

Waco EQC-6 Wright R760-E2 breather clean up 10-2012

1) First configuration

This is a record of the challenges we had with our recently completed Waco EQC-6 Wright engine. During 21 hours of initial operation the airplane would produce a light oil mist on the wind shield during local flights. During high power climbs at 30" and 2000 RPM the windshield would become obscured.

When the airplane was finished it was test flown with plumbing that retained the stock nose "mushroom" vent and an added 5/8 vent to the power section between cylinder #1 and #7. We also added a 5/8 vent to the top of the starter drive and "T" ed this to the power section vent and then to an RMJ 5/8 Oil air sep that drained down the left gear leg.



N16591 in flight

With this configuration we noted considerable oil coming from the gear leg drain line from the oil air sep. In formation flight it was noted that at lower power less than 22" the drain line was clear and started to discharge oil at power settings above 25" to a steady stream at 28". This amounted to 2 quarts and hour overboard. We also noted light oil mist on the windshield after a 1 hour flight.

2) The plumbing fix

- a) We added a $\frac{3}{4}$ vent line to the nose case and "T" it to an added $\frac{3}{4}$ vent to the right hand gun port cover plate. We then plumbed the $\frac{3}{4}$ vent lines to an RMJ $\frac{3}{4}$ oil air sep mounted high in the accessory area of the after cowl. The oil air sep was then drained to $\frac{1}{4}$ barb fitting added to the left gun port cover. The vent line from the oil air sep was plumbed out the bottom of the cowl into low pressure air. A rubber $\frac{3}{4}$ MILL 6000 hose was used from the nose case to retain heat in the line and reduce water condensation. An aluminum line would be chilled by airflow.
- b) We retained the $\frac{5}{8}$ vent line from the power section and plumbed it to a second RMJ $\frac{5}{8}$ oil air sep mounted high on the left side of the accuracy after cowl. We then drained this oil air sep to a second $\frac{1}{4}$ barb on the left hand

gun port cover. We then plumed the 5/8 vent line out the bottom of the cowl into low pressure airstream.

c) The 5/8 vent on the top of the starter drive was "T" ed to the 1/2 vent line from the oil tank. After test flights it was noted that when the oil cooled down negative pressure was noted in the oil tank. The 1/2 oil tank vent was "T" ed to the vent port low on the engine and also the starter drive which insures oil tank and engine case equilibrium. It was noted in test flights a steady oil pressure reading of 65 PSI with no needle fluctuation. Prior to tank re-plumb slight oil pressure fluctuation was noted and an oil pressure of 55 PSI. The re-plumb increased oil pressures 8-10 PSI and a steady reading suggesting air in the system with the original plumbing.

3) We also added a drain lines to cylinder #4 and #5 plumbed to a quick drain on the firewall. This drain is left open when the engine is sitting. We also incorporated a cockpit controlled oil shut of between the oil tank and the engine. When oil is shut off start circuit is disabled and oil shut off LED is lit on the instrument panel.

4) With the help of Larry Harmachinski we were made aware of shut down propeller position procedure called the "H" twist. We removed spark plug from cylinder #1 and engine

was placed on #1 compression stroke TDC. We then marked this propeller blade as #1. At shut down blade #1 is turned to a point where the blade rocks clearly between Cylinders #2 AND #3 at a horizontal point. The #1 blade is then rotated 270 degrees to a straight up position lined up with cylinder #1.

With the above plumbing changes implemented we now have 5+ hours on the airplane with oil consumption at 1 qt in 3 hours and a clean airplane after each flight regardless of power settings. Also with shut down prop "H" twist positioning, drain left open and oil shut off starts are clean with minimum smoke and oil discharge.

