R&R
of the Fuel Selector Valve
B58 Baron

Larry Olson

B58 Baron, SN TH 1 and after. The TC 1970, TC 2003 and after TE1081, TE 1084 and after will be the same for removal, and in the valve. This process is valuable for stopping leakage and seepage from this valve. Other Baron models may be similar.

This is for a mid 70s BE58 with the 166 gal fuel system, which does not have an aux system.

This is only for info, and is not an overhaul. It is intended to give one a perspective of doing an R&R to prevent fuel seepage of leaks. Following the Beechcraft Maintenance Manual is strongly advised, and any information contained here, would be secondary, but the pictures are nice.

All of the tools needed are common shop tools, except a spanner wrench for the gear. You will need a one inch wide flat spanner wrench with 1/8th in studs. You can buy one at a marine store. It's common for removing water filter caps in boats. You'll also need open end wrenches up to 1 in.

This operation requires a licensed mechanic, however, the skill level is such that one who is mechanically inclined could accomplish this with the aid of an A&P.

The main cause for fuel seepage is one of the three O-rings in the forward and rear housing of the valve and replacing these is a must, as well as the O-rings and some parts in the fuel ports as indicated here.

It is important to note that the maintenance manual calls for emptying the tanks and there's an argument to do so, however, it can be done (as referenced below) with fuel in the tank, but there is some risk, especially if you smoke during this exercise. There is a likely chance you will get some fuel on yourself. However, it's possible to do this without spilling a drop on yourself.

The aircraft will have to be put on jacks, and the inner gear door opened for access.

Time required is approximately 1.5 hours to remove, 2 hours to dissemble and replace parts and reassemble, and 1.5 hours to reinstall on the plane. Getting the center screw out (HE 1811) can add time and add four letter words to ones vocabulary.

Overall procedure:

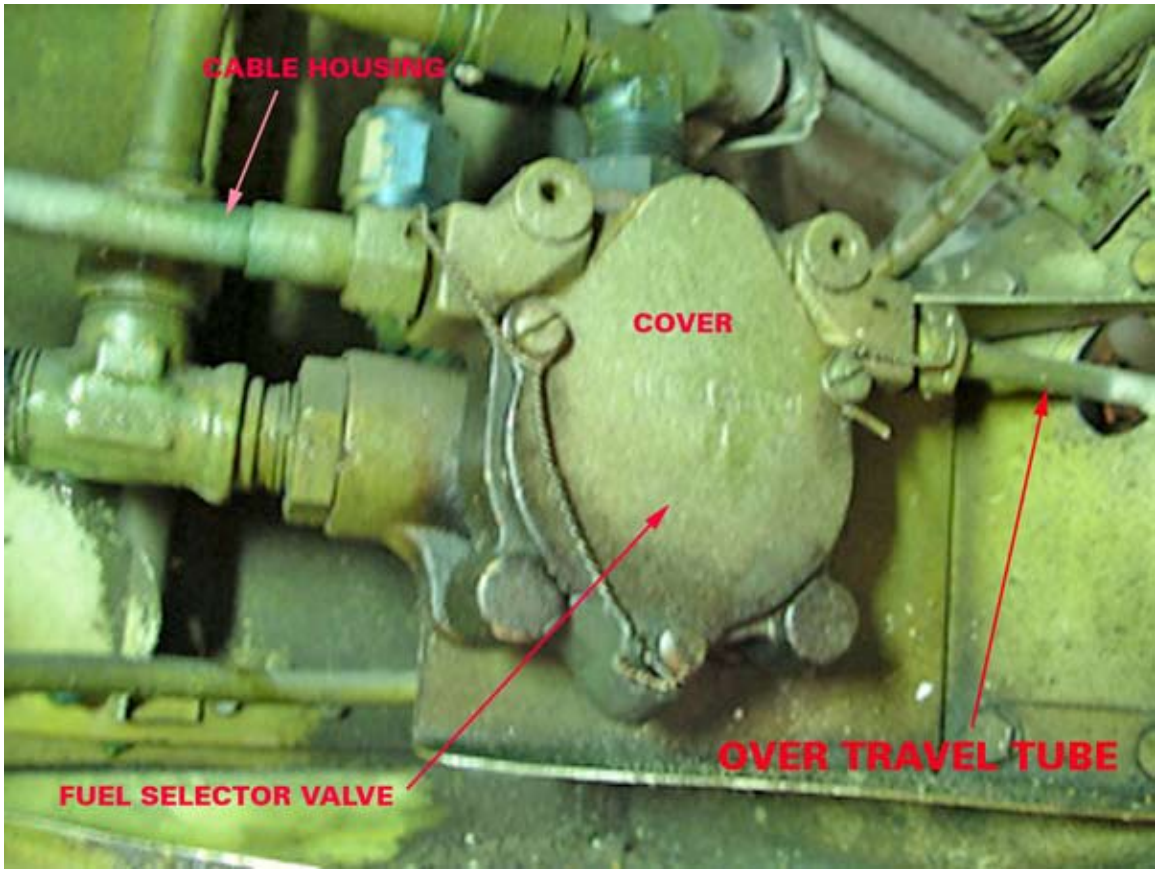
Just for clarification, these are the steps that will be followed:
1. Removal of the valve.
2. Replacement of common O-rings and parts that cause leaks.
3. Reassembly of the valve.

