This procedure is to be used to diagnose and solve issues with poor idle stability, stalling, and excessively high idle speed. The ECU uses a closed loop idle control system to achieve a specific engine RPM by varying the position of the idle air control valve. Following this procedure ensures this system is working correctly and has full control of the engine idle speed. The engine management system uses throttle position as its primary load input, therefore the relationship between throttle position and air flow is critical to proper engine operation. Altering the throttle stop MUST be done by using this procedure in its entirety, failure to do so may cause incorrect throttle position readings which will likely cause a detrimental effect on engine fuelling and ignition timing, and possibly even engine damage.

- Connect to OBD port on bike and then to USB port on your PC via the USB CAN dongle

- Load SXCar, access page 4 (Idle Control)

- Switch on ignition and click ‘Connect’ (top left of page)

- If required, update calibration on ECU using ‘Program ECU’ button, choose correct calibration file for the model of bike. Follow on screen instructions to load new calibration

- Reset idle learn value by clicking on reset idle learns button, confirm ’Idle Learn’ value goes to zero

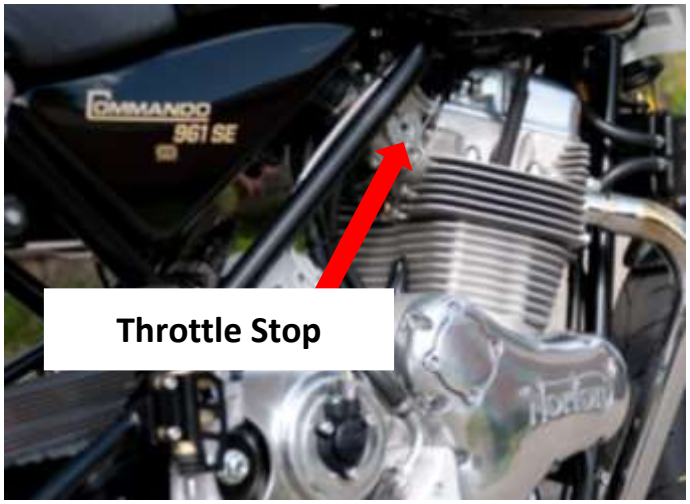
- Start bike, and warm to 120 degrees head temperature, this can be done at a static idle

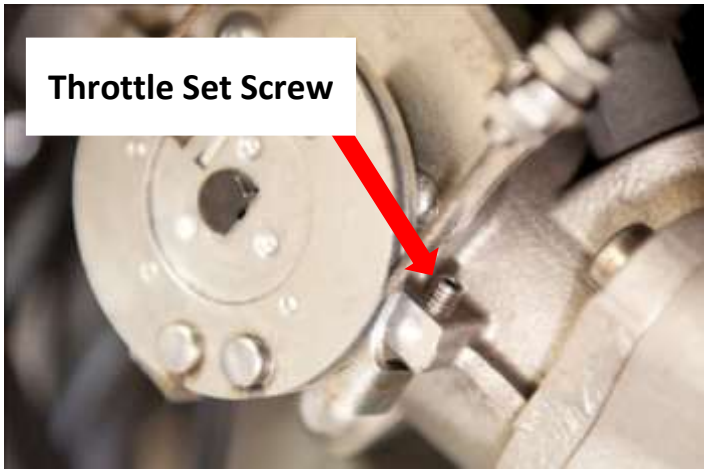
- Once target temperature is reached, increase engine RPM to 4000 and then return to zero throttle:
  - When opening and closing throttle, it is important the ‘Throttle Position’ value returns to 0.00% after each RPM increase
  - Any inconsistency here could indicate throttle not fully returning, which can be the cause of an inconsistent idle
  - If throttle returns to 0.00% each time then continue procedure, but continue to monitor throttle position for any changes

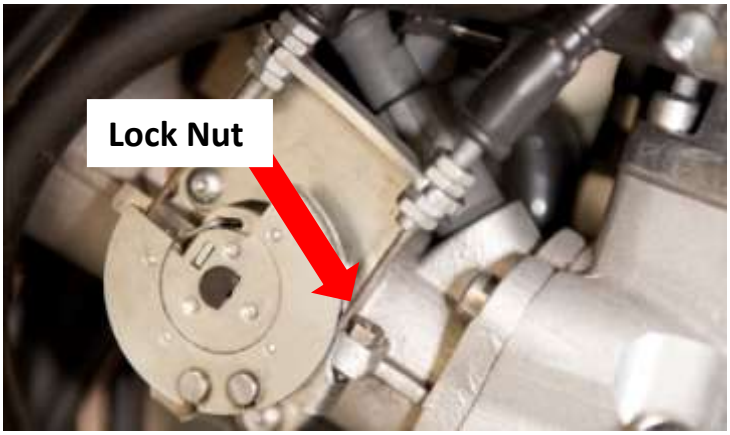
- The idle control is monitored by the two gauges showing ‘Base Idle Duty Cycle’ and ‘Final Idle Duty Cycle’:
  - The base idle duty cycle is the pre-programmed position of the idle vale to achieve a 1200RPM idle when at operating temperature

- The final idle duty cycle is the actual position of the idle valve to attempt to achieve a 1200RPM idle
- If there is a significant difference between them, then the following action should be taken:

Idle Duty Cycle	Solution
Final idle duty cycle is greater than base idle duty cycle by more than 3%	Open throttle on stop – Turn set screw clockwise (follow procedure below)
Final idle duty cycle is less than base idle duty cycle by more than 3%	Close throttle on stop – Turn set screw anticlockwise (follow procedure below)







- Adjustments are to be made by the following procedure:
  - Turn off ignition
  - Loosen lock nut on stop (pictured)
  - Using an Allen key, turn the set screw a quarter to half turn at a time in the direction based on the differences in idle duty cycle displayed in the table above
  - Turn on ignition and restart bike
  - Repeat this process until the average final duty cycle is within ±3% of base duty cycle (final duty cycle will fluctuate to maintain correct RPM)
  - Retighten lock nut once within the idle duty cycle range

Note: If this is the first time the throttle has been adjusted, it is possible there is no lock nut fitted due to the screw being held by lock tight. Any adjustment will overcome this lock tight and a lock nut will then be required to hold position of screw

- If throttle cannot be closed sufficiently, check the idle control valve using the following procedure:
  - Remove the hose connection that leads from the air box to the idle control valve (pictured)
  - With the engine running and the final idle duty cycle at 0%, blocking this pipe should have no effect on engine RPM
  - If there is an effect on RPM, the idle control valve is faulty needs to be replaced
  - **IMPORTANT: ALWAYS DISCONNECT BATTERY BEFORE UNPLUGGING THE IDLE CONTROL VALVE. FAILURE TO DO THIS MAY DAMAGE THE ECU.**

- If the idle valve is working correctly, the throttle body needs to be replaced