Guarantee

On receipt of your Brantz unit: _____ Serial No. _____

Read the testing and fitting instructions carefully as all aspects of them should be closely followed. The case may be cleaned with isopropyl alcohol or a cloth moistened with soapy water. Solvents must not be used.

Guarantee: This meter/clock is guaranteed for one full year from the date of purchase. We will repair or replace it at our discretion free of charge except where faults are caused by misuse or fair wear and tear. This guarantee does not cover the outer case and screen. We reserve the right to relinquish all responsibilities for repairs if the item has been opened up, has been tampered with in any way, has been invaded by any fluids or has been connected up incorrectly. The unit has been designed to operate satisfactorily when connected to vehicles fitted with all normal interference suppression devices to meet current EEC specifications and no guarantee is given that the meter/clock will tolerate abnormal electrical conditions or excessive vibration. Repairs undertaken by mail are done so for the convenience of the purchaser who must enclose sufficient funds for the return of the unit by whichever method is preferred. To avoid cost of shipping a fault-free unit, test it away from the original vehicle, either on the bench with a battery, or in another car. To make sure that any obscure fault is found, please include the fullest description of the fault symptoms and return to Brantz at Padside Green, Summerbridge, Harrogate, England HG3 4AL. Tel: (0) 1943 880499.

PURCHASE DATE: _____ (attach copy of receipt). RETAILER: _____

The above guarantee can be extended indefinitely by means of an inexpensive maintenance contract. This maintenance contract can only be made during the period of an existing guarantee, or by agreement following a factory service. Full details from the manufacturer. MAINTENANCE CONTRACT to extend the period of guarantee: The above guarantee is acknowledged by the manufacturers to cover the EXTENDED Period

_____ to _____ subject to a valid maintenance code and authorised signature below.

CODE _____ MANUFACTURER'S AUTHORISED SIGNATURE _____

This contract does not detract from a purchaser's statutory rights.

For operating manuals and other technical information in several languages see www.brantz.co.uk

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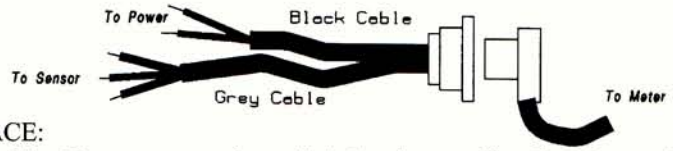
Before fitting any type of sensor to a vehicle, connect it up to the Brantz meter and check its correct operation by rotating the inner of speedometer cable types, or repeated touching of wheel types to a metal object. Use a low calibration figure on the meter, and watch the readouts increment. If the readouts do not increment there is a problem which should be investigated. Make absolutely sure that sensors are correctly connected before turning on the meter as they will be destroyed by reverse current.

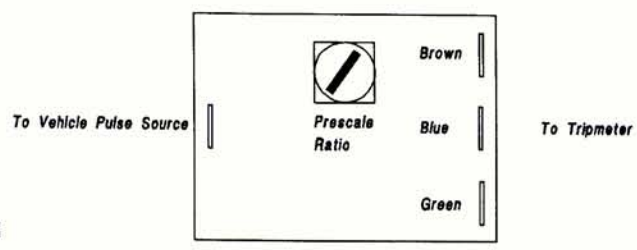
PLUG KIT (to enable the removal of Brantz meters from the vehicles for safe keeping, or to share one meter between several vehicles. Can be factory fitted or DIY). Wiring configuration of the four pin plug kit as fitted to Brantz meters: The pins are marked with numbers one to four on both male and female sections as follows: The female socket section is fitted to the vehicle and as supplied from the factory comes with a length of wiring, configuration as follows: The number one pin is connected to the two green/yellow wires, one of which is in the grey cable and one of which is in the black cable (this is the vehicle's negative power connection. Normally negative = Ground, but could be otherwise with historic vehicles, pre 1960). The number two pin is connected to the brown of the grey cable (this feeds +5volts from the meter to the sensor). The number three pin is connected to the blue wire in the grey cable (this is the digital signal wire from the sensor to the meter). The number four pin is connected to the brown wire in the black cable (this is the vehicle's +12volt power feed to the meter and should be fused at 2 amps). The male section of the plug kit is normally factory fitted to the meter (but DIY fitting should follow the above instructions) so that the only interaction a customer normally has is with the cables of the female section. The female section is connected to the vehicle as follows: The Black cable contains a green/yellow wire which connects to the vehicle's negative ground. The black cable also contains a brown wire which connects via a 2 amp fuse to a permanent +12volt supply which is not controlled by the ignition switch etc. If there is a blue wire in the black cable, ignore it. The grey cable goes to the sensor which is wired as per separate instructions relating to each type of sensor.