For an understanding, the valve will be separated into four parts:
1. Front Cover
2. Forward main housing, containing the gear and the selector cable.
3. Rear main housing, containing the fuel ports.
4. Rear Cover

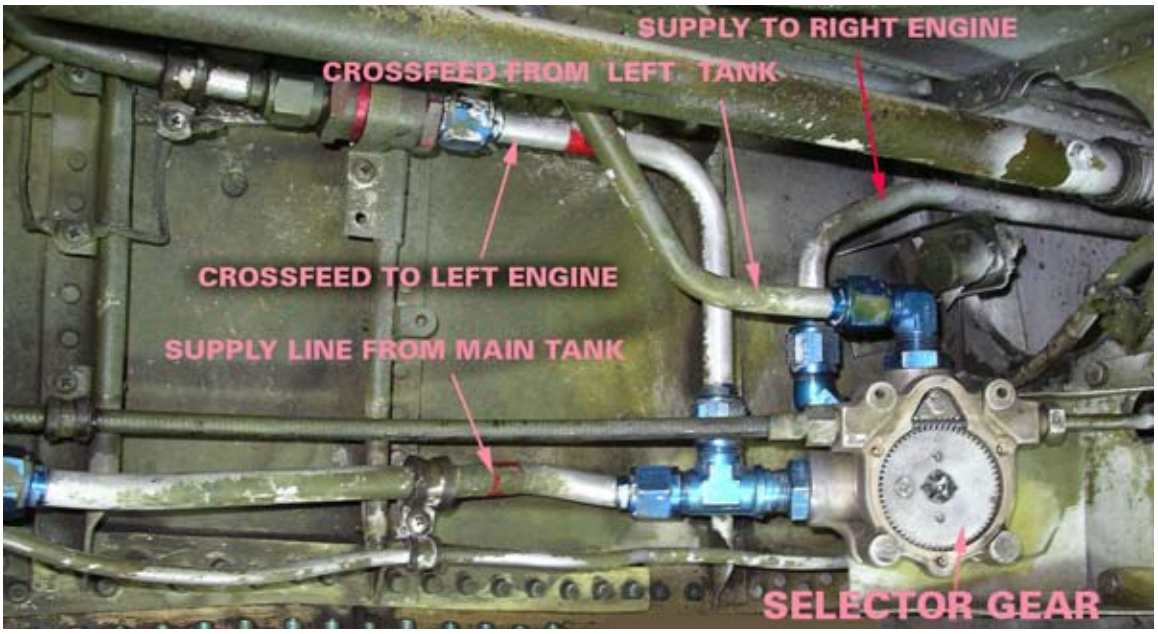
Below is the right hand fuel selector valve, located in the right wheel well. To access this, one needs to open the inboard wheel well cover, and preferably have the aircraft on jacks.

