

SMITHS INSTRUMENT MOUNTING PANELS AND SUPPLEMENTARY INSTRUMENTS

PRICE LIST AND FITTING INSTRUCTIONS

ITEM	DESCRIPTION	CODE	RECOMMENDED RETAIL PRICE		
			£	s.	d.
MOUNTING PANELS	DeLuxe Sub-Panel for two instruments	PAD	1	17	6
	Standard Mounting Panel for one instrument	PA1		3	6
	Standard Mounting Panel for two instruments	PA2		5	0
	Standard Mounting Panel for three instruments	PA3		6	6
	Super Sub-Panel for one instrument	SP1		7	6
	Super Sub-Panel for two instruments	SP2		10	0
	Super Sub-Panel for three instruments	SP3		12	6
	Super Sub-Panel for two instruments and Impulse Tachometer	SPT3		15	0
INSTRUMENTS FULL SCALE READING	Oil Pressure Gauge Kit (white figures on black dial)	PB	3	10	0
	Oil Pressure Gauge Kit (black figures on silver dial)	PS			
	Water Temp. Gauge Kit (white figures on black dial)	TB	3	10	0
	Water Temp. Gauge Kit (black figures on silver dial)	TS			
	Dual Gauge Kit (white figures on black dial)	DB	6	10	0
	Dual Gauge Kit (black figures on silver dial)	DS			
	Electric Clock (white figures on black dial)	CB	5	0	0
	Electric Clock (black figures on silver dial)	CS			
	Ammeter Kit (white figures on black dial)	AB	1	10	0
	Ammeter Kit (black figures on silver dial)	AS			
	Vacuum Gauge Kit (white figures on black dial)	VB	3	10	0
	Vacuum Gauge Kit (black figures on silver dial)	VS			
	INSTRUMENTS SHORT SCALE READING	Oil Pressure Gauge Kit (white figures on black dial)	PSB	3	10
Water Temp. Gauge Kit (white figures on black dial)		TSB	3	10	0
Ammeter Kit (white figures on black dial)		ASB	1	10	0
INSTRUMENTS FOR THE ENTHUSIAST	Oil Temp. Gauge Kit (white figures on black dial)	OTB	3	10	0
	Performance Gauge Kit (coloured segments on dial)	PF	3	15	0
	Impulse Tachometer (4 cylinder cars) (white figures on black dial)	IT4	10	15	0
	Impulse Tachometer (6 cylinder cars) (white figures on black dial)	IT6	10	15	0
ACCESSORIES	Tee-Piece for fitting Oil pressure gauge to Rover engines	TR		7	6
	Tee-Piece for fitting Oil pressure gauge to Vauxhall engines after 1963	TV		7	6

SUPPLEMENTARY INSTRUMENTS FITTING INSTRUCTIONS

FITTING SMITHS SUPPLEMENTARY INSTRUMENT PANELS

Select a suitable mounting position, such as the underside of the dashboard or the top of the glove pocket, and offer up the panel for checking at the same time ensuring that there is sufficient space to accommodate the depth of the instruments which are to be mounted in the panel. Using the instrument panel as a guide, mark and drill the required number of $\frac{1}{8}$ " dia. holes (depending on which panel is being fitted), and mount the panel in position using the nuts, bolts, and spring washers provided. The instruments are mounted in the panel with the simple strap fixing, provided, and the lighting attachment lead

is connected to a convenient point on the panel light circuit. Ensure that the instrument cases are properly earthed, making a separate earthing connection if necessary.

In the case of the super mounting panels, the plastic fascia is held firmly in position against the back plate once the instruments are mounted.

If a temperature gauge or dual gauge is being fitted, the capillary tubing should be straightened out and passed through the panel first.

DUAL GAUGE KITS

These Kits contain a combined oil pressure/water temperature gauge, 5' oil gauge pipe line, connector, oil gauge tee piece, hose connector and double ended union. Fitting details given for the individual oil pressure gauge and water temperature gauge are also applicable to the dual gauge.

