1. **PURPOSE:**

To describe the operation and Standardization procedure for the KF Titrator.

1. **SCOPE:**

This procedure is applicable to the digital KF Titrator of Laboratory.

Make : VEEGO

Model : VEEGO/MATIC-MD+PC

Instrument No. : DIPL/QC/INS/KF/002

1. **RESPONSIBILITY:**
   1. Analyst-QC is responsible to follow this SOP.
   2. Head-QC/Designee is responsible for ensuring implementation of this SOP.
   3. Head-QA/Designee is responsible for monitoring overall compliance of this SOP.
2. **DEFINITIONS:**

Nil

1. **PROCEDURE:**
   1. **OPERATION:**
      1. Clean and dry the reaction Vessel
      2. Assemble the apparatus
      3. Fill the reservoir with Karl Fisher reagent, ensure that delivery is free from air Bubbles
      4. Switch on the apparatus and adjust the speed of the magnetic stirrer.
      5. The Display will indicate.

|  |
| --- |
| VEEGO INSTRUMENTS  CORPORATION  KARL FISHER TITARTOR |

* + 1. The message will remain “NO” for few Seconds and will change to

VEEGO /MATIC PC

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* + 1. Press START Key, the massage will appear as

Add Sample

Conf. Time =10 secs

* + 1. The 4th line shows the stirring time (the set stirring time is 10 secs, this is 10 secs, This time can vary from 1 sec to 20 sec). When the time decrements to “0”. The Display will indicate as

Add Sample

Conf. Time “10” secs

* + 1. Then dispensing unit will start adding K/F reagent into the beaker through delivery Tube the display will indicate as -

TITRATION STARTED

00:01 ml

Conf. Time: 20 secs

* + 1. 2nd Line of the display indicates the consumption of KF reagent in ml. 4th line of the Display indicates the end point duration. The end point should last for 20 secs. When The time counts down to “00”, it indicates the end point is reached. The display will Indicates as -

TITRATION STARTED

06:52 ml

Conf. Time: 00 secs

**Note:** when the addition of KF reagent is progress, thecounts willincrease, elapsed Time will indicate 20secs. When the addition of KF reagent stops, the time will start Decrementing. If the moisture still exists in the titration vessel, the addition of KF reagent will continue the elapsed time will indicate 20sec, again. When the total moisture is neutralized, the addition of KF reagent and the counting will stop, the (elapsed) time will Count down to”00” and audio signal will indicate titration is over.

* + 1. The intermittent addition of reagent will not stop until the elapsed time of 20 sec a down Every time does not count down to ‘00’ between two additions) the display will indicate as -

K/F Reagent Reading

06:52 ml

* + 1. To make titration vessel moisture free, follow the above procedure (i.e.: 1.7 to 1.10) 2 to 3 Times. This indicates that the methanol is neutralized (or titration vessel is moisture free)
  1. **KF FACTOR:**

The titer factor can be determined in two ways.

* + 1. **1st Procedure** 
       1. Press CAL-1 Key and add 10µl of distilled water in the titration vessel. The display will Indicate

Add 10 µl distilled water

and press

Enter to Cont

* + - 1. Press ENTER Key The display will indicate

Add sample

Conf. Time : 05 Secs

* + - 1. The 4thline indicate the external stirring time, when the time counts down to: 00”. The Dispensing unit will start adding K/F Reagent in the titration vessel. The display will indicate -

TITARTIN STARTED

00:00

Conf. Time : 20 Sec

* + - 1. 2nd line of the display indicates the consumption of KF reagent to neutralize the 10 mg of moisture added into titration vessel. Every time the addition takes place, the counts Increase accordingly.
      2. 4th line of the display indicates the time duration of end point. (i.e. 20secs) After the Completion of titration if the end point lasts for 20 secs, indicates the titration is over by an audio signal. For example if the display indicate and titration over is indicated by audio signal and the display indicates as

TITARTIN STARTED

02:00

Conf. Time: 00 Sec

K/F reagent reading : 2.00

* + - 1. The above message will remain ‘ON’ for few seconds on the display and change over to

Wait calculating Factor

As wt of 10µl of water is 10 mgs

It is = = 5 mgs of H2O per cc of reagent

The above message will remain for few seconds and will change over to

Factor = 05.000

Repeat test for New factor

New factor

YES / NO

* + - 1. The printer port is provided at the rear of the instrument. If the 80 column dot matrix Printer is attached to the instrument with paper loaded and kept “ON” the heading and 1st Reading of the titer factor will be printed.
      2. ‘YES’ massage is flashing. If one wants to repeat the test to find out new factor, then press ENTER key the display will indicate as

Add 10µl distill water

And Press

Enter to cont.

