

Title:

QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 1 of 26

1. PURPOSE

The purpose of this procedure is to define a preventive maintenance (PM) operating procedure to keep the test instrument performing at an acceptable level without the need to perform repair actions.

Process 25580 – Making of Test Fixtures and Testing of Sub Assemblies governs the need for this Operating Procedure.

2. SCOPE

The scope of this procedure is the maintenance of QDa systems installed at Schivo Group.

The Schivo QDa systems are used for the Spares and RCA testing of the assemblies listed in Table 1:

Part Number	Description and Test Protocol
700010377	MKII Ion Block (47347)
700009612	QDa ESi Source Enclosure (47466)

Table 1 – Assemblies currently tested on the Schivo QDa systems.

The level of Schivo QDa system functionality depends on the parts in table 1.

Table 2 identifies those AMITS test sequences that the Schivo QDa system must be able to pass to be verified as able test the items in Table 1: Table 2 must be reviewed if Table 1 is updated.

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 2 of 26

AMITS Test Sequence.	Functionality tested within test sequence.	Applicable to QDa Schivo?
Acquity QDa	Full test sequence for a new instrument	No
QDa Detector Dynode	Tests detector noise performance.	No
QDa Detector Housing	Tests the Detector housing (Quad and Detector). Checks quad can pass slow scan shape peak specifications. Tests detector noise performance.	No
QDa Quad Rail	Checks quad can pass slow scan shape peak specifications.	No
Spare QDa Control PCB	Checks Control PCB can control all the functionality required by the QDa	No
Spare QDa ESI Enclosure	Checks the source enclosure performs to specification.	Yes
Spare QDa Ion Block	Checks the ion block allows an instrument to pump down, and allows stable ion transfer. Checks internal calibration ions can be created throughout the mass range.	Yes
Spare QDa Pumping Block	Checks the pumping block assembly (including the first ion guide) allows an instrument to pump down, heats the ion block, and allows stable ion transfer. Checks that the assembly does not charge.	No
Spare QDa Segmented Quad	Checks the segmented quad assembly (including the first ion guide) allows an instrument to pump down, and allows stable ion transfer. Checks that the assembly does not charge.	No

Table 2 – Test sequences available in AMITS V2.0, the functionality that the test sequence checks, and whether this functionality is required for testing parts listed in Table 1

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 3 of 26

QDa System Architecture

Each QDa system (Figure 1) consists of a number of subsystems (Table 3) . Each subsystem will require preventive maintenance to be performed annually by PAE, and minor tasks to be performed at regular intervals by the local test engineer:

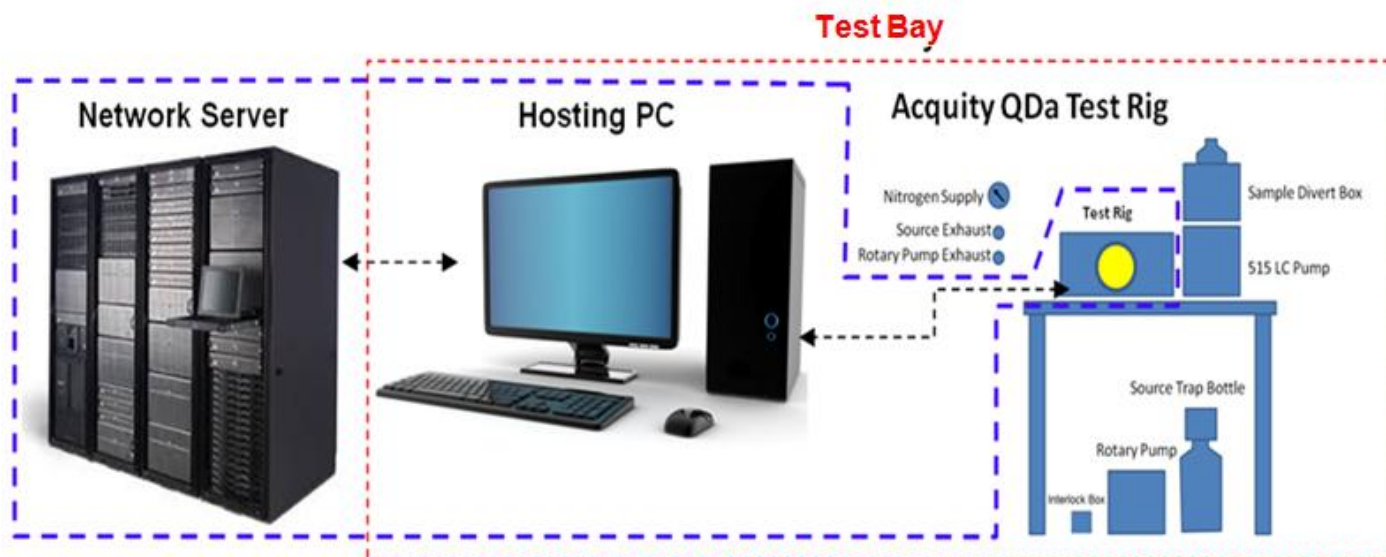


Figure 1 – QDa System

Computer System Interface

Spares or Assembly item under test.



