
Fitting Instruction for fitment of Diaphragm Pressure Relief Valve (PRV) Part Number RTR4456K.

Note: - Read all these instructions before commencing work to avoid making costly mistakes.

Before You Start

It is essential that these Instructions should be fully read, referring where necessary to the appropriate original Triumph Workshop Manuals and/or Parts Books for the relevant car, prior to commencing work.

Language

These Instructions are written in the English language and assume that the reader has a full competence in that Language and the technical terms and Safety Advice used therein.

Safety

Your Safety and that of the users of the vehicle to which these products are to be fitted and all other Road Users and members of the General public is paramount. Accordingly the fitment of these products should only be undertaken by persons who are competent skilled vehicle technicians and will execute the work in accordance with accepted standards of safety and quality of workmanship. All work should be undertaken with the correct tools, which must be in good and serviceable condition. Where applicable reference should be made to all safety instructions contained in the original Triumph Workshop Publications.

Note 1. To fit this kit the petrol system of the car must be dismantled. Make sure the car is generally safe with a fire extinguisher at hand. Blank off any petrol pipes whilst they are not being worked on and keep the petrol filler cap firmly shut. Avoid sparks and look out for evidence of fire or smouldering and take immediate action when necessary.

Note 2. This PRV system is designed for fitment in conjunction with a Bosch fuel pump conversion kit with a micron paper filter AFTER the fuel pump. A typical kit can be viewed on our website. See RTR4050XK.

This PRV kit will not fit with a Lucas fuel pump unless the pipework is reconfigured so that the PRV is moved out of the way of the CAV filter and its pipework. TR5 owners with the PRV on the chassis are strongly advised to reengineer the pipework to conform to the TR6 arrangement where the PRV is position to the left hand side of the petrol tank to which these instructions refer.

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General Description

HOW IT WORKS

This Pressure Relief Valve (PRV) kit replaces the original PRV found in TR5's and TR6's and as it is of a modern diaphragm design, cures many problems inherent in the Lucas Mechanical Fuel Injection system, namely: -

1. The new style PRV is a diaphragm type (the original type operates on the spring loaded plunger on a seat principle) which is not susceptible to resonance; a big problem with the original type valve when used in conjunction with a Bosch fuel pump. The knock on benefit of this is that Teflon (PTFE) lined hose from the pump to PRV can be used. With the original type PRV installed a hard Teflon lined hose will cause considerable ear deafening resonance so a soft rubber hose must be used. The resonance will go away (hopefully) but as modern fuels will permeate through rubber hose, the boot will inevitably smell of petrol (not popular with the ladies). The use of a Teflon lined hose, through which fuel will not permeate, will radically reduce the smell of petrol in the boot.
 2. To adjust the fuel pressure on the original PRV the return fuel line must be removed as the adjuster is inside the PRV only accessible when this pipe is removed. This means that a real time pressure reading cannot be taken whilst making an adjustment as the fuel line needs to be refitted first. This new PRV has an external adjuster which means fuel pressure can be adjusted with the pump running and monitored at the same time.
 3. Original style PRV's are only available on an exchange basis which is inconvenient especially to overseas customers. As core units are very scarce we can no longer offer the original PRV for sale on an outright basis. As this is a new PRV it is sold on an outright basis so all these problems are overcome.
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Fitting Instruction

Diaphragm Pressure Relief Valve

Parts List

Have you got all the parts you need?

Before you start work, please read the Parts List below and check that all items for your car are present.

THE DIAPHRAGM PRV KIT CONSISTS OF: -

Parts list Number 322

ITEM	PART No.	DESCRIPTION	FIG REF	QTY	CHECK
1	RTR4456-4	Diaphragm PRV Assembly	322/1	1	()
2	RTR4456-1	Mounting Plate	322/2	1	()
3	RTR4456-2	blank	322/3	1	()
4	RTR4456-3	straight 5/16" hose union	322/4	1	()
5	SC106201	M6 screw	322/5	2	()
6	NP106051	M6 plain nut	322/6	2	()
7	WP206120141	Plain Washer	322/7	2	()
8	WS206113	Locking washer	322/8	2	()
9	152068	Dowty Washer	322/9	1	()
10	RTR5296-1	Union 3/8"BSP Male -> 1/8" NPT Male	322/10	1	()
11	RTR4005	Rubber Mount	322/11	1	()
12	NP605081	Nut Plain 5/16 UNF	322/12	2	()
13	WP10512075	Washer Plain 5/16" ID X 3/4 OD 0.075"	322/13	1	()
14	WS105090853	Washer Spring 5/16"	322/14	2	()
15	GHC10408	Clip Pipe 8-12mm	322/15	1	()