Follow the procedure as per para 4.2.1 to 4.2.5

* + - 1. In this way, 6 difference readings to calculate the KF factor can be taken. After the 6th Factor, the display for example indicates as-

Factor = 05.0120

Repeat test for

New factor

YES/NO

* + - 1. This message will appear every time till it is decided that no new factor is necessary. (For Example we will take values of the first three factors) Press ENTER Key.

The message will appear as -

Factor 1 = 05.0000

Factor 2 = 05.1500

Factor 3 = 05.2530

ENTER TO CONT.

* + - 1. The factor 1 massage is flashing. On pressing ‘ENTER’ key again, ‘factor 2’ will be flashing. On Pressing ENTER key again, ‘factor 3; will be flashing. Then pressing ENTER key again, the massage will change over to ‘Factor 4’ massage is flashing.

Factor 4 = 05.0000

Factor 5 = 05.0350

Factor 6 = 05.0120

ENTER TO CONT.

* + - 1. If operator wants to see the factor -1, 2, or 3 he has to press key

UP

PG ----------

DN

* + - 1. The massage will appear as -

Factor 1 = 05.0000

Factor 2 = 05.1500

Factor 3 = 05.2530

ENTER TO CONT.

Factor 1 massage is flashing.

If user wants to delete any factor (for example- factor 2 and Factor 3)

Press ENTER key The “Factor 2’ message will start flashing.

Press CE/CLEAN key, the factor 2 reading will be deleted and the row will become Blank.

Press ENTER key the “Factor 3’ message will start flashing .Press CE/CLEAN key, the factor 3 reading will be deleted and the row will become blank. The massage will appear as -

Factor 1 = 05.0000

Factor 2 = 05.1500

Factor 3 = 05.2530

ENTER TO CONT.

* + - 1. Instead of pressing three times ENTER key, one can press key to change the massage

UP

PG ----------

DN

Factor 4 = 05.0000

Factor 5 = 05.0350

Factor 6 = 05.0120

ENTER TO CONT.

* + - 1. ‘Factor 4’ message flashing. If user wants to delete the Factor 5, press ENTER key. ‘Factor 5’ massage will start flashing.

Press key

CE / CLEAN

* + - 1. Then “Factor 5’reading will get deleted and that row will become blank. The massage will appears as Press ENTER Key two times.

Factor 4 = 05.0000

Factor 5 = 05.0350

Factor 6 = 05.0120

ENTER TO CONT.

* + - 1. The massage will appear as

WAIT

Calculating Average factor

* + - 1. The above massage will remain ‘ON’ for few seconds.
      2. The massage will appear as

Avg. Factor = 05.0040

PRESS ENTER TO CONT.

* + - 1. It will take the average of factor 1, 4&6. Deleting Factor Nos: 2, 3&5 as required. If the Factor reading are not to be deleted, it will take all the 6 readings of the titre factor and Calculate the average factor.
      2. If user does not want to take all the 6 readings, if he wants to take only three readings, say After 3rd reading, i.e. the message appearing on the display for example is

|  |
| --- |
| Factor = 05.0000  Repeat test for  New factor  YES/NO |

* + - 1. ‘YES’ message is flashing..
      2. Press Key

0 -------

UNIT SET

* + - 1. ‘NO’ message will start flashing. Press ENTER Key.

* + - 1. Then the message will appear as -

Factor 1 = 05.0000

Factor 2 = 05.1500

Factor 3 = 05.2530

ENTER TO CONT.

* + - 1. For example we will use these above factors.
      2. To go to next message, either press ENTER key three times or

|  |  |
| --- | --- |
| \*  PG | UP  -----  DN |

Press Key

* + - 1. The message will appear as

Factor 4 = 05.0000

Factor 5 = 05.0350

Factor 6 = 05.0120

ENTER TO CONT.

