

Toby DVR5 Oil Control - TECHNICAL HANDBOOK

DVR OIL CONTROL- Principle Of Operation

The **Toby DVR Oil Control** serves to regulate the capacity of a heating device fired with oil. Apart from the task of having to supply the burner with the controlled, pre-selected quantity of fuel per time, the oil control also protects the burner against overfilling and flooding and is therefore the safety device of the heating appliance.

The **Toby Oil Controls** function according to the principle of level regulation. The fuel enters via the filter and the inlet valve into the oil control itself. The rising oil level in the oil control lifts the float and, as soon as the oil has reached the level mark, the inlet valve is closed far enough by the float to allow only as much oil to flow into the control as flows out of it to the burner. Should the inlet valve 'let by' as a result of accumulated dirt, the oil level in the control rises further. This causes the operating float to rise and to release the spring previously stretched by hand across the control lever (R); thus the inlet valve is closed completely.

In order to recommence operations, the control lever (R) must be **lifted**. If the safety device has been tripped, the heating device must first of all be started and only then may the control lever be actuated. With the DVR oil control, the flow, i.e. heating capacity must be adjusted by hand, by means of the control knob.

DVR OIL CONTROL- Normal Annual Servicing

Like all mechanical devices it is necessary to clean the Toby Oil Controls at certain intervals, as a rule every 1-2 years. If particularly dirty fuel is used, additional cleaning may prove necessary. The following sequence should be carried out during the annual overhaul;

- 1) Tap the actuating pin, with the control knob set at the highest position. In this way, any slight accumulation of dirt in the metering stem slit will be removed (**as per picture 1**)
- 2) Remove any oil coke (cracked oil) from the burner feed pipe so that the fuel can flow unobstructed from the valve to the burner.
- 3) Remove and clean the filter (**as per pictures 2 & 3**) and refit it.
- 4) Remove the draining screw (**as per picture 4**) and rinse the oil control through with fuel oil from the tank until clear oil emerges at the point of drainage.
- 5) If water should be found inside the oil control, it is advisable to remove the pipe between the oil control and the burner and to clean it.



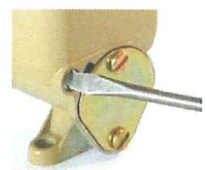
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After the last-mentioned operations have been carried out the appliance should be run for at least 15 minutes with the device at first set on low and then at high (control knob positions 1 and 6).

Should this run not prove satisfactory for reasons of the oil flow or the proportions between the fuel and the combustion air, the oil flow is to be adjusted to the viscosity of the oil and/or the available flue draught. The measures to be taken in this case are described under **Oil Flow Adjustment** (below) and in the table 'Fault Finding & Maintenance Measures' (page 4).

DVR OIL CONTROL- Oil Flow Adjustment

When the heating device is first put into operation, an adjustment of the oil control to the existing conditions, sometimes proves necessary.

Such adjustments are necessary if the minimum flue draught required is not available or if the fuel oil used is not of the viscosity specified (mm^2/s or cSt) on the name plate of the oil control. Adjustment of the flow is only to be done when the heating device is in operation.

After the flow has been corrected at least 5 minutes must be allowed to elapse before the flame corresponds to the newly-adjusted flow.

As a general rule, a half-turn of the flow adjustment screw suffices to make the necessary correction. Along-side the flow adjustment screws are arrows indicating + and – signs showing in which direction the screw must be turned so as to increase or decrease the flow.

The high flame must be controlled or adjusted first with the stove running at maximum capacity, after which the low flame is controlled or adjusted at position 1. If the flow is controlled by means of a built-in or externally mounted thermostat or other regulating device, the low flame must be adjusted via the thermostat pin (see **picture 7**). Turning the pin clockwise decreases, turning anti-clockwise increases the flow. While checking the low flow via the thermostat pin, the pin must be pressed down on to the hexagonal nipple.

Correction of the maximum flow. The flame must not cause soot or rumbling. Exact adjustment can only be carried out only when a smoke sampling pump and a draught gauge is used (see **picture 5**).



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Correction of the minimum flow. The flame must just burn all round in the case of the minimum flow. The high flame must first be controlled or adjusted then the low flame (see **picture 6**).