Note: - Some PRV kits may come with additional parts that are not needed and are not identified in parts list number 322 nor shown in figure 1. These parts can be discarded.

Diagrams



Figure 1: Kit Contents for Parts List number 322

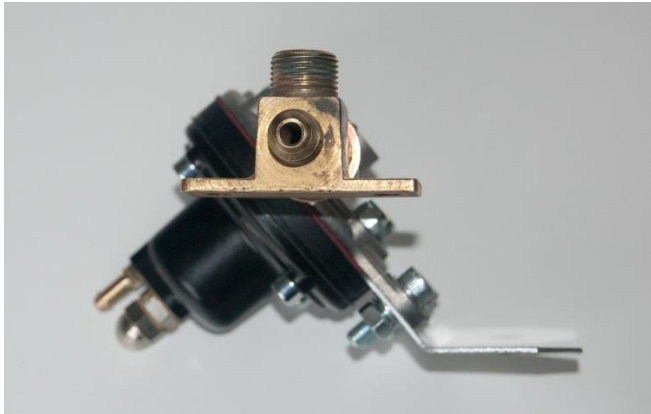


Figure 2: Lining up the Plate



Figure 3: Complete Assembly



Figure 4: Assembly installed

Tools/Equipment required

ITEM	DESCRIPTION	QTY	CHECK
1	ENGLISH & METRIC SPANNERS AND SOCKETS	A/R	()
2	PRESSURE GAUGE	1	()
3	FIRE EXTINGUISHER	1	()
4	PTFE SEALING TAPE	1	()
5	DRILL AND DRILL BITS	1	()
6	PAINT AND/OR WAX	1	()
7			()
8			()
9			()

Preparation

1. Jack the car up and set on stands. Remove the rear road wheel on the Left Hand side.
2. Disconnect the battery, empty the boot and drain the petrol tank (or switch the fuel tap off if one is fitted to the outlet of the petrol tank). Make sure the car is generally safe with a fire extinguisher at hand as you will be disassembling the fuel system.
3. Remove the old Pressure Relief Valve (PRV) and brass 'T' piece from the car with its mounts attached. This entails disconnecting the feed pipe from the top of the brass 'T' piece, the feed line to the metering unit from the front of the brass 'T' piece and the return line from the rear of the PRV as well as the nuts under the rubber mounts accessed from under the rear floor.
4. Remove the old PRV and the strainer block from the brass 'T' piece. The strainer is no longer needed as this was fitted by Triumph to protect the delicate internals of the original style PRV. As the diaphragm type PRV is less sensitive and the fuel it is regulating is coming directly from the Bosch pump micron Filter (See note 2 above) the strainer can be omitted.

Assembly

1. Assemble the mounting plate (2) to the PRV (1) with screws (5), nuts (6), plain washers (7) and locking washers (8). See figure 2
2. Install the male/male fitting (10) into the brass T piece with the Dowty washer (9). To this add the new PRV (1) and orientate so that the PRV is at an angle of 50 degrees so that the base of the mounting plate is in the same plane as the feet of the Brass T piece. The end of the union that screws into the PRV is a taper thread and MUST be fitted with PTFE tape or similar thread sealing material. Be sure to wind the PTFE tape onto the tapered end of the union in the direction of rotation. A taper thread can be tightened until the required orientation is achieved. However the joint must be sufficiently tight to hold over 100PSI fuel pressure but not so tight as to crack the PRV aluminium casing. Whilst tightening the union into the PRV the orientation can be tested by placing the base of the mounting plate (2) on to a flat

surface such as a bench or table top and by eye ensuring that the feet of the brass T piece are parallel with the face of the bench/table top and therefor parallel with the face of the base plate. See Figure 2