* + - 1. Press ENTER Key tree times, the message will appear as

WAIT

Calculating Average

Factor

* + - 1. The message will remain for few seconds and change over to, the message will appear as

AVG. FACTOR : 05.0040

PRESS ENTER TO CONT.

Note: If Printer is ‘ON’, it will print all the six titre factors and also the average value. It will also print the factor numbers which are deleted

* + 1. **CAL II Key:**

On pressing this key, user can find out the titer factor by using Sodium –tart rate Dehydrate which is a standard powder known as DST. On pressing this key, the massage will appear as

Massage will appear as

ADD DST

PRESS ENTER TO CONT.

**For example:** Add DST fine powder wt =115 mgs, press ENTER key.

* + - 1. Message will appear as When the time decrements to 00 secs. The dispensing unit will start adding the KF Reagent.

WAIT

EXTRACTING MOISTURE

EX TIME = 20 sec

* + - 1. The display will appear as When the total moisture is neutralized, the conf. time will decrement to ‘00’ secs.

Karl Fisher Reagent

00.10 ml

Conf. time : 20 Sec

* + - 1. The display will then appear as

Karl Fisher Reagent

03.05 ml

Conf. time : 20 Sec

If for example 03.05ml of K/F reagent is consumed.

* + - 1. Then display will change to

KF Reading = 3.05 ml

* + - 1. The above message will remain ‘ON’ for few seconds and then it will change over to

ENTER DST WEIGHT

0.02355 gm

Press ENTER to cont.

* + - 1. 2nd line os indicating the weight of DST of last test.
      2. To enter the new weight =115 mgs, press [0][.][1][1][5]
      3. The display will appear as

Calibration Weight

000.115 mgs

Any key to change

Press Enter to cont.

* + - 1. If weight is not entered properly, proceed as under: Press any key the display will appear as

ENTER DST WEIGHT

000.115 mgs

Any key to change

Press Enter to cont.

* + - 1. Now enter the correct weight. Press ENTER Key
      2. The display will appear as

Wait Calculating Factor

* + - 1. This message will remain for few seconds and will change over to

Factor = 05.9045

Repeat test for

New factor

YES / NO

Press Enter to cont.

* + - 1. Yes message is flashing. If one wants to continue, press ENTER Key.
      2. If one wants to find out all six factor, follow the procedure as from para 4.2.7
  1. **FACTOR KEY**
     1. When the reagent is calibrated (i.e. titre Factor) by using CAL-1 and CAL-II key, the Reading of titer factor goes in memory. To see the reading if, necessary, press FACTOR Key.
     2. The same key i. e factor key can be used to enter the titer factor manually if desired.
     3. FACTOR key, the display will appear as - As an example, press

K.F REAGENT FACTOR

05.0000 mgs/ml

PRESS ENTER TO CONT.

(The figure displaying on the screen may be of last checking)

* + 1. Suppose if one wants to enter the new titer factor which is manually calculated by way of pressing ‘START’ key and adding known quantity of moisture).

Such as titer factor = 6.25

Press [6][\*][2][5] keys

* + 1. The display will appear as Press ENTER Key.

K.F REAGENT FACTOR

0006.25 mgs/ml

PRESS ENTER TO CONT.

* + 1. The display will appear as (The second line may be last test)

K.F REAGENT READING

01.40 ml

* 1. **TO TEST THE SAMPLES**
     1. Press the START Key the display will appear as

ADD SAMPLE

CONF. TIME: 10 Secs

**Note:** Sample should be added after pressing the “START’ key only

* + 1. When the CONF.TIME decrements to 00 seconds. The dispensing unit will start adding the K.F Reagent and on the display the counting will start.
    2. The display will appear as Second line of the display shows the consumption of K/F reagent in ml. when the moisture is neutralized , the counting will stop , conf. time will start decrementing , If on Decrementing the time, the moisture still remains before the time reaches’00’ the dispensing Unit will start again and will add the K/F Reagent. The counts will increase according. When the complete moisture is neutralized, the conf. time decrement to 00 seconds and the Audio signal will indicate the end point is reached.

