



Date: 26 Feb 2024

Certificate of Calibration

Name & Address of Customer: Sadar Hospital, Department of Pathology SitamarhiCity: Sitamarhi State: Bihar. PIN: 843302

Phone _

E-Mail _

Name of Instrument: Selectra PRO M

Type: Random Access Fully Automatic Biochemistry Analyser

Serial No: 21-4143Calibration Date: 22 April 2024Next Calibration Due: 21 April 2025

This is to certify that above said instrument has been validated of hardware calibration for Filters, Aspiration, and Temperature & Lamp according to the procedures provided by Elitech Group Clinical Systems, France.

This calibration is carried out by using Standard Operating Procedures (S.O.P.) provided by Elitech Group, shown in the attachment.

These instruments conform to CE-IVD & EU directives of use.

Calibration carried out on site by:- Mr. Prashant

Signature & Stamp

Name of Engineer/ Application Specialist: - Ajit Mohan Dubey
Asst. Sr. Manager-Application



Encls. - SOP of Validation/Calibration along with data.



Validation / Calibration - SOP

Selectra ProM

Name of the Customer & Address : Dept. of Pathology Sadar Hospital, Department of	
Sadar Hospital Sitamarhi	
Sr No: <u>21-4143</u>	
Status : Under warranty	Validation & Preventive Maintenance

➤ Power Supply

Measure Input power Supply Voltage: 229_V (230 V AC \pm 10 V)

Check Earthling: 2.1 V (0 - 5 V)

➤ Ambient temperature: 23 ° C (10 - 35 ° C)

➤ Appearance : Clean (Clean/Dusty)

➤ Bellow Pumps: Open the pump assays and clean it thoroughly.

➤ **Analyser Control**

Filter: Select the desired position through the Service menu.
Filter wheel sets the desired Filter: **Yes**

Filter Status: Needs replacement (Yes/ NO)

ρ 340nm ρ 405nm ρ 505nm ρ 546 nm ρ 578 nm ρ 620 nm ρ 660 nm ρ 700 nm

Note: Filter checked status was ok no need of replacement.

Temperature: Select the desired Options through the Service mode.
Temperature OK: **Yes**

Pump: Select the desired volume through the Service mode
Verify by aspirating the same Quantity : **OK**



Valve: Select the desired position through the service mode.
Valve is energized: Yes

Syringes: Check for syringe leakage by physical inspection of syringes.
No water leakage Found.

Cuvette Drier Block: Check the condition of cuvette drier block by removing the cover of cuvette rotor and lifting the wash arm through service menu. It should be reasonably clean. If dirty please change the drier block.

Note:- Condition of cuvette drier block is clean. No need to change.

Mixer Belts – Check the elasticity of mixer belts. Should be reasonably good or replace the belts.

Note:- Mixer belts are good no need to change.

Cuvette Rotor Blank : Perform rotor blank and check the OD values of cuvettes. All cuvette blank OD values should be within acceptable range. If required replace the cuvette rotor.

Note:- All cuvette blank OD values are in range no need to replace



Hardware Calibration of Selectra Pro S/Pro M

➤ Lamp Calibration/Alignment

Lamp Adjustment :-

1. Flush the system with distilled water by doing Rotor Blank.
2. Select Adjust Lamp in service menu. Check Value obtained on Display. (Adjust the lamp, if it is out of 1.800 to 4.000, to as low as possible)

Do not touch lamp !! It may be Hot !!

Lamp alignment Data @ 340 nm wavelength			
Lamp Abs Obtained	Acceptable Range	Alignment	Remarks
3.6396 Abs	1.800 to 4.200abs	Done	Lamp O.D.in acceptable range. No replacement required.

➤ Checking the filters

Perform filter check in adjust lamp mode in service menu.

All the arrows must be in Green area. If not, then adjust lamp or replace filter if necessary.

Note :

When the absorbance value is too low to measure, i.e., the gain is too high, in this case, instead of the absorbance value, the value -99999 is shown.

Filter (Wavelength)	Gain Range	Gain Achieved	Remarks	Corrective Action
340	0.1 – 3.5	2.3259	OK	Not required
405	0.1 - 2.6	1.6276	OK	Not required
505	0.1 - 2.6	0.6974	OK	Not required
546	0.1 - 2.6	0.6579	OK	Not required
578	0.1 - 2.6	0.5205	OK	Not required
620	0.1 - 1.2	0.4706	OK	Not required
660	0.1 - 0.7	0.5184	OK	Not required
700	0.1 - 0.75	0.3644	OK	Not required
Over all Remarks	Filter gains within acceptable range. No replacement required.			

