ELECTROLAB

# RECIPROCATING DISSOLUTION TESTER

**MODEL NO:** **ERD-03 (USP-3)**
**ERD-07 (USP-7)**

# OPERATIONAL MANUAL

ELECTROLAB

EL 23/24, T. T. C. Electronic Zone,
M.I.D.C. Mahape, Navi Mumbai 400 710, India
Tel : 91 - 22 - 4161 31 31
Website: www.electrolabgroup.com

# INDEX

# 1. PREFACE

## Purpose and Use

The operational manual shows you the construction and operation of ERD-03 (USP3) and ERD-07 (USP7). The screen displays used in the manual are only for representational purpose and bears no resemblance of functioning of USP-3 and USP-7 apparatus in one unit.

Please read the instructions carefully, especially the precaution aspects. Always keep the operational manual close to the instrument. The manual should always be within reach so as to give assistance in answering any questions, which may arise.

## All Rights Reserved



This manual was put together with the necessary care. However, errors and omissions cannot be completely excluded. ELECTROLAB reserves the right, in the course of further development of the product, to change technical data and specifications without prior notice.

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No liability is assumed for damage resulting from the disregard of information in this manual.

# 2. UNPACKING OF INSTRUMENT

This section gives the brief detail about the unpacking procedure of the instrument.

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***Complete the Following steps to safely unpack your apparatus and accessories.***

Step 1: Open each carton carefully and check the contents for any damages which may occur during shipping. But if it does, contact both the carrier who delivered the instrument and ELECTROLAB service engineer. Though claims for damage are filled with the carrier, we can help you file a claim and get the instrument in functioning as quickly as possible.

Step 2: Carefully open the instrument from its shipping carton.

Step 3: Remove all cushioning material and tape.

Step 4: Place the instrument on a clean, dry and steady level section of bench top with the drive unit's front panel facing you.

# 3. INTRODUCTION

This section gives the general information about the ELECTROLAB ERD-03 (USP 3) and ERD-07 (USP 7) instrument and its features.

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## About ERD-03 and ERD-07:

- The USP method 3 and 7 are the perfect R&D tools for tablets, granules, pellets and powders which require multiple media change in combination with test run duration of 999 hours max.

- With USP method 3 and 7, samples are loaded inside so the disintegrated particles remain inside when the test station moves from one row of vessels to the next row (from one kind of media to the next one). Due to this method of testing, up to 24 media changes can be performed automatically.

- Operation involves programming the drain hold time, dips hold time, dips rate in dpm. In ERD-03 (USP 3), on the up stroke, the bottom mesh in the inner tube moves upward to contact the product and on the down stroke the product leaves the mesh and floats freely within the inner tube. Thus the action produced carries the product being tested through a moving medium.

- The microcontroller based stepper motor drive ensures a precise stroke height of 100 mm for ERD-03 (USP 3) method and 20 mm for ERD-07 (USP 7) method & rate of dips per minute in range of 5 to 50 dpm which can be validated by tachometer.

- Twenty individual protocols can be programmed, stored, recalled for each test. 24 programmable sampling intervals can be set.

## Features:

- ERD-03 (USP 3) complies to current USP Apparatus 3 specifications
  ERD-07 (USP 7) complies to current USP Apparatus 7 specifications
- Ideal for extended release products or any dosage form requiring release profiling at multiple pH levels
- Select between multiple configurations of rows, vessels and vessel volume.
- Bath Alignment on only two pins.
- Touch screen with graphical display for user friendly operation
- Facilitates manual and auto sampling
- 20 programmable protocols with 24 sample intervals
- Dip rate ranges between 5 to 50 dpm with an accuracy of ± 5%
- Programmable hold, drain time and programmable dip rate in each row
- The glass syringes eliminate adsorption and offers a high accuracy of dosing
- Online validation of dpm and temperature.
- Rugged clear acrylic water bath
- Dual level security with password
- PC & LAN Connectivity allows centralized printing, storing and sharing of data
- Retractable curtain to prevent media loss by evaporation
- Performs key operation like filtering, storing and replacing withdrawn samples with fresh media.
- No routine calibration or maintenance
- Supports 10ml and 25ml syringes
- The arm movement meets the automated sampling requirements of collection
- The 4-way motorized valve offers unprecedented system flexibility and the capability to deal with tricky media

# 4. INSTALLING THE INSTRUMENT

In this section the installation procedure of **ERD-03 (USP 3)** and **ERD-07 (USP 7)** is described in brief details.

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## Filling of bath:

- Pour water up to the marked water level bath, during this the water enters through outlet tube thereby priming the circulation pump and heater unit. (This is essential to avoid dry run of pump and heater unit.)

- Use ultra pure water when possible to minimize scale and mineral buildup, use algaecide to inhibit mold & bacterial growth.

- Check all connections for leakage.

## Installation of media vessels along with tray:

- The instrument consists of various configurations of rows (depending on vessel capacity) where vessel tray with different media change over can be performed automatically.

  i.e. 2 Rows: 1000 ml vessel capacity
  6 Rows: 100ml / 300ml vessel capacity
  12 Rows: 50ml (only for ERD-07 USP 7)

- Fill vessel with respective media and insert vessels in the tray.

- With the help of tray holder place the trays on water bath as number marked on bath tray.
  **Note: Ensure that the tray holders are not lifted in upward direction when placed on the bath.**

- The media vessel needs to be installed immediately before starting the test.

**Note: 1. Insert all filled vessels in the tray where test needs to be performed.**
**2. If vessels are placed in position without media, they will float and damage drive mechanism.**
**3. Place all vessel trays on bath even though test is not performed on that tray position.**

## Assembly of reciprocating cylinder – ERD-03 (USP 3):

→ Upper Cap
→ Mesh
→ Glass Cylinder
→ Mesh
→ Lower Cap

- Insert mesh into the upper & lower cap.
- Tighten the lower cap to the glass cylinder & then place the test sample in the cylinder.
- Fix the upper cap to the cylinder.

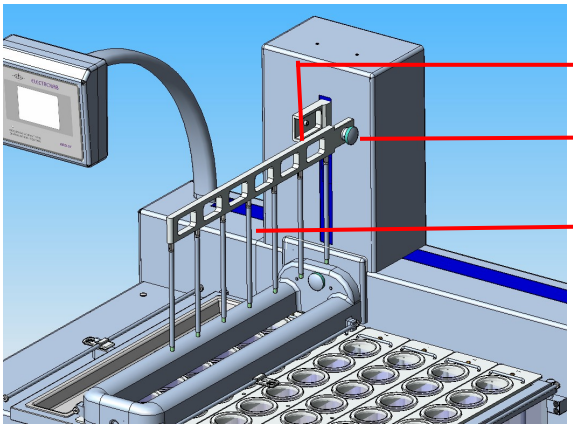
## Assembly of reciprocating holder – ERD-07 (USP 7):

SPRING HOLDER

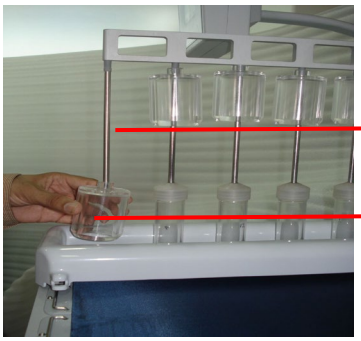
ACRYLIC ROD

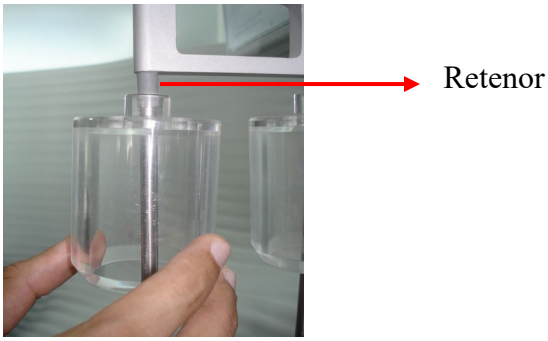
## Installation of Arm – ERD-03 (USP 3):

- Insert arm to arm holder and tighten it with the help of knob present on the arm by rotating it in clockwise direction.




- Insert evaporating cap in the arm rod, twist evaporating cap slightly to hold it on retenor.



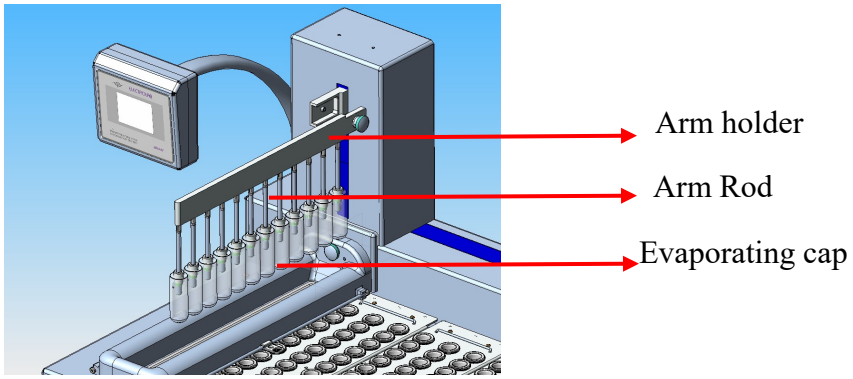



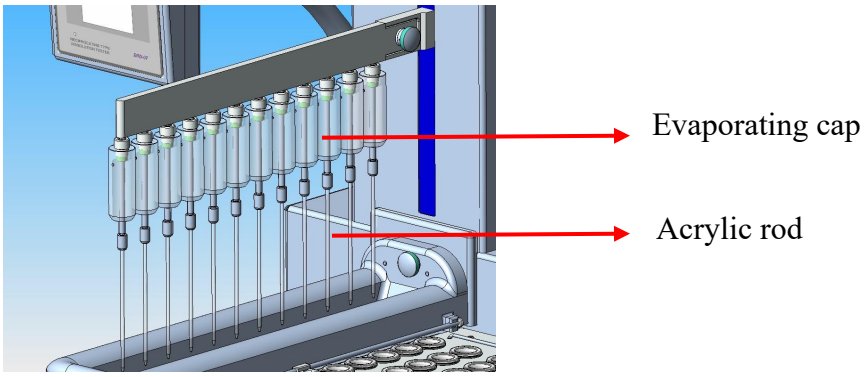

- Place assembled reciprocating cylinder with test sample placed in it at the end of arm rod & rotate it in anticlockwise direction to fully tighten it.


## Installation of Arm – ERD-07 (USP 7):

- Insert arm to arm holder and tighten it with the help of knob present on the arm by rotating it in clockwise direction.

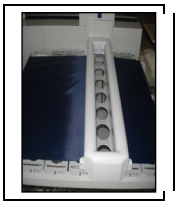
- Insert evaporating cap in the arm rod. Attach the acrylic rod/spring holder to the arm rod and tighten it.




## Covering with evaporation curtain:

- After assembling the tray vessels and arm, cover the vessels with the evaporation curtain.