ELECTRIC CLOCKS 12 volt (For positive earth ignition systems)

These instruments are supplied complete with wiring. Connect the yellow lead, which is supplied already connected to the clock to the A.2 terminal on the fuse box or any live fused circuit. Ensure that the clock is properly earthed—if necessary making a separate earth connection.

OIL PRESSURE GAUGE KITS

These Kits contain an oil gauge, 5' pipe line, connector and tee piece. Most cars not fitted with an oil pressure gauge have an oil pressure warning light. To fit the oil pressure gauge, remove the oil pressure warning light switch which is normally located on the side of the engine, and screw the connector in its place. Then

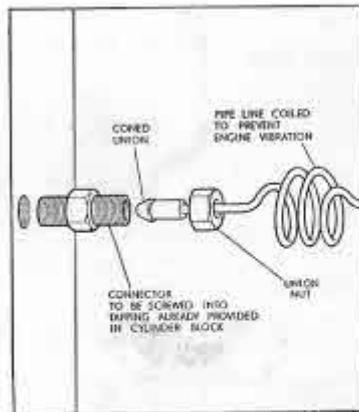


FIG. 1 ILLUSTRATION OF PIPE LINE FITTER.

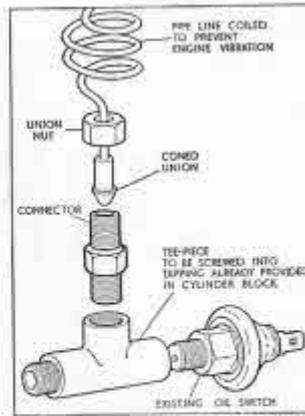


FIG. 2 ILLUSTRATION OF PIPE LINE & TEE-PIECE FITTED.

fit the pipe line to the connector, ensuring that the end of the pipe line which terminates with a coned union is used (Fig. 1). Take the pipe line by the most convenient route to the gauge through a $\frac{3}{8}$ " dia. hole drilled in the bulkhead. Coils of not less than 2" dia. should be made near each end of the tubing to take up engine vibration. The other end of the pipe line, which terminates with a flat union, should then be connected to the gauge, ensuring that the small leather washer is in position. If it is required to retain the use of the oil pressure warning light, the tee piece provided should be used to enable both the warning light switch and pipe line to be fitted (Fig. 2). (In the case of B.M.C. 'A' series engines, it is advisable to remove the main oil feed pipe in order to screw the tee piece home. The pipe line should be refitted to the branch of the tee piece so that it points forward along the cylinder block, before curving back towards the bulkhead).

NOTE: Special 'T' pieces are available for Rover cars, and all Vauxhall models after 1963.

AMMETER KITS

This Kit contains an ammeter and the wiring required for the electrical connections. When fitting the ammeter ensure that the main lead from the battery is disconnected. Then locate the lead, (coloured brown on most vehicles) which runs from the starter solenoid via the junction box, fuse box or terminal strip to the starter switch. Disconnect this lead at the most convenient point

and connect it to the ammeter using some of the wire provided, to extend the lead if necessary. If the car has a "positive earth" circuit connect this lead to the negative ammeter terminal. If the car has a "negative earth" circuit connect it to the positive ammeter terminal. Connect the other ammeter terminal using the wire supplied to the point where the original lead was disconnected. Check that the electrical connections have been securely made and are properly insulated, then reconnect the main lead to the battery and check the circuit by starting the engine and accelerating. The pointer should move towards the "+ 30" marking. If it does not, the connections are incorrect and should be reversed on the ammeter terminals. (Disconnect the main battery lead before doing this).

