brantz

Brantz Rally Products

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BRANTZ Rallymeters

Introduction

Overview and Operating Instructions for Brantz Rally Products

International 1 Pro BR13

The International 1 is a basic single readout tripmeter which is ideal for road rallying and club level stage events. This is the only electronic unit allowed on certain HERO events.

Single Display (Red LEDs ~ 15mm high)

Calibrated by the user, manually setting switches in the base of the unit.

99.99 Maximum Distance

Can be calibrated to read miles or kilometres.

Zero, Forward and Reverse Buttons on the front face of the Meter.

Dimensions: 120 x 70 x 55mm

Requires a Brantz Sensor

BR13

OPERATING INSTRUCTIONS FOR:

BRANTZ INTERNATIONAL 1 TRIPMETER Version 6L (int1).

Instructions issue: Oct 2010

Right Track Enterprises Ltd

www.brantz.co.uk

Wiring:

Connect up to the vehicle's power supply as directed by the label on the black power lead coming out of the base of the tripmeter. This is normally Brown to +12 volts and Green/yellow to -12 volts. Connect straight to the vehicle's battery posts via a 2 amp fuse (not provided with the Brantz) on the live wire. The blue in this cable is not normally used. The sensor is connected to the grey cable coming out of the base of the tripmeter as directed by the separate sheet showing all the possible combinations of sensor and how to fit them.

Use:

The tripmeter is switched on by means of the switch on the base of the meter. The switch is moved from the 0 pressed position to the 1 pressed position. The meter digits will light up when the power is ON.

Controls:

The pressed position of the pushbutton marked ZERO on the face of the tripmeter zero's the readout on the 'Pro' Brantz 1 model. This switch should be operated momentarily when the tripmeter is first switched on. The control marked + and - is fitted to the 'Pro' models and allows the tripmeter to count upwards or downwards (+ is incrementing, or upwards).

Calibration:

The meter is calibrated to be accurate on any vehicle fitted with any type of Brantz sensor and using any wheel size or gearing by means of the three pushwheel switches on the lower right hand corner marked CALIBRATION. If the meter is to show hundredths of a kilometre then the thumbwheel switches are first set to 100. Find the start of an accurately measured kilometre and momentarily press all the reset (zero) controls. Drive the measured kilometre and stop accurately at the end of the distance. Note the figure which has come up on the readout. This is the calibration figure for this particular setup of the vehicle. Enter this figure onto the calibration pushwheel switches. The accuracy of the meter can be confirmed by turning the vehicle around and travelling back over the measured kilometre. The measured kilometre should be read by the Brantz very accurately as 1.00 kilometre. To calibrate in hundredths of a mile, follow the above calibration procedure exactly, but substitute the word 'mile' for the word 'kilometre'. If several wheel / tyre sizes and gearings are available for the vehicle then repeat the calibration procedure for each combination & note down the different calibration figures. Long distance events: Certain of the Brantz 'Pro' models which contain the letter 'D' in their serial number can shift the decimal place of the top TOTAL readout one place to the right so that the meter will indicate 999.9 kilometres or miles which is a useful facility for certain international events. The tripmeter cannot change from one mode to the other after being switched on. On power-up, the tripmeter normally will be in standard mode (99.99) kilometres or miles, but if the ZERO switch is held in the zeroing position WHILST THE METER IS BEING SWITCHED ON then the long distance mode will be selected. If the meter is switched off again, the normal mode will be reselected.

Troubleshooting:

See the guarantee form for definition of normal electrical supply, fluid ingress and vibration / impact damage. If a malfunction is observed, firstly connect up the meter in another car to see if the problem is with your car's electrics. Suppliers or manufacturers will be pleased to offer advice about testing for interference (see sensor sheet) or other conditions which prevent a vehicle from being electronics compatible.

International 2 Pro BR6

The International 2 Pro and its predecessors are probably the most popular rally tripmeters to have served so many generations of rallying enthusiasts with their accuracy, ease of use and rugged dependability.

Dual Display – Total and Inter (Red LEDs ~ 15mm high) – Idea for Stage Rallys

Calibrated by the user.

999.99 Maximum Total Distance

99.99 Maximum Inter Distance

Remote Zero Unit to operate the Inter Display

Can be calibrated to read miles or kilometres.

Zero, Forward, Reverse and Freeze Buttons on the front face of the Meter. Plus Stepper Knob.

Dimensions: 120 x 100 x 45mm

Requires a Brantz Sensor

BR6

OPERATING INSTRUCTIONS FOR:

BRANTZ INTERNATIONAL 2 TRIPMETER Version 6L

Instructions Issue: Oct 2010

Right Track Enterprises Ltd

www.Brantz.co.uk

Wiring:

Connect up to the vehicle's power supply as directed by the label on the black power lead coming out of the base of the tripmeter. This is normally Brown to +12 volts and Green/yellow to -12 volts. Connect straight to the vehicle's battery posts via a 2 ampere fuse (not provided with the Brantz) on the live wire. The blue in this cable is not normally used. The sensor is connected to the grey cable coming out of the base of the tripmeter as directed by the separate sheet showing all the possible combinations of sensor and how to fit them. The remote reset button is permanently cabled to the tripmeter.

Use:

The tripmeter is switched on by means of the switch on the base of the meter. The switch is moved from the 0 pressed position to the 1 pressed position. The meter digits will light up when the power is ON.

Controls:

The remote reset button will zero the lower distance display. The metallic switch on the face of the meter has three positions, and will normally be in the central position. If this switch is moved upwards to the FREEZE position it will stop the top TOTAL display from incrementing. This facility is useful if the competitor wishes to preset the TOTAL distance figure to a certain value which will be reached at a known certain point on the road, or the TOTAL reading is too high and the vehicle needs to travel a distance without the TOTAL distance being increased. The downward position of this switch zero's both readouts on the Clubman version of the Brantz International 2 meter and just the top TOTAL readout on the 'Pro' Brantz model. This switch should be operated momentarily when the tripmeter is first switched on. The STEP control above the three-position switch is to edit the TOTAL readout value. It is a rotary control which is normally fully anti-clockwise until a 'click' is felt. Turning this control clockwise will cause the TOTAL readout to step itself which enables the competitor to set the TOTAL readout to any figure. This facility is useful to align the TOTAL readout value to a value given, say, by the organizer’s handbook at a certain point. The control marked + and - is fitted to the 'Pro' models and allows the tripmeter to count upwards or downwards (+ is incrementing, or upwards).

Calibration:

The meter is calibrated to be accurate on any vehicle fitted with any type of Brantz sensor and using any wheel size or gearing by means of the three thumbwheel switches on the lower right hand corner marked **CALIBRATION**. If the meter is to show hundredths of a kilometre then the thumbwheel switches are first set to 100. Find the start of an accurately measured kilometre and momentarily press all the reset (zero) controls. Drive the measured kilometre and stop accurately at the end of the distance. Note the figure which has come up on both readouts. This is the calibration figure for this particular setup of the vehicle. Enter this figure onto the calibration thumbwheel switches. The accuracy of the meter can be confirmed by turning the vehicle around and traveling back over the measured kilometre. The measured kilometre should be read by the Brantz very accurately as 1.00 kilometre. To calibrate in hundredths of a mile, follow the above calibration procedure exactly, but substitute the word 'mile' for the word 'kilometre'. If several wheel / tyre sizes and gearings are available for the vehicle then repeat the calibration procedure for each combination & note down the different calibration figures. Long distance events: Certain of the Brantz 'Pro' models which contain the letter 'D' in their serial number can shift the decimal place of the top TOTAL readout one place to the right so that the TOTAL will indicate 999.9 kilometres or miles which is a useful facility for certain international events. The tripmeter cannot change from one mode to the other after being switched on. On power-up, the tripmeter normally will be in standard mode (99.99) kilometres or miles, but if the T.ZERO switch is held in the downwards (zeroing) position WHILST THE METER IS BEING SWITCHED ON then the normal mode will be reselected.

<u>International 2S Pro</u> BR7

The International 2S Pro tripmeter has all the features of the International 2 Pro PLUS a third readout showing current speed or average speed. The average can be recommenced at any time, even on the move.

Triple Display – Total, Inter and Speedometer/Odometer or Average Speed (Red LEDs ~ 15mm high)

Calibrated by the user.

999.99 Maximum Total Distance

99.99 Maximum Inter Distance

99.9 Maximum Vehicle Speed Display (Speedometer)

Remote Zero Unit to operate the Inter Display

Can be calibrated to read miles or kilometres.

Zero, Forward, Reverse and Freeze Buttons on the front face of the Meter. Plus Stepper Knob.

Dimensions: 120 x 100 x 45mm

Requires a Brantz Sensor

BR7

OPERATING INSTRUCTIONS FOR:

BRANTZ INTERNATIONAL 2S Pro TRIPMETER Issue 9H.

Instructions version: Oct 2010

Right Track Enterprises Ltd

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Note new facilities of 'Average speed' and 'Long distance total'

Wiring:

Connect up to the vehicle's power supply as directed by the label on the black power lead coming out of the base of the tripmeter. This is normally Brown to +12 volts and Green/yellow to -12 volts. Connect straight to the vehicle's battery posts via a 2 ampere fuse (not provided with the Brantz) on the live wire. The blue in this cable is not normally used. The sensor is connected to the grey cable coming out of the base of the tripmeter as directed by the separate sheet showing all the possible combinations of sensor and how to fit them. If you are using the universal speedometer cable sensor the grey cable contains a Brown which connects to the sensor brown, Blue goes to blue, and Green goes to green. The remote reset button is permanently cabled to the tripmeter.

Use:

The tripmeter is switched on by means of the switch on the base of the meter. The switch is moved from the 0 pressed position to the 1 pressed position. The meter digits will light up when the power is ON. A battery charger is not a suitable source of power to test the tripmeter. If the meter is switched OFF then it should remain switched off for a minimum of three seconds or so.

Controls:

The remote reset button will zero the lower left hand INTERMEDIATE distance display. The metallic switch on the top right hand of the face of the meter has three positions, and will normally be in the central position. If this switch is moved upwards to the FREEZE position it will stop the top TOTAL display from incrementing. This facility is useful if the competitor wishes to preset the TOTAL distance figure to a certain value which will be reached at a known certain point on the road, or the TOTAL reading is too high and the vehicle needs to travel a distance without the TOTAL being incremented. The downward position of this switch towards the T ZERO position zero's both readouts on the Clubman version of the Brantz International 2 'S' meter and just the top TOTAL readout on the 'Pro' Brantz model. This switch should be operated momentarily after the tripmeter is first switched on. The STEP control to the right of the TOTAL readout is to edit the TOTAL readout value. It is a rotary control which is normally fully anti-clockwise until a 'click' is felt. Turning this control clockwise will cause the TOTAL readout to step itself which enables the competitor to set the TOTAL readout to any figure and is itself governed by the +/- control described below. This facility is useful to align the TOTAL readout value to a value given, say, by the organizer's handbook at a certain point. Note that the STEP over-rides the FREEZE control. The control marked + and - is fitted to the 'Pro' models and allows the tripmeter to count upwards or downwards. (+ is incrementing, or upwards, - is decrementing, downwards).