QDa Sub Systems
High performance QDa, including source exhaust sub system (Source Exhaust valve Assembly, Bottle Waste Trap, solvent waste bottles) – See Figure 2.
Rotary Backing Pump
515 HPLC pump
Host PC sub system (PC, Monitor, Keyboard and Mouse)
TB668 Sample Divert Box

Table 3 – QDa Sub Systems

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 4 of 26

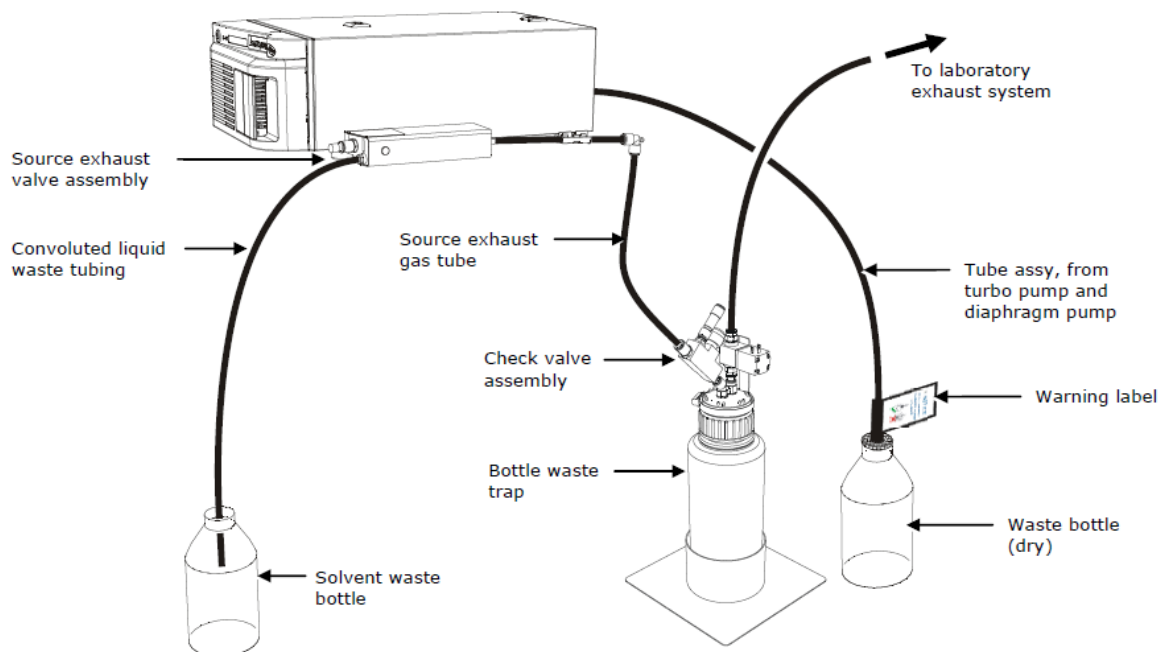


Figure 2 – High Performance QDa Exhaust sub system.

3. DEFINITIONS AND ABBREVIATIONS

Term	Definition / Abbreviation
PM	Preventive Maintenance
PAE	Product Assurance Engineer
PA	Product Assurance Group
ESI	Electrospray Ionisation
HPLC	High Performance Liquid Chromatography
AMITS	Automated Manufacturing Instrument Test Software
PMT	Photomultiplier Voltage
TSP	Test Specification Procedure

4. ROLES AND RESPONSIBILITIES

Roles	Responsibilities
AMITS Administrator	Can amend configurable values within AMITS.
PAE	Product Assurance Engineer. Responsible for annual PM tasks, and any tasks that can not be performed by the local engineer (Operator)
Operator	Local Engineer. Responsible for regular maintenance tasks that does not involve any maintenance that involves removing the covers of the QDa

5. REFERENCES / RELATED DOCUMENTS

Doc No:	Document Title
25580	Making of Test Fixtures and Testing of Sub Assemblies
715004515	ACQUITY® QDa® Detector Performance Maintenance - Technical Reference
715004514	ACQUITY QDa Detector Performance Maintenance Protocol
46202	TSP – Acquity QDa AMITS Test Procedure
45747	Automated Manufacturing Test Software Reference Manual - QDa
25689	Training and Support of Suppliers Who Perform Testing
10044	Maintenance & Calibration of Test Equipment
715003956	Acquity QDa Overview and Maintenance Guide
48552	QDa Schivo PM Test Record

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 6 of 26

6. FORMS

Doc No:	Document Title
48552	Product Assurance – QDa Schivo Preventative Maintenance Test Record
25237	Supplier Training Record
WAT053014	515 Pump Performance Maintenance Protocol. (supplied with PM Kit)
715004514	Acquity QDa Detector Performance Maintenance Protocol

6.1. Records

Ref No:	Document Title
QMS1	QDa Schivo Preventative Maintenance Test Record (48552)
QMS2	515 Pump Performance Maintenance Protocol. (supplied with PM Kit) (WAT053014)
QMS3	Acquity QDa Detector Performance Maintenance Protocol (715004514)

7. HEALTH & SAFETY

Refer to the health and safety considerations within the QDa System Test Procedure (46202) and the QDa Overview and Maintenance Guide (715003956).

