

DOCUMENT TITLE: **ACQUITY ACTUATOR TEST PROCEDURE**

SYSTEM/ASSEMBLY NAME: **ACQUITY ACTUATORS**

PART NUMBER AFFECTED **279000886**

TEST EQUIPMENT NAME: **ACQUITY ACTUATOR TESTER**

TEST EQUIPMENT NUMBER: **TE82800**

TEST SOFTWARE:



AUTHOR(S): **JASON IRR**

DATE: **February 07, 2005**

REVISED BY: **MATT BRULE**

DATE: **October 25, 2018**

EQUIPMENT REQUIRED

Quantity	Part Number	Description
1	TE 82800	AcQuity Actuator Test System

DISPOSABLES REQUIRED

Quantity	Part Number	Description
A/R	N/A	MEOH

DEFINITIONS AND ABBREVIATIONS

Term	Definition
N/A	Not Applicable
MEOH	Methanol
A/R	As Required
PSI	Pounds per Square Inch
USL	Upper Specification limit
Min	Minute
PSC	Production Support Check
UUT	Unit Under Test
SDS	Solvent delivery System
ETFE	Ethylene tetrafluoroethylene (tubing material)
PTFE	Polytetrafluoroethylene (tubing material)
ID	Internal Dimension
VAC	Volts Alternating Current
PC	Personal Computer
mL	Milli Liters

TEST SPECIFICATIONS AND TRACEABILITY MATRIX

Test #	Test Specification & Condition	Acceptance criteria	Reference
1	Static Leak test at 14000 PSI with Methanol	USL= 200 PSI/min	PSC to verify that subassembly is not leaking prior to installation in instrument, where full instrument leak test is performed.

SPECIFICATIONS

This test uses the “canned” leak test in the SDS firmware to perform a static leak check at 14000 PSI to the Actuator under test (UUT) The system is plumbed up, the same as an AcQuity SDS and includes a known good Actuator assembly used as the Primary actuator. The UUT is installed and tested as the Accumulator. The system is dead ended using an AcQuity vent valve. The specification for this test is a leak of less than or equal to 200 PSI/min.

Note that all equipment has valid calibration or Preventative maintenance sticker before use.

NOTE TO OPERATOR

- **DO NOT SET THE ACTUATOR DOWN UPRIGHT ON THE BRASS COLORED BRACKET THIS WILL DAMAGE THE PLASTIC VENT FITTING.** When actuator needs to be set down place the actuator on its side.
- **USE CAUTION WHEN HANDLING THE TRANSDUCER CABLE. THE CLIPS ON THE CONNECTOR, USED TO CONNECT THE TRANSDUCER AND HOLD IT IN PLACE, ARE DELICATE AND BREAK EASILY.**
- The gold plated compression screws for this test do not need to be over tightened. The compression screws only need to be lightly snug.
- This Procedure assumes that the operator has basic computer knowledge.
- The primary actuator in this test will remain the same actuator and will not be changed. It will often be referred to as the dummy in this procedure.

1. DEGASSER SETUP

- 1.1. Fill a one-liter solvent bottle with filtered methanol and place in a four-bottle solvent tray.
- 1.2. Cut a length of 0.125 ETFE tubing (WAT082727) to run from the solvent bottle to a vacuum degasser inlet port.
- 1.3. Insert one end of the tubing through the solvent bottle cap.
- 1.4. Cut a 1.5" length of 0.148 ID PTFE tubing (WAT024036) and insert 3/4" onto the tubing in the solvent bottle.
- 1.5. Press the solvent filter (WAT025531) onto the free end of the PTFE tubing.
- 1.6. Install the cap on the solvent bottle and push the tubing through until the solvent filter reaches the bottom.
- 1.7. Slide a compression screw (WAT046-11), followed by a ferrule (WAT046-01) over the end of the tube.

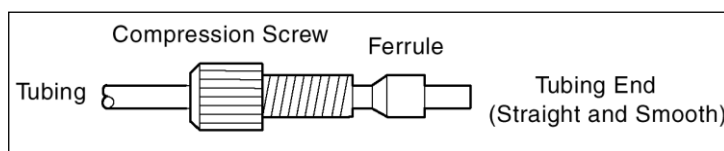


Figure 1

- 1.8. Firmly seat the tubing in the degasser inlet port.
- 1.9. Complete the connection by finger-tightening the compression screw.
- 1.10. Cut a length of 0.125 ETFE tubing and repeat steps 1.7 to 1.9 for the degasser-pump inlet line (Keep this line as short as possible).

