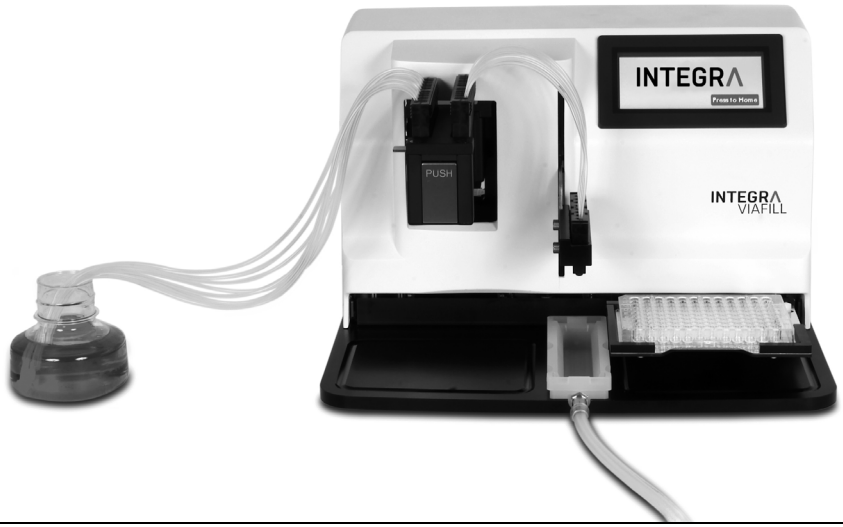
INTEGRA



VIAFILL Operating instructions

900-00006-00-V10

Declaration of conformity

INTEGRA Biosciences AG – 7205 Zizers, Switzerland

declares on its own responsibility that the devices

Description	Model
VIAFILL Dispenser	**5600**
VIAFILL Plate Stacker	**5910**

comply with:

EU Directives	**Scope**	**Date effective**
2014/35/EU	Low voltage directive (LVD)	20.04.2016
2014/30/EU	Electromagnetic compatibility (EMC)	20.04.2016
2012/19/EC	Waste electrical and electronic equipment (WEEE)	14.02.2014
2011/65/EC	Restriction of hazardous substances (RoHS)	03.01.2013
EU Regulations	**Scope**	**Date effective**
1907/2006	Registration, evaluation, authorisation and restriction of chemicals (REACH)	01.06.2007
EU Standards	**Scope**	
EN 9001:2015	Quality Management	
EN 61010-1:2010	Safety general laboratory equipment	
EN 61326-1:2013	Electromagnetic compatibility laboratory equipment	
EN 61010-2-081:2015	Safety automatic laboratory equipment	

GBR Regulations	**Scope**	**Date effective**
S.I. 2016/1101	Electrical equipment safety	08.12.2016
S.I. 2016/1091	Electromagnetic compatibility (EMC)	08.12.2016
S.I. 2013/3113	Waste electrical and electronic equipment (WEEE)	01.01.2019
S.I. 2012/3032	Restriction of hazardous substances (RoHS)	02.01.2013
GBR Standards	**Scope**	
EN 61010-1:2010	Safety general laboratory equipment	
EN 61010-2-081:2015	Safety automatic laboratory equipment	
EN 63000:2018	Restriction of hazardous substances (RoHS)	

USA Regulations	Scope
47 CFR Part 15 (FCC)	Electromagnetic compatibility (EMC)
17 CFR Parts 240 & 249b	Dodd frank “Conflict minerals”
27 CCR Parts 25102-27001	Proposition 65: The safe drinking water and toxic enforcement act
USA Standards	**Scope**
UL 61010-1:2012	Safety general laboratory equipment
UL 61010-2-081:2015	Safety automatic laboratory equipment

CAN Standards	Scope
CSA-C22.2 No. 61010-1	Safety general laboratory equipment
CSA C22.2 No. 61010-2-081	Safety automatic laboratory equipment

CHN Regulations	Scope	Date effective
Order 32/2016	Restriction of hazardous substances (RoHS)	01.07.2016
CHN Standards	**Scope**	
SJ/T 11364-2014	Restriction of hazardous substances (RoHS)	

JPN Regulations	Link	Date effective
PSE (Denan) Law	Electrical appliance and material safety law	01.01.2014

EAC Технический регламент Таможенного союза	
TP TC 004/2011	О безопасности низковольтного оборудования
TP TC 020/2011	Электромагнитная совместимость технических средств

Zizers, March 29, 2021

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Imprint

This operating instruction manual has part number 900-00006-00, the version is V10.

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Table of contents

1 Introduction

These operating instructions contain all the information required for installation, operation and maintenance of the VIAFILL.

1.1 Symbols used

The operating instructions specifically advise of residual risks with the following symbols:

WARNING

This safety symbol warns against hazards that could result in injury. It also indicates hazards for machinery, materials and the environment. It is essential that you follow the corresponding precautions.

CAUTION

This symbol cautions against potential material damage or the loss of data in a microprocessor controller. Follow the instructions.

NOTE

This symbol identifies important notes regarding the correct operation of the device and labor-saving features.

1.2 Intended use

This is a general-purpose laboratory instrument for use in research only. Any use of this instrument in a medical or IVD setting is the responsibility of the user.

The VIAFILL is a rapid reagent dispenser in the volume range of 0.5–9’999 µl using a variety of tubing sets.

If the VIAFILL is used in a manner not specified by INTEGRA Biosciences, the protection provided by the VIAFILL may be impaired.

1.3 Safety notes

1) The VIAFILL corresponds to the state of the art, complies to the recognized safety regulations and is safe to operate. The VIAFILL can be operated only when it is in perfect condition and while observing these operating instructions.
2) The device may be associated with residual risks if it is used or operated improperly by untrained personnel. Any person operating the VIAFILL must have read and understood these operating instructions, and particularly, the safety notes, or must have been instructed by supervisors so that safe operation of the device is guaranteed.
3) Do not open or modify the VIAFILL in any way. The back panel must not be removed. Repairs may only be performed by INTEGRA Biosciences AG or by an authorized after-sales service member.
4) Parts may be replaced with original INTEGRA Biosciences parts only.
5) AC Inlet: If any abnormalities occur such as smoking or ignition, immediately disconnect device (AC Inlet) from power supply. Therefore, set up VIAFILL where it is easy to insert and remove a power cable from AC Inlet.
6) Outlet Requirement: Only use grounded outlets when plugging in the VIAFILL. DO NOT USE UNGROUNDED OUTLETS!
7) Do not use the VIAFILL near flammable material or in explosive areas. Also, do not pipette highly flammable liquids such as acetone or ether.
8) When handling dangerous substances, comply with the material safety data sheet (MSDS) and with all safety guidelines such as the use of protective clothing and safety goggles.
9) Prolonged exposure of the VIAFILL to UV-light can cause discoloration and/or yellowing of the control unit. However, this will not affect the performance of the device in any way.

