- • Target Weigh-in
- • Target Weigh-out
- • Weigh-in Start
- • Weigh-out Start

Press the UP, DOWN, LEFT and RIGHT navigation keys to navigate among the softkey position numbers. Softkeys can be added, removed, and positioned using the following softkeys:

	Edit	Changes the softkey in the selected position to another softkey or to none, which leaves the softkey position blank. Editing a blank position does not move the position of following softkeys.
	Insert	Inserts a softkey into a selected position. All other softkeys located at or after that position increase position number by one.
	Delete	Deletes a softkey in a selected position. All other softkeys located at or after that position decrease position number by one.

C **Clear**   Clears all softkey assignments except the INFORMATION RECALL $\mathcal{D}$ and SETUP $\diamondsuit$
softkeys. They will be shown in positions 1 and 2 respectively.

3.8.   Communication

The IND570fill has new shared data fields that can be added to
output templates, a Container Tare Table report, an Action log
output, as well as new selections for the Trigger parameter in the
Connections sub-branch of setup. Refer to the standard IND570
terminal **User's Guide** for details on all other setup information
for the **Communication** branch of setup.
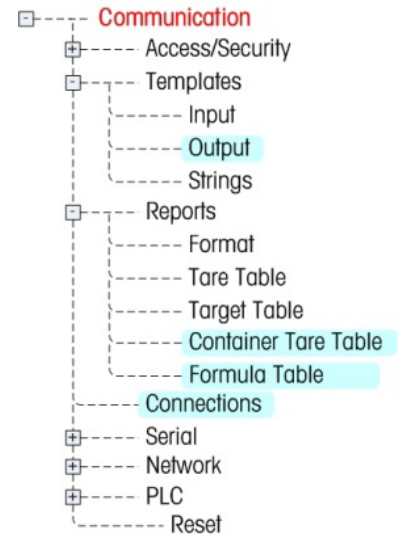
- Output Templates
- Container Tare Table Report
- Connections

```
⊟----- Communication
 ⊞----- Access/Security
 ⊞---┬-- Templates
    │------ Input
    │------ Output
    └------ Strings
 ⊟---┬-- Reports
    │------ Format
    │------ Tare Table
    │------ Target Table
    │------ Container Tare Table
    └------ Formula Table
   ------ Connections
 ⊞----- Serial
 ⊞----- Network
 ⊞----- PLC
    └------- Reset
```

3.8.1.   Templates

New data fields are available to be transmitted in the IND570fill
application software version. These shared data fields can be
added to templates and then triggered to print at the end of
weigh-in and weigh-out cycles.

The following templates are assigned to application-specific functions in IND570fill:

Template 6   Fill

Template 7   Dump

Template 8   Dose

Template 9   Blend

Template 10   Number of Cycles

3.8.1.1.   Output

There are five preprogrammed output templates preloaded in the IND570fill (templates 06 – 10).
These templates are designed for each of the weigh-in and weigh-out cycles and for the number of
cycles feature. More details about the Fill-570 print templates can be found in Appendix E of this
manual.

In addition, the Fill-570 application software includes new shared data fields, which are available
for insertion into the templates. They include those listed in Table 3-4, Table 3-5, Table 3-6, Table
3-7 and Table 3-8. In these tables, A/N indicates an alphanumeric field.

Table 3-4: Miscellaneous Shared Data Fields

IND570 Data Field	SDName	Length
Cycle start time	ar0110	12 A/N
Cycle start date	ar0111	12 A/N

IND570 Data Field	SDName	Length
Current cycle number	ap0153	3 A/N
Total number of cycles	ax0131	3 A/N
Total weight for cycles	af0170	Note 1
Cycle total weight unit	ce0103	5 A/N

Table 3-5: Fill Cycle Shared Data Fields (Template 6)

IND570 Data Field	SDName	Length
Fill material description	ar0106	20 A/N
Fill target weight	af0161	Note 1
Fill weight unit	ap0136	5 A/N
Fill +tolerance weight	af0164	Note 1
Fill -tolerance weight	af0165	Note 1
Fill +tolerance (%)	af0166	Note 2
Fill -tolerance (%)	af0167	Note 2
Active container tare ID	ap0155	3 Num
Active container tare description	ar0107	20 A/N
Out of tolerance flag	ar0112	1 A/N
Single material actual fill weight	af0292	Note 1

Table 3-6: Dump Shared Data Fields (Template 7)

IND570 Data Field	SDName	Length
Gross weight at start of dump	af0204	Note 1
Final gross weight	af0294	12 A/N
Net weight dumped	af0205	Note 1
Weight units	wt0103	3 A/N

Table 3-7: Dose Shared Data Fields (Template 8)

IND570 Data Field	SDName	Length
Dose material description	ar0105	20 A/N
Dose target	af0151	Note 1
Dose weight unit	ap0131	5 A/N
Dose +tolerance weight	af0154	Note 1
Dose -tolerance weight	af0155	Note 1
Dose +tolerance (%)	af0156	Note 2
Dose -tolerance (%)	af0157	Note 2

IND570 Data Field	SDName	Length
Out of tolerance flag	ar0112	1 A/N
Dose final weight	af0203	Note 1
Refill tare value	af0168	Note 1

Table 3-8: Blend Shared Data Fields (Template 9)

IND570 Data Field	SDName	Length
Material #1 description	ar0101	20 A/N
Material #2 description	ar0102	20 A/N
Material #3 description	ar0103	20 A/N
Material #4 description	ar0104	20 A/N
Material #5 description	ar0118	20 A/N
Material #6 description	ar0119	20 A/N
Material #1 target	af0111	Note 1
Material #2 target	af0121	Note 1
Material #3 target	af0131	Note 1
Material #4 target	af0141	Note 1
Material #5 target	af0178	Note 1
Material #6 target	af0188	Note 1
Material #1 +tolerance weight	af0114	Note 1
Material #2 +tolerance weight	af0124	Note 1
Material #3 +tolerance weight	af0134	Note 1
Material #4 +tolerance weight	af0144	Note 1
Material #5 +tolerance weight	af0181	Note 1
Material #6 +tolerance weight	af0191	Note 1
Material #1 -tolerance weight	af0115	Note 1
Material #2 -tolerance weight	af0125	Note 1
Material #3 -tolerance weight	af0135	Note 1
Material #4 -tolerance weight	af0145	Note 1
Material #5 -tolerance weight	af0182	Note 1
Material #6 -tolerance weight	af0192	Note 1
Material #1 +tolerance (%)	af0116	Note 2
Material #2 +tolerance (%)	af0126	Note 2
Material #3 +tolerance (%)	af0136	Note 2
Material #4 +tolerance (%)	af0146	Note 2

IND570 Data Field	SDName	Length
Material #5 +tolerance (%)	af0183	Note 2
Material #6 +tolerance (%)	af0193	Note 2
Material #1 -tolerance (%)	af0117	Note 2
Material #2 -tolerance (%)	af0127	Note 2
Material #3 -tolerance (%)	af0137	Note 2
Material #4 -tolerance (%)	af0147	Note 2
Material #5 -tolerance (%)	af0184	Note 2
Material #6 -tolerance (%)	af0194	Note 2
Material #1 fill variance	af0120	Note 1
Material #2 fill variance	af0130	Note 1
Material #3 fill variance	af0140	Note 1
Material #4 fill variance	af0150	Note 1
Material #5 fill variance	af0187	Note 1
Material #6 fill variance	af0197	Note 1
Material #1 actual fill weight	af0119	Note 1
Material #2 actual fill weight	af0129	Note 1
Material #3 actual fill weight	af0139	Note 1
Material #4 actual fill weight	af0149	Note 1
Material #5 actual fill weight	af0186	Note 1
Material #6 actual fill weight	af0196	Note 1
Material #1 out of tolerance flag	ar0112	1 A/N
Material #2 out of tolerance flag	ar0113	1 A/N
Material #3 out of tolerance flag	ar0114	1 A/N
Material #4 out of tolerance flag	ar0115	1 A/N
Material #5 out of tolerance flag	ar0116	1 A/N
Material #6 out of tolerance flag	ar0117	1 A/N
Formula ID	ap0156	3 Num
Formula Rescale Legend	ar0121	1 A/N
Formula description	ar0120	20 A/N
Total formula weight	af0160	Note 1
Actual total formula weight	af0176	Note 1
Total formula variance	af0177	Note 1
Formula weight units	ap0111	5 A/N

Note 1: These values should be trimmed with the justification feature of the template. They are numeric values with irregular decimal positions.

Note 2: These values should be trimmed with the justification feature of the template. A maximum of three decimal positions are available.

3.8.2. Reports

The Fill-570 adds a Container Tare Table and a Formula Table to the reports branch. These sub-branches are used to set the fields which will be printed when a Container Tare Table or Formula Table report is generated.

3.8.2.1. Container Tare Table

Use this setup screen to select which fields in the Container Tare Table will print when a Container Tare Table Report is printed from the REPORTS softkey ⬜. More details are provided in Appendix C, Container Tare Table. The ID field is always printed; it cannot be disabled. Fields that can be enabled or disabled include:

- Tare
- Description
- Minimum Tare
- Maximum Tare
- n (number of transactions)
- Total (accumulated total tare weights)

🔹 If the Container Tare Table is disabled, this branch cannot be expanded.

3.8.2.2. Formula Table

Use this setup screen to select which fields in the Formula Table will print when a Formula Table Report is printed from the REPORTS softkey ⬜. The ID field, material target IDs and Auxiliary Out values are always printed; they cannot be disabled. Fields that can be enabled or disabled include:

- Formula Description
- n (number of transactions)
- Total (accumulated total tare weights)

🔹 If the Formula Table is disabled, this branch cannot be expanded.

3.8.3. Connections

The IND570fill application software adds new triggers that can be used to automatically send data at the end of a weigh-in cycle, the end of a weigh-out cycle or when the number of cycles has been reached. Each of these outputs must be programmed separately by creating a demand output to the desired port and then selecting one of the new triggers.

There is also a new assignment added to print each record of the Action Log as they occur. This is accessed by programming an assignment of Action Log Output. Each time a new record is added to the Action log, the same data will be transmitted out the selected port. Refer to Appendix A for more details of the Action Log.

The connections setup screen shows the physical port connections that have been programmed for the terminal. This includes the standard serial port COM1, standard USB port, optional COM2 and COM3 serial ports, the optional Ethernet ports, the EPrint port and the Print Client port. The optional

ports are only available if either the COM2/COM3 or the Ethernet option has been installed. This screen defines what will happen when a demand print occurs or when a custom trigger is activated. If no connections are programmed, nothing will be available on the COM, USB or Ethernet ports.

The following functions are available via softkeys on the connections screen:

- Editing   - Deleting   - Clearing   - Inserting

3.8.3.1.   To edit or insert connection assignments

1. Press the UP and DOWN navigation keys to select (highlight) a connection assignment in the list.

2. Press the EDIT softkey ✎ to open the setup screen for editing a specific connection assignment or press the INSERT softkey ▭ to create a new connection assignment.

   Parameters that are configured in the connections screen include the port and the type of input or output assignment. Depending upon these selections the remaining fields will vary but could include the trigger, the template to be sent, and if checksum will be sent or not.

3. Press the UP and DOWN navigation keys to move the focus to the fields to be edited or added.

4. Press the ENTER key to select a field to edit or add.

5. Use the selection boxes for each field to select the port, associated assignment, and desired settings for the connection. New choices added with the IND570fill are:

Trigger	Assignment
- Blend / Fill	- Action Log Output
- Cycle	
- Dose	
- Dump	

📊 Not all choices are available for all connection assignments. Only valid choices are shown in the selection boxes.