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Adjustment of the minimum flow via the thermostat pin. This adjustment is necessary only when the oil flow is thermostatically controlled. Turning the pin clockwise decreases, turning the pin anti-clockwise increases the minimum flow.

When the pin is pressed down, the low flame must just burn all round, i.e. in a closed circle.

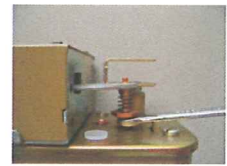
Top plate removal (see **picture 8**).

Removal of the float assembly. Remove the screw as shown (see **picture 9**).

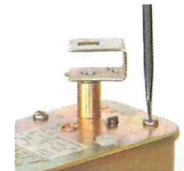
Lifting out the complete float assembly. When the attachment screws have been removed, the complete float assembly can be lifted out upwards (see **picture 10**). If the float assembly must be replaced with a new one because of a defect, then on the DVR models the flows must be checked and if necessary corrected (see **pictures 5, 6 & 7**).

Cleaning the metering stem slot. This must be done only with a soft non-metallic instrument. The slot must not be enlarged and the 'o' ring not damaged (see **picture 11**).

Anti-overheating devices may be fitted in the DVR oil controls. This may have been specified by the heating/stove appliance manufacturer or in order to comply with Standards existing in certain countries. The anti-overheating safety device is fitted during manufacture of the control. The device closes and locks the inlet valve in the case of an ambient temperature exceeding 100°C. In order to be able to reset the float control after the safety device has been tripped, the complete anti-overheating device must be replaced (see **picture 12**).



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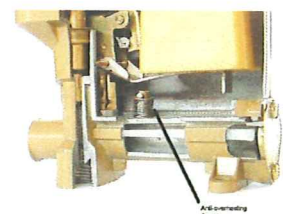
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Points To Be Observed With Regard To The Oil Supply Line.

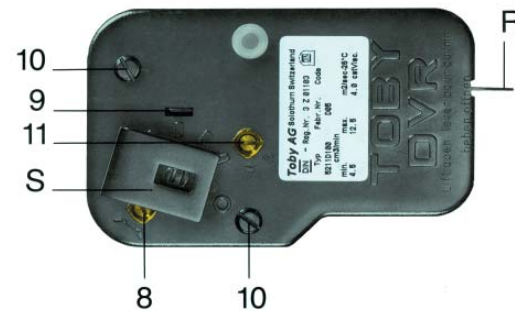
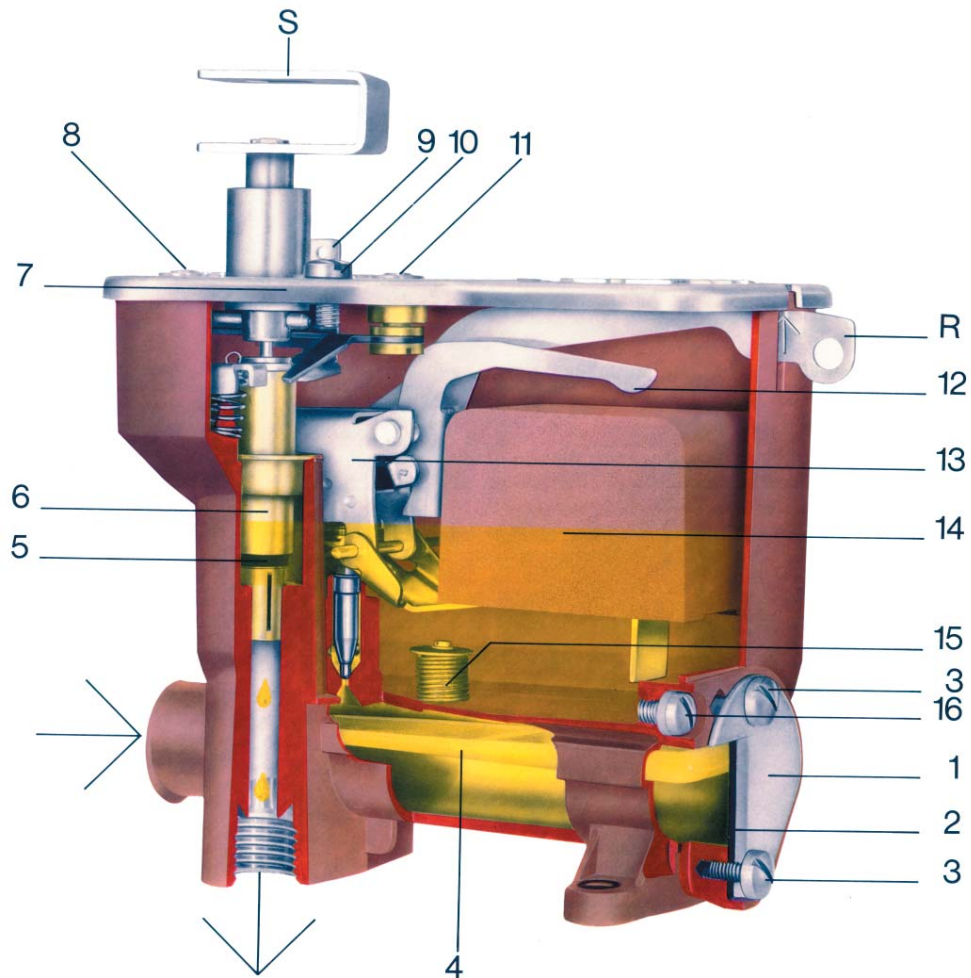
If the appliance is supplied with oil where the feed pressure at the oil control is greater than 3.5m head (4psi) then a pressure reducing valve or 'head breaking device' must be fitted in the pipeline leading to the DVR oil control to ensure conditions within the necessary limits. When fitting the pressure reducing valve, care is to be taken that the pipe between the pressure reducing valve and the DVR oil control is on a constant upward slant in order that any air bubbles which unavoidably accumulate in this pipe can escape into the DVR oil control. Within the Oil System Installation, the oil control is not the only factor for the correct functioning of the heating device. The correct choice of all the other components is also important. For this reason, in the case of a problem which is believed to be attributable to the DVR oil control, the complete installation should be checked over to ascertain whether it does indeed deliver the required amount of fuel to the DVR oil control.

