Civil Aviation Authority

MANDATORY PERMIT DIRECTIVE

Number: 2018-008

Issue date: 14 September 2018

In accordance with Article 41(1) of The Air Navigation Order 2016, as amended, the following action required by this Mandatory Permit Directive (MPD) is mandatory for applicable aircraft registered in the United Kingdom operating on a UK CAA Permit to Fly.	
Type Approval Holder's Name: ***Various***	Type/Model Designation(s): **Vedenyev M-14P** **Ivchenko AI-14** **Zhuzhou HS-6**
Title:	**Engine Fuel System: Inspection and draining**
Manufacturer:	Vedenyev / Ivchenko / Zhuzhou
Applicability:	Vedenyev M-14P, M-14PF, M-14P-400 and Ivchenko AI-14, AI-14R, AI-14P, AI-14RF and Zhuzhou HS-6 engines fitted to (but not limited to) the following aircraft: Yakovlev Yak-52, Yakovlev Yak-18, Yakovlev Yak-55, Nnchang CJ-6 and Sukhoi Su-26.
Reason:	An accident to a Yakovlev YAK-52 has highlighted the fact that maintenance programmes/schedules for this type of engine do not require the cleaning of the fine fuel filter, draining of the compensator tank and periodic operation of the fuel system drain valves Unlike the fuel coarse filter, there is no drain provision at the fine fuel filter, this filter is coloured black while most of the fuel system components are painted in yellow. This could lead to the filter being overlooked. Additionally, the fuel system includes a compensation tank which is equipped with a drain valve. No requirement could be found in any maintenance programmes/schedules sampled to periodically operate this drain which could lead to further contamination of the fuel system. Whilst the accident occurred to a Yak-52, where the fuel system was found to be contaminated by water and corrosive deposits, it is known that aircraft with the same powerplant have similar fuel system components and layout, e.g. YAK-50, the applicability of this MPD is extended to all UK permit aircraft with this power plant and derivatives. (See engine type/model designations above)
Effective Date:	**30 September 2018**

Compliance/ Action:	Within 10 flight hours or three calendar months of the effective date of this MPD whichever is first and thereafter at 50-hour intervals or annually whichever is first; 1. By reference to the aircraft maintenance documentation and physical survey positively locate all of the fuel system drains, the system fine fuel filter (black) and the compensation tank within the aircraft fuel system. 2. Operate the aircraft fuel system drains, carry out water/sediment checks. a. At the bottom of each wing tank. b. Under the centre fuselage on the fuel line before the collector tank (check aircraft configuration). c. At the engine coarse filter. 3. Locate the fine fuel filter, remove and replace or clean and inspect, see detailed maintenance instructions below. 4. Locate the fuel system compensation tank (if fitted) operate the attached drain valve, check for water contamination. 5. If heavy water contamination, or evidence of corrosive build up in the fine fuel filter or the compensation tank is found, consider further investigation at inlet to carburettor/fuel control unit. If heavy contamination found refer to manufacturer's instructions for flush, clean and/or replacement of system components as necessary. 6. Review the aircraft maintenance programme to ensure that the programme contains an entry for all drains and filters to be operated/inspected periodically, at intervals of 50 hours or annually whichever is first. **Note**: Owners/operators should consider increasing the frequency of these checks based on the aircraft utilisation and where the aircraft is parked. Aircraft which are not hangared and/or used infrequently and/or located in a maritime environment may require more frequent checks. Detailed Maintenance Instruction to be carried out (item 3 above). In respect to the aircraft with power plant affected (as above) the fuel system has a fine fuel filter downstream of the collector tank in the fuel line to the carburettor (housing nominally painted black). 1. Locate the fine fuel filter, remove and replace or clean and inspect per the manufacturer's documented procedure. **Note:** a. The removed filter element must be cleaned using ultrasonic bath equipment in accordance with the manufacturers requirements. **It is not sufficient to clean the filter in fuel bath, mechanical action or other means.**

Compliance/ Action Cont:	b. With the filter element removed, inspect the filter housing internal faces for water, dirt, contamination and corrosive deposits. c. If there is water or other contaminates in the filter housing or the element, suspect fuel system contamination and consider further investigation of the fuel system, in accordance with manufacturer's instructions or best engineering practice. d. Check aircraft defect history for possible fuel system defects, 'hunting' of engine RPM at constant throttle setting. e. **The filter element must not be disassembled.** 2. In the absence of a manufacturer's documented procedure, the task should be carried out using the following procedure: a. Remove locking wire and unscrew the fine fuel system filter cover. b. Remove the filter element. c. Replace the filter element with a new item or a filter cleaned in accordance with (1) a. above. d. Replace packings using new parts. e. Refit the filter cover, tighten and wire lock. f. Locate the compensation tank mounted on the right-hand side of the fireproof bulkhead (check configuration). g. Cut locking wire and operate drain valve. h. Drain all traces of water, close drain valve and re-establish wire locking. i. Carry out leak check of all disturbed joints and drain valve at engine ground run. Carry out inspection/replacement of fuel system fine filter element and draining of compensation tank at repeat intervals of 50 hours or annually, whichever comes first. Airframe and engine fuel system fuel drains should be operated as a maintenance action at intervals of 50 hours or annually whichever comes first, add to maintenance programme as a specific maintenance action. Owners and operators are responsible for the regular operation of fuel system drain valves between maintenance actions, preferably before flight as part of the pre-flight routine, carry out water sediment checks.

ENSURE COMPLIANCE WITH THIS MPD IS RECORDED IN THE AIRCRAFT LOGBOOK	
Reference Publications:	**NONE**
Remarks:	1. This MPD was not posted for consultation because of the urgency of the requirement. 2. Enquiries regarding this Mandatory Permit Directive should be referred to: GA Unit, Safety Airspace Regulation Group, Civil Aviation Authority, Aviation House, Gatwick Airport South, West Sussex RH6 0YR. Tel: +44 (0)1293 573988 E-mail: *GA*@caa.co.uk