B.0202-0B

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Maintenance manual Supplement:

Older Burners

This Maintenance manual supplement is approved under the authority of DOA no EASA.21J.277

This balloon is to be preserved in an airworthy condition in compliance with instructions and information contained herein.

0.1 RECORD OF REVISIONS

The new or amended text in the revised page will be indicated by a black vertical line in the left hand margin, and the Revision No. and the date will be shown on the bottom of the page.

Revision No.-	Affected Section	Afected Pages	Date of Issue
1	0 3	OB-2 OB-6	21. Oct 2011
2	0 1 3	OB-2 OB-4 OB-5	02. Jun 2016

0.2 LIST OF EFFECTIVE PAGES

Section	Page	Date of Issue
0	OB-2	02. Jun 2016
1	OB-4	02. Jun 2016
2	OB-4	25. Mar. 2010
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1. GENERAL

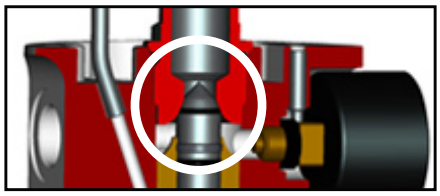
1.1 Introduction

This Maintenance Manual supplement introduces information for maintenance of older models of burners not mentioned in the Maintenance Manual, document no. B.0202 (hereafter referred as Manual).

If any chapter is influenced by this Supplement, only the respective additional or changed information is stated in this Supplelment, all other remain without any change. In case of confusion the Manual decides.

1.2 Applicability

The information contained within this Maintenance Manual applies to the H3, H3-D,HB2 and Komet burners and also to Ignis burners with conical seal in the main blast valve (as shown on the picture) used for balloons of BB, BB-S, AEROTECHNIK AB, AB2, AB2a or AB8 types.



▲ Conical seal in the Ignis blast valve

2. TECHNICAL DESCRIPTION

(Section not affected by the Supplement.)

3. INSPECTIONS AND OPERATING PERIODS

3.4.4 Burner check

1. Check the burner for completeness thoroughly.
2. Inspect (without overpressure) the manometers/pressure gauges, their general condition, protective glass lens fixing, and condition and legibility of the dial with pointer, which should indicate zero when not connected to the fual supply.
3. Supervise fuel hoses are of the correct age from data mentioned on hose squeezed endings (see Section 4.5.1). Use only the original hoses approved by the burner manufacturer in case of replacing. Inspect the physical condition of hoses thoroughly. Pay special attention to the liquid ones. Observe outer covers of hoses along their entire length to check for no mechanical damage or worn places. Concentrate on bent locations and hose end fittings, if they are not cracked/slack at the squeezed endings. If there are any doubts about the hose perfect condition, replace it with a new one (use only the original hoses produced by the burner manufacturer). During deciding this, please keep special attention and severity. Minor surface damage to fuel vapour hoses (the hoses supplied the pilot burner) is not critical and can be permitted.
4. Check connecting couplings of both the liquid and vapour phases. Inspect the condition of contact surfaces and also entering tapered cones for no mechanical damage. On the Rego coupligs/connectors equipped with a self-closing valve, review its function. Check colour marking of the couplings (if used).
5. Check welds and the surface of the vaporiser and burner frame, especially at positions of bands on the upper tube edge of the coil and at the rod inserting sockets on both the burner and basket frames. On burners H3, H3-D and HB2 supervise the last strength test of the vaporiser. The time period from the manufacturing or the last test should not be longer than five years. In case of the event of the test review, ask the manufacturer to do it.
6. Check all threaded joints and the condition of retaining safety rings. Reject any safety ring showing a loosening/slack or strain, and replace it with a new one.
7. Inspect the tightness of burner couplings and the manometer function. Connect up the burner by the supplying hose to the pressure source with the checking manometer/pressure gauge (nitrogen cylinder) and adjust the pressure at 12 bar. Pressurise the fitting/coupling unit and conduct the leakage test of all connections by means of lather solution (see Section 7.3). Check the pressure level on the burner unit manometer.

CAUTION:

The leakage test conducted by means of the open flame is not permitted. There is a fire risk.

8. Realise the inspection of the main flight (blast) valve/burner (FV). Follow the steps for disassembly of FV relevant to the burner certain type used - see Section 6.5.3. Remove the FV head, then the lever/cam of the lever and pull out the stem. All the parts should be thoroughly cleaned with a soft cloth and all the O-rings should be put apart. After checking the guide surfaces of the stem, bush and opening to the lever pin / cam of the lever, the O-rings and the face sealing should be replaced with new ones. Review the safe position of the retaining screw that dimensions the face sealing. While replacing the sealing keep on procedures according to the right re-change of the FV sealing relevant to the pertinent burner type mentioned in Section 6.5.3. Check the state and condition of the FV spring free length. The minimum admissible length of the free spring is 24 ± 1 mm for the HB2, H3 or H3-D burner. The minimum admissible length of the free spring is 27 mm concerning the KOMET burners. In case the length is not standard it is necessary to install a new spring. Supervise the working surface of the lifting lever cam/ control lever and its functioning. Also the sliding shim must be checked and if any of the mentioned parts is somehow damaged it is to be replaced. All the movable components should be covered with vaseline and then FV can be assembled altogether. Assembling and taking up the clearance of the lever/ lever cam we recommend following the instructions for building up the FV burner of certain type - see Section 6.5.3.
9. Inspect the whisper burner (WB) valve. There is the same procedure as for the FV burner inspection regarding the KOMET type mentioned above. The HB2, H3 and H3-D burners should be inspected, especially the age of the ball control valve/cock and its functioning, respectively no leakage in the shut off position. If there are any doubts concerning the condition of any part and if the valve/cock is aged more than 5 years, the new one must be applied.

10. Inspect the pilot burner (PB).

KOMET type:

Put aside the supply hose and remove the fuel filter. Wash up the filter in a petrol, then dry with compressed unpolluted air and reinstall it. Remove the lever/handle of the PB control and also the PB head from the fitting unit. All components should be cleaned properly with a soft cloth and inspected to see if their friction areas do not suffer from mechanical damage. New O-rings and face sealing should be installed. All moving parts must be lubricated with silicon grease. The PB head can be assembled and screwed up into the fitting unit, then the controlling lever should be set and its position adjusted. Remove the PB flame cup and inspect the fuel strainer located under it. It must not be blocked by the soot or other deposits. When dirty, wash the strainer in petrol and make sure it is clear before re-installation. Burned strained must be replaced. Disassembling, assembling and adjusting procedures of PB must be ruled with respect to the directions for PB of KOMET type as shown in Section 6.5.3.

HB2, H3 and H3-D types:

Remove the body of PB and also its jet. Wash the jet in the petrol bath and dry it with compressed air. Open up the ball valve/cock of PB and use the compressed air to clean up the fitting. Then your PB can be built up again. Disassembling, assembling and adjusting procedures must be ruled with respect to the assembling directions for PB of HB2, H3 and H3-D types as shown in Section 6.5.3.

11. Supervise the functioning of the piezo igniter and also the distance setting of ignition electrode contacts. Conduct the test for ignition and stability of PB heating. Concerning types HB2, H3 and H3-D firstly clean up the carbon on the ceramic insolator that is the part of the ignition electrode. Re-inspect the safe position of connectors of the conductor. Check the function of the pressure regulator and install the new O-rings if necessary with the old type of ČSN couplings (only with the older type of burners).

12. Final burner leakage test of fittings should be carried out. Connect the pilot burner by means of the supply hose to the pressure source with the checking manometer/pressure gauge (nitrogen cylinder). Then adjust the pressure to the level of 12 bar. The fitting unit should be pressurised and inspected for tightness. Draw attention to all connections and apply the lather solution (see Section 7.3).

CAUTION:
The leakage test wuth using of the open flame is not permitted. There is a risk of fire.

