

DOCUMENT TITLE: **TEST SPECIFICATION AND PROCEDURE, ACQUITY CPSM RTZ MECHANISM TEST**

SYSTEM/ASSEMBLY NAME: **ACQUITY CPSM RTZ MECHANISM**

PART NUMBER AFFECTED **279001698, 279001993, 279002008, 279001991, 279001950, 289004640, 289004595, 279003321, 700005225, 700006065, 700009452, 700005175, 700010179, 700010760, 800000469**

TEST EQUIPMENT NAME: **ACQUITY CPSM RTZ ASSEMBLY TESTER**

TEST EQUIPMENT NUMBER: **TE82995**

TEST SOFTWARE:



AUTHOR(S): **RICHARD DAVIS**

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REVISED BY: **RICHARD DAVIS**

DATE: **April 24, 2018**

EQUIPMENT REQUIRED

Quantity	Part Number	Description
1	405006712	Needle Blank 1mm FTN
1	999032846	Base Plate
2	186002631	384 Well Plate
1	279002047	Needle Seal Wash Housing, Assy
1	405013532	Calibration Pin
1	210000393	Sensor Interface PCBA
1	999037997	Flywheel
1	405012852	Insert, Press-In, M4, SST
1	405012905	Screw, Thumb, Knurled, SST, M4
1	289005264	Rotary Sample Tray (labeled FTN)
1	289005264	Rotary Sample Tray (modified and labeled FL)

TEST SPECIFICATIONS AND TRACEABILITY MATRIX

Test Specification & Condition	Acceptance criteria	Reference FSD 721001299
Theta Drive Belt Tension: Encoder Lag (10 sample average) Encoder Lag STDEV -	1.00 to 1.75 deg. ≤.05 (10 Consecutive Samples)	PSC - This step verifies the build process which is not validated
Needle Seal Position	48 to 68 mm	5.15.1.11
Needle Seal Force	48 to 68 lbs/in	5.15.1.36
R/Theta Positioner Test	Action – Completes without instrument alarms	5.15.2.5
1 st Move Error	-0.3 to 0.3 Degrees	5.15.1.5 and 5.15.2.5.1
1 st Move vs Encoder Error	-.41 to .41	Reference 721005238 Sec. 3.0
Zp axis	-15 to 15 Lost Steps	5.15.1.6 and 5.15.2.5.2
Z axis	-15 to 15 Lost Steps	5.15.1.7 and 5.15.2.5.3
R axis	-15 to 15 Lost Steps	5.15.1.8 and 5.15.2.5.4

1. TEST SETUP

- 1.1. Power up PC and Monitor.
- 1.2. Login using the credentials supplied by Test Engineering.
- 1.3. Open the test program by double-clicking the “RTZ Test System” desktop icon.
- 1.4. The RTZ positioning system used in all CPSM's consists of 4 subassemblies. Each subassembly may be tested after it is mated with the other three. See table for required subassemblies.

Testing	Subassemblies required			
	DATUM BASE W/THETA DRIVE	RZZ Assy	Needle Carriage Assy	Sample Tray
289004595	279001991	279002008	N/A	FL
289004640	279001991	279001993	N/A	FTN
279001993	279001991	N/A	289004640	FTN
279002008	279001991	N/A	289004595	FL
279003321	279001991	279001993	289004640	FTN

- 1.5. There should be known good subassemblies available for testing.

2. TEST PROCEDURE:

- 2.1. Mount the Datum Base w/Theta Drive only on the test bed.
- 2.2. Mount the Flywheel, tool #999037997 on the Datum Plate.
- 2.3. Connect the Theta Drive Motor and Encoder to the Tester.
- 2.4. Click on the “Start” button to begin.
- 2.5. Follow on-screen instructions.
- 2.6. When instructed, mount the RTZ assembly to the Datum Base and connect as follows:
 - 2.6.1. Remove Flywheel tool
 - 2.6.1.1. If testing an FL assembly install the Rotary Sample Tray labeled FL.
 - 2.6.1.2. If testing an FTN assembly install the Rotary Sample Traay labeled FTN.
 - 2.6.2. Connect Flex Cable from the Needle Carriage Assembly to the Sensor Interface board.
 - 2.6.3. Connect the R Axis Motor Assy to tester connector J39.
 - 2.6.4. Connect the Theta Axis Motor Assy to tester connector J31.
 - 2.6.5. Connect the Z Axis Motor Assy to tester connector J32.
 - 2.6.6. Connect the Zp Axis Motor Assy to tester connector J33.
 - 2.6.7. Connect the R Axis Encoder to tester connector
 - 2.6.8. Connect the Load Cell to the Sensor Interface Board J3.
 - 2.6.9. Connect the Theta Home Sensor to Sensor Interface Board J2 using the extender cable provided.

2.7. Calibrate the Theta Drive Axis

2.7.1. Follow online instructions.

2.8. Calibrate R Axis

2.8.1. Follow online instructions.

2.8.2. Keyboard shortcut keys for R Axis calibration:

2.8.2.1. "b" for big steps (1mm)

2.8.2.2. "s" for small steps (.1mm)

2.8.2.3. PgUp/PgDn keys to move the needle Up and Down

2.8.2.4. "4" (←) key to move the needle left

2.8.2.5. "6" (→) key to move the needle right

2.9. Pierce Test

2.9.1. Follow online instructions.