Regardless of the listed safety notes, additional applicable regulations and guidelines of trade associations, health authorities, trade supervisory offices, etc. must be observed.

Please visit our website www.integra-biosciences.com on a regular basis for up to date information regarding REACH classified chemicals contained in our products.

2 Description of the device

2.1 Scope of delivery

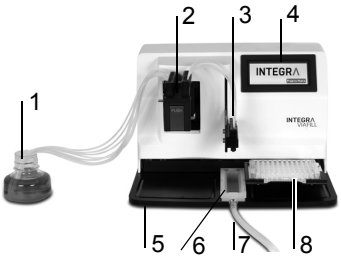
- VIAFILL base unit
- Reservoir holder with waste nozzle
- Waste tubing
- 8 channel plastic dispensing cassette, sterile, 5–9999 µl
- Power cord
- Operating instructions

CAUTION

Verify the scope of delivery when unpacking the device and check for potential transportation damage. Do not operate a device that is damaged, instead contact your local dealer.

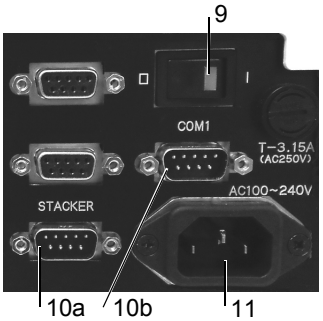
2.2 Overview of the VIAFILL

2.2.1 Front view



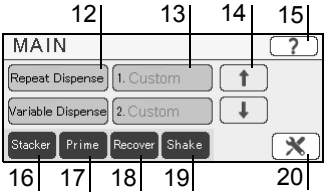
1 **Source bottle** with source tubings and weight
2 **Pump head** with rotor and inserted dispensing cassette
3 **Pipetting arm** with dispensing cartridge
4 **Touch screen display**
5 **VIAFILL base**
6 **Waste station,** reservoir holder with waste nozzle
7 **Waste tubing**
8 **Plate sledge**, moves the plates

2.2.2 Back view



9 **Main switch**
10 **RS232 Ports:**
10a for stacker
10b additional port for PC
11 **Power supply port**

2.2.3 Display and buttons of the main menu



12 **Pipetting functions**

13 **Custom programs**

14 **Arrow keys**, to select custom programs

15 **Help**, to explain screens.

16 **Stacker**, option to stack plates, will be highlighted if STACKER is properly connected.

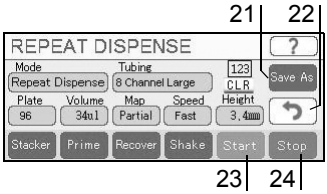
17 **Prime** button aspirates the source fluid, fills the dispensing cassette and pre-dispenses the source fluid.

18 **Recover**, reverse pump movement to recover the liquid from the tubing into the source bottle.

19 **Shake**, to shake the plate linearly.

20 **Toolbox**, for general settings.

2.2.4 Buttons of pipetting functions



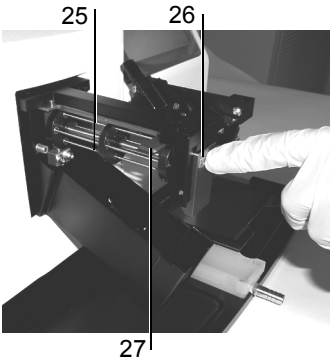
21 **Save as**, to save the pipetting parameters with a custom name.

22 **Back**, to navigate to the previous screen.

23 **Start**, to start the dispensing protocol.

24 **Stop**, to stop the protocol at any time.

2.2.5 Pump head

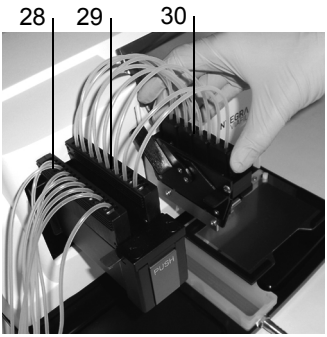


25 **Pump rollers**, peristaltic pump rotors where cartridge tubings are stretched against.

26 **Green PUSH button**, to lower the housing of the pump rotor.

27 **Silver lever**, down position for loading of dispensing cassettes and to release the tubing tension (rest position).

2.2.6 Dispensing cassette



28 **Left tubing cartridge** with two holes, inserted on the silver lever.

29 **Right tubing cartridge**, placed in the groove on the pump head.

30 **Dispensing cartridge**, inserted on the holder of the pipetting arm.

Tubing set on display	Dispensing cassettes ordering info	Part No.
8 Channel Large	8 channel, standard bore	5724
8 Channel Small	8 channel, small bore	5722
16 Channel	16 channel, small bore	5742

3 Installation

3.1 Operating environment

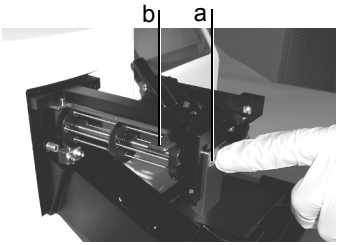
The VIAFILL has been designed for use in a laboratory. It shall be operated in a dry and dust-free location without large temperature fluctuations or direct sunlight. Place the VIAFILL on a flat, dry, clean and vibration-proof bench. Leave at least 10 cm (3.9 in.) space on both sides and on the back to allow adequate air circulation.

3.2 Assembling the instrument

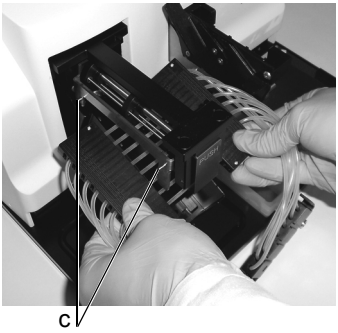
Unpack the VIAFILL from the packaging configuration. Attach the power cord. Ensure that the mains switch (9) on the back panel is in the OFF position.

3.2.1 Installing the dispensing cassettes

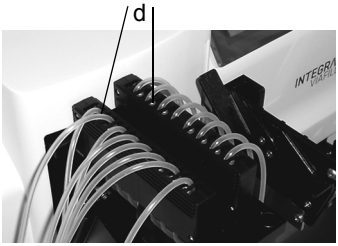
Different dispensing cassettes can be used with the VIAFILL. A dispensing cassette is designed for rapid reagent addition using the Repeat Dispense and Variable Dispense functions.



