



MANDATORY
SERVICE BULLETIN

No. 0010

DATE: 11TH June 2019

**58 KEMP STREET
KILBIRNIE, WELLINGTON 6022, NZ**

SUBJECT: Mercedes DIII Piston Rings, Part no W2M1802-0013.

MODELS AFFECTED: All TVAL newly built engines or original engines that have been overhauled by TVAL, with the following serial numbers:
MN 35273.
MN 37681.
MN 35777.
MN 45812.
TVA 97262.
TVA 97318.
TVA 97339.
TVA 97343.
TVA 97393.

COMPLIANCE TIME: Before further flight.

BACKGROUND: The Vintage Aviator has found that some rings were manufactured incorrectly and whilst conforming to the drawings for all other dimensions, were not completely round.

PURPOSE: This bulletin introduces a one-off replacement of the affected piston rings with ones of new manufacture.

COMPLIANCE: Check the aircraft records to determine if one of the affected engines is fitted, if so, continue with ring replacement procedure below.

INSTRUCTIONS:

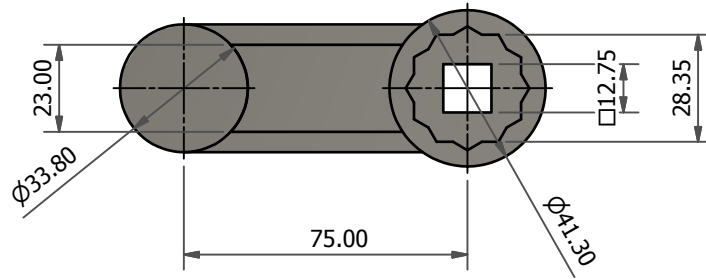
(Note; Special tool is required to be made, drawing of which is attached to this Bulletin for local manufacture)

1. Drain engine coolant and shut off fuel.
2. Remove intake and exhaust manifolds, then airframe air pressure supply pipe.
3. Turn engine to #1-cylinder TDC and appropriately mark crankshaft, tacho drive and magneto rotor position for reassembly with white marker pen (or similar).
4. Remove cam tube as an assembly by undoing the air pump oil pipes at the front, ring nut from bevel gear housing to tower shaft connection and main 17mm AF retaining nuts on each cylinder, making sure that the cam tube is released evenly. Remove cam tube by lifting the front slightly higher first to allow the drive bevel gear to slip through the housing. (Note a soft hammer may be required to encourage the drive end to come away).

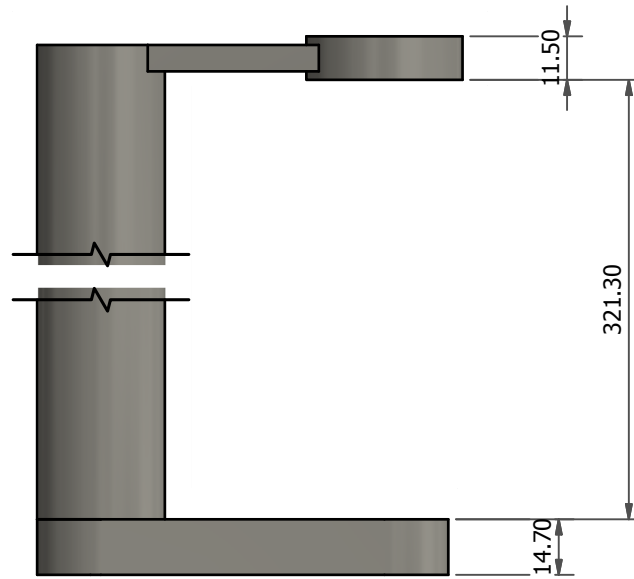
5. Remove the spark plugs and HT leads complete with tubes and magneto distributor caps.
6. Remove clamps from inter-cylinder water connections and roll the rubber sleeve over onto one side to allow cylinders to be removed.
7. Remove ring nut from rear cylinder water inlet pipe and remove bleed pipe from top of cylinder.
8. Using special tool made to the drawing with this bulletin, remove all cylinder holding nuts and bridges.
9. Number all cylinders for reassembly and remove one by one. Take care to support piston and conrods during removal.
10. Remove old rings from pistons and discard. Clean all cylinder mounting and water connection sealing faces.
11. Hone cylinders using the plateau honing method. **This is a very important step**, see the following web address for details.
<https://www.sunnen.com/ProductDetails.aspx?ProductID=51&NavID=713>
12. Thoroughly clean cylinder bores, then with a white lint free cloth soaked with Automatic Transmission Fluid, wipe bores, repeating until the cloth comes out clean.
13. Gap the new rings to 0.030" and fit to the pistons. Ensure that the rings are free in the piston grooves and sit below the piston when fully pushed in. Stagger the ring gaps so that they are not in line. Leaving the rings free from oil, smear the piston skirts with engine oil.
14. Fit the inter-cylinder water pipe connection sleeves to the cylinders in the correct order so that every connection pipe pair has a sleeve.
15. Apply a thin film of Loctite Gasket Dressing SI 5923 to the cylinder base surfaces and fit the correct numbered cylinders carefully over the pistons, then seat to the crankcase. Check that all the inter-cylinder water connections are correctly installed.
16. Fit the cylinder hold down bridges and nuts to the crankcase. Torque the 28mm AF nuts to 70 ft/lbs and the 22mm AF nuts to 40ft/lbs.
17. Apply Black MS sealant to the inter-cylinder water connections and refit. Leave this sealant to cure before installing clamps. Refit the water inlet and bleed pipes to the rear cylinder.
18. Fit the cam tube assembly in reverse order ensuring that the timing marks made in point 3 are in alignment. Be careful that the rockers are sitting correctly on top of the valves before tightening down.
19. Check valve clearances and adjust to 0.015" intake and 0.012" exhaust
20. Refit the intake and exhaust manifolds, then airframe air pressure supply pipe.
21. Refit sparkplugs and leads.
22. Fill engine with coolant and check for leakage.
23. Ground run engine and check for correct operation.
24. Make a logbook entry indicating compliance with this Service Bulletin.