DVR Oil Control- Fault Finding & Maintenance Measures.

Possible Defects	Causes	Counter-measures
No oil flows to the vapourising burner or oil control	Oil tank empty Lock-out valve closed Oil control switched to safety position	Fill up with oil Open lock-out valve Lift the control lever (R)
Too little oil flows to the vapourising burner	Burner feed line coked Stove is on a tilt Oil Control is dirty Fuel used is too viscous	Remove oil coke Stand the stove horizontally Clean oil control (pictures 1-4) Increase flow (pictures 5-8)
Too much oil flows to the Vapourising burner (stove gets sooty and rumbles)	Too much oil in burner prior to ignition. Flue draught inadequate or flue is getting a false draught. Flow too high	Reduce fuel to burner prior to ignition. Measure draughts. Check against stove manufacturers specification. Prevent false draughts Decrease flow (pictures 5-8)
Oil flow to the vapourising burner fluctuates	Dirty metering stem slot	Tap actuating pin as shown (picture 1) Clean oil control (pictures 1-4)
Safety device is constantly tripped	Oil control very dirty	Clean oil control (pictures 1-4)
Stove is turned off and oil still flows to the vapourising burner	Control knob of the oil control is pulled upwards by the driving element. Washer on metering stem is defective Dirty oil control	Lengthen driving element or make it move more easily so that the stroke movement of the control knob is not hindered. Renew metering stem insulation Clean oil control (pictures 1-4)

Should it not be possible to put the DVR oil control back into running order, Please contact the stove/heating appliance manufacturer for a replacement or assistance.

Toby DVR 5...



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|-------------------------------|-------------------------------|
| 1 Filter cover | 10 Fixing screw |
| 2 Filter washer | 11 Low flame adjustment screw |
| 3 Filter screw | 12 Safety cut-off lever |
| 4 Filter | 13 Float assembly |
| 5 Washer | 14 Microcell float |
| 6 Metering stem | 15 Overheating safety device |
| 7 Lid assembly | 16 Draining screw |
| 8 High flame adjustment screw | R Control lever |
| 9 Actuating pin | S Control knob |