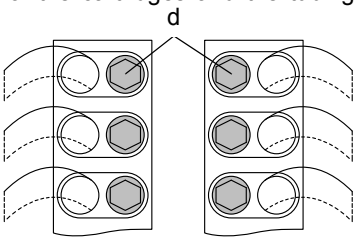
1) Press the green **PUSH** button (a) on the front of the pump head (2) to lower the housing and reveal the rollers that the tubing must be clamped against.
2) Press the silver lever (b) into the down position. This will allow the dispensing cassette to be loaded.

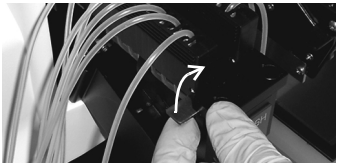


3) Hold the black left and the right dispensing cartridge below the rollers of the pump head, so that the tubings points downwards and the screws upwards. Fit the two holes on the inside of the left cartridge (28) with the two silver pins (c) located on the sliver lever. Position an equal number of tubes in front of and behind of the middle black roller wheel (25).

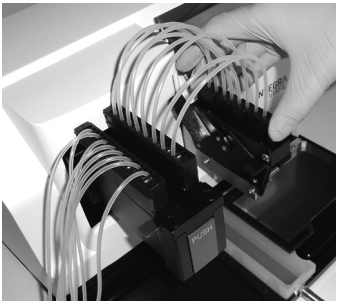


4) Stretch the right black cartridge (29) upwards and set vertically into the groove on top of the pump head.
5) Ensure all (16 or 32) adjustment screws (d) are on the inside of the cartridges and the tubings on the outside!





6) Pull the sliver lever (27) back up into position, as shown by the arrow. Both black cartridges should now be in the upright position.
7) Lift the black pump housing back into position until it clicks into place.



8) Place the dispensing cartridge (30) into cassette holder on the pipetting arm.
9) Put the source tubings, connected with the weight, into the source container.

3.2.2 Tubing selection for 6 through 48 well dispensing

Simply disconnect the appropriate tubing from the source tubing weight (1) to adapt the tubing to dispense liquid into 6, 12, 24, and 48 well plates.

Below is an instructional diagram for use of 8 channel cassette tubing sets on 6, 12, 24, and 48 well plates. Simply attach the 8 channel cassettes (5722 & 5724) and disconnect the tubes shown below. Tube one is closest to the instrument. Select the desired program; select the correct 8 channel tubing set and a 96 well plate.

	6 Well Plate	**12 Well Plate**	**24 Well Plate**	**48 Well Plate**
Tube 1	disconnect	disconnect		
Tube 2			disconnect	
Tube 3	disconnect	disconnect		disconnect
Tube 4	disconnect		disconnect	
Tube 5	disconnect	disconnect	disconnect	
Tube 6		disconnect		
Tube 7	disconnect		disconnect	disconnect
Tube 8	disconnect	disconnect		

3.3 Plate stacker (optional)

The VIAFILL plate stacker allows for microwell plates to be stored, dispensed to and then stacked. Two plate chimneys are available with the capacity of 25 plates or 50 plates and must be ordered separately.

3.3.1 Materials included

Unpack the plate stacker and confirm the contents. These include:

- Stacker base unit
- Power cable
- RS232C serial communication cable
- Stacker reservoir with 2 hexagon screws
- Waste tubing
- Chimney mounting hardware (2 support brackets, 4 hexagon head screws and 4 washers)
- 2 clips
- De-lidding assembly (main assembly, 4 hexagon head screws, 2 Philip head screws)

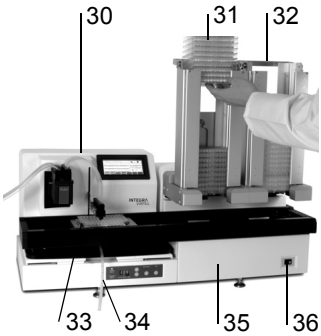
NOTE

Stacker Chimneys sold separately from base unit. Two Chimneys must be ordered to use the stacker properly.

Two individuals are required to lift the stacker base unit onto a level bench.

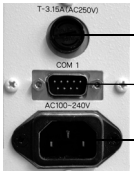
3.3.2 Description of the stacker

Front view



30 **VIAFILL base unit**, not included
31 **Plate chimney position 1**, not included
32 **Plate chimney position 2**, not included
33 **Plate carrier** of the stacker, moves the plates
34 **Waste tubing**, from stacker reservoir
35 **Stacker base unit**
36 **Stacker ON/OFF switch**

Back view

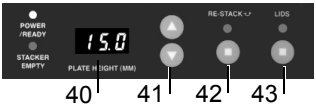


37 **Fuse**

38 **RS232 Port**, for VIAFILL

39 **Power supply port**

Front panel



40 **PLATE HEIGHT**, currently set

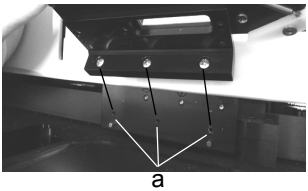
41 **Arrow keys**, to adjust the plate height

42 **RE-STACK**, to restack the plates back to the first chimney position

43 **LIDS**, to remove the lids before dispensing

3.3.3 Stacker set up

1) Remove the VIAFILL reservoir and plate sledge:

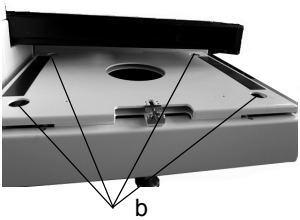


Simply slide the reservoir holder out of the VIAFILL base.

Three cross slot screws (a) need to be removed on the underside of the plate sledge (8). This will allow the entire plate sledge to be removed.

Store the plate sledge and the screws safely.

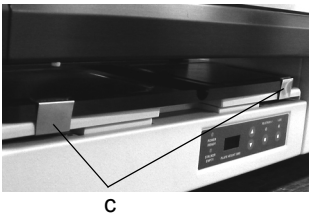
2) Slide the VIAFILL onto the stacker:



Slide the VIAFILL from the back onto the stacker base unit (35).

The VIAFILL feet will fit into four holes (b) on the deck of the stacker.

3) Attach the clips:



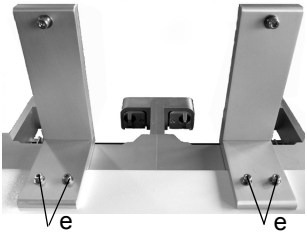
Secure the VIAFILL base to the stacker rail by attaching the two clips (c). If the VIAFILL is not fixed stage alignment is not possible.

4) Insert the stacker reservoir:

Attach the waste tubing to the stacker reservoir and tighten the 2 screws (d) with a hexagon wrench.

