

ZA {Facelift for Temperature Monitoring Options} ZB

With the original MG ZA/ZB temperature sender dead, the readily available MGB temperature sender TS7955 has come to the fore. Fellow enthusiasts have applied this sender in different ways {electronic, hybrid and substitution} to give us a working gauge! Two more options are provided here. Long may the TS7955 'Temp' sender reign?

Options:

[Austin 1800\[Morris 1800\] Temperature gauge](#)- Uses the TS7955 sender and can be modified to fit behind the standard MG ZA/ZB 'Temp' faceplate. Swap meets and a few remaining wrecks are a source of these instruments. See picture 2.

*Temperature and fuel gauges are bi-metal technology; both are compatible with a TS7955 sender, pivot the correct way, and either can be used for our purposes.

[Triumph \[Model?\] Temperature gauge](#) - Type BF6106/08 uses a TS6056 sender in common with the '74 to '78 MGB. See picture 1.

*Both temperature and fuel gauges are bi-metal and tested compatible to both TS6056 and TS7955 senders, but only the fuel gauge pivots the correct way. Therefore only the fuel gauge is preferred. This is an excellent option see text.

**It's worth pointing out that some instrument panels use the same internals for both the temperature gauge and petrol gauge. Just calibrated differently.*

NB. Senders TS7955 and TS6056 have the same screw thread on differently shaped bodies.



Picture 1 Temp senders, Voltage stabilizer and Triumph instrument cluster

Temperature Sender(s)

Changing between TS6056 & TS7955 may require recalibration of gauge.

Other Possible TS 6056 Options [see box labeling in picture No1]

If other marques use the 'Temp' sender TS6056, then we have other possible options:

Hillman - 64 to 76; MGB - 74 to 78; Jaguar - 71 to 79; Rover - 48 to 79;

Sunbeam - 64 to 76; & Triumph - 46 to 76

Fundamental Temp Gauge Setup {Picture 1}

The MG ZA/ZB Magnette, Austin 1800 and Triumph 'Temp' gauges are bi-metal designs. It's usual to power bi-metal units via a 10Volt voltage stabilizer.

What to look for

MG ZA/ZB 'Temp' gauge is housed in a standard Smiths container with its faceplate riveted to the container's extension lugs. A clearance in each lug extension allows installation of the gauge to its, instrument, sub cluster. See picture 3.

Replacement gauge should have:

- An identical Smiths Instruments container or altered to fit into one [see pictures 2 & 3]
- Dimensions to accept original faceplate [shape of lugs and spacing for installation]
- Pointer of suitable shape [colour and length will/may need correcting]
- Bi-metal gauge checked and calibrated [adjusted] to the driving sender.

Using the Triumph Fuel gauge as a 'Temp' gauge

Excellent candidate only requires: faceplate removed, pointer shortened, pointer painted florescent green and MG ZA/ZB faceplate added. This all fits onto the MG Magnette's instrument cluster. Don't forget to check/calibrate while connected to a voltage stabiliser.

Using the Austin 1800 Fuel gauge {or Temp gauge} as a 'Temp' gauge

Austin 1800 gauges are mounted on a back plate and not housed in a normal 1950s Smiths Instrument's container. It's a draw back as both the Austin 1800 gauge and a standard Smiths Instrument container must be modified to become a single unit. Detail on this option is provided in a separate write-up.

Conclusion The Austin 1800 {Morris 1800} bi metal units BF8108/00 or BT8108/00 solved my temperature gauge/sender dilemma. A better choice is to locate a Triumph BF6106/08 bi metal unit [pictures 1-3]. Although for simplicity or lack of choice the original MG Z type 'Temp' gauge can be used with a TS6955 sender but will read reversed. Of course don't forget the voltage stabilization and understand the below reference material before choosing your option?

Purchased at a swap meet as coming from a Triumph; the origins of the Triumph instrument cluster's Fuel gauge [BF6106/08] is un-confirmed. Check Triumph 2000 or Triumph Herald as a possible source?

References

Look under **Hints and Tips** for more options. <http://www.mgcars.org.uk/mgccz/>
Search under **Threads** for more advice. <http://www2.mgcars.org.uk/cgi-bin/gen5?runprog=mgbbs&access=&mode=tlist&source=&subject=18&thread=>



Picture 2 from the top: MG Z type, Austin 1800 and Triumph {Model?} clusters.