SPEED / AVERAGE SPEED. The three digit display on the lower right hand corner of the tripmeter will display the vehicle's current speed to three digits in the units to which the tripmeter is calibrated, i.e. if the tripmeter is calibrated in miles then the speed and average speed will be in miles per hour. If the tripmeter is calibrated in kilometres then the speed and average speed will be in kilometres per hour. Note that the high accuracy of the speedometer is automatically calculated from the distance calibration of the tripmeter and is dependent for accuracy on the accurate calibration of the tripmeter as described later. The three position switch just above the SPEED/AVERAGE SPEED readout should be in the left position marked SPEED to use the readout as a conventional speedometer. In the central position the readout will illuminate the decimal point which indicates that the readout is showing AVERAGE SPEED, and that this average speed has been calculated to one decimal place. Switching from speed to average speed by means of the switch does not interfere with the average speed calculations. The calculation of the average speed commences when the three position switch is momentarily

moved to the right position marked ZERO. It is necessary to hold this switch operated for about half a second. The average speed Zero can be used at any time with the vehicle moving or stationary and is independent of the TOTAL and INTERMEDIATE readouts.

Calibration:

The meter is calibrated to be accurate on any vehicle fitted with any type of Brantz sensor and using any wheel size or gearing by means of the three thumbwheel switches marked CALIBRATION. If the meter is to show hundredths of a kilometre then the thumbwheel switches are first set to 100. Find the start of an accurately measured kilometre and momentarily press all the reset (zero) controls. Drive the measured kilometre and stop accurately at the end of the distance. Note the figure which has comes up on both readouts. This is the calibration figure for this particular setup of the vehicle. Enter this figure onto the calibration thumbwheel switches. The accuracy of the meter can be confirmed by turning the vehicle around and traveling back over the measured kilometre. The measured kilometre should be read by the Brantz very accurately as 1.00 kilometre. To calibrate in hundredths of a mile, follow the above calibration procedure exactly, but substitute the word 'mile' for the word 'kilometre'. If several wheel / tyre sizes and gearings are available for the vehicle then repeat the calibration procedure for each combination & note down the different calibration figures. If the rally organizer has laid out an 'official distance' or you wish to make your tripmeter read the same as the rally organizers distances then the following instructions apply: Set your tripmeter to a large figure L, say, 399 to 999 (it may be your normal calibration figure which you know is accurate, but for this purpose, that is academic). Zero the readouts at the start of the organizer's measured distance (say he has given you a distance of 4.56 to the next known point 'P'). Drive to the next known point 'P' and note the figures on the TOTAL and INTERMEDIATE (same figure) readouts 'D'. Divide 'D' by 'P' and multiply the result by 'L'. This will give you the new calibration figure to enter onto the calibration digits to make your tripmeter read the same as the rally organizer's. N.B. your speed and average speed will be calculated from the 'official' distances traveled which should be the figures which have been used by the organizer to calculate the target speeds. Long distance events may require the use of a TOTAL readout showing 999.9 kilometres or miles. Pro tripmeters with 'D' in their serial numbering can shift the decimal point from 99.99 to 999.9 in the following way: Switch off the tripmeter for 3 seconds. Operate the T.ZERO switch and keep it operated whilst the ON/OFF switch is turned ON. The short distance mode is re-installed if the meter is switched OFF. Note that if the tripmeter is to be recalibrated for any reason, then it should be done in the normal 'short distance' mode. Long distance events: Certain of the Brantz 'Pro' models which contain the letter 'D' in their serial number can shift the decimal place of the top TOTAL readout one place to the right so that the TOTAL will indicate 999.9 kilometres or miles which is a useful facility for certain international events. The tripmeter cannot change from one mode to the other after being switched on. On power-up, the tripmeter normally will be in standard mode (99.99) kilometres or miles, but if the T.ZERO switch is held in the downwards (zeroing) position WHILST THE METER IS BEING SWITCHED ON then the long distance mode will be selected. If the meter is switched off again, for two seconds, the normal mode will be reselected.

Troubleshooting:

See the guarantee form for definition of normal electrical supply, fluid ingress and vibration / impact damage. If a malfunction is observed, firstly connect up the meter to another car to see if the problem is with your car's electrics. Suppliers or manufacturers will be pleased to offer advice about testing for interference (see sensor sheet) or other conditions which will prevent a vehicle from being electronics compatible.

Laser 3 BR34

The Brantz Laser 3 Rally Computer is a sophisticated high precision instrument which shows via red LED readouts Time of Day including hundredths of a second and has two stopwatches. Six digit distance (to three decimal places) is viewed via shiftable four digit windows. Speed information includes current, maximum and average speeds. A leap forward in technology allows optimisation of car performance tuning using the acceleration figures to 60, 100 and 120 mph and kph from 0, 30, 50 and 70 mph and kph, along with times for a standing start quarter mile or kilometre, and a standing start mile or kilometre. A programmable digital fuel gauge is provided which will read a gauge which stands unpowered, or is already part of a vehicle's electrical system. Available extras include a Wiring and Fitting Kit and a Hard wired Remote Zeroer.

Triple Display

- 24HR Clock HH:MM:SSSS
- Total Distance, Inter Distance
- Fuel Gauge, Speedometer, Average Speed, Acceleration Test

999.99 Maximum Total Distance (000.0/00.00/0.000 formats)

99.99 Maximum Inter Distance (000.0/00.00/0.000 formats)

Remote Zero Unit to operate the Inter Display

Can be calibrated to read miles or kilometres.

Zero, Forward, Reverse and Freeze Buttons and Hold Buttons.

Optional Hard Wired Remote

Dimensions: 140 x 80 x 35mm

Requires a Brantz Sensor

BR34

INSTALLATION and OPERATING INSTRUCTIONS FOR:

Brantz Laser3 Precision Rally Computer

Instructions Version: Oct 2010

Right Track Enterprises Ltd

www.brantz.co.uk.

Installation:

A minimum system for fitting to a road vehicle is the Laser 3 computer plus a distance sensor with its' connectors and fasteners. The computer and sensor should be tested before being fitted to the vehicle as follows: Open the rear connection cover door of the Laser and note the three connection blocks. Take great care not to connect anything to the wrong terminal or damage will occur. The top block is marked 'Fuel Gauge FF' terminal. Do not connect anything to this yet. The centre block is for the distance sensor only and connections will be made to this later on. The lower block is for the 12 volts power input. Use good quality wire and connect the + terminal of a 12 volt battery to the terminal marked ++12v on the computer. The spring loaded type terminals will allow a stripped end of wire to be pushed into the block if the gripper is depressed with a screwdriver etc. Releasing the gripper will clamp and connect the inserted wire which would preferably be solder 'tinned' to prevent stray strands of wire from moving about. Connect terminal marked 12v-- on the computer to -12volt terminal of a charged battery. For safety, connect computer first, battery last. Pressing the button marked ON should cause the readouts to light up. You can set the clock if you wish, as directed in the instructions later. The clock's backup battery will be charged during the first period of use. Disconnect the computer from the battery. Connect up the distance sensor to the centre terminal block as directed in the sheet for sensors. Re-connect the computer to power and set the four calibration switches to 1000 and turn the computer ON. Spin the sensor internals or if a wheel type sensor is provided, touch the end of the sensor many times with a metallic object such as a screwdriver. The lower readout should increment. The above test shows that the computer and sensor are working ok.

Fitting to the vehicle:

Using a good quality 2 ampere mains cable, connect long insulated wires to the block terminal of the computer as in the previous section. Take care that there are no loose strands of wire left out of the connectors. Make sure you can distinguish which wires are for the sensor (screened wire is best) and which wires are for the 12 volts power input. Cut out the block connector cover plate to let in these wires, leaving a minimum of clearance so that dust does not get in, and replace the cover plate. The computer can be mounted into the vehicle using Velcro type self-adhesive strip, which reduces the amount of vibration passed from the vehicle to the computer, or 5mm threaded screws into the corner mount holes. Connect up to the distance sensor as directed in the wiring table at the back of the manual to the centre block which is marked Sensor ONLY. Terminal ++ is a 5 volt power feed going OUT to the sensor. Most 2 wire sensors do not need connection to this terminal. PP is the positive pulse INPUT terminal and -- is negative out to the sensor. Connecting PP to -- in test pulses simulates the action of the sensor. Connect the power leads to the vehicle's battery terminals directly via a 1.5 amp fuse. Note that reliable service cannot be expected if poor quality connections are used. Carefully observe the correct polarity of positive and negative. It is assumed that the fuel tank sender has one end connected to negative ground. The other end may or may not be disconnected from the rest of the vehicle and is connected to the upper Laser block connector FF. If a second auxiliary fuel gauge is required (say in the rear for filling purposes) then connect / disconnect it via a switch when actually used as it can affect accuracy.

Operation:

Keyboard convention: Green keys are normally selected. Holding the 'Select Orange Keys' button down whilst pressing other buttons will select the functions described in the orange text areas. The computer is turned ON by pressing the 'ON' button. To turn OFF hold the 'Select Orange Keys' and 'OFF' button until the displays disappear. The 'Select Orange Keys' button locks itself in for about half a second, so sequential button pushes can be made (eg 'Sel Orange then 'OFF' in quick succession).

Dimming the readouts

The first two stages of the 'off' control lower the intensity of the readouts. Release the 'OFF' button at the stage when the readout says ‘LO’. Full brightness is restored by pressing just the 'ON' button. When the ‘Off’ button is used to go to the fully off situation, all the tripmeter modes which were in use at the time of switching off are remembered for the next time the computer is switched on again.

Set Clock

Press 'Resume Time' if the top readout is showing fuel. Press 'Select Edit Item' repeatedly until the ‘Set-ti’ item is offered for modification, then press ‘Orange/Modify Item’ to enter the time setting menu. Using the numeric keys, enter each of the six digits of the time in 24 hour format. As soon as the sixth digit is entered, the clock exits the setting mode. If a mistake has been made during setting, either complete the six digits and then do it again correctly, or press the ‘escape’ button which then ignores the mistaken attempt. Note that the last two digits of the clock (hundredths of a second) do not normally show as they change too quickly to be of any value in real time. These show only when the clock is frozen by the 'Hold Time' button.