   The Trigger field displays only when the assignment selection is Demand Output. The Blend/Fill trigger will initiate a data output at the completion of the weigh-in cycle. The Cycle trigger will initiate a data output when the message [xx cycles complete] is acknowledged with the ENTER key. The Dose trigger will initiate a data output at the completion of a dose weigh-out cycle and the Dump trigger will initiate a data output at the completion of a dump weigh-out cycle. If none of these triggers are used for a connection, no automatic prints will occur.

   Any of the output templates can be used for the Fill-570 demand outputs, but templates 6 through 10 have been preloaded for use. Details of the templates can be found in Appendix E.

   If usage conflicts occur, an error message displays.

6. Press the OK softkey ᴼᴷ to accept the connection parameters and return to the Connections setup screen when editing or adding the connection assignment is complete.

7. Press the ESCAPE softkey ⌜Esc⌝ to discard the connection parameters and return to the Connections setup screen without saving the connection assignment edits or additions.

   Press the DELETE softkey ✎ to delete a connection assignment from the Connections list.

   Press the CLEAR softkey C to clear all connection assignments in the Connections list.

   Press the EXIT softkey ↖ to return to the menu tree.

3.9.   Maintenance

The IND570fill adds no new setup parameters or selections in the Maintenance branch. Refer to the standard **IND570 User's Guide** for setup information.

⊞------ Maintenance

4 Fill Cycle

This chapter provides information about the Fill cycle. It includes an overview of the sequence and the softkeys used, and a discussion of the configuration options.

4.1. Overview

In this sequence, an empty container is usually placed on a weighing platform and then filled while on the platform. This is typically a simple sequence that uses a one- or two-speed feeding mechanism to fill the container. The filling of the container is controlled by the IND570, but replenishing of the supply is not. The fill cycle can also be used to automatically refill a supply vessel when using a dose weigh-out cycle. The programming is the same regardless of the use.

4.1.1. Example Sequence

1. Place container on the scale platform.
2. Press Weigh-in Start.
3. Container tare checking is used (if enabled) or an auto tare to net zero is applied (cycle tare enabled).
4. Container is filled to target.
5. Fill results are printed.
6. Container is removed.

Features that might be used to enhance the performance of this sequence:

- Timing intervals
- Tracking cycles
- Container tares
- OK to weigh-in interlock
- Clear tare

- Auto jog
- Fill adjustments
- Learn mode
- Auxiliary output
- Pac statistics

4.2.   Softkey Icons

The following softkeys can be added to the Home page of the IND570 to provide access to features used in this sequence.

Softkey	Function
(icon)	**Container Tare Active Record** – The Active Container Tare provides a view of the container tare values that will be used in the fill cycle. The values shown here can be selected from the Container Tare Table or entered manually by the operator. This includes either a tare value (which will be used in the process) or a tare range (that is used to confirm the current container is within a predetermined range. Changes to these values do not affect the Container Tare Table.
(icon)	**Container Tare Table** – The container tare table contains up to 100 container tare records. Each record has an ID, tare value, minimum and maximum tare values, and a description. In addition, each record is associated with an individual accumulator and consecutive number that tracks the number of times the container has been used.
n	**Number of Cycles** – Allows programming of a certain number of fill cycles before an operator message is shown indicating the number of cycles is complete.
(icon)	**Target Weigh-in Active Record** – The Active Fill Target provides a view of the target values that will be used in the fill cycle. The values shown here can be selected from the Target Table or entered manually by the operator. Changes to these values do not affect the Target Table.
(icon)	**Weigh-in Start (Fill)** – This softkey starts the fill cycle.

4.3.   Configuration Suggestions

This section describes suggested configuration selections associated with the Fill / None sequence of the IND570fill. Comments are provided to help guide in making a decision regarding a specific setup parameter. For a complete listing and explanation of all setup parameters for the IND570fill, refer to Chapter 3, **Setup Parameters**.

Sub-Branch	Function	Selection	Comments
Weigh-in Mode			
	Weigh-in	Fill	Selects the Fill weigh-in cycle.
	Cycle tare	Enabled	Triggers a semi-automatic tare or container tare comparison (if enabled) at beginning of fill.
	Clear Tare	Disabled	Determines if the tare taken before the fill will clear at the end of the cycle to show gross weight or if the display will continue to show the net weight.
	Weigh-in Transition	Disabled	This enables the terminal to return to the home position after filling the container. This could be changed to weigh-out (dump) to automatically dump the filled weight.

Sub-Branch	Function	Selection	Comments
Timing			
	Before Weigh Delay	0 seconds	Program a time delay only if required.
	After Weigh Delay	0 seconds	Program a time delay only if required.
	Weigh-in Complete	0 seconds	Program this field with the amount of time the Complete: Weigh-in output should remain "on" after the Fill cycle completes.
General			
Materials	Materials Weigh-in	1	If multiple materials are selected, the cycle is a blend and not a fill.
	#1 Feed Speeds	2	Select 1 if only a single-speed filling control is required.
Cycles	Track Cycles	Disabled	Enable only if cycles will be tracked.
Container Tare	Container Tare	Disabled	Select "Enable" if the operation requires the use of the Container Tare Table. Select "Linked" if a container tare record is to be linked to a target table record.
Interlocks	OK to Weigh-in	Disabled	Enable only if this signal will be used.
Jog	Mode	Automatic	Manual jog may be used if desired.
	Pulse Time (On)	# seconds	Enter as needed for specific material.
	Pause Time (Off)	# seconds	Enter as needed for specific material.
Tolerance & Heel	Manual Accept	Disabled	Enable only if the operator is to make the tolerance acceptance decision.
	Zero Tolerance Check	Disabled	Normally not used. Enable this only if a stored container tare value (not the minimum and maximum values) will be used to check for a correct container on the scale.
Advanced			
Fill Adjustment	Overfill Adjustment	Disabled	Enable only when the operator is to make manual adjustments to an overfill condition.
	Auto Spill Adjustment	Enabled	
	Cycles Averaged	3	Decrease or increase this number as required.
	Adjustment Factor	65%	Reduce this number to make smaller adjustments or increase to make larger adjustments.

Sub-Branch	Function	Selection	Comments
	Update Table	Enabled	Enable when the adjusted spill value should be saved back into the Target Table. "Disabled" saves the new value in the active record only.
Learn Mode	Learn Mode	Enabled	
	Test Point	40 %	Adjust this value as necessary.
	Feed Time	# seconds	Program as needed for material used.
	Update Table	Enabled	Enable when the "learned" values should be saved back into the Target Table. "Disabled" saves the new values in the active record only.
Auxiliary Output	Operation	Disabled	Enable only when required.
Pac Statistics			
	Pac Statistics	Disabled	Enable if tracking of filling statistics is required.

4.4. Required Discrete Outputs

The following discrete outputs are required for this sequence and must be assigned in the **Application > Discrete I/O > Outputs** sub-branch of the menu tree and then connected for external control. Other input and output functions may be assigned and connected as required.

Output	Operation
Weigh-in Fast Feed	This output is not used in a one-speed control system. Turns "on" during the faster speed feed of a two-speed control system.
Weigh-in Feed	Turns "on" for the feed cycle of a one-speed control. In a two-speed control system this output turns "on" during the slower feed.

4.5. Optional I/O

All the required operator controls can be provided by the IND570fill terminal through softkeys and keypad. The following discrete inputs are not duplicated on the IND570fill keypad and can be assigned in the **Application > Discrete I/O > Inputs** sub-branch of the menu tree, then connected and used when required by the application.

Input	Operation
Silence Alarm	Turns the alarm output off.
OK to weigh-in	An input signal used to Indicate it is OK to begin and continue the weigh-in cycle.

Additional output signals are available to provide additional information and control during the sequence. The following discrete outputs can be assigned in the **Application > Discrete I/O > Outputs** sub-branch of the menu tree then connected and used when required by the application.

Output	Operation
After Weigh Delay	When "on", indicates the after weigh delay timer is counting down.
Alarm	Signals an alarm condition such as cycle aborted.
Auxiliary output	Used as a separate output control signal based on weight or time.
Complete: Cycles	When this output is "on", indicates the number of programmed cycles has been completed.
Ready	When this status output is "on", it indicates the system is ready and a new cycle can begin. Only one of the three status outputs will be on at one time. If this output is not "on", a weigh-in or weigh-out cycle cannot be started.
Running	When this status output is "on", it indicates a sequence is running.
Holding	When this status output is "on", it indicates the sequence is in a holding state or a paused state.
Tolerance OK	Indicates the final fill weight is within tolerance. Active while the fill cycle is active.
Out of tolerance	Indicates that the actual weight is not within the programmed tolerances of the target weight. This output is only active during the tolerance check portion of the sequence.
Before Weigh Delay	When "on", indicates the before weigh delay timer is counting down.
Complete: Weigh-in	If weigh-in transition is Hold, output is "on" when the cycle is Holding until operator presses OK. If weigh-in transition is Disabled, Weigh-in or Weigh-out, output is "on" for the amount of time programmed in the Weigh-in Complete timer.

5 Blend Cycle

This chapter provides information about the Blend cycle. It includes an overview of the sequence of actions and the softkeys used, and a discussion of the configuration options.

5.1. Overview

The formula containing the target for each material must be stored in the IND570fill and retrieved for use. The feeding of each material may use one- or two-speed feeders, and can be different from one material to another. Either a fixed vessel or a removable one can be used to receive the materials being blended. The weigh-out cycle is programmed separately. The IND570's auxiliary output can be used to control a mixer.

5.1.1. Example Sequence

1. Place container on the scale platform.
2. Press Weigh-in Start.
3. Container is tared to net zero.
4. Each material in the formula is filled to its target weight one at a time. A tare is typically performed between material fills.
5. Blend results are printed.
6. Container is removed.

Features that might be used to enhance the performance of this sequence:

- Timing intervals
- Tracking cycles
- OK to weigh-in interlock
- Tolerance checking

- Auto jog
- Fill adjustments
- Learn mode
- Auxiliary output

- Clear tare
- PAC statistics

5.2. Softkey Icons

The following softkeys can be added to the Home page of the IND570 to provide access to features used in this sequence.

Softkey	Function
n	**Number of Cycles** – Allows programming for a certain number of blend cycles to be completed before an operator message is shown indicating the number of cycles is complete.
F	**Formula Values** – Provides access to the page where the target values for multiple materials in the formula are displayed. A new formula can be recalled from memory and a formula can be rescaled from this page. The formula shown here can only be selected from the Formula Table. When exiting the formula view, the terminal confirms that the sum of the material targets is not greater than the programmed scale capacity. If it is, an error message is displayed and one of the target values in the formula must be reduced. The Fill-570 stores up to 99 formulas. A formula can only be created within the Formula Table branch of setup. For more information on how to store formulas, refer to **Appendix C**.
	Weigh-in Start – This softkey starts the weigh-in cycle to begin the blending process.

5.3. Configuration Options

This section describes suggested configuration selections associated with the Blend / None sequence of the IND570fill. Comments are provided to help guide in making a decision regarding a specific setup parameter. For a complete listing and explanation of all setup parameters for the IND570fill, refer to Chapter 3, **Setup Parameters**.

Sub-Block	Function	Selection	Comments
Weigh-in Mode			
	Weigh-in	Blend	Selects the blend weigh-in cycle.
	Cycle tare	Enabled	Triggers a semi-automatic tare at the beginning of the blend and between each material.
	Clear Tare	Disabled	Determines if the tare taken before the blend will clear at the end of the cycle to show gross weight or if the display will continue to show the net weight of the last material of the formula.
	Weigh-in Transition	Disabled	This enables the terminal to return to the home position after blending the formula. This could be changed to weigh-out (dump) to automatically dump a blended formula.
Timing			
	Before Weigh Delay	0 sec	Program a time delay only if required.