TEMPERATURE GAUGE KITS

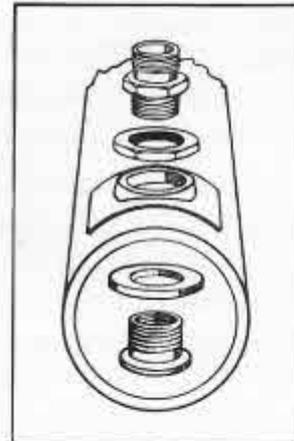


FIG. 3 RADIATOR HOSE

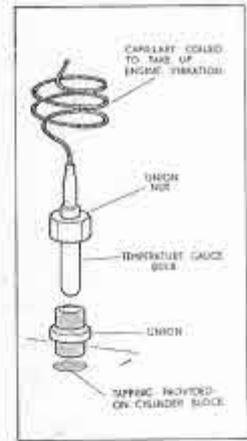


FIG. 4 Ford Engine

These kits contain a temperature gauge hose connector and double ended union. To enable the bulb and capillary to pass through the bulkhead it is necessary to cut a 1" dia. hole. After fitting the instrument, the grommet provided should be inserted in this hole to hold the capillary tubing steady and to prevent draughts. The method of connecting the temperature gauge bulb to the engine varies according to the car on which the instrument is to be fitted.

On engines where provision exists, i.e. most Fords, B.M.C. 1100 Series, etc., the union provided can be screwed direct into the tapping provided after partially draining the radiator. To fit the gauge, remove the plug from the tapping and screw in the double ended union supplied. The temperature gauge bulb is then inserted into the union and the union nut screwed down (Fig. 4). In cases where this type of fitting is not feasible, connection should be made to the top radiator hose, for which a special hose connector is supplied (Fig. 3). To fit this connector, partially drain the radiator, remove hose and with the aid of the hose cutter provided, cut a $\frac{3}{4}$ " diameter hole in a suitable position. Fit the rubber washer over the screwed connector, and pass it through the wall of the hose from the inside. Place the curved portion over the protruding head and tighten up with the nut. A proprietary sealing compound should be used to ensure that all joints are watertight.

OTHER MODELS

Where no provision for fitting a temperature gauge has been made by the car manufacturer or convoluted radiator hose is used the remaining al-

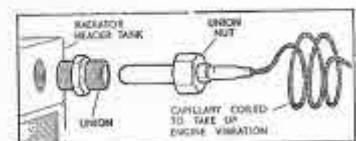


FIG. 5 General Purpose fitting

ternative is to fit the temperature gauge bulb to the header tank. For this type of installation, it is necessary to cut a $\frac{5}{8}$ " dia. hole in a suitable position in the header tank into which should be soldered the double ended union provided, ensuring that the shorter thread on the union is inserted into the hole in the header tank. The temperature gauge bulb is then inserted into the union and the union nut screwed into position (Fig. 5).

GENERAL

When the gauge has been fitted, coils of not less than 2" dia. should be made near each end of the tubing at right angles to the bulb to take up engine vibration. Finally, the tubing should be cleated or fastened by insulating tape at suitable points along its route, keeping it clear of parts of the engine which become excessively hot.

IMPORTANT

The tubing must not be sharply bent or twisted, and all bends should be made by the fingers. No sharp tools should be applied to the tubing and on no account must it be disconnected from the bulb or gauge.

When the temperature gauge is fitted in the thermostat housing, radiator hose, or to the header tank, no reading will be obtained on the gauge until the engine has reached normal operating temperature, i.e. when the thermostat opens. If a reading is obtained immediately when the car is started from cold, the thermostat is not operating correctly and should be replaced.

It is not recommended that the capillary type of temperature gauge should be fitted on the Triumph Herald using the existing thermostat housing since the capillary tubing has to be bent at too sharp an angle and is likely to foul the bonnet and the resulting vibration can lead to fracture of the capillary tubing.

VACUUM/PERFORMANCE GAUGE KITS

This Kit contains the vacuum gauge and the items required for fitting as illustrated below.