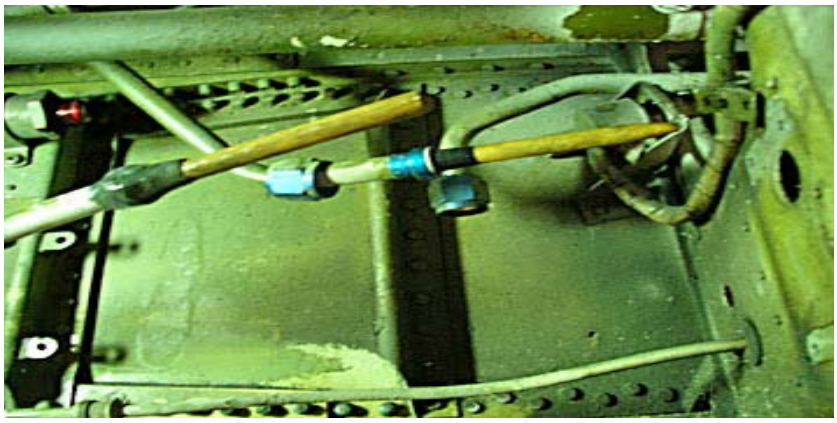
The stains on the bottom are an indication of seepage and leaks.

Remove the cover. There should be no fuel under the front cover, but could have some stains due to seepage or leaks. However, if it's dripping from this area, one could disconnect and secure the fuel lines first. After removing the front cover, we will need to disconnect all of the lines to the valve.



Two of the lines will leak fuel, unless both tanks are empty there's a risk in flowing fuel into your lap. However, if one is quick they can disconnect the line and plug the line with a dowel stick, slightly larger than 3/8 in or cap the line with a female cap, size AN 929.
Below are the lines that will leak and the next page shows them stopped with a dowel. The cap will work much better.





Remove the remainder of the lines, and remove the valve support from the airframe, so that the valve just hangs there.

With the valve mounting bracket disconnected the valve can be worked out of the hole the over center tube fits through and just hang to allow one to remove the cable from the valve. Measure the length the cable sticks out for future reference in replacing, to minimize rerigging. **Note the position of the gear and have it in the same position when replacing. In this illustration the valve selector in the cockpit is selected to ON, and the gear, with the stopping screw at the top, is selected to ON.** You can see this easily by looking at the shaft when everything is disassembled and looking into the fuel ports. Remove the Slider. Loosen the cable housing bolt and rotate the entire valve to unscrew it from the cable housing. Slide valve off cable.

With the valve on the bench, remove the fittings and the bracket. Remove the rear cover. Remove the gear by removing the stop screw and the center screw. This one can be a bitch, because it's often put in with lock tight. It will require a spanner wrench to hold the gear and an Allen wrench on a socket to get the torque to break it loose. In extreme cases a large easy out may have to be used.

Once the screw is removed, wrap the valve upside down on a wood bench to dislodge the gear, which is held in place with two locating studs. **Caution: there is a small ball and spring that you don't want to loose under the gear which will fall out. Put it in a safe place, unless you have the replacement parts.** The spring is $30 and may not need to be replaced with an R&R.

Once the gear is off, unscrew the four screws and remove the front half from the rear half. There are three O-rings (packing) that need to be replace in these two sections.

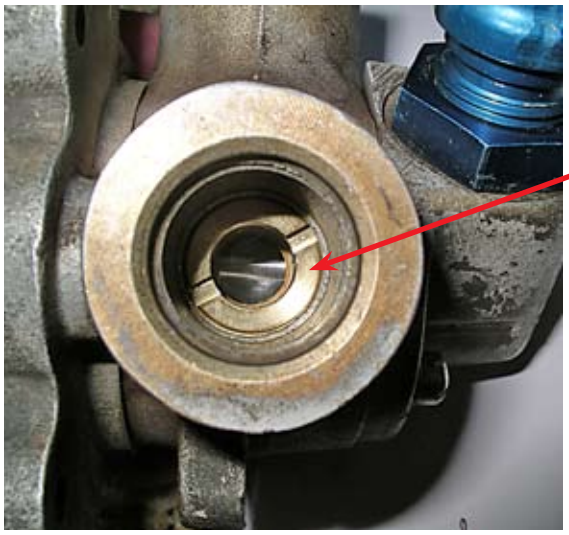
1. The packing on the back of the rear section. MS29513-025
2. The packing on the front of the rear section in the groove by the bearing. MS29513-023
3. The O-ring that is INSIDE the shaft. 97D75-1 Seal, Quad Ring