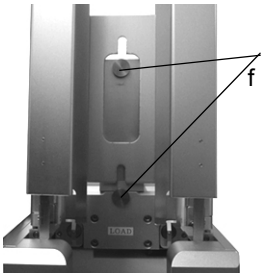
5) Asseble the chimneys:

Put the hexagon head screws with 1 washer each in the holes of the support brackets.



From the back of the stacker put the support brackets on the top of the Stacker Base and pull them to their stop.

Screw the support brackets with 2 hexagon head screws and washers each (e) on stacker base by using hexagon wrench.



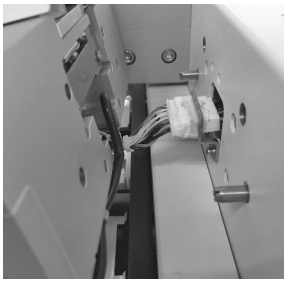
Connect the stacker chimneys by lowering them over the pins (f) on the chimney support brackets.

6) Connect the cables:
Connect the RS232C cable from the port of the Stacker Base (38) to the marked port on the back panel of the VIAFILL (10a). Attach the power cords. Turn on the power for both the VIAFILL and the Stacker.

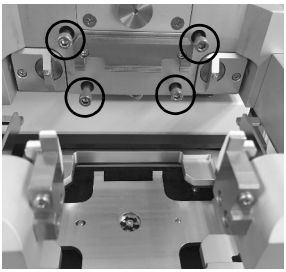
3.3.4 De-lidding assembly

The de-lidding assembly is included with all VIAFILL Stacker units.

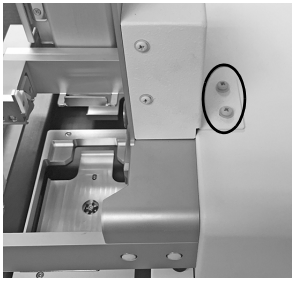
The assembly includes 4 hex screws and 2 Philip head screws.



Connect de-lidding assembly cable.



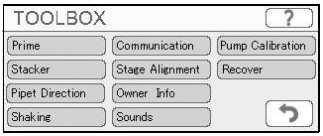
Align and attach with four hex screws. Make sure the cable is not pinched between the stacker and the assembly.



Align and attach top of assembly to top of stacker housing using two Philip head screws.

4 Toolbox - Adapt your VIAFILL

The **TOOLBOX** is accessible from the **MAIN** Menu and the different function screens (Repeat Dispense and Variable Dispense).

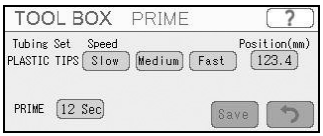


Simply press the **Toolbox** icon in the lower right corner of the VIAFILL MAIN menu to access the **TOOLBOX** menu. Once in the **TOOLBOX**, select the desired function to change its settings.

Toolbox options	Description
Prime	Allows the height and speed of the prime to be adjusted for the dispensing cassette.
Stacker	Allows the Stacker to be turned ON or OFF.
Pipet Direction	Choose from Straight and Stagger pipetting directions.
Shaking	Sets the shaking time.
Communication	Turns PC communication capability on (YES) or off (NO).
Stage Alignment	Allows cassette nozzles to be properly positioned over a well.
Owner Info	Displays the serial number, software version and display version. The owner name can also be modified using this option.
Sounds	Allows beep tones to be turned on (YES) or off (NO).
Pump Calibration	Allows to change the calibration factor of the pump.
Recover	Allows the height and speed of the recover function to be adjusted for the dispensing cassette.

4.1 Prime

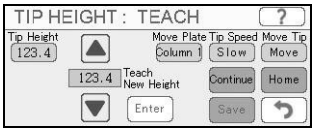
A prime is performed when pressing the **Prime** button in the function menus (Repeat Dispense and Variable Dispense).



Prime speeds can be set, select one of the **Speed** buttons **Slow**, **Medium** or **Fast**.

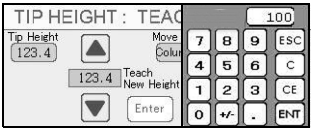
Set the prime time. This refers to how long the pump will move.

Press the **Position (mm)** button to adjust the height that the prime and purge into the waste station will be performed at.



The current tip height setting is displayed on the left of the screen.

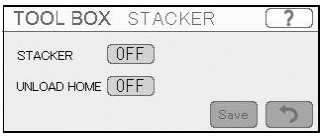
a) Press the **Column 1** button titled Move Plate to move the Plate carrier to the far right. Use this position to set the heights.
b) Adjust the tip adjustment speed by pressing the **Fast**/**Slow** and **Continue**/**Step** buttons. Press the ▲ **Up** and ▼ **Down** arrows to adjust the tip height.
c) Press **Enter** to select the tip height and press **Save** to continue.



The height can also be entered using a keypad by pressing the button below Tip Height. Once the numerical value is entered, confirm with **ENT**. Press **Move** titled **Move Tip** to move the pipet tips to the new tip height (or alternatively to the upmost position by pressing **Home**). Press **Save** to continue.

4.2 Stacker (optional)

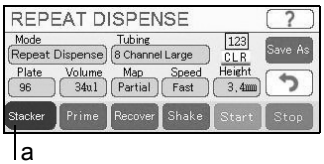
4.2.1 Put the VIAFILL into “Stacker” mode.



Press **Stacker** in the **TOOLBOX** main menu to turn the **STACKER ON** (and **OFF**).

Turn **UNLOAD HOME ON** and the Plate carrier of the stacker will restack the plate to unload the carrier to the left chimney at the beginning of the run to prevent that a plate is loaded twice. The stacker will confirm there are no plates on the carrier.

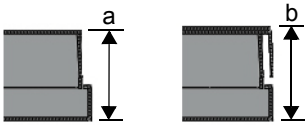
Press **Save** to continue.



The **Stacker** button (a) will appear dark green if the stacker is activated and installed correctly.

4.2.2 Adjust plate height

Enter the plate height (in mm) with the arrow keys on the front panel of the stacker.



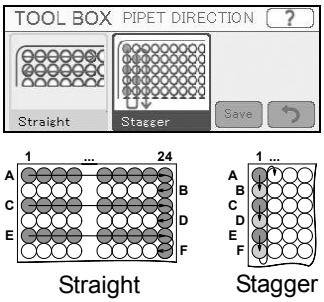
If the plate height is not known, measure the distance from the bottom of the well plate to:

- the top of the plate rim (a) or
- the top of the lid for lidded plates (b).

The plate height determines when the grippers are engaged to hold the stack of plates above the single lidded plate being dispensed to. This measurement needs to be exact to ensure the grippers engage at the base of the second plate from the bottom of the stack. It is best to test the de-lidding function with only two lidded plates to ensure the correct height is entered.