# 5. OPERATING THE INSTRUMENT

In this section operating procedure of **ERD-03 (USP 3)** and **ERD-07 (USP 7)** is described in brief details.

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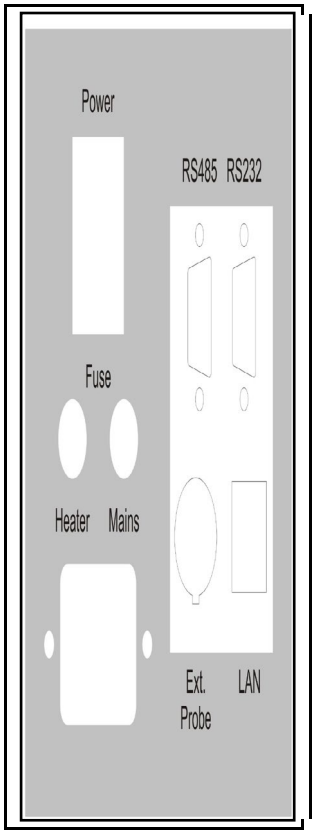
## Front Panel Description:

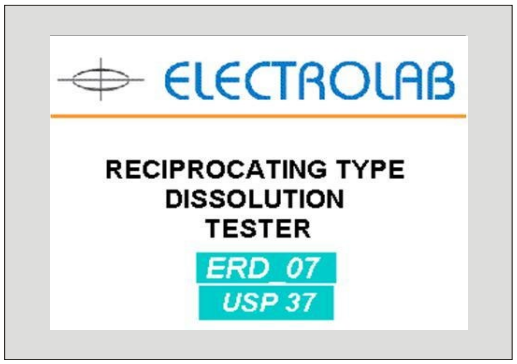
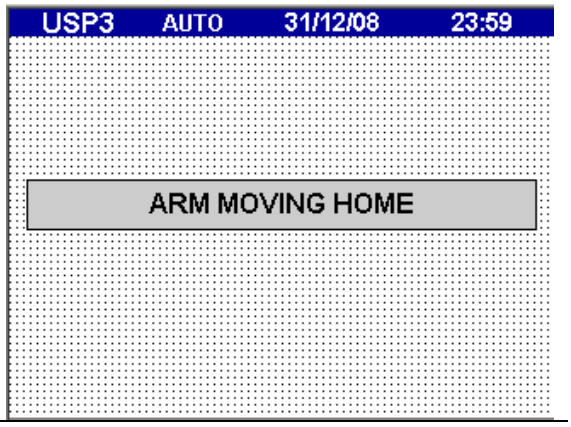
- **ERD-03 (USP 3)** and **ERD-07 (USP 7)** are provided with touch screen graphical display.
- The 'Alt' tab in alphanumeric keypad is used for entering numeric digits.
- The red line indication on the tab indicates the keys are disabled.

## Rear Panel Description:



# System Operation:

***Note:** The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

| OPERATION | DISPLAY |
|---|---|
| • After the system set up is over, switch on the power. |  WELCOME SCREEN |
| • After Power On, the instrument would initialize itself; the welcome screen will flash for 3 seconds. | |
| • Logo screen will be flashed & 'ARM MOVING HOME' indication screen will appear in case the arm is not initialized to home position i.e. parked above the bath & stopped above the waste tray. |  LOGO SCREEN<br>  |

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## OPERATION

- Once the arm initializes itself, if security is enabled Login screen will be displayed else Idle screen will be displayed. By default security is disabled.

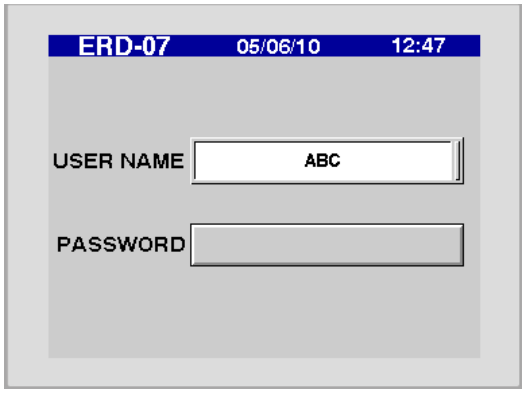
- At first installation, login with
  Admin **username : ABC**
  **password : 123456**

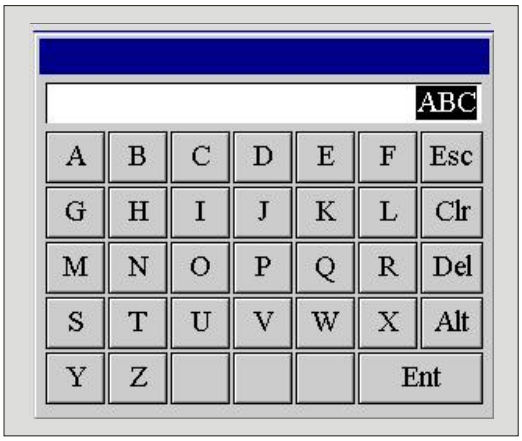
- Press tab for username and enter username (alpha numeric entry)

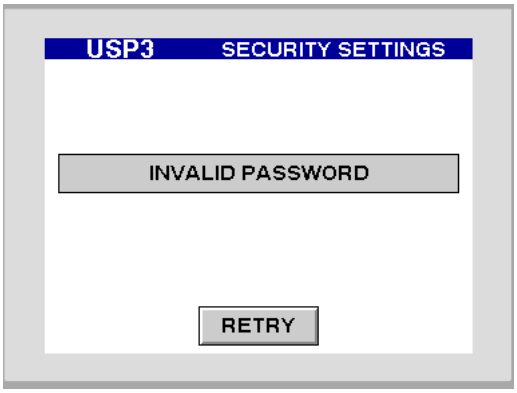
- Press tab for password and enter the password (numeric entry). Password can be maximum of six numbers.

- If username or password is incorrect an **error screen** will be displayed

## DISPLAY



# PROTOCOL SETTING

*__Note:__ The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

## OPERATION

- Once the user has logged in, an idle screen will be displayed. Idle screen displays the current status of the instrument.
- It will indicate Date, Time, Bath Temperature, and current Protocol number, etc.
- ENGAGE CAPS for automation purpose, to hold & release the vessel caps.
  When tray position is detected then Up & Down key will be appear in idle screen.
- In configuration if Auto mode is selected then ENGAGE CAPS key will be appeared on the screen & in Manual mode ENGAGE CAPS key will disappeared.

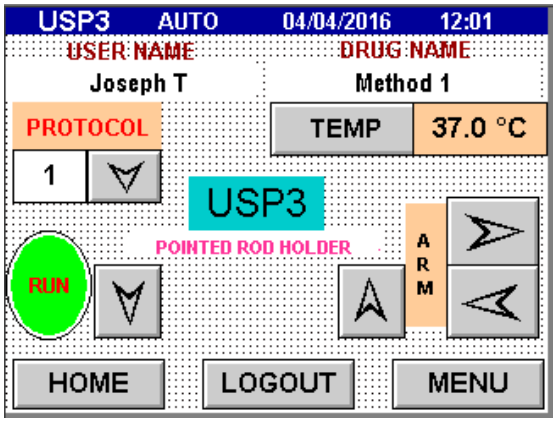
- **Manual Temperature Control:**
  Press **TEMP** to enter manual temperature control.

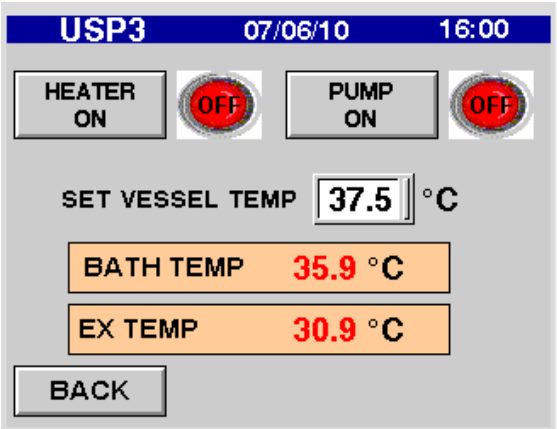
- **ARM MOTION**:

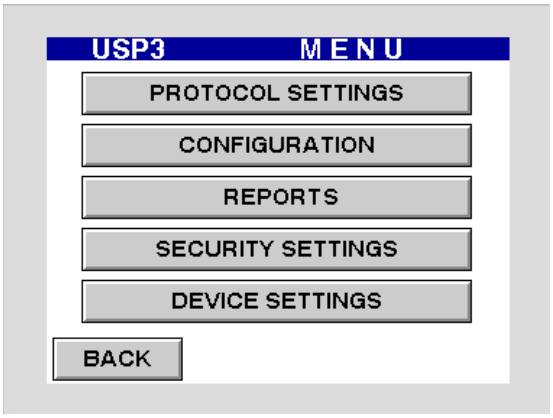
  Arm can be moved manually to Right or Left & Top or Bottom.
  To bring the arm back to home position press **HOME** tab.

- Press **RUN** to start the test
- Press **MENU** to enter device menu
- Press **BACK** to go back to Idle screen

## DISPLAY



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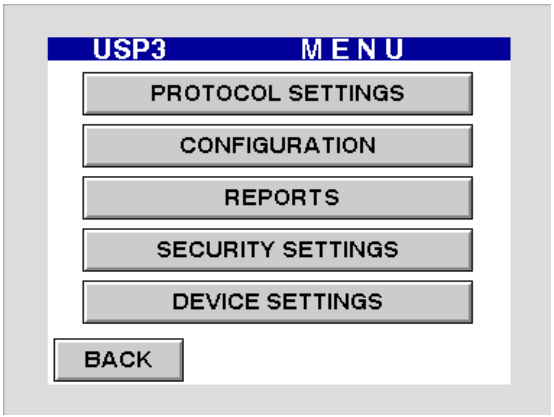
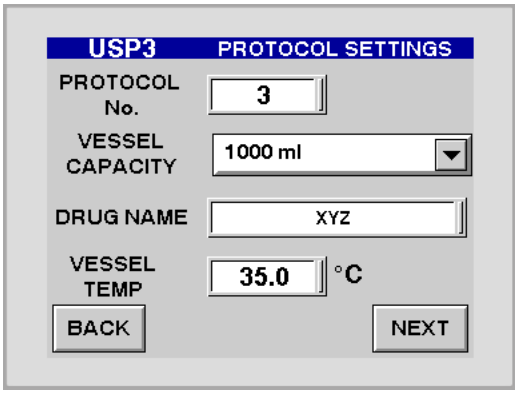
| OPERATION | DISPLAY |
|---|---|
| **MENU <PROTOCOL SETTINGS>**<br>• Press **Protocol Settings** in menu to view or edit protocols or monographs.<br>• Select 1 of 20 protocols by pressing numeric field of protocol no.<br>• The respective protocol details needs to be entered as mentioned below:<br>(1) Vessel Capacity -100ml, 300ml, 1000ml<br>-50ml (Only for ERD 07 USP 7)<br>(2) Drug Name -16 character (alphanumeric)<br>**Note: For numeric characters press Alt key.**<br>(3) Vessel Temperature - 20.0ºC to 40ºC |  <br>  |