Next, remove the stuff inside the fuel line ports. There's a gland that needs to be unscrewed, and beneath it there is a spring, washer and a nylon seal. Use a small pick to remove them. There are course threads in the beginning of the opening and fine threads deeper in, where the gland screws into.

Note the position of the gland when you remove it. It should be one thread below where the fine theads begin when reassembled.

Also below the above there are two sleeves that are difficult to remove. The smaller one may fall out, so be careful. The larger one is difficult to remove and not necessary to remove either.

You can replace all of these parts if you wish, but replace the nylon seal and the O-ring that wraps around it for sure.



Looking into fuel port with gland in place. You can barely see one thread of the fine thread where the gland sits.

Gland

The spring is expensive ($16) and may not be necessary to replace. It's wise to replace the teflon seal and the packing.

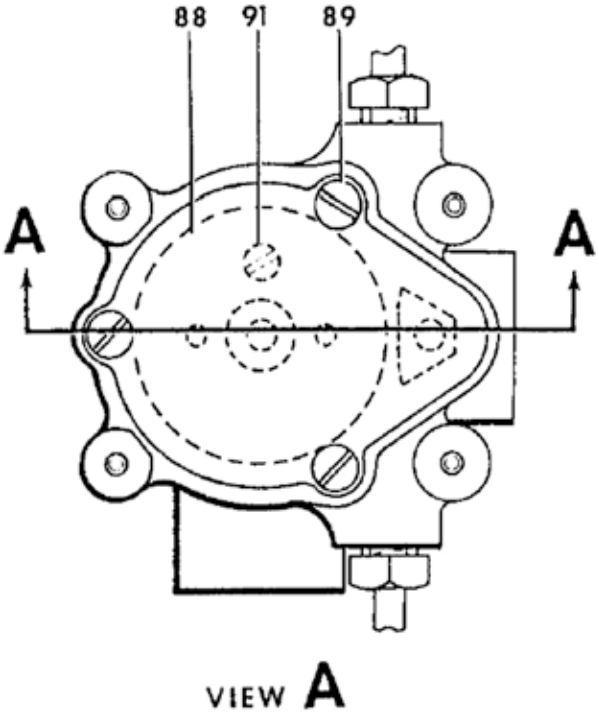
REASSEMBLY

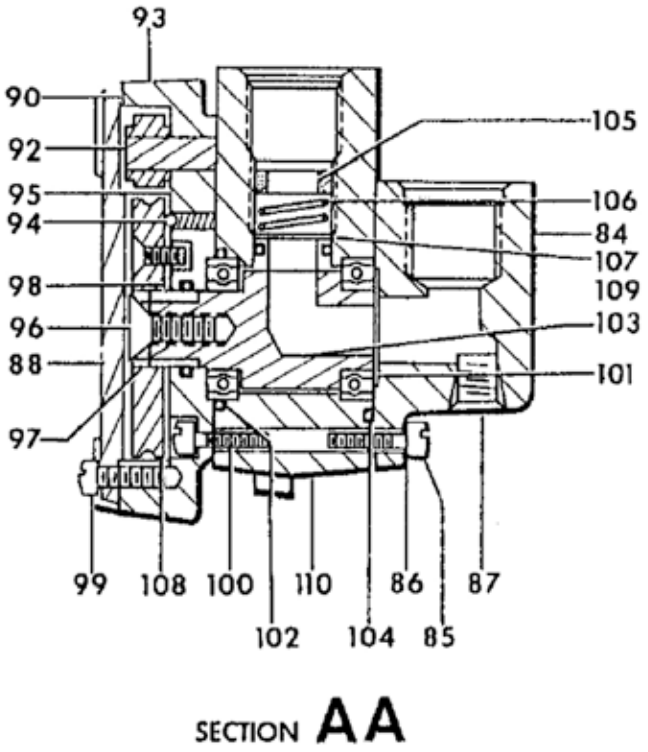
Replace the parts in the fuel ports. Note the picture above showing the valve open and closed by rotating the shaft. You can use this to positively know where the valve is when you reassemble. Even though this picture has the gland and parts removed, you can still see it clearly with them in place.