7.1. Equipment/Materials of use Required

Order one month in advance of PM and arrange for the parts to be shipped to Schivo

Part Number	Description
WAT052587	515 HPLC pump PM Kit (x1 per system)
201000301	Acquity QDa High Performance Maintenance Kit (x1 per system)
700009641	ESI Probe Assembly 250mm (x1 per system)
186006846	MS cleaning solution (x1 per system)
WAT053502	Waters PM Label (x5 per system)

Recommended Tools

Part Number	Tool Name
0901018	Fiberglass pencil
5870100	Eye Glass
700005054	O-ring removal tool
700009677	Oil cartridge change tool
N/A	Circlip pliers
N/A	2-mm Allen wrench
N/A	2.5-mm Allen wrench
N/A	3-mm Allen wrench

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 7 of 26

N/A	4-mm Allen wrench
N/A	15-mm Allen wrench
N/A	Adjustable 22-mm wrench
N/A	Small and medium adjustable wrench
N/A	10-mm wrench
N/A	9/16 inch wrench
N/A	Medium flat blade (jeweler's) screwdriver
N/A	Needle nose pliers or forceps
N/A	Pozidriv screwdriver
N/A	Chemical-resistant, powder-free gloves
N/A	Ultrasonic bath
N/A	Large beaker
N/A	Large Flat-blade screwdriver
N/A	Container to catch used oil
N/A	Funnel
N/A	Needle Nosed Pliers
N/A	500ml Measuring Cylinder
N/A	Length of small diameter stainless steel tube
N/A	2 blank peek nuts
N/A	1m Black Peek tubing
N/A	10ml Measuring Cylinder
WAT011042	Plunger insertion tool
WAT076765	Seal replacement tool

Software

MassLynx – Latest SCN supported by AMITS

AMITS for QDa – Latest released issue.

Team Viewer – optional for remote access assistance.

Samples Additional to the PM Kit

Acquity QDa Set Up Solution.

LC/MS Grade Methanol

LC/MS Grade or Deionised Water

Formic Acid (Minimum 96% pure)

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 8 of 26

8. PROCEDURE

8.1. Preparation One Month in advance on the PM visit.

Roles	Tasks/Instructions																		
PAE	Preparation One Month in advance on the PM visit. 8.1.1. One month in advance of the PM service, order: <table border="1"> <thead> <tr> <th>Part Number</th><th>Description</th></tr> </thead> <tbody> <tr> <td>WAT052587</td><td>515 HPLC pump PM Kit (x1 per system)</td></tr> <tr> <td>201000301</td><td>Acquity QDa High Performance Maintenance Kit (x1 per system)</td></tr> <tr> <td>700009641</td><td>ESI Probe Assembly 250mm (x1 per system)</td></tr> <tr> <td>186006846</td><td>MS cleaning solution (x1 per system)</td></tr> <tr> <td>WAT053502</td><td>Waters PM Label (x5 per system)</td></tr> </tbody> </table> 8.1.2. Confirm Schivo has at least 1 litre of QDa Set Up Solution on order from Waters Wexford for the PM visit. 8.1.3. Raise a Shipment Request for the parts and send them to Schivo. (Confirm contact name with Schivo for the SR). 8.1.4. Confirm the following parts will be available at Schivo for the PM visit: <table border="1"> <thead> <tr> <th>Part Number</th><th>Description</th></tr> </thead> <tbody> <tr> <td>N/A</td><td>10ml Measuring Cylinder</td></tr> <tr> <td>N/A</td><td>500ml Measuring Cylinder</td></tr> </tbody> </table> 8.1.5. Confirm Schivo has the facilities to safely dispose of the waste rotary pump oil, and waste sample 8.1.6. Find and photocopy the current training records for the QDa System test procedures followed at Schivo. These need to be taken to Schivo for review . 8.1.7. Print new blank training records in case the current records have to be updated. 8.1.8. Acquire from the Calibration group two blank “calibrated” labels per system. 8.1.9. Confirm all of the points above have been completed before proceeding with the PM Visit	Part Number	Description	WAT052587	515 HPLC pump PM Kit (x1 per system)	201000301	Acquity QDa High Performance Maintenance Kit (x1 per system)	700009641	ESI Probe Assembly 250mm (x1 per system)	186006846	MS cleaning solution (x1 per system)	WAT053502	Waters PM Label (x5 per system)	Part Number	Description	N/A	10ml Measuring Cylinder	N/A	500ml Measuring Cylinder
Part Number	Description																		
WAT052587	515 HPLC pump PM Kit (x1 per system)																		
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186006846	MS cleaning solution (x1 per system)																		
WAT053502	Waters PM Label (x5 per system)																		
Part Number	Description																		
N/A	10ml Measuring Cylinder																		
N/A	500ml Measuring Cylinder																		

8.2. Procedure Overview

Roles	Tasks/Instructions
PAE	8.2.1. Familiarize the Operator and Cleanroom Management with what the PM Procedure entails. <pre> graph TD A[Schivo QDa System Preventive Maintenance] --> B[Confirm QDa System Performance (Prior to PM Protocols)] B --> C[Perform PM Protocols QDa PM Protocol 515 Pump PM Protocol Rotary Pump PM Protocol Host PC PM Protocol] C --> D[Confirm QDa System Performance (Post PM Protocols)] D --> E[Review PM procedures to be performed by Operators] E --> F[Review Training Records Operator PM Procedures Operator Spares Testing] F --> G[Complete Preventive Maintenance Test Record.] </pre> Flow Chart 1 – Preventive Maintenance Procedure Overview

Title:

QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 10 of 26

	• The Schivo QDa system performance will be tested. This will provide a record of the systems performance before any PM rework action is performed. Key features will be recorded such as pumping power and optimal detector PMT. • PM Protocols will be followed for the QDa instrument. 515 pump, rotary pump, and host PC. • The Schivo QDa system performance will be retested. This will provide evidence that the QDa system is still able to verify spare part performance. • Operator PM training will be reviewed, and the Operator training records updated if necessary. • The preventive maintenance test record package will be completed and stored at Waters Wilmslow.
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Title:

QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 11 of 26

8.3. Confirm QDa System Performance (Pre PM Protocol)

Roles	Tasks/Instructions
PAE	Test Preparation 8.3.1. Check that the Nitrogen supply to the QDa System is between 6.5 to 7Bar. 8.3.2. Record the pressure in the QDa Schivo Preventative Maintenance Test Record (48552) 8.3.3. Check that the QDa has a goldbrick ion block fitted, or a ion block that has been tested to TSP 700010377 QDa Ion Block MKII System Test Procedure (47347) and passed. 8.3.4. Record the ion block serial number in the QDa Schivo Preventative Maintenance Test Record (48552) 8.3.5. Check that the QDa has a goldbrick Source Enclosure fitted, or a source enclosure that has been tested to TSP 700009612 QDa Source Enclosure Assy System Test Procedure (47466) and passed. 8.3.6. Record the source enclosure serial number in the QDa Schivo Preventative Maintenance Test Record (48552) 8.3.7. Turn the instrument on, and wait for the source pressure test to complete – or wait a minimum of 5 minutes. 8.3.8. Open MassLynx, and open the tune page. 8.3.9. Check that the instrument turbo speed is at 100%, and place in the instrument into operate. 8.3.10. Check that the tune page “gain” has been set at 1 for both positive and negative modes. 8.3.11. From the diagnostic page, check what the positive ESI mode PMT read back value is. Record the value in the QDa Schivo Preventative Maintenance Test Record (48552) 8.3.12. From the diagnostic page, check what the negative ESI mode PMT read back value is. Record the value in the QDa Schivo Preventative Maintenance Test Record (48552) 8.3.13. Shut down MassLynx 8.3.14. Connect the instruments probe to its TB668 sample divert box. Confirm at least 200ml of sample is available.

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 12 of 26

AMITS Spare Ion Block Test (Pre PM Protocol)

8.3.15. Use AMITS to test the ion block, as described within [47347](#), but using the following Test Run Details

Product Type: Spare_QDa_Ion_Block

Serial Number: QBA*_prePM_ddmmyy

Sample Use By Date: as labeled on bottle

Test Box Number: as labeled on test box

Test Rig Number: QBA*

Procedure Document Version: [48550](#)

Production / Factory Order: N/A

* = Instrument Serial Number

8.3.16. Allow the test to complete, performing any normal actions to correct test failures as long as the rework actions are logged within AMITS.

8.3.17. Print the AMITS Summary, DHR, and History records from the completed run.

8.3.18. Open the LOG for the "Manufacturing Pre-test" / "Basic Beam – Positive" test

8.3.19. Use CNTRL F to open a find window

8.3.20. Enter PMT_RB to find the readback for the Default Positive PMT voltage

8.3.21. Record the default PMT read back in the QDa Schivo Preventative Maintenance Test Record ([48552](#))

8.3.22. Open the LOG for the "Manufacturing Pre-test" / "Basic Beam – Negative" test

8.3.23. Use CNTRL F to open a find window

8.3.24. Enter PMT_RB to find the readback for the Default Negative PMT voltage

8.3.25. Record the default PMT read back in the QDa Schivo Preventative Maintenance Test Record ([48552](#))

8.3.26. Record that the AMITS Spare Ion Block Test (Pre PM Protocol) has been completed in the QDa Schivo Preventative Maintenance Test Record ([48552](#))

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 13 of 26

AMITS Spare Source Enclosure Test (Pre PM Protocol)

8.3.27. Use AMITS to test the ion block, as described within ([47466](#)), but using the following Test Run Details

Product Type: Spare_QDa_ESI _Enclosure

Serial Number: QBA*_prePM_ddmmyy

Sample Use By Date: as labeled on bottle

Test Box Number: as labeled on test box

Test Rig Number: QBA*

Procedure Document Version: [48550](#)

Production / Factory Order: N/A

* = Instrument Serial Number

8.3.28. Allow the test to complete, performing any normal actions to correct test failures as long as the rework actions are logged within AMITS.

8.3.29. Print the AMITS Summary, DHR, and History records from the completed run.

8.3.30. Record that the AMITS Spare Source Enclosure Test (Pre PM Protocol) has been completed in the QDa Schivo Preventative Maintenance Test Record ([48552](#))