13. The final burning test and the test of the burner basic functions must be conducted. Concentrate on the heat power output values of the flight burner and whether these corresponds to the standard fuel pressure in the fuel system. Minimise the losses of the burner outputs caused by carbon layers (blockage) on the vaporiser. If the vaporiser is highly carbonated, pay attention to the thorough check of FV shutting off in all positions of the control lever/handle. In case the shutting up represents problems including too long dying out of the flame you must change the face sealing and the spring of the FV head. If you think that the burner causes problems concerning the fuel pressure and it loses appropriate output, conduct the minute test of the fuel consumption under special conditions: gas overpressure is equal to 6 bar. Heat power output can be deducted easily using the equation: P [MW] = (heating capacity [kJ/kg] multiplied by 0.001factor and then multiplied again by the fuel consumption [kg]) divided by 60 [sec]. The value of the propane-butane heating capacity is 50 000 kJ/kg. In case the power output is more than 10% lower than standard values mentioned in Section 2.3.5, the burner should be repaired by an approved organisation. Supervise the tightness of connections of the descending tube and fitting body and also the connection tightness of the crossover valve while intensive burning by means of using the lather solution. Review the possibility of the heating intensity control of PB.
Check the function of the gas spring on burners fitted with adjustable burner frames. The burner should move smoothly through its complete height range. When the lever is released the burner must stay at the checked height.

14. The EASA Form One should be completed and distributed as required.

4. AIRWORTHINESS

(Section not affected by the Supplement.)

5. BALLOON HANDLING AND MAINTENANCE

(Section not affected by the Supplement.)

6. REPAIRS

6.5 Burner repairs

6.5.1 General notes

WARNING:
Before starting any maintenance or repair work disconnect the burner from all fuel supplies and vent all the fuel from the burner.

CAUTION:
It is essential that all fuel system and burner repairs are carried out in a clean environment.The presence of dirt or chemicals may damage movable parts, rubber seals or bonded joints and could block the burner jets.

CAUTION:
When maintaining or repairing fuel system and burners all replacement items must be approved by BALÓNY KUBÍČEK spol. s.r.o. and come with the correct documentation (EASA Form One if applicable). BALÓNY KUBÍČEK spol. s r.o. accept no liability for items not provided by them.

6.5.2 Restrictions

Repairs which involve opening the fuel system, including replacement of '0'-rings and rubber seals, must be carried out by BALÓNY KUBÍČEK spol. s r.o. or an organisation with wtitten approval by BALÓNY KUBÍČEK spol. s r.o. to make these repairs. These repairs include

- Replacement of fuel hoses and connecting quick couplers
- Repairs to a vaporiser including replacement of individual jets
- Repairs to a manometer
- Repairs to blast valves, whisper burners and pilot burners
- Repairs to the pressure reducer of a whisper burner
- Repairs to a crossover valve
- Repairs to threaded joints sealed with PTFE tape or sealing lubricant
- Repairs of loose connection of the burner coil
- Pressure testing

6.5.3 Standard practises

6.5.3.1 '0'-rings and rubber Seals

When movable units sealed with '0'-rings are disassembled, new '0'-ring must be used when the components is reassembled. When disassembling other joints, '0'-rings and seals must be inspected and replaced if damaged or deformed. Lubricate '0'-rings with a graphite- based lubricant (We recommend Molyduval Attila GR). We recommend carrying out regular replacement of '0'-rings after 100 hours in operation.

6.5.3.2 Threaded Joints

a) General – When assembling burner parts and fuel hoses that are not fixed with either a sealant or sealed with PTFE tape lubricate the threads with silicone (Vaseline). If threaded joints made from aluminium clad are not lubricated before assemble then they can jam.

b) Fixed and tightened by sealing – Threads must be clean and free from grease, dirt and old sealant. Smear the sealant on the second and fourth thread of the outer threaded joint and screw in immediately. To shorten the time necessary for sealant to dry it is possible to use spray activator that is applied on all thread joint under the sealant. Always observe the drying times recommended by the sealant manufacturer.

Used sealants:
- Loctite 243 – for securing threads against unintentional loosening (removable joints)
- Loctite 620 – for securing main burner jets
- Loctite 270 – for sealing and securing thread

c) Sealed with PTFE tape – Threads are clean and free from grease, dirt and old tape. All burrs on the threads must be removed with emery cloth. It is good to coarsen the crests of the outer threads (passing hacksaw blade over it) across the thread as this prevents displacement of the tape. For sealing use 12 x 0.1 mm PTFE tape. Wrap the outer thread in the direction of thread. When wrapping the tape must be tense all the time and thereby pulled between the thread. Choose the number of layers according to thread diameter (from 3 to 6 layers). If the wrapping is correct, the tape must completely fill the space between each thread and form a cone (see picture).

▲ RIGHT

▲ WRONG

CAUTION:
Keep the first thread free from tape, because the tape on the thread edge could be cut off during reassemble. Loose pieces of tape could then get into the fuel system and cause a blockage.

After reassemble of any burner of fuel component carry out leak detection of joints according to para 7.3 of the Manual.

6.5.3.3 Replacement of fuel hoses

CAUTION:
Never repair damaged fuel hoses or squeezed hose ends. Always replace the hose with a new one from BALÓNY KUBÍČEK spol. s r.o.

a) Seal burner liquid hoses with 1/4“ NPT threads (connecting hose / REGO coupling) with PTFE tape

b) Secure burner liquid hoses with 3/8“ BSP and M18x1.5 thread form (connecting hose / TEMA 3810 coupling and joint of hose / burner fitting) with special sealing washer (steel washers with rubber inserts)
c) Secure burner vapour hoses with 1/4“ BSP and M14x1.5 thread form (connecting hose / burner fitting) with special sealing washer (steel washers with rubber inserts).

On older burners, where DYNAQUIP D3 / TEMA 1600 / LORCH hose couplings are not squeezed directly to the rubber hose, tighten the thread joint to a torque of about 25 Nm without additional sealing.

As regards older burners, where DYNAQUIP D3 / TEMA 1600 / LORCH hose couplings are not squeezed directly to the rubber hose, fasten up the thread joint by the torque of about 25 Nm without additional sealing.

d) Torque while replacing hoses should not exceed these values:
- hoses with 1/4“ NPT thread ..... max. 20Nm
- hoses with 3/8. BSP thread ..... max. 20Nm
- hoses with 1/4“ BSP thread..... max. 15Nm
- hoses with M18x1.5 thread ..... max. 20Nm
- hoses with M14x1.5 thread ..... max. 15Nm

NOTE:
We recommend lubricating couplings with graphite powder.

6.5.3.4 Main burner jets

Unscrew damaged or loose main burner jets. Remove old sealant and grease from the jet. Apply a drop of Loctite 620 sealant on the jet thread and immediately screw in. Tighten it up to a torque of 2.5 Nm. After refitting burner jets allow them to dry for at least 8 hours before passing vapour or liquid through the burner.

6.5.3.5 Adjusting the pilot burner flame

If the pilot flame is too big or too small then, on some burners, you can regulate its size by adjusting the air intake. Change the quantity of air by moving a steel strap on the burner support (covering and uncovering the inlet hole). Never cover the entire hole. If the burner does not burn despite there being vapour pressure in inlet hose and the pressure reducer is working then clean the PB jet and check that the filter is not blocked with dirt or carbon. Replace the soiled filter with a new one. Wash the jet in petrol and dry it with pressurised cold air. Assembling and disassembling PB see sections with descriptions of individual burner maintenance. Pilot burners are fitted with a fuel filter. If you do not succeed in removing the defect by any of procedures mentioned above, check the condition of the filters and replace if required. For position and disassembling and assembling see sections with description of individual burner maintenance.

6.5.3.6 Manometer repairs

Replace a nonfunctioning manometer with a new one. Fix loose acrylic lens with quick-setting adhesive. If the pointer does not indicate zero while fuel inlet is disconnected and flight vent is open, remove the lens and lower the pointer to indicate zero by removing pointer and refitting it. Take care when moving the pointer because it is very easy to damage the manometer. After remounting the pointer test the manometer to make sure that it functions correctly. Pressurising the fuel system and make sure the manometer indicates correctly. For pressuring use pressurised nitrogen and check the pressure with an accurate manometer

6.5.3.7 Adjusting position of the condensate suction tube

If the suction tube is not effective it may be adjusted. Loosen the screw on the suction tube holder and insert the tube to the bottom of a indentation that catches the condensation. The other end of the tube must be in line with a main burner jet and it should cover half of the jet hole when seen from above.