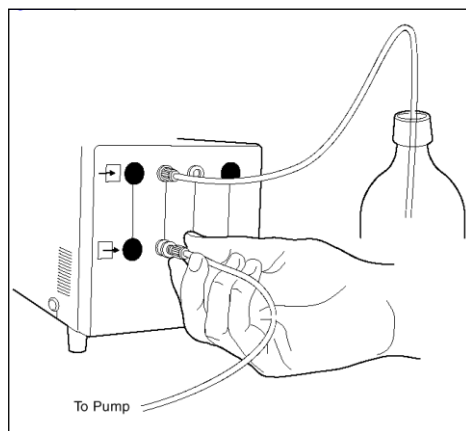


Figure 2

- 1.11. Use a syringe to draw solvent through all chambers in the vacuum degasser (including unused chambers). Install caps (WAT079780) on the inlet and outlet ports of any unused chambers.

2. TESTER SETUP

- 2.1. Place the primary actuator (known good) on the holding fixture closest to the tester, pump head facing right.
- 2.2. Electrical
 - 2.2.1. Connect the tester power cords to 110 VAC outlets.
 - 2.2.2. Connect the monitor power cord to a 110 VAC outlet.
 - 2.2.3. Connect the degasser outlet to the solvent inlet on the rear of the tester.

- 2.2.4. Connect the solvent outlet on the rear of the tester to the waste supply, solvent can be recycled.
- 2.2.5. Connect COM 1 from the PC to the 9 pin “D” connector on the rear of the tester.
- 2.2.6. Connect the USB connector on the rear of the tester to a USB port on the PC.
- 2.2.7. Connect the keyboard mouse to the PC.
- 2.2.8. Connect the PC’s video output to the video connector on the rear of the tester.
- 2.2.9. Connect a network line to the PC.
- 2.2.10. Connect the 3 cables to the primary actuator (motor, encoder, and transducer)
- 2.3. Fluidic
 - 2.3.1. Connect the degasser outlet to the solvent inlet on the rear of the tester.
 - 2.3.2. Connect the solvent outlet on the rear of the tester to the waste supply, solvent can be recycled.
 - 2.3.3. Connect the known good “PRIMARY” actuator to the tester; connect the check valve to the tester’s solvent outlet. The outlet of the Primary actuator will connect to the inlet of the UUT.
- 2.4. System
 - 2.4.1. Power up the PC.
 - 2.4.2. Put the POWER switch on the tester to the ON (up) position.
 - 2.4.3. Allow the PC to boot.
 - 2.4.4. Log in to the tester account.
 - 2.4.5. Start the test program with the desktop icon .



3. TESTING

BEFORE CONNECTING ANY TUBING TO THE ACTUATORS PLEASE REFER TO FIGURE-2 ON PAGE 4

- 3.1. Install a known good check valve in the UUT.
- 3.2. Place the UUT on the holding fixture next to the primary actuator, facing in the same direction.
- 3.3. Connect the 3 cables to the UUT being careful to observe pin 1 on the connectors.
- 3.4. Make the fluidic connections to the UUT.
 - 3.4.1. Connect the check valve to the outlet of the primary actuator.
 - 3.4.2. Connect the actuator out to port 2 of the vent valve in the front of the tester.