TITRATION STARTED

00.10 ml

CONF. TIME: 10 Secs

* + 1. The display will appear as

KFR READING

02.88 ml

Taking for granted, the titre factor of reagent =6.25

18 mgs =6.25x2.88

* + 1. To find out % and PPM.
    2. Enter the sample quantity.
    3. Press Key.

9

Sample Quantity

* + 1. The display will appear as –

Sample quantity

00000003 gm/ml

Press Enter to Continue.

(The quantity which is showing on display may be of last test). To enter the weigh = 150 mgs, user has to enter the weight in Gms i.e.0.150 Gms.

* + 1. Press [0] [.0] [1] [5] [0] the display will indicate as Press Enter Key

Sample quantity

00000003 gm/ml

Press Enter to Continue.

* + 1. The Display will appear as -

K.F.R. Reading

02.88 ml.

* + 1. Press Key.

7 %

PPM

* + 1. The display will appear as -

WAIT

Calculating % and PPM

And the display will change over to - Press ENTER Key.

% = 12.000

PPM = 120000.00

Mg of H2O =18.0000

* + 1. The display will appear as-

KFR Reading

02.88 ml

* 1. **TO TEST THE SAMPLES**
     1. **To test the liquid Sample:**

Example- Methanol: Add 10ml, as Sample.

Press START Key. The display will appear as-

ADD SAMPLE

CONF. TIME=10 Secs.

* + 1. **Note: sample should be added after pressing ‘start’ key.**
    2. When the total moisture is neutralized, CONF. Time decrements to ‘00’ Seconds The Display will appear as-

TITRATION STARTED

00.10 ml.

CONF. TIME=20 Secs.

* + 1. When the total moisture is neutralized, CONF.TIME decrements to ‘00’ seconds The display will appear as-

TITRATION STARTED

00.56 ml.

CONF. TIME=00 Secs.

(Quantity of reagent 00.56 is taken as example).

* + 1. A audio signal will indicate the end point is established.
    2. The display will indicate as-

KFR Reading

00.56 ml.

* + 1. To find out %and PPM to enter the sample qty =10 ml.
    2. Since the Sample qty added is ml, is necessary to enter the density of solvent, Methanol density such as 0.793
    3. Press Key.

9

SMPL QTY

* + 1. The display will appear as-

SAMPLE QUANTITY

000003gm/ml

PRESS ENTER TO CONT

* + 1. The third line indicating the gm/ml of sample quantity may be of last check.

To enter the new value .Press [1] [0].The display will indicate as- Press ENTER Key.

SAMPLE QUANTITY

0000010gm/ml

PRESS ENTER TO CONT

* + 1. The display will appear as-

KFR Reading

00.56 ml

* + 1. To enter the density, i.e. = 0.793, Press Key.

8

DENSITY

The display will appear as-

DENSITY

00000010 kg/L.

PRESS ENTER TO CONT

Second line of the display is indicating the density as 1(which is the set value).

* + 1. To enter the new density i.e.0.793, Press [0] [.] [7] [9] [3].
    2. The display will appear as- Press ENTER Key

DENSITY

0000.793 mg/L.

PRESS ENTER TO CONT

* + 1. The display will appear as-

KFR Reading

00.56 ml

* + 1. Press Key.

7 %

PPM

* + 1. The display will appear as -

WAIT

CALCULATING % and PPM

* + 1. The above massage will appear for few seconds and will change to- Press ENTER Key.

% = 0.044

PPM = 440.000

Mg of H2O = 3.5000

PRESS ENTER TO EXIT

* + 1. The display will appear as-

KFR Reading

00.56 ml

* + 1. To test the next sample, press START key and follow the procedure as per Paragraph 4.4.2

\*\*If the time is lost, then the fresh end point should be obtained and then press The START key.

* 1. **SOLVENT BLANK**: (i.e. Dilution of sample in a solvent)
     1. Example: If the sample is having low moisture, it is not possible to add large quantity of sample or if the sample contains high % of moisture like 30% or more It requires to add very small quantity of sample. In this case, the dilution technique is suitable.
     2. Example: For moisture of order of 0.1%, the sample quantity required is at least 10gms So that the mgs of H2O available is 10 mgs
     3. For such samples, the dilution technique is suitable.
     4. Dissolve the sample quantity 10 gms in 20ml of methanol
     5. Determine the moisture in the methanol also. I.e Blank Reading of methanol only Known as ‘Solvent Blank’
     6. Add 1 ml of methanol in the titration vessel.