6.5.3.8 Gimbal mounting of burner unit (cardan joint)

During maintenance of a cardan joint, after disassembling clean the components and lubricate with Molyduval Attila GR. Replace worn friction pads with new ones.

6.5.3.9 Flexible couplings on burner frames

Replace damaged rubber buffers with new ones (burner frames made since 2007).
Replace damaged tube frame couplings with new ones.

6.5.3.10 Adjustable burner frame

If, on burners with height adjusters, the burner units do not stay in a selected height, it is necessary to adjust the pressure in the gas spring. This can only be carried out by an authorized provider of gas struts or by BALÓNY KUBÍČEK spol. s r.o..

If the burner frame / gas strut is damaged and burner units can not be adjusted:
- if burner frame components are damaged or bent, replace them with new ones
- if the gas spring is damaged or bent, replace it with a new one.

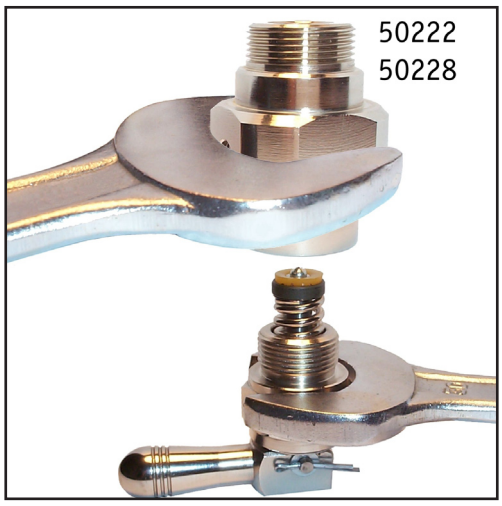
6.5.3.11 Repairing mechanical deformation of burner coils and burner cans

A hardwood rod may be used to straighten small deformations (by prizing or knocking) in the burner cans and deformation of the burner coils. After every repair the the coil the coil must be pressure tested according to para 7.4. of the Maintenance Manual.

6.5.4 H3, H3-D and HB2 burners specific repairs

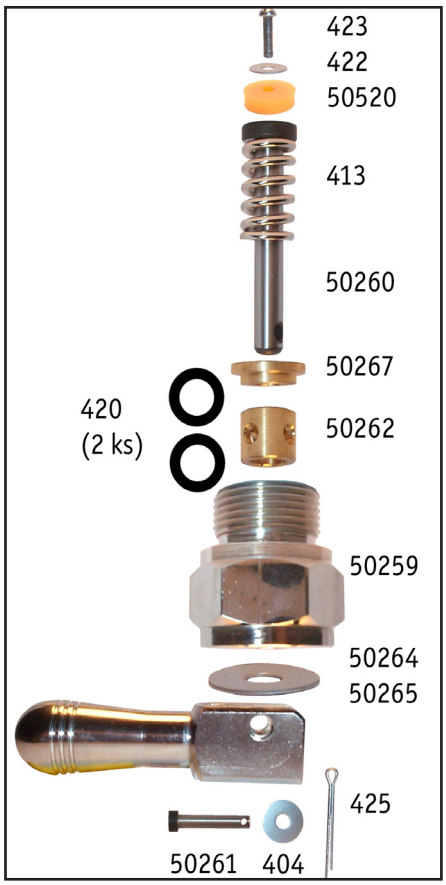
6.5.4.1 Blast valve repairs

Put out the nut of the main flight (blast) valve head (50259). Remove the split pin (425) with the washer (404), lever roll pin of FV head (50261), set out the lever (50263), adjusting sliding shim (50264, 50265) and carefully pick the stem (50260). The stem and bush of FV head (50262) shall be cleaned up, observed and the state of both top and bottom O-rings (420) should be checked. Protect the O-rings with silicon vaseline and if they are damaged replace them with new ones. (We recommend re-changing O-rings during every whole dismantling of the FV head). Then install the bottom O-ring firstly and put a thick layer of silicon vaseline into the room inside the head then insert the bush, the top O-ring and the lid (50267). The stem should be also coated with silicon vaseline, set the spring and install it into the head. Put together the adjusting sliding shims and the lever, put in the split pin and fix it with the roll pin (see 61-2). Complete the FV head and fix the head roll pin with the split one. Before assembling the head into the FV body (50222, 50228) check up the state of seat, face stem sealing (50520) and also the right position of the screw (423). In case you find up any damage of the sealing, replace it with new. (We recommend re-changing it during every whole dismantling of the FV head). The head should be then equipped with the seal PTFE tape of width 0.1 mm and then installed into the FV body. Check up the level clearance and conduct the leakage test with the lather solution (see Section 7.3 of the Manual).



▲ Dismantling FV head of H3, H3-D and HB2 burners

404 - Washer, 4.3 Zn
413 - Pressure spring
420 - O-ring, 12x8 rubberý
422 - Washer, 3.2 Z
425 - Split pin, 2x18 Zn
50222 - Left FV body
50228 - Right FV body
50259 - Nut of FV head



▲ FV head of H3, H3-D, HB2 burners

50260 - Stem of FV head
50261 -Lever roll pin of FV head
50262 - Bush of FV head
50263 - FV lever
50264 - Adjusting shim of FV
50265 - Adjusting shim of FV
50267 - Lid of FV head
50520 - Face seal of FV cone

6.5.4.2 Adjusting clearance of the FV lever of H3, H3-D, HB2 burners

The minimum clearance between the lever and the adjusting shim must be 0.5 mm.
Adjusting the right clearance you should use the sliding shim 1 mm thick (50264) and one 0.5 mm thick (50265). Take off the split pin (425) and also the head roll pin (50261) and the lever. Then adjust the right number of sliding shims. Then insert the lever and the roll pin, check the clearance and fix the state with the split pin.

CAUTION:
Fixing the roll pin by means of the split pin you should pay attention not to let the split pin to make spontaneous movement that causes stuck and blocking of the flight vent in the open position.

6.5.4.3 Repairing untightness at the descent tube/fitting connection

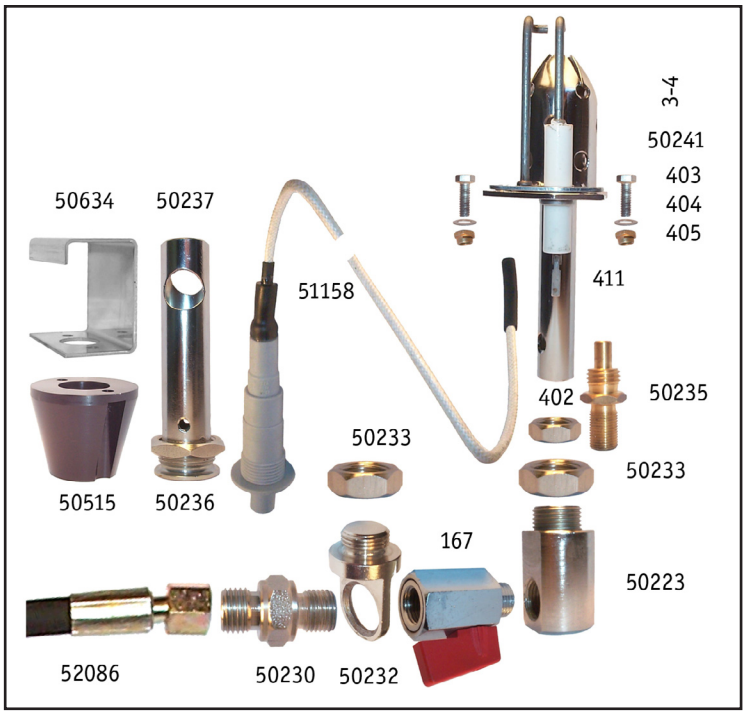
The repair starts with fastening of the central nut using the specially adjusted open-end wrench. If the positioning is not good enough, ask the manufacturer to replace the lower part of the descent tube.

6.5.4.4 Pilot burner repair

Clean the ceramic insulation of the spark ignition electrode using a cloth with the detergent or using a hard but non-metal brush. Layers of soot or carbon deposits can cause problems as the possible source of discharge except of the electrodes of the spark gap. Damaged components shoulds be replaced with new ones. Check up the undisturbed state of the conductor between the piezo igniter and the sparking plug. Adjust the distance between the electrodes of the pilot burner according to the picture. The distance between the electrodes (411) or the distance between the electrodes and the body of the pilot burner (50241) according to the type of the burner should be adjusted. The spark must be as long as possible but it must spark over properly. The recommended distance is from 3 to 4 mm. Then review the right functioning of the piezo igniter, if necessary to change for a new part.