Note

Austin 1800 Gauges – Fuel Gauge = BF8108/00; Temp Gauge = BT8108/00

Triumph Gauge - Fuel Gauge = BF6106/08

Smiths {+ polarity} electronic Stabilizer – case code = BR1305/00a [packet code = BRE1307-00]



Picture 3 from the top, rear of: MG Z type, Austin 1800 and Triumph clusters.

Laurence [Loz] Scott
19 May 2005

Geelong
MG Magnette ZA & ZB enthusiast

Temperature Gauge & Sender Options for the MG ZA/ZB Magette



Picture No1 This is option 6 with only its pointer remaining to be attended to.

The weakness of the Z types temperature monitoring system is the unique temperature sender. After 50 years of service a situation has now been reached where original senders are failing and no original service replacement part is available. Thankfully many people have contributed practical options, five of which will be briefly mentioned along with a suitable reference; while a sixth option as used by the author is presented in more detail. With six options you can choose your own adventure, see you at the conclusion.

Potential Options

One – Repair the original sender

Comment. This is well documented although it seems to require a high degree of skill and patience.

Benefit & Operation. Great option as the system is returned to standard

***Reference.** Internet

Two – Construct an electronic circuit that matches an MGB's temperature sender to the standard ZA/ZA temperature gauge

Comment. This is documented in detail. A high degree of skill and understanding is required in its construction and setup.

Benefit & Operation. Really nice option where an available temperature sender can be employed to allow the original temperature gauge to operate correctly.

***Reference.** Internet

Three – Use and MGB sender and voltage stabilizer with original MG ZA/ZA temperature gauge

Comment. An easy option to implement

Benefit & Operation The standard temperature gauge is still in use although in operation it will read in the wrong direction [i.e. Hot to Cold]. A VDO 320045 sender was used.

***Reference.** Internet

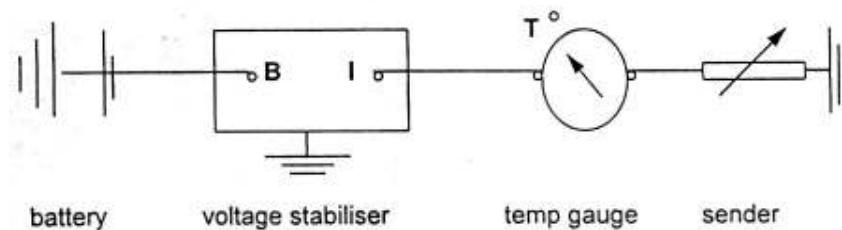


Diagram No1 – This shows a positive earthed electrical system

Four – Replace the standard temperature gauge with one from a MK111 or MK1V Magnette and utilize the MGB temperature sender.

Comment. Simplest option if you can obtain one of the rare Farina Magnette gauges.

Benefit & Operation. Only requires a quick substitution of gauge and sender to deliver a correctly operating instrument

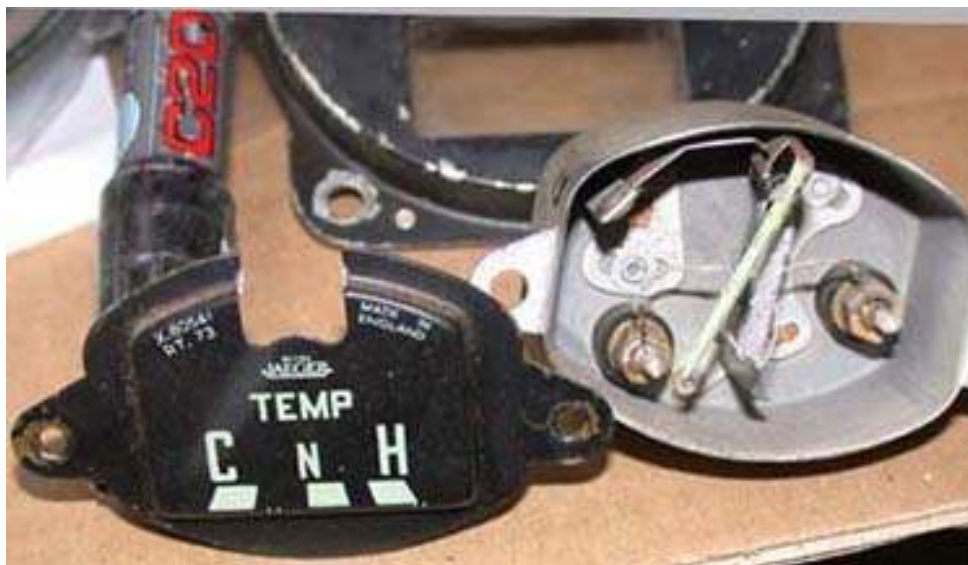
***Reference.** Internet

Five – Place the internals from an MGB electrical temperature gauge into the shell of the standard ZA/ZA temperature gauge and utilize the MGB temperature sender.