Reassemble the forward and rear case halves. Be sure the packing (O-rings) stay in place. Attach the back cover and safety.

Note the position of the valve, as above. Replace the spring and ball and carefully put the gear back in place aligned with the studs. Put the center screw in place and secure it with some Lock Tight, medium will work, and tighten. Replace the limit screw.

Put the unit back in the plane. It's a bit easier to secure the fuel lines before completely securing the bracket to the airframe, allowing a bit of flex to attach the lines before getting soaked with fuel. Replace the supply line to the engine, the crossfeed T to the other side, and the crossfeed input and the main tank supply in that order, seems to work the best, and minimizes the fuel spillage. After securing the fuel lines, finish mounting the unit to the plane. Double check the position of the gear and the selector position in the cockpit. If this needs to be re-rigged, refer to the Maintenance Manual.





Beech diagram from the parts manual. Reference to parts on the next page.

PARTS FOR R&R FUEL SELECTOR VALVE
FROM BEECH PARTS MANUAL, WITH UPDATE NOTES
BE58, SN TH 1 and after. The TC 1970, TC 2003 and after TE1081, TE 1084 and after

Item	PART NO/DESCRIPTION	QUANTITY	CODE
-85	AN500A10-10 SCREW.....**NEW: AN503-10-10**	3	
-86	AN935-10 WASHER	3	
-87	R MS20913-1S .PLUG .....**NEW: AN9130-11**	1	7
/ATTACHING PARTS/			
-89	AN501A-l0-8 .SCREW.....**NEW: AN502-10-8**	3	
-90	***R HE1863 .GASKET***	1	7
-91	R 76D47-1 .SCREW,STOP .	1	7
-92	R HE2035 .PIN	1	7
-93	R HE1880 .SLIDER	1	7
-94	R 75D88-5 .BALL,STEEL	1	7
-95	R HE2022 .SPRING	1	7
-96	***R HE1811 .SCREW***.....**NEW (JanAero PN) HE 780-5**.(hard to get)	1	7
-97	R MS16624-1025 .RING,RETAINING ...	1	7
-98	***R 97D75-1 .SEAL,QUAD RING***	1	7
-99	R HE1803 .BOX,GEAR	1	7
/ATTACHING PARTS/			
-100	AN500-10-10 SCREW	4	
	AN935-10 .WASHER **NEW:MS35338-43**	4	
-101	R P33C32 .BEARING/USE WITH HE780-1 OR HE780-3 ONLY/	2	7
	R AA33C32 .BEARING	2	7
-102	***R MS29513-23 .PACKING,PREFORMED***.....**NEW: MS29513-023**	1	7
-103	R HE1806 .ROTOR/USE WITH HE780-1 OR HE780-3 ONLY/	1	7
	R 93D80-1 .ROTOR	1	7
-104	***R MS29513-25 .PACKING,PREFORMED*** ....**NEW: MS 29513-025**	1	7
-105	R HE1810 .GLAND	1	7
-106	R HE1251 .SPRING	2	7
	R HE1373 .WASHER	2	7
-107	***R HE1372-1 .SEAL;TEFLON***	2	7
-108	R HE1809 .GEAR	1	7
-109	***R MS29513-13 .PACKING,PREFORMED***...**NEW: MS 29513-013**	2	7

ITEMS in bold italic you want for sure. If you can't locate the screw in item 96 and don't mess up the one you have, you can get by.

Most of the screws, washers, packing, O-rings are fairly cheap.