4.3 Pipet Direction

The function only applies when using an eight channel tube set to dispense to a 384 well plate or when using a sixteen channel tube set to dispense to a 1536 well plate. The plates are filled in two steps, depending on the defined pipetting direction:

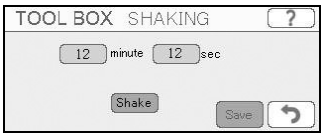


- **Straight**: first every other row (A, C, E,...) is dispensed, starting from the first column and then the pipetting arm shifts sideways to fill the remaining rows (B, D, F,...) starting from the last column.
- **Stagger**: every column is dispensed in two steps starting from the first column with every other rows (A, C, E,...) and then followed by the remaining rows (B, D, F,...).

Select the preferred pipetting direction and press **Save** to continue.

4.4 Shaking

The **Shaking** option can set shaking time in minutes and seconds.



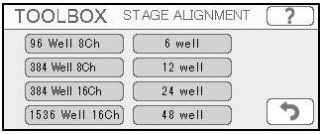
Set the shaking time on the beside screen.

When this **Shake** button is pressed, the button becomes dark green and the setting time is operated.

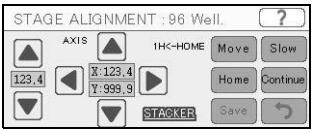
4.5 Communication

Turn the communication capability on (**YES**) or off (**NO**). This enables users to communicate to the VIAFILL using API commands via a PC.

4.6 Stage Alignment

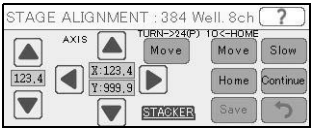


Adjust the plate stage for differing well plate and tubing set combinations. This option ensures the dispensing nozzles are centered over the microplate wells. The STAGE ALIGNMENT screen will appear once the button is pressed.



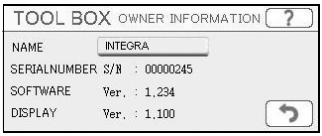
First, press the **Move** button to position the plate in the teach position. Press **Fast**/**Slow** and **Continue/Step** to adjust the Plate carrier and Pipetting arm movement speeds. Use the ▲ **Up** and ▼ **Down** arrow buttons on the left to position the dispensing tips above the plate.
Adjust the X and Y stage position to the desired location by the arrow (◀, ▶, ▲, ▼) buttons.
Press **Save** to update and save current settings.

Alignment of 384 well plate with 8 channel or 1536 well with 16 channel cassette:



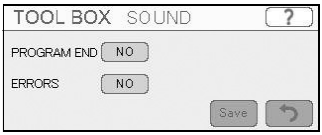
With these combinations the home position and the turn point must be teached.
For 384 well plate, press **Move 1O<-HOME** and the **ARROW** buttons to position the front most dispensing tip above the center of well 1O. Press **SAVE**.
Now press, **Move TURN ->24P** and the **ARROW** buttons to position the front most dispensing tip above well 24P.
Press **Save** to save current settings.

4.7 Owner Information



Press the **NAME** button to change the owner and press **Save**. The SERIAL NUMBER, SOFTWARE version and DISPLAY version is also shown here. Press **Back** to continue.

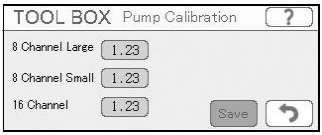
4.8 Sounds



Turn beep tones on or off by selecting the buttons **YES** or **NO**. Sounds can be managed for PROGRAM END and ERRORS. Press **Save** to continue.

4.9 Pump Calibration

Each tubing sets factory setting is 1.00 (100 percent). To change the calibration factor, simply press the value next to the desired tubing set.



Use the keypad to adjust the calibration factor. To increase the volume by one percent; press 1.01 and press **Enter**.

Press **Save** to continue.

4.10 Recover

The recover function reverses the peristaltic pump direction to move the liquid in the tubing back in to the source container.

Press one of the three RECOVER speeds (**Slow, Medium, Fast**).

Press the **Position (mm)** button to adjust the height that the RECOVER will be performed at, see 4.6.

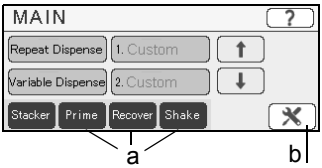
Set the recover time.This refers to how long the pump will move in the reverse direction to 'recover' any reagent in the tubing cassette.

5 Operation

5.1 Turn on the device

CAUTION
Remove hands from the VIAFILL at switch on and during homing.

Turn on the VIAFILL by pressing the main switch (9) that is located on the back panel.



If the VIAFILL starts properly:

- the display lights up,
- you are prompted to **Press to Home** to perform a homing routine,
- the **MAIN** menu is displayed as shown beside.

The time settings of **Prime**, **Recover** or **Shake** buttons (a) are defined in the **TOOLBOX** (b). When one of these buttons is pressed, the button becomes dark green and each motion specified by the setting time is operated. If the button is pressed again during operation, the movement will stop immediately.

5.2 Quick start guide

The following quick start list gives you an overview how to start pipetting immediately:

1) Insert an appropriate dispensing cassette, see 3.2.1.
2) Turn on the VIAFILL.
3) Define the prime and recover heights in the **TOOLBOX**, see 4.1 and 4.10.
4) Select one of the pipetting functions from the **MAIN** menu.
5) Check or change the tubing set, the plate, the dispense volume, the map which wells to fill, the speeds, and the tip height, see 5.3.
   Alternatively select a custom function with all parameters stored.
6) Press **Prime** until liquid is dispensed from tips.
7) Press the green **Start** button to start.
8) Before prolonged standby, wash the cassette and store it in the rest position, see 6.1.
9) Turn off the VIAFILL.

5.3 Set parameters of pipetting functions

5.3.1 Predefined Functions

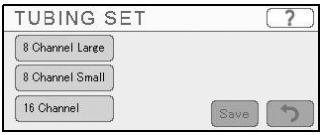
The VIAFILL provides the following pipetting functions:

Repeat Dispense:
The function is designed to rapidly fill a micro plate from a source container.

Variable Dispense:
The function is designed to rapidly fill differing volumes to a micro plate from a source container. The volumes can be programmed for each individual column.

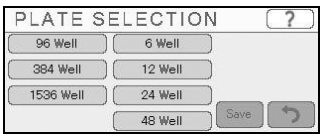
Select the **Repeat Dispense** or **Variable Dispense** function from the **MAIN** menu and set the desired parameters.

1) Select the tubing set
Press the button below **Tubing** in the selected pipetting menu. Select the tubing set that is currently installed in the VIAFILL (see "2.2.6 Dispensing cassette" on page 11) and press **Save**.



