

THE JACKDAW, THE DEVIL'S HIGHWAY
MORTIMER WEST END, READING, BERKS RG7 2AD, UK

TE3509 BRAKE FLUID ALARM KIT

WHAT IS IT?

- The TE3509 is an electronic brake fluid sensor that fits in place of the standard cap on the brake Master Cylinder (MC). Versions are available for Lockheed and Girling braking systems as fitted to many British cars of the 50s, 60s and 70s*.

WHO SHOULD USE IT?

- The TE3509 is a significant safety enhancement for classic cars that are not fitted with a brake fluid level alarm.
- It is particularly valuable on vehicles with single braking systems and remote servos where a servo seal leak can result in total brake failure as all of the brake fluid is drawn out of the system by the inlet manifold vacuum.

FEATURES:

- Low fluid level simultaneously flashes a red LED panel lamp and sounds a bleeper
- Solid state high reliability; no moving parts, no contacts and no filament lamps
- Suits negative or positive earth 12V systems
- Easy installation with no necessity to solder or crimp
- Pluggable connector allows easy Master Cylinder cap removal
- Confidence check bleep and flash at ignition switch-on
- Response time less than 1 minute
- Sensor projects only 10mm above the standard Master Cylinder cap height
- Proof against reverse polarity and indicator/bleeper short circuit
- Main feed wire Faston connectors have integral fuse links which provide over-current protection if the cables are damaged (replacement cables are available from TE Electronics)

THE KIT comes in a 1 litre "Really Useful" clear PVC box and comprises:

- The TE3509 PCB Master Cylinder Cap assembly with two-part 3 way screw terminal connector
- 16mm dia Red LED panel lamp complete with an easy mount housing (to be discarded if you want to dashboard mount the LED)
- Piezoelectric sounder with screw or sticky pad mounting
- 100% Pre-Made cabling plus spiral sleeve, Faston tags, screws, ty-raps, and sticky pads make for a quick and easy installation; you even get a screwdriver for the connector!



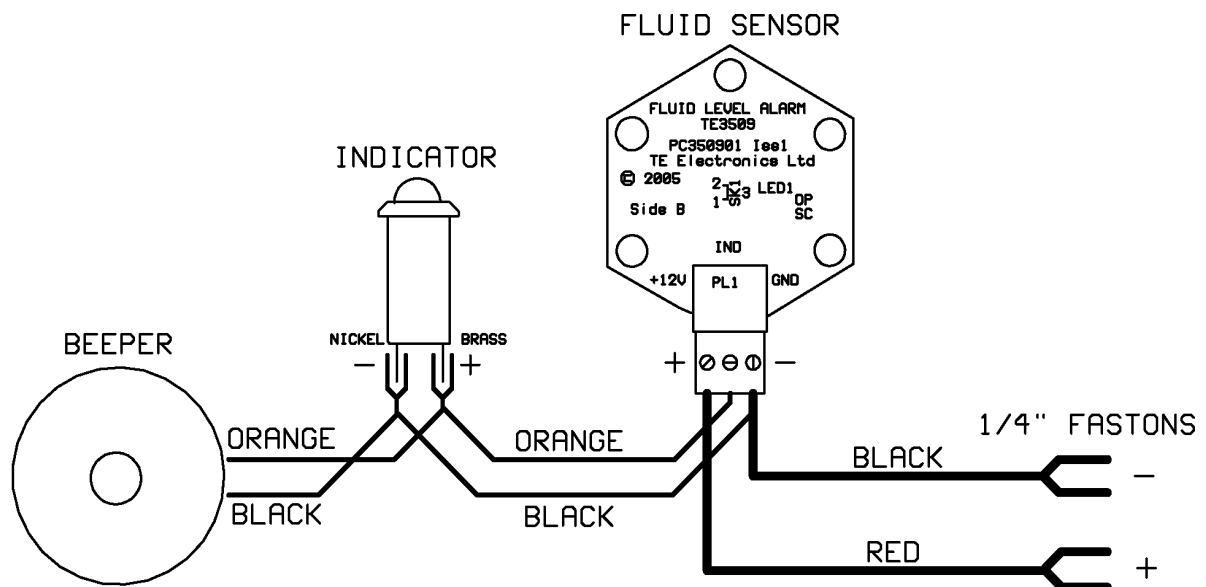
* Caps BLMC part nos: Lockheed = 17H 6861, 513123, 513123A(illustrated); Girling = 510844.

INSTALLING YOUR TE3509 FLUID LEVEL ALARM

ITEMS YOU WILL NEED:

A drill plus general tools, including

- 3.2mm/1/8" and 2.5mm drill bits may be required for fixing screws and also for the pilot hole if panel mounting the LED indicator.
- If panel mounting the LED indicator, the required hole is 14mm; the best way to drill this easily and neatly in a thin panel is to use a step drill (make sure it has a 14mm section and you stop at that step!).
- A 17mm 1/2" drive socket is ideal for tightening the LED back nut (use the socket alone as a hand tool).
- A knitting needle or similar thin rigid rod is useful for threading cable through bulkhead grommets – tape the cable to it near the end avoiding any abrupt steps.