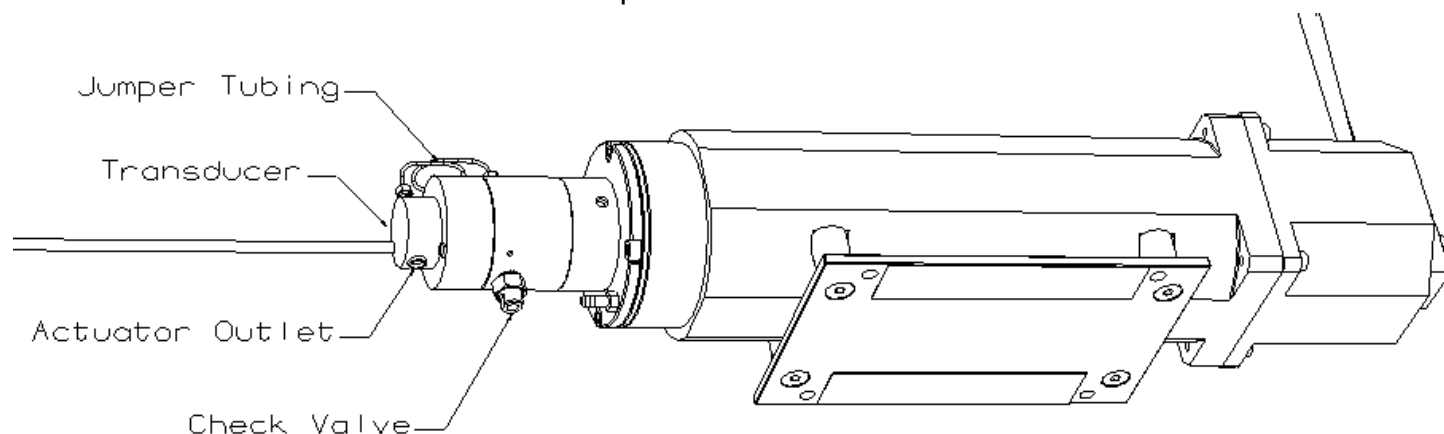


Figure 3

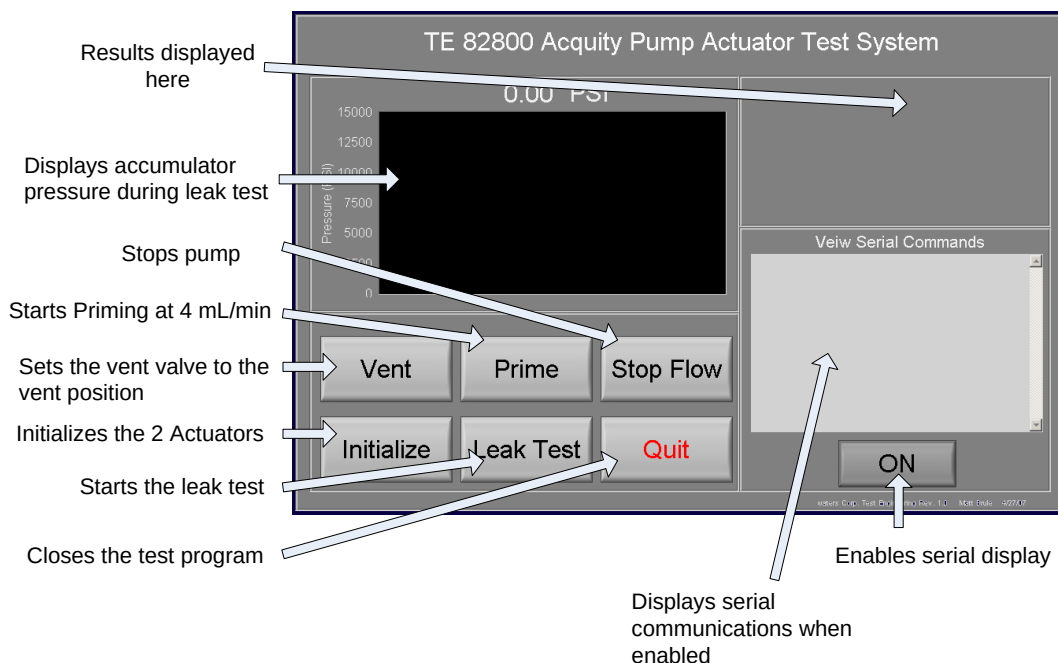


Figure 4

- 3.5. Open solvent valve located on the front of the tester, It is labeled **SOLVENT**. Flip the toggle up to open valve, the green indicator above the valve should show green.
- 3.6. Toggle the power switch that is located on the left front of tester. It is labeled **UUT POWER**.
- 3.7. Allow about 30 seconds for the embedded SDS card to initialize, beeps will be emitted during initialization.
- 3.8. Press the **Vent** button in the test program window. The vent valve will move to the vent position if it is not already there.
- 3.9. Press the **Initialize** button in the test program window. The 2 actuators will home.
- 3.10. Press the **Prime** button in the test program window. The pumps will pump at 4 mL/min to prime.
- 3.11. Allow the pumps to prime for about a minute, or whatever time is deemed necessary.
- 3.12. Press the **Leak Test** button in the test program window. The leak test will start. After about 2 minutes the leak test results will be displayed.
- 3.13. Put the UUT POWER switch in the off position (down).
- 3.14. Turn off the SOLVENT valve, the green indicator will no longer indicate green.
- 3.15. Disconnect the UUT.
- 3.16. Repeat section 3 to test more actuators.