

#### **QUALITY CONTROL DEPARTMENT**

STANDARD OPERATING PROCEDURE			
<b>Department:</b> Quality Control	SOP No.:		
Title: Operation, Cleaning and Calibration of Auto-titrator	Effective Date:		
Supersedes: Nil	Review Date:		
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#### 1.0 OBJECTIVE:

To lay down a procedure for Operation, cleaning and calibration of Auto-titrator

#### 2.0 SCOPE:

This SOP is applicable for Auto-titrator Apparatus, (MAKE : Metrohm Model: 702 SM Titrino) installed in Quality Control Department Laboratory.

- **3.0 RESPONSIBILITY** Execution Executive QC. Checking Assistant Manager QC.
- **4.0 ACCOUNTABILITY** Manager Quality Control
- **5.0 PROCEDURE:**
- 5.1 CLEANING & OPERATING PROCEDURE

Cleaning Frequency: Daily: Before and after every use

- 5.1.1 Clean the instrument with a clean cotton cloth.
- 5.1.2 Switch 'ON' the mains.
- 5.1.3 Switch 'ON' the instrument.
- 5.1.4 Switch on the Titrino using **On/Off** switch at front panel of Titrino...
- 5.1.5 Select appropriate Exchange Unit and fit it on the top of the instrument
- 5.1.6 Exchange Unit is activated by the movement of cock changeover switch., which is present on front side of the exchange unit.
- 5.1.7 Connect the suitable electrode at the rear panel of the instrument using appropriate electrode cable. Also Verify it through s/w of Titrino.
- 5.1.8 Recalling a method:

Press **<user method>** keys repeatedly, till the option Recall Method comes on screen, press **<enter>**. Select the required method using **<select>** key on keyboard and then press **<enter>**.

- 5.1.9 The method name is displayed on the extreme right side of the first line of the screen.
- 5.1.10 Take the sample along with suitable solvent and place it on the stirrer.
- 5.1.11 Switch on the stirrer.
- 5.1.12 Clean the electrode with water and then rinse it with the solvent solution
- 5.1.13 Dip the electrode assembly along with dispensing tube of Exchange unit in the sample vessel just above the stirring bar.
- 5.1.14 Press **<start>** key either on front panel of instrument or on keyboard.



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- 5.1.15 After completion of the analysis, result will be shown on display.
- 5.1.16 For print out press <print> <Select> < Full Enter>

#### **5.2** For Measurement:

- 5.2.1 Select the **MEAS** mode by pressing **<mode>** key repeatedly, until **MEAS** is displayed on second line of the screen and then press **<**enter> to confirm the selection.
- 5.2.2 Select the measuring quantity i.e. pH or milli volt by means of **<select>** key on keyboard, and then press **<enter>** to confirm the selection.
- 5.2.3 Connect the suitable electrode in appropriate input at the rear panel of Titrino.
- 5.2.4 Press <start> key either on front panel of instrument or on keyboard.
- 5.2.5 Measured quantity will be displayed on the screen

#### 5.3 CALIBRATION PROCEDURE

**Frequency**: Once in 3 months.

- 5.3.1 Operate the instrument as per operational procedure described above.
- 5.3.2 Take Potassium Hydrogen Phthalate previously dried at 105°C for 2hrs as the primary standard for titration.
- 5.3.3 Set the instrument parameter in MET mode.
- 5.3.4 Take 5 different accurate weights of primary standard varying from 0.1 to 0.3g.
- 5.3.5 Perform titration using standard 0.1M Perchloric acid & repeat the same procedure with0.1M Sodium Hydroxide.
- 5.3.6 Refill the burette after each titration.
- 5.3.7 Report the results as per Annexure-I.
- 5.3.8 Calculate the linearity and correlation coefficient.
- 5.3.9 Linearity should not be less than 99.0%
- 5.3.10 Correlation coefficient should not be less than 0.990.
- 5.3.11 The performance of the instrument is satisfactory, if the obtained Linearity and Correlation



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Coefficient is within the given limit.

5.3.12 If the results of calibration are not found to be satisfactory, follow the SOP "Action level procedure for out of calibration instruments" SOP.

#### 5.4 CLEANING PROCEDURE:

FREQUENCY: DAILY

- 5.4.1 Switch 'OFF' the instrument and switch 'OFF' the mains.
- 5.4.2 Remove the solution from the test compartment and Electrode, wash with purified water and wipe off with tissue paper.
- 5.4.3 Electrode should be dipped in a provided solution, after washing properly.
- 5.4.4 Clean the outer surface of the instrument with Isopropyl alcohol and dry it with tissue paper.

Record details of cleaning in the log card of instrument.

#### 6.0 SAFETY & PRECAUTIONS

- 6.1 Always switch "off" the instrument & main when not in use.
- 6.2 Always store the electrode in specified solution.

#### 7.0 REVISION HISTORY:

Revision No.	Reason for Revision	Superseded	from & date

#### **8.0 DISTRIBUTION:**

Сору	Issuance Record			Withd Rec	lrawal cord		uction cord	
No.	Date	Dept. issued	Name / Signature of receiver	Issued By Name / Signature	Ву	Sign/ Date	Ву	Sign/ Date



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#### 9.0 REFERENCES:

SOP for "Action level procedure for out of calibration instruments".

### 10.0 ABBREVIATIONS & ANNEXURES

SOP: Standard Operating Procedure

QA: Quality Assurance

No.: Number

QC : Quality Control

% : Percentage

°C : Degree centigrade

g : Gram

ml : Millilitre

M: Molar

**Annexure I: Calibration Of Autotitrator** 

Annexure II: Cleaning record for Autotitrator



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	ISSUE DATE:	
CALIBRATION DATE	DATE OF LAST CALIBRATION	NEXT DUE FOR CALIBRATION
	INSTRUMENT DETAILS	
1		

INSTRUMENT DETAILS					
INSTRUMENT NAME INSTRUMENT ID No.					

## **OBSERVATION**

Titrator Calibration:	
Balance Id No. :	
Ref. No. of Potassium Hydrogen Phthalat	e:
Actual Normality of 0.1M Perchloric acid	:
Actual Normality of 0.1M NaOH	:

S.No.	For 0.1M Perchlor	ric acid	For 0.1M Sodium Hydroxide		
	Wt. of Potassium	Burette reading	Wt. of Potassium	Burette reading	
	Hydrogen Phthalate (mg)	at Ep1 (ml)	Hydrogen Phthalate (mg)	at Ep1 (ml)	
	(mg)	(1111)	(mg)	(1111)	
1.					
2.					
3.					
4.					
5.					
Linearity					



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## ANNEXURE II CLEANING RECORD FOR AUTOTITRATOR

NAME OF THE INSTRUMENT:
MAKE
MODEL NO
IDENTIFICATION NO.

<b>Date Of Cleaning</b>	Cleaned By	Checked By	Remarks