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 14 of 26

8.4. QDa and Rotary Pump PM Protocol

Roles	Tasks/Instructions
PAE	QDa and Rotary Pump PM Tasks The standard annual PM mechanical procedures are detailed within: 715004515 ACQUITY® QDa® Detector Performance Maintenance - Technical Reference 715004514 ACQUITY QDa Detector Performance Maintenance Protocol 8.4.1. Perform 715004514 ACQUITY QDa Detector Performance Maintenance Protocol except for the concessions listed below. - Only perform the maintenance tasks for the ion block, if it is the goldbrick unit. - Only perform the maintenance tasks for the source enclosure, if it is the goldbrick unit. - Do not perform the “Calibration and Resolution” Post performance checks. 8.4.2. Leave a hard or electronic copy of 715004515 ACQUITY® QDa® Detector Performance Maintenance - Technical Reference on site. Calibration Number Once the QDa has been PM'ed, it can be allocated a calibration number, if one has not been allocated already. The calibration system will then automatically flag when the QDa requires its next annual PM visit 8.4.3. Request a calibration number for the QDa. Refer to document 10044 'Maintenance and Calibration of Test Equipment'. This contains the procedure for adding an instrument to the calibration database. 8.4.4. Attach a “Calibrated” label to the instrument.. Data Storage 8.4.5. The completed 715004514 ACQUITY QDa Detector Performance Maintenance Protocol has to be stored in the Product Assurance area in Wilmslow. The results must be accessible at all times. PM Label A Performance Maintenance Label (WAT053502) should be attached to the instrument to identify when the QDa was PM'ed and to identify when the next PM is due,. The Calibration field on the label is not required and should <i>be N/A'ed</i>

Title:

QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 15 of 26

8.4.6. Complete a Performance Maintenance Label (WAT053502). Attach this to the side panel of the QDa.

Test Record

8.4.7. Record that the QDa has completed its PM protocol in the QDa Schivo Preventative Maintenance Test Record ([48552](#)) for the system under test.

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 16 of 26

8.5. 515 Pump PM Protocol

Roles	Tasks/Instructions																
PAE	8.5.1. The following items are required for each 515 Pump, and have been added to the required parts list in section 7.1. <table border="1"> <thead> <tr> <th>Part Number</th><th>Description</th></tr> </thead> <tbody> <tr> <td>WAT052587</td><td>515 HPLC pump PM Kit</td></tr> <tr> <td>Check Availability</td><td>10ml measuring cylinder</td></tr> <tr> <td>Check Availability</td><td>2 blank peek nuts</td></tr> <tr> <td>Check Availability</td><td>1m black peek tubing</td></tr> <tr> <td>Check Availability</td><td>Stop watch</td></tr> <tr> <td>WAT076765</td><td>Seal replacement tool</td></tr> <tr> <td>WAT011042</td><td>Plunger Insertion tool</td></tr> </tbody> </table> 8.5.2. Perform the WAT053014 – 515 Pump PM Protocol. The PM mechanical procedures are detailed within WAT068980 515 HPLC Pump Operator's Guide. 8.5.3. Leave a hard or electronic copy of WAT068980 515 HPLC Pump Operator's Guide on site. Calibration Number Once the 515 pump has been PM'ed, it can be allocated a calibration number, if one has not been allocated already. The calibration system will then automatically flag when the 515 pump requires its next annual PM visit 8.5.4. Request a calibration number for the 515 pump. Refer to document 10044 'Maintenance and Calibration of Test Equipment'. This contains the procedure for adding an instrument to the calibration database. 8.5.5. Attach a "Calibrated" label to the instrument.. Data Storage The completed 515 Pump PM Protocol WAT053014 has to be stored in the Product Assurance area in Wilmslow. The results must be accessible at all times. PM Label A Performance Maintenance Label (WAT053502) should be attached to identify when the 515 pump was PM'ed and to identify when the next PM is due. The Calibration field on the label is not required and should <i>be N/A'ed</i> 8.5.6. Complete a Performance Maintenance Label (WAT053502). Attach this to the rear panel of the 515 Pump.	Part Number	Description	WAT052587	515 HPLC pump PM Kit	Check Availability	10ml measuring cylinder	Check Availability	2 blank peek nuts	Check Availability	1m black peek tubing	Check Availability	Stop watch	WAT076765	Seal replacement tool	WAT011042	Plunger Insertion tool
Part Number	Description																
WAT052587	515 HPLC pump PM Kit																
Check Availability	10ml measuring cylinder																
Check Availability	2 blank peek nuts																
Check Availability	1m black peek tubing																
Check Availability	Stop watch																
WAT076765	Seal replacement tool																
WAT011042	Plunger Insertion tool																

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 17 of 26

	Test Record 8.5.7. Record that the 515 pump has completed its PM protocol in the QDa Schivo Preventative Maintenance Test Record (48552) for the system under test.
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8.6. Host PC and Server PC PM Protocol

Roles	Tasks/Instructions
PAE	Check Updates have been applied 8.6.1. Windows and the virus checker software are subject to updates. Check that all the pending updates have been applied. 8.6.2. Check that the version of MassLynx installed matches that referred to within the TSP of the parts tested on this system. 8.6.3. Check that the firmware installed on the QDa is the latest release for the QDa serial number. PM Label A Performance Maintenance Label (WAT053502) should be attached to identify when the 515 pump was PM'ed and to identify when the next PM is due. The Calibration field on the label is not required and should <i>be N/A'ed</i> 8.6.4. Complete a Performance Maintenance Label (WAT053502). Attach this to the rear panel of the 515 Pump Test Record 8.6.5. Record that the Host PC and Server have completed its PM protocol in the QDa Schivo Preventative Maintenance Test Record (48552) for the system under test.

