CAESAREA MEDICAL ELECTRONICS

NIKKI T34

AMBULATORY INFUSION PUMP

FIELD SERVICING GUIDE

Please Note: This is a simple guide to assist with SPT and EPP while in the field.
Any works required outside the guide will require unit to be returned to workshop
Guide use is restricted to Chemtronics trained personnel.

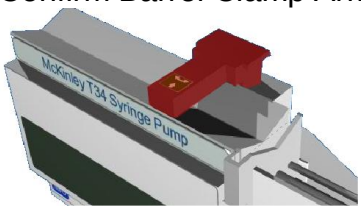
INTRODUCTION

- This guide is designed to assist in with SPT and EPP testing. A basic understanding of pump operation and functionality is required. Unit Operational and Service manual can be found in Bendigo Workshop or online through Citrix at http://warney/ServiceManuals/ (CME/NIKI T34 SYRINGE PUMP/)
- Test result shown in this guide have been achieved with unit set to 24:00 hr mode with Terumo (5, 10, 20, 30 & 50/60ml) syringes activated, Occlusion level set to 540mmHg (10.44psi) and procedures found in Service Manual (Ref: 100-090SS), Instruction Manual (Ref: 100-090SA) and online at http://www.cme-infusion.com/documents/pub/index.html
- Test Equipment required
  - Terumo 20 and 50/60ml syringes
  - Infusion Analyser (IDA)
  - Vernier callipers (not essential)
  - Brand new 9V alkaline battery
- Access Codes
  - Technician Code – 123. To access Tech Mode Hold INFO while turning unit on ON/OFF Hold INFO for 3 seconds, then access code prompt will appear.
  - Setup Code – 99. To access Setup Mode turn unit on, allow unit to finish Self Test and Pre-loading. Press INFO Scroll + or − until *Change Set up* is active.

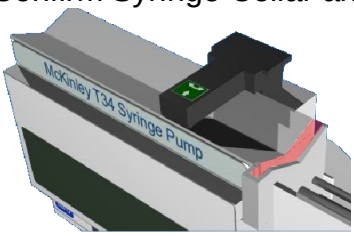
1. VISUAL INSPECTION

Inspect unit for damage.

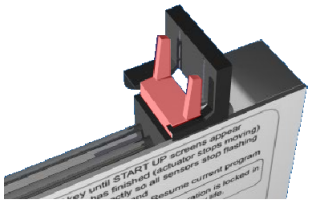
I. Confirm Barrel Clamp Arm moves freely and rotates only when fully extended



II. Confirm Syringe Collar and Sensor are free from obstruction with no damage.



III. Confirm Plunger Sensor/Actuator has no damage and free from obstruction.



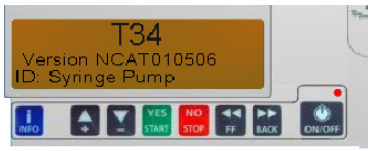
2. *BASIC TEST.*

Fit new 9v alkaline battery and turn on by pressing 

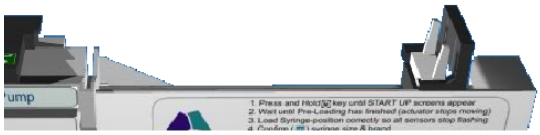
for more than 1 sec.

I. Confirm Operation LED blinks RED and Green and backlighting illuminates.

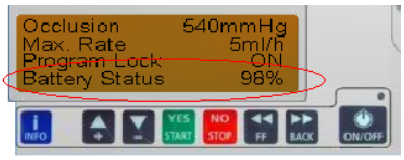
II. Confirm Model, Version and ID are all displayed at start up



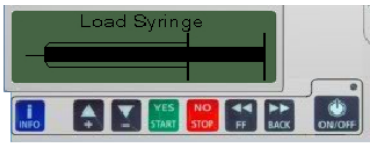
III. Confirm Plunger travels to far right during Pre-Loading



IV. During Start up sequence confirm battery level is above 95%



V. Confirm unit finishes start up sequence with Load Syringe displayed & syringe flashing

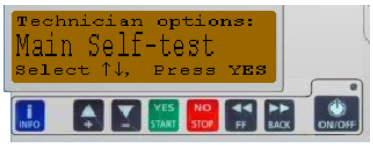


TEST COMPLETE

3. *MAIN SELF TEST*

With new battery fitted, No syringe loaded, Enter ***TECH MODE*** as described on page 2.

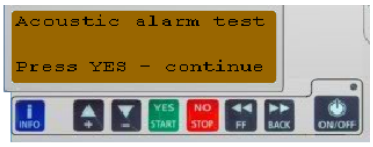
I. Scroll through (or) to find *Main Self-test.* Press to enter *Main Self-test*.



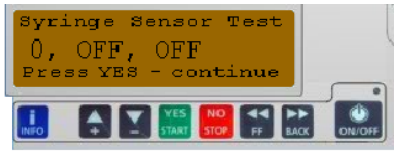
II. ***KEYBOARD*** test. Press the button, then , , etc… as advised on display

III. ***DISPLAY*** test. Back light will illuminate then switch off. Screen will also turn all pixels on, off, on… until is pressed, confirming all pixels active.