Calibration

All speed and distance functions rely on the computer being accurately calibrated for the vehicle/gearing/tyre combinations pertaining. Set the 'Calibration' switches to 0000. As soon as the vehicle moves the total readout will change to ‘Cal Set’. Go to the start of a measured mile. Press the 'Zero lower' button momentarily. Drive the measured mile exactly and stop. A figure will appear in the lower 'Trip' readout. Enter this figure onto the Calibration switches. Turn the vehicle round and check that the measured mile measures as a mile on the computer when driven. The computer is calibrated in kilometres exactly as above, but substitute the word 'kilometre' for the word 'mile'. Note that when the computer is calibrated in miles, all speeds will be in mph and when calibrated in kilometres, all speeds will be in kph. Note the different calibration figures if different gears/wheels/tyres etc are to be fitted during an event.

Default settings

This button restarts the computer if an electrical problem has caused the internal processor to 'crash'. It is a powerful command which will lose most data stored, so do not use it unless there is a major problem. The Laser 3 copes with severe abnormalities in the car's electrical system, so if it has become necessary to use this command the car must be giving trouble and is in need of close attention.

Distance mode

The 'Total' and 'Trip' readouts are identical except that the Trip readout does not have the 'Hold' function. The 'Hold' function takes a spot distance reading where the readout does not change, but the distance is still being calculated inside the computer. This function would be useful for pace-noting when a distance to a feature was required to be noted, but the vehicle could not stop. When on 'Hold' the green light in the button will come on. Another press of this button will restore the readout to the current position as if the button had never been pressed. The 'Freeze' buttons will stop the readouts from counting (the button lights) if pressed, and will restore counting if pressed again. The distances are computed in six digit format e.g. 123.456 miles or km, but the readouts only view four of these digits. The digits on view can be shifted along by repeated presses of the 'Mode Distance' button. The distance readouts can be preset to any distance required either whilst the vehicle is standing still or whilst it is on the move. Press 'Split' at the point where the new distance is correct. Enter the six figure distance using the numeric keypad. As the sixth digit is pressed the computer leaves the ‘Split’ mode. If the vehicle has been standing still during the preset or the readout is in ‘Freeze’ mode, then that figure will come up on the readout, and if the vehicle has been moving, then the distance moved during the presetting process will be added to the preset distance. If the tripmeter is in ‘-dist’ mode, ie counting downwards, then the distance traveled since the ‘Split’ button was pressed will be deducted from the set distance figure. the ‘Split’ facility is available on both the upper and lower readouts. In the ‘Split’ mode it is not necessary to enter all six distance digits; the unentered digits following the entered digits will be assumed to be zeros. If entering less than six digits, pressing the ‘Return’ button indicates to the tripmeter that the “Split’ figure is complete. If a mistake is made during the entering of the ‘Split’ figure, a press of the ‘escape’ button will ignore the mistaken attempt and allow another entry. A mistake in entering a ‘Split’ figure can be corrected by moving back to the incorrect digit by use of the ‘Down Arrow’ button and re-typing the correct digit. The 'Zero' buttons reset the readouts back to zero, but note that to prevent inadvertent zeroing of the upper 'Total' distance readout, the upper zero button needs to be pressed for three seconds to work. Pressing the '-DIST' button reverses the count. The button lights when counting downwards. Pressing the '-DIST' button again restores count to the upwards direction. The RR terminal on the upper connector in the rear of the computer can be configured by 'Select Edit Item' as a Reverse instruction (RR setup = -dist) and can be connected to reversing lights; -12v signals a reversal

(use a relay if the vehicle's logic is the opposite of this) , or the 'RR' Terminal can be configured to accept a hard wired remote zeroing button for the lower readout (-12 volts = zero readout. Configure RR setup in the 'Select Edit Item' menu as REMOTE-tp).

Speed Mode

Puts the current speed on the readout. Available in both the 'Total' and 'Trip' readouts.

Max Speed Mode

Available in the 'Total' readout. The maximum speed attained since the computer was last switched on, or the 'Zero Upper' button was pressed in this mode which resets the maximum speed monitor.

Average Speed Mode

Available in the 'Total' readout. Calculated for up to 24 hours, since the computer was switched ON, or the 'Zero Upper' button was pressed in this average speed mode which resets the calculation to re-commence from that moment onwards for up to 24 hours. Average is calculated to one decimal place.

Accel Mode

N.B. Entering this mode clears some other calculations and memories from the computer, and is intended to be used during vehicle testing etc, outside the rally competition. The acceleration facility enables vehicle modifications to be assessed for their value. Press 'Mode Accel' and use the 'Select Edit Item ' button to choose the speed range (start and end) over which the time is to be measured. When the required acceleration parameter is showing (eg 0-60 or standing start 0.25 etc) press the Orange/ Modify Item. The time in seconds (with decimal place) will show in the 'Trip' readout. The run can be repeated by pressing the 'Zero Lower' button. Pressing the 'Resume Time' button quits the Acceleration Mode and restores the readouts to previous settings.

Fuel Mode

To show the tank contents Press 'Mode Fuel'. The fuel gauge map can be programmed by emptying the tank to the level you wish to call EMPTY. Ensure that the vehicle's fuel gauge system is powered up if the Laser 3 is to run alongside the original. Normally this is achieved by having the vehicle ignition turned on. With 'Select Edit Item ' button select 'cal-fuel' and press 'Orange/Modify Item'. The computer will spend about a second detecting if you are attached to a volts-on or volts-off type system, then it will show 'SET-E' and a figure. Press 'Orange/Modify Item' and this empty reading will be programmed into the computer memory. Press 'Select Edit Item' and the menu will move on to offer you the quantity of fuel. Fill the tank and note the quantity in litres. Use the Laser 3's up or down arrows to match this quantity figure then press the 'Return' symbol on the keypad to put the fuel guage level (at this quantity of fuel) into memory. Quit the calibration sequence by pressing 'Resume Time'. The computer assumes linearity of the gauge. The quality of the sensor in the tank dictates the precision of spot readings. The Laser 3 is capable of measuring litres to one decimal place. Once programmed, the map is retained by the computer even when it is switched OFF.

Timing Functions:

1/Time of Day

Normally, six digits show on the 'Time' readout. Pressing 'Hold Time' halts the readout and displays the hundredths of a second. 'Resume Time' restores the clock as if nothing had been pressed.

2/Stopwatches

The 'Total' readout and the 'Trip' readout each have a stopwatch available. The full range of Freeze/Hold/Zero buttons are available for the stopwatch whilst the accompanying readout is in stopwatch mode. The stopwatches count in minutes (rotating at 60) and seconds. A fast press of the zero button commences counting. Another fast press stops the stopwatch. A press of more than three seconds zero's the readout. If both readouts are in stopwatch mode, and one stopwatch is waiting at zero, pressing the 'Freeze' on the other stopwatch will freeze that stopwatch and simultaneously commence the zeroed stopwatch counting. An option available via the 'Select Edit Item' enables 'Auto Start' of the upper stopwatch as soon as the vehicle moves off from rest. This happens only if the stopwatch is at zero, and is useful for stage starts. Stage start and stage finish functions are best done using the 'Total' readout as stopwatch by pressing the remote button which stops the stopwatch and the time of day together at the stage finish. Stage start can be done manually with the remote button or automatically using the 'Auto Run' self-start.

Auto Off is used to power the Laser 3 down when the vehicle is parked. It is enabled or disabled from the 'Select Edit Item' menu which monitors the motion of the vehicle. If no motion is detected for 15 minutes when the computer is in 'Auto Off Enabled' mode then the computer readouts are shut down and memorized. As soon as

the 'ON' button is pressed or the vehicle moves, the readouts are illuminated. Standby current is around 15 milliamps, so disconnect the Laser 3 if the vehicle is to be parked up for more than a week.

Optional Driver's Repeater

The wireless link can be used to present the driver with his own display of data such as speed, time, fuel, distance etc on a separate readout unit (The 'Pro Remote').

Optional Data collection unit

Data from the tripmeter can be stored every second into a PC when required for stage analysis. The PC is connected via its' serial port to the 'Pro Remote' which is radio linked to the Laser 3, and should be running the appropriate Brantz software.

Remote Zero Units

The wireless Remote Zero Unit has 2 control buttons which suffices for most co-driver needs, and operates over a wireless link to the Laser 3 computer. It needs a PP3 battery. If the 'Total' readout is in stopwatch mode the button marked 'Upper' will with a fast press commence the upper stopwatch (say at a stage start). A second fast press will freeze the time of day and upper stopwatch (say a stage finish). If pressed for more than 2 seconds it will restore the current time of day to the 'Time' readout and zero the upper stopwatch. If the 'Total' readout is in 'distance mode' then the button will zero the distance, but only after a three second press. The button marked 'Lower' will control the 'Trip' readout. The Pro zero unit has a wireless communications channel and has a screen which displays the three readouts of the main Laser 3 computer plus the fuel status and speed. The unit uses a PP3 battery. The 'Zero Upper' button operates as 'Zero Upper' on main computer. 'Zero Lower' button operates as 'Zero Lower' on main computer. The control buttons can perform multiple functions of speed, time, distance, stopwatch, acceleration by selecting that function for its' parent button on the main Laser 3. The 'Split' distance presetting facility is available for the Upper readout. When being used as a Driver's monitor, the driver can view all the data or just select a single item of interest (say speed or fuel) by pressing the 'Max/Min' button.

