



Malfunction Coatron A4/A6/A6Plus/5000: Poor precision of results

Error description:

Instrument gives prolonged or imprecise clotting time or +++ or replicates are 20% and more in difference to first run.

General advice:

- PT reagent sediments. It is very important to apply magnetic mixing bar.
- The temperature in the reagent vial should max 30°C to ensure good on-board stability. We have good experience with 28°C on reagent side and 39°C on optic side.
- The reagent needs around 1h after reconstitution to become stable.
- Run 12xPT in mode "BAT" and compare to "ECO" (see last page). If you can see significant improved precision, then it is a sign of carryover or imprecise volumes.
 - Is always the first result (channel-1) different to the other channels?
 - Remove the cuvettes after use and check, if volumes in the channels are equal.
 - Set PT INC to 120s. This can help improve precision.
 - Check that Z coordinate is good adjusted to allow appropriate inside and outside washing
 - Check, if there a lot of bubbles in the syringe. If yes, then replace the pump-valve.
- If a fresh reagent drifts over 1-2h, then this indicates
 - carryover (sample to PT or cleaner to PT). Good XYZ adjustments and new needle can help.
 - Sedimentation Apply magnetic mixing bar to PT or shake vials by hand at start of worklist.
 - Evaporation. Reduce temperature on PT position to 30°C or lower.
 - The cleaner is crucial. Use only TECO clean solution 21 510 00. Do not stored on-board longer than 8hours or protected from evaporation. (see last page).
- Replacements:

Imprecision can be mostly improved by new valve. This part degrade over time and become leaky due to micro particles in the rinse solution, which cause scratches on the Teflon surface.

We recommend a replacement latest after 100.000 test. If you use own system water, then check, that it double purified from salts and minerals.
- Recommendation:

The mode "ECO" (single dispensing) is much more robust and tolerant versus degraded system parts (needle, valve,...). Additional it saves 10% reagent in compare to mode "BAT". If you can accept 20% lower throughput, then switch device to "ECO". You have to options:

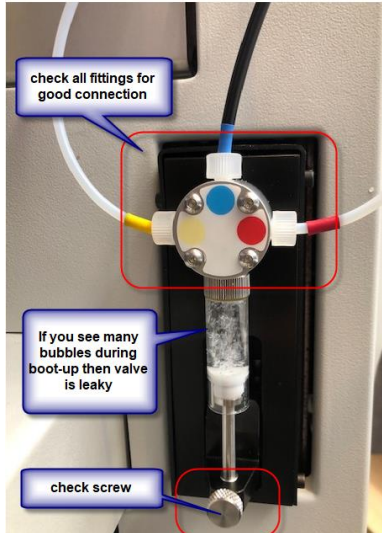
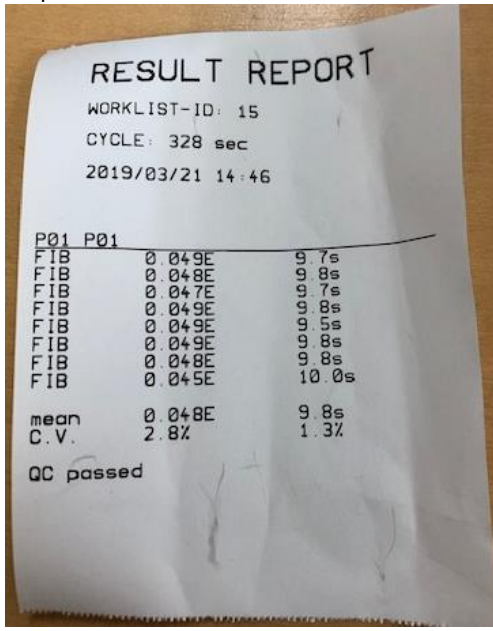
 - Send worklist with TECAM always with mode "ECO" or
 - Set MDS=OFF in the hidden PT settings to disable multi-dispensing permanently.



Major sources

Instrument problems	check		trouble shoot
Carryover	Needle false adjusted to wash position	Check XYZ, especially after any needle crash	Adjust XYZ
	Out of rinse solution	Check rinse solution level in tank	Refill/Replace tank
	Rinse tank tube not adjusted	The tube must be at button level of tank	Fix tube to correct length and position.
	Wash position defect	Check, that needle is flooded outside during washing	Replace wash position (see last page)
	Evaporation of cleaning solution	TECO 10mL container tend to high evaporation. The clean solution becomes more and more concentrated over time.	Dispose onboard clean solution after 8h and apply TECO caps with 8mm hole.
	Step-loss of X-coordinate	Observe needle during clean-cycle and check, if it is shifting left/right	Replace x-belt and maintenance x-axis
	Needle expired	Run FIB-QC (see next page, Step-5)	Replacement
Imprecise volume in cuvette	Liquid Level Sensor stops in air	Run menu SERVICE\CHECK ROBOTIC	Replacement
	Valve is leaky	Check for air bubbles in the syringe during washing (see next page Step-4)	Replacement
	Out of rinse solution	Check rinse solution level in tank Check tank tube is at button level	Refill/Replace tank
	Needle probe is blocked	Tip of needle is partly blocked by poor cleaning or crashing	Replace needle probe
	Syringe is loose	Check screw of syringe	Tighten screw
	Syringe is defect	Run FIB-QC (see next page, Step-5)	Replacement
Optical signal	Cuvette not correct adjusted to optic	Run FIB-QC (see next page, Step-5)	Service menu \Adjust motor
Poor onboard stability of reagent	Sedimentation	Check, PT reagent must be stirred	Place magnetic stir bar into vial
	Evaporation	TECO 10mL container tend to high evaporation	Apply TECO caps with 8mm hole.
	Temperature	Check for correct heating and cooling	Adjust Reagent heating 25-30°C Reagent cooling <16°C Cuvette heating=37°C