Connect the union to the back of the instrument, making sure that the small leather washer is seated correctly around the restrictor hole, to ensure an air tight joint. Connection to the induction manifold is effected by drilling (No. 6 drill) and tapping ($\frac{1}{4}$ " BSF) at a point on the manifold as near top centre as possible. Then fit the hose connector and copper washer into the tapping, insert the restrictor valve into the rubber tubing at the manifold end with the "tail" pointing towards the instrument and push the rubber hose on to the connector on the manifold. The hose should then be taken by the most convenient route to the gauge through a $\frac{1}{2}$ " dia. hole drilled in the bulkhead and pushed onto the union on the back of the instrument. (See Fig. 6).

The performance gauge is a vacuum gauge arranged in coloured segments to indicate engine performance. The comparative zones are as follows:—

0-5
ins hg
RED

THROTTLE OPEN. Engine pulling under heavy load or high rate of acceleration. Sudden depression of the throttle pedal will cause pointer to drop to 'O'. Wasteful fuel consumption which can be amended by changing to a lower gear. Pointer remaining in red sector indicates leak in manifold, carburettor or carburettor gasket.

5-10
ins hg
ORANGE

THROTTLE APPROXIMATELY HALF OPEN. Fast cruising condition or medium rate of acceleration. Efficient fuel consumption allied with relative performance. Slow oscillation in blue sector indicates incorrect sparking plug gapping or contact breaker points pitted or carburettor out of adjustment.

10-18
ins hg
BLUE

THROTTLE APPROXIMATELY QUARTER OPEN. Normal cruising condition with engine pulling easily under light load. Maximum fuel economy. Pointer dropping slightly from normal position suggests leaky or burnt valves.

18-21
ins hg
GREEN

THROTTLE CLOSED. Engine idling under no load or throttle slightly open with engine decelerating. Pointer giving steady low reading indicates incorrect ignition or valve timing or poor condition of piston rings.

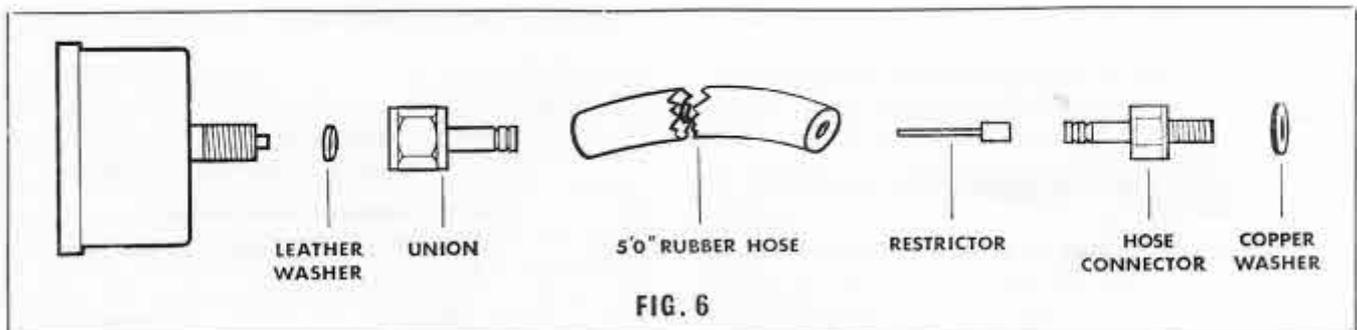
21-30
ins hg
YELLOW

THROTTLE CLOSED. Vehicle over-running engine and using engine as a brake. Driving under this condition may result in oiled-up plugs and heavy oil consumption in a worn engine. Poor economy. A steady gauge reading well inside the green sector indicates good engine condition.

These instruments are not suitable for 2 stroke engines.

IMPORTANT

When drilling and tapping the induction manifold, it is recommended that the manifold is removed before drilling to obviate the risk of metal particles falling into the manifold and thus being drawn into the engine. For twin carburettor installations, ideally the connection should be made in a central position on the balance pipe but due to the differences between various types of twin carburettor installations it is recommended that reference is made to the manufacturer for his advice regarding the most suitable point at which the union should be fitted.