If it is necessary to replace defective filters, please contact service department.



➤ Calibration/Verification of performance of Pipetting system & measuring unit

- Install dichromate solution on reagent rotor(s) & as sample on sample rotor (Use service disk which has Pre-defined protocol installed for dichromate run).
- Run 10x "Check-S" or 10x "Check-R" as QC samples.

Test	Target Value	Target CV [%]	Mean Result	CV [%]
Check-S	0.08(0.060-0.100)	≤2%	0.079	0.324
Check-R	1.75(1.500-2.000)	≤2%	1.752	0.810

Remarks:

Rotor Blank acceptable. Instrument ready for chemical installation & calibration.

- Change reagent disk from Service to Standard
- Install the various reagents on reagent rotor(s)
- Install ISE reagents on reagent rotor(s) (If applicable)
- Run Reagent Blanks(s)
- Run Calibrations

Volume calibration of pipettors:-

It is possible to check a predetermined amount of water to check the correct functioning of the pump. Before carrying out this check, the instrument must first carry out a flush routine to ensure that all system tubes are completely filled with water by doing fill system.

1. Go to Sample syringe full stroke. (For Pro M Model Only)
2. Collect the dispensed water. Check the dispensed volume using calibrated pipette. (Pro M only)



Pipettor Calibration Data using distilled Water		
Full stroke volume to be dispensed (μL)	Dispensed volume checked and found complying as full stroke volume? (Yes/No)	Remarks
Sample Syringe:		
100	Yes	OK
100	Yes	OK
100	Yes	OK
Reagent syringe:		
1000	Yes	OK
1000	Yes	OK
1000	Yes	OK

Data for volumes other than full stroke:-

This can be verified using pre-determined amount of distilled water in sample/regent cups and running any dummy program. As soon as the reagent probe/sample probe takes up the sample/reagent, those cups/bottles are taken back and verified for remaining volume using calibrated pipette. Same can be repeated for variable volumes by changing the aspiration volumes in test programmes.

Pipettor Calibration Data using distilled Water				
Measured Volume taken in sample cup(μL) (A)	Water to be aspirated by syringe(μL) (B)	Water that should be remaining in cup after aspiration(μL) (C=A-B)	Is the remaining volume inside the cup was found to be the same as in column C? (Yes/No)	Remarks
Reagent syringe:				
5000 μL	300 μL X 3 test =900 μL	4100 μL	Yes	OK
Sample syringe:				
300 μL	30 μL X 3 test =90 μL	210 μL	Yes	OK



➤ Temperature Calibration

Select Temperature in Service Menu. It should be $37^{\circ}\text{C} \pm 2^{\circ}\text{C}$
Verify with temperature Indicator by surface probe in cuvette rotor. If any discrepancy
add the offset of difference in actual & desired temperature.

Temperature Calibration Data				
Displayed Temp	Ref. Range	Temp. Indicator	Temp Offset Required	Temp. offset Value
37°C	$37^{\circ}\text{C} \pm 2^{\circ}\text{C}$	36.7°C	No	0 °C
Remarks	Temp. Calibration OK. No offset required.			



➤ Reagent Calibration of the Instrument

Customer is advised to verify the hardware calibration by reagent calibration. Use Elitech Calibrator Elical 2 for the calibration of all parameters.

User can do the same & attach the results in separate sheet with factors after verifying the same with Elitech Elitrol I & Elitrol II controls. All control values should fall within acceptable range.

Data sheets of the same should be attached along with this document.

- Switch Off the instrument.
- Ensure all the Recommended Spares / Consumables have been replaced.(if not done during PM and required)
- Clean the instrument.
- Close the cover.

Recommended Spares for replacement : NIL

We hereby certify that Validation have been carried out under the MOU. Hardware Calibration of Lamp, Filters, Temperature & Aspiration (Pump) has been done successfully.

Please perform the standardization / Calibration and verify by evaluating controls before processing patient samples.

Next Calibration is due on: 22 Feb. 2025.

Signature of Application Specialist

Place
Date.

