NOTICE TO OPERATORS
BR700-710 ENGINES
NTO No.: 170
Issue No.: 02 Date: 02 Dec 2011

TITLE: **High Oil Consumption and Oil leaks**

Valid until: **02 Dec 2012** **ATA Area: 71-00-00**

EFFECTIVITY: **All BR710 Engines**

PURPOSE: **To provide operators with details of the investigation into high oil consumption and oil leaks**

Background:

There have been occurrences of oil leaks attributed to Pressure Relief Valves (PRV). Rolls-Royce has now investigated these oil leaks and determined the root cause to be the Pressure Relief Valve (PRV) P/N 39504500. Some PRVs have been found under certain flow conditions to oscillate and cause premature wear of the valve body. The wear forms a step that can then prevent the valve poppet from achieving its full range of travel. Not all oil tanks / PRVs are affected by this phenomenon. A new design of valve is currently being tested and validated and will be made available for new production and as a spare part when validation is complete and production has commenced.

Pending the introduction of the new design Rolls-Royce advise operators that the maximum amount of oil which can leak due to the PRV is 3,6 liters (7.6 US PINTS), after this amount of oil loss the PRV will be unable to cause further oil spill overboard. This condition is caused by a combination of the leak path and the aircraft attitude during climb. When the oil level is 3,6 liters (7.6 US PINTS) down and the aircraft is at maximum attitude during climb there is no escape path for the oil. This means that providing an engine is within the current engine oil consumption limits there will be no effect on the maximum flight duration.

- In order to assist Operators in troubleshooting PRV issues the EMM procedure for High Oil Consumption has been revised, this has been transmitted by the issue of the following repeat TVs, which should be used until the relevant Engine Maintenance Manuals are updated.

- **TV113574 (BR700-710A1-10)**
- **TV113575 (BR700-710C4-11)**
- **TV113576 (BR700-710A2-20)**

Operators are asked to contact their local Rolls-Royce RCM if they have any questions.

Where an operator finds that through following the troubleshooting procedure they are required to replace the PRV they are requested to inform their RCM or the Rolls-Royce Deutschland Technical Helpdesk to arrange for return of the unit to Rolls-Royce Deutschland Service Engineering via the Service Parts Investigation Notice (SPIN) process. The returned PRV will then be checked for failure mode.

Note on the Oil Loss Mechanism

During normal operation the oil tank pressure is maintained by the PRV at approximately 6 psi above ambient, refer to Figure 1. If the PRV fails to open the tank pressure rises. At approximately 45 psi the Safety Pressure Relief Valve (SPRV) will open venting the excess pressure to atmosphere through the Scupper Drain Line. During level flight this is pure air. On takeoff or steep climb the oil level is angled such that it will cover the inlet to the SPRV. At this point oil will flow through the open valve and exit via the scupper drain line. Oil will be lost until the level drops to below the SPRV inlet. The difference in levels equates to 3.6 liters (7.6 US pints) and after this amount of oil loss the PRV will be unable to spill further oil overboard.

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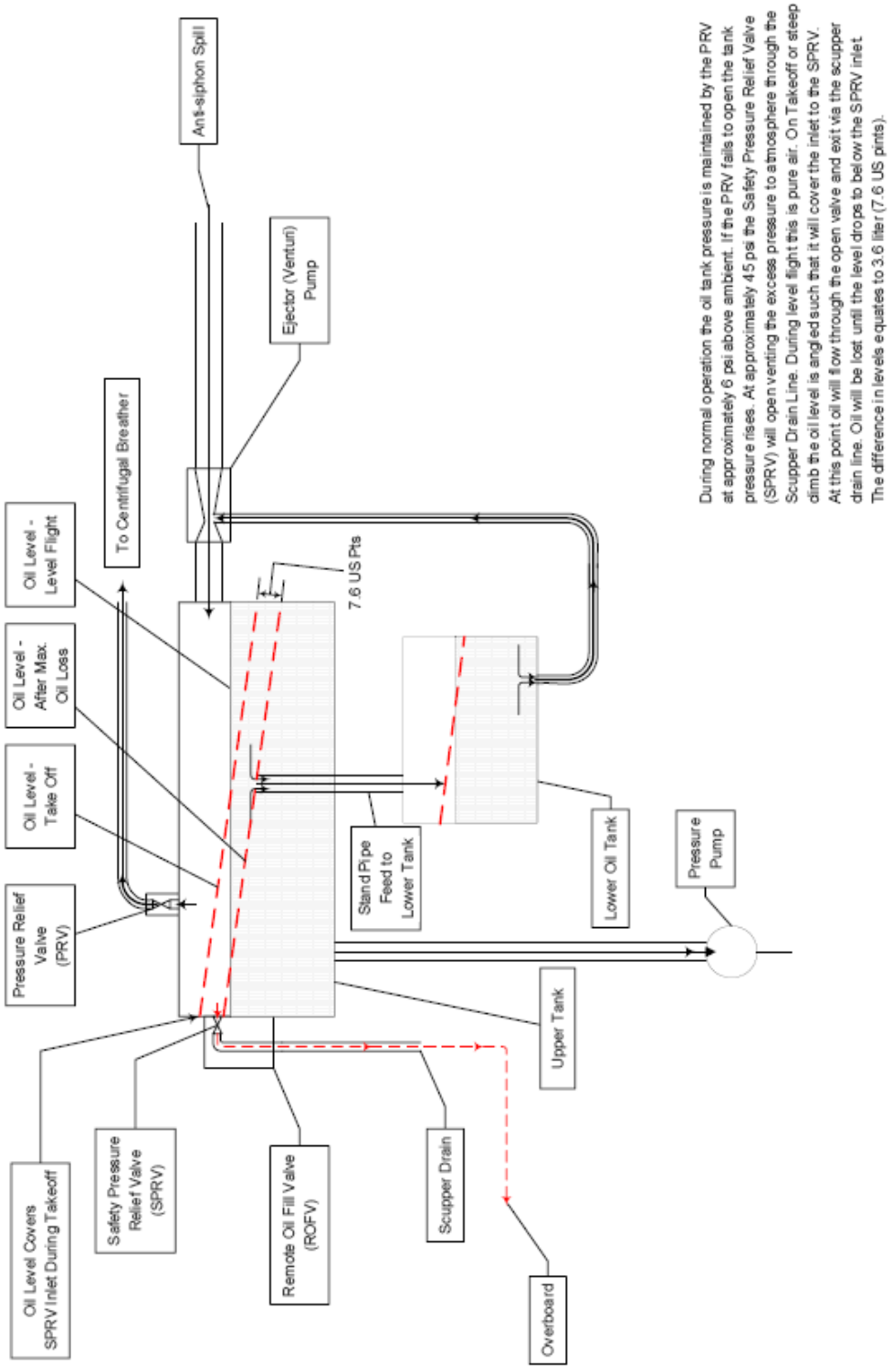

Figure 1 Simplified Diagram Of Relevant Parts of Oil System