Appendix Three – Port opening duration verification procedure

Verification of the port opening duration angles shall be performed using the following procedure.

Equipment required:

(1) One 200mm minimum diameter degree wheel assembly or electronic rotary encoder device.
(2) One 10mm-wide piece of 0,2mm-thick shim stock, sharpened to a point on one end.

To verify top-edge-controlled port opening duration (all exhaust ports and reed induction transfer ports):

- Exhaust opening angles apply to all exhaust ports.
- Install the degree wheel or rotary encoder on the crankshaft of the engine.
- Insert the shim stock into the port, perpendicular to the chord of the port, and rotate the crankshaft in such a manner as to “lock” the shim in place with the top of the piston.
- Set a “zero” with the degree wheel pointer, note the degree setting at current location or set “zero” on rotary encoder display.
- Rotate the crankshaft such that the port remains open during the rotation.
- As the piston rises to a closing position for the port carefully locking the shim in place with the top of the piston.
- The difference between the starting, or “zero” point, on the degree wheel and the ending point or total readout on the rotary encoder must conform to the maximum listed angle or less.

To verify bottom-edge-controlled port opening duration (piston port intake ports):

- Install the degree wheel or rotary encoder on the crankshaft of the engine.
- Insert the shim stock into the intake port from outside of the engine, perpendicular to the chord of the port, and rotate the crankshaft in such a manner as to “lock” the shim in place with the skirt of the piston.
- Set a “zero” with the degree wheel pointer, note the degree setting at current location or set “zero” on rotary encoder display.
- Rotate the crankshaft such that the intake port remains open during the rotation.
- As the piston comes down to a closing position for the intake port, carefully lock the shim in place with the skirt of the piston.
- The difference between the starting, or “zero” point, on the degree wheel and the ending point or total readout on the rotary encoder must conform to the maximum listed angle or less.