Sub-Block	Function	Selection	Comments
	After Weigh Delay	0 sec	Program a time delay only if required.
	Weigh-in Complete	0 sec	Program this field with the amount of time the Complete: Weigh-in output should remain "on" after the Blend cycle completes.
General			
Materials	Materials Weigh-in	2 - 6	Enter the maximum materials to be used in any blend.
	#1 Feed Speeds	2	Select 1 if only a single-speed material control is required.
	#2 Feed Speeds	2	Select 1 if only a single-speed material control is required.
	#3 Feed Speeds	2	Select 1 if only a single-speed material control is required.
	#4 Feed Speeds	2	Select 1 if only a single-speed material control is required.
	#5 Feed Speeds	2	Select 1 if only a single-speed material control is required.
	#6 Feed Speeds	2	Select 1 if only a single-speed material control is required.
Cycles	Track Cycles	Disabled	Enable only if cycles will be tracked.
Container Tare	Container Tare	Disabled	Container tare is not supported in this sequence.
Interlocks	OK to Weigh-in	Disabled	Enable only if this signal will be used.
Jog	Mode	Automatic	Manual jog may be used if desired.
	Pulse Time (On)	# seconds	Enter as needed for materials used.
	Pause Time (Off)	# seconds	Enter as needed for materials used.
Tolerance & Heel	Manual Accept	Disabled	Enable only if the operator is to make the tolerance acceptance decision.
	Zero Tolerance Check	Disabled	This feature is not used in this sequence.
Advanced			
Fill Adjustment	Overfill Adjustment	Disabled	Enable only when the operator is to make manual adjustments to an overfill condition.
	Auto Spill Adjustment	Enabled	
	Cycles Averaged	3	Decrease or increase this number as required.
	Adjustment Factor	65%	Reduce this number to make smaller adjustments or increase to make larger adjustments.

Sub-Block	Function	Selection	Comments
	Update Table	Enabled	Enable when the adjusted spill value should be saved back into the Target Table. "Disabled" saves the new value in the active record only.
Learn Mode	Learn Mode	Enabled	
	Test Point	40 %	Adjust this value as necessary.
	Feed Time	# seconds	Program as needed for material used.
	Update Table	Enabled	Enable when the "learned" values should be saved back into the Target Table. "Disabled" saves the new values in the active record only.
Auxiliary Output	Operation	Disabled	Enable only when required.
Pac Statistics			
	Pac Statistics	Disabled	Enable if tracking of blending statistics is required.

5.4.   Required Discrete Outputs

The following discrete outputs are required for this sequence and must be assigned in the **Application > Discrete I/O > Outputs** sub-branch of the menu tree and then connected for external control. Other input and output functions may be assigned and connected as required.

Output	Operation
Material "x" Fast Feed	Used in a two-speed fill cycle. The Material "x" (1, 2, 3, 4, 5, or 6) Fast Feed output turns "on" when Material #1, 2, 3, 4, 5 or 6 is feeding at the faster rate of a two-speed fill cycle.
	This direct material fast feed output eliminates the need to combine the Weigh-in Fast Feed and Material # outputs to correctly activate a feeding system.
Material "x" Feed	Turns "on" for the feed cycle of a one-speed control. In a two-speed control system this output turns "on" during the slower feed. The Material {"x" (1, 2, 3, 4, 5 or 6) Feed output turns "on" when Material # 1, 2 3, 4, 5 or 6 is feeding at the slower rate of a two-speed fill cycle or during the feed cycle of a single speed fill.
	This direct material feed output eliminates the need to combine the Weigh-in Feed and Material # outputs to correctly activate a feeding system.

Alternatively, use

Weigh-in Fast Feed	This output is not used in a one-speed fill cycle. Turns "on" during the faster speed feed of a two-speed fill cycle.
Weigh-in Feed	Turns "on" for the feed cycle of a one-speed control. In a two-speed control system this output turns "on" during the slower feed.
Material # x (1-6)	The output for material "x" (1, 2, 3, 4, 5 or 6) turns "on" when material #"x" is feeding. It can be used to connect the weigh-in fast feed and weigh-in feed signals to the correct feeder system.

*   Refer to **Appendix E** for examples of discrete output mapping using both the combined output signals and direct material output signals.

5.5.   Optional I/O

All of the required operator controls are automatically provided by the IND570fill terminal with its softkey icons and keypad. The following discrete inputs are not duplicated on the IND570fill keypad and can be assigned in the **Application > Discrete I/O > Inputs** sub-branch of the menu tree then connected and used when required by the application.

Input	Operation
Silence Alarm	Turns the alarm output off.
OK to weigh-in	An input signal used to Indicate it is OK to begin and continue the weigh-in cycle.

Additional output signals are available to provide additional information and control during the sequence. The following discrete outputs can be assigned in the **Application > Discrete I/O > Outputs** sub-branch of the menu tree then connected and used when required by the application.

Output	Operation
After Weigh Delay	When "on", indicates the after weigh delay timer is counting down.
Alarm	Signals an alarm condition such as cycle aborted.
Auxiliary output	Used as a separate output control signal based on weight or time.
Before Weigh Delay	When "on", indicates the before weigh delay timer is counting down.
Complete: Cycles	When this output is "on", indicates the number of programmed cycles has been completed.
Ready	When this status output is "on", it indicates the system is ready and a new cycle can begin. Only one of the three status outputs will be on at one time.
Running	When this status output is "on", it indicates a sequence is running.
Holding	When this status output is "on", it indicates the sequence is in a holding state or a paused state.
Tolerance OK	Indicates the final fill weight is within tolerance. Active while the fill cycle is active.
Out of tolerance	Indicates the actual weight is not within the programmed tolerances of the target weight. This output is only active during the tolerance check portion of the sequence.
Start Delay	When "on", indicates the start delay timer is counting down.
Complete: Weigh-in	If weigh-in transition is Hold, output is "on" when the cycle is Holding until operator presses OK. If weigh-in transition is Disabled, Weigh-in or Weigh-out, output is "on" for the amount of time programmed in the Weigh-in Complete timer.

6   Dump Cycle

This chapter provides information about the Dump cycle. It includes an overview of the sequence and the softkeys used, and a discussion of the configuration options.

6.1.   Overview

In this sequence, a fill or blend has already occurred as the weigh-in cycle and the material already weighed into the weigh vessel will be completely emptied into another vessel or container. The dump cycle remains active until the weight in the weigh vessel drops below the heel value programmed in setup and then the After Empty delay timer starts. When the timer completes, the weigh-out outputs will be turned off. There is no tolerance check at the completion of the dump and a dump is always done in the gross mode.

6.1.1.   Example Sequence for Dump

1. Material already exists in weigh vessel from weigh-in cycle.

2. Press Weigh-out Start.

3. Any tare value is cleared and weight is in gross mode.

4. Supply vessel is emptied.

5. Dump results are printed.

6. Weigh vessel is filled again in preparation of the next dump cycle.

Features that might be used to enhance the performance of this sequence:

- Timing intervals
- Tracking cycles
- Container tares
- OK to weigh-out interlock

- Heel weight
- After empty delay
- Auxiliary output
- Pac statistics
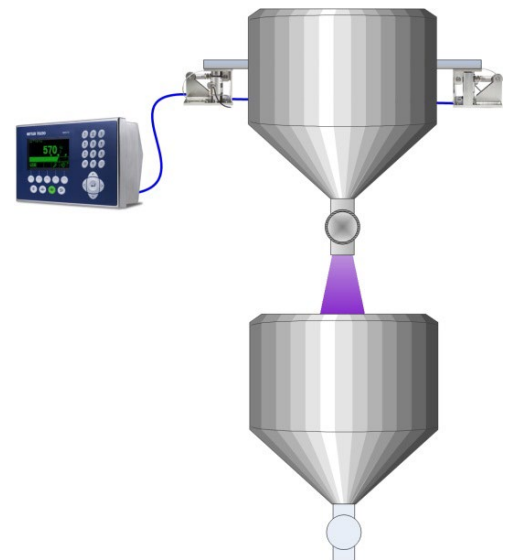
6.2.   Softkey Icons

The following softkeys can be added to the Home page of the IND560 to provide access to features used in this sequence.

Softkey	Function
n	**Number of Cycles** – Allows programming for a certain number of Dose cycles to be completed before an operator message is shown indicating the number of cycles is complete.
	Start Weigh-out – This softkey starts the weigh-out cycle and doses material to the weigh-out target value in the net mode.

6.3.   Configuration Options

This section describes suggested configuration selections associated with the Dump cycle of the IND560fill. Comments are provided to help guide in making a decision regarding a specific setup parameter. For a complete listing and explanation of all setup parameters for the IND560fill, refer to Chapter 3, **Setup Parameters**.

Sub-Block	Function	Selection	Comments
Weigh-out Mode			
	Weigh-out	Dump	
	Weigh-out Transition	Disabled	After the dump cycle is complete, the display will return to the home position. Select Weigh-in as the transition if a weigh-in cycle should be triggered automatically after the dump is complete.
Timing			
	After Empty Delay	5 sec	Program the amount of time the weigh-out signals should remain "on" after the gross weight falls below the programmed heel weight value.
	Weigh-out Complete	0 sec	Program this field with the amount of time the Complete: Weigh-out output should remain "on" after the Dump cycle completes.
General			
Cycles	Track Cycles	Disabled	Enable only if cycles will be tracked.
Interlocks	OK to Weigh-out	Disabled	Enable only if this signal will be used.
Tolerance & Heel	Zero Tolerance Check	Disabled	Enable this feature if the weigh vessel should be checked to make sure it is within a programmable range of calibrated zero before starting the next weigh-in cycle.
	Heel Weight	Amount in primary units	Enter the weight of the material potentially remaining in the vessel when it is completely empty.

Sub-Block	Function	Selection	Comments
Advanced			
Auxiliary Output	Operation	Disabled	Enable only when required.
Pac Statistics			
	Pac Statistics	Disabled	Enable if tracking of dump statistics is required.

6.4.   Required Discrete Outputs

The following discrete outputs are required for this sequence and must be assigned in the **Application > Discrete I/O > Outputs** sub-branch of the menu tree and then connected for external control. Other input and output functions may be assigned and connected as required.

Output	Operation
Weigh-out Fast Feed	This output turns "on" during the dump weigh-out cycle.
Weigh-out Feed	This output turns "on" during the dump weigh-out cycle. Not required if only one output signal is required for control.

6.5.   Optional I/O

All of the required operator controls are automatically provided by the IND560fill terminal with its softkey icons and keypad. The following discrete inputs are not duplicated on the IND560fill keypad and can be assigned in the **Application > Discrete I/O > Inputs** sub-branch of the menu tree then connected and used when required by the application.

Input	Operation
Silence Alarm	Turns the alarm output off.
OK to weigh-out	An input signal used to indicate it is OK to begin and continue the weigh-out cycle.

Further output signals are available to provide additional information and control during the sequence. The following discrete outputs can be assigned in the **Application > Discrete I/O > Outputs** sub-branch of the menu tree then connected and used when required by the application.

Output	Operation
After Weigh Delay	When "on", indicates the after weigh delay timer is counting down.
Alarm	Signals an alarm condition such as cycle aborted.
Auxiliary output	Used as a separate output control signal based on weight or time.
Ready	When this status output is "on", it indicates the system is ready and a new cycle can begin. Only one of the three status outputs will be on at one time.
Running	When this status output is "on", it indicates a sequence is running.
Holding	When this status output is "on", it indicates the sequence is in a holding state or a paused state.

| Output	Operation
Complete: Weigh-out	If weigh-out transition is Hold, output is "on" when the cycle is Holding until operator presses OK. If weigh-out transition is Disabled, Weigh-in or Weigh-out, output is "on" for the amount of time programmed in the Weigh-out Complete timer.

7 Dose Cycle

This chapter provides information about the Dose cycle. It includes an overview of the sequence of actions and the softkeys used, and a discussion of the configuration options.