(If time is lost, obtain the fresh end point by pressing the START key and wait till the Audio signal indicating fresh end point)

* + 1. Press START key and follow the procedure as paragraph 4.4
    2. Suppose the reading of K/F reagent to neutralize 1 ml of methanol =0.05ml
    3. The display will appear as -

KFR Reading

00.56 ml

* + 1. To enter the reading into solvent blank mode,

Press Key

5

SOLVENT BLANK

* + 1. The display will appear as -

SOLVENT BLANK

0000000 ml

PRESS ENTER TO CONT

* + 1. To enter the volume, press [0],[.][0][5]

The display will appear as - Press ENTER Key

SOLVENT BLANK

00000.50 ml

PRESS ENTER TO CONT

* + 1. The display will appear as -

KFR Reading

00.05 ml

* + 1. Now add 1 ml of diluted sample (without losing any time gap). (Remember sample is diluted by adding 10gms of sample in 20 ml of methanol )
    2. Press START Key and follow the procedure as per paragraph 4.4.15 to 4.4.18
    3. The display will appear as - Taking for granted, the consumption of K/F reagent required for 1 ml of diluted sample.

KFR Reading

01.15 ml

* + 1. To enter the sample quantity, i.e .0.500 Gms

(Since 20 ml of methanol =10 gms of sample, 1 ml of methanol =0.500 gms of sample)

* + 1. Press key

9

SMPL QTY

* + 1. The display will appear as

SAMPLE QUANTITY

0000.500gm/ml

PRESS ENTER TO CONT

* + 1. Press ENTER Key the display will appear as -

KFR Reading

01.15 ml

* + 1. To find out % and PPM, Press Key

7 %

PPM

* + 1. The display will appear as -

WAIT

CALCULATING % and PPM

* + 1. This message will remain for few seconds and change to

% = 0.625

PPM = 6250.000

Mg of H2O = 3.1250

PRESS ENTER TO EXIT

* + 1. ENTER Key The display will appear as

KFR Reading

01.15 ml

* 1. **EXTRACTION TIME:** 
     1. In most of the liquid samples, the moisture is extracted by the methanol in Titration vessel, as soon as it is added. In the case of high viscous liquid and from some of the solid sample, moisture may not be extracted immediately. In such samples, Extraction time is essential to extract the moisture.
     2. During this extraction time all functions are stopped. Only stirring is kept ‘ON’ to extract the moisture. When ‘EXTRACTION TIME’ is over, the dispensing unit will start adding K/F Reagent
     3. The ‘EXTRACTION TIME’ is set to ‘10’ seconds, but this can be varied from 1seconds to 240 seconds as per requirement.
     4. The display is indicating as Second line is showing the reading of K/F reagent may be of last test.

KFR Reading

00.56 ml

* + 1. Press key

4

EX TIME

* + 1. The display will appear as Second line if display is showing set value of 10 seconds

EXTRACTION TIME

0010 Secs

PRESS ENTER TO EXIT

* + 1. To Change the time, say 20 seconds, press [2][0]. The display will indicate as

EXTRACTION TIME

0020 Secs

PRESS ENTER TO EXIT

* + 1. Press ENTER key. The display will indicate as –

KFR Reading

00.56 ml

* + 1. If user wants to cancel the Ex. Time of 20 seconds and go to ‘SET VALUE’, it can be Done by pressing the CE key or, can over write.

Example:

EXTRACTION TIME

0020 Secs

PRESS ENTER TO EXIT

* + 1. Press key or Press [1][0].

