SERVICE LETTER No.: 0007/2012/R1

Concerning: Operators of in-line engines – M 132, M 137, M 332, and M 337 of all versions and organisations approved for the maintenance of the engines according to the PART-145 regulation.
Revision of the Service Letter No. 0007/2006 pursuant to experience from air traffic.
The new text is written in blue and marked with a vertical line on the left.

Reason: Introduction of spark plugs L 22.62A for the above-mentioned engines. This change has been brought about by technological innovations in the production of plugs. The spark plugs L22.62A have successfully been tested in the ground as well as flight trials.
Since January 2009, the side electrode has been strengthened to 1.6 mm and the bushing under the M14x1 thread to connect the ignition cable has been strengthened.
Useful life and maintenance specification for L22.62A plugs.
The production of the original plugs L22.62 has been terminated.

Measure:

Brief description of L22.62A plugs and ordering

The aircraft spark plugs L22.62A have 19 hexagon. M12x1.25 thread into the cylinder head. The connection to the cable platform using M14x1 thread is not changed.
For mounting and dismounting the L22.62A plugs, a new universal-joint wrench Sc 0878 is designed and orders for it can be placed with LOM PRAHA s.p. Sealing washer mounted under the plug, serial number: 443 942 001 006, are supplied with each new plug as well as separately.
The L22.62A spark plugs can be initially ordered from LOM PRAHA s.p. only, including the EASA F1 certificate. Any other potential distributor must supply a copy of original EASA F1 certificate issued by LOM PRAHA s.p. with the plugs.
When placing the first order for the L22.62A plugs, we recommend ordering the Sc0878 wrench.

Adjustment of engines, useful life of plugs and maintenance

The properties of engines, engines setting, and prescribed speed drop when switching over to one magneto M1 and M2 do not change.
When planning the consumption of L22.62A plugs, an average useful life of 200 hours under normal operation must be allowed for. This useful life has been proved itself in air traffic. When using Avgas 100LL fuel, during training, towing, acrobatic and combined operations, the useful life of the plugs may be shorter.
The useful life of spark plugs depends also on their maintenance.
The distance of electrodes for the new plugs is 0.5 ± 0.05 mm. It is measured with a wire gauge.
The Regulation concerning the maintenance of plugs is given in the Annex to this Service Letter.

Interchangeability

In the event that plugs of the engines in operation need to be replaced, we recommend to replace the original plugs L22.62 with the L22.62A plugs in the whole engine or the whole row of plugs (in the case of the transition period of the use of both L22.62 and L22.62A plugs).

We do not expect the replacement of individual plugs.

Expenses: To be covered by the operator.

Effective date: On the date of issue.

Prague, date: 4. 7. 2012 Approved on the basis of power of DOA No. EASA.21J.306.

Approved by: Ing. Petr Prokop, MBA, m.p.
Designing Department Manager

The Annex to the Service Letter is on the next Page.

Regulation for Storage, Mounting, Dismounting, and Maintenance of Aircraft Spark Plugs L 22.62A

1. Application

The regulations herein apply to the aircraft spark plugs L22.62A. All instructions included in the regulations herein are binding and must be precisely and strictly observed in order to ensure the perfect condition of spark plugs and, in this respect, safe operation of aircraft.

2. Storage of plugs at user's premises

The plugs must be stored in intact original packaging. The storage facilities must be kept clean and ventilated, with a relative humidity not exceeding 80%, free of vapours of acids or other chemicals attacking iron, zinc or nickel. Abrupt changes in temperature resulting in moisture condensation on the plugs must be prevented. The plugs should be stored loosely, at best 20 cm above the floor. The plugs must not be stored on the floor. It is necessary to keep records in the warehouse on the basis of which it is possible to find out the period for which the plugs are stored. The recommended useful life at user's premises is 5 years from issuing the EASA F1 at the most. Upon the expiry of the period, it is necessary to ask LOM PRAHA s.p. designing organisation to determine the conditions and procedure of release of plugs stored for a longer period for the air operation.