PRELIMINARIES:

- By inspection or meter, establish whether your car is negative or positive earth. British cars after c1967 will be negative earth while those before may be positive earth but may have been converted. *The sensor is proof against reverse connection.*
- Referring to your car manual, or by using a meter, establish which connection at your fuse box is fused and ignition switched – we will call this the **hot tab**.
- Decide whether you want to use the supplied LED housing or discard it and panel mount the LED. If removing the LED, pull off the 0.110" Faston connectors.
- The LED/beeper/housing mounting positions should be chosen to be within the pre-made cable length (*contact TE if you have a non-standard requirement*).
- ***For safety it is now advisable to isolate the battery before commencing installation.***

INSTALLATION, GENERAL: (detailed instructions for your car are enclosed if available. For a list of models with detailed instructions see the TE website)

- Fix the beeper and, if reqd, the LED housing using the ST screws or double sided sticky pads provided. The beeper and sensor cables exit the LED housing via notches in the back face. *The beeper can be conveniently mounted on the LED housing.*
- If panel mounting the LED indicator, note that the positive terminal is brass and the negative is nickel. This may not be visible after installation so orient the lamp in a known position, eg positive at the top.
- If you've re-mounted the LED, replace the 0.110" Faston connectors – the orange wire is positive and black is negative.
- Temporarily remove the orange and black cables from the sensor connector. Thread them through a bulkhead grommet and re-connect ensuring all connections are as in the diagram. Lay the cables near the Master Cylinder (MC) and **loosely** ty-rap into place.
- In the region of the fuse box find a suitable earthed screw/fixing bolt (ideal dia $\leq 5\text{mm}$) that can be used to attach the earth "Faston" tab (E). Alternatively drill a 3.2mm/1/8" hole into a suitable place in the body and use the No 8 ST screw provided.
- Lay in the red and black cables, Faston connectors near the fuse box and earth tab, running along a loom or other suitable route to the region of the Master Cylinder. **Loosely** ty-rap into place.
- Wrap the spiral insulation around the wires from the sensor connector to where the cables will be secured.
- Connect the + and – Fastons at the fuse box. If negative earth, connect – to the earth Faston tab and + to the fuse box hot tab; vice-versa for positive earth. *The piggy-back Faston allows you to connect the new lead even if there are no spare tabs.*
- Dress the cables, "losing" any excess cable by looping. Position the connector and then tighten all the ty-raps. Cut off excess ty-rap tails leaving ~ 5mm stubs.

TESTING:

- Carefully check the installation against the diagram.
- With ignition OFF, re-connect the battery and plug-in the fluid sensor - note that the plug is inserted screws uppermost - leaving the sensor assembly resting on the Master Cylinder (MC). There should be no response from the LED or beeper – *if there is, you have connected up to a non-ignition switched circuit.*
- Switch on the ignition. There should be a momentary LED flash and a beep. After approximately 30s the alarm should start to flash the LED and sound the beeper (it's not immersed in fluid....) *If nothing happens, re-check polarity and connections. If beep but no LED, the LED connections are probably reversed. If no flash/beep but the PCB overload red LED is flashing, the orange and black lines are shorted.*
- Switch OFF the ignition, unplug the sensor, remove the MC cap and top up the brake fluid. Now screw on the brake fluid sensor and re-connect.
- Switch ON the ignition. There should be a momentary flash of the LED and beep followed by a continued silence as the fluid sensor is now immersed in brake fluid. Installation is complete.

CONNECTOR ANGLE INCONVENIENT?

If the master cylinder cap tightens to leave the connector at an inconvenient angle then you can change it. **For the Nylon (Lockheed) cap:**

- Mark the cap lobe where you would like the connector
- Unplug and remove the sensor. Wipe the fluid from the internal metal cylinder.
- Using a No0 or No1 Pozidrive/Supadrive screwdriver, undo the five small self tapping screws that hold the PCB to the cap
- Wrap 2 or 3 turns of masking tape around the metal cylinder for grip/protection
- By hand, or using a small slip/water-pump pliers or similar, grip the cylinder and turn it CLOCKWISE (as viewed from inside the Master Cylinder) until the connector approaches the mark
- Now view the unit onto the PCB and continue turning slowly clockwise until the next set of fixing holes align with the 5 PCB holes.
- re-fix the 5 self tapping screws – *do not overtighten* (it's only Nylon....)
- carefully remove the masking tape from the metal cylinder
- screw sensor assembly back onto Master Cylinder and re-connect.

MASTER CYLINDER MAINTENANCE:

- UNPLUG THE SENSOR CONNECTOR BEFORE UNSCREWING THE MC CAP FOR ROUTINE INSPECTION/TOPPING UP. **RECONNECT AFTERWARDS.**
- **PERIODICALLY CHECK THAT THE PCB BREATHER HOLE IS CLEAR** (0.6mm hole between the top fixing screw and the "V" of the word LEVEL). If blocked, unplug the sensor and clear the hole with a short fine wire.

HELP

If you have a problem with your TE3509 Brake Fluid Sensor Kit, or have a suggestion for improvement, please contact us: contact details are at the head of page 1.

Your TE3509 Brake Fluid Sensor is guaranteed for 12 months. Please return any faulty devices to TE Electronics Ltd with your return address and a brief description of the problem.

If you have fitted your kit to a model not currently listed we'd like to hear your experiences and recommendations. *Perhaps we could even persuade you to become the author of the detailed instructions for your model!*

OTHER TE ELECTRONICS PRODUCTS

TE Electronics manufactures niche market and custom electronic equipment for the AV, SCADA, telecomms and automotive industry.

Please contact us if you have a problem that you think could be solved by some custom electronics. We are always pleased to hear of your "Solution Opportunities"!