▶ Adjust Lamp

- Reagent Arm
- Sample Arm
- Reagent Disk
- Sample Disk / Barcode
- Measurement Disc/Filter
- Wash Arm
- Pipettor
- Vacuum system
- Water system
- Optical electronics
- Electronics

Filter check

	340	405	505	546	578	620	660	700
	-2.6	-2.6	-2.6	-2.6	-2.6	-2.6	-2.6	-2.6
	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8
	-1.6	▶ -1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
	-0.8	-0.8	▶ -0.8	-0.8	-0.8	-0.8	-0.8	-0.8
	-0.6	-0.6	-0.6	▶ -0.6	-0.6	-0.6	-0.6	-0.6
	-0.4	-0.4	-0.4	-0.4	▶ -0.4	-0.4	-0.4	-0.4
	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	▶ -0.2
	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
	2.3259	1.6276	0.6974	0.6579	0.5205	0.4706	0.5184	0.3644

F1

Lamp adjustment

F10



Return

▶ Adjust Lamp

Reagent Arm

Sample Arm

Reagent Disk

Sample Disk / Barcode

Measurement Disc/Filter

Wash Arm

Pipettor

Vacuum system

Water system

Optical electronics

Electronics

Lamp adjustment

Lamp absorbance	Cuvette absorbance
-4.6	-4.6
-4.4	-4.4
-4.2	-4.2
-4.0	-4.0
-3.8	-3.8
-3.6	-3.6
-3.4	-3.4
-3.2	-3.2
-3.0	-3.0
-2.8	-2.8
-2.6	-2.6
-2.4	-2.4
-2.2	-2.2
-2.0	-2.0
3.6396	2.5663

04 : 57

Please wait for 5 minutes (see above clock) to let the lamp stabilize.

Loosen the screw with the spring.

Adjust the other two screws such that the lamp absorbance and the cuvette absorbance fall within the green range and are as low as possible.

Also, check for the first 5 filters, if the absorbance has a decreasing "profile".

Then do a filter check by inspecting if all values fall within the green range. If not, adjust the lamp again such that the absorbance values are a little bit higher.

When finished, tighten the screw with the spring.



Rotor/System

- Reset system
- Change cuvette rotor
- Change syringes
- Fill/Empty system
- Clean system
- Rotor/Needle rinse
- ▶ Blank rotor

340 nm
405 nm
505 nm
546 nm
578 nm
620 nm
660 nm
700 nm

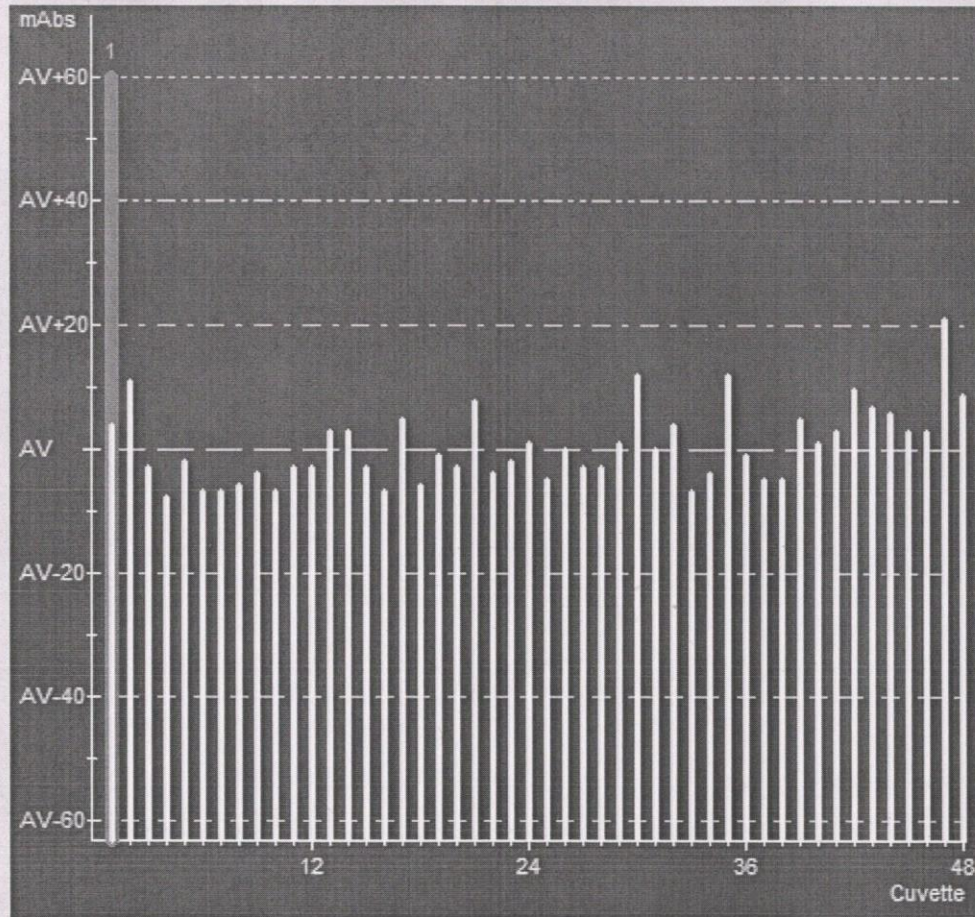
1-12	13-24	25-36	37-48
0.42577	0.42528	0.41733	0.41706
0.43313	0.42537	0.42166	0.41684
0.41854	0.41881	0.41893	0.42680
0.41421	0.41529	0.41866	0.42339
0.41960	0.42714	0.42285	0.42546
0.41468	0.41601	0.43365	0.43212
0.41509	0.42117	0.42211	0.42875
0.41646	0.41863	0.42557	0.42813
0.41843	0.43044	0.41529	0.42487
0.41455	0.41778	0.41787	0.42458
0.41924	0.41989	0.43403	0.44298
0.41922	0.42261	0.42106	0.43057