The 16-Channel tubing sets are grayed out if the current destination plate is a 96 well plate. Select a 384 well plate to allow the selection of 16-Channel tubing sets.

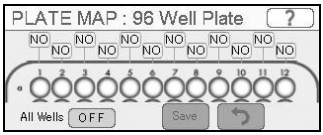
2) Select the plate that is located on the deck
Press the **Plate** option in the selected pipetting menu.



Match the plate on the screen to the plate that is seated on the VIAFILL Plate sledge. After selecting the correct plate, press the **Save** button.

See section 3.2.2 to see what tubes to disconnect to dispense to a 6, 12, 24 or 48 well plates.

3) Select which wells to fill
Press the plate **Map** option in the selected pipetting menu.



Press the **YES** and **NO** buttons to select and deselect columns. Press the **All Wells** button to select (**ON)** or deselect (**OFF**) the entire plate.

Press the **Save** button to continue.

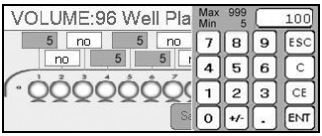
For filling less than 96-well plates some tubes need to be removed from source, see "3.2.2 Tubing selection for 6 through 48 well dispensing" on page 14. In addition, the corresponding columns have to be deactivated in order to obtain a correct and clean filling.

4) Select dispense volume(s)
Press the **Volume** button in the selected pipetting menu.

Repeat dispense:

Press the **Dispense** volume input field to display the keypad. Enter the desired volume being dispensed to each well and press **ENT**.
Press **Save** to continue.

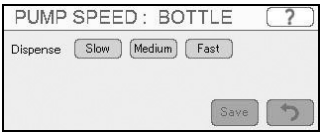
Variable dispense:



Only the wells that were selected as **YES** in the plate **MAP** screen are allowed to be edited. Press the column volume indicator to activate the volume keypad as shown here. Enter the desired volume for each column and press **ENT**.

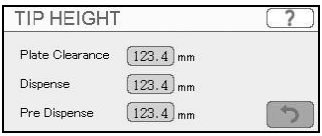
Press **Save** to continue.

5) Select the speeds
Press the **Speed** button in the selected pipetting menu.



Select the desired dispense speed and press **Save**.

6) Adjust the tip height
Press the **Height** button in the selected pipetting menu.



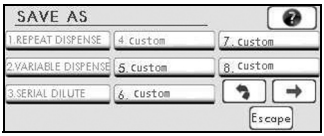
The plate clearance, dispense and pre-dispense heights can all be easily adjusted.

- **Plate Clearance**: The distance the dispensing cassette parks over the plate when the plate is moving between wells.
- **Dispense**: The height of each column dispense.
- **Pre Dispense**: The height the dispensing cassette dispenses to the Waste station before dispensing to the plate.

5.3.2 Custom programs

Save a program

You should save programs as custom programs to maintain the parameter settings, especially the tip height values of **Repeat Dispense** or **Variable Dispense**.



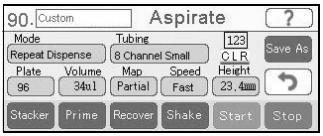
Press **Save As** to save the parameters with a custom name. The screen beside will appear. Select which custom program position to overwrite.

Click on the custom text box title of the selected program. The keypad will appear to enter a custom name.

Once the Custom name is entered, press **SAVE**.

Create a new custom program

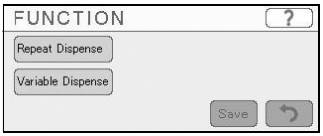
In addition to saving a program as a custom program, the VIAFILL software allows the user to start with a blank custom program. This allows a user to select the function (Repeat Dispense or Variable Dispense). All other settings should be chosen the same as any other program mode.



Select any of the 94 **custom** buttons from the **MAIN** menu using the **Arrow keys**. This will take you to the Custom programming main screen.

Press the Custom text box on the top to display the keypad, enter the desired Custom name and press **SAVE**.

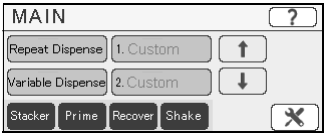
Unlike the other modes, the function can be changed in custom programming.



Press the **Mode** key and select the desired function. This will determine which options are available. (Repeat Dispense only allows one volume to dispensed to all columns and Variable Dispense allows unique volumes to be dispensed to each column.)

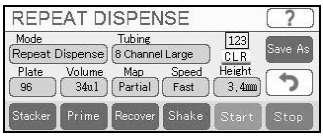
To complete the rest of the function programming see the individual programming instructions for each option (5.3).

Copy a program



From the **MAIN** menu select one of the custom programs. Change all desired parameters and save the program with a new custom name.

5.4 Run a program



Press the green **Start** button to start the dispenses.

Press the **Stop** button at any time to pause the program.

Once the program is paused, press **Continue** to resume or **END** to cancel the program.

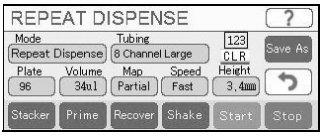
5.5 Special functions

5.5.1 Prime

WARNING

*Before priming the dispensing cassette, set the prime height in the **TOOLBOX**, see* “4.1 Prime” on page 20.

A prime needs to be performed before the dispensing cassettes can be used for dispensing. The prime function draws the bottle source fluid through the tubing sets and prepares the tubing set for dispensing.



Enter the **MAIN** screen for the method being performed (Repeat Dispense or Variable Dispense).

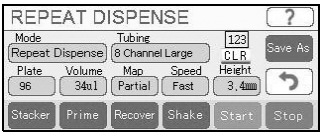
Prime until the source fluid is dispensed from all dispensing cassettes nozzles. You can set a time in the **Prime** TOOLBOX option. Press **Prime** once to run for defined amount of time. You can stop the priming immediately by pressing the **Prime** button a second time.

5.5.2 Recover

WARNING

*Before using the recover function; set the recover height in the **TOOLBOX**, see* “4.10 Recover” on page 24.

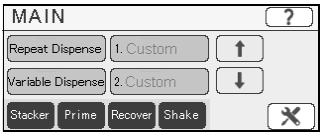
The recover function should be used when users are finished dispensing with dispensing cassettes. This function reverses the pump motion and pulls the reagent back into the source container.



Enter the Main function screen for the method being performed (Repeat Dispense or Variable Dispense).

Recover until the reagent is completely removed from the dispensing cassette. You can also set a time in the **Recover** TOOLBOX option. Press **Recover** once to run for defined amount of time. You can stop the recovering immediately by pressing the **Recover** button a second time.