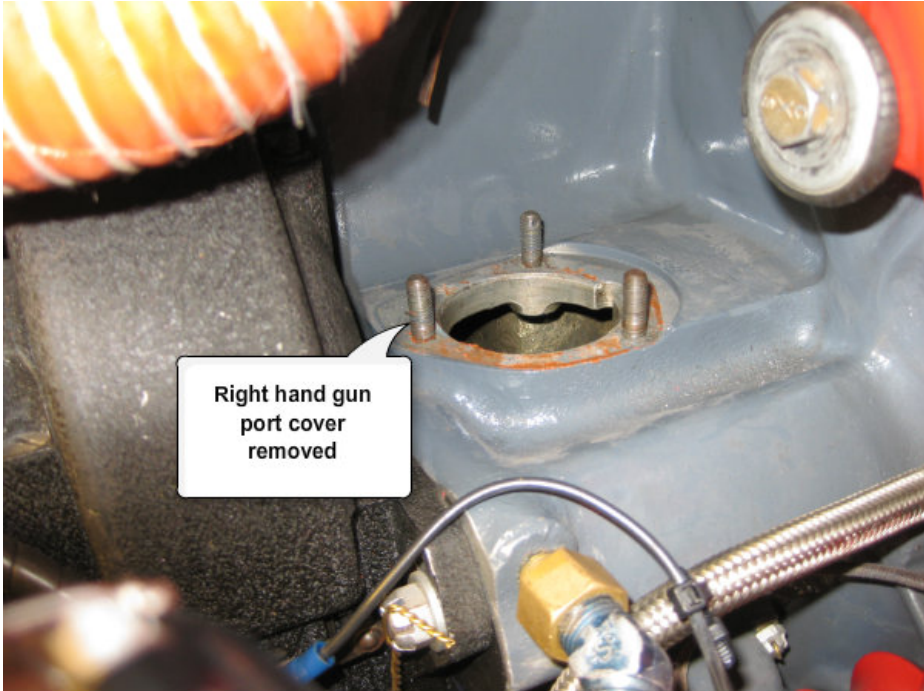




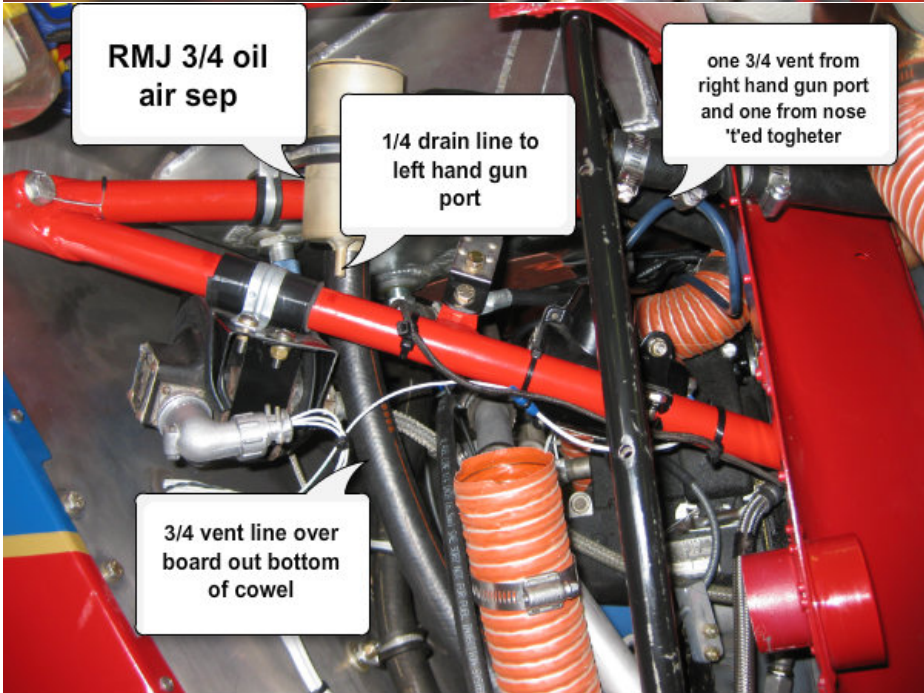
3/4 vent line hooked to left gun port cover and "T" ed to 3/4 nose vent line