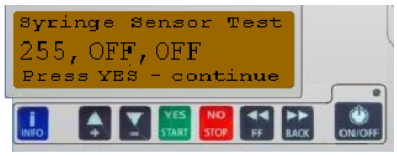
IV. ***ACOUSTIC ALARM*** test. *Audible alarm will pulse at one sec intervals. Confirm audible alarm by pressing*

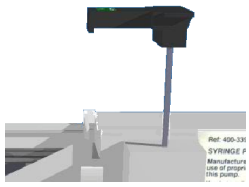


V. ***SYRINGE SENSOR*** test. Confirm following display with no Syringe fitted.

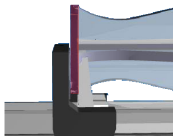


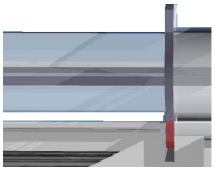
With Barrel Clamp fully extended and rotated the display should show





Fit Syringe with Barrel Clamp still up and confirm first *OFF* changes to *ON* when syringe collar is fitted and second *OFF* changes to *ON* when plunger fitted to actuator.

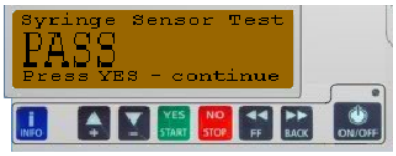




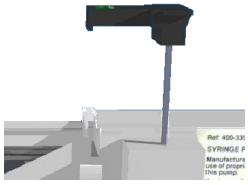
Terumo 20ml syringe will show the following when syringe correctly fitted. (145 +/- 3)

Terumo 50ml syringe will show the following when syringe correctly fitted. (235 +/- 3)

With either syringe loaded close Barrel Clamp and press YES START Correctly loaded syringe will display *PASS*. Remove Syringe as prompted on screen. Press YES START to acknowledge syringe removed and all sensors values return to zero. Again *PASS* will be displayed if successful.



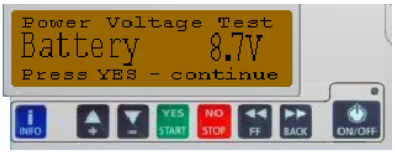
VI. ***SYRINGE DIAMETER*** test. With no syringe fitted and Barrel Clamp at rest position, display should show *0mm.* Extend Barrel clamp and display will show increase in measurement before displaying *0mm* again when clamp is twisted to its *hold* position.



Fitting syringe with Barrel Clamp resting on syringe barrel following results should be displayed: Terumo 20ml = 22mm +/- 0.4mm; Terumo 50ml = 31.5 +/- 0.4mm. (These values can be confirmed with vernier callipers) Remove syringe and lower Barrel Clamp to confirm test

VII. ***SYRINGE TRAVEL*** test. With no syringe fitted actuator will travel left until it reaches the Syringe Collar. Actuator will then reverse and travel fully to the right of travel. Unit will display *PASS* when actuator returns to Syringe Collar.

VIII. ***POWER VOLTAGE*** test. Unit will display 9v battery voltage.



TEST COMPLETE

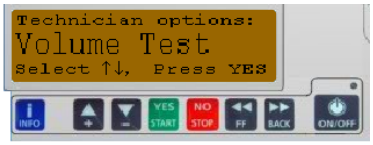
All tests can be done individually be entering *MANUAL TESTS* from *TECHNICIAN OPTIONS* menu

4. *VOLUME/FLOW TEST*

With new battery fitted, No syringe loaded, Enter ***TECH MODE*** as described on page 2.

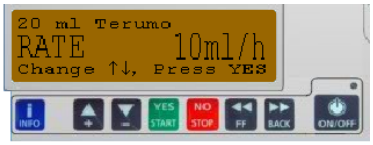
Ensure actuator has sufficient space to load syringe with adequate fluid as actuator cant be move once in *Tech Mode.* Start unit as normal and move actuator to desired location

I. Scroll through (or) to find *Volume Test.* Press to enter *Volume Test*.

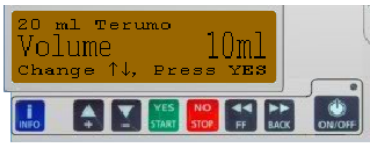


II. Load Terumo 20ml or 50ml syringe. Select correct syringe by scrolling through brands and confirm syringe size by pressing

III. Hold until *Rate* reaches *10m/lh* and press to confirm



IV. Increase *Volume* by holding until it reaches at least *10ml*. Confirm by pressing



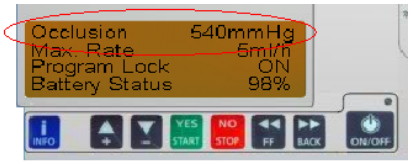
V. With syringe connected to infusion analyser allow unit to run until adequate fluid has been delivered to obtain average reading (10ml/h +/-0.5). Cancel anytime by pressing or allow pump to run its duration.

TEST COMPLETE

5. OCCLUSION TEST

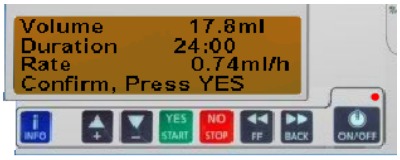
With new battery fitted switch on pump for normal operation. Allow pre-loading to complete.

I. Position the actuator to allow Terumo 50ml syringe that is atleast 50% full of demineralised water. Load syringe and confirm Brand and Size by pressing YES START Take note of the set occlusion level (default set to 540mmHg [10.44psi])



II. The volume isn't relevant for this test so press YES START to confirm the volume detected.

III. If Program Lock is deactivated reduce the time required for this test by using to reduce the duration to the minimum allowable to increase the rate to the maximum allowable. Confirm the rate by pressing YES START



IV. Connect the syringe to a pressure measurement device (IDA)

V. Press YES START a further three times to start infusion.

VI. You need to watch the pump because as soon as the T34 alarm with occlusion the anti-bolus system comes in to operation causing the pump to reverse and the pressure will reduce to a safe level almost immediately.

VII. Check occlusion alarm occurred at 540mmHg (tolerance range 415mmHg (8psi) to 725mmHg (14psi))

TEST COMPLETE

Please le me know of any mistakes.

Cheers, Leigh