Cuvette AV: 0.4225 SD: 0.0063 Cuvette Gain: 8.0000
 Lamp AV: 1.8583 SD: 0.0003 Lamp Gain: 12.0000
 Last blank date: 23-Feb-2024
 time: 09:47:29 AM

Rotor/System

- Reset system
- Change cuvette rotor
- Change syringes
- Fill/Empty system
- Clean system
- Rotor/Needle rinse
- ▶ Blank rotor

- 340 nm
- 405 nm
- 505 nm
- 546 nm
- 578 nm
- 620 nm
- 660 nm
- 700 nm



Cuvette AV: 0.4225 SD: 0.0063 Cuvette Gain: 8.0000
 Lamp AV: 1.8583 SD: 0.0003 Lamp Gain: 12.0000
 Last blank date: 23-Feb-2024
 time: 09:47:29 AM

Evaluate Results

Control name: Water
 Batch number: Check R
 Expiry date:
 Measurement date: 23-Feb-2024 10:07:49 AM
 Sample type: Control
 Status: READY A1

Check R 1.753 dAbs
 READY

Test name	Value	Flags
- Check R	1.753 dAbs	
#1 Check R	1.766 dAbs	
#2 Check R	1.771 dAbs	
#3 Check R	1.777 dAbs	
#4 Check R	1.737 dAbs	
#5 Check R	1.742 dAbs	
#6 Check R	1.761 dAbs	
#7 Check R	1.746 dAbs	
#8 Check R	1.744 dAbs	
#9 Check R	1.745 dAbs	
#10 Check R	1.742 dAbs	

Graph Info

Target: 1.750 dAbs
 Low limit: 1.500 dAbs
 High limit: 2.000 dAbs
 Max value: 1.777 dAbs
 Min value: 1.737 dAbs
 Max diff: 0.039 dAbs
 SD: 0.014 dAbs
 CV: 0.810 %
 AV: 1.753 dAbs

	Concentration [dAbs]	Absorbance [dAbs]
#1	1.766	1.7664
#2	1.771	1.7708
#3	1.777	1.7766
#4	1.737	1.7374
#5	1.742	1.7417
#6	1.761	1.7612
#7	1.746	1.7465
#8	1.744	1.7438
#9	1.745	1.7451

Evaluate Results

Control name: 8-Abs
 Batch number: Check S
 Expiry date:
 Measurement date: 23-Feb-2024 10:31:58 AM
 Sample type: Control
 Status: READY A2

Check S 0.079 Abs
 READY

Test name	Value	Flags
Check S	0.079 Abs	
#1 Check S	0.079 Abs	
#2 Check S	0.079 Abs	
#3 Check S	0.079 Abs	
#4 Check S	0.078 Abs	
#5 Check S	0.079 Abs	
#6 Check S	0.079 Abs	
#7 Check S	0.078 Abs	
#8 Check S	0.078 Abs	
#9 Check S	0.079 Abs	
#10 Check S	0.079 Abs	
#2 Check S	0.087 Abs	

Graph Info

Target: 0.080 Abs
 Low limit: 0.060 Abs
 High limit: 0.100 Abs
 Max value: 0.079 Abs
 Min value: 0.078 Abs
 Max diff: 0.001 Abs
 SD: 0.000 Abs
 CV: 0.324 %
 AV: 0.079 Abs

	Concentration [Abs]	Absorbance [Abs]
#1	0.079	0.0787
#2	0.079	0.0790
#3	0.079	0.0785
#4	0.078	0.0784
#5	0.079	0.0787
#6	0.079	0.0785
#7	0.078	0.0784
#8	0.078	0.0783
#9	0.079	0.0785