3/4 vent line from nose case and "T" ed to right hand gun port



Right hand gun port cover removed

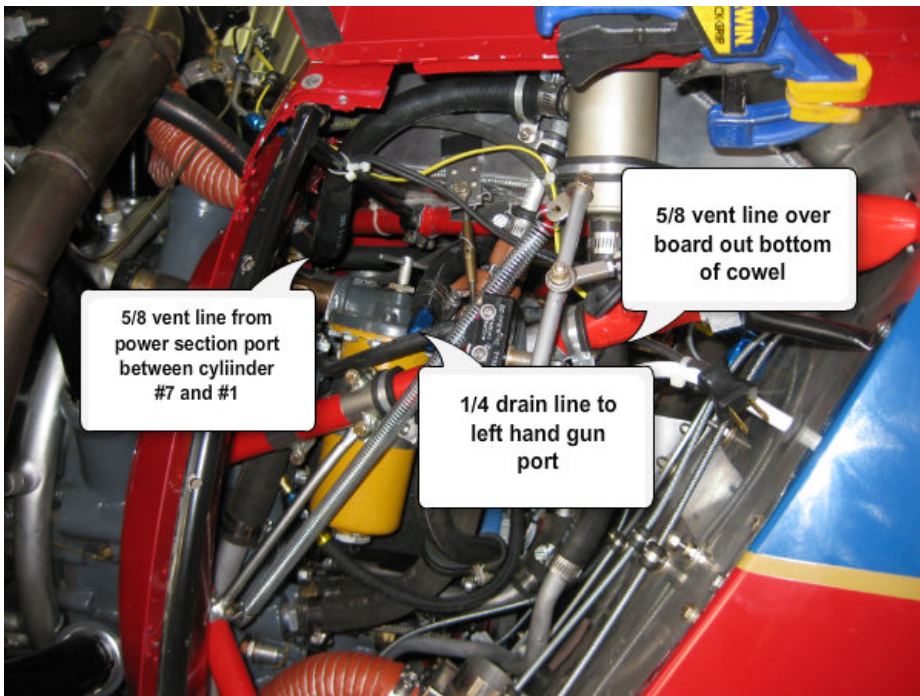
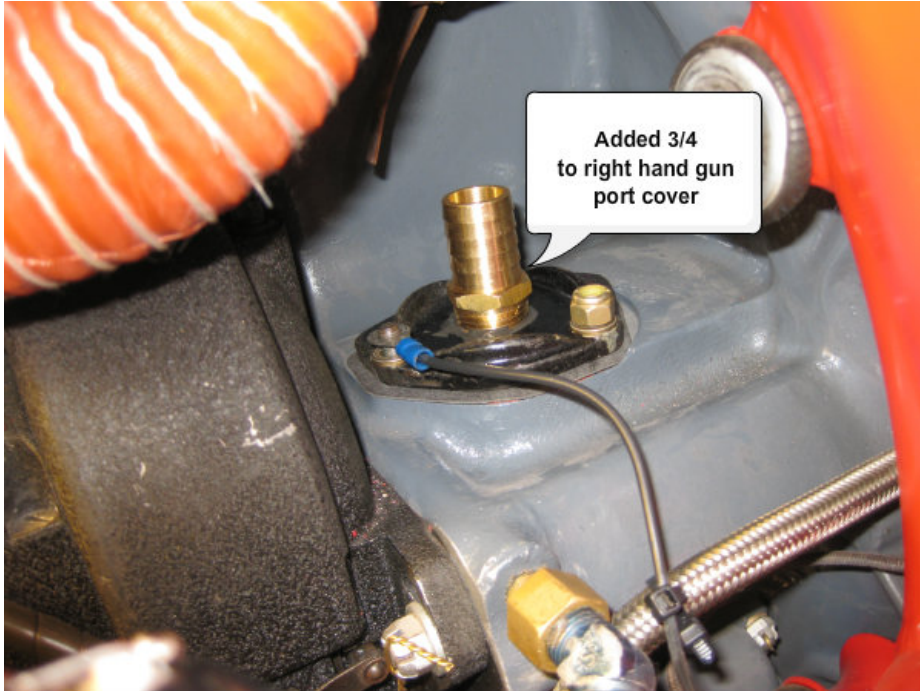


RMJ 3/4 oil air sep

1/4 drain line to left hand gun port

one 3/4 vent from right hand gun port and one from nose 'ted togheter

3/4 vent line over board out bottom of cowl



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