3. Mounting of plugs into the engine

Remove the plug from the packaging and remove the thread protector. In the case of a new spark plug, we recommend to check or adjust the gap between the electrodes to 0.5±0.05 mm. Using a brush, apply even layer of 20 % colloidal graphite in engine oil on the bush thread. The spark gap must not be fouled with graphite. Ensure that the plug is not damaged and if it is equipped with the sealing washer and screw it by hand (without wrench) to the cylinder head. Tighten the plug using the prescribed tubular wrench Sc 0878 (25 Nm tightening torque) carefully in order to prevent damaging of the plug in the thread pin. When screwing and tightening the plugs in the cylinder head, it is necessary to ensure that the plugs are not stressed by additional bending moment as the thread pin can break off. Insert the ignition cable with the cable terminal into the plug. Screw on the cap nut of the shielding elbow at first by hand and then tighten carefully (10 Nm tightening torque). If the ramp is not equipped with elbows and the ignition cable is fastened in the plug by the knurled cap nut, tighten the nut by hand without using the wrench. Only new plugs or plugs inspected in compliance with this Regulation, Article 6, may be mounted into the engine. Handle plugs with care, tapping or knocking is unallowable; if the plug falls on the ground, do not mount the plug into the engine without checking in compliance with Article 6 of this Regulation.

4. Dismounting of plugs from the engine

The plugs are dismounted:
a) For the purpose of the performance of the periodic checking of the plugs condition,
b) In order to perform the prescribed engine overhauling, and
c) In consequence of a failure.

4.1 Dismounting of plugs for the periodic checking

Unless otherwise specified, it should be performed after each **50** hours of operation. At first, unscrew the shielding elbow, remove the ignition cable, fit the prescribed universal-joint wrench Sc 0878 on the plug, and loosen the plug. Any tapping or knocking on the wrench is forbidden. The plug removed must not bear any marks of rough handling.

4.2 Dismounting of plugs for the prescribed engine overhauling

Follow the procedure given in Section 4.1 and carry out works specified in the "Technical Description and Instructions for Operation of Engines" – Part 7/10.

5. Maintenance of plugs

The plugs should be discarded in the event that:

a The electrodes are burnt in such an extent that the side electrode has a thickness of less than 0.7 mm, Fig. 3.

b The insulator (by visual examination) is chipped off or cracked.

c The thread is battered or distorted.

Wipe the surface of plugs with a cloth soaked with benzine, wash down the layer of graphite with a coarse brush, dip the thread pin into benzine for 10 – 15 minutes, and at the same time wash off the sealing washer. After the specified period, remove the plugs from benzine and clean them by blowing out with pressure air. The plugs with the insulator tip fouled with carbon or slag coating may also be cleaned by sand-blasting. Insert the plug into the sand-blasting machine and for a certain period of time given by the extent of fouling of the plug clean the insulator tip with sharp silica sand or corundum according to ČSN 22 4012 – grain size 25 using pressure pair. Unreasonably long-time sand-blasting is not recommended. DO NOT USE A WIRE BRUSH TO CLEAN THE PLUGS!

After the sand-blasting, beat out sand by gentle tapping the plug hexagon against the side of a wooden table top and clean it by blowing out with pressure air. Inspect the plug visually under light and using a magnifying glass and make sure that no grain of sand is left between the insulator tip and bush or between the centre electrode and the insulator. Afterwards, again wash out the plug with clean benzine and blow out the plug with pressure air. Adjust then the plug electrodes as prescribed. It is recommended to adjust the gap between electrodes to 0.3 to 0.4 mm. Adjustment of the electrode distance is very important to service life of the plug. The adjustment should be performed on the special equipment or use a Ø 0.3 to 0.4 mm wire gauge and insert it between the electrodes and apply an adequate pressure against another object and bend the lateral electrode so as to obtain a 0.3 mm to 0.4 mm gap between electrodes (Fig. 1). Check the gap between the electrodes once again. Make the gauge of a 0.3 to 0.4 mm diameter wire.

When straightening the side electrode, use a small screw driver to lean it against the **edge of the thread** and against the side electrode. **Warning: Do not lean the screwdriver against the central electrode in any case** as you could damage it.