Comment. Great lateral thinking. Availability and cost may be a factor as some countries, like Australia, seem to have capillary type temperature gauges fitted in MGBs

Benefit & Operation. This is a permanent and practical solution.

***Reference.** Internet



Picture No 2 Option 6 is commenced with the release of face's rivets

Six - Place the internals from Austin 1800 [Morris 1800] temperature gauge into the shell of the standard ZA/ZA temperature gauge and utilize the MGB temperature sender.

Comment. If the internals of an MGB temperature gauge can be utilized, then the Austin 1800 from BMC can donate in a similar way. Medium level skill is needed to implant.

Benefit & Operation. The Austin 1800 uses the same sender as the MGB. Plus it's fitted with a temperature [and petrol] gauge that is [can] matched to the MGB sender perfectly.

Reference. Read on for more detail



Picture No 3 Austin 1800 gauge and faceless MG Z type gauge compared

Why the Austin 1800 gauge

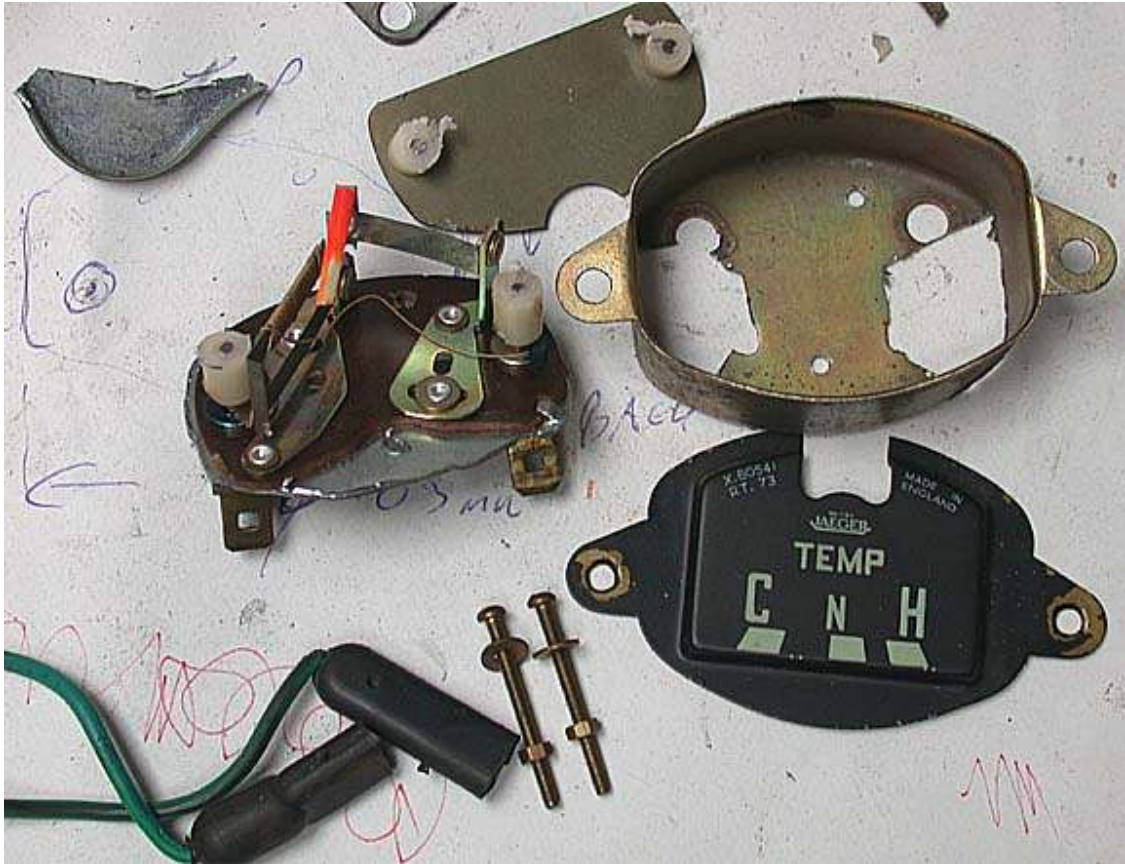
The Austin 1800 has a B Series engine and uses the same temperature sender {Echlin TS7955} as the MGB so it looks a good choice. A few things to point out early are:

Once common the Austin 1800 is becoming very scarce!