Connections for Brantz Laser 3:

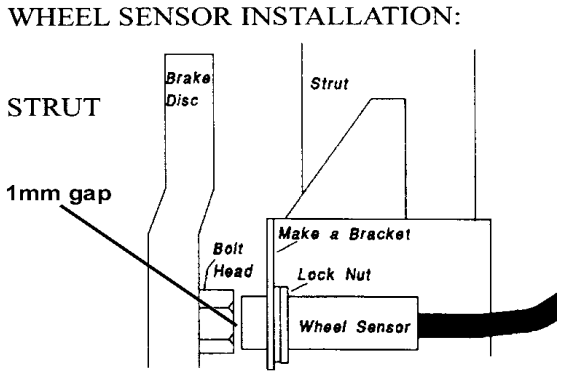
Block connectors as viewed from the rear of the tripmeter

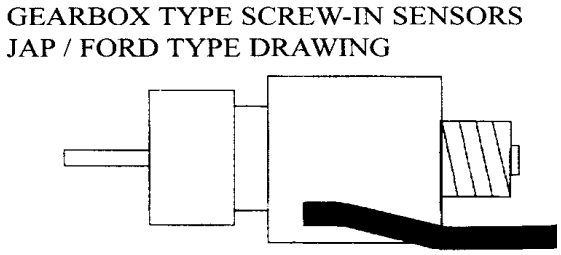
	Fuel Gauge FF	RR Input (Configure as reverse/R.zero
Sensor ++ (+5v out)	Sensor PP (pulses in)	Sensor _ _ (neg out)
	Power In +12 volts	Power In -12 volts

Centre Connection Block is wired for each sensor as is shown in columns	Sensor connects to ++ terminal as in the chart below	Sensor connects to PP terminal as in the chart below	Sensor connects to -- terminal as in the chart below
Sensor type: universal Speedometer Cable Sensor (Black Plastic)	Brown	Blue	Green
Wheel type sensor M14x1.0 thread Two wires only		Brown	Blue
Brantz Dividing Prescaler Interface for digital speedometer pulse sources	Brown	Blue	Green
Ford/GM/Fiat/Lada/Vauxhall/ VW/ Gearbox sensor. M18x1.5 thread, square drive. Will need a little reshaping to become an adequate engineering fit.	Red	White	Black or Silver
Japanese gearbox sensor. M20x1.5 thread, lug drive. Note that two wiring colour schemes are available.	Red	White	Black or Silver
This chart lists connections which are equivalent to the grey cable found on other Brantz tripmeters	Brown	Blue	Green
Technical help and all manuals are available on www.brantz.co.uk or phone +44 (0) 1625 669366			

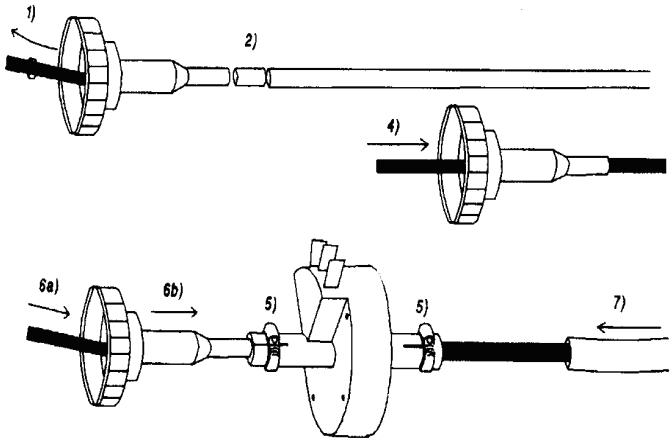
Wheel Sensor Installation:

Before fitting the sensor to the vehicle, connect it up to the tripmeter and test its' functionality by touching the sensing end many times with a screwdriver, and note that the tripmeter increments. A bracket to mount the sensor to the suspension strut should be made rigid enough to prevent flexing. Bolt heads (a minimum of four for accuracy) should pass squarely across the face of the sensor all at a distance of 1mm (this is very important). Socket head bolts cannot be used as they cause problems. Correct fitting of the sensor can be checked by monitoring the voltage across the sensor with a voltmeter. When connected to the tripmeter and the sensor is next to a bolt head the voltage should be about 2 volts. When the sensor is clear of the bolt head the voltage should be about 4.2 volts. Check that all (four?) bolts give similar results. If the tripmeter is put onto calibration figure 0001 then all four bolts should cause the tripmeter to increment.





Universal Speedometer Cable Sensor installation:



1/ Choose a straight location for the sensor where it will not be damaged by heat or vibration. Note the length of inner cable which protrudes from the outer sheath so that this can be replicated when the sensor and cable assembly is completed.

2/ Pull out the inner core.

3/ Remove 13mm of sheath at the proposed location of the sensor by using a fine-tooth metal saw.

3/ Remove any burrs with a fine file.

4/ Place a petrol hose type screw clamp on each end of the sensor.

5/ Insert a loose end of the speedometer cable inner and push very firmly through the internal friction bushing of the sensor. Take care not to kink the speedometer cable inner.

6/ Feed the loose end of the inner through the last piece of sheath until it fully inside the sensor. Lightly tighten the clamps. The clamps could be substituted by adhesive lined heat-shrink sleeving. This product is useful for reconstructing cable sheaths which have been cut into several sections. Make sure the cable dimensions are the same as when you started.

7/ Correct functionality of the sensor can be tested with a voltmeter connected between vehicle negative ground and the blue terminal of the sensor. When the tripmeter is connected the terminal will change between 0v and +5volts as the sensor is slowly rotated. There are 5 pulses per sensor revolution.

Troubleshooting:

The Laser 3 requires first class tight and preferably soldered electrical connections (definitely not crimps!) to a power source derived directly from the vehicle's battery terminals. See the Guarantee sheet for definition of the required normal interference-free vehicle.

www.brantz.co.uk has all technical data.

A hard-wired remote (push-to-make switch) can be fitted to zero just the lower distance reading. The terminal in the rear of the Laser marked 'Rem / Rev is connected to this external switch. The other side of the switch is connected to the negative (earth) of the vehicle. Ensure the menu is configured for this Rem/Rev terminal to be in the 'trip' mode. If it is not in the correct mode, pressing the hard-wired remote switch will light the '-dist' light on the Laser when pressed. To alter this in the menu press the green 'Select Edit Item' button repeatedly until the rr-SETUP appears on the top readout display. This part of the setup menu stays available for about 5 seconds, then it reverts back to showing 'time of day digits'

During the period that rr-setup is showing, we can modify the Rem/Rev connnection's function to either –dist (which is the reverse count command), or 'reset-tp' which is taking commands from the hard-wired remote to zero the intermediate (lower) readout. During the above 5 second period, hold down the 'Select Orange Keys' button, and at the same time press the 'Modify Item' button several times, leaving the top readout showing the 'reset-tp' indication, which means that we are using the hard-wired remote button. Now let go of the ''Select Orange Keys' button. If you want to put this (and other) chosen options into permanent memory, then turn off the Laser3 using the keyboard command 'Select Orange Keys' plus the ON/OFF button.

BR9C

Classique

BR9M

Mulsanne

Retrotrip 2 BR9C/BR9M

The Retrotrip2 has been designed for approval for use on many historic or retrospective rallies to fill the vacuum left by a shortage of mechanical tripmeters. Those competitors who could source a genuine period tripmeter with the correct functions and with sufficient spare parts to get it calibrated were felt to have an unfair advantage. The Retrotrip has the functions and instant 'one in a thousand' calibration accuracy for any wheel changes etc, plus can be seen to be 'fiddle proof' because of the old style electro-mechanical clicking digits, hence its' widespread approval.

Dual Display

- Total Distance
- Inter Distance

Independently Zeroed displays

Display Lenses for increased digit size

- Mulsanne Model has ALL WHITE digits

12 Volt Illumination

Easily Calibrated

Dimensions: 120 x 75 x 85 (140 x 85 x 90 inc switched and mounting holes)

Requires a Brantz Sensor

BR9C/BR9M

INSTALLATION and OPERATING INSTRUCTIONS FOR:

Retrotrip 2

Instructions Version: Oct 2010 Right Track Enterprises Ltd www.brantz.co.uk

The Retrotrip can be used with a wide range of motion sensors, but the universal speedometer cable sensor is the one recommended. See the separate sheet for correct connection to the grey cable. The black cable connects brown to +12 volts and the green/yellow connects to -12 volts, both of which should be directly to the battery terminals via a 2 amp fuse and not to chassis or existing vehicle power points. The highest quality connections are needed (definitely not crimps!). Cars not using the modern negatively earthed alternator type charger should use the Brantz Power Conditioner to get a reliable power source. Failure to do this can cause counter mis-match.

Calibration: To measure hundredths of a mile, set the rotary switches (they may have central button actuators which require pen-push operation) to 100 then go to the start of a measured mile. Zero the readouts. Drive exactly a mile at no more than 20mph and stop. Note that there is a limit to how fast the readouts can step, and this can easily be exceeded during calibration although this will not be a problem with the higher calibration figure derived and actually used later. The three digit figure which has accumulated during the mile should be entered onto the rotary switches. The mile should then measure as a mile. Trim the figure up or down a digit to optimize. The above procedure can be used to calibrate in kilometres, but substitute the word ‘kilometre’ for the word ‘mile’. Carefully read the TROUBLESHOOTING documentation to reduce to a minimum the shortcomings of the old technology which is the basis of the retrospective design.

Testing a RetroTrip on the workshop bench:

Connect the power cable (black sheath) to a 12 volt battery, brown to +12 volts, green/yellow to -12 volts. Note that testing can not be done reliably when connected to a battery charger, as the current is not smoothed. If the Retrotrip has customer-installed connectors, especially crimp types, push & pull these gently, then firmly, to check tightness. Solder them in place wherever possible.

Test (1) Switch on the Retrotrip. Observe the top lights go on. Switch off.

Test (2) (Optional test for dealers with Brantz test equipment. Others go straight to test 3) Put the Retrotrip calibration switches (some may be pen-push types) to 555. Connect the grey cable to a Brantz 'Rolling Road Tester' taking care to connect the right colours. Zero the two readouts. Switch on the Retrotrip. Note the two counters click over together. Change the calibration figures (there is a limit as to how fast the counters can go, so the calibration figure cannot be too low. Switch off the Retrotrip. Remove the 'Rolling Road Tester'.

Test (3) Connect a sensor to the grey cable carefully observing the colour codes (see the sensor information sheet). Select a low calibration figure. Switch on the Retrotrip. Rotate the sensor mechanism (or for a wheel sensor touch a steel object onto the tip of the sensor many times). See the counters click over.

Self Test Facility for more recent models:

Connect the Retrotrip to a charged battery supply (sensor is not needed). Put the rotary calibration switches to 000. Turn on the power. Note the readouts may take half a step. Within eight seconds of turning the power on, change the calibration switches to 888. After a few seconds the counters will start to self-step themselves in groups of eight for as long as the power remains connected. This enables the simulation of great distances on the bench.

If all the above functions are correct then any problem is likely to be with the car and/or the installation. See the trouble-shooting tips on the sensor sheet and MOST IMPORTANTLY - try the meter on another car. Derive power directly from the battery TERMINALS not the chassis or fuse panel. This is the single most important installation recommendation, and it is the one most resisted by customers as it is frequently inconvenient. Low battery voltage at the trip will cause trouble (see recommended power conditioner below).

Popular problems are: Reversed power, loose crimp type connectors, even more loose connectors, battery under voltage, poor quality wiring with still more loose connectors, and earthing derived from chassis instead of battery, radio interference from HT/pumps/horn/wipers/dynamo/ alternator etc. See sensor sheet for a very simple interference test. N.B. PREVENT VIBRATION! - Excessive vibration can cause one counter to disagree with the other. Remember that the counter technology of the Retrotrip is necessarily over fifty years old and today's expectation of perfect performance is a little harder to achieve. Older cars with 6 volt electrics or poorly performing or less reliably performing 12 volts charger systems should use a **BRANTZ POWER CONDITIONER** which will always produce a correct voltage source for the Retrotrip.