6.5.4.5 Fuel supply repair

Turn off the conductor (51158) from the spark ignition electrode, unscrew up the body of the pilot burner (50241) and also the jet (50235). The H3 and H3-D types need to remove the whisper burner body before unscrewing. The jet should be cleaned by using the metal wire 0.7 mm thick, then washed in petrol and dried with the pressurised cold air.



◀ Pilot burner H3, H3-D, HB2 types

167 - Ball cock
402 - Nut, M8
403 - Screw, M4
404 - Washer, 4.3
405 - Nut, M4
411 - Spark plug
50223 - Elbow, G1/8 - G1/4
50230 - Connector, M14x1,5 - G1/4
50232 - Support of ball cock
50233 - Nut, G3/8
50235 - Jet of PB
50236 - Nut M26 (H3, H3-D)
50237 - Cover (H3, H3-D)
50241 - PB body
50515 - Support of HB2 piezo
50634 - Piezo igniter cover of HB2 type
51158 - Piezo igniter
52086 - Fuel hose

6.5.5 KOMET burner specific repairs

6.5.5.1 Blast valve (BV) repair

Identification and mending of a defect:
If it is difficult to control the BV or there is a leak caused by the valve not closing properly then:

1. Check the amount of movement of the lever assembly controlling the valve. Replace damaged parts and lubricate the assembly with Molyduval Attila GR.
2. Check the state and lubrication of 'O'-rings in the valve. Replace damaged 'O'-rings and lubricate with Molyduval Attila GR.
3. Check that the countersunk lock screw is correctly fitted (1116) and the condition of the face of the stem seal of BV/WB (51133).Remove and replace loose screws using Loctite 243 (see 6.5.3.2)
4. Check that there is no permanent deformation of the spring (51132). If the spring length in loose, less than 27mm, then replace it with a new one.
5. Check the state and lubrication of the parallel / roll pin (1160). Replace the pin if it is damaged and lubricate with Molyduval Attila GR.

Disassembling the blast valve
Remove the lever screw (1126) in the BV head and the screws on the head cover (51138). Remove the head cover of the BV (51116) and using a spanner unscrew the BV nut (51119). On KOMET burners S / N 105 and higher remove the head cover of WB before dismantling the BV. Then remove the screws (2722) on both units and take off the entire handle with body (52719) and cover (52718). Force out the pin (2743) and take off the lever. Using a nut wrench unscrew the BV nut. After rectifying the defects replace the damaged parts, including seals, and reassemble.

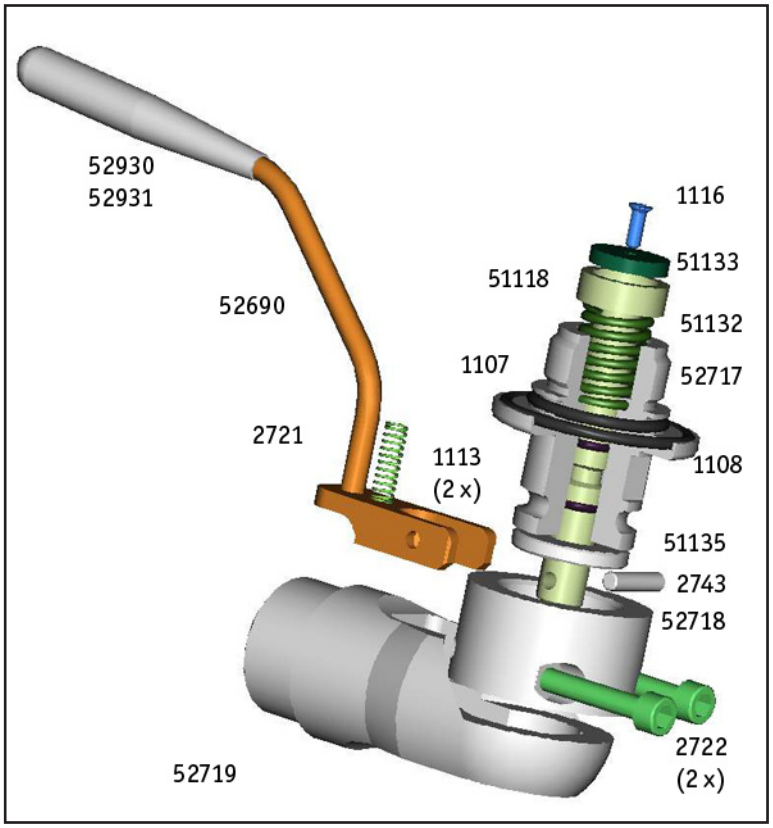
In order to replace 'O'-rings (1113) or the spring of BV (51132), first remove the roll pin (1160) from the head cam of the BV and pull out the stem of the BV (51118).

◀ Blast valve of KOMET type

1107 - 'O'-ring 25x2.5
1108 - 'O'-ring 37x2.5
1113 - 'O'-ring 7x1.8
1116 - Screw M3x8
1117 - 'O'-ring 25x2
1126 - Screw M6x80
1160 - Roll pin 4x28
51116 - Head cover of KOMET BV
51118 - Stem of KOMET BV/WB
51119 - Nut of KOMET BV
51132 - Spring of KOMET BV/WB
51133 - Stem seal of KOMET BV/WB
51134 - Sliding shim of KOMET burner
51138 - Screw of KOMET head cover
51184 - Lever of KOMET BV head
52013 - Head cam of KOMET BV

Blast valve re-assembly

Before setting the '0'-rings (1107, 1108, 1113) into the pertinent pits, coat them carefully with lubricant. Then place the sealing of the stem and fix it with the lock screw. Slide the spring onto the stem and put a thick layer of lubricant into the space between the '0'-rings (see 6.5.3.1). Clean the hole inside the BV nut and install the completed stem. Then put on the sliding shim (51134 or 51135) and then the head cam of the BV; adjust the openings of the sliding shim and head cam and fix in the right position with the lubricated roll pin (1160 or 2743) (see 6.5.3.1 for lubrication). Screw the complete head into the burner fitting and adjust it with of a spanner. Check that the clearance between the cam and the sliding shim is between 1 to 2 mm. If the clearance is not within these limits then change the shims for new ones of different thickness. Place the head cover with the cam on the BV nut and fix it with the screws (51138). Connect the lever of BV using the screw (1126). Check the quantity of motion, tightness and the function of the BV.



◀ Blast valve of KOMET burner (s/n 105 and up)

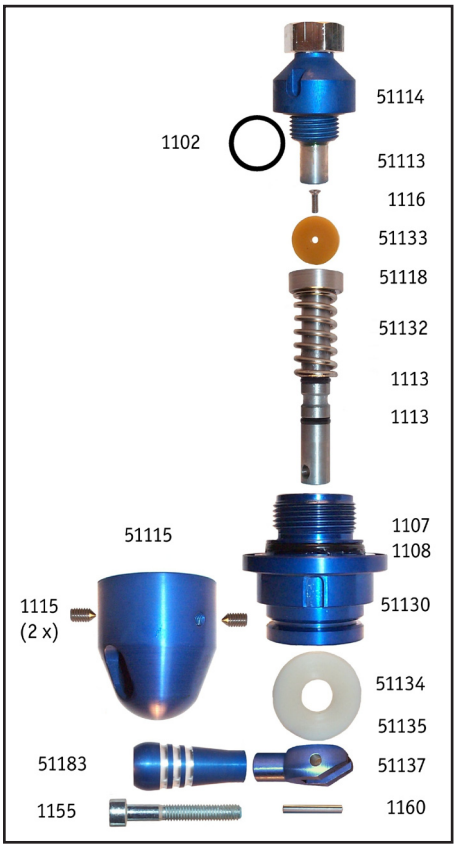
1107 - '0'-ring 25x2,5
1108 - '0'-ring 37x2,5
1113 - '0'-ring 7x1,8
1116 - Screw M3x8
2721 - Spring
2722 - Screw M5x35
2743 - Roll pin 4x16
51118 - Stem of KOMET BV/WB
51132 - Spring of KOMET BV/WB
51133 - Stem seal of KOMET BV/WB
51135 - Sliding shim of KOMET+burner
52690 - Lever of KOMET BV
52717 - Nut of KOMET BV
52718 - Cover of KOMET BV
52719 - Handle body of KOMET
52930 - Cover of left KOMET lever
52931 - Cover of right KOMET lever

6.5.5.2 Whisper burner (WB) repairs

Identification and mending of a defect
If it is difficult to control the WB or there is a leak caused by the valve not closing properly then the procedure is the same as for the BV due to similar design.