PLUG KIT DRAWING



BRANTZ PRESCALING INTERFACE:

This interface is intended to safely drive Brantz meters from digital pulse supplies found on vehicles fitted with digitally pulsed electronic speedometers or tachographs and as such, substitute for other types of motion sensors. Some types of ABS sensors are suitable as inputs to the interface. The three push-on connectors on the right of the device are colour coded to match the wires inside the GREY cable coming from the Brantz meter. The single push-on connector on the left of the interface will respond to digital ground pulses coming from the vehicle. Confirm suitability with a voltmeter before connecting the interface to the vehicle's pulse wire: Low signal = less than one volt, high signal is greater than 4 volts positive with respect to ground. Analogue sources are not suitable. Check that the signal occurs at very low speeds as well as at normal driving speeds. The rotary switch on the interface sets the prescale ratio and should be greater than zero. The lower the prescale ratio is, the greater the meter accuracy will be, but this facility is provided to compensate for very high pulse rates which would take the Brantz meter out of its normal calibration range of up to 999. If the meter calibration is out of range, rotate the prescale ratio above the normal setting of ONE. If a sensitivity control is fitted below the rotary prescale switch, this should be in the centre of its adjustment



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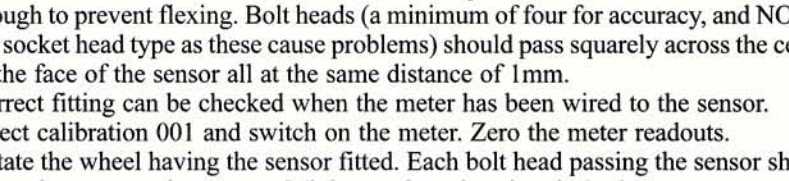
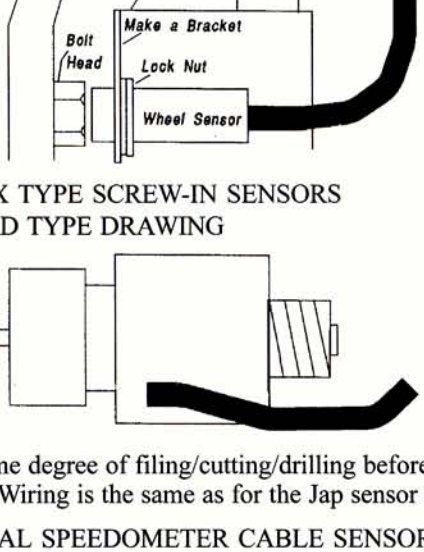
range, unless it needs to be in another position to make an unusual application work. Technical information: Drain on the vehicle's sensor is less than 0.5mA, TTL Compatible. Interface current consumption is less than 10mA.

Input is 'dioded' to prevent interaction of the interface and the vehicle if the meter is switched off. Divide ratio = figure on the rotary switch (1 to 15) zero is not valid. Power source from meter is 5volts, interface is not protected from reverse connection. Output is open collector.

WHEEL SENSOR INSTALLATION:



STRUT



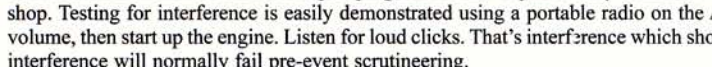
A bracket to mount the wheel sensor to the suspension strut should be made rigid enough to prevent flexing. Bolt heads (a minimum of four for accuracy, and NOT of the socket head type as these cause problems) should pass squarely across the centre of the face of the sensor all at the same distance of 1mm.
Correct fitting can be checked when the meter has been wired to the sensor.
Select calibration 001 and switch on the meter. Zero the meter readouts.
Rotate the wheel having the sensor fitted. Each bolt head passing the sensor should cause the meter to increment. Minimum detection time is 2mSec.