*Note: The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

## OPERATION

(4) Dip hold time - 0 to 9 mm(min): 0 to 59 sec(ss)

(5) Drain time(After sampling)- 0 to 9 mm(min): 0 to 59 sec(ss)

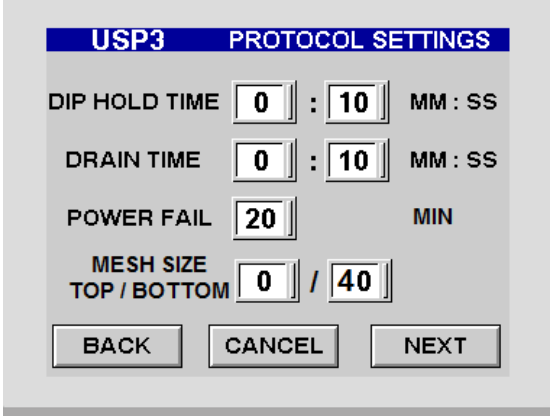
(6) Power fail – 1 to 40 mins

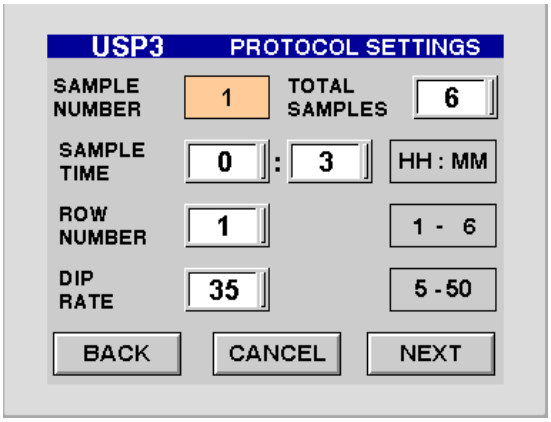
(7) Total Samples – 1 to 24

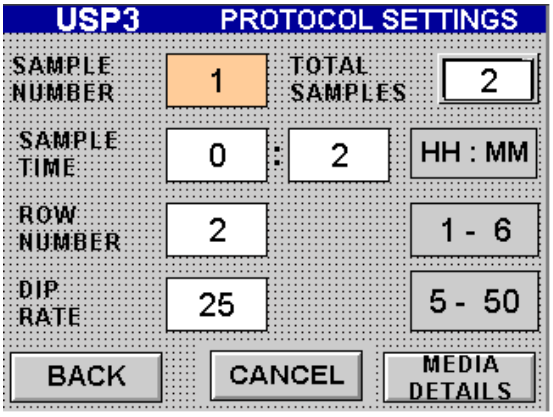
(8) Sample number- Press numeric field of sample number to edit the respective sample i.e. Sample time – 0 to 999 hrs: 0 to 59 mins
Row No. – 1 to 6 (ERD 07 USP 3)
1 to 9 (ERD 07 USP 7)
Dip rate – 5 to 50 dips/min

- Press **EXIT** tab to exit from protocol settings and menu screen will be displayed.

## DISPLAY



*Note: The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

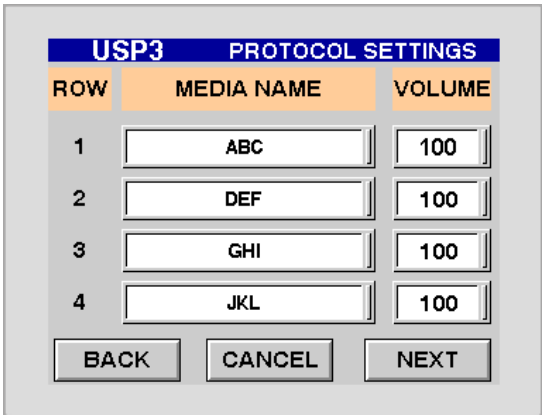
## OPERATION

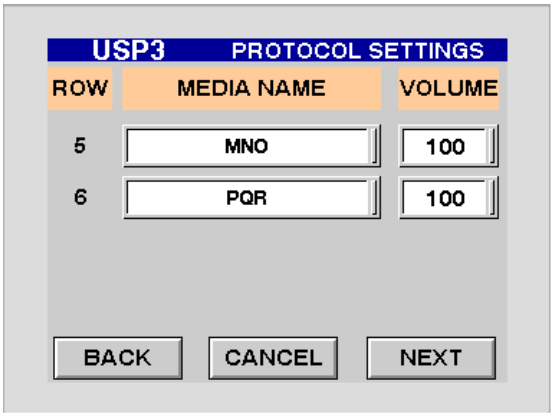
- Press **MEDIA DETAILS** to edit the media name & volume for different rows.
- Press **SAVE** tab after editing the media details and menu screen will be displayed.
- Press **SAVE** tab, set parameters will be saved.
- Press **CANCEL**, set parameters will not be saved.
- Press **BACK**, previous screen will be displayed.
- In sampling info the details of the sample can be edited i.e. sample collect, Rinse volume.

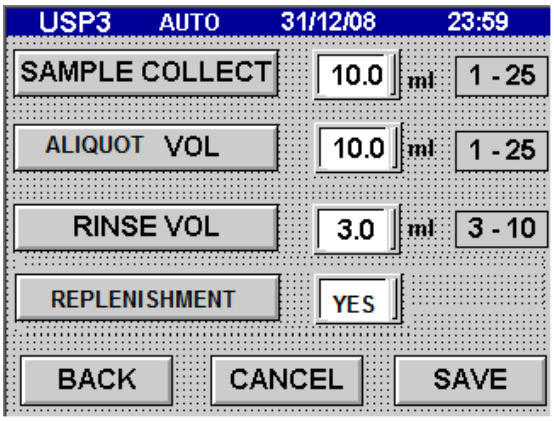
**Note: Maximum total sample can be withdraw upto 30ml from each vessel.**

**Only admin has rights to edit protocol whereas users can view the set protocol.**

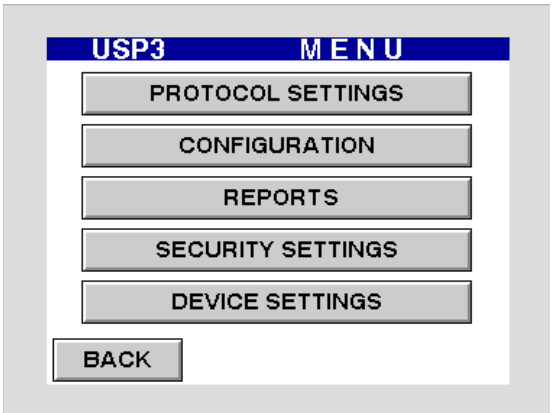
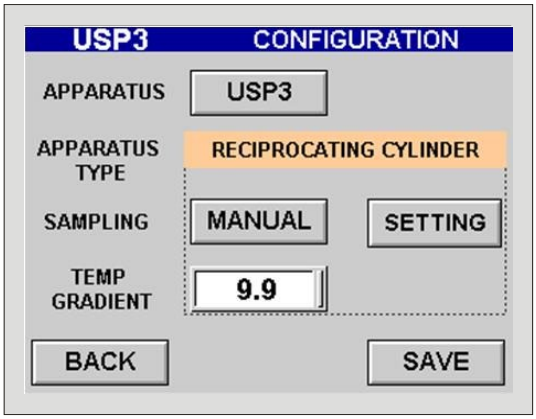
## DISPLAY



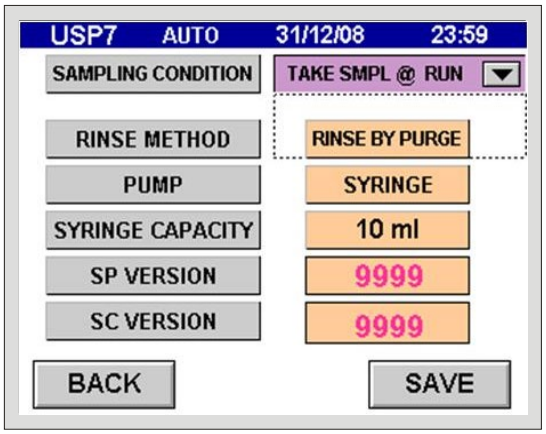
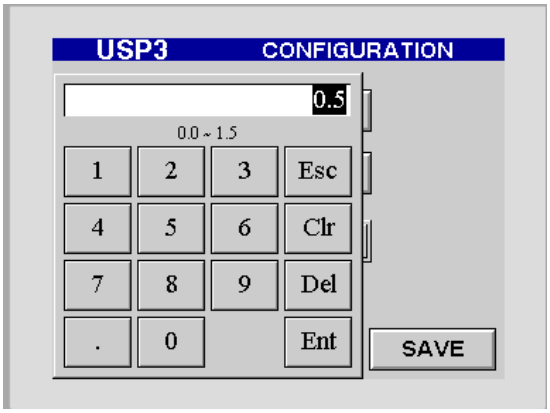



*Note: The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

| OPERATION | DISPLAY |
|---|---|
| **MENU <CONFIGURATION>**<br><br>• Press **CONFIGURATION** tab in menu screen to enter configuration menu.<br><br>• If user selected AUTO mode in configuration then sampling details screen visible in the protocol setting.<br><br>• User can set the sampling type either MANUAL or AUTO mode.<br>If AUTO mode is selected then setting key will be enabled. |  <br>  |

***Note:** The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

| **OPERATION** | **DISPLAY** |
|---|---|
| • If setting key is pressed, User can see the Rinse method type, Pump type, Syringe Capacity, Syringe pump & Sample collector version number.<br>• User can set the sampling condition whether to take sample @ halt time or take sample @ run time.<br>• The temperature gradient can be set from 0.0 to 1.5<br>• Press **BACK** to go to previous screen & if **SAVE** tab is pressed menu screen will be displayed.<br>**Note: Only admin has rights to access configuration menu.** |  <br>  |

*Note: The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

## OPERATION

**MENU <REPORTS>**

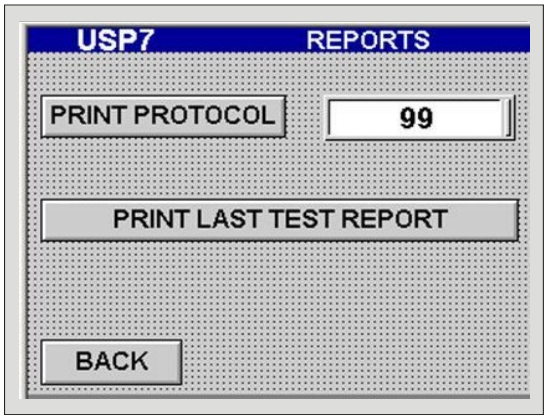
- The last test report can be printed.
- Print protocol key is used for to print the current protocol information.
- PRINT LAST TEST REPORT key is used for to print the last conducted test.