Detailed operating and installation information is available on www.brantz.co.uk

Retrotrip 3 Classique BR10C

The Retrotrip3 is a simple evolution of the ever-popular Retrotrip2 and has all the same features of accurate one-in-a-thousand push digit calibration and clicking electromechanical readouts which has made the Retrotrip2 eligible for historic type rallies throughout the world. Where the Retrotrip3 differs is that it contains two completely separate and independent tripmeters in the same box. One tripmeter drives the normal two counters on the top row of the box. A switch allows one of these two counters to be disconnected to hold a reading for 'whatever' purpose. A second tripmeter with its' own calibration switches drives a third readout on the lower row. Both tripmeters are fed from the same single sensor fitted to either the speedometer cable or road wheel. All counters can be zeroed independently. Either of the tripmeters can be prevented from counting by changing its' calibration figure to 000.

Triple Display

- Total Distance
- Inter Distance
- Stop Watch Read Out/Average Speed

Independently Zeroed displays

Display Lenses for increased digit size

12 Volt Illumination

Easily Calibrated- With the lower one Independently Calibrated

Requires a Brantz Sensor Dimensions: 140 x 95 x 110 (170 x 95 x 110 inc Mounting holes)

BR10C

OPERATION INSTRUCTIONS FOR:

RetroTrip 3 Classique

Instructions Version: Oct 2010 Right Track Enterprises Ltd www.brantz.co.uk

This Retrotrip is a simple evolution of the ever-popular Retrotrip2 and has all the same features of accurate one-in-a-thousand push digit calibration and clicking electromechanical readouts which has made the Retrotrip2 eligible for historic type rallies throughout the world. Where the Retrotrip3 differs is that it contains two completely separate and independent tripmeters in the same box. One tripmeter drives the normal two counters on the left hand side of the box. A switch allows one of these two counters to be disconnected to hold a reading for 'whatever' purpose. The Calibration switches and the On-Off switch on the left control this tripmeter with counters labelled as I (for intermediate distances, and T for total distances. A second tripmeter with its' own calibration switches drives a third readout marked as V on the upper row on the right. This tripmeter can also be switched On or Off. The whole instrument can be switched on or off by the horizontal power switch bottom right. A design feature of the BR10C is that it can be modified internally to suit various requirements. To open up the instrument, disconnect totally from the power source and remove the top lighting cowl. Remove the four corner screws on the face of the instrument. The counters, rocker switches and counter output socket are connected to the control board via spring loaded connectors. Make changes only if you are competent in electrical matters or damage could result. The position of each counter can be changed to suit your own taste. The counter output socket can be used to drive an external counter running in parallel with any of the three internal counters by selecting which terminals it is connected up to. One or more of the internal counters can be removed from the instrument to comply with various rally organisers rules. Note that both tripmeters are fed from the same single sensor fitted to either the speedometer cable or road wheel. All counters can be zeroed independently. Remember that much of the meter's technology is over fifty years old, and even such simple functions as zeroing the readouts can require a certain amount of dexterity! Calibration (Cal'TI') for the two distance counters on the left is as normal and should be done accurately. Zero the counters and set the calibration 'TI' digits to 100 and drive a measured kilometre (or mile if working in miles and miles per hour). Enter this figure onto the calibration 'TI' push digits. A more accurate figure can be obtained by driving a measured two kilometres and dividing the readouts by two. The tripmeter will now indicate hundredths of a kilometre or mile depending on the distance travelled. An alternative way of calibrating Cal'TI' if the organisers have given you an accurate route of say 3.26 km is to enter 326 onto the Cal'TI' switches, zero the TI readouts and drive the known distance. The figure which has accumulated on either of the 'TI' readouts is the figure to enter onto the Cal'TI' calibration switches. If you have a second tripmeter (and the BR10C has two independent tripmeters) you can achieve an indication of AVERAGE SPEED, by calibrating the second tripmeter to a different figure as derived from the Bath Formula supplied with each BR10C (See below). The BR10C is wired as follows: The black cable is the power feed and contains a brown wire which is connected to +12volts. The Green/yellow is connected to the -12volts. Whichever of these two wire is the 'live' it should be fitted with a fuse of not more than 2 amps. Wiring must be taken directly from the vehicle's battery terminals and not from the chassis or existing vehicle wiring. Cars which have a 6 volt or 12 volt dynamo system (ie not a negatively earthed

alternator type charger) must use the Brantz Power Conditioner. The grey cable connects to the sensor as indicated on the sheet supplied with the tripmeter. If using the normal universal speedometer cable sensor then Brown goes to brown, Blue goes to blue, and Green/Yellow goes to green. Wheel sensors will often work with the Retotrips, but their use is not recommended. Assemble and test your Retrotrip on the bench with a spare battery BEFORE fitting to the car so that you know everything is OK prior to installation.

CALIBRATING your second tripmeter in the BR10C according to the 'BATH FORMULA' which follows: You have a second tripmeter (the RETRO 3 has two independent tripmeters) so you can achieve an indication of AVERAGE SPEED, by calibrating the second tripmeter to a different figure so that the number indicated on that tripmeter numerically equals the SECONDS ELAPSED. If it doesn't match, drive faster or slower until it does match. At the start of the timed section -start a stopwatch and travel at the speed which makes the second tripmeter give the same number as the seconds on the stopwatch. i.e. at 34 seconds the tripmeter reads 000.34, and at one minute and 12 seconds, the trip reads 000.72. Certain Brantz rally clocks (model BR32) contain a simple 'seconds counter' which goes 0-9 on all digits to facilitate the above comparison so at 1minute 12 seconds the Brantz rally clock can show 0072 seconds. The calibration figure for the second tripmeter (Cal'V') is Cal'TI' (see top calibration proceedure) multiplied by the speed which the event organisers wish you to average, divided by 36. For example, if your main distance tripmeter calibration figure is 678 and the desired average is 41.9 KPH, the the second calibration figure Cal'V' is 789. ie Bath formula to get the Cal'V' calibration is the organiser's target average speed x Cal'TI' / 36 [this latter part of the formula is a constant figure, perhaps something like 10.3 for example, so the cal'V' figure for 40kph or 40mph in this example would be 40x10.3 which is the 'V' calibration figure of 412]. N.B. the 'Bath Formula' is a copyright work and may not be replicated without authority.

Testing a RetroTrip on the workshop bench:

Connect the power cable (black sheath) to a 12 volt battery, brown to +12 volts, green/yellow to -12 volts. Note that testing can not be done reliably when connected to a battery charger, as the current is not smoothed. If the Retrotrip has customer-installed connectors, especially crimp types, push & pull these gently, then firmly, to check tightness. Solder them in place wherever possible.

Test (1) Switch on the Retrotrip. Observe the top lights go on. Switch off.

Test (2) (Optional test for dealers with Brantz test equipment. Others go straight to test 3) Put the Retrotrip calibration switches (some may be pen-push types) to 555 / 555. Connect the grey cable to a Brantz 'Rolling Road Tester' taking care to connect the right colours. Zero the three readouts. Switch on the Retrotrip. Note the two counters click over together. Change the calibration figures (there is a limit as to how fast the counters can go, so the calibration figure cannot be too low. Switch off the Retrotrip. Remove the 'Rolling Road Tester'.

Test (3) Connect a sensor to the grey cable carefully observing the colour codes (see the sensor information sheet). Select a low calibration figure. Switch on the Retrotrip. Rotate the sensor mechanism (or for a wheel sensor touch a steel object onto the tip of the sensor many times). See the counters click over. The BR2(a) wheel sensor will only work with RetroTrips built after July 2004.

Self Test Facility for more recent models of Retro (AUG 2001):

Connect the Retrotrip to a charged battery supply (sensor is not needed). Put the rotary calibration switches to 000 / 000. Turn on the power. Within eight seconds of turning the power on, change all the calibration switches to 888 / 888. After a few seconds the counters will start to self-step themselves in groups of eight for as long as the power remains connected. This enables the simulation of great distances on the bench. If all the above functions are correct then any problem is likely to be with the car and/or the installation. See the trouble-shooting tips on the sensor sheet and MOST IMPORTANTLY - try the meter on another car. Derive power directly from the battery TERMINALS not the chassis or fuse panel. This is the single most important installation recommendation, and it is the one most resisted by customers as it is frequently inconvenient. Low battery voltage at the trip will cause trouble (see recommended power conditioner below). Popular problems are: Reversed power, loose crimp type connectors, even more loose connectors, battery under voltage, poor quality wiring with still more loose connectors, and earthing derived from chassis instead of battery, radio interference from HT sparkplugs / pumps / horn / wipers / dynamo / alternator etc. See the sensor sheet for a very simple interference test. N.B. PREVENT VIBRATION! - Excessive vibration can cause one counter to disagree with the other as can poor power supplies. Remember that the counter technology of the Retrotrip is necessarily over fifty years old and today's expectation of perfect performance is a little harder to achieve. Older cars with 6 volt

electrics or poorly performing or less reliably performing 12 volts charger systems should use a BRANTZ POWER CONDITIONER which will always produce a correct voltage source for the Retrotrip. If any of the above recommendations have been followed, please make a list of them with your observations, and have that list to hand before calling a technical helpline.

If you are experiencing difficulties with your Retrotrip installation:

In order that we can help you, please complete the following tests and indicate every item as 'good' or explain the observation if not good. Fax back to us on 0044 (0) 1625 669366 or Email: sales@brantz.co.uk and we will respond.

Test 1) Check to see if battery is 12volt or 6volt. If 12 volt go to test 2. If 6 volt test the Retrotrip from a temporary 12 volt battery connected only to the Retrotrip. Observation:

Test 2) Check to see that Power is derived directly from the TWO battery terminals not fuse panel etc or chassis. Indicate 'Good' or observation:

Test 3) If the Retrotrip has customer-installed connectors, especially crimp types, push & pull these gently, then firmly, to check tightness. Solder them in place wherever possible or use screw-type connectors. Indicate 'Good' if not crimp type or observation:

Test 4) Test for interference. This is particularly common when home-made HT sparkplug leads have been used, but can come from damaged alternators or fuel pumps/horn/wipers etc. If interference is present it is always too powerful to defend against and should be fixed at source by suppressors or new silicon leads etc. Take a portable radio, select the AM band (important) and tune into a quiet spot between stations. Turn up the volume and start the vehicle. Listen for loud clicks. That's interference. Compare the vehicle with a normal road car as a guide to what is acceptable. Try other vehicle accessories to locate intermittent sources of trouble. Indicate 'Good' or observation:

Test 5) SELF TEST FACILITY FOR MORE RECENT MODELS (May 1999 onwards): Connect the Retrotrip to a charged battery supply (sensor is not needed). Put the rotary calibration switches to 000. Turn on the power. Within eight seconds of turning the power on (Important / less than 8 seconds is not a very long time!!!), change all the calibration switches to 888. After a few seconds the counters will start to self-step themselves in groups of eight for as long as the power remains connected. This enables the simulation of great distances on the bench. If all the above functions are correct then any problem is likely to be with the car and/or the installation. Indicate 'Good' or observation:

Test 6) If test 5 fails, connect the Retrotrip power wires directly to a spare 12volt battery which is not connected to your car. Repeat test 5. Indicate 'Good' on spare or observation:

Test 7) Connect a sensor to the grey cable carefully observing the colour codes (see the sensor information sheet). Select calibration figure(s) 009. Switch on the Retrotrip. Rotate the sensor mechanism (or for a wheel sensor touch a steel object onto the tip of the sensor many times). See the counters click over. Indicate 'Good' or observation:

Test 8)If all the above tests are 'Good' Try the meter on another car. Indicate 'Good' on the other car, or observation:

Note that testing can not be done reliably when connected to a battery charger, as the current is not smoothed.