7.1. Overview

This sequence assumes a supply vessel as the weighing platform. The IND570fill controls the dosing of material out of the supply vessel into multiple containers. The refilling of the supply material may or may not be controlled by the IND570fill. The IND570fill will monitor for sufficient material in the supply to complete a full dose. If the supply material is low, an operator message will be displayed and the next dose is inhibited.

7.1.1. Example Sequence for Dose

1. Place container under weigh vessel.

2. Press Weigh-out Start.

3. Supply vessel is tared to net zero.

4. Container is filled to weigh-out target (measured as a loss in weight from the supply vessel).

5. Dose results are printed.

6. Container is removed and another container is put in place to capture the next dose.
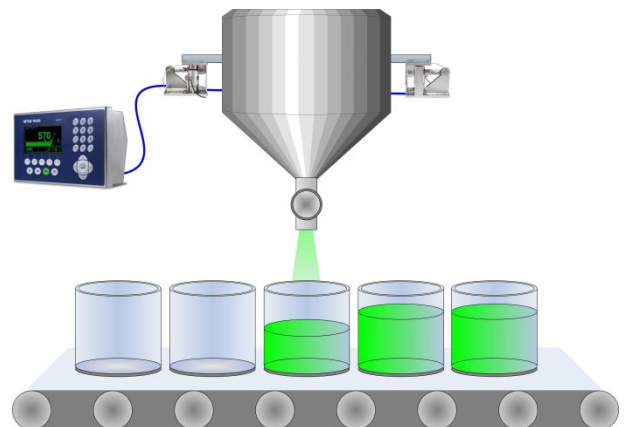
Features that might be used to enhance the performance of this sequence:

- Timing intervals
- Tracking cycles
- OK to weigh-out interlock
- Auto jog
- Clear tare

- Fill adjustments
- Learn mode
- Auxiliary output
- Heel weight
- Pac statistics

7.2. Softkey Icons

The following softkeys can be added to the Home page of the IND570 to provide access to features used in this sequence.

Softkey	Function
n	**Number of Cycles** – Allows programming for a certain number of Dose cycles to be completed before an operator message is shown indicating the number of cycles is complete.
	Target Weigh-out Active Record – The Active Weigh-out Target provides a view of the target values that will be used in the dose cycle. The values shown here can be selected from the Target Table or entered manually by the operator.
	Start Weigh-out – This softkey starts the weigh-out cycle and doses material to the weigh-out target value in the net mode.

7.3. Configuration Options

This section describes suggested configuration selections associated with the None / Dose sequence of the IND570fill. Comments are provided to help guide in making a decision regarding a specific setup parameter. For a complete listing and explanation of all setup parameters for the IND570fill, refer to Chapter 3, **Setup Parameters**.

Sub-Block	Function	Selection	Comments
Sequence			
	Weigh-out	Dose	
	Clear Tare	Disabled	Determines if the tare taken before the dose will clear at the end of the cycle to show gross weight or if the display will continue to show the net dosed weight.
	Refill Mode	Automatic	
	Supply Material Conservation	Disabled	Enable this setting to create a 2-step dose process if the supply vessel has insufficient material for a single dose. The terminal determines the target for the initial dose after refilling to meet the original dose target.
	Weigh-out Transition	Disabled	This allows the terminal to return to the home position after a dose cycle. This could be changed to weigh-out to support a continuous dosing of material one cycle after another (proper control of the container is required for this).
Timing			
	Start Delay	0 seconds	Program a time delay only if required.
	After Weigh Delay	0 seconds	Program a time delay only if required.

Sub-Block	Function	Selection	Comments
	Weigh-out Complete	0 seconds	Program this field with the amount of time the Complete: Weigh-out output should remain "on" after the Dose cycle completes.
General			
Cycles	Track Cycles	Disabled	Enable only if cycles will be tracked.
Container Tare	Container Tare	Disabled	Container tare should not be used in this sequence.
Interlocks	OK to Weigh-out	Disabled	Enable only if this signal will be used.
Jog	Mode	Automatic	Manual jog may be used if desired.
	Pulse Time (On)	# seconds	Enter as needed for specific material.
	Pause Time (Off)	# seconds	Enter as needed for specific material.
Tolerance & Heel	Manual Accept	Disabled	Enable only if the operator is to make the tolerance acceptance decision.
	Zero Tolerance Check	Disabled	This feature is not used in this sequence.
	Heel Weight	Amount in primary units	Enter the weight of the material remaining in the vessel when it is completely empty.
Advanced			
Fill Adjustment	Overfill Adjustment	Disabled	This feature is not used in this sequence.
	Auto Spill Adjustment	Enabled	
	Cycles Averaged	3	Decrease or increase this number as required.
	Adjustment Factor	65%	Reduce this number to make smaller adjustments or increase to make larger adjustments.
	Update Table	Enabled	Enable when the adjusted spill value should be saved back into the Target Table. "Disabled" saves the new value in the active record only.
Learn Mode	Learn Mode	Enabled	
	Test Point	40 %	Adjust this value as necessary.
	Feed Time	# seconds	Program as needed for material used.
	Update Table	Enabled	Enable when the "learned" values should be saved back into the Target Table. "Disabled" saves the new values in the active record only.
Auxiliary Output	Operation	Disabled	Enable only when required.

Sub-Block	Function	Selection	Comments
Pac Statistics			
	Pac Statistics	Disabled	Enable if tracking of dosing statistics is required.

7.4. Required Discrete Outputs

The following discrete outputs are required for this sequence and must be assigned in the **Application > Discrete I/O > Outputs** sub-branch of the menu tree and then connected for external control. Other input and output functions may be assigned and connected as required.

Output	Operation
Weigh-out Fast Feed	This output is not used in a one-speed dose weigh-out cycle. It turns "on" during the faster speed of a two-speed dose weigh-out cycle.
Weigh-out Feed	This output turns "on" during a one-speed dose weigh-out cycle or during the slower speed of a two-speed dose weigh-out cycle.

7.5. Optional I/O

All of the required operator controls are automatically provided by the IND570fill terminal with its softkey icons and keypad. The following discrete inputs are not duplicated on the IND570fill keypad and can be assigned in the **Application > Discrete I/O > Inputs** sub-branch of the menu tree then connected and used when required by the application.

Input	Operation
Silence Alarm	Turns the alarm output off.
OK to weigh-out	An input signal used to indicate it is OK to begin and continue the weigh-out cycle.

Further output signals are available to provide additional information and control during the sequence. The following discrete outputs can be assigned in the **Application > Discrete I/O > Outputs** sub-branch of the menu tree then connected and used when required by the application.

Output	Operation
After Weigh Delay	When "on", indicates the after weigh delay timer is counting down.
Alarm	Signals an alarm condition such as cycle aborted.
Auxiliary output	Used as a separate output control signal based on weight or time.
Complete: Cycles	When this output is "on", indicates the number of programmed cycles has been completed.
Ready	When this status output is "on", it indicates the system is ready and a new cycle can begin. Only one of the three status outputs will be on at one time.
Running	When this status output is "on", it indicates a sequence is running.
Holding	When this status output is "on", it indicates the sequence is in a holding state or a paused state.

Output	Operation
Tolerance OK	Indicates the final dose weight is within tolerance. Active while the dose cycle is active.
Out of tolerance	Indicates the actual weight is not within the programmed tolerances of the target weight. This output is only active during the tolerance check portion of the sequence.
Before Weigh Delay	When "on", indicates the start delay timer is counting down.
Complete: Weigh-out	If weigh-out transition is Hold, output is "on" when the cycle is Holding until operator presses OK. If weigh-out transition is Disabled, Weigh-in or Weigh-out, output is "on" for the amount of time programmed in the Weigh-out Complete timer.

A   Action Log

This appendix provides information about the Action log file.

The IND570fill provides the ability to log certain actions that occur during the weigh-in and weigh-out cycles into a file. This log file can then be viewed at the terminal or exported via FTP or the serial port using the shared data server. This file is only available if Alibi memory is not enabled. In certain applications where the Alibi memory is required, the Action log file cannot be used. It is also possible to program a demand output connection that sends each record out a programmed port as the action is logged.

A.1.   File Structure

The file is an encoded binary file and each record in the Action log file is six bytes long. Approximately 150,000 records can be stored in the log file. The log is structured as a ring file that overwrites the oldest record when it becomes full. Each record includes:

- Date and time stamp fields

- An action code. This action code (see **Logged Actions**, below) is translated to actual text for viewing at the IND570fill and for writing to a USB flash drive.

- Check digit

The binary file is converted to a comma delimited file (CSV) for writing to a USB flash drive via the USB softkey **USB**. The Action Log is not available for FTP or serial file transfer from the IND570fill.

A.2.   Logged Actions

Each action is recorded by its action code. If enabled, the following actions are logged when they occur.

Table A-1: Logged Actions

Action Code	Logged Action
1	Start weigh-in cycle
2	Start Weigh-out cycle
3	Cycle Paused
4	Cycle Resumed
5	Cycle Aborted
6	Tolerance OK

Action Code	Logged Action
7	Out of tolerance
8	Accept out of tolerance
9	Reject out of tolerance
10	Start manual jog
11	Overfill adjustment
12	Weigh-in target edited
13	Weigh-out target edited
14	Formula selected
15	Container Tare value edited
16	Scale blanked over capacity
17	Scale blanked under zero
18	Formula rescaled
19	Partial Dose (Material Conservation Mode)

A.3.   Viewing the File

When enabled, the Action log file can be viewed in setup at **Application > Memory > Alibi**. The Action log file will be shown instead of the Alibi memory file.

1. Access the menu tree and open the **Application > Memory > Alibi** sub-branch.

2. Make certain that Action Log is selected for the Alibi Memory parameter.

3. Press the VIEW TABLE softkey ⊞ shown at the bottom of the screen. The Search Screen displays (Figure A-1).
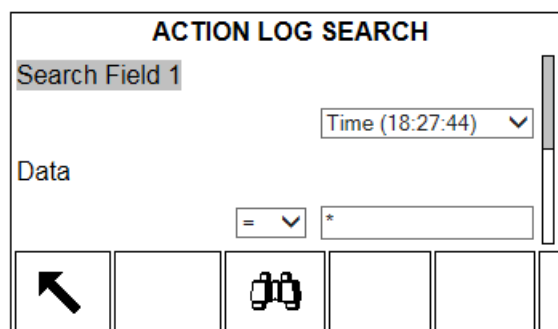
Figure A-1: Action Log Search Screen

4. Use the Search Field 1 and Search Field 2 selection boxes and associated data fields to enter specific search information to limit the search, or use the default "find all" character, the asterisk (*) to view all records.

5. Press the SEARCH softkey 👓. The Action Log Search View screen (Figure A-2) displays with the search results sorted in chronological order. The file will have the most current record at the

end of the file and focus will be on that record. Only the first two fields of the records (date and time) will be shown on the display. The action text in each record can be viewed by pressing the RIGHT navigation key to move the view to the right. Pressing the LEFT navigation key will return the view toward the left.

LOG SEARCH VIEW

Date	Time	Log Actions
12-Mar-2015	10:15:03	Tolerance OK
12-Mar-2015	10:23:56	Start weigh-out
12-Mar-2015	10:35:11	Tolerance OK
12-Mar-2015	10:38:48	Start weigh-in

Figure A-2: Action Log Search Results View

A.4. Resetting the File

The Action log cannot be manually reset or cleared. It is automatically cleared after it has been disabled and enabled again or if the assignment for Alibi memory is changed.

A.5. Exporting the File

The Action log file is a compressed binary file and is converted to a comma delimited text file for transfer to a USB flash drive.

The Action log file is available for export to a USB flash drive by using the USB softkey **USB** from the home page. The file cannot be imported back into the IND570fill.