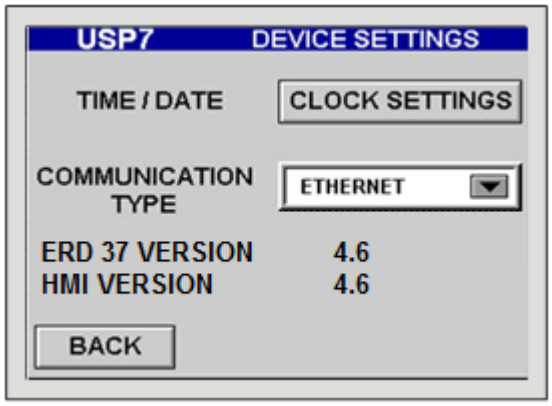
**MENU <DEVICE SETTINGS>**

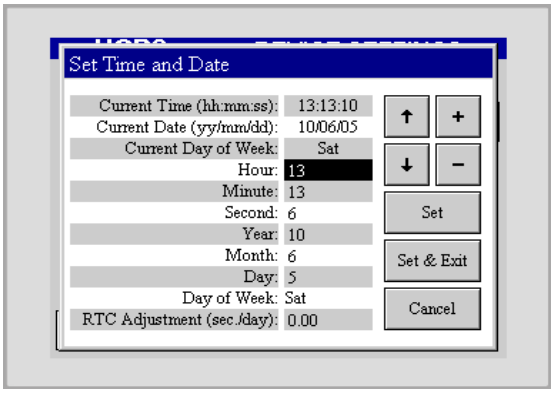
- Press **DEVICE SETTINGS** tab in menu screen.
- In Device settings user can edit Time & Date.
- Press **CLOCK SETTINGS** tab to set current date, time etc.
- User can set the communication type for printing, ETHERNET either RS 232.
- Select ETHERNET for LAN & RS 232 for Print / PC.
- Press **BACK** to go to previous screen & if **SAVE** tab is pressed menu screen will be displayed.

**Note: Only admin can access device settings.**

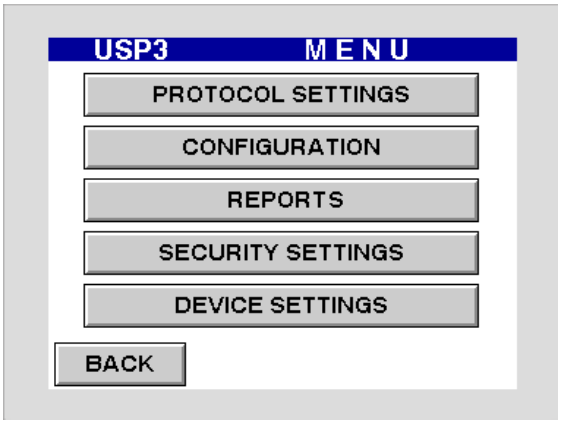
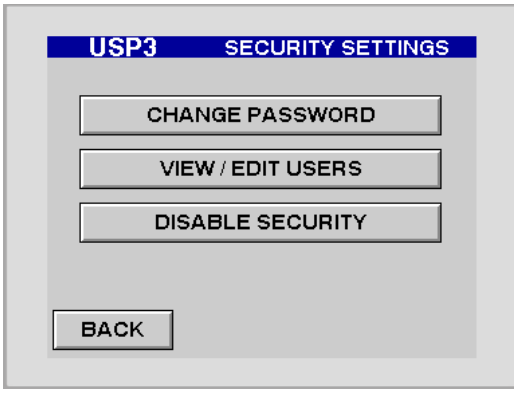
## DISPLAY



*__Note__: The screen will display **USP 7** instead of **USP 3** for **ERD 07** (**USP 7**).

| **OPERATION** | **DISPLAY** |
|---|---|
| • Press **SECURITY SETTINGS** tab from menu screen.<br><br>• The security screen will be displayed where user can change password, view/edit users or disable security.<br><br>**MENU<SECURITY SETTINGS>[CHANGE PASSWORD]**<br><br>• Press alphanumeric field of old & new password to enter the admin or user password which needs to be edited.<br><br>**Note: Only admin has rights to change his or her password and other user's password whereas user can change his or her respective passwords.**<br><br>• Press **SAVE** tab 'Password change successful' screen will be displayed & if **BACK** is pressed it will go back to the previous screen. |  <br>  |

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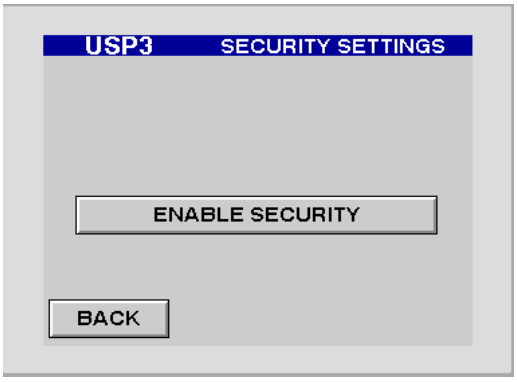
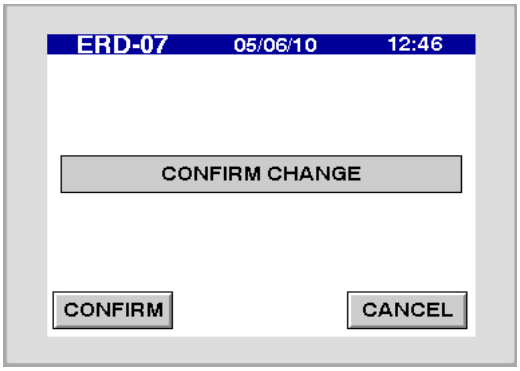
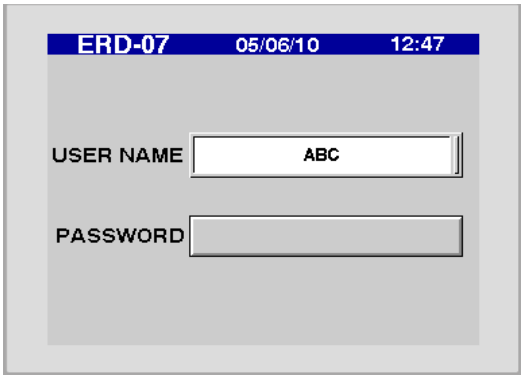
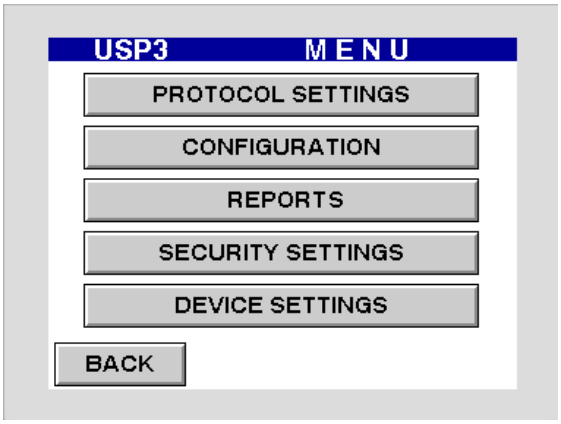
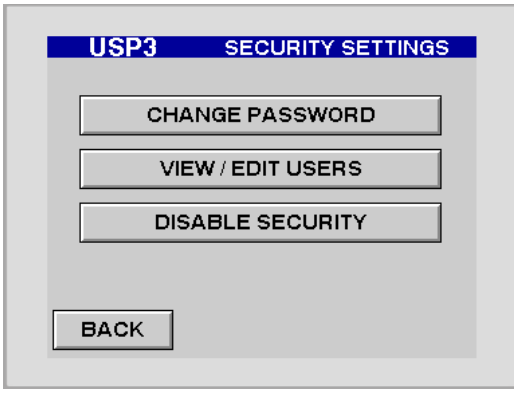
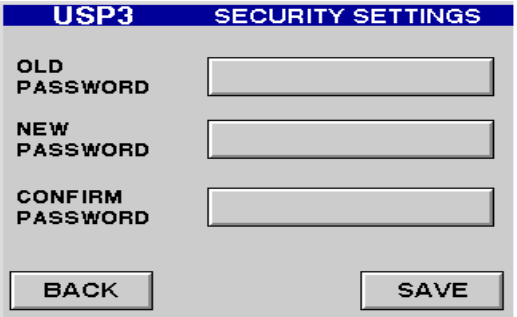
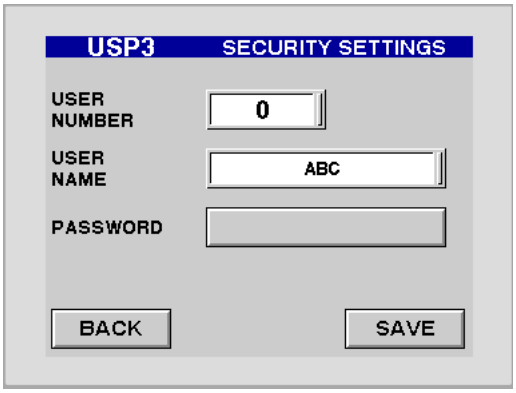
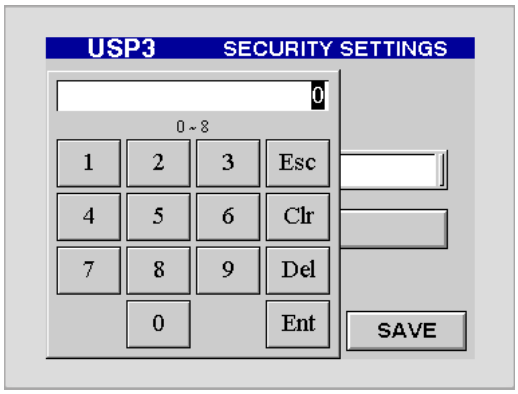
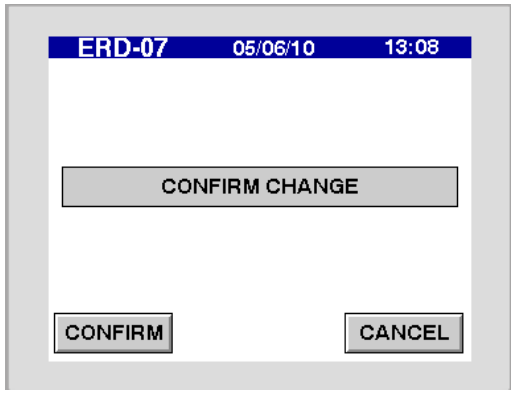
| OPERATION | DISPLAY |
|---|---|
| **MENU<SECURITY SETTINGS>**<br>• ERD-07 comes with an access and security to allow access to be controlled, all users must identify themselves. This is done by issuing user name and password.<br>• ERD-07 has dual security settings i.e. Admin(0) & users (8)<br>**MENU<SECURITY SETTINGS>[ENABLE SECURITY]**<br>• Press on **ENABLE SECURITY** tab, the confirmation screen will be displayed.<br>• Press **CONFIRM** tab to confirm the change done or cancel.<br>• Once security is enabled login screen with user name & password will be displayed.<br>• After login screen is displayed, idle screen will be displayed. |  <br>  <br>  |