Power Conditioner/Power Booster BR21

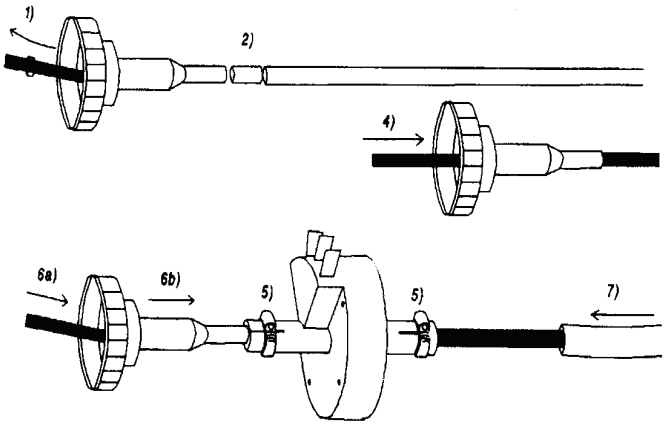
Oct 2010 Right Track Enterprises Ltd www.brantz.co.uk

The Brantz Power Conditioner has been designed to provide a reliable voltage source for Brantz rally tripmeters and the RetroTrip models when these instruments are connected to a road vehicle which has a 6 volt power system or a 12 volt power system of the less reliable dynamo type. Connections must be made directly to the vehicle's battery terminals and must be of the screw type or soldered terminals. An internal fuse is fitted which will disconnect the power for around 30 seconds and then re-connect if the unit is overloaded. Note that the Power Conditioner is intended to supply only a tripmeter! The unit will not compensate for loose connections or interference type faults. When the output is switched off, the unit continues to consume a few milliamps, so if the car is to remain unused for a period, the Power Conditioner should be wired via a good quality, well connected switch.

Brantz Universal Speedometer Cable Sensor BR1

Oct 2010 Right Track Enterprises Ltd www.brantz.co.uk

This plastic '5 pulses-per-rev' unit fits in the length of almost any speedometer cable, though some old cables require holes to be slightly enlarged due to larger than normal cable dimensions; and some modern speedometer cables need ingenuity 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. To assist with fitting, a cross-section of the universal sensor is shown. 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. Modern sensors can be stripped to help with fitting in difficult cases. Connections are Brown to Brown (5v positive power), Blue to Blue (pulses); Green to Green (negative power). **Before fitting to the vehicle, connect it up to the tripmeter and insert a rod or small screwdriver into the sensor and spin it with the tripmeter powered up. The tripmeter should increment. Do not proceed to fitting the sensor unless this test works.**



1) Remove inner core. Cut through the outer sheath at the location of the sensor with a fine toothed hacksaw. 32 teeth/inch recommended.

2) Make a second cut through sheath to shorten the sheath by 1/2 inch (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.

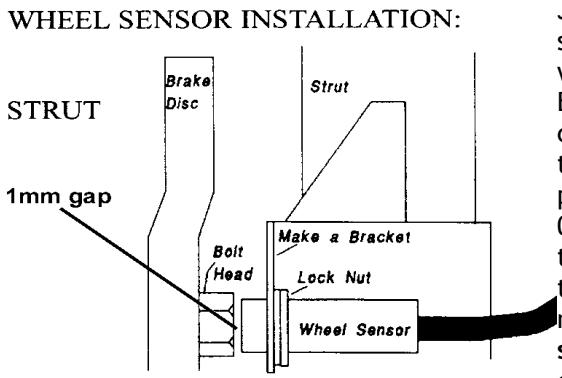
5) Place clamps (Jubilee clips or preferably screw type petrol hose clips) loosely on to both ends of the plastic sensor.

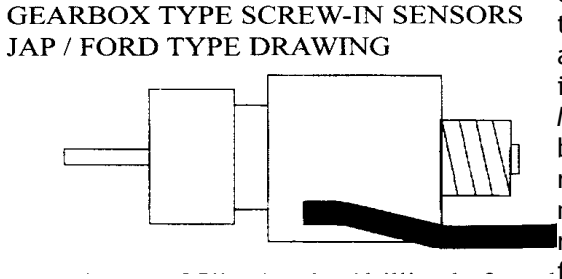
6) Insert the loose end of the speedometers cable inner into one end of the sensor and push very firmly through the sensor's internal friction bushing until the sheath section is fully seated in the sensor. If your speedometer cable sheath is of a smaller diameter than can be easily clamped by the sensor then build up the diameter of the sheath with adhesive aluminium tape. Tighten the clamps moderately.....NB also: can be used with the Brantz BR52 pulse doubler for higher calibration figures.

PLEASE NOTE THAT USING BRANTZ SENSORS ON TRIPMETERS OTHER THAN OF BRANTZ OR RETROTRIP MANUFACTURE CAN DESTROY THEM AND NO WARRANTY RETURN IS POSSIBLE.

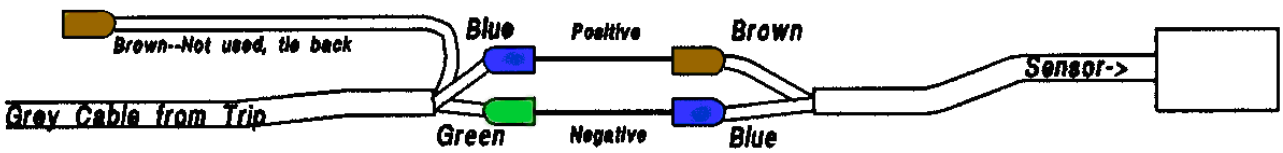
Brantz Universal Wheel Sensor BR2A

Oct 2010 Right Track Enterprises Ltd www.brantz.co.uk





June 2004 saw the last of the Brantz BR2 14mm type wheel sensors (14mm diameter).The introduction of the BR2A type wheel sensor sees a shift in the performance available. The new BR2A is a 12mm device with slightly different performance characteristics and is designed for the 2005 range of Brantz tripmeters which are recognisable by the integral side mounting plates (International 1, 2, and 2S types) or serial numbering 04-07-etc. The new sensor may well work with older tripmeters but this cannot be relied upon. Old tripmeters can be upgraded at the Brantz factory for a small charge, or free of charge if the meters have come in for a service. **Before fitting any type of sensor** to a vehicle, connect it up to the Brantz meter and check its correct operation by 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. Don't use crimp type connectors. 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. Make provision to prevent the sensor from overheating. 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. Monitor with a voltmeter: Low is about 2 volts when away from the target, High is about 4 volts when near the target. Wheel sensors are a wear-and-tear item; keeping them cool dramatically extends their life.



Brantz Japanese Gearbox Sensor BR3

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Most Japanese manufacturers have standardised their gearbox outputs to accept a 20mm x 1.5mm threaded sensor which has a round peg drive with a 'lug' pinched onto the side. Connect up to the Brantz meter to the sensor before fitting the sensor to the vehicle. Put the Brantz on to Calibration figure 001, Switch on the Brantz and rotate the inner rotor of the sensor. See the Brantz tripmeter increment. Do not proceed to fitting the sensor to the vehicle if this stage does not function correctly. Unscrew the original speedometer cable from the gearbox, gently screw in the Brantz Japanese sensor with the drive pin in place, checking that a spacer is not needed to prevent the inner rotor from binding, and screw the original speedometer cable into the sensor with the same check for binding. Wiring is to the Brantz GREY cable as follows: Green to Black or Silver (negative Ground), Brown to Red (positive power supply), Blue to White (pulsed signal output). Some Japanese sensors are wired Green/Yellow to Green/Yellow, Blue to Blue, Brown to Brown. Technical specification: 4 pulses per revolution (20mA sink capability). Hysteresis type sensor. 5volts to 13 volts power supply. Further information on fitting and testing Brantz equipment can be seen and printed from the website www.brantz.co.uk

Brantz Ford/GM Gearbox Sensor BR4

Oct 2010 Right Track Enterprises Ltd www.brantz.co.uk

Most European manufacturers have standardised their gearbox outputs to accept a 18mm x 1.5mm threaded sensor which has a square peg drive. Note that this square peg can be inserted into the sensor as a short, or as a long drive pin. Connect up to the Brantz meter to the sensor before fitting the sensor to the vehicle. Put the Brantz on to Calibration figure 001, Switch on the Brantz and rotate the inner rotor of the sensor. See the Brantz tripmeter increment. Do not proceed to fitting the sensor to the vehicle if this stage does not function correctly. Unscrew the original speedometer cable from the gearbox, gently screw in the Brantz sensor with the drive pin in place, checking that a spacer is not needed to prevent the inner rotor from binding, and screw the original speedometer cable into the sensor with the same check for binding. Wiring is to the Brantz GREY cable as follows: Green to Black or Silver (negative Ground), Brown to Red (positive power supply), Blue to White (pulsed signal output). Some sensors are wired Green/Yellow to Green/Yellow, Blue to Blue, Brown to Brown. Technical specification: 4 pulses per revolution (20mA sink capability). Hysteresis type sensor. 5volts to 13 volts power supply. This sensor could be damaged by being connected to a non-Brantz/Retrotrip instrument, and in this event can not be returned as defective under a warranty claim. Further information on fitting and testing Brantz equipment can be seen and printed from the website www.brantz.co.uk

Brantz Drive Shaft Sensor BRH2

Oct 2010 Right Track Enterprises Ltd www.brantz.co.uk

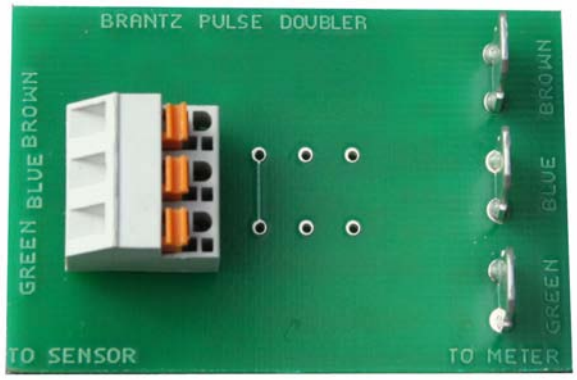
Special sensors for generic detection of rotating shafts to provide bigger distance sensing for the Brantz range of odometers.

