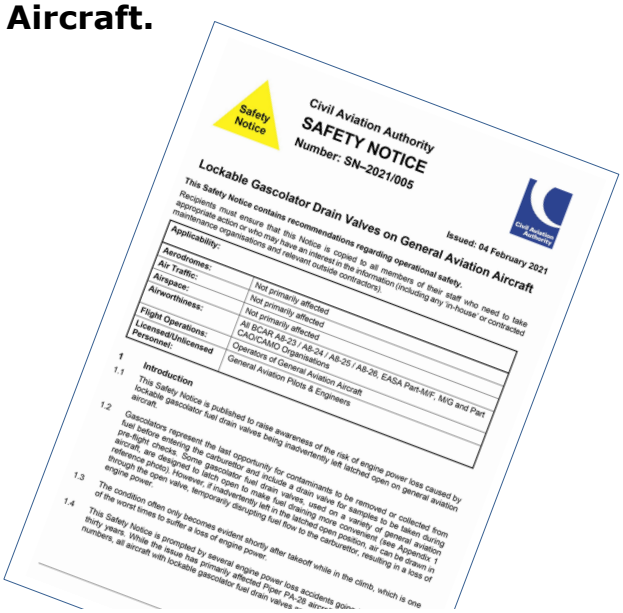
AIRWORTHINESS ALERT

LAA/AWA/21/06
11th February 2021

CAA Safety Notice SN-2021/005

Lockable Gascolator Drain Valves On General Aviation Aircraft.


Safety Notice

Civil Aviation Authority
SAFETY NOTICE
Number: SN–2021/005

Lockable Gascolator Drain Valves on General Aviation Aircraft

Issued: 04 February 2021

This Safety Notice contains recommendations regarding operational safety. Recipients must ensure that this Notice is copied to all members of their staff who need to take appropriate action or who may have an interest in the information (including any in-house or contracted maintenance organisations and relevant outside contractors).

Applicability:	
Aerodromes:	
Air Traffic:	
Airspace:	Not primarily affected
Airworthiness:	Not primarily affected
Flight Operations:	All BCAR A8-23 / A8-24 / A8-25 / A8-26, EASA Part-MF, MIG and Part CAO/CAMO Organisations
Licensed/Unlicensed Personnel:	Operators of General Aviation Aircraft General Aviation Pilots & Engineers

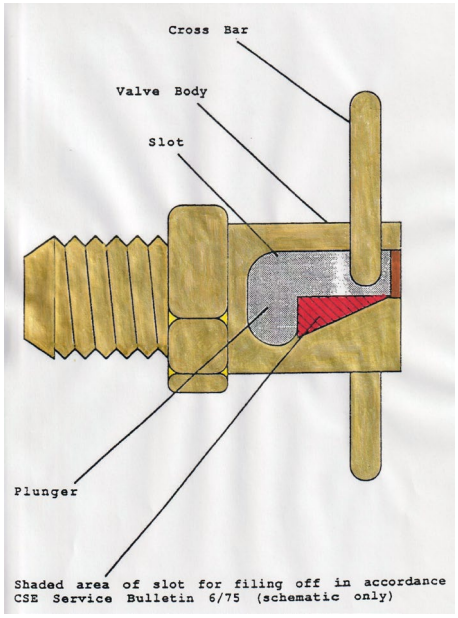
1 Introduction

1.1 This Safety Notice is published to raise awareness of the risk of engine power loss caused by lockable gascolator fuel drain valves being inadvertently left latched open on general aviation aircraft.

1.2 Gascolators represent the last opportunity for contaminants to be removed or collected from fuel before entering the carburettor and include a drain valve for samples to be taken during pre-flight checks. Some gascolator fuel drain valves used on a variety of general aviation aircraft, are designed to latch open to make fuel draining more convenient (see Appendix 1 reference photo). However, if inadvertently left in the latched open position, air can be drawn in through the open valve, temporarily disrupting fuel flow to the carburettor, resulting in a loss of engine power.

1.3 The condition often only becomes evident shortly after takeoff while in the climb, which is one of the worst times to suffer a loss of engine power.

1.4 This Safety Notice is prompted by several engine power loss accidents going… thirty years. While the issue has primarily affected Piper PA-28 aircraft… numbers, all aircraft with lockable gascolator fuel drain valves…



There are at least three methods available to stop a fuel drain valve being left open. One, always remember to close the valve after a fuel quality check – perhaps you could add a 'reminder' placard. Two, change the fuel valve to a non-locking type; or three, as shown above, modify an existing lockable fuel drain to a non-locking device by filing of the area constituting the lock – as shown above in the 1970's CSE Modification directed at PA-28 fuel systems in their training fleet.

The UK CAA have recently published a Safety Notice (SN-2021/005) highlighting the importance of ensuring that fuel drain valves are closed before the aircraft is flown.

Drain valves that have been inadvertently left open have led to a number of serious in-flight incidents, including loss of power during the initial climb and a well-above average fuel consumption, noticed during normal enroute fuel quantity checks.

This recent Safety Notice, focusses on the drain valves fitted into a gascolator; though locking drain valves may be fitted in a variety of points in an aircraft's fuel system. The most likely scenario, which can lead to a gascolator fuel drain being left open, is that a fuel quality sample is taken from the gascolator during a pre-flight inspection with the main fuel valve in the OFF position.

Gascolators, when full, contain about 250 ml of fuel, just right for a fuel sample, but only a few seconds of full-power engine operation. When the fuel main fuel valve is opened, in preparation for engine starting, the drain valve will start leaking fuel; this vastly increases the likelihood of a fire during engine start.

Experience shows that an engine will start and run normally with the drain valve in the open position; however, even with the auxiliary fuel pump on, at full power, fuel supply to the engine will be affected and a power loss will occur.

This safety issue has been around at least since the 1970's, and various solutions have been sought to prevent occurrences. The most successful solution however, is fitting a drain valve that cannot lock in the open position.

SN-2021/005 may be downloaded **HERE**.