Disassembling the whisper burner valve
Unscrew the hex screw in the operating handle (1155) and the adjusting screws (1115). Remove the head cover (51115). Using a spanner unscrew the WB nut (51130). To access the 'O'-rings (1113) and WB spring of (51132) remove the roll pin (1160) from the cam of WB head (51137) and pull out the stem of WB (51118). If the a seal on the WB stem is damaged then replace the complete stem assembly.

Whisper burner re-assembly
Coat 'O'-rings (1107, 1108, 1113) with lubricant (see 6.5.2.1) and place into the pits. Insert the stem seal and fix it with the screw. Put the spring on the stem and fill the space between the 'O'-rings with lubricant (see 6.5.2.1). Clean the cavity and insert the completed stem. Refit the sliding shim (51134 or 51135) and the WB head cam (51137); position the openings of the sliding shim and the head cam. Secure with the parallel pin after lubricating properly (see 6.5.2.1). Install the assembled head into the burner fitting and fasten a spanner. Check the standard clearance to be 1 – 2mm between the cam and the sliding shim. If the clearance is not correct then replace the shim with a new one of a different thickness. Replace the head cover and cam on the WB nut and fix it with screws. Connect the operating handle using the screw (1155). Check that the WB functions correctly.



◀ Whisper burner on KOMET burners

1102 - 'O'-ring, 18.5x3
1107 - 'O'-ring, 25x2.5
1108 - 'O'-ring, 37x2.5
1113 - 'O'-ring, 7x1.8
1115 - Adjusting screw, M5x8
1116 - Screw, M3x8
1155 - Hex socket screw, M6x40 Zn
1160 - Roll pin, 4x28
51113 - WP insert of KOMET type
51114 - KOMET WB
51115 - Head cover of KOMET WB
51118 - Stem of BV/WB of KOMET type
51130 - WB nut of KOMET type
51132 - Spring of KOMET BV/WB
51133 - Stem sealing of KOMET BV/WB
51134 - Sliding shim of KOMET burner
51135 - Sliding shim of KOMET + burner
51137 - Head cam of KOMET WB
51183 - Operating handle of the KOMET WB

6.5.5.3 Pilot burner (PB) repairs

Identification and mending of a defect

If it is difficult to operate the pilot burner or there is a leak caused by the valve not closing properly then:

1. Check the position of the control lever (51144), the condition of the lifting assembly (51123 and 51124) and the stem of PB (51122) and its 'O'-rings. Replace damaged parts with new ones, lubricate the lifting assembly with Molyduval Attila GR and adjust the lever position (see 6.5.5.4).
2. Check stem seals (51123) and lower surface of the jet (51140). Replace damaged seals, clean the contact surface on the jet.

If there is a fuel leakage around the control lever:

1. Check the 'O'-ring (1105) and the surfaces that it contacts. Replace damaged 'O'-rings, polish the contact surface.
2. Check stem seals and surface. If any seal is damaged then replace the complete stem assembly, lubricate with Molyduval Attila GR.

If PB does not burn or burns irregularly:

1. Check that the jet (51140) is not blocked. Clean the jet. Wash it in petrol and dry with pressurised air.
2. Check the filter (52043). If blocked or damaged replace the filter.
3. Check the position of the pizo igniter electrode (51144) and PB spark gap. Clean the ceramic part of the electrode. Adjust the PB spark gap. Replace the piezo igniter if it does not work.

Disassembling the pilot burner

1. LRemove the safety ring (1104), drop out the upper and bottom lifts (51124 and 51123) and pull out the stem of PB (51122) with its seals (51126).
2. Remove the safety ring (1104), drop out the upper and bottom lifts (51124 and 51123) and pull out the stem of PB (51122) with its seals (51126).
3. Loosen the lock screw (1109) and remove the pizo igniter by pulling down on the push button in its center(51144). Pull straight down so that the igniter is not damaged.
4. Loosen the lock screw (1115) and remove the PB flame cup (51161). Remove the filter and unscrew the PB pipe (51162).
5. Screw out the jet.

Pilot burner re-assembly

1. Screw in the jet (51140) and then the PB pipe (51162).
2. Put the filter on the PB pipe of PB and refit the flame cup (51161).
3. Insert the piezo igniter (51145). Adjust the position of the projection on the flame cup so that it is above the igniter and adjust the distance. Adjust the spark gap and secure the piezo and flame cup with the adjusting screws (1109 and 1115).
4. Put the spring (51127) and bottom PB lift (51123) on the stem. Put 'O'-ring (1105) on the lift carefully. Screw the lift with stem into the fitting unit. While tightening the lift be careful not to squeeze the edge of the 'O'-ring.
5. Fit the upper PB lift, shim(s) (1103) and secure with the safety ring (1104). Lubricate the stem and lift areas with Molyduval Attila GR. The clearance between the upper and bottom lift should not be more than 1mm. Set the necessary clearance by using a shim of the correct thickness.
6. Refit the control lever (51144). Adjust to the right position (see 6.5.5.4) and fix with a lock screw (1109)

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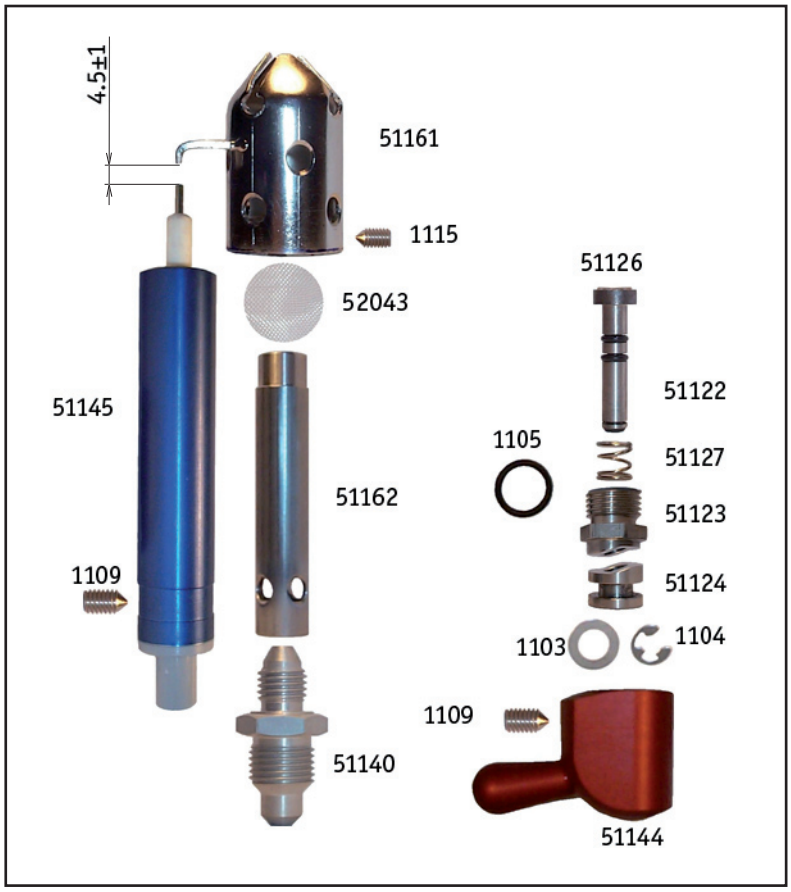


◀ KOMET pilot burner

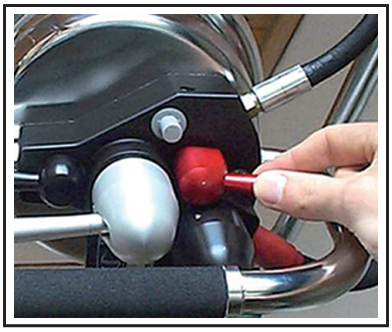
1103 – Shim, 8x14
1104 – Safety ring on the shaft
1105 – 'O'-ring, 12x2.5
1106 – 'O'-ring, 4x1.75
1109 – Adjusting screw, M6x10
1115 – Adjusting screw, M5x8
51122 – Stem of KOMET PB
51123 – Bottom lift of KOMET PB
51124 – Upper lift of KOMET PB
51126 – Stem sealing of PB KOMET
51127 – Spring of PB KOMET
51140 – Jet of PB KOMET
51144 – Control lever of PB KOMET
51145 – KOMET piezo igniter
51161 – PB flame cup KOMET
51162 – Pipe of PB KOMET
52043 – Filter of PB KOMET

6.5.5.4 Positioning the pilot burner control lever

Set the On and Off positions of the control lever as shown in the pictures below. Lock the correct position by tightening the adjusting screw (1109). Check that the lever works correctly.