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 18 of 26

8.7. Confirm QDa System Performance (Post PM Protocol)

Roles	Tasks/Instructions
PAE	Test Preparation 8.7.1. Turn the instrument on, and wait for the source pressure test to complete – or wait a minimum of 5 minutes. 8.7.2. Open MassLynx, and open the tune page. 8.7.3. Check that the instrument turbo speed is at 100%, and place in the instrument into operate 8.7.4. Connect the instruments probe to its TB668 sample divert box. Confirm at least 200ml of sample is available.
PAE	Detector Performance Every QDa detector performs slightly differently. Therefore the default PMT voltage used by AMITS must be normalized. <pre> graph TD A["Schivo QDa System Detector PMT Normalization"] --> B["Follow test procedure to tune and run the tune page detector gain tool in both positive and negative ionization modes."] B --> C["Note the ideal PMT values"] C --> D["Configure the default positive and negative PMT values in AMITS to match the ideal PMT values."] D --> E["Confirm the default PMT values being used by AMITS matches the ideal PMT values"] </pre>

Title:
QDa Schivo Preventative Maintenance Procedure

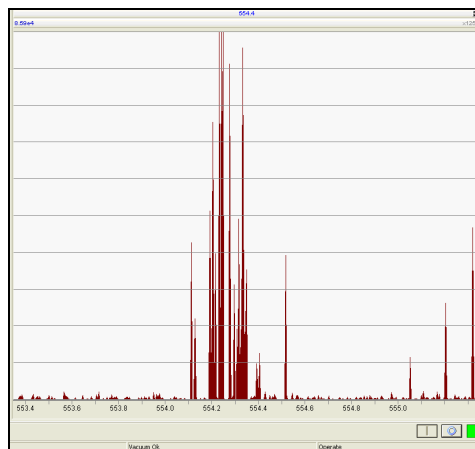
Document No: 48550

Version No: 01

Page 19 of 26

Positive Detector Gain Test

- 8.7.5. Check that the detector gains have been reset to default values. Reset the detector gain by selecting from the tune page **Setup / Reset Detector Gain Parameters**. If the detector has been reset, this option should be grayed out.
- 8.7.6. Go into operate to observe the beam in positive ionization mode.
- 8.7.7. Turn on the sample by using telnet or putty to access rioMainMenu as described in [46202](#). Use the code 406 to turn on the sample
- 8.7.8. To perform the gain test, the photomultiplier tube needs to see single ion events. To observe single ion events (or as close as possible) on the tune page, **Set Up / Scope Parameters** set the scan time to 0.05 and the inter-scan delay to 0.05.
- 8.7.9. Open a single mass window set to 556.3Da for positive ionization. Use a span of 3 Da.
- 8.7.10. The number of single ion events being monitored needs to be reduced. To do this increase the **High Mass resolution** slider value, **not** the High Mass Setup. This will preserve the setup values determined in earlier specs, and also change the peak width without altering the mass position.
- 8.7.11. This will also lower the amount of ions striking the PMT.
- 8.7.12. Repeat increasing the high mass resolution slider until the peak looks similar to the one below. It will be necessary to increase the window 'Gain' to see the peak as more mass resolution is applied.



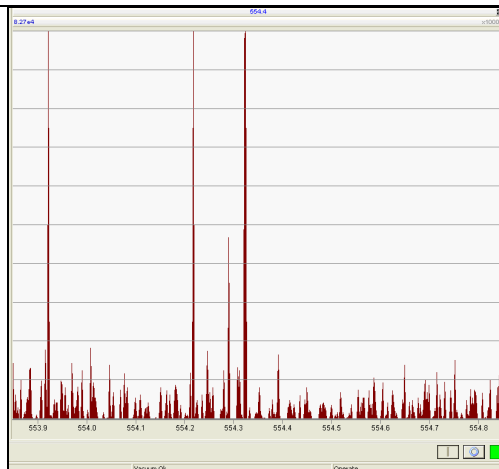
- 8.7.13. Reduce the 'span' to 0. This will fill the window with the ion events associated with this peak.
- 8.7.14. Decrease the Ion Energy and increase the High Mass resolution to reduce the number of ion events to about 5-to-10 per scan. Your nearest guess will be sufficient to do this, but a **printed** window should look similar to the one below. The 'live' tune page will appear to have more ion events due to the high scan speed.