1. Insert a USB flash drive into the IND570fill USB port and press the USB softkey. The USB action page will open.

2. Select Write to USB as the action.

3. Under the File Name selection, choose Action Log.

4. Press the START softkey ◇ and the file will be transferred to the USB flash drive.

The action log will be written to the USB flash drive at the following location:

"Drive ID" : IND570 > (S/N) > Logs > Act_log.csv

The format of the CSV file includes the date, the time and the action text. A sample is shown below in Figure A-3.

```
21-Feb-2015,11:12:45,Start weigh-in
21-Feb-2015,11:12:49,Aborted
21-Feb-2015,11:13:12,Edit container tare
21-Feb-2015,11:13:18,Start weigh-in
21-Feb-2015,11:13:29,Tolerance OK
21-Feb-2015,11:13:41,Tolerance OK
21-Feb-2015,11:13:57,Out of tolerance
21-Feb-2015,11:13:59,Accept out of tolerance
21-Feb-2015,11:14:07,Start weigh-out
```

Figure A-3: Action Log CSV Format

A.6. Printing the File

It is not possible to print the whole Action log file at once, but each record can be printed as it occurs if a connection is configured (in setup at **Communication > Connections**) with an assignment of Action Log Output. Each record will provide the date, the time and the Action log text and is 40 characters long. A sample of this print is shown in Figure A-4.

```
21-Feb-2007   11:12:45   Start weigh-in
21-Feb-2007   11:12:49   Aborted
21-Feb-2007   11:13:12   Edit container tare
21-Feb-2007   11:13:18   Start weigh-in
21-Feb-2007   11:13:29   Tolerance OK
21-Feb-2007   11:13:41   Tolerance OK
21-Feb-2007   11:13:57   Out of tolerance
21-Feb-2007   11:13:59   Accept out of tolerance
21-Feb-2007   11:14:07   Start weigh-out
```

Figure A-4: Action Log Output Sample

B   Container Tare Table

This appendix provides details of the Container Tare Table used in the IND570fill terminal. The container tare table can include up to 200 records, which store tare weights and minimum and maximum values. These tare values can be used instead of manually entering a tare for each transaction; the minimum and maximum values can be used for a tare comparison.

When totalization is enabled, each time a transaction is completed using a specific ID, the selected weight value (gross or net weight) is added to the total and the counter increments by one. The counter for the totals is seven digits long and has a maximum value of 1,500,000. When this value is exceeded, an overflow error displays and that value is not accumulated. The counter must be reset in order to continue totalizing. The total register is 11 digits in length including all positions to the right of the decimal point. The decimal position is determined by the display resolution for the unit entered as the tare unit. Thus, the maximum value for a scale with a display resolution of 0.01 kg would be 999999999.99 kg. When this value is exceeded, an overflow error displays and that value is not accumulated. The total must be reset in order to continue totalizing.

Container tare weights can be recalled by selecting from a list of all the values using the CONTAINER TARE TABLE softkey ⬡ followed by the SEARCH softkey 🔍, or they can be "quick accessed" directly by pressing the ID value followed by the CONTAINER TARE TABLE softkey ⬡ or they can be "linked" to the target ID for a Fill weigh-in cycle and automatically recalled when the Target ID is recalled. A printed report of the records in the Container Tare Table is available through the REPORTS softkey ▭. This procedure is explained later in this appendix.

B.1.   Record Format

The structure of a container tare record is shown in Table B-1. Each record in the Container Tare table will have these fields available.

Table B-1: Container Tare Records Stored in the Tare Table

Field	Length	Type	Description
ID	2	Numeric	Numeric string used for tare record lookup
Tare Weight	8	Numeric	Tare value. Stored in display resolution.
Tare Units	3	Alpha	Tare weighing units (dwt, g, kg, lb, oz, ozt, t, ton)
Minimum Tare	8	Numeric	Minimum acceptable tare weight. Stored in display resolution.
Maximum Tare	8	Numeric	Maximum acceptable tare weight. Stored in display resolution.
Description	20	Alpha-numeric	Description of this tare value

Field	Length	Type	Description
Total Weight	8	Numeric	Total weight of transactions completed using this stored tare record
Total Count	8	Numeric	Total number of transactions using this stored tare record.

B.2.   Selecting From a List

Before the container tare table can be accessed, the CONTAINER TARE TABLE softkey ⏍ must be added to the softkeys on one of the home screens (refer to Chapter 3, **Configuration,** in the standard **IND570 User's Guide**).

B.2.1.   To Access the Container Tare Table

1.   Press the CONTAINER TARE TABLE softkey ⏍ to display the search screen as shown in Figure B-1.
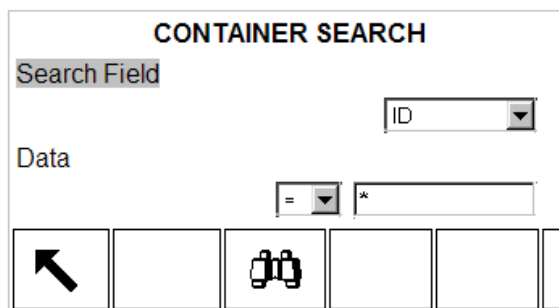
Figure B-1: Container Tare Table Search Screen

2.   Use the Search Field selection boxes and associated data fields to enter specific search information to limit the search, or use the default "find all" character, the asterisk (*) to view all records.

3.   Press the SEARCH softkey (⏍). The Container Tare Table Search View screen (Figure B-2) displays with the search results sorted by ID. The file will have the lowest ID record at the top of the file and focus will be on that record. Only the first three fields (ID, Minimum, and Maximum) and a portion of the fourth field (Description) will be shown on the display. The remainder of the fields in each record can be viewed by pressing the RIGHT navigation key to move the view to the right. Pressing the LEFT navigation key will return the view toward the left.

Figure B-2: Container Tare Table Search View Results

4. Use the UP and DOWN navigation keys to focus on a container tare record.

5. Press the OK softkey $\overset{OK}{\vee}$ to recall that record and move it to the active container tare record. If the record has a non-zero tare value, that value will be used for the tare. If the tare value is "0", then the minimum and maximum tare values will be used. All values stored in the container tare table are automatically converted when recalled if they don't match the display unit.

B.3.   Quick Access

If the ID number for a specific record in the Container Tare Table is known, the record can be quickly recalled for use without going through the view and selection process.

Before the container tare table can be accessed, the CONTAINER TARE MEMORY softkey $\diamondsuit$ must be added to the softkeys on one of the home screens (refer to Chapter 3, **Configuration**, in the standard **IND570 Technical Manual**).

B.3.1.   To Access a Container Tare Record Quickly:

1. Enter the one-, two- or three-digit ID for the container tare that is to be used. The data entry screen displays as shown in Figure B-3.
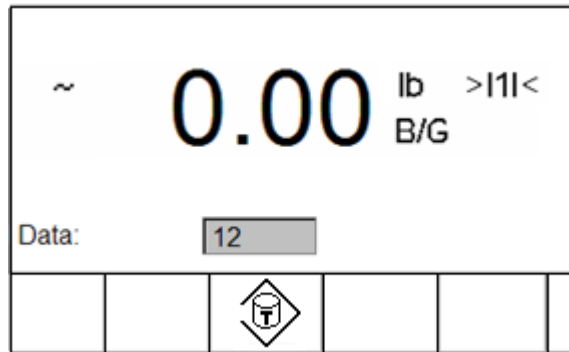

Figure B-3: Data Entry Screen

2. Press the CONTAINER TARE MEMORY softkey $\diamondsuit$ to quickly recall the ID record entered. The stored tare record is recalled from the Container Tare Table and is moved to the container tare active record. All values recalled from the container tare table are automatically converted if it doesn't match the display unit.

3. If an invalid ID number is entered, a message [ID not found] displays.

B.4.   Linked to Target ID

If the Container Tare has been programmed as "linked" to the Target ID in setup, the container tare record will automatically be recalled and inserted into the active container tare record when the Target ID is recalled. No special operator sequence is required in this mode. When the Weigh-in Target ID is recalled (either from list view or quick recall), the Container Tare Table record with the same ID number is automatically recalled for use.

The "linked" operation is only available for a Fill weigh-in cycle and cannot be used when Blend has been selected as the weigh-in cycle.

B.5.   Clearing Records and Totals

B.5.1.   To Clear All Records

All the records in the Container Tare Table can be cleared by pressing the CLEAR softkey **C** when viewing the first setup page for the table at the **Application > Pac > General > Container Tare Table** sub-branch of the menu tree.

B.5.2.   To Clear all Totals

The totals for all of the records in the Tare Table are cleared by pressing the REPORTS softkey ⬜, selecting Container Tare Table from the selection box, and pressing the CLEAR TOTALS softkey **C✳**. A confirmation will display, with [Clear n and Totals?] text with "Yes" and "No" selection boxes. Move focus to the desired response then press the ENTER key.

B.5.3.   To Clear an Individual Record Total

1. Access the menu tree and move to the **Application > PAC > General > Container Tare Table** sub-branch.

2. Press the VIEW TABLE softkey ⬚. The Search screen (Figure C-1) displays.

3. Use the Search Field selection boxes and associated data fields to enter specific search information to limit the search, or use the default "find all" character, the asterisk (*), to view all records.

4. Press the SEARCH softkey 🔍. The Container Tare Table Search View screen (Figure C-2) displays with the search results sorted by ID.

5. Use the UP and DOWN navigation keys to highlight the tare record for which the total is to be cleared and press the EDIT softkey ✏. The Container Tare Edit screen displays.

6. Press the DOWN navigation key to highlight the "n and Total" label and press ENTER.

7. Clear the "n" and/or "Total" values by pressing the CLEAR key on the numeric keypad when focus is in that data entry box. When the value in the data entry box is clear, press ENTER.

8. Press the OK softkey ᴼᴷ to accept the changes.

9. Press the EXIT softkey ↖ four times to return to the home screen.

B.6.   Container Tare Table Report

The Container Tare Table can be viewed by an operator by pressing the REPORTS softkey ⬜. Results of the container tare table view can also be printed. The table report structure is based on the fields defined in the table and report configuration. These fields are described in Chapter 3, **Configuration**. Sample report printouts are shown in section B.6.1.1 and section B.6.1.2 below.

In order to access the report function, the REPORTS softkey [icon] must be added to the selection of softkeys on one of the home pages (refer to Chapter 3, **Configuration**, in the standard **IND570 Technical Manual**).

B.6.1. To View / Print the Container Tare Table

1. Press the REPORTS softkey [icon]. The Reports Selection Screen displays (Figure B-4). Only tables that have been enabled in setup are shown. The Tare Table will always be shown.
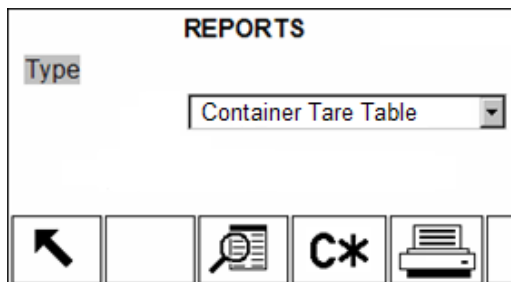

Figure B-4: View Reports Screen

2. Select the Container Tare Table from the Type selection box. Note that the available softkeys will change based on the selection of the type of report.

3. After selecting the container tare report, press the VIEW TABLE softkey [icon].

4. The table search screen displays. This screen is shown in Figure C-1.

5. Use the Search Field selection boxes and associated data fields to enter specific search information to limit the search, or use the default "find all" character, the asterisk (*) to view all records.

6. Press the Search softkey [icon] to view the results of the search.

7. After the search is complete, the PRINT softkey [icon] can be pressed to generate a printout of the report. A "Reports" connection must be present to generate the report print.