CE

CLEAN

* + 1. The massage will appears as

EXTRACTION TIME

00.10 Secs

PRESS ENTER TO EXIT

* + 1. Press ENTER Key. The display will indicate as

KFR Reading

00.56 ml

* 1. **CLEANING:**
     1. Press CLEAN Key. The display will appear as

Are you ready for cleaning any key to EXIT Enter to continue

* + 1. Press ENTER Key. The massage will appear as

Remove Glass adapter from K/F Reagent bottle and connect to methanol bottle

* + 1. Press ENTER Key

Connect Glass STOPPER TO K/F Reagent Bottle

* + 1. Press ENTER Key

WAIT

CLEANING STARTED

PRESS CLEAN TO STOP

* + 1. The dispensing unit will start sucking the methanol. To ‘Stop’ in between, press

‘STOP’ key again. OR The system will ‘STOP’ automatically after few minutes.

VEEGO/MATIC-MD

* 1. **BATCH NO:**
     1. To enter batch number as 1234, press BATCH NO key. The display will appear as

BATCH NUMBER

0000

Press ENTER to cont.

* + 1. Press [1][2][3][4] the massage will appear as

BATCH NUMBER

124

Press ENTER to cont.

* + 1. Press ENTER key. The massage will appear as

VEEGO/MATIC-MD

* 1. **DISPENSER CALIBRATION:**
     1. **Calibration Frequency:** Every 2Months (±3 days)
     2. Fill the sufficient amount of Methanol into reservoir and connect it to the “INLET’ of the dispenser. Connect the ‘OUT LET’ of the dispenser to a small beaker.
     3. Allow the dispenser to run for sometime so that the inlet and outlet tubes are filled with water. This can be done by running the clean cycle of the dispenser.
     4. Thus the dispenser is now ready for calibration. After air bubble is removed.
     5. On pressing the ‘CLEAN’ key the display will show the massage.

DO YOU WANT TO

VALIDATE DISPENSER

ANY KEY TO EXIT

ENTER TO CONTINUE

* + 1. If you want to continue with Validation or Calibration of the dispenser, Press ENTER Otherwise press any key to exit. On Pressing then ENTER key the display will show the Message

DISPENSER READY

ANY KEY TO EXIT

ENTER TO CONTINUE

* + 1. If the dispenser is ready after removing air bubbles etc., then to continue with Calibration of the dispenser, press ENTER otherwise press any key to exit. On pressing the ENTER key the display will show the message.

SELECT MODE VALIDATION/CALIBRATION

SLECT TO CHANGE

ENTER TO CONTINUE

* + 1. Observe that the message ‘VALIDATE’ is bilking, on pressing the SELECT key the Message “CALIBATE’ will blink. Press SELECT to choose the either of the modes.
    2. Press SELECTS to choose ‘CALIBRATION’ mode. Observe that on pressing the SELECT key the message ‘CALIBRATE’ is blinking. Now press ENTER to continue. On pressing the ENTER to continue. On pressing the ENTER key the display will Show the message.

DISPENSER READY

ANY KEY TO EXIT

ENTER TO CONTINUE

* + 1. If the dispenser is ready after removing air bubbles etc., then to continue with calibration of the dispenser, Press ENTER otherwise press any key to exit. On pressing the ENTER key the display will show the message

ENTER REQUIRED VALUME

00.00ML

PRESS ENTER TO CONTINUE

* + 1. Now enter the required volume to be dispensed for calibrating the dispenser, say

10.00ML, after entering the required volume the display will show.

ENTER REQUIRED VALUME

10.00ML

PRESS ENTER TO CONTINUE

* + 1. Now press ENTER to continue the calibration. On pressing the ENTER the display Will Show

PLACE THE CYLINDER

AND

ENTER TO CONTINUE

* + 1. Now place the measuring cylinder just below the delivery tip and press ENTER. The Display will show

WAIT

ADDING LIQUID

00.00ML

* + 1. Observe that the dispenser is adding the Methanol into the beaker and display indicates Amount of Methanol being dispensed, after 10.00 ml water is dispensed, the dispenser Stops and the display shows the message.

ENTER DISPENSED VOLUME VALUME

00.00ML

PRESS ENTER TO CONTINUE

* + 1. Now take the dispensed i.e. Volume of methanol. if the volume dispensed is 9.70 ml. Now on entering the volume dispensed as 9.70 ml the will show.

ENTER DISPENSED VOLUME VALUME

09.70 ML

PRESS ENTER TO CONTINUE

* + 1. After entering the volume press ENTER. The display will show.