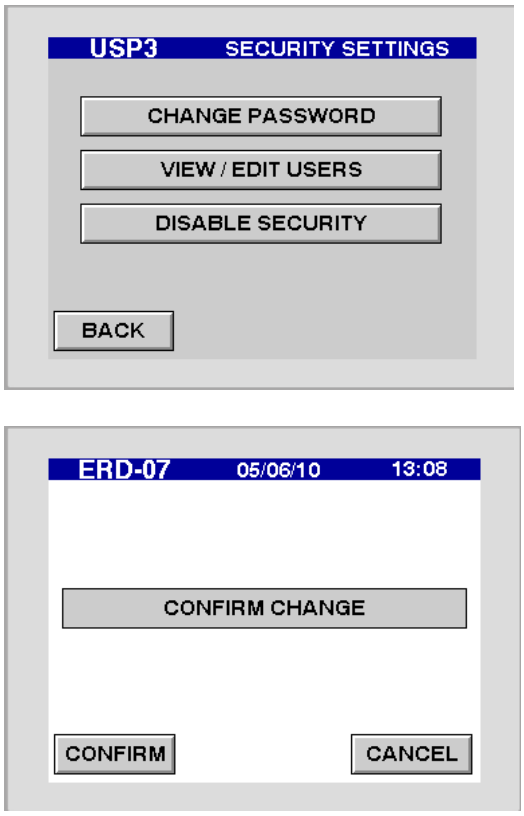
*Note: The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

| OPERATION | DISPLAY |
|---|---|
| **MENU<SECURITY SETTINGS>[CHANGE PASSWORD]**<br><br>• Press alphanumeric field of old & new password to enter the admin or user password which needs to be edited.<br><br>**Note: Only admin has rights to change his or her password and other user's password whereas user can change his or her respective passwords.**<br><br>• Press **SAVE** tab 'Password change successful' screen will be displayed & if **BACK** is pressed it will go back to the previous screen. |  <br>  <br>  <br>  |

*Note: The screen will display **USP 7** instead of **USP 3** for **ERD 07 (USP 7).**

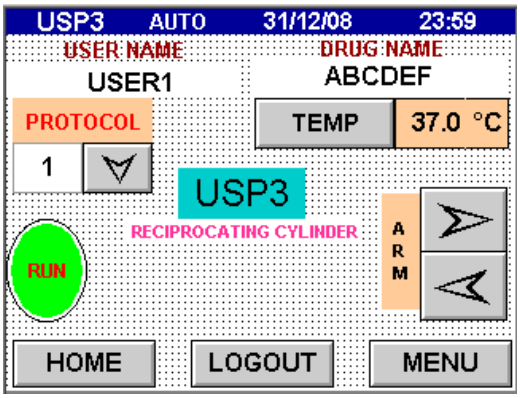
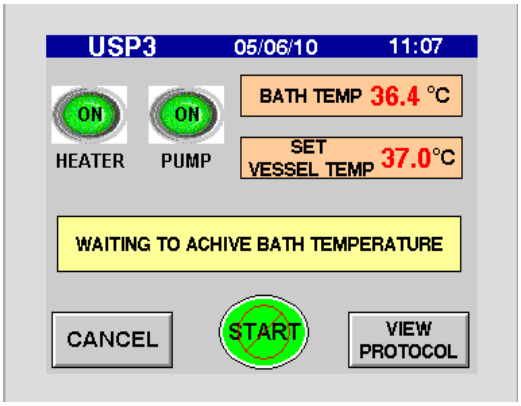
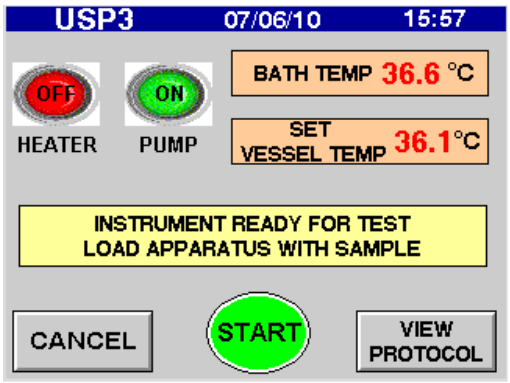
| OPERATION | DISPLAY |
|---|---|
| **MENU<SECURITY SETTINGS>[View/Edit User]**<br><br>• Press numeric field of user number from 1 to 8 whose user name needs to be edited.<br><br>• After selection of user no. view or edit user name.<br><br>• After entering password of respective user, press **SAVE** tab the confirmation screen will be displayed.<br><br>• Press **CONFIRM** to confirm the change done or **CANCEL**.<br><br>**Note: Only admin has rights to view or edit users.** |  <br>  <br>  |

*Note: The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

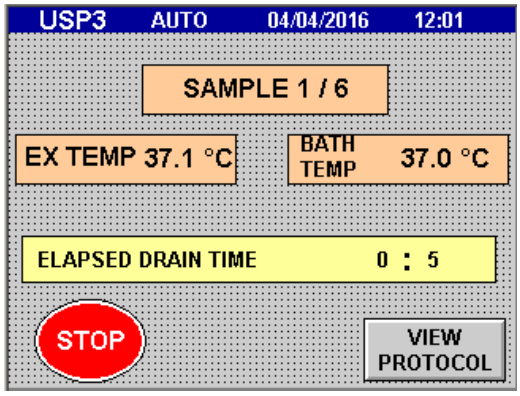
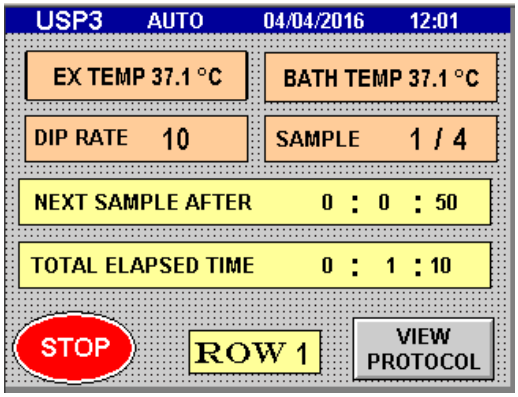
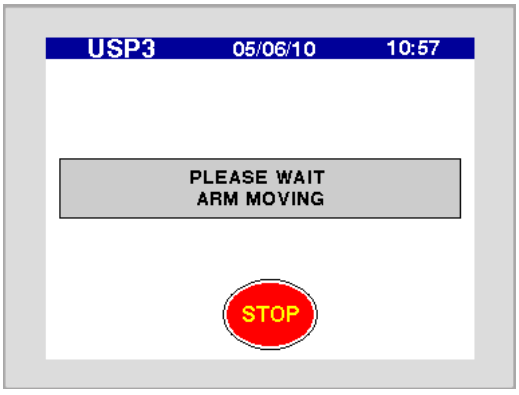
| OPERATION | DISPLAY |
|---|---|
| **MENU <SECURITY SETTINGS>[DISABLE SECURITY]**<br><br>• Press **DISABLE SECURITY** to allow all users to access the instrument without login.<br><br>• Confirmation screen will be displayed.<br><br>• Press **CONFIRM** to confirm the change done or **CANCEL**.<br><br>**Note: Only admin has rights to disable security** |  |

# RUN CYCLE FOR MANUAL MODE

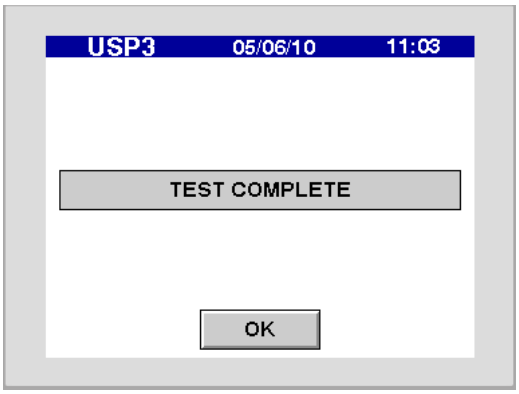
***Note:** The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

| OPERATION | DISPLAY |
|---|---|
| • Press **RUN** on Idle screen after loading the set protocol. |  |
| • The run screen will be displayed, with an indication **'Waiting to achieve bath temperature'**. |  |
| • Once bath temperature is achieved to set temperature then **START** key is enabled.<br><br>**NOTE: Instrument must be turned ON/OFF before every test.** |  |

*Note: The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

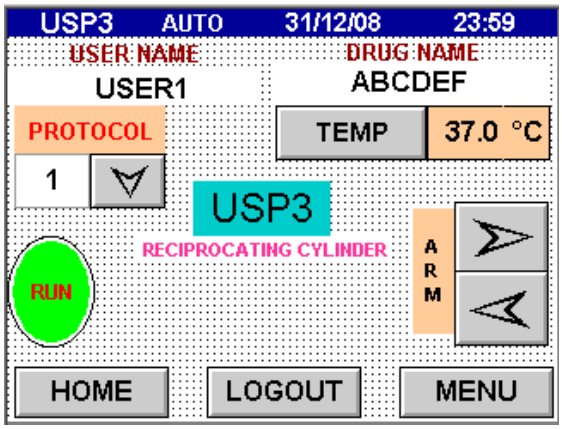
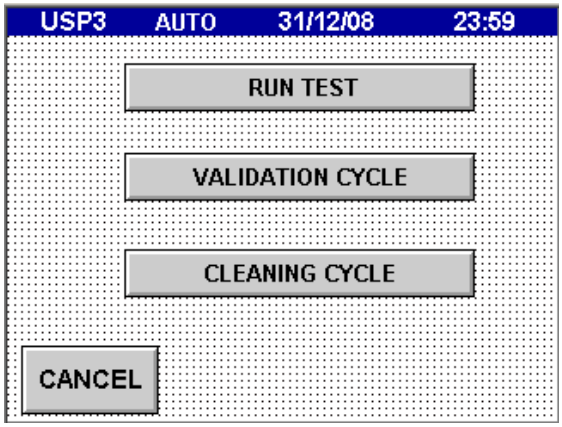
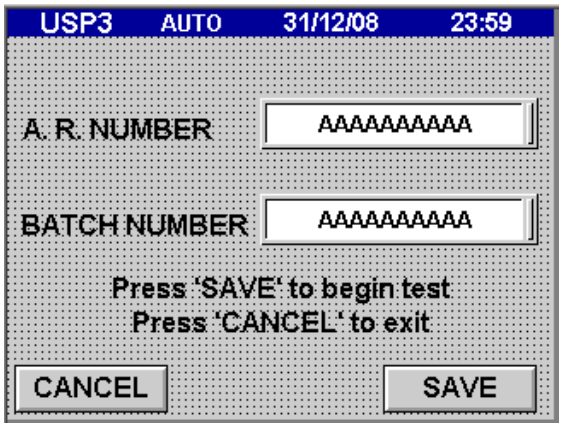
| OPERATION | DISPLAY |
|---|---|
| • Run screen will be displayed with detailed information about Bath temperature, Elapsed drain time, Indication about next sample & Total elapsed time. |  |
| |  |
| • The indication displays 'Please wait arm moving' after completion of sample as arm moves to another tray for next sampling. |  |

*__Note:__ The screen will display **USP 7** instead of **USP 3** for **ERD 07(USP 7)**.