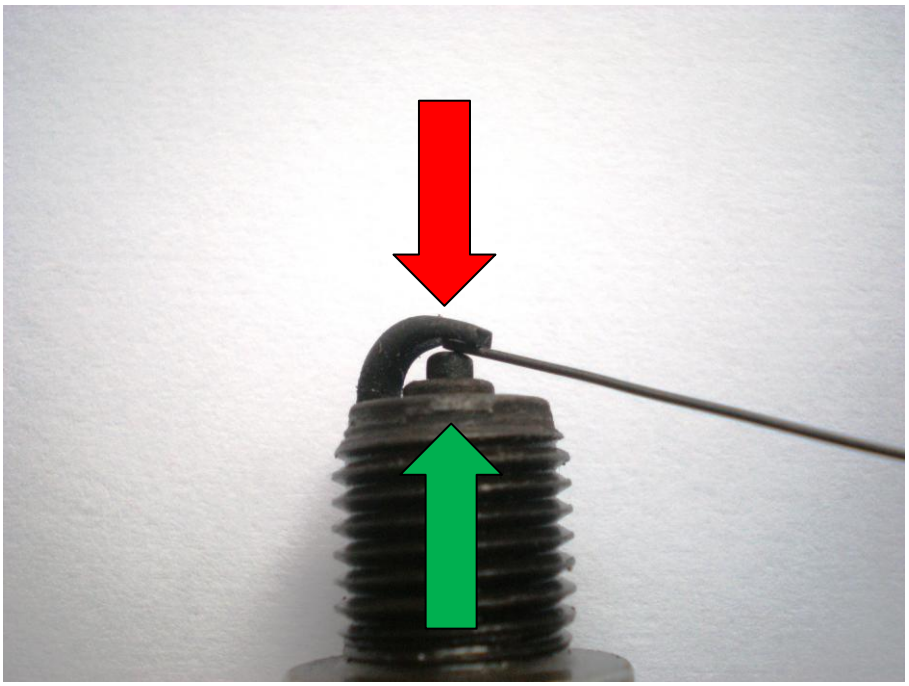

Fig. 1 – Adjustment and measurement of the gap between electrodes for a plug used (sect. 5)

6.0 Checking of plugs

After the performance of the maintenance of the plugs and before their mounting into the engine, the plugs should undergo the following checks:

a Checking of adjustment of electrodes,

b Checking of function and tightness, and

c Checking of visual appearance.

6.1 Checking of adjustment of electrodes

The checking should be performed with a wire gauge. The plugs with the electrode distance not complying with the Regulation, i.e. 0.3 to 0.4 mm, should be returned for adjustment. If the plugs did not undergo the maintenance and were dismounted as a result of the engine overhauling, this checking is not carried out.

6.2 Checking of function and tightness

Fasten the plug into the measuring instrument so that its spark gap reaches up to the pressure chamber and the insulator bolt is in contact with the high-voltage cable terminal.

The high-voltage source is the induction coil with a primary voltage of 12 V, the minimum secondary voltage amounts to 21 kV. The inspection ball spark gap is connected in parallel to the spark plug gap. The distance of balls with ∅ 20 mm is set to 5.3 mm.

Supply pressure air to the instrument chamber and, at the same time, switch on the electric power supply to the induction coil and monitor, through the inspection glass, the sparking on the electrodes of the spark plug. Electric spark occurs on the plug electrodes only up to a certain pressure. In the case of higher pressure, the plug electrodes do not spark and spark occurs on the parallel inspection spark gap set to a distance of 5.3 mm. In the event that neither the plug nor the inspection gap spark, the plug tested is defective provided that the electrical accessories are in good order.

After the checking of function, tightness of the plug is checked using the same instrument.

The plugs should be discarded in the event that:

a The plug does not spark up to a pressure of 1.1 MPa.

b Neither the plug nor the parallel spark gap set to 5.3 mm spark at a pressure exceeding 1.1 MPa.

c Leakage of the plugs is exceeding 30 cm^3/min. at a pressure of 3 MPa.

6.3 Checking of visual appearance

Inspect the following:

a The M12x1.25 plug bush thread pin for any cracks (with 3x magnifying glass) or other damages.

b The insulator for any chipping-off or cracks.

c Check the M14x1 shielding shell thread for cracks (using 3x magnifying glass) or for any other damaging.

d The insulator tip for proper sand-blasting. In the course of further operation, hard slag coating can sometimes form on the insulator tip and cannot be removed by sand-blasting. Such plugs must be discarded and must not be further used.

e The space between the centre electrode and insulator and the space between the insulator tip and the bush for any grain of sand left. If any grains of sand are found to be not removed, the plugs should be cleaned again.

The plugs with any of the above-mentioned defects, with the exception of the defect mentioned in Letter e) in the case of which the plug is returned for repair, should be clearly identified with permanent red colour as unserviceable.

The discarded plugs must be replaced with new ones.

The plugs should be equipped with the sealing washers. The washers may be used in multiple times. The washers should be discarded if they lost more than a third of their original thickness.

