

Work standard AR01-19

General

In individual cases a reduction of usability concerning main blast valves of older FB 6 burners could be detected. Investigations showed that contamination in connection with leaks led to a pressure built up inside the valve, which severely reduced the usability.

Background: AD for changing the blast valve of FB 6 with Teflon sealing

Concerned: Main blast valves of all FB 6 burners and FB 7 burners with an equal valve structure

Detection: Affected FB 7 blast valves have a grub screw on the circumference of the blast valve upper part. The screw is in one level with the axis of the burner handle. Burner with grub screws on the side are not affected.

Actions: replacement of the main blast valve upper bodies and valve stem assemblies.

Tools: Hex-wrench with T handle AF4, hex-wrench AF2,5; possible flat file with a smooth cut; calliper gauge 150 mm 20s nonius, center punch, hammer

Material: **Silicone remover**; Brake cleaner, Loctite® 243, lubricants **Teccem Flouronox Paste KL**, technical Vaseline, silicone grease, lint-free cleaning cloth

Marking: Center punch mark on the outside of the circumference above or below the grub screw of the main blast valve upper body

Work to be performed:

For all work with solvents and cleanser, the specified greases or metal cutting tools, industrial safety measures must be taken. These can be found in the section "safety information".

Disassembly:

The burner handle must be unscrewed from the main blast valve upper bodies. This requires unscrewing the two M5 screws from each burner unit (hex-wrench AF4). Older burners with construction year before 2005 may still have M4 screws for installing the burner handle. Within this AR, the M4 cylinder head bolts are being replaced with M5 screws. The valve upper bodies in exchange are equipped with the necessary M5 threaded bores. The 4 bores of the burner handle must be extended from Ø4,5 mm to bores of Ø5,5 mm. The distances of the centre of the thread bores inside the valve upper body was not changed.

The threaded bolt (fig. 1; 3) must be unscrewed from the valve lever (hex wrench AF2,5; fig. 1; 7). After that the valve lever (fig. 1; 1) is not connected to the valve stem (fig. 1; 2) anymore and can be taken off. The stainless steel gliding plate (fig. 1; 4) can be taken from the upper body.

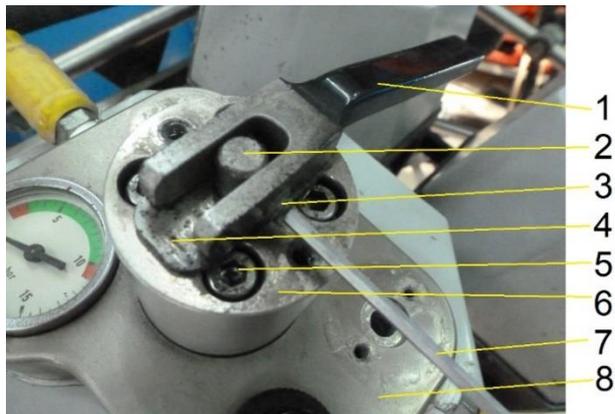


Fig. 1: Main blast valve view

The main blast valve upper body (fig. 1; 6) is mounted to the valve block (fig. 1; 8) with 4 screws (fig. 1; 5). These screws must be unscrewed (hex wrench AF4). The main blast valve upper body including valve stems can be removed from the valve block. The valve stem assembly (fig. 2) must be removed from the main blast valve upper body by pulling it out. This might need a little more force because of the lightly greased clearance fits.

Cleaning:

All disassembled parts of the valve and the exposed bores of the valve blocks must be cleaned of residual grease and contaminants with **silicone remover and after that with residue-free brake cleaner and lint-free cleaning cloths**. It is important that every thread and sealing surface is free of dirt and grease before reassembly. The cleaned parts must be blown off with compressed air and wiped off with clean cloths. The disassembled and unmodified main blast valve upper bodies and valve stem unit must to be sent back to Theo Schroeder fire balloons at short notice.

Assembly:

The radial groove of the valve stem must be generously lubricated with special lubricant **Teccem, Fluoronox Paste KL** before the O-ring can be inserted into the groove. Surplus grease can be spread on the O-ring and surface aside. The two radial grooves and the shaft facing the free end of the valve stem must be lightly lubricated with Vaseline or silicone grease before the assembly of the corresponding O-rings. The O-rings and surface aside must be lightly greased after assembly. In order to facilitate the inserting of the valve stem assembly into the main blast valve upper body, the bore orifice of the main blast valve upper body must be lightly lubricated. The valve stem assembly must be inserted into the larger bore of the upper body with the valve shaft extension ahead until reaching the stop position. The bottom O-ring of the main blast valve upper body must also be replaced and lightly greased with Vaseline or silicone grease. The bottom O-ring seals the main blast valve upper body - valve block assembly. The valve assembly can carefully be inserted into the valve block with the valve stem ahead (fig. 2). Make sure that the O-ring of the valve stem will not be damaged.

The grub screw on the circumference of the main blast valve upper body (fig. 2; 1) must be in line with the burner handle facing the opposite burner. The 4 holes of the valve upper body (fig. 2; 2) used to mount it onto the valve block, must be in line with the corresponding tap holes of the valve block (fig. 2; 3). Damaged copper disks used for the screws must be replaced. In the next step, a droplet Loctite® 243 must be applied onto every thread near the tip of each screw. The fixing screws of the main blast valve upper body can be stuck through the upper body into the valve block. The screws must be tightened step- and crosswise. It must be taken care that the bottom O-ring of the upper body is properly inserted in the groove. The torque of the fixing screws is 1 Nm. The gliding plate of the main blast valve lever can now be stuck onto the stem assembly sticking out of the upper body. The wearing points of the valve lever on the gliding plate must be lubricated with Vaseline. The main blast valve lever must be stuck on the valve stem assembly extension shaft sticking out of the upper body. The bores of shaft and lever must align (fig. 1). The threaded bolt of the main blast valve lever must be inserted so far that it can be screwed in. As mentioned before a drop of Loctite® 243 must be applied on the thread. No torque is applicable here, the Loctite® 243 provides sufficient fixation of the bolt.



Fig. 2: Assembly

The flanks of the lever must be lightly lubricated with Vaseline to avoid wear. There must be a clearance between the gliding plate and the valve lever of at least 0,2 mm (tolerance zone: +0,3 mm). If the clearance is higher than the tolerance, a new lever must be used. This lever must be adjusted to the valve. The contact surface of the lever towards the friction disk must be filed carefully and parallel with a fine defined above. The clearance must be checked during adjustment by fitting the lever to the valve. The valve lever and the sliding disk must be aligned, pointing towards to opposite burner, so that the burner handle can be plugged onto the main blast valve upper body. The burner handle must be fixed with the 4 cylinder head screws (torque 1 Nm and Loctite® 243).

After completing the assembly, the burner must be test burned to check the function and leak-tightness of the valve.

Safety instructions

Any skin contact with the specified cleaning agents and solvents should be avoided. Appropriate personal protective equipment should to be worn (safety glasses or full face shield, chemical-resistant protective gloves, inhalation protection against organic vapour). If applicable the breathing protection can be replaced by an extraction unit and the eye protection can be replaced by a viewing glass. If no extraction unit is available, the cleaning must be conducted in a well ventilated working area. Solvent containers should not be left open. The risk of leaking solvents should be avoided. Solvent-resistant containers should be used. The containers must be marked accordingly. Brushes can be used to apply the grease. A separate brush must be used for each grease. If there is no brush available a protection cream or disposable gloves should be used. Brushes may not lose any bristles or hair.