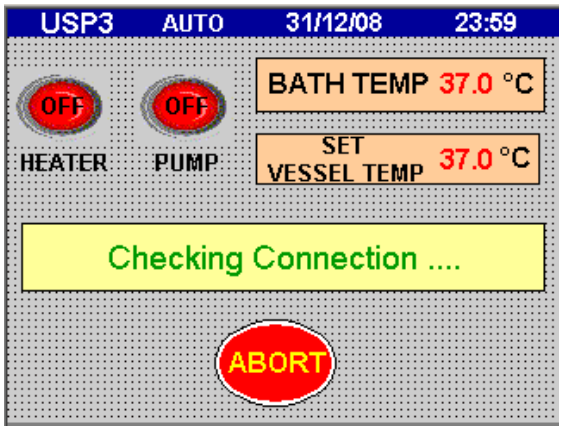
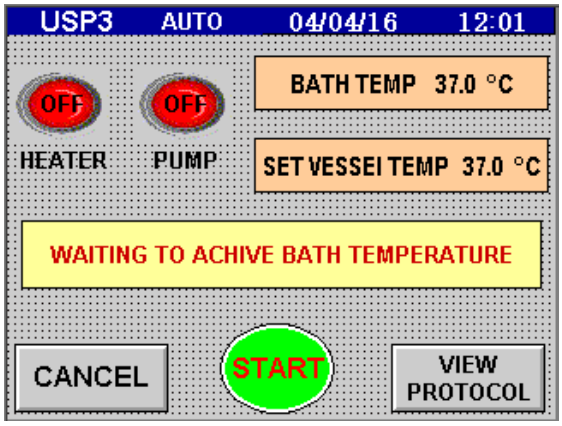
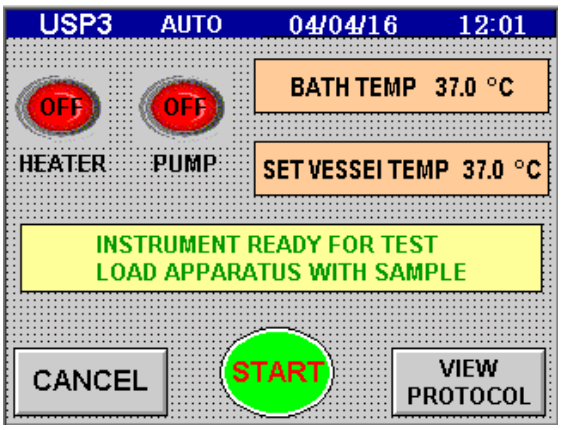
| **OPERATION** | **DISPLAY** |
|---|---|
| • After test over 'Test Complete' indication screen will be displayed. |  |

# RUN CYCLE FOR AUTOMATION MODE

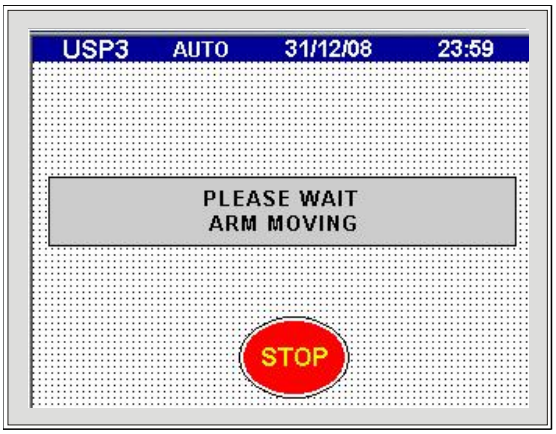
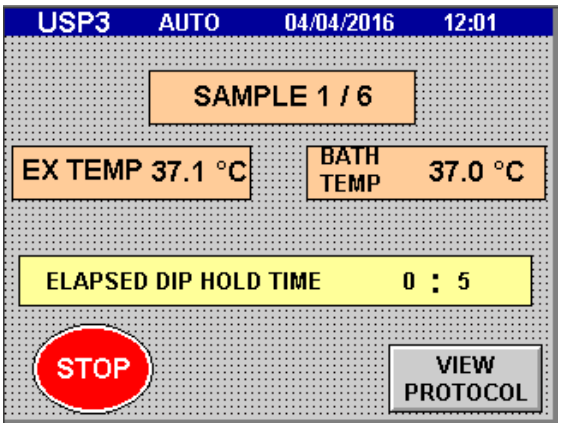
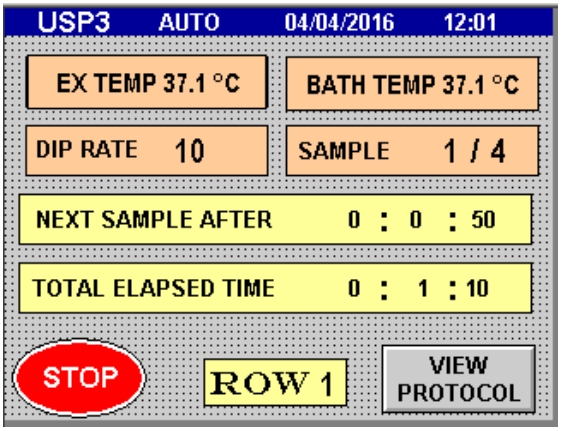
***Note: The screen will display USP 7 instead of USP 3 for ERD 07(USP 7).**

| OPERATION | DISPLAY |
|---|---|
| **IDLE SCREEN <RUN>[RUN TEST]**<br>• Press **RUN** on Idle screen after loading the set protocol. |  |
| • The run screen will be displayed, with 3 cycle stage RUN TEST, VALIDATION CYCLE & CLEANING CYCLE.<br>Press **CANCEL** to go back to the previous screen. |  |
| • A.R. Number & Batch Number will be displayed after pressing the **RUN TEST** key.<br>• Using Enter key, A.R. Number & Batch Number can be added upto 10 digit.<br>• Press **SAVE** to begin test & press **CANCEL** to go back to the previous screen. |  |

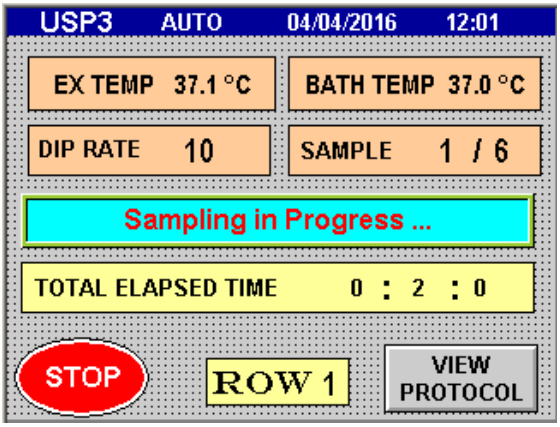
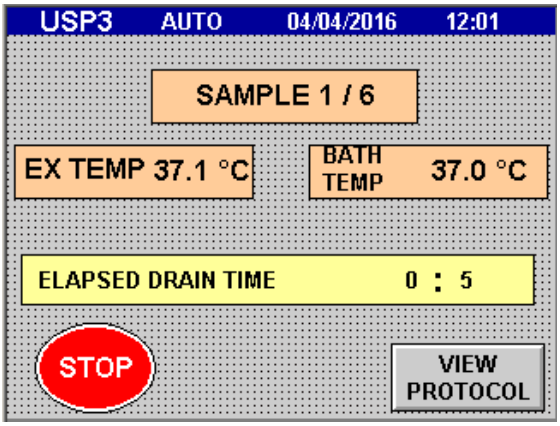
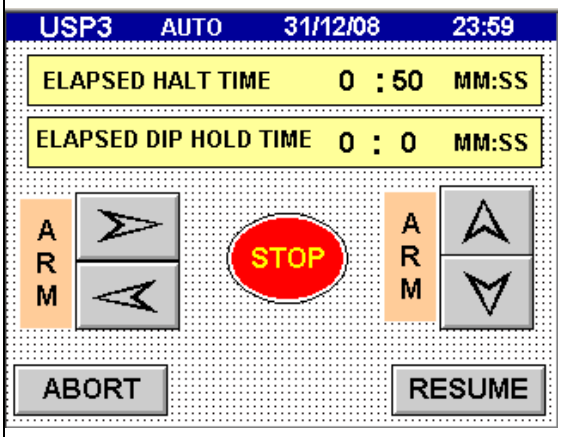
***Note: The screen will display USP 7 instead of USP 3 for ERD 07(USP 7).**

| OPERATION | DISPLAY |
|---|---|
| • If **RUN TEST** key is pressed the RUN screen will be displayed with an indication **"Checking Connection".**<br>• If connection is OK & still some problem in syringe pump or in sample collector then relevant error message will be displayed on run screen.<br>• If checking connection having some problem or any error message on the run screen then **START** key is disabled.<br>• After 30 seconds idle screen will be appeared on the HMI.<br>• If connection is OK with no error message then the run screen will be displayed with an indication, **"WAITING TO ACHIEVE BATH TEMPERATURE".**<br>• Once bath temperature is achieved to set temperature then **START** key will be enabled. |  <br>  <br>  |