5.5.3 Shaking

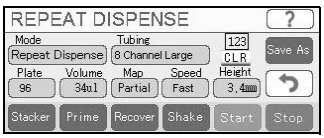


The **Shake** button is located on the VIAFILL **MAIN** menu and in all function **MAIN** menus (Repeat Dispense or Variable Dispense). Shaking plates helps to homogenize the reagent while simultaneously reducing air bubbles within the reagent. Simply press the **Shake** button to shake plates for the time defined in the TOOLBOX. Pressing the **Shake** button a second time stops the shaking immediately.

5.6 Stacker function (optional)

The VIAFILL plate stacker allows for microwell plates to be stored, dispensed to and then restacked. Ensure, that the stacker option is turned ON, see “4.2 Stacker (optional)” on page 21. The VIAFILL stacker is also capable of stacking deep well blocks. Simply adjust the plate height on the stacker as described in section 4.2.2 and check the tip heights in the specific function menu to use the stacker with plates of differing heights.

Turn on the Stacker on the right of the front panel (36) and the VIAFILL on the back left (9). The homing routine will syncronize the stacker and the VIAFILL. Select either **Repeat Dispense** and **Variable Dispense** or a Custom program to begin.



The stacker plate counter (CLR) is shown on the right side of the **Repeat Dispense** and **Variable Dispense** screens.

5.6.1 Lid stack

When using lidded plates, ensure that the correct plate height is entered on the stacker key pad, see “4.2.2 Adjust plate height” on page 22.

Press the LIDS option on the front panel of the stacker (43) to activate the plate/lid function. This will remove lids from each plate, store it, dispense to the plate and then replace the lid before stacking. Turn this function ON or OFF at any time by pressing the button.

5.6.2 Plate Re-stack

Press the RE-STACK button on the front panel of the stacker (42) to activate the plate restack function. After filling all plates, the stacker will then re-stack the plates back to the first chimney position. This ensures that the microwell plates return to the same order that they were loaded in.

5.7 Troubleshooting/FAQ

5.7.1 VIAFILL base unit

Problem	Probable cause	Remedy
Peristaltic pump does not rotate.	Tubings are not correctly positioned on the roller wheel.	Turn off VIAFILL. See section 3.2.1 to confirm the tubing set is installed correctly.
Plate sledge does not move.	Software malfunction.	Switch the device off and on. Contact service technician.
Position error of pipetting arm.	Tip heights defined too low.	Define appropriate clearance heights. See 6) in section 5.3 for how to adjust tip heights.
The dispensing nozzles do not line up with the center of the wells.	The stage alignment has not been set correctly.	Select the Stage Alignment option in the TOOLBOX. See section 4.6 for how to adjust the stage alignment.
The desired height was not saved.	The height was not entered correctly.	Once the desired height is selected, press Enter and then press Save. This will ensure the height is saved properly.
The 384 stage alignment does not allow the dispensing nozzle to reach the center of both wells on a 384 well plate (4.6).	Belt movement malfunction.	Contact service technician.

5.7.2 Stacker

Problem	Probable cause	Remedy
The stacker does not communicate with the VIAFILL.	The stacker option was not activated in the TOOLBOX.	Go to the stacker option in the TOOLBOX menu. Turn the stacker option ON (4.2). Restart both the VIAFILL and Stacker.
	The RS232 cable is not connected properly.	Connect the RS232 cable as described in section 3.3.3.
The lid function is not working properly.	Incorrect height entered into plate height option on the front stacker panel.	Enter the correct height (in mm), see 4.3.
The Start button will not activate the VIAFILL/Stacker.	The plate counter has reached the limit 999.	Reset the plate counter with the reset arrow button (in the Repeat Dispense or Variable Dispense function run screen).

6 Maintenance

6.1 Washing the dispensing cassettes and period of non-use

CAUTION

Handle the dispensing cassettes with great care so that the tubes and tips do not get damaged. When operating with small bore dispensing cassettes, ensure that the liquid does not contain any particles >50 µm.

For a break of one day or longer, empty the tubings by pressing the **Recover** button. Wash the cassette by priming it with deionized water or, if necessary, with washing detergent followed with deionized water. Ensure that all tubings are washed properly. Empty the tubings by pressing **Recover**. The cassette can be dried at room temperature.

Press the green **PUSH** button (26) on the front of the pump head (2) to lower the housing. Release the tubing tension by pressing the silver lever (27) into the down position.

CAUTION

The tubing tension should be released whenever the VIAFILL is not in use!

6.2 Cleaning the VIAFILL

WARNING

Always turn off power and unplug the power supply before cleaning the exterior.

Spilt fluids can damage the outer surface and internal components.

For reliable daily operation, keep the VIAFILL free of dust and liquid spills. Immediately wipe away spilt acids, solvents, alkaline or saline solutions to prevent damage.

The materials used on the exterior of the VIAFILL support regular cleaning intervals. Clean the external components periodically with a moistened lint-free cloth or Kim wipe lightly soaked with mild soap solution in distilled water. Also, a 70% dilution of Isopropyl or Ethanol alcohol mix can be used. Never use acetone or other solvents.

6.3 Decontamination of the VIAFILL

Decontamination is not required for the proper functioning of the VIAFILL. Only if any surfaces have been in direct contact with biohazardous material, they must be decontaminated in accordance to good laboratory practice. Wipe the clean surface with a lint-free cloth, lightly soaked e. g. with the following disinfectants:

- Ethanol 70%
- Microcide SQ 1:64
- Glutaraldehyde solution 4%
- Virkon solution 1–3%

Follow the instructions provided with the reagents.

6.4 Decontamination of the dispensing cassettes

The whole dispensing cassettes with tubings can be autoclaved a maximum of ten times each at 1 bar pressure at 121 °C for 20 min. Replace dispensing cassette after ten autoclave cycles!

CAUTION
After autoclaving, the dispensing cassettes must cool down to room temperature before use.
Do not autoclave any other parts of the VIAFILL than specified.

Alternatively, the dispensing cassettes can be decontaminated in Virkon 1–3%, Ethanol 70% or glutaraldehyde 4% solution for 10 minutes. Afterwards rinse them with deionized water.

6.5 Cleaning the tips

NOTE
Place the source tubing in a separate bottle filled with deionized water to prevent particles re-entering the reagent.

If any tips of the dispensing cassettes are clogged, try one of the following procedures:

- Rinse the tips by pressing the **Recover** and the **Prime** button alternatively.
- Dismount the dispensing cassette. Fill a 20 ml syringe with deionized water or ethanol, attach a round sterile filter and put a suitable short tubing on the syringe and on the outlet of the tip. Press liquid through the tip. To verify the cleaning, put the syringe to the tip inlet and check if liquid is coming out of the tip while pressing liquid through.