▲ Off –position (closed)

▲ Boundary between On / Off position



▲ On-position (open)

6.5.5.5 Cleaning the pilot burner fuel filter

If the flame of the PB is weak or if you are not sure of the cleanliness of the fuel that you have been using then unscrew the vapour hose and fuel filter from the burner block. Wash the filter in petrol until it is clean, dry it with pressurised air and refit the filter and hose. Screw back to the fitting. Instructions on removing and refitting fuel hoses are in para 6.5.3.3.

6.5.5.6 Crossover valve (CV) repair

NOTE:
A crossover valve is only used at KOMET burners of serial numbers up to 104.

Repair a fuel leek from the CV control in the following way. After disassembling CV control – crossover valve (51149, 52010), safety ring (1139) and stem replace the 'O'-rings (419). Lubricate the 'O'-rings and the space between them with lubricant (see 6.5.2.1). Fix the stem with a safety ring and secure the CV control in the correct position.
If the valve does not close properly then replace the whole ball cock (parts 51172, 51198, 51199 and 52007).
Disconnect the burner units and disassemble the by-passing hose of CV. Unscrew the safety nut (51172) by using an Allan key and replace the both seats and ball (51199, 52007, 51198).

◀ Crossover valve of KOMET burner

419 – 'O'-ring, 6x2
1125 – Adjusting screw, M5x12
1139 – Safety ring for the hole
51139 – Stem of KOMET CV
51149 – KOMET CV control, left
51168 – KOMET CV casing
51172 – KOMET threaded shim
51198 – KOMET ball
51199 – Seat of CV I KOMET
52007 – Seat of CV II KOMET
52010 – KOMET CV control, right

6.5.5.7 Repairing a loose connection of the burner coil/ fitting

Tighten the connecting screw (by using a GOLA spanner). If it is not possible to remove the defect this way then replace the 'O'-rings on the connecting screw.

6.5.6 IGNIS burner specific repairs

6.5.6.1 Blast valve (BV) repair

Identification and removal of a defect

If it is difficult to operate the BV or there is a leak caused by the valve not closing properly then:

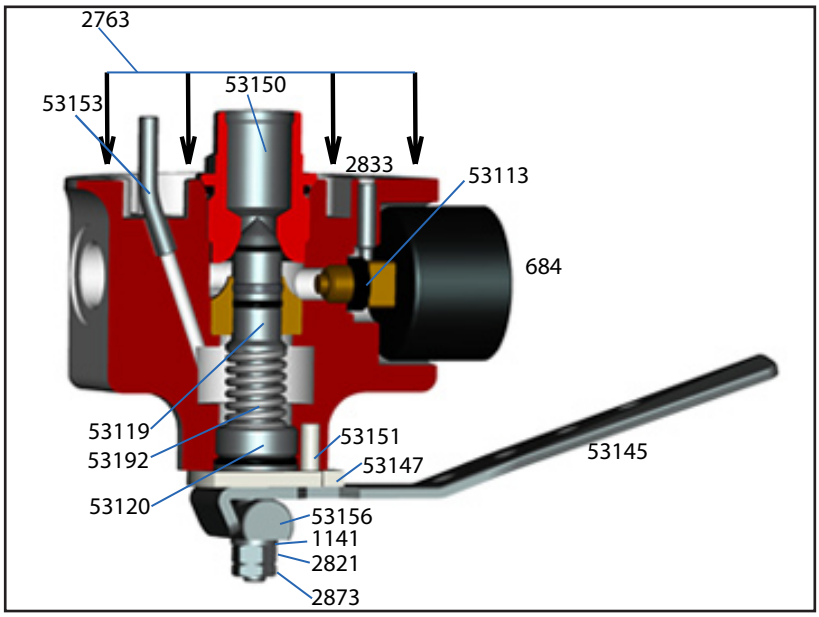
1. Check the amount of movement of the lever assembly controlling the valve. Replace damaged parts and lubricate the assembly with Molyduval Attila GR.
2. Check the state and lubrication of stem (53119) that belongs to the vent and the lead nut. If a seal is damaged replace the whole stem and seal assembly. Lubricate friction areas and seals with Molyduval Attila GR.
3. Check the condition of the front face of the stem (53119) and the stem seal. If the front face or the seal is damaged then change the whole stem assembly. Clean the contact surface carefully.
4. Check that there is no permanent deformation of the spring (51132). If, with the valve in the closed position, the lever feels loose then replace the spring.

If there is fuel leakage from the blow-off tube, from around the lever assembly, from around the manometer or from the fuel hose connection or fuel filter II cover (53209)

1. Check sealing rings of the stem (53119) and lead nut (53120). If any seal is damaged then replace the whole stem assembly. Lubricate friction areas and rings with Molyduval Attila GR.
2. Check the manometer seal (53113) and that the manometer is fitted securely. Replace the seal if it is damaged, tighten the manometer and fix it in the correct position with screw 2833.
3. Check the sealing shim on the threaded joint of the fuel hose and that the hose is tight. Replace the shim if it is damaged and tighten the hose (see 6.5.3.3).
4. Check sealing of the fuel filter cover and its tightening. Replace the shim if damaged and retighten the cover.

Disassembling the blast balve and manometer

1. Remove the screws in the burner handle, remove the handle and the cover of the lever assembly. (For easier handling you can dismantle the fitting from the burner unit.)
2. Unscrew nuts (2873, 2821) and remove the lever assembly including the frictional sliding shim (53147).
3. Using a box spanner unscrew the lead nut (53120) and remove the stem with the spring(53119, 53192).
4. Unscrew retaining screw 2833 at least 5mm, unscrew the manometer by hand.



◀ Blast valve of IGNIS burner

684 - WIKA Manometer
1141 - Shim 6.4 stainless
2763 - Screw M5x16
2821 - Nut M6 stainless
2833 - Adjusting screw M5x20
2873 - Nut M6 stainless low
53113 - Manometer seal
53119 - Stem of BV
53120 - Screw lead of Stem BV
53145 - Lever of BV
53147 - Sliding shim
53150 - Threaded shim of BV
53151 - BV lever shock absorber
53153 - Blow - off tube
53156 - BV pendulum bearing
53192 - BV spring

Blast valve and manometer re-assembly

1. Put the spring (53192) and lead nut (53120) on the clean and lubricated stem (53119).
2. Put the stem into the body of the manifold block. Lubricate the thread of the nut thread. Tighten the nut so that the hexagon is line with the groove in the manifold block so that a sliding shim (53147) can be easily fitted.
3. Put on the lever (53145) and pendulum bearing (53156). Fix with nuts (2821, 2873) through the shim (1141). Tighten the nut so that there is clearance of 0.2 – 0.3mm between the lever and the sliding shim. (When the lever is in the correct position relative to adjusting shim (53151), there will be a clearance of about 4 mm between the two).Secure the joint by tightening the locking-nut (2873).
4. Slide the seal(53113) onto the manometer thread. Screw the manometer in by hand so that it seals and the dial is in the upright position. Secure the gauge against rotation by tightening the screw (2833). If you do not manage to tighten the manometer so that there is no leakage and the dial is in right position at the same time then turn the dial and pointer through 180°. For disassembling see 6.5.3.6.
5. Refit the cover and handle, fix with screws.