The Austin 1800 temperature gauge and fuel gauge are internally identical. Take both.

A 10volt voltage stabilizer is essential in the correct operation of these bi metal gauges.

Instrument housings from Smiths Instruments where common in 1950's Austin and Morris's and identical to our MG Z type housing. If possible don't use yours.



Picture No 4 Both back plate [Austin] and housing [MG Z type] are modified.

Modifications for compatibility

Basic idea is to fit the workings of the Austin 1800 gauge into a housing that will accept the MG Z type faceplate and allow the pointer to move across its range unrestricted. To achieve this the back-plate of the Austin 1800 gauge must be trimmed back sufficiently to fit inside the standard housing, and additionally the standoffs that support the Austin 1800's faceplate must be cut off. Picture No. 4 shows these modifications.

The MG Z type's housing is modified in three ways.

- Rivets holding the faceplate must have their turned ends gently drilled off. Once drilled the faceplate can be easily, but gently eased off. *Note the rivets are not drilled out as the rivet stubs, Picture No5, are useful in relocating the faceplate.*

- Back of housing must be cutaway so the electrical connections of the new internals can pass through and not short circuit on surrounding metal

- After testing for fit, drill two holes in the housing, and mechanism back plate so two securing bolts can pass through. See picture No 4.



Picture No 5 New internals fitted and retained with two bolts and silicon sealer

Securing it together

Trial fit the housing and mechanism back plate using the two bolts. Now pack spacers [washers] between the housing and back plate and test for fit and forward projection of the pointer with the faceplate on. When satisfied there a no binds or potential short circuits insert silicon from the rear and tighten the bolts [check it all again]. Once the silicon has set place a bead of silicon inside on the join between the back of the housing and perimeter of the now fixed back-plate.

Check and Calibrate!

Using diagram No1 as a guide setup a test circuit with temporary connections [clips] using: battery, Temp sender, Temp gauge, voltage stabilizer and container for hot water. Picture No 5 shows slotted pivot points that allow adjustment of the operating range.



Picture No 6 Enamel and luminous paint for the pointer.

Changing the colour of the pointer

A bright red pointer would spoil the look of the instrument cluster. One coat of enamel was applied and, once dry, followed with a finishing coat of luminous paint

It's wise to protect the faceplate with plastic cling wrap and ensure the pointer is supported or not stressed during the paint application. Remember to remove protective materials before the paint dries. Picture No6 shows the Hobby paints used:
Humbrol Enamel – Colour Code 90; Matt Beige Green
Revell luminous paint



Picture No 7 Updated temperature gauge and its cluster reinstalled [four screws]

Instrument Cluster Installation

Four captive nuts allow the Fuel/Temp cluster [Picture No. 7] to be easily removed and reinstalled. Next clamp the 10volt stabilizer to a suitable chassis earth; the older Smiths stabilizer BR1305/00A needs to be clamped as indicated on the case and a later electronic Smiths stabilizer [regulator] **BRE 1307-00** is **NEGATIVE EARTH only**. Finally check the wiring is correct; that is: battery to stabilizer [B], stabilizer [I] to a Temp gauge terminal, and temperature sender wire to other Temp gauge terminal

Conclusion

No responsibility can be accepted for any one undertaking any of the above options as this write up assumes an understanding of electrical theory and wiring that may be beyond some peoples present ability. Using the internals of an Austin 1800 temperature gauge and ECHLIN TS7955 [Austin/MGB] temp sender has restored the instrument panels temperature monitoring system.

The tiny Dremel drill was used with a cutoff wheel to achieve the reasonably delicate cutting of [Austin] back plate and [Z type] housing. Employing anything larger than a Dremel could prove disastrous.

Lastly, much valuable information is contained in the Internet *references below.

Warped Wisdom

Being unique, special and reliable is a great trilogy in your golden days. The Z type temperature sender at +50 years is well past its prime and needs assistance to retire to another realm. Other options can help but none of them can stop old father time.

*References

<http://www.magnette.org> Click on Hints and Tips, Electric and Temp Gauge
<http://www.magnette.org> Click on Other Links then Magnette Message Board
http://www.mgcars.org.uk/body_replacement.HTML Voltage Stabilisers.

Loz Scott

20 February, 2005