B.6.1.1. 40 Column Example

If the first field on a line is disabled, it will not be printed and the field to the right will be shifted left. If a field on the right of a line is disabled, it will not print and that space will be blank. If all fields on a specific line are disabled, the entire line will be removed from the report.

```
Container Tare Table Report
10:15:43    Mar 20 2015

ID:  1                Tare:        0 kg
Minimum:      0.8   Maximum:      1.2
Desc:  Blue Box #4
n:        0    Total:          0 kg
************************************
ID:  2                Tare:        0 kg
Minimum:      1.8   Maximum:      2.2
Desc:  Green Bag #29
n:        0    Total:          0 kg
************************************
ID:  3                Tare:        0 kg
```

```
Minimum:        2.8   Maximum:        3.2
Desc:  Yellow Bag #11
n:           0   Total: :            0 kg
****************************************
```

B.6.1.2. **80 Column Example**

If any field is disabled, that data will not be printed and the entire column will be removed from the report.

```
Container Tare Table Report
10:15:43    Mar 20 2015

ID     Tare      Minimum   Maximum        Desc        n       Total
**********************************************************************************
   1     2.3  kg       0        0  AAA                 0       0  kg
**********************************************************************************
  22       0  kg     5.3      7.8  BBB                 0       0  kg
**********************************************************************************
  25       0  kg    22.3     22.7  CCC                 0       0  kg
```

B.7. Import and Export of Container Tare Table

The Container Tare Table can be imported and exported from the IND570fill by FTP over Ethernet, serial file transfer via COM1 or written to or read from a USB flash drive. Each of these methods are described in this section.

B.7.1. USB Flash Drive

The Container Tare Table is available for writing to a USB flash drive by using the USB softkey **USB** from the home page. The file can also be read from a USB flash drive back into the IND570fill.

1. Insert a USB flash drive into the IND570fill USB port and press the USB softkey. The USB action page will open.

2. Select Write to USB or Read from USB as the action.

3. Under the File Name selection, choose Table A4 (Container Tare).

4. Press the START softkey ◇ and the file will be transferred to/from the USB flash drive as selected in the action parameter.

    The location of the Container Tare Table on the USB flash drive will be:

    "Drive ID" : IND570 \ (S/N) \ Tables \ Cont.csv

B.7.2. FTP and Serial File Transfer

The Container Tare Table is available for import or export using FTP on the Ethernet port or via serial file transfer from the COM1 port. When a file transfer is requested, the IND570fill converts the table into a CSV format (comma delimited text file) that is then transferred. The location of the Container Tare Table in the IND570fill is:

    Flash2: Cont.csv

Full details of how to perform the FTP or serial file transfer can be found in Appendix C, **Communications**, in the standard **IND570 User's Guide**.

C   Formula Table

This appendix provides information about the Formula Table (A5).

The formula table is used to store up to 100 material formulas for the blend weigh-in cycle. The formulas are created and stored in setup at **Application > Pac > General > Formula Table**.

- **IMPORTANT:** Formulas can only use materials that have been defined and saved in the IND570 Target Table.

The number of materials to be used in a formula can be programmed from two to six in setup. So regardless of how many materials are entered for a formula, if only three materials are configured there, the blend cycle will use only three of the possible materials programmed.

- **IMPORTANT:** All materials in a formula must have the same weight unit. If an attempt to add materials with different units into a formula is made, a unit mismatch error will be shown and the material with the "different" unit will not be accepted.

C.1.   Table Format

Each formula contains a formula ID, from 2 to 6 target table IDs, auxiliary output values, a totals field and a counter for the number of times a formula is used. Some fields are separately enabled or disabled so all fields may not be present for all applications. The possible fields are shown in Table C-1.

The counter for the formula totals is seven digits long and has a maximum value of 1,500,000. When this value is exceeded, an overflow error displays and that value is not accumulated. The counter must be reset in order to continue totalizing. The total register is 11 digits in length including all positions to the right of the decimal point. The decimal position is determined by the display resolution for the unit entered as the tare unit. The maximum value for a scale with a display resolution of 0.01 kg would be 999999999.99 kg. When this value is exceeded, an overflow error displays and that value is not accumulated. The total must be reset in order to continue totalizing.

Table C-1: Formula Table Format

Field	Length	Type	Description
ID	3	Numeric	Numeric string used for formula record lookup and recall
Description	20	Alphanumeric	Description of the formula record
Material 1 ID	3	Numeric	Numeric string for material reference from target table
Material 2 ID	3	Numeric	Numeric string for material reference from target table

| Field	Length	Type	Description
Material 3 ID	3	Numeric	Numeric string for material reference from target table
Material 4 ID	3	Numeric	Numeric string for material reference from target table
Material 5 ID	3	Numeric	Numeric string for material reference from target table
Material 6 ID	3	Numeric	Numeric string for material reference from target table
n	7	Numeric	Total number of transactions completed using this formula
Total	12	Numeric	Total weight of transactions completed using this formula
Auxiliary On	7	Numeric	Auxiliary output starting weight for this formula
Auxiliary Off	7	Numeric	Auxiliary output end weight or "on" time for this formula

The Formula table is converted to a comma delimited file (CSV) for FTP, for serial file transfer, or for writing to a USB flash drive via the USB softkey **USB**.

C.2. Selecting from a List

Before the Formula table can be accessed, the FORMULA softkey ⌗ must be added to the softkeys on one of the home screens (refer to Chapter 3, **Configuration**, in the standard **IND570 User's Guide**).

C.2.1. To Access the Formula Table

1. Press the FORMULA softkey ⌗ then the FORMULA TABLE softkey ⌗ to display the formula search screen.

2. Use the Search Field selection boxes and associated data fields to enter specific search information to limit the search, or use the default "find all" character, the asterisk (*) to view all records.

3. Press the SEARCH softkey ⌗. The Formula Table Search View screen displays with the search results sorted by ID. The file will have the lowest ID record at the top of the file and focus will be on that record. Only the first three fields (ID, Minimum, and Maximum) and a portion of the fourth field (Description) will be shown on the display. The remainder of the fields in each record can be viewed by pressing the RIGHT navigation key to move the view to the right. Pressing the LEFT navigation key will return the view toward the left.

4. Use the UP and DOWN navigation keys to focus on a formula record.

5. Press the OK softkey ⌗ to recall that record and move it to the active formula record. The display will return to the active formula view.

C.3. Quick Access

If the ID number for a specific record in the Formula Table is known, the record can be quickly recalled for use without going through the view and selection process.

Before the formula table can be accessed, the FORMULA softkey ⬚ must be added to the softkeys on one of the home screens (refer to Chapter 3, **Configuration**, in the standard **IND570 User's Guide**).

C.3.1.   To Access a Container Tare Record Quickly

1. Press the FORMULA softkey ⬚ to access the active formula view.

2. Enter the one- or two-digit ID for the formula that is to be used. The data entry screen displays as the ID is entered.

3. Press the FORMULA TABLE softkey ⬚ to quickly recall the ID record entered. The stored formula record is recalled from the Formula Table and is moved to the formula active record. All values recalled from the formula table are automatically converted if it doesn't match the display unit.

4. If an invalid ID number is entered, a message [**ID not found**] displays.

C.4.   Formula Table Report

The Formula table can be viewed outside of setup by an operator by pressing the REPORTS softkey ⬚. Results of the Formula table view can also be printed. The report structure is based on the fields defined in the table and report configuration in setup.

In order to access the report function, the REPORTS softkey ⬚ must be added to the selection of softkeys on one of the home pages (refer to Chapter 3, **Configuration**, in the standard **IND570 User's Guide**).

C.4.1.   To View the Formula Table

1. Press the REPORTS softkey ⬚. The reports screen displays.

2. Press ENTER to move focus from Type into the selection box.

3. Use the UP and DOWN navigation keys to select Formula Table then press ENTER.

4. Press the VIEW TABLE softkey ⬚ to proceed to the Formula Search page.

5. Use the selection boxes and associated fields to enter specific search information to limit the search, or do not enter any search limits to view all Formula Table information.

6. Press the START SEARCH softkey ⬚. The Formula Search View screen displays with the search results. Only records with non-null values display. Records are ordered by ID, with the lowest ID number shown first.

7. Press the UP, DOWN, LEFT, and RIGHT navigation keys to scroll up and down and across the screen in order to view all data and all records listed.

   ◼ **IMPORTANT:** If the Weigh-in mode is not programmed as Blend, the Formula Table will not be available under the REPORTS softkey ⬚.

C.4.2. To Print the Formula Table

The complete Formula table can be printed when accessed from the REPORTS softkey⬚. A reports connection must be made in setup at **Communication > Connections**.

1. Press the REPORTS softkey ⬚. The reports screen displays.

2. Press ENTER to move focus from Type into the selection box.

3. Use the UP and DOWN navigation keys to select Formula Table then press ENTER.

4. With Formula Table selected as the Type, press the PRINT softkey 🖶.

5. The Formula table will be printed in the format selected in setup.

▪ **IMPORTANT:** The Total weight and Auxiliary Out values are in primary weight units. The weight unit is not included in the table but is added to the report for clarity.

C.4.2.1. 40 Column Example

If the first field on a line is disabled, it will not be printed and the field to the right will be shifted left. If a field on the right of a line is disabled, it will not print and that space will be blank. If all fields on a specific line are disabled, the entire line will be removed from the report.

```
Formula Table Report

        21:25:26      02/Mar/2015


ID   1  Blend XP-10

 M1  11  M2  12  M3  13
 M4  14  M5   0  M6   0
n =      12   Total =      53.086 lb
Aux On =    1.300  Aux Off =       20

****************************************
ID   2  Blend XP-20

 M1  21  M2  22  M3  23
 M4  24  M5   0  M6   0
n =      55   Total =   15778.360 lb
Aux On =    0.200  Aux Off =       40

****************************************
```

Figure C-1: Example Print of Formula Table in Narrow Format

C.4.2.2. 80 Column Example

If any field is disabled, that data will not be printed and the entire column will be removed from the report.

▪ **IMPORTANT:** The wide format of the formula table is actually 90 characters. Make sure the additional characters are handled properly in the equipment receiving the file.

```
Formula Table Report

      21:28:46     02/Mar/2015



ID  Description          M1  M2  M3  M4  M5  M6      n        Total      Aux On  Aux Off
 1  Blend XP-10          11  12  13  14   0   0     12      53.086 lb    1.300       20
****************************************************************************
 2  Blend XP-20          21  22  23  24   0   0     55   15778.360 lb    0.200       40
            ******************************************************************************
```

Figure C-2: Example Print of Formula Table in Wide Format

C.5. Clearing Totals

C.5.1. Clearing Totals of All Records

The totals for all the records in the Formula Table can be cleared by pressing the REPORTS softkey ▯, selecting Formula Table from the Type selection box, and pressing the CLEAR TOTALS softkey **C✱**.

C.5.2. Clearing Totals of Individual Records

It is possible to clear the totals of individual Formula Table records within setup only.

1. Access the setup menu tree and select **Application > Pac > General > Formula Table**.

2. Press the VIEW TABLE softkey ▧. The Search screen displays.

3. Use the Search Field selection boxes and associated data fields to enter specific search information to limit the search, or use the default "find all" character, the asterisk (*), to view all records.

4. Press the SEARCH softkey ▥. The table Search View screen displays with the search results sorted by ID.

5. Use the UP and DOWN navigation keys to highlight the formula record for which the total is to be cleared and press the EDIT softkey ✎. The record Edit screen displays.

6. Press the DOWN navigation key to highlight the n and Total label and press ENTER.

7. Clear the n and/or Total values by pressing the CLEAR key **C** on the numeric keypad when focus is in that data entry box. When the value in the data entry box is clear, press ENTER.