The plugs are thus ready to be mounted into the engine.

The "Acceptance Inspection Report" should be prepared concerning the checking of the plugs. A record concerning the checking of the plugs dismounted from the engine should be made (in the engine log book) within the framework of the performed periodic engine monitoring.

Aircraft spark plug L22.62A – dimensions and identification of a new plug.

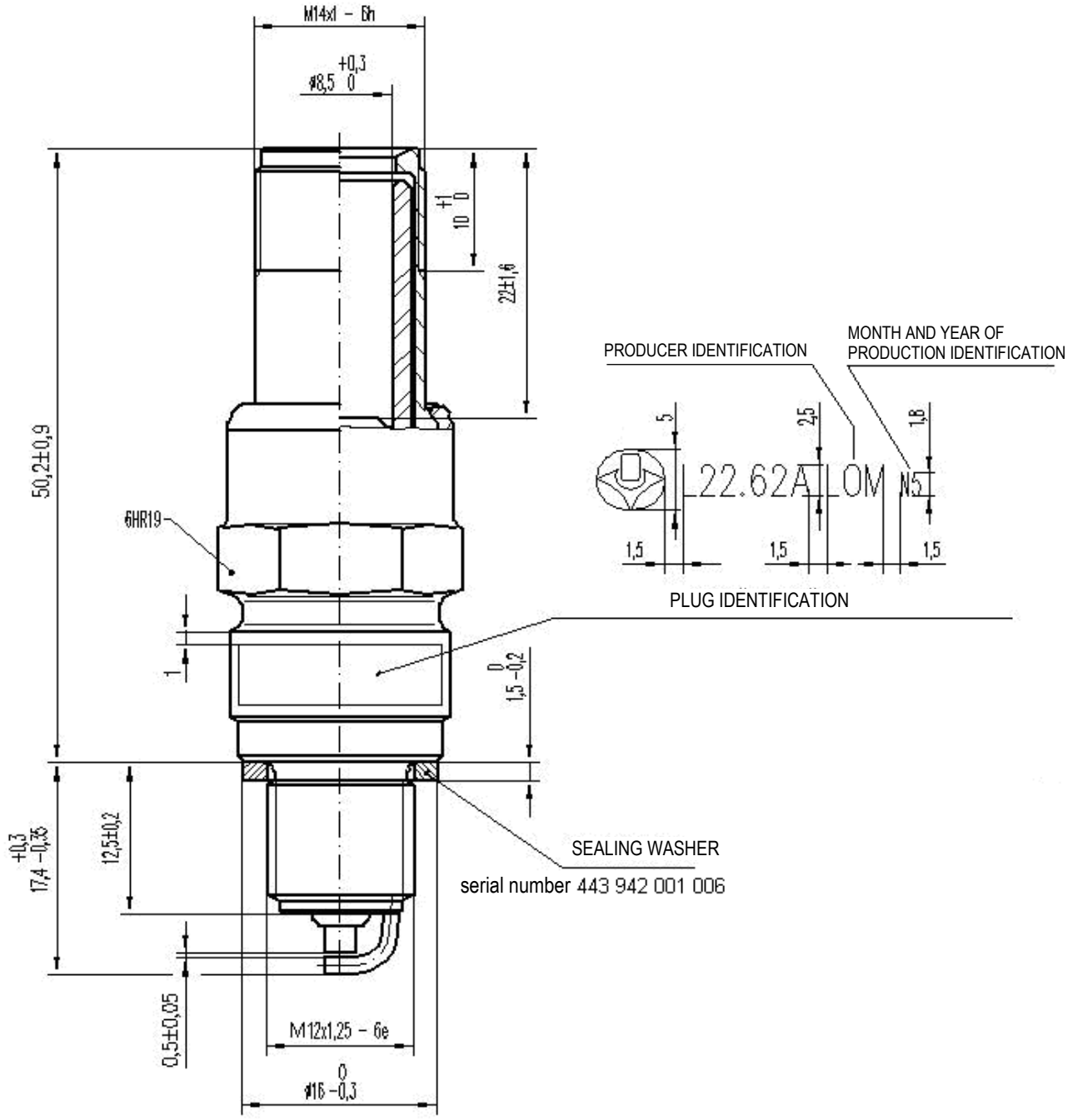

Fig. 2 - Spark plug used, evaluated visually as good prior to electrode adjustment

Fig. 3 - Spark plug used, evaluated visually as worn out