PARTS SUPPLIER:

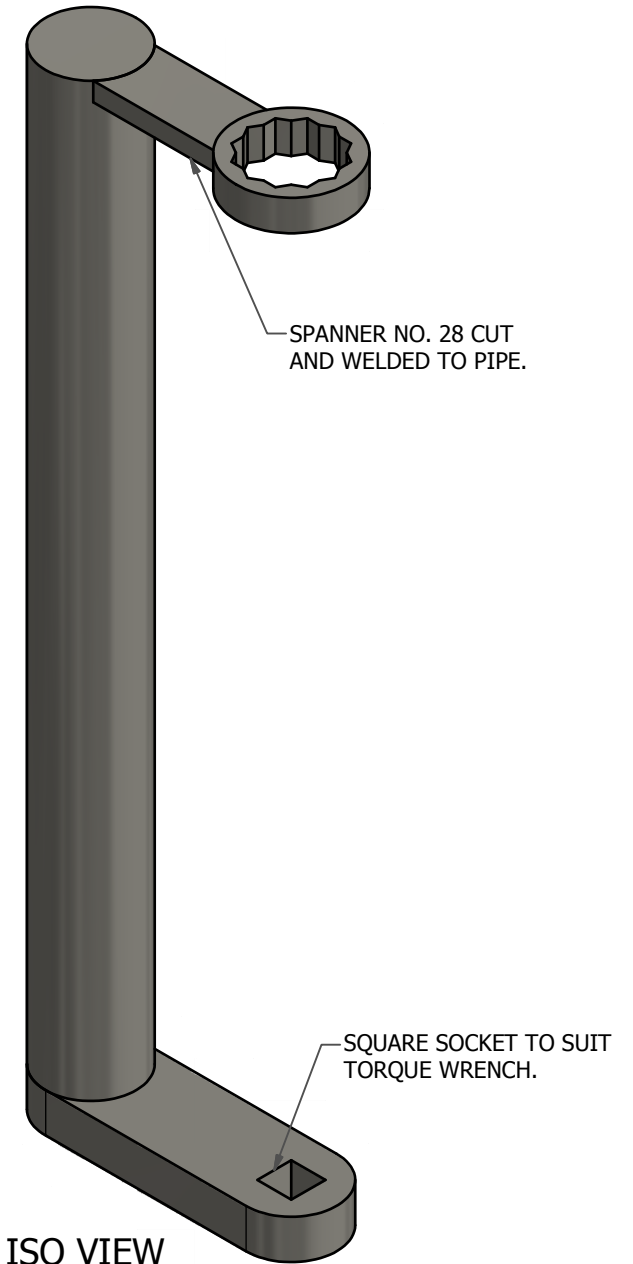
New rings are available at no cost from The Vintage Aviator Ltd.



TOP VIEW



SIDE VIEW



ISO VIEW

NOTE 1: DIMENSIONS ARE APPROX. USE THE CORRECT SPANNER SIZE AND ALIGN TO TORQUE WRENCH SQUARE.



Cylinder Torque Tool		Orig MTRL - steel		Break All Edges		Drawn By - Paul		Date Created - 11/06/2019	
		Variation MTRL - Steel		Tolerance		Checked By -		Rev Date -	
Engine - Merc 180	QTY Per Project - 1	Surface Finish - As Manufactured		SCALE 1:2 All Measurements in mm		General ±0.1		<small>DRAWING IS A TECH DIRECTIVE. WRITTEN DIMENSIONS TO BE USED. DO NOT SCALE DWGS. ALL DISCREPANCIES REFERRED TO DESIGN OFFICE FOR CLARIFICATION OR CORRECTION. NO PART OF THIS WORK MAY BE COPIED, MODIFIED, REPRODUCED OR DISTRIBUTED IN ANY FORM WITHOUT PRIOR WRITTEN CONSENT OF THE VINTAGE AVIATOR LIMITED.</small>	
Component - Tooling	Digitised From - New	Protective Coating - None				Angular ±1°			
Part Number - Cylinder Torque Tool	Original Dwg - na	Heat Treatment - None		Rounding 0.01		Sheet Size - A4			
				Part ID Type - 3		Sheet 1 of 1			