GEARBOX TYPE SCREW-IN SENSORS
JAP / FORD TYPE DRAWING

Most Japanese manufacturers have standardised their gearbox outputs to accept a M22 x 1.5 threaded sensor which has a round peg drive with a 'lug' pinched onto the side. Unscrew the original speedometer cable from the gearbox, screw in the Brantz Jap sensor with the drive pin in place, and screw the original speedometer cable into the sensor. Wiring is to the Brantz GREY cable as follows: Green to Green/Yellow, Blue to Blue, Brown to Brown. Some Jap sensors have a different colour code and are wired as follows: Green/Yellow to Black or Silver, Brown to Red, Blue to White. Many Ford/GM/Vauxhall/Fiat/VW/Skoda/Lada gearbox outputs are similar in that they have a square drive and a M18 x 1.5 screw thread. The Brantz Ford/GM sensor will fit many of these vehicles but will require some degree of filing/cutting/drilling before they are an acceptable engineering fit. Select this sensor only if you have the skills to do this. Wiring is the same as for the Jap sensor above.

UNIVERSAL SPEEDOMETER CABLE SENSOR

This plastic unit fits in the length of almost any speedometer cable, though some old cables require holes to be slightly enlarged due to 'chunky' cable dimensions, and some modern speedometer cables need enginuity to dismantle them as manufacturers seem to want to prevent customers from separating the inner from the outer. Generally with the so-called 'sealed' cables, a section of sheath from the centre of the cable should be removed first to obviate the fixing system used on the ends of the inner. Replacement lengths of sheath can always be put back in after the cable has been separated. Heat-shrink sleeve, particularly the type which is adhesive-lined makes easy repairs to segmented sheaths. Note that the rotor floats in air and puts no additional strain on the speedometer drive, but this construction demands that the sensor should not be subjected to 'end thrust' which could be produced by a worn cable, or being fitted on a bend in the cable. Sensors can be stripped to help with fitting in difficult cases. Connections are Brown to Brown, Blue to Blue; Green to Green/Yellow.



1) Remove inner core. Cut through the outer sheath at the location of the sensor with a fine toothed hacksaw.
2) Make a second cut through sheath to shorten the sheath by 13mm.
3) Remove any burrs with a fine file.
4) Wipe off any excess grease and any metal debris from the inner and the outer, and re-insert the inner which has an enlarged end through its' section of sheath.
5) Place clamps (Jubilee clips or preferably screw type petrol hose clips) onto both ends of the plastic sensor.
6) Insert the loose end of the speedometers cable inner into one end of the sensor and push very firmly through the sensor's internal friction bushing until the sheath section is fully seated in the sensor. If your speedometer cable sheath is of a smaller diameter than can be easily clamped by the sensor then build up the diameter of the sheath with adhesive aluminium tape.
Tighten the clamps moderately.
7) Feed the loose end of the inner through the last piece of sheath until it is fully inside the sensor. Tighten the clamps moderately. If you do not wish to use clamps, they could be replaced with adhesive lined heat-shrink sleeve.

Trouble-shooting suspected sensor installations:

If it is suspected that either a wheel or speedometer sensor has been damaged in service (ie tripmeter does not increment on the road) then the output from the sensor can be tested with a voltmeter (voltage varies as wheel or sensor is rotated. Alternatively the tripmeter itself can be proven to be OK by the following test which must be carried out strictly in the order described. a) Switch off the meter. b) Pull off the three push-on connectors from the grey cable to the sensor. c) Ease back the insulating sleeves from the Blue and Green wires of the grey cable described in b). Keep these away from contact with anything else. d) Select calibration 001 on the tripmeter. e) Switch on the tripmeter. f) Press all the zeroing buttons. g) Tap the above Blue and Green wire connectors together electrically many times. The tripmeter should increment. If it does, and there is no increment during normal use on the road with the sensor connected, then the sensor has indeed been damaged and the tripmeter itself is still functional. The other type of misoperation from which a tripmeter can suffer is self-stepping whilst the vehicle's engine is running, or self zeroing, or readouts going on and off by themselves. Assuming the power supply is reliable (try powering the meter directly from a separate battery placed temporarily in the passenger area) then suspect powerful radio interference from home-made H.T. sparkplug leads. This is particularly common with historic vehicles. Replace them with standard proprietary parts from an accessory shop. Testing for interference is easily demonstrated using a portable radio on the AM band (important). Tune away from the stations into a quiet frequency, turn up the volume, then start up the engine. Listen for loud clicks. That's interference which should be cured, as it is far too powerful to defend against with screening etc. Vehicles with interference will normally fail pre-event scrutineering.