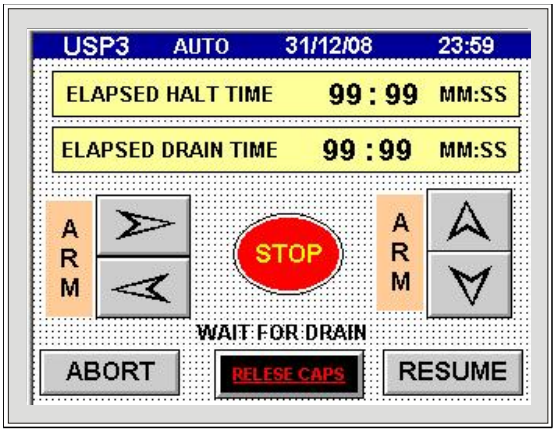
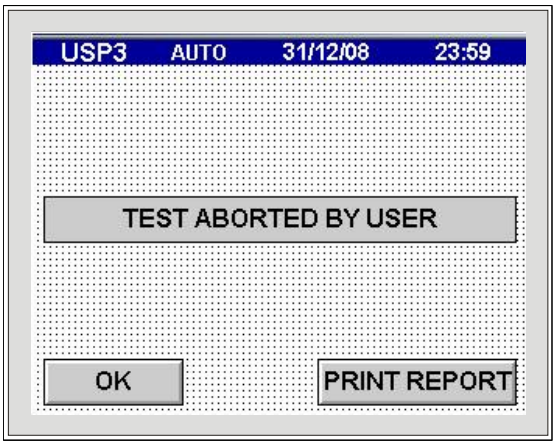
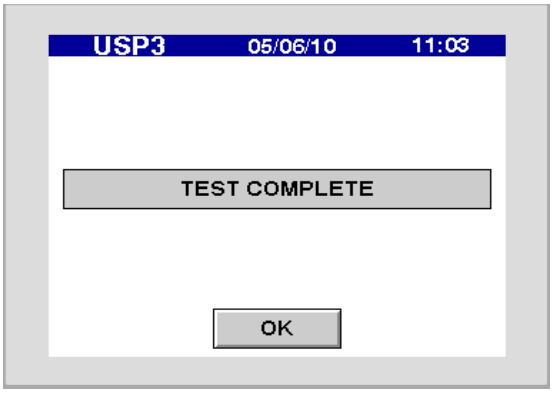
***Note: The screen will display USP 7 instead of USP 3 for ERD 07(USP 7).**

| OPERATION | DISPLAY |
|---|---|
| • When **START** key is pressed arm goes to run mode & finding the current tray position setting which was set in the protocol setting. |  |
| • If tray position is achieved then arm goes to run mode (Dip hold state).<br>• In Dip hold state, arm will goes to bottom of the position & servo motor will release the caps. |  |
| • After Dip hold time is over then arm will goes to the cycle state & it will appear on the HMI run screen.<br>• Run screen will display the information of the current sample as bath temperature, external temperature, current sample's dip rate, current sample number, total elapsed time, next sample time & current tray position. |  |

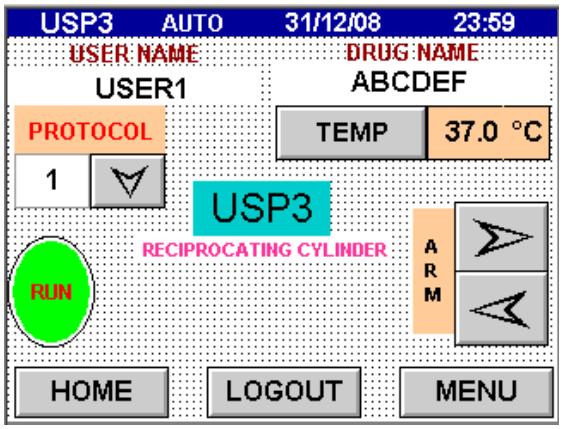
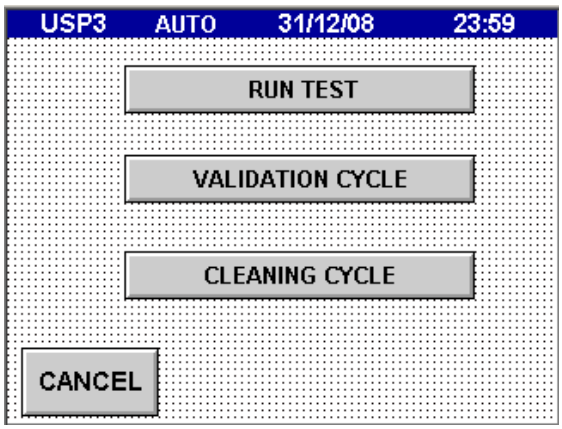
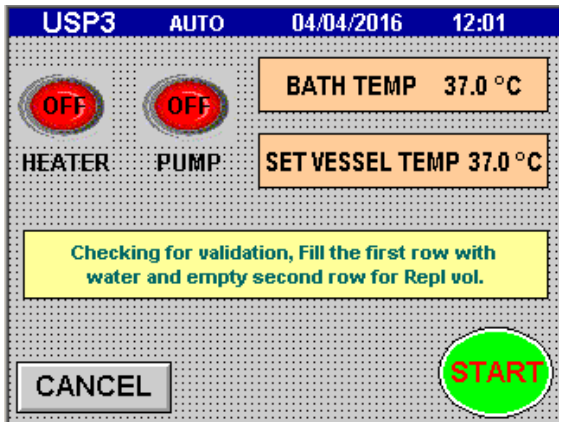
***Note: The screen will display USP 7 instead of USP 3 for ERD 07(USP 7).**

| OPERATION | DISPLAY |
|---|---|
| • After the sample time is completed, sampling test will be in progress & arm waiting for the sample at the bottom position at least 2 to 3 min (Depending upon the volume & aliquot volume loaded in the current protocol) |  |
| • After sampling is completed arm will goes to drain state.<br>**NOTE : After the sample completed, arm should be holds the cap & goes in the upper direction till the top opto cut.** |  |
| • After the drain time is over arm will perform the next sampling test as per the earlier steps. |  |

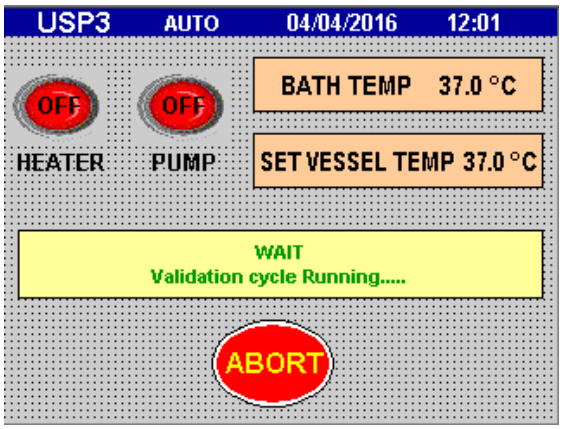
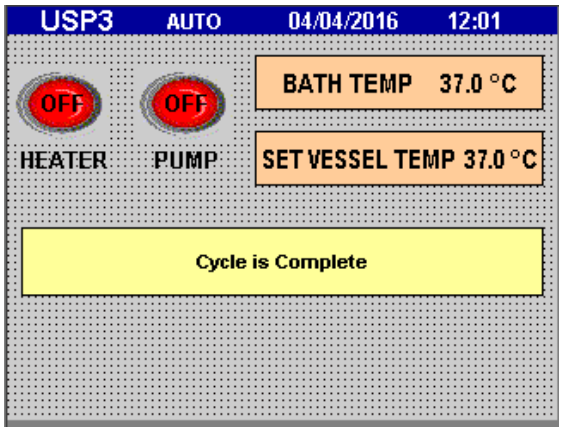
***Note: The screen will display USP 7 instead of USP 3 for ERD 07(USP 7).**

| OPERATION | DISPLAY |
|---|---|
| • In between the test, user can be stop the test by using the **STOP** key, then halt screen will appear on the screen.<br>• User can move the arm Up & Down direction. If the cannulas are engage & arm at top position then drain time will start. After the drain time is over then right & left key will appear on the screen.<br>• When RESUME key is pressed, the arm will goes at appropriate tray position & then dip hold state.<br>After the dip hold time is over it will goes to in cycle state & the run screen will appear on the HMI.<br>• When **ABORT** key is pressed arm will holds the caps & then it will goes to the drain state.<br>• After aborting the test user can be print the report of the last test.<br>• After test over '**Test Complete**' message will be displayed on the screen.<br>• When **OK** key is pressed, arm will go to home position. |  <br>  <br>  |

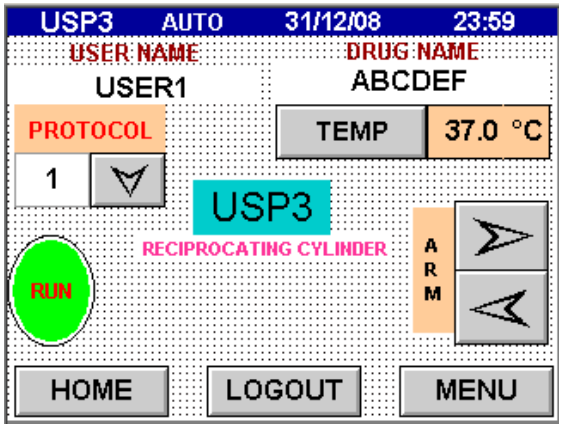
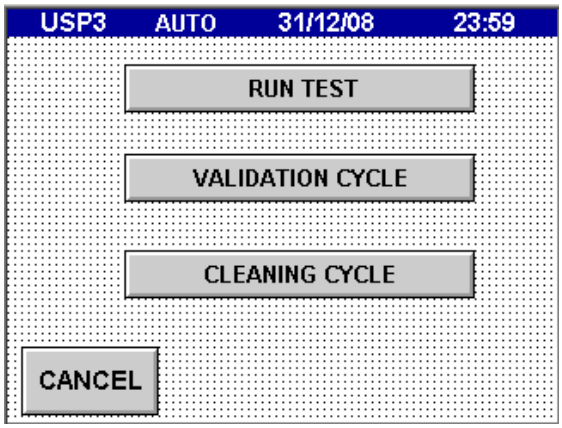
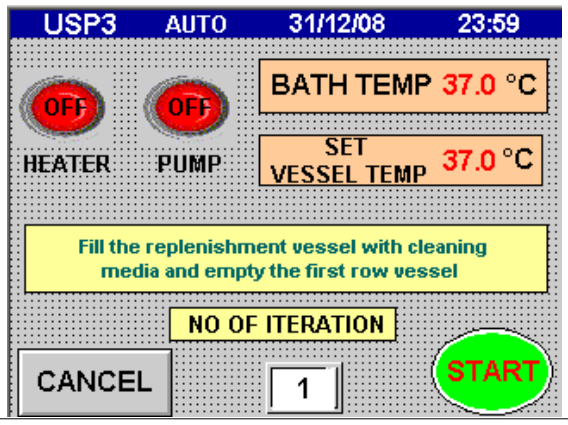
***Note: The screen will display USP 7 instead of USP 3 for ERD 07(USP 7).**

| OPERATION | DISPLAY |
|---|---|
| **IDLE SCREEN <RUN>[VALIDATION CYCLE]**<br>• Press **RUN** on Idle screen after loading the set protocol. |  |
| • The run screen will be displayed, with 3 cycle stage RUN TEST, VALIDATION CYCLE & CLEANING CYCLE.<br>Press **CANCEL** to go back to the previous screen.<br>• If **VALIDATION CYCLE** key is pressed the RUN screen will be displayed with an indication **"Checking Connection".**<br>• After pressing the **VALIDATION CYCLE** key, the screen will be displayed the BATH TEMP, SET VESSEL TEMP & the indication of the heater and pump.<br>**NOTE : For checking the validation, fill the first row with water & empty second row for replenishment volume.** |  <br>  |