The Type BRH2 sensor types are a fall-back fitment to be utilised when the more easily implemented standard types are unuseable and they require some level of interpretation for each individual situation. Select these sensor options only if you are able to provide some amount of engineering expertise and originality. The detector section of the BRH22 is wired using only two of the three wires. Green/Yellow is to the sensor's White wire, Blue is to the sensor's Brown wire. BEFORE fitting to the vehicle is attempted, demonstrate the functionality of the sensor IN THE HAND by wiring to the Brantz odometer (on a low calibration figure) and pass the active side of the magnet across the sensing point of the sensor several times. See the odometer increment.

Do not proceed to the fitting stage without this test.

The sensor has a detection spot at the non-wired end. The actual package appearance of the sensor may differ from the picture below. The supplied magnet has a 5mm hole on one side which must pass the sensor end at about 5mm to 15mm distance. The magnet must be attached to the rotating shaft so that the white 5mm hole is pointing radially out from the shaft. Two worm-thread bands (Jubilee Clips) should be wrapped around the shaft and magnet(s), and a holding compound such as sanitary silicone sealant could be used to prevent looseness. Attach clips and magnets evenly around the shaft so that the shaft remains in dynamic balance. Once the clamps are in place, snap off any protruding banding from the jubilee clips. Ensure sensor bracket is rigid. Additional braces may be necessary to achieve this. Use of just one magnet sensing shafts rotating faster than the road wheels may be necessary if the meter shows that it needs a calibration figure which exceeds the number available on the meter's calibration switches, and two or more magnets should be used on shafts rotating at road-wheel speed to give accuracy. The sensor should be provided with a mounting bracket which senses horizontally so that gaps are not varying unduly if the shaft moves up and down. Pick a place where the shaft has minimum movement (typically near the gearbox). Check the output on the blue wire with a voltmeter when everything is connected up to show that a voltage change occurs (0volts to 5volts and back etc) as the magnet passes the sensor.

The **Type BRH2** Hall-Effect DriveShaft Sensor fits as shown in the photograph above. Use a non magnetic bracket (Brass or Aluminium, but NOT STEEL as this will prevent the sensor from 'seeing' the magnetic field; Similarly don't use steel washers around the sensor). The bracket should be made up to give a gap of about 5mm to 15mm between the end of the gold-coloured sensor and the magnet face(s). Wiring of this type of sensor is to the Brantz GREY SENSOR CABLE using only two of the three wires. Green/Yellow is to the sensor's White wire, Blue is to the sensor's Brown wire. When the sensor is correctly connected to the Brantz and the Brantz is turned on, a voltmeter connected between the two wires will change from 5 volts to about zero volts alternately as the shaft is rotated and the sensor detects the magnets



Brantz Sensor Pulse Doubler BR52

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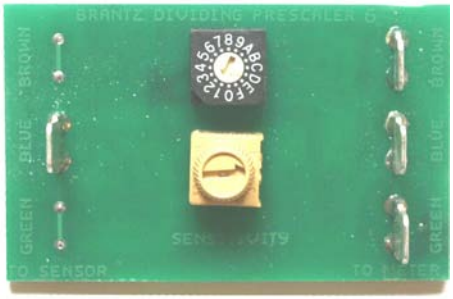
Brantz tripmeters and retrotrips which are fitted to vehicles with a low number of pulses feeding to the tripmeter produce a low calibration figure. If this figure is normally in the range under 499 then the calibrated accuracy of the tripmeter can be improved by doubling the number of pulses produced by the sensor. This BR52 device will fit onto the grey cable coming from the tripmeter using the connector blades on the right, and an extension grey cable can be connected to the connection block on the left of the BR52 board (pictured above). This extension cable will connect as normal to the Brantz wheel type sensor or any of the Brantz speedometer cable or gearbox sensors (see separate sensor connection instructions). This will result in the doubling of the tripmeter calibration figure, which makes a finer step between one calibration figure and the next. The advice for installation is identical to the instructions for the wheel sensor; or any other sensor, on any Brantz or Retrotrip or Survmaster instrument.

All sensor instructions recommend test of sensor by connecting to the tripmeter BEFORE INSTALLING ONTO CAR. ***Do not proceed to installation if the test is not successful***.

1/ Customer can test his tripmeter as noted on guarantee sheet by selecting calibration figure 009. With no sensor connected to the tripmeter; tap the green/yellow and the blue wires in the grey cable together electrically, many times. The tripmeter will increment. Then connect the sensor to the grey cable (in your hand, not fitted to car) as in the wheel sensor instructions: Brown in the tripmeter grey cable is not used. Blue in the grey tripmeter cable goes to brown of the wheel sensor. Green/yellow in the tripmeter grey cable goes to blue of the wheel sensor. Touch the end of the sensor with a steel object many times and the tripmeter will increment.
2/ The BR52 has 3 connectors in, marked SENSOR and three connectors out marked TO TRIPMETER. The Brown repeats the brown, the blue repeats the blue, the green repeats the green. When section 1/ above has been completed successfully, connect the three flat spade terminals of the BR52 to the tripmeter grey cable, Brown to Brown. Blue to Blue, Green/yellow to Green. Connect the wheel sensor to the terminals marked SENSOR as normal wheel sensor instructions: Brown of the sensor to the Blue terminal, Blue of the sensor to Green terminal. Turn on the tripmeter (on calibration 009) and touch the end of the wheel sensor many times with a steel object. The tripmeter will increment, in this case at double the increment rate.
3/ If that test 2/ is successful, install onto the car with the same connections detailed in 2/ and on completion rotate the wheel to see the tripmeter increment.
4/ Proceed to calibrate tripmeter as normal.
5/ Connecting to Laser3 tripmeter. The Laser3 does not have a grey sensor cable; it has instead, a three terminal connection block marked SENSOR. the three terminals have direct equivalents to the grey sensor cable of other tripmeters. The ++ terminal is equivalent to the Brown of the grey sensor cable, the PP is equivalent to the Blue of the grey sensor cable, the -- is equivalent to the Green/yellow of the grey sensor cable. Connect the BR52 spade terminals brown to ++, the blue to PP, the green to --. Connect a sensor to the BR52 SENSOR terminals as you would connect a sensor to the Brantz Grey sensor cable.



Brantz Dividing Pre-Scaler BR5

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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, though some ABS systems do not generate a speedometer pulse until they reach a certain speed and so are not capable of accurate work Check with your car supplier. 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.

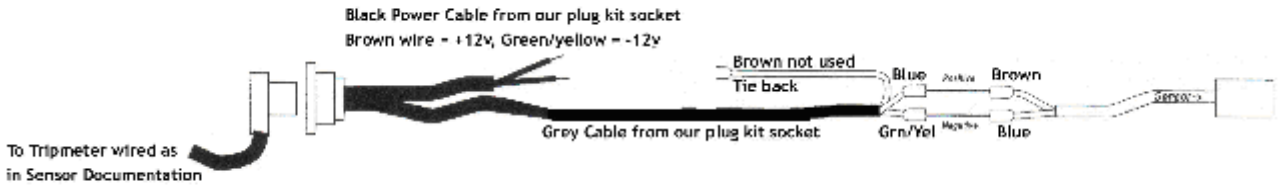
Technical information: Drain on the vehicle's sensor is less than 0.5mA, TTL Compatible. Interface current consumption is less than lOmA. Input is 'dioded' to prevent interaction of the interface and the vehicle if the meter is switched off. Divide ratio = figure on the rotary switch (1 to *15)* zero is not valid. Some models have a rotary SENSITIVITY control which can adjust to different input voltage thresholds. Adjust this to the centre of its workable range which is normally as shown in the above photograph. Power source from meter is 5 volts, interface is not protected from reverse connection. Output is open collector. This sensor could be damaged by being connected to a non-Brantz/Retrotrip instrument. Further information from the website www.brantz.co.uk

Plug Kit BR43

Oct 2010 Right Track Enterprises Ltd www.brantz.co.uk

The Plug Kit enables 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 +l2volt 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 +l2volt 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.

Take Power Directly from the Battery Terminals



All connections are as in sensor documentation

Brantz Rally Clock/imer BR32

Oct 2010 Right Track Enterprises Ltd www.brantz.co.uk

The Rally Timer is built at the same height and with the same bright red digits as the BRANTZ Internationals and sits comfortably along side them. The six digit clock shows as 12 or 24 hr formats and holds the time of day when the remote button $provided as standard$ is pressed. The four digit stopwatch halts at the same moment. The stopwatch will show cumulative or re-zeroed elapsed time. A special function will allow the stopwatch to count seconds to 9999 instead of minutes and seconds if desired. This function is useful for historic rallying and other events which call for a seconds counter. The case dimensions are approx 70mm x 100mm x 40mm

Connect the clock to a 12volt DC power source. Battery chargers etc are not suitable as the current is not smoothed. Brown goes to positive, green / yellow goes to negative. It is important to the long life of the instrument that it is connected directly to the terminals of the car battery (not chassis or fuse panel etc) via a 2 ampere fuse, and not more. If any malfunction is experienced in your car, Try the clock away from your own car on a battery at home or on a different car.

To set the time of day on the upper six digit display, press the 'Time' button. The least significant digit will flash. Select 12 hour or 24 hour format by alternate presses of the remote button. Select the digit to be updated by pressing the 'Reset' button repeatedly until the correct digit is flashing. Increase the value of the selected digit by pressing the 'STRT/STP' button as many times as is required. Note that when the least significant seconds digit is flashing, the digit is zeroed by pressing the 'STRT/STP' button. When the correct time is achieved, normal clock operation is resumed by again pressing the 'Time' button.

Stopwatch operation: The lower stopwatch display is zeroed by pressing the 'Reset' button. When the stopwatch is not running, only three digits are illuminated. The stopwatch can be started by pressing the 'STRT/STP' button. Note that the most significant stopwatch digit is illuminated. The stopwatch can be stopped and restarted by alternate presses of the 'STRT/STP' button.

Rally timing: Stop and zero the stopwatch as above. At the start of a rally stage press and quickly release the remote button. The stopwatch starts to run. At the end of the stage momentarily press the remote button. The stopwatch will stop and the Time of Day (Rally Time) will hold. Another fast press will start them again from where they left off. A longer press will zero the stopwatch and allow the time of day to continue. Facilities: Timekeeping accuracy can be adjusted by means of the internal trimmer. There is no backup battery fitted to the economy models. The model 26 has a facility to change the stopwatch mode over to a one second counting mode. In this mode the decimal point disappears from the lower stopwatch readout and the stopwatch counts 0 to 9 on each of the four digits instead of the usual 60 seconds / minute format. This mode is selected by pressing

the RESET button on the clock face AND HOLDING IT FOR ONE SECOND. The decimal point will disappear and only the least significant digits will show. This facility is useful for historic rallying or other functions which require a simple seconds count. All other functions of the switches (including remote) stay as normal.