6.6 Servicing

INTEGRA Biosciences recommends annual preventative maintenance service for the VIAFILL dispenser. Please contact INTEGRA for pricing and details.

If liquid ever enters the internals of your VIAFILL, please contact INTEGRA Biosciences for service advice.

WARNING
If working with infectious materials, e. g. human pathogens, VIAFILL needs to be decontaminated before sending them to service and the declaration on the absence of health hazards must be signed. This is necessary to protect service personnel.

6.7 Calibration

The VIAFILL and each dispensing cassette is calibrated by the manufacturer to ensure that each channel is accurate. You can gravimetrically determine the accuracy of an entire dispensing cassette, i. e. the ability of the pump to dispense the exact volume desired.

Weigh a micro plate and dispense distilled water into the first column using the repeat dispense function. Weigh the plate again and calculate the weight of the actual volume. Repeat this procedure with a calibrated pipette and calculate the weight of the target volume. Determine the percent deviation of the actual to the target weight and adjust the calibration factor, see “4.9 Pump Calibration” auf Seite 24, if necessary.

6.8 Equipment disposal

The VIAFILL is labeled with the “crossed-out wheeled bin” symbol to indicate that this device must not be disposed of with unsorted municipal waste. Instead, it is your responsibility to correctly dispose of your waste equipment by handing it over to an authorized facility for separate collection and recycling. It is also your responsibility to decontaminate the device in case of biological, chemical, and/or radiological contamination so as to protect from health hazards the persons involved in the disposal and recycling of equipment.

For more information about where you can drop off your waste equipment for recycling, please contact your local dealer from whom you originally purchased the product or your local council.

By doing so, you will help conserve natural resources and you will ensure that your waste equipment is recycled in a manner that protects human health and the environment. Thank you!

7 Technical Data

7.1 Environmental conditions

	Operation
Temperature range	5–35 °C
Humidity range	Max. rel. humidity 80 % for temperatures up to 31 °C, decreasing linearly to 50 % rel. humidity at 40 °C.
Altitude range	<2000 m

7.2 Specification of the device

Dimensions (L x W x H)	37.5 cm x 30.5 cm x 24.0 cm (14.76” x 12.00” x 9.45”)
VIAFILL weight	10.66 kg (23.5 lbs)
Electricity supply	Device input: 100–240 VAC, 50/60 Hz, 66 W
Dispense speeds	18 seconds (100 µl to 96 well)
Compatible plate formats	6, 12, 24, 48, 96, 384, 1536 Shallow & Deep Well Plates
Volume range	0.5 µl to 9999 µl
Bore size of plastic tubing sets	Small: 0.3 mm (0.012”), Standard: 0.5 mm (0.018”)
User interface	Touch Screen
Amperage rating	0.8 A Max (AC 100 V), maximum allowable current
Voltage tolerance	±10 %
Outlet type	VIAFILL must use grounded outlets only!
Fuse rating	AC 250 V, T 3.15 AL

Device	**Material**
Housing	Cast Urethane
Black base	Anodized Aluminium
Display	PET film with hardcoat
Plate carrier	Stainless steel
VIAFILL cassette	**Material**
Tubing	Silicone
Tubing collector (sinker)	Polypropylene
Cartridges (black)	Duracons (Polyxymethylene) and Duranex (Polybutyleneterephalate)
Dispensing tips (transparent)	Polypropylene

7.3 Intellectual property

The VIAFILL is covered under the following patent:

Patent Number	Country	Title
8,591,832	USA	Multi-Channel Wellplate Filling System

7.4 Dispense speed

Dispensing option	Well plate	1 µl	10 µl	50 µl	100 µl
8 Channel small bore cassette	96 well	5.6 s	7.6 s	15.1 s	23.8 s
8 Channel small bore cassette	384 well	11.9 s	17.9 s	47.7 s	84.5 s
8 Channel standard bore cassette	96 well	NA	5.8 s	7.3 s	9.8 s
8 Channel standard bore cassette	384 well	NA	11.6 s	18.3 s	26.2 s
16 Channel small bore cassette	384 well	7.6 s	10.4 s	25.5 s	43.7 s
16 Channel small bore cassette	1536 well	17.6 s	30.5 s	NA	NA

Conditions:
Dispense speed: fast
Dispense direction: straight
Mode: Repeat dispense

7.5 Dead volumes for dispensing cassettes

Dispensing cassette	Part No.	Dead volume per tube	Dead volume per cassette
8 Channel small bore	5722	200 µl	1.60 ml
8 Channel standard bore	5724	860 µl	6.88 ml
16 Channel small bore	5742	200 µl	3.2 ml

7.6 Specification of the stacker (optional)

Dimensions (L x W)	78.75 cm x 31.75 cm (31" x 12.5")
with 25 Plate chimney (H)	62.23 cm
with 50 Plate chimney (H)	94.62 cm
Base unit weight	27 kg
Power requirements	100–240 VAC, 50/60 Hz, 110 W
Amperage rating	2.0 A Max (AC 100 V), maximum allowable current
Interface cable	RS232C
Detection method	Optical sensor

7.7 Accuracy and precision specifications

Dispensing cassettes:

	Volume	Accuracy	Precision	Recommended
8 channel small bore	100 µl	±1.5%	≤1.0%	1000 plates
	2.0 µl	±3.0%	≤4.0%	
8 channel standard bore	200 µl	±1.5%	≤1.0%	2000 plates
	20.0 µl	±2.0%	≤3.0%	
16 channel small bore	100 µl	±1.5%	≤1.0%	1000 plates
	2.0 µl	±3.0%	≤4.0%	

8 Accessories and consumables

8.1 Accessories

Accessories		Part No.
Plate Stacker	base unit	5910
Plate Stacker Chimney	25 plate capacity (1 each)	5915
	50 plate capacity (1 each)	5916

8.2 Consumables

Dispensing cassettes		Part No.
8 channel, small bore	plastic dispensing cassette, sterile, 0.5–999 µl, 5 per case	5722
8 channel, standard bore	plastic dispensing cassette, sterile, 5–9999 µl, 5 per case	5724
16 channel, small bore	plastic dispensing cassette, sterile, 0.5–999 µl, 5 per case	5742

Reagent Reservoirs		Part No.
10 ml	Disposable reagent reservoirs, individually sealed, 30 reservoirs per case, sterile	4331
	Disposable reagent reservoirs, four sleeves of 50 reservoirs per case, sterile	4332
	Reservoir Base, 10 pack	4306
25 ml	Disposable reagent reservoirs, individually sealed, 30 reservoirs per case, sterile	4311
	Disposable reagent reservoirs, four sleeves of 50 reservoirs per case, sterile	4312
	Reservoir Base, 10 pack	4304