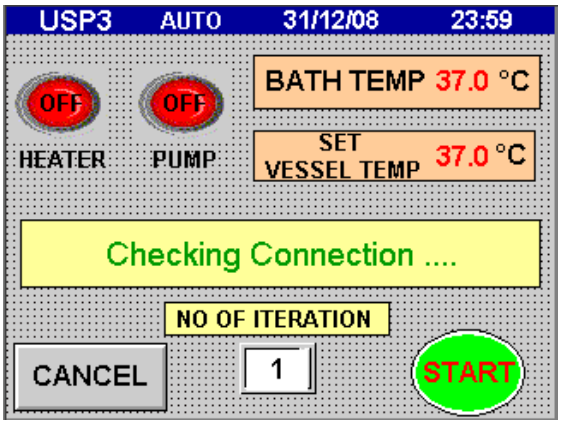
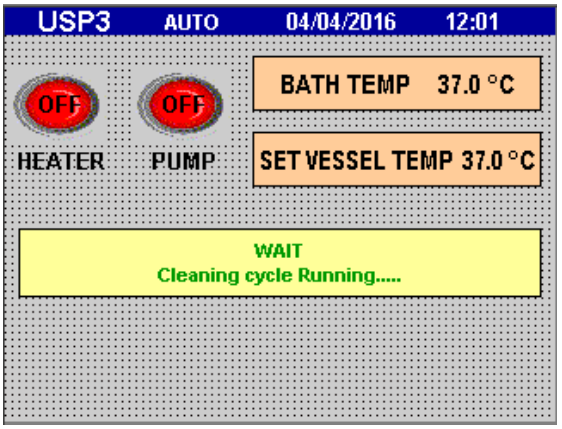
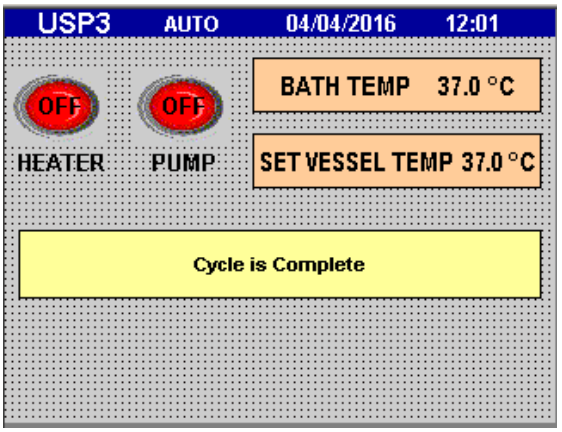
***Note: The screen will display USP 7 instead of USP 3 for ERD 07(USP 7).**

| OPERATION | DISPLAY |
|---|---|
| • When **START** key is pressed arm will goes to first tray of bottom position, then syringe pump takes sample from the test vessel & purge into the sample collector.<br>• As per the protocol setting,<br>**For Example**, Sample volume = 10 ml<br>Aliquot Volume = 10 ml<br>Rinse Volume = 3 ml<br>Then the Rinse volume (3 ml) collected in to the first row of the sample collector, Aliquot volume (10 ml) collected in the second row of the sample collector<br>**NOTE : Replenishment is not available.** |  |
| • After the aliquot sample is collected in sample collector, validation cycle is completed & arm will goes to home position. |  |

***Note: The screen will display USP 7 instead of USP 3 for ERD 07(USP 7).**

| OPERATION | DISPLAY |
|---|---|
| **IDLE SCREEN <RUN>[CLEANING CYCLE]**<br>• Press **RUN** on Idle screen after loading the set protocol. |  |
| • The run screen will be displayed, with 3 cycle stage RUN TEST, VALIDATION CYCLE & CLEANING CYCLE.<br>Press **CANCEL** to go back to the previous screen.<br>• If **CLEANING CYCLE** key is pressed the RUN screen will be displayed with an indication **"Checking Connection".**<br>• After pressing the **CLEANING CYCLE** key, the screen will be displayed the BATH TEMP, SET VESSEL TEMP & the indication of the heater and pump.<br>**NOTE : Fill the replenishment vessel with cleaning media and empty the first row vessel.** |  <br>  |

***Note: The screen will display USP 7 instead of USP 3 for ERD 07(USP 7).**

| OPERATION | DISPLAY |
|---|---|
| • The RUN screen will be displayed with an indication **"Checking Connection".** |  |
| • After pressing the **START** key cleaning cycle will be running & on this screen current bath temperature, set vessel temperature, indication of the heater and pump will displayed. |  |
| • After the all PTFE tubes are cleaned by the cleaning media then cleaning cycle is completed & arm will goes to home position. |  |

# 6. SPECIFICATIONS

## ERD-03 (USP 3) SPECIFICATION

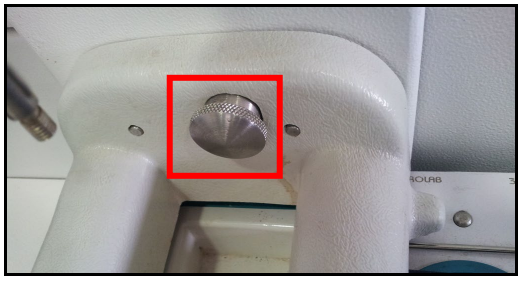
| | | |
|---|---|---|
| **Material of Construction** | : | SS 316 |
| **Water Bath** | : | Clear Acrylic Molded Water Bath (44 liter capacity) |
| **Vessel** | : | 1000ml glass vessels (6 nos.), 300ml glass vessels (42 nos.), 100ml glass vessels (42 nos.) |
| **Display** | : | Touch screen |
| **Heater** | : | 250 Watts, 230 V AC, S. S 304 |
| **Mains Fuse** | : | 1 Amp |
| **Heater Fuse** | : | 6 Amp |
| **No. of dips rate** | : | 5 to 50 dpm |
| **Stroke Height** | : | 100 mm |
| **Temperature Range** | : | 20.0°C to 40.0°C |
| **Temperature Accuracy** | : | ± 0.2°C |
| **Dimension** | : | 795 mm (L) X 675 mm (W) X 780 mm (H) (Approx.) |

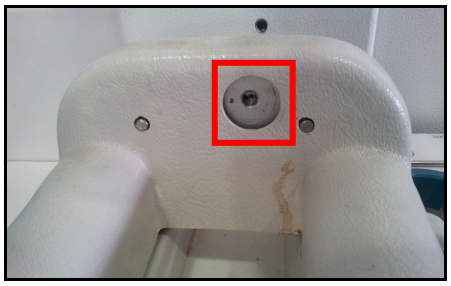
## ERD-07 (USP 7) SPECIFICATION

| | | |
|---|---|---|
| **Material of Construction** | : | SS 316 |
| **Water Bath** | : | Clear Acrylic Molded Water Bath (44 liter capacity) |
| **Vessel** | : | 1000ml glass vessels (6 nos.), 300ml glass vessels (42 nos.), 100ml glass vessels (42 nos.), 50ml glass vessels (144 nos.) |
| **Display** | : | Touch screen |
| **Heater** | : | 250 Watts, 230 V AC, S. S 304 |
| **Mains Fuse** | : | 1 Amp |
| **Heater Fuse** | : | 6 Amp |
| **No. of dips rate** | : | 5 to 50 dpm |
| **Stroke Height** | : | 20 mm |
| **Temperature Range** | : | 20.0°C to 40°C |
| **Temperature Accuracy** | : | ± 0.2°C |
| **Dimension** | : | 795 mm (L) X 675 mm (W) X 780 mm (H) (Approx.) |

# 7. 1000ml Accessories Attachment

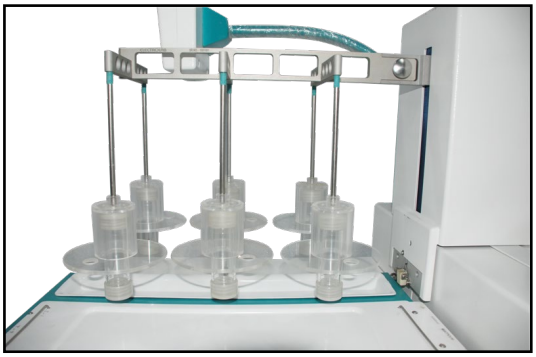
- Remove the curtains for fixing the 1000ml attachment.
- Rotate the screw knob anticlockwise & remove it as shown below.

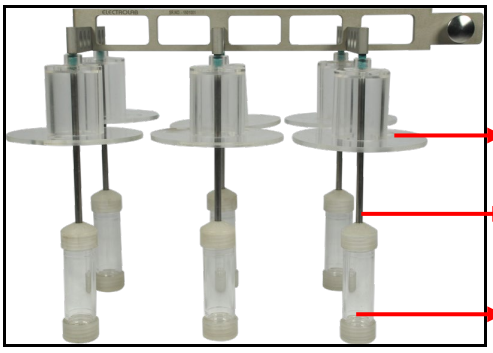




- The vessel trays should be placed as shown below.


- Attach 1000ml accessories as shown in below.





# 8. MAINTAINING THE INSTRUMENT

In this section maintenance of **ERD 03 (USP 3)** and **ERD 07 (USP 3)** is described in brief details.

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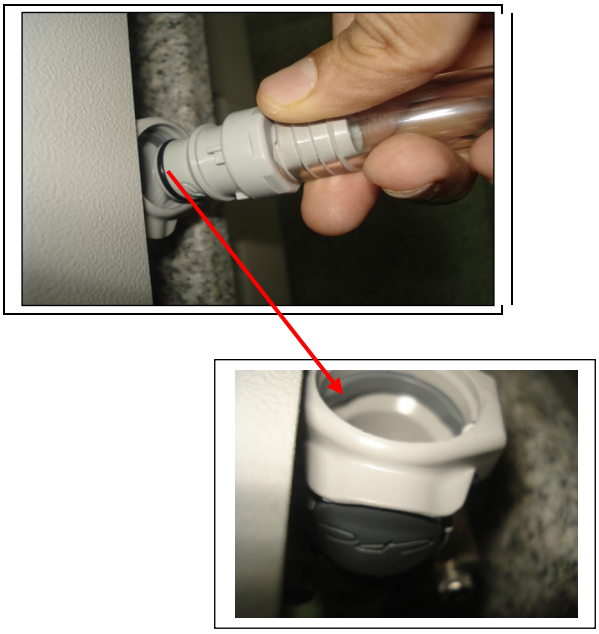
## Removal of water from water bath:

- Insert the outlet tube to the outlet knob present at the bottom on front side of instrument.



- Press the button present adjacent to the outlet knob.

- After removal of water clean the tank with solvents like Deconex 12 basic as the temperature of bath changes their might be fungal growth which may cause contamination of sample.

## Cleaning of Media Vessels:

- Wash the media vessel after every test or while using another media with a suitable solvent.

## Cleaning of Reciprocating Cylinder- ERD 03 (USP 3):

- Refer assembly of reciprocating cylinder to separate each component.
- Wash cylinder with suitable solvent.

## Cleaning of Reciprocating Holder- ERD 07 (USP 7):

- Wash rod with suitable solvent.0

**Also Note*:** When the vessels used on dissolution tester are non genuine/ mixed make, there is possibility of missing a sample from the respective vessel/vessels. It is more likely when the media volume is lower like 500ml. Due to the uncontrolled dimensions the media level of the respective vessel may not allow the sampling probe to be in the media at proper position to take the sample.