Title:
QDa Schivo Preventative Maintenance Procedure

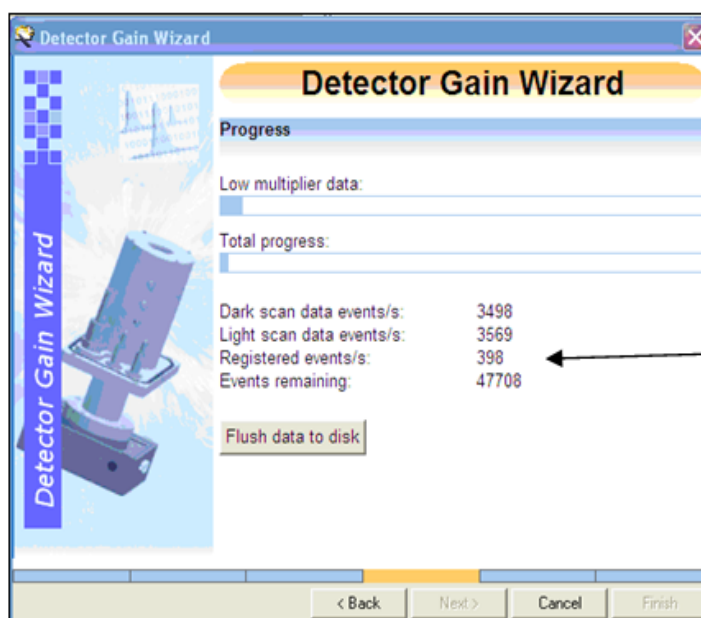
Document No: 48550

Version No: 01

Page 20 of 26



- 8.7.15. From the **Setup** menu, select **Detector Gain Wizard**.
- 8.7.16. This will open a password request window. Enter '1147'.
- 8.7.17. The Detector Gain Wizard will almost fully automatic, but still requires a little input from the user. Click the 'Next' button on the first page.
- 8.7.18. On the second page, enter the exact mass centre of the ion events. This is the centre of the 0 span window. Click on the 'Next' button to move to the third page.
- 8.7.19. The third page gives the user the chance to go 'Back' and change the mass position of the ion events, or click 'Next' to begin the detector gain process. Click 'Next' to continue.
- 8.7.20. Page four of the wizard monitors the average dark and light scan ion events during the gain test.



- 8.7.21. Tune the high mass resolution until the Registered Events is between 300 and 600.

Test Acquisition

- 8.7.22. Once the event number is tuned, restart the gain test by clicking the Back button, and then the

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 21 of 26

	Next button. 8.7.23. Once the test completes, note the ideal detector PMT value and click on the next and then “finish” button to close the detector gain test. 8.7.24. Record the ideal positive PMT in the QDa Schivo Preventative Maintenance Test Record (48552) for the system under test. Negative Detector Gain Test 8.7.25. Repeat this procedure for negative mod eusing 554Da as the peak. 8.7.26. Record the ideal negative PMT in the QDa Schivo Preventative Maintenance Test Record (48552) for the system under test. Compare to current AMITS Default PMT Value 8.7.27. Compare the latest detector gain values with the AMITS read back values noted in section 9.2 8.7.28. If the detector gain results match the AMITS read back value (+/- 10%), as noted in section 9.2, then no further action is required. 8.7.29. If the detector gain results do not match the AMITS read back value (+/- 10%), as noted in section 9.2, the default PMT value/s will need to be updated to match the new detector gain value/s. 8.7.30. If the default PMT value/s need to be updated.,contact the QDa AMITS administrator in Wilmslow with team viewer access details, 8.7.31. Record whether the default PMT has been modified or not in the QDa Schivo Preventative Maintenance Test Record (48552) for the system under test.
PAE	Post PM Performance Test Preparation 8.7.32. Check that the Nitrogen supply to the QDa System is between 6.5 to 7Bar. 8.7.33. Record the pressure in the QDa Schivo Preventative Maintenance Test Record (48552) 8.7.34. Check that the QDa has the same ion block fitted that was used for section 9.2. 8.7.35. Record the ion block serial number in the QDa Schivo Preventative Maintenance Test Record (48552) 8.7.36. Check that the QDa has the same Source Enclosure fitted that was used for section 9.2. 8.7.37. Record the source enclosure serial number in the QDa Schivo Preventative Maintenance Test Record (48552) 8.7.38. Shut down MassLynx

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 22 of 26

AMITS Spare Ion Block Test (Post PM Protocol)

8.7.39. Use AMITS to test the ion block, as described within 47347, but using the following Test Run Details

Product Type: Spare_QDa_Ion_Block

Serial Number: QBA*_postPM_ddmmyy

Sample Use By Date: as labeled on bottle

Test Box Number: as labeled on test box

Test Rig Number: QBA*

Procedure Document Version: [48550](#)

Production / Factory Order: N/A

* = Instrument Serial Number

8.7.40. Allow the test to complete, performing any normal actions to correct test failures as long as the rework actions are logged within AMITS.

8.7.41. Print the AMITS Summary, DHR, and History records from the completed run.

8.7.42. Open the LOG for the "Manufacturing Pre-test" / "Basic Beam – Positive" test

8.7.43. Use CNTRL F to open a find window

8.7.44. Enter PMT_RB to find the readback for the Default Positive PMT voltage

8.7.45. Record the default PMT read back in the QDa Schivo Preventative Maintenance Test Record ([48552](#))

8.7.46. Open the LOG for the "Manufacturing Pre-test" / "Basic Beam – Negative" test

8.7.47. Use CNTRL F to open a find window

8.7.48. Enter PMT_RB to find the readback for the Default Negative PMT voltage

8.7.49. Record the default PMT read back in the QDa Schivo Preventative Maintenance Test Record ([48552](#))

8.7.50. Record that the AMITS Spare Ion Block Test (Post PM Protocol) has been completed in the QDa Schivo Preventative Maintenance Test Record ([48552](#))

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 23 of 26

AMITS Spare Source Enclosure Test (Post PM Protocol)

8.7.51. Use AMITS to test the ion block, as described within (47466), but using the following Test Run Details

Product Type: Spare_QDa_ESI _Enclosure

Serial Number: QBA*_postPM_ddmmyy

Sample Use By Date: as labeled on bottle

Test Box Number: as labeled on test box

Test Rig Number: QBA*

Procedure Document Version: [48550](#)

Production / Factory Order: N/A

* = Instrument Serial Number

8.7.52. Allow the test to complete, performing any normal actions to correct test failures as long as the rework actions are logged within AMITS.