3. Install the blank (3) into the opposite end of the PRV from the T piece and the straight 5/16" hose union (4) into the central outlet. Use PTFE tape as per instruction 2 above.
4. Inspect the original mounts attached to the brass T piece. Bend these slightly to see if the rubber is split, if there is any doubt about their serviceability, replace them. Order part number UKC2451
5. Temporarily install the unit into the car securing the T piece mountings with the original 1/4UNF nuts. TR5 owners who are moving the PRV from the chassis may find it useful to know that the two holes required are 7mm diameter, are 26mm forward of the step in the boot floor and the outboard hole is 55mm off the wheel arch face whilst the other is 41.3mm (1-5/8") further inboard.
6. Hold the assembly upright and mark through the hole in mounting plate (2) to the boot floor. This should be 27mm off the wheel arch and 50mm off the step in the boot floor however these dimensions can be varied for best fit.
7. Drill an 8mm diameter hole in the boot floor to accommodate rubber mount (11). Protect the raw edge of the hole from corrosion with paint or wax.
8. Remove the assembly and attach to the plate (2) rubber Mount (11) with a nut (12) and spring washer (14). Remove the cap nut from the adjuster as the pressure will need adjusting later. See Figure 3
9. Install the unit into the car securing the T piece mountings with the original 1/4UNF nuts and washers. Attach the mount (11) to the floor with plain washer (13), spring washer (14) and plain nut (12).
10. Reattach the solid pipe to the front of the T piece. Be aware that this pipe may not be original and may not be the correct shape. This is quite common and results in the T piece rubber mounts being repeatedly broken. We have arranged for the additional third mount to align the T piece in its original orientation and it is therefore essential that if necessary the shape of the solid pipe be adjusted so that it can be fitted with no strain on the T piece and PRV assembly mountings.
11. Reconnect the inlet hose from the pump. Note that if this hose is rubber it will most probably be the cause of petrol smells in the boot. A Teflon lined Stainless Steel braided hose will cure this problem. We have two types which will suit most systems, 215642SS is the same length as the original (450mm) with a 90° union at both ends and RTR4048SS which is 648mm long with a straight union one end and a 90° union at the other
12. Remove the old union from the 5/16" return rubber pipe to the petrol tank and attach this to the straight outlet (4) with hose clip (15) provided. See figure 4
13. TR6 owners should make sure that no hoses are brushed or at worst trapped by the action of the boot hinges

Set Up and Maintenance

1. The fuel pressure must be set to the original specification that being 106 to 110psi (731 to 760kN/m² or 7.31 to 7.6 Bar). Follow the instructions in the original workshop manual, for
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TR6 that being page 19.65.01 item 2. This entails putting a T piece in line with the feed hose into the metering unit, to which a pressure gauge is attached. Whilst it is essential to ensure correct running of the engine for the pressure to be set using a pressure gauge, we have found from experience that winding the adjuster **in** $3\frac{1}{4}$ to $3\frac{1}{2}$ turns from the factory set position is the range within which the correct pressure is found. This will vary depending on the pump system used.

Note that the pressure is **incorrectly** stated in the same book at 19.45.01 item 6.

2. Disconnect the coil to prevent it from overheating whilst the pressure is set.
 3. With the fuel pump activated slacken the locknut on the top of the PRV and adjust the central screw in until the correct pressure is achieved. See the pointer in Figure 3 which is pointing at the adjuster. Screwing in increases the pressure and screwing it out decreases the pressure. We have found that with our pump system when the pressure is set correctly the cap nut cannot be refitted as they is not quite enough thread. This will give some indication of the position for the correct pressure. It is however important that a suitable gauge is used to set the pressure as over pressure can damage other components in the system.
 4. Test for leaks and once satisfied refit the boot board, road wheel and reconnect the ignition coil. Remove the stands and road test.
 5. No on-going maintenance is needed to the main PRV unit however the pressure setting should be rechecked periodically to ensure optimum engine performance.
 6. Check the rubber mounts periodically too and change them if cracking occurs. However, with 3 rather than the original 2 mountings this is less likely.
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