Recommended service actions (standard pathway):

Step-1: Install latest firmware + upgrade clean position (see step-6) Coatron A4 Build-261 (Jul-2020) Coatron A6 Build-106 (Jul-2020) Coatron A6 Plus Build-53 (Jul-2020) You can download from https://www.teco-medical.com/downloads.html	<u>List of SW-improvements to former versions from 2019</u> • The new firmware has significant improvements regarding precision, accuracy and optical interferences. • It is more tolerant to poor service like old needle, valve, • Additionally the consumption of rinse to reduced significantly. • The most important point is , that lifetime of valve is increased from 80.000 to 150.000 determinations by changing procedure of sample washing.
Step-2: Goto instrument SERCIVE\ADJUST MOTOR and perform	The Coatron A6+/5000 is very sensitive if cuvette is not exactly centered to the LED light beams. In this case especially FIB,DD,AT,FDP gives very poor precision.
Step-3: Goto instrument SERCIVE\ADJUST XYZ and perform	The two needles must be mounted at 110mm height. Fine XYZ adjustment is important to ensure correct inside and outside washing of needle probe
Step-4 : Check for leaky valve 	During boot-up the instruments performs a complete wash cycle. Watch carefully • The valve or tubing is leaky in case of airbubbles like on the picture • Check that syringe-screw is connected • Check that tube fittings are connected • Check that needle is washed inside and outside with rinse solution.
Step-5: Perform FIB QC test 	• Place on-board FIB, IBS reagent + Normal control to P01 • Goto meu ANALYSIS/NEW LIST and set mode="QC" • Install paper into printer and start QC test • C.V. < 7.5% and E > 0.030E → Everything is fine QC-Results: - Failed if C.V. > 7.5% Higher results indicate false alignment of cuvette, imprecise volumes (needle, syringe, pump), carryover (needle, wash position) - Failed if Mean of "E" < 0.030E Results below indicate false alignment of cuvette or problem with normal control or FIB reagent



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Step-6: Upgrade clean position 21 034 00



Old clean position: REF= 21 034 00 ©

Compatibility: With all firmware version
Service plan: Replacement every 50.000 tests



New clean position: REF= 21 034 50 (a)

Compatibility: Only with firmware versions released after 2019
Service plan: No regular replacement required

Protection from evaporation

TECO 10mL container tends to high evaporation. Apply TECO caps with 8mm hole.

Apply TECO caps with 8mm hole, if placing reagents or CLEAN solution onboard within 10mL container.



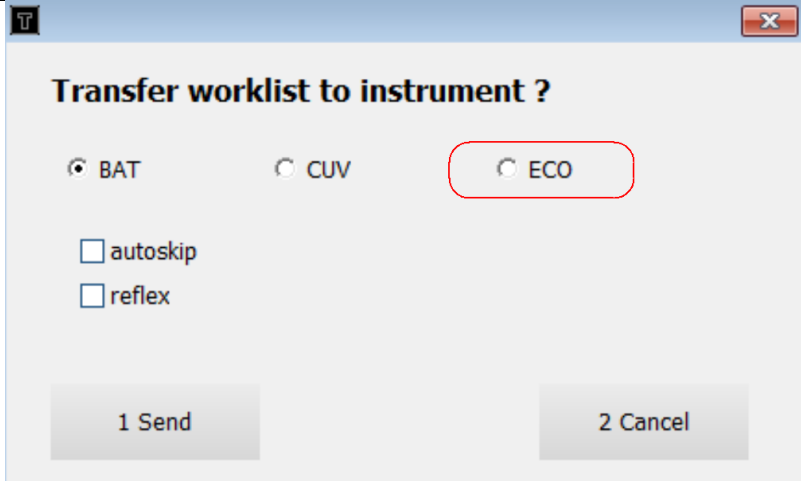
TECO 10mL container tend to high evaporation, which can lead to carryover of CLEAN solution or instability of reagents. The special caps reduce evaporation significantly

TECO caps with 8mm hole
REF = 80 525 05



Optional:

If service and part replacement does not improve the precision, then using the “ECO” mode might help. Especially with Coatron A4 it might improve significantly.

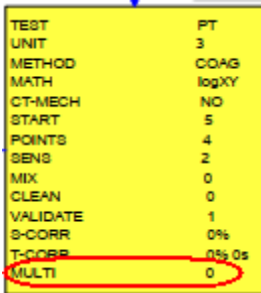


TECAM PRO software

In ECO mode the systems performs single dispensing, which is positive to precision and consumption (see below).

Permanent deactivation of multi-dispensing

- 1) Switch off device
- 2) Press key “0” and keep it pressed all the time
- 3) Switch on
- 4) Wait until INIT-screen is displayed”
- 5) Release key “0” and press again
- 6) Wait until system has finished boot and shows main menu
- 7) Enter SETUP TEST
- 8) Select PT
- 9) Press key “0”
- 10) Change MULTI to “0”



Background :

Multi-dispensing (MDS) means: 1 input and 4 outputs.
(e.g. input 400µL PT reagent and output 4x 100µL into the cuvette channels.
MDS is enabled with TECAM mode=BAT.

Advantage: Throughput upto 30% faster

Disadvantage:

- 7% more reagent volume required.
- Upto 50% more clean+rinse required
- Upto 5% higher imprecision
- Result quality very sensitive to system adjustment (motor, XYZ, wash) and perfect pump+needle system

Single-dispensing (SDS) means: 1 input and 1 outputs.
(e.g. input 100µL PT reagent and output 100µL into the cuvette channel. SDS is enabled with TECAM mode=ECO.

Advantage = see disadvantages of MDS