8.7.53. Print the AMITS Summary, DHR, and History records from the completed run.

8.7.54. Record that the AMITS Spare Source Enclosure Test (post PM Protocol) has been completed in the QDa Schivo Preventative Maintenance Test Record ([48552](#))

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 24 of 26

8.8. Review Operator's Day to Day PM Tasks

A number of tasks should be performed by the instrument operator according to an agreed schedule.

Roles	Tasks/Instructions																
PAE	8.8.1. Train the Operator/s on the following tasks <table> <tr> <th>Procedure</th><th>Frequency</th></tr> <tr> <td>Clean the inside of the source enclosure</td><td>Once a week</td></tr> <tr> <td>Empty the source exhaust trap bottle and source drain bottles</td><td>Check daily and empty as required.</td></tr> <tr> <td>Inspect and adjust the roughing pump oil level</td><td>Once a week, and top up as required.</td></tr> <tr> <td>Purge and prime the 515 pump</td><td>Whenever the sample batch is changed and whenever AMITS starts to fail pump stability tests. Review the pump stability value location within AMITS.</td></tr> <tr> <td>Check room Nitrogen Pressure. The pressure must never exceed 7Bar.</td><td>Check daily.</td></tr> <tr> <td>Check Host PC has applied any Windows or Security updates.</td><td>Once a Week.</td></tr> <tr> <td>Run a goldbrick ion block test at regular periods in between batch orders.</td><td>To keep the systems performance optimal, do not leave it for long periods of time. Run a goldbrick ion block test at least once a week.</td></tr> </table> 8.8.2. The Product Assurance (PA) engineer/s responsible for the test instrument must train the instrument operator/s on how to perform these tasks. 8.8.3. Train the Operator when the schedule recommends when these tasks should be performed. 8.8.4. Recommend that the Operator maintains an instrument log book. Any actions should be recorded.. 8.8.5. Schivo Group must notify PAE Manchester if a new Operator requires training 8.8.6. Operators must follow the schedule above to maintain performance 8.8.7. Operators must log when any PM task has been performed. 8.8.8. Operators must notify PAE Manchester when the day-to-day PM schedule no longer maintains the systems performance. 8.8.9. Record that the day-to-day PM task review has been performed in the QDa Schivo Preventative Maintenance Test Record (48552)	Procedure	Frequency	Clean the inside of the source enclosure	Once a week	Empty the source exhaust trap bottle and source drain bottles	Check daily and empty as required.	Inspect and adjust the roughing pump oil level	Once a week, and top up as required.	Purge and prime the 515 pump	Whenever the sample batch is changed and whenever AMITS starts to fail pump stability tests. Review the pump stability value location within AMITS.	Check room Nitrogen Pressure. The pressure must never exceed 7Bar.	Check daily.	Check Host PC has applied any Windows or Security updates.	Once a Week.	Run a goldbrick ion block test at regular periods in between batch orders.	To keep the systems performance optimal, do not leave it for long periods of time. Run a goldbrick ion block test at least once a week.
Procedure	Frequency																
Clean the inside of the source enclosure	Once a week																
Empty the source exhaust trap bottle and source drain bottles	Check daily and empty as required.																
Inspect and adjust the roughing pump oil level	Once a week, and top up as required.																
Purge and prime the 515 pump	Whenever the sample batch is changed and whenever AMITS starts to fail pump stability tests. Review the pump stability value location within AMITS.																
Check room Nitrogen Pressure. The pressure must never exceed 7Bar.	Check daily.																
Check Host PC has applied any Windows or Security updates.	Once a Week.																
Run a goldbrick ion block test at regular periods in between batch orders.	To keep the systems performance optimal, do not leave it for long periods of time. Run a goldbrick ion block test at least once a week.																

Title:
QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 25 of 26

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8.9. Review Operator Training Records

Roles	Tasks/Instructions
PAE	8.9.1. Refer to document 25689, Training and Support of Suppliers Who Perform Testing. 8.9.2. Prior to the PM visit, find and photocopy the current training records for the test procedures referenced in section 2. 8.9.3. Review each training record. The training record should be updated at Schivo if: • The test procedure is up issued. • New engineers are trained to perform the test. • Engineers have since left the subcontractor / or no longer performing this task. • The training record template is updated. 8.9.4. Complete the training record review checklist within the PA Test Instrument PM Form 43593

8.10. Compile PM Test Records ready for Storage in Waters Wilmslow

Roles	Tasks/Instructions
PAE	8.10.1. Confirm the PM documentation package has been completed and compiled ready for storage in the QDa Schivo Preventative Maintenance Test Record (48552) 8.10.2. The completed PM package must be stored in PAE at Waters Wilmslow, and be readily available. The completed package will consist of the completed: • QDa Schivo Preventative Maintenance Test Record (48552), and associated AMITS print outs. • 515 pump PM protocol (WAT053014) • Acquity QDa Detector PM Protocol (715004514) • TSP training records, if updated.

9. APPENDICES / ATTACHMENTS

Not Applicable

Title:

QDa Schivo Preventative Maintenance Procedure

Document No: 48550

Version No: 01

Page 26 of 26

DOCUMENT HISTORY

VERSION:	01	ORIGINATOR:	Paul Slater	Change ID:	55962
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