ENTER DISPENSED VOLUME VALUME

09.70 ML

ANY KEY TO CHANGE

PRESS ENTER TO CONTINUE

* + 1. To edit the dispensed volume, press any key so that the volume can be edited. Otherwise Press ENTER Key to confirm. On pressing the ENTER Key the display will show

ARE YOU READY FOR

NEXT RUN

ANY KEY TO ABORT

ENTER TO CONTINUE

* + 1. The same experiment is repeated thrice and the average volume is calculated. To continue with the calibration press ENTER Key and repeat the experiment again. Each time calculate the dispensed volume and enter it properly. If you do not want to Continue with calibration further, press any key to abort. In that case the average of whatever. After the calibration is over the display will show the Message with an. Audio signal for few seconds

CALIBRATION OVER

The message will be cleared automatically after few seconds.

* 1. **DISPENSER VALIDATION:**
     1. **Validation Frequency:** Every 2 Months (±3days) Acceptance Criteria: ±0.20ml
     2. Fill the sufficient amount of methanol into reservoir and connect it to the “INLET’ of the dispenser. Connect the ‘OUT LET’ of the dispenser to a small beaker.
     3. Allow the dispenser to run for sometime so that the inlet and outlet tubes are filled with water. This can be done by running the clean cycle of the dispenser.
     4. Thus the dispenser is now ready for calibration. After air bubble is removed.
     5. On pressing the ‘CLEAN’ key the display will show the massage.

DO YOU WANT TO

VALIDATE DISPENSER

ANY KEY TO EXIT

ENTER TO CONTINUE

* + 1. If you want to continue with Validation of the dispenser, Press ENTER otherwise Press any key to exit. On Pressing then ENTER key the display will show the message.

DISPENSER READY

ANY KEY TO EXIT

ENTER TO CONTINUE

* + 1. If the dispenser is ready after removing air bubbles etc., then to continue with validation of the dispenser, press ENTER otherwise press any key to exit. On pressing the ENTER Key the display will show the message.

SELECT MODE VALIDATION/CALIBRATION

SLECT TO CHANGE

ENTER TO CONTINUE

* + 1. Observe that the message “VALIDATE” is blinking, now press ENTER to continue for the validation of the dispenser. On pressing the ENTER key the display will show the massage.

DISENSER READY

ANY KEY TO EXIT

ENTER TO CONTINUE

* + 1. If the dispenser is ready after removing air bubbles etc. then to continue with validation of the dispenser, press ENTER otherwise press any key to exit. On pressing the ENTER Key the display will show the message.

ENTER REQUIRED VOLUME

00.00ML

PRESS ENTER TO CONTINUE

* + 1. Now enter the required volume to be dispensed for validating the dispenser, Say

10.00ml. after entering the required volume the display will show.

ENTER REQUIRED VOLUME

10.00ML

PRESS ENTER TO CONTINUE

* + 1. Now press ENTER to continue the. On pressing the enter the display will show

PLACE THE CYLINDER

AND

ENTER TO CONTINUE

* + 1. Now place the measuring cylinder just below the delivery tip and press ENTER. The Display will Show

WAIT

ADDING LIQUID

* + 1. Observe that the dispenser is adding the methanol into the beaker and the display Continues to show above message After 10.00 ml methanol is dispensed, the dispenser Stops and the display show the message

CHECK THE DISPENSER VALUME

PRESS ENTER TO CONTINUE

* + 1. Measuring the methanol Volume. Repeat the validation three times

1. **FORMATS / ANNEXURE(S):**
   1. KF Standardization Record : QC032-FM066
   2. Calibration of KF Titrator : QC032-FM067
   3. Validation of KF Titrator : QC032-FM068
   4. Usage Log Book : QC048-FM086
2. **CHANGE HISTORY:**

| Revision No. | Effective Date | Details of Revision | Ref CCF No. |
| --- | --- | --- | --- |
| 00 | 07.06.2013 | New Sop Introduced for KF Titrator | -- |
| 01 | 01.06.2014 | Formats are the part of SOP. So prepared Separately | -- |
| 02 | 01.01.2017 | SOP format make to in line with SOP-QA-001-04. | QC-CRF-025/16 |