NOTE:

The blow-off tube is only pressed in the fitting and fixed with Loctite 243 sealant.

Disassembling the burner manifold

1. Remove the four M5 screws (2763).
2. Pull out all the fitting from vaporiser dish. Do not dismantle the threaded shim. The central tube with sealing rings is only push fitted into the burner manifold.
3. While reassembling the burner lubricate the M5 screws with a silicone lubricant or Vaseline and the sealing rigs with Molyduval Attila GR (see 6.5.3.1)..

6.5.6.2 Whisper burner (WB) repair

Identification and removal of a defect

If it is difficult to operate the BV or there is a leak caused by the valve not closing properly then:

1. Check the seals on the stem (53138) and top surface of the unit (53134). If the seals are damaged then replace the whole stem assembly. Lubricate friction areas and rings with Molyduval Attila GR.
2. Check the front face of the stem and contact surface. If a seal is damaged, replace the whole stem assembly. Check that the lever moves correctly to give full control of the valve. Replace damaged parts and lubricate the assembly with Molyduval Attila GR.
3. Check the quantity of motion of the lever assembly regarding valve control. Replace damaged parts and lubricate the assembly with Molyduval Attila GR.

If there is a fuel leakage around the lever assembly or at the upper side of the fitting around the WB support:

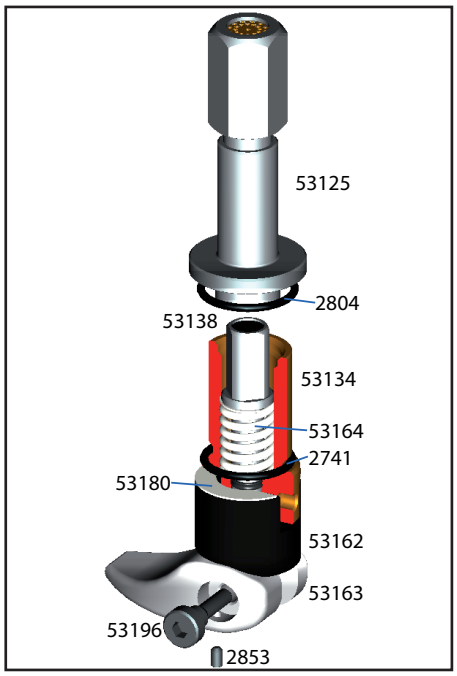
1. Check seals on the stem (53138) and top surface of the unit (53134). If a seal is damaged then replace the whole stem assembly. Lubricate friction areas and rings with Molyduval Attila GR.
2. Check the outer steals (2741, 2804) and surfaces that these seals come in contact with. Replace damaged seals.

Disassembling the Whisper Burner

1. Unscrew the WB unit (53125), whilst holding the control valve so that it does not rotate. The assembly is secured against its rotation with M5 screw (set screw), which is bolted from the side of the fitting.
2. After unscrewing of the WB unit unscrew the safety screw M5 and pull out the assembly.
3. Before disassembling the control lever (53163) loosen the lock screw (2853). Unscrew the pin of the lever (53196).

Assembling the Whisper Burner

1. Insert the stem (53138) with the spring (53164) into the stem casing. Put the shim and lever base on the stem. Fit the WB lever (53163) and the pin (53196), tighten the pin and secure with the lock screw to prevent it rotating. Lubricate the assembly, stem and lead surface with Molyduval Attila GR.
2. Insert the assembly into the burner manifold and screw up the pressure reducer fix with the lock screw M5 and from the upper side screw up the WB unit (53125) with a seal (2804) and tighten.
3. Check there is a clearance of at least 2mm between the lever (53163) and Teflon shim. If the clearance is too large then insert more shims (53180)



◀ Whisper burner on IGNIS burners

2741 – '0'-ring, 19x2 NBR
2804 – '0'-ring, 21x2 NBR
2853 – Adjusting screw, M3x5
53125 – IGNIS Whisper Burner
53134 – Stem casing of WB / PB
53138 – Stem of WB / PB
53162 – Lever base of WB / PB, left, right
53163 – Lever of WB, left, right
53164 – Spring of WB / PB
53180 – Shim
53196 – Lever pin of WB /PB

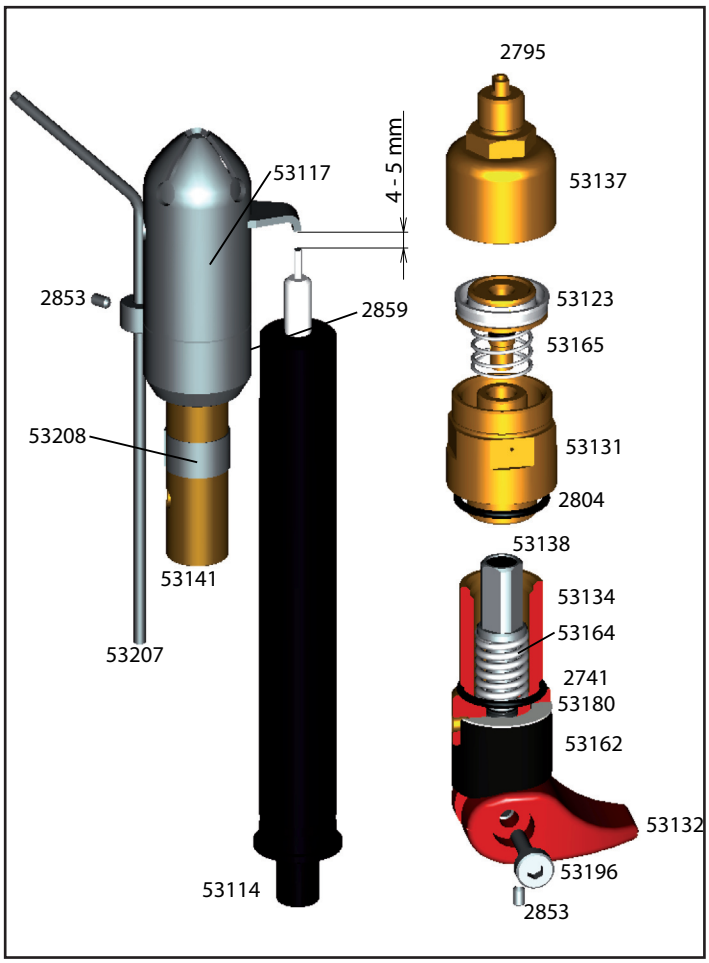
6.5.6.3 Pilot burner (PB) repair - burner with a pressure reducer

Identification and removal of a defect

If it is difficult to control the pilot burner (PB) or there is a leak caused by the valve not closing properly then:
If there is a fuel leakage around the control lever:
Because the construction of the PB assembly is the same as the WB assembly follow the advice in para 6.5.4.4.
If PB does not burn, burns irregularly or fails to ignite:
1. Check the cleanliness PB and the pressure reducer. Clean the PB / reducer in accordance with 6.5.2.5 and 6.5.2.6.
2.Check the position of the piezo igniter electrode (53114) and PB spark gap (53117). Clean the ceramic part of the electrode. Adjust the spark gap to 4-5mm. If the piezo igniter does not work replace it.

Disassembling the Pilot Burner and piezo igniter

1. Loosen the lock screw of the piezo igniter and withdraw the piezo (53114).
2. Loosen the lock screw (2859) and remove the PB flame cup(53117).
3. Unscrew the pressure reducer unit by using a spanner on the flat sides of the reducer unit (53131). Prevent it rotating within the burner manifold by holding the control lever. The assembly is secured against rotation by a M5 screw (set screw), which is screwed in from the side of the fitting.
4. After unscrewing the reducer unit, unscrew the M5 safety screw and pull out the controlling assembly.
5. Before disassembling the control lever (53132) loosen the safety screw (2853). Screw out the lever pin (53196).