8. Press the OK softkey ✓ to accept the changes.

9. Use the EXIT ↖ softkey to return to the home screen.

C.6. Importing/Exporting the Table

The Formula Table is available for importing and exporting using FTP, serial file transfer or a USB flash drive by using the USB softkey **USB** from the home page.

C.6.1. FTP and Serial File Transfer

The Formula Table is available for import or export using FTP on the Ethernet port or via serial file transfer from the COM1 port. When a file transfer is requested, the IND570fill converts the table into a CSV format (comma delimited text file) that is then transferred. The location of the Formula Table in the IND570fill is:

Flash2: Formula.csv

Full details of how to perform the FTP or serial file transfer can be found in Appendix C, **Communications**, in the standard **IND570 User's Guide**.

C.6.2. USB Flash Drive

1. Insert a USB flash drive into the IND570fill USB port and press the USB softkey **USB**. The USB action page will open.

2. Select Read from or Write to USB as the action.

3. Under the File Name selection, choose Formula Table (A4).

4. Press the START softkey ◇ and the file will be transferred to/from the USB flash drive as selected.

The Formula Table will be written to the USB flash drive at the following location:

MSFS: IND570 > (S/N) > Tables > Formula.csv

The format of the CSV file includes all the fields shown in Table C-1 above. A sample is shown below in Figure C-3.

```
1,Blend XP-10,11,12,13,14,15,0,12,53.086,1.3,20,
2,Blend XP-20,21,22,23,24,25,0,55,15778.360,0.2,40,
3,Blend XP-30,31,32,33,34,35,0,0,0,0,0,
```

Figure C-3: Formula Table CSV File Format

D   Pac Statistics

The IND570fill can be programmed to calculate statistics for either the programmed weigh-in or programmed weigh-out cycle. The statistical information is updated when the weigh cycle completes the tolerance check or if Dump is selected, at the conclusion of the dump cycle.

Statistics will be kept for a maximum of 50 weigh-in or weigh-out cycles. Additional cycles beyond 50 can still be run, but statistics will not be kept for those. No operator message is given when the maximum number is reached.

Any of the four cycles can be selected as the weigh cycle to trigger the statistics; however, only the weights from one type of cycle will be tracked. The statistical information available is shown in Table D-1.

Table D-1: Statistical Information

Statistic	Description
Minimum weight	The smallest weight of all weighments
Maximum weight	The largest weight of all weighments
Average weight	The mathematical average of all weighments
Median weight	The final weight most often reached
Standard deviation	The standard deviation of all weighment values
Minimum cycle time	The shortest weigh cycle time
Maximum cycle time	The longest weigh cycle time
Average cycle time	The mathematical average of all cycle times
Total weight	The total of all weighments
Cycle count	The number of weighments
Out of tolerance -accepted	The number of out of tolerance weighments that were accepted
Out of tolerance	The total number of weighments that were out of tolerance
Aborted	The number of cycles that were aborted

D.1.   Pac Statistics Report

The Pac Statistics can be viewed by an operator by pressing the REPORTS softkey 🔲. Results of the Pac Statistics can also be printed and cleared when viewing.

Before the Pac Statistics can be accessed, the REPORTS softkey 🔲 must be added to the softkeys on one of the home screens (refer to Chapter 3, **Configuration,** in the standard **IND570 User's Guide**).

D.1.1. To View / Print the Pac Statistics

1. Press the REPORTS softkey 🔲. The Reports Selection Screen displays (Figure D-1). Only features that have been enabled in setup are shown. The Tare Table will always be shown.
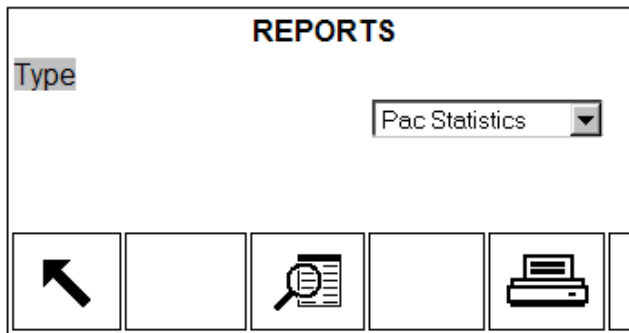
Figure D-1: View Reports Screen

2. Select Pac Statistics from the Type selection box. Note that the available softkeys will change based on the selection of the type of report.

3. After selecting Pac Statistics, press the VIEW TABLE softkey 🔍.

4. The Pac Statistics as shown in Figure D-2 will be displayed.

Figure D-2: Pac Statistics View

5. The UP and DOWN navigation keys may be used to view all data fields.

6. While displaying the Pac statistics, the PRINT softkey 🖨 can be pressed to generate a printout of the report. A "Reports" connection must be present to generate the report print.

The pac statistics report is the same for both narrow and wide formats and is shown in Figure D-3.

```
                   Pac Statistics

      11:00:49        05/Mar/2015

Minimum Weight:                   199.6 lb
Maximum Weight:                   199.7 lb
Average Weight:                   199.7 lb
Median Weight:                    199.7 lb
Standard Deviation:                 0.0 lb
Minimum Cycle Time:                 0.3 min
Maximum Cycle Time:                 0.7 min
Average Cycle Time:                 0.5 min
Total Weight:                     399.3 lb
Cycle Count:                        2
Out of Tol - Accepted:              0
Out of Tolerance:                   0
Aborted:                            0
```

Figure D-3: Printed Pac Statistics Report

D.2.   Resetting Statistics

While the Pac Statistics are being displayed, (see Figure D-2) all data can be reset in preparation of the next statistical period.

1.   While viewing the Pac Statistics page, press the RESET softkey ⭕ .

2.   A confirmation message with "Yes" in focus will be displayed asking if the statistics should be cleared.

3.   To clear the statistics, press the ENTER key. To exit without clearing the statistics, press the LEFT or RIGHT navigation keys to move focus to the "No" choice then press ENTER.

D.3.   Import and Export of Pac Statistics

The Pac Statistics can be exported from the IND570fill by FTP over Ethernet or serial file transfer via COM1, or it can be exported to a USB flash drive. Each of these methods is described in this section.

D.3.1.   USB Flash Drive

Pac Statistics is available for writing to a USB flash drive by using the USB softkey **USB** from the home page. The file cannot be read from a USB flash drive back into the IND570fill.

1.   Insert a USB flash drive into the IND570fill USB port and press the USB softkey **USB**. The USB action page will open.

2. Select Write to USB as the action.

3. Under the File Name selection, choose Pac Statistics as shown in Figure D-4.
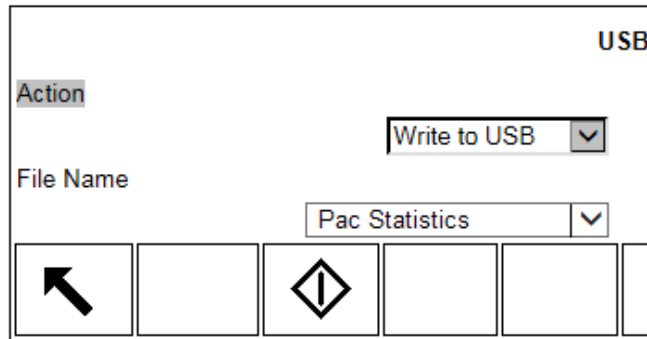
Figure D-4: Write Pac Statistics to USB Flash Drive Display

4. Press the START softkey ◇ and the text file will be transferred to the USB flash drive.

The location of the Pac Statistics file on the USB flash drive is:

"MSFS" : IND570 \ (S/N) \ Reports \ PacStats.txt

D.3.2. FTP and Serial File Transfer

A Pac Statistics text file is available for export using FTP on the Ethernet port or via serial file transfer from the COM1 port. When a file transfer is requested, the IND570fill converts the pac statistic data into a TXT file (ASCII text format) which is then transferred. The location of the Pac Statistics file in the IND570fill is:

Ram: PacStats.txt

Full details of how to perform the FTP or serial file transfer can be found in Appendix C, **Communications**, in the standard **IND570 User's Guide**.

E   Fill-570 Print Templates

This appendix provides information regarding the print templates available for the Fill-570 application software. These templates are available as default templates (6 – 10) in the terminal, and can be modified as needed.

A print trigger for each of the types of cycles (Fill/Blend, Dump, and Dose) and for the completion of the programmed Number of Cycles is provided to trigger a demand output. A connection must be made in setup at **Communication > Connections** using these triggers for a demand output for a selected port.

The following five default templates are given as examples for the Fill, Dump, Dose, Blend and Number of Cycles templates that are available.

E.1.   Template 6: Fill Cycle

The available shared data variables for the Fill cycle are listed in Table 3-5 in Chapter 3, **Setup Parameters**. In addition to these shared data variables, any variables from the standard IND570 and the miscellaneous Fill-570 variables in Table 3-4 may also be added.

E.1.1.   Sample Output, Template 6

```
     Fill Cycle 37 of 500

Material XP-50

Start:         16:37:13    14/Mar/2015
Finish:        16:37:35    14/Mar/2015


Target:                      5.000 lb
Net Delivered:               4.998 lb


**************************************
```

E.2. Template 7: Dump Template

The available shared data variables for the Dump cycle are listed in Table 3-8 in Chapter 3, **Setup Parameters**. In addition to these shared data variables, any variables from the standard IND570 and the miscellaneous Fill-570 variables in Table 3-4 may also be added.

E.2.1. Sample Output, Template 7

```
        Dump Cycle 42 of 500

Start:          16:37:46    14/Mar/2015
Finish:         16:38:05    14/Mar/2015

Start Weight:                 5.008 lb
Finish Weight:                0.008 lb
Net Delivered:                5.000 lb


***********************************
```

E.3. Template 8: Dose Template

The available shared data variables for the Dose cycle are listed in Table 3-7 in Chapter 3, **Setup Parameters**. In addition to these shared data variables, any variables from the standard IND570 and the miscellaneous Fill-570 variables in Table 3-4 may also be added.

E.3.1. Sample Output, Template 8

```
        Dose Cycle 13 of 55

Material XP-10 Dose

Start:          16:52:35    14/Mar/2015
Finish:         16:52:49    14/Mar/2015

Target Weight:                1.000 lb
Net Delivered:                1.000 lb


***********************************
```

E.4. Template 9: Blend Template

The available shared data variables for the Blend cycle are listed in Table 3-6 in Chapter 3, **Setup Parameters**. In addition to these shared data variables, any variables from the standard IND570 and the miscellaneous Fill-570 variables in Table 3-4 may also be added.

E.4.1. Sample Output, Template 9

```
        Blend Cycle 4 of 55

Formula XP-60

Start:          16:55:48    14/Mar/2015
Finish:         16:57:19    14/Mar/2015

Mat. Target(lb)  Actual(lb)    Var.(lb)
 1        1.000        1.000       0.000
 2        1.000        0.998      -0.002
 3        1.000        1.006       0.006
 4        1.000        1.004       0.004
 5        1.000        1.000       0.000
 6        1.000        0.996      -0.004
-----------------------------------------
Total     6.000        6.004       0.004

 *************************************
```

E.5. Template 10: Number of Cycles Template

The available shared data variables for the Number of Cycles trigger are listed in Table 3-4 in Chapter 3, **Setup Parameters**. In addition to these shared data variables, any variables from the standard IND570 may also be added.

E.5.1. Sample Output, Template 10

```
Total of 55 cycles complete

Finish:         16:38:52    14/Mar/2015

Total material:           26.540 lb

 *************************************
```

F   Material Steering for Blending

This appendix provides information regarding the mapping of discrete outputs for controlling feeding systems during a blend weigh-in cycle. The IND570fill provides two methods for controlling the feeding of all the materials for a blend.

- The Material 1 - 6 output can be combined with the Weigh-in Fast Feed and Weigh-in Feed outputs to correctly route the two feeding output signals to the correct feeding controls.