FITTING SHORT SCALE INSTRUMENTS

AMMETER KIT

This Kit contains an ammeter and the wiring required for the electrical connections. The fitting details given for the ammeter which matches the full scale reading instruments are also applicable to the short scale ammeter.

OIL GAUGE KIT

This Kit contains an oil gauge, 5' pipe line, connector and tee piece. Fitting instructions and illustrations are identical to those given for the full scale reading oil pressure switches.

TEMPERATURE GAUGE KIT

This kit contains a temperature gauge, transmitter, hose connector and wiring. On cars where provision exists the transmitter can be screwed direct into the tapping after partially draining the radiator. Having fitted the transmitter in position, it

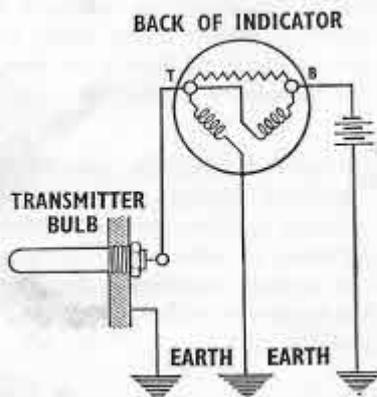


FIG. 7

should then be wired up by taking the long lead provided in the temperature gauge kit, and connecting the eye-letted end to the terminal marked 'T' on the rear of the instrument. The other end, terminating in a female blade connector, should be pushed into position onto the top of the transmitter. Taking the short lead, provided with the kit, to the second terminal marked 'B' on the rear of the temperature gauge, connect it to the ignition switch or any switched fused circuit (See Fig. 7). Ensure that the instrument case is properly earthed making a separate connection if necessary.

In cases where this type of fitting is not feasible, connection should be made to the top radiator hose, for which a special hose connector is supplied (Fig. 3). To fit this connector, partially drain the radiator, remove hose and with the aid of the hose cutter provided, cut a $\frac{3}{4}$ " diameter hole in a suitable position. Fit the rubber washer over the screwed connector, and pass it through the wall of the hose from the inside. Place the curved portion over the protruding head and tighten up with the nut. A proprietary sealing compound should be used to ensure that all joints are watertight. It is essential that the hose connector be earthed, otherwise a reading will not be obtained.

OIL TEMPERATURE GAUGE KIT

This Kit contains an oil temperature gauge and double ended union. To enable the bulb and capillary to pass through the bulkhead it is necessary to cut a 1" dia. hole. After fitting, the grommet provided should be inserted in this hole to hold the capillary tubing steady and to prevent draughts. To fit this instrument it is necessary to drill and tap the engine sump, and it is essential to seek the guidance of the manufacturer as to the exact position where the sump should be drilled.

Having ascertained the correct position a $\frac{1}{2}$ " dia. hole should be drilled and tapped $\frac{3}{8}$ " B.S.P. If the wall of the sump is not of sufficient thickness to allow tapping then the double ended union should be sweated into position. After passing the capillary tubing through the instrument bracket and the hole in the bulkhead, insert the temperature gauge bulb into the union. Finally screw on the union nut using sealing compound where necessary to ensure that all joints are oil-tight. When the connection has been completed, coils of not less than 2" dia. should be made near each end of the tubing, at a right angle to the bulb, to take up engine vibration. Finally the tubing should be cleated or fastened by using insulating tape at suitable points along its route, keeping it clear of parts of the engine which become excessively hot. Important—the tubing must not be sharply bent or twisted, and all bends should be made by the fingers. No sharp tools should be applied to the tubing, and on no account must it be disconnected from the bulb or gauge.

IMPULSE TACHOMETERS

For full fitting instructions and fitting details on these instruments, see separate leaflet Ref. No. S.1704/3.

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