◀ IGNIS pilot burner

2741 – 'O'-ring, 19x2 NBR
2795 – Jet
2804 – 'O'-ring, 21x2 NBR
2853 – Adjusting screw, M3x5
2859 – Adjusting screw, M5x8
53114 – Piezo igniter
53117 – PB flame cup
53123 – Differential piston of PB
53131 – Nut of the piston chamber
53132 – Lever of PB, left, right
53134 – Stem casing of WB / PB
53137 – Piston chamber
53138 – Stem of WB / PB
53141 - Support of PB
53162 – Lever base of WB / PB, left, right
53164 – Spring of WB / PB
53165 – Piston spring
53180 – Shim
53196 – Lever pin of WB / PB
53207 – Tube of extractor
53208 – Inlet restrictor of PB

Assembling the Pilot Burner and piezo igniter

1. The assembling procedure is the same as for the WB, proceed in accordance with 6.5.4.6, but replace the WB unit with the pressure reducer. Be careful while tightening the reducer, use a spanner on the flat sides of the piston chamber (53131).
2. Screw the PB support (53141) onto the reducer, put the PB flame cup (53117) on the PB support. Refit the piezo igniter (53114). Position the PB flame cup so that these is the correct spark gap between it and the piezo, as shown in the picture. Secure the piezo and the PB flame cup with their lock screws.
3. Adjust the position of extractor tube (53207) and secure it with the screw (2853) against rotation. Check that the piezo functions correctly.

Cleaning the pilot burner pressure reducer

When using low-quality fuel with a high oil content the pressure reducer may become so soiled that it stops working properly resulting in a reduced pilot flame that can not be regulated (see 6.5.3.5). In extreme cases the oil can be seen coming out of the jet. In such cases proceed as follows:

1. Unscrew the upper and lower parts of the reducer unit (piston chambers 53137 and 53131). The thread is secured with Loctite 243 sealant. Carefully remove the piston (53123) - take care not to damage the seal around the rim of the piston (wiper seal)
2. Clean all parts of the unit. Never clean the piston or seals with an alkali solvent. Do not replace damaged seals; if a seal on the piston is damaged then replace the piston and seals as a single item. If the piston is functioning incorrect in that vapour is leaking from the air bleed in the reducer body then this may be solved by lubricating the piston wiper seal.
3. When reassembling lubricate the PTFE wiping seal with CARBAFLO BBL 50 and then carefully slide the piston (53123) into the piston chamber (53137).
4. Put on the spring (53165) onto the shaft of the piston and then, having coated the thread with Loctite 243, screw the upper and bottom part of the piston chamber together. Do not alow any Loctite to enter the pressure reducer as this will prevent the unit working.

NOTE:

A simple way to clean a slightly soiled pressure reducer is by connecting the burner to a cylinder filled with pure propane then running the pilot burner for at least 2 hours. Pure propane vapour will push the residual oil and dirt out. After cleaning the pilot light size may require adjustment (see 6.5.3.5).

6.5.6.4 Pilot burner (PB) repair - burner without a pressure reducer

NOTE:

Construction of the PB without the pressure reducer (i.e. fed by a vapour phase of the fuel) is in principle the same as the one with the reducer. Except that there is no differential piston in the reducer and no hole for pressure equalization in the reducer unit.

Repair techniques are similar to those described for the PB with a pressure reducer.

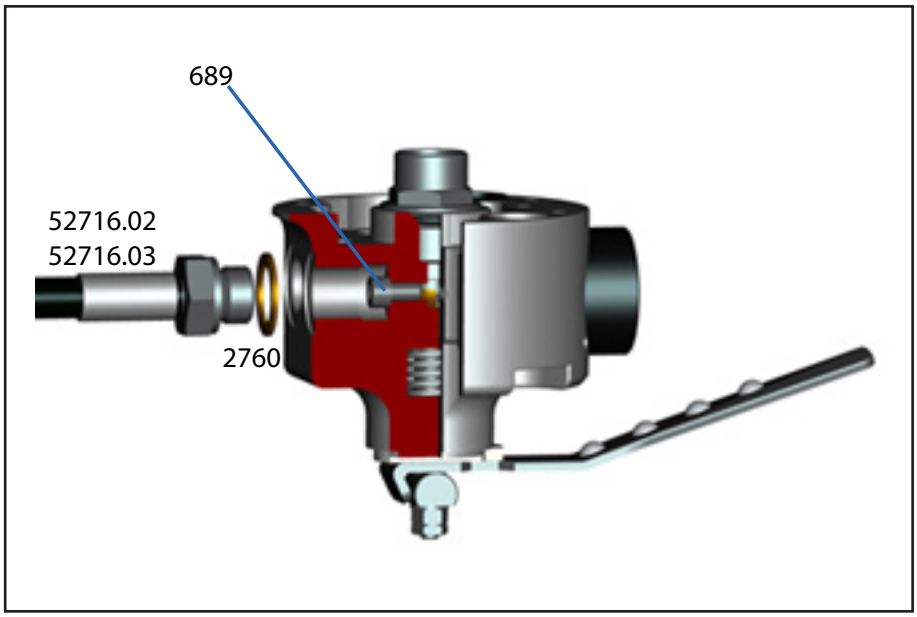
6.5.6.5 Replacement of the fuel filter in a PB

- Filter I
  The fuel filter is sealed to the piston chamber (53137). This filter and item (53137) forms one unremovable component Disassembling and assembling the piston chamber see 6.5.6.3.
- Filter II (53205) – only fitted when the burner has a pressure reducer (when there is no vapour hose)
  Unscrew the plug (53209) then unscrew the filter (53205).
  Before reassembling lubricate the filter thread with Molyduval Attila GR.

CAUTION:

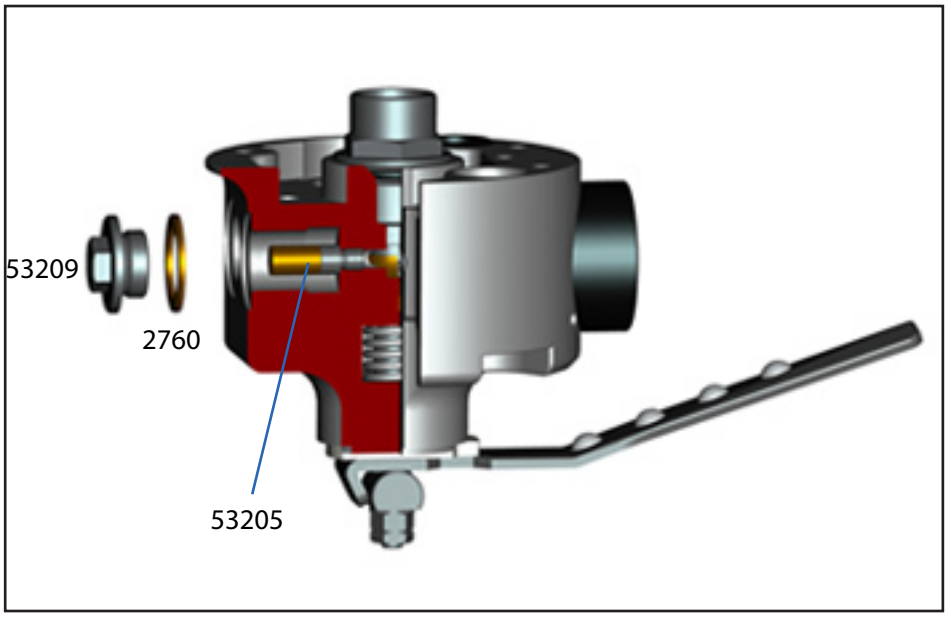
When the burner has a vapour hose (the burner without a pressure pressure reducer) then a blinding screw (369) must be fitted in place of the fuel filter otherwise the liquid fuel would get into the vapour circuit.

▼ Fuel supply of PB in a IGNIS without a pressure reducer (with a vapour hose)



689 – Screw, M6x10
2760 – Sealing shim
52716.02 – Fuel hose
52716.03 – Fuel hose

▼ Fuel supply of PB in a IGNIS with a pressure reducer (without a vapour hose)



2760 – Sealing shim
53205 – Fuel filter II
53209 – Plug of filter II

6.5.6.6 Repairing a loose connection of the burner coil/ fitting

If the fitting becomes loose then replace the ‘0‘-rings. Do not loosen the stainless nut where the descent tube is put. Unscrew the lock screws and pull the fitting out. Lubricate the new ‘0‘-rings with lubricant (see 6.5.2.1).

7. INSTRUCTIONS

(Section not affected by the Supplement.)

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