- The direct material feed outputs, Material 1 - 6 Fast Feed and Material 1 - 6 Feed, eliminate the need for external material steering and provide individual connections to each material feeder directly from the IND570fill.

F.1.   Direct Material Outputs

The direct material outputs of the IND570fill (Material 1 - 6 Fast Feed and Material 1 - 6 Feed) are each programmed as a separate discrete output that can be directly connected to the feeding system, eliminating the need for external relay logic. Figure F-1 below provides a basic wiring example of the direct material outputs.

Material 1 Fast Feed o———————▶	Material 1 Fast Feed Control
Material 1 Feed o———————▶	Material 1 Feed Control
Material 2 Fast Feed o———————▶	Material 2 Fast Feed Control
Material 2 Feed o———————▶	Material 2 Feed Control
Material 3 Fast Feed o———————▶	Material 3 Fast Feed Control
Material 3 Feed o———————▶	Material 3 Feed Control
Material 4 Fast Feed o———————▶	Material 4 Fast Feed Control
Material 4 Feed o———————▶	Material 4 Feed Control
Material 5 Fast Feed o———————▶	Material 5 Fast Feed Control
Material 5 Feed o———————▶	Material 5 Feed Control
Material 6 Fast Feed o———————▶	Material 6 Fast Feed Control
Material 6 Feed o———————▶	Material 6 Feed Control

Figure F-1: Direct Material Output Wiring

F.2.   External Relay Logic

When using the Weigh-in Fast Feed and Weigh-in Feed outputs (not each material's) and the Material "x" (1 – 6) outputs, it is possible to route the two feed outputs to the correct control devices using external relays. Figure F-2 below describes the external relay wiring required and Figure F-3 and Figure F-4 show how the relay contacts can be used to route the weigh-in fast feed and weigh-in feed outputs to the correct control.
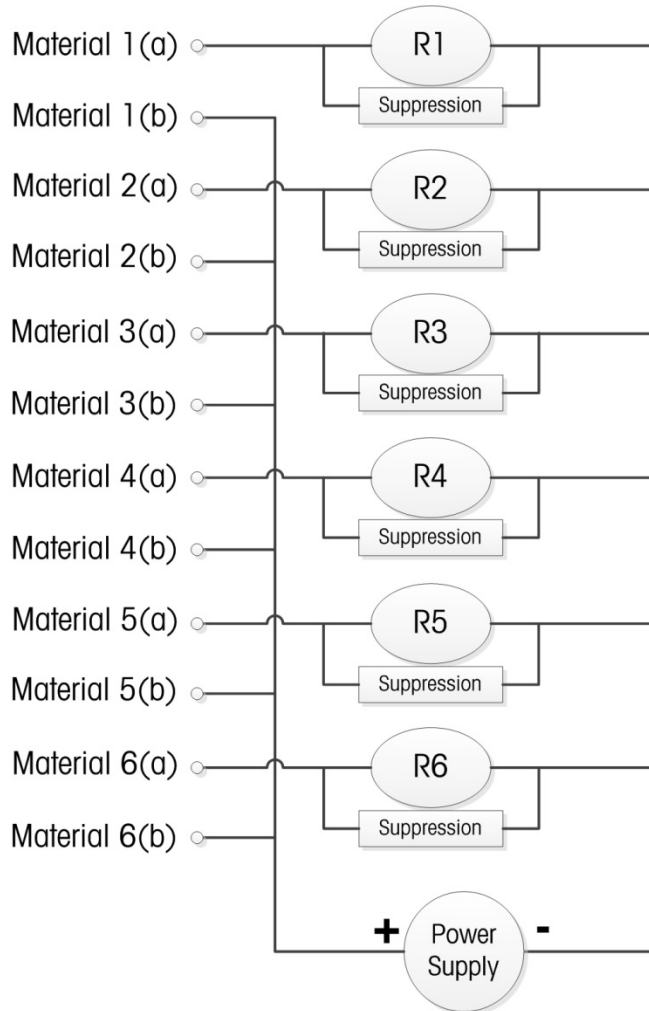
Figure F-2: External Relay Layout
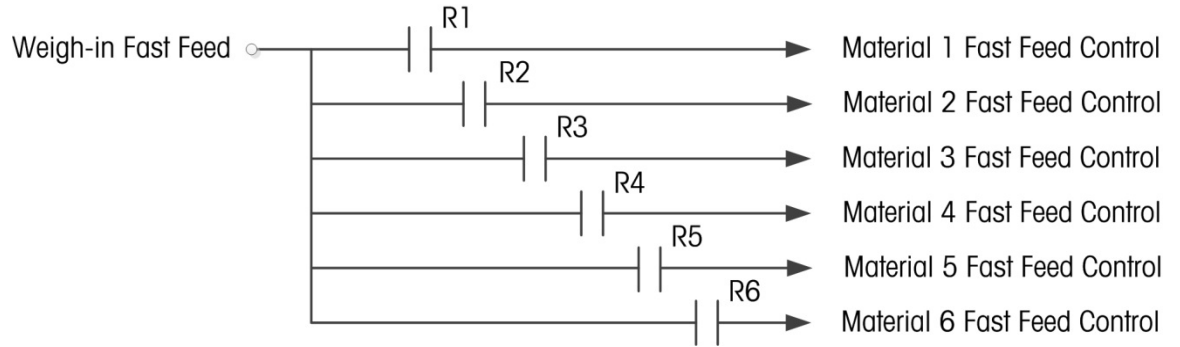
Figure F-3: External Relay Wiring for Weigh-in Fast Feed Control
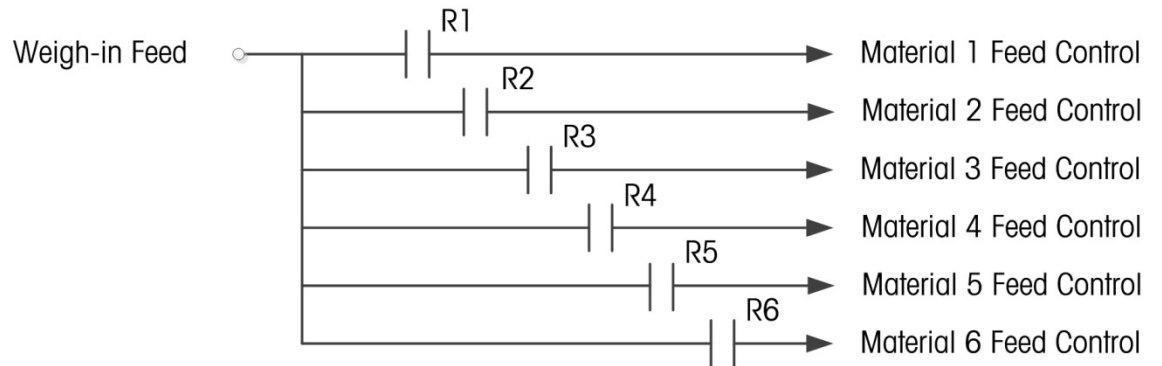
Figure F-4: External Relay Wiring for Weigh-in Feed Control

F.3. Discrete Output Shared Data

The IND570fill has unique shared data to monitor the status of all discrete inputs and outputs. When a discrete output is "on", the shared data field value sets to "1". When the output is off, the shared data field value resets to "0". The shared data fields associated with the material steering principles discussed in this appendix can be found in Table F-1.

Table F-1: Blend Shared Data Fields

IND570fill Data Field	SDName	Length
Material 1	as0115	1 A/N
Material 2	as0116	1 A/N
Material 3	as0117	1 A/N
Material 4	as0118	1 A/N
Material 5	as0143	1 A/N
Material 6	as0144	1 A/N
Weigh-in Fast Feed	as0122	1 A/N
Weigh-in Feed	as0123	1 A/N
Material 1 Fast Feed	as0131	1 A/N

IND570fill Data Field	SDName	Length
Material 1 Feed	as0132	1 A/N
Material 2 Fast Feed	as0133	1 A/N
Material 2 Feed	as0134	1 A/N
Material 3 Fast Feed	as0135	1 A/N
Material 3 Feed	as0136	1 A/N
Material 4 Fast Feed	as0137	1 A/N
Material 4 Feed	as0138	1 A/N
Material 5 Fast Feed	as0139	1 A/N
Material 5 Feed	as0140	1 A/N
Material 6 Fast Feed	as0141	1 A/N
Material 6 Feed	as0142	1 A/N

G   Default Values

Table G-1 provides details of the default condition of all the IND570fill setup parameters.

Table G-1: Fill-570 Default Values

Setup Feature	Default Value	Security Access
Application—Pac—Weigh-in Mode		
Weigh-in	Fill	Maintenance
Material Transition	Automatic	Maintenance
Cycle Tare	Enabled	Maintenance
Clear Tare	Disabled	Maintenance
Weigh-in Transition	Disabled	Maintenance
Application—Pac—Weigh-out Mode		
Weigh-out	None	Maintenance
Clear Tare	Disabled	Maintenance
Refill Mode	Automatic	Maintenance
Refill Tare	Disabled	Maintenance
Supply Material Conservation	Disabled	Maintenance
Weigh-out Transition	Disabled	Maintenance
Application—Pac—Timing		
Start Delay	0	Maintenance
After Weigh Delay	0	Maintenance
After Empty Delay	5	Maintenance
Weigh-In Complete	0	Maintenance
Weigh-Out Complete	0	Maintenance
Application—Pac—General—Materials		
Materials Weigh-in	1	Maintenance
#1 Feed Speeds	2	Maintenance
#2 Feed Speeds	2	Maintenance
#3 Feed Speeds	2	Maintenance

Setup Feature	Default Value	Security Access
#4 Feed Speeds	2	Maintenance
#5 Feed Speeds	2	Maintenance
#6 Feed Speeds	2	Maintenance
Dose Speeds	2	Maintenance
Application—Pac—General—Cycles		
Track Cycles	Disabled	Maintenance
Application – Pac – General – Formula Table		
Auxiliary Out	Disabled	Maintenance
Totalization	Disabled	Maintenance
Rescale	Disabled	Maintenance
Application—Pac—General—Container Tare		
Container Tare	Disabled	Maintenance
Description	Disabled	Maintenance
Totalization	Disabled	Maintenance
Application—Pac—General—Interlocks		
OK to Weigh-in	Disabled	Maintenance
OK to Weigh-out	Disabled	Maintenance
Application—Pac—General—Jog		
Mode	Automatic	Maintenance
Pulse Time (on)	2 seconds	Maintenance
Pause Time (off)	2 seconds	Maintenance
Application—Pac—General—Tolerance & Heel		
Manual Accept	Disabled	Maintenance
Zero Tolerance Check	Disabled	Maintenance
Zero Tolerance Value	0 (primary units)	Maintenance
Heel Weight	0 (primary units)	Maintenance
Application—Pac—Advanced—Fill Adjustment		
Overfill Adjustment	Disabled	Maintenance
Auto Spill Adjustment	Disabled	Maintenance
Cycles Averaged	3	Maintenance
Adjustment Factor	65 %	Maintenance

Setup Feature	Default Value	Security Access
Update Table	Disabled	Maintenance
Application—Pac—Advanced—Learn Mode		
Learn Mode	Disabled	Maintenance
Test Point	40 %	Maintenance
Feed Time	3 seconds	Maintenance
Update Table	Disabled	Maintenance
Application—Pac—Advanced—Auxiliary Output		
Operation	Disabled	Maintenance
Active Cycle	Weigh-in	Maintenance
Trigger Weight (on)	0 (primary units)	Maintenance
Time (off)	1 second	Maintenance
Weight Limit (off)	0 (primary units)	Maintenance
Application—Pac—Pac Statistics		
Statistics	Enabled	Maintenance
Trigger	Fill	Maintenance
Application—Pac—Assign I/O		
Mode	Fill-560	Maintenance

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