Switch convention: Green buttons are normally selected. Pressing the 'C' button then sequentially another button within one second selects the orange button. Switch 'on' by pressing the start/stop button. Switch 'off' by pressing 'C' then sequentially 'F3' button which should be held pressed until the readouts are no longer illuminated. Dimming is achieved by releasing the 'off' command before it is completed. When the clock 32 is switched on, it enters the same mode as was in use last and a green light is lit in the 'start/stop' button which indicates that this clock is version 32. The light changes to red when the stopwatch is running and changes to flashing red/green when the stopwatch and time-of-day are stopped. Timing modes: Pressing 'C / sequentially F1' changes between the three modes available. Usually 24 hour mode is used, but 12 hour mode is available as well as the specialist 10 hour (or Decimal Timing) mode where the day is divided into 10 decimal hours with each decimal hour containing 100 decimal minutes and each decimal minute contains 100 decimal seconds. Midnight is 00.00.00 in all modes. The stopwatch follows into the mode selected. Pressing 'C / sequentially F2' alternately selects or deselects the 'Historic Regularity Timing' mode option (the clock says F2 ON). In 'Historic Regularity Timing' mode the stopwatch is always running internally and the 24 hr 'Standard Rally Time' clock and stopwatch displays will FREEZE for approximately 32 seconds whenever the Stopwatch Remote button is pressed at a Regularity Timing Point. At this moment the stopwatch is INTERNALLY set to zero and re-commences counting from zero thus timing the next section. The Remote button is normally the only control button used, and should be pressed only momentarily. The first timed section of any series should be commenced only by the remote button; though the current stopwatch and 'Standard Rally Time' can be forced into the readouts before the 32 second internal 'hold' matures by momentarily pressing the 'Start/Stop' button on the clock face.

The above 'Hold period' allows the Co-driver to confirm the Time given by the Timing Point Marshal is correct. During this period the red/green light will flash to indicate that the readouts are Held. When the 32 seconds period is up, the time clock resets itself to 'Standard Rally Time' and the stopwatch will display the 'Section Time' which commenced timing the last time the remote was pressed. The Co-driver can force the clock to terminate this automatic 32 second hold period by pressing the 'Start/Stop' button should he immediately need sight of the 'Standard Rally Time' and the expired stopwatch time on that next section. The back-up battery in this model lasts for 12 months after a powered-up period. An internal trimmer can adjust time-keeping accuracy (as a guide, a quarter turn = about 5 seconds per day). To re-initialize the clock following change of internal battery or some dramatic electrical event which has wiped the clock's program: disconnect from power, then hold C button pressed whilst reconnecting power, then release the C button.

SpeedTable Version A5 BR19(A5)

Oct 2010 Right Track Enterprises Ltd www.brantz.co.uk

This **Speedtable (VERSION A5 manual)** allows competitors to quickly program any speed to one decimal pace. Keeping the car's tripmeter matched to the speedtable figure creates very accurate average speed attainment. The unit is battery operated, has back-lighting which is operated by the 'L' button, beeps at each increment if you wish it, and needs no connection to the car.

Specifications: 4 digit large LCD readout. 4 mechanical push-switches to calibrate to any speed 0.1kph to 999.9 mph (either mph or kph). Solid state back-lighting. Audible beep on or off by use of S button. A5 model choose beep at 10 metre or 100 metres. Speed to one decimal place. Small (10cm long) pocket size case. PP3 (9 volt) alkaline battery operated. A quality battery lasts for several days continuous use. Remove it if the unit is not to be used for long periods. Use of the beeper and back-light reduces battery life. The battery condition is indicated by the brightness of the back-light. Set the rotary switches to the required average speed to one decimal place (ie 0352 = 35.2 mph or kph). These switches permanently reassure that the speed is correctly programmed. The Z membrane switch zero's the readout and enters the set speed into the calculation. If you keep the vehicle at the speed which matches the tripmeter to the speedtable then the average speed desired will have been achieved. If the tripmeter is lower than the speedtable then increase the speed of the vehicle. If the tripmeter is higher than the speedtable then slow down the vehicle until the figures match. The R button enters the desired average speed from the rotary switches without zeroing the readout. This enables speed changes to be achieved without zeroing the tripmeter; pre-enter the new speed onto the rotary switches, and press R at the point where the new speed starts. The new speed calculations will commence from that point. If, after reaching the next control, the timing Marshal advises that a new average speed should be used RETROSPECTIVELY (ie from the previous control) then enter the new average on the rotary switches and momentarily press the 'M' button. A new target tripmeter reading will appear on the readout.

Special settings: The machine is of course only a timer. Used on setting 0360 it simply counts seconds. Used on setting 3600 it counts seconds to one decimal place. Used on 0006 it counts minutes. Used on 0600 it counts minutes to 2 decimal places. Used on 0001 it counts hours to one decimal place. Used on setting 0010 it counts hours to 2 decimal places.

The Marshalling Clock mode is available by holding the 'H' (Hours) button pressed whilst switching the clock 'ON' by the power switch in the rear battery compartment. It features hours, minutes, seconds and hundredths of a second, spread over two uses of a large format four digit LCD screen. The primary function of a marshalling clock is to hold the time of day for logging purposes when a competitor completes a stage of a competition, then restore the current time of day to the readouts following the noting of the competitor's time. A bonus feature is that this clock holds a memory of the previous frozen time, just in case the screen freeze is released accidentally before the time is fully noted or agreed. A good quality alkaline PP3 battery lasts about a week, but use of the night lights will reduce this life. A lithium type battery is expensive, but can last even longer.

Instructions: Fit the battery in the compartment at the rear of the case observing the correct polarity by proper use of the polarised connector switch may be fitted in this compartment to switch off the clock. When first powered up in the marshalling clock mode, the message 'not / SEt' will flash on the screens. Hold down the H button and whilst the H button is being held press the M button. Release the M button. Release the H button. The clock is in the hours/minutes screen as evidenced by the existence of the centre colon (double dot). The flashing pair of digits can be incremented by multiple presses of the S button, or can be zeroed by the Z button. Pressing the H button will select either the hours digits flashing (24 hour format only) or the minutes digits. In the 'setting' mode, or indeed any mode, the R button will swap screens so that the four digits showing are either the hours and minutes (with colon lit) or seconds and hundredths of a second (with just one decimal point lit). Whilst still in the setting mode with seconds / hundredths showing we can either zero the seconds with the Z button as the full minute comes, or increment full seconds with the S button. When the time has been fully set, press the H button first, then whilst holding the H button press the R button. This will quit the time setting mode, but it is important to note that there is a reliability feature which prevents the clock from inadvertently being altered in the field. Once the 'time setting' mode has been exited, it cannot be re-entered unless the whole clock is powered down for a few seconds by either disconnecting the battery, or switching the power on/off switch to the off position if this is fitted. Timekeeping accuracy is adjustable by the trimmer in the rear compartment.

Use by the marshal: R button as always toggles between the hours/minutes screen (colon showing) or the seconds/hundredths screen (with just decimal point showing). The marshal can use this button at any time without affecting anything else. When a competitor enters the timed point the S (STOP) button is pressed. This freezes the screen with that competitor's time and also puts this time into the memory location, replacing any previously remembered time. The eight digit time of day can be shown by alternate presses of the R (ROTATE) button which will show the hours/minutes (colon in the centre) then the seconds/hundredths (decimal point in the centre). A press of the Z (END) button restores the screen to the present time of day. If the remembered time is to be recalled, press the M (MEMORY) button. R will still swap screens. Z still restores current time of day to screens.

SpeedTable Version A9 BR19(A9)

Oct 2010 Right Track Enterprises Ltd www.brantz.co.uk

This **Speedtable (VERSION A9 manual)** allows competitors to quickly program any speed to one decimal place. Keeping the car's tripmeter matched to the speedtable figure creates very accurate average speed attainment. The unit is battery operated, has back-lighting which is operated by the 'L' button, beeps at each increment if you wish it, and needs no connection to the car.

Specifications: 4 digit large LCD readout. 4 mechanical push-switches to calibrate to any speed 0.1kph to 999.9 mph (either mph or kph). Solid state back-lighting. Audible beep on or off by use of S button. A9 model choose beep at 100 metres or 1kilometre. Speed to one decimal place. Small (10cm long) pocket size case. PP3 (9 volt) alkaline battery operated. A quality battery lasts for several days continuous use. Remove it if the unit is not to be used for long periods. Use of the beeper and back-lights reduces battery life. The battery condition is indicated by the brightness of the back-lights. Set the rotary switches to the required average speed to one decimal place (i.e. 0352 = 35.2 mph or kph). These switches permanently reassure that the speed is correctly programmed. The Z membrane switch zero's the readout and enters the set speed into the calculation. If you keep the vehicle at the speed which matches the tripmeter to the speedtable then the average speed desired will have been achieved. If the tripmeter is lower than the speedtable then increase the speed of the vehicle. If the tripmeter is higher than the speedtable then slow down the vehicle until the figures match. The R button enters the desired average speed from the rotary switches without zeroing the readout. This enables speed changes to be achieved without zeroing the tripmeter; pre-enter the new speed onto the rotary switches, and press R at the point where the new speed starts. The new speed calculations will commence from that point. If, after reaching the next control, the timing Marshal advises that a new average speed should be used RETROSPECTIVELY (ie from the previous control) then enter the new average on the rotary switches and momentarily press the 'M' button. A new target tripmeter reading will appear on the readout.

Special settings: The machine is of course only a timer. Used on setting 0360 it simply counts seconds. Used on setting 3600 it counts seconds to one decimal place. Used on 0006 it counts minutes. Used on 0600 it counts minutes to 2 decimal places. Used on 0001 it counts hours to one decimal place. Used on setting 0010 it counts hours to 2 decimal places.

The Marshalling Clock mode is available by holding the 'H' (Hours) button pressed whilst switching the clock 'ON' by the power switch in the rear battery compartment. It features hours, minutes, seconds and hundredths of a second, spread over two uses of a large format four digit LCD screen. The primary function of a marshalling clock is to hold the time of day for logging purposes when a competitor completes a stage of a competition, then restore the current time of day to the readouts following the noting of the competitor's time. A bonus feature is that this clock holds a memory of the previous frozen time, just in case the screen freeze is released accidentally before the time is fully noted or agreed. A good quality alkaline PP3 battery lasts about a week, but use of the night lights will reduce this life. A lithium type battery is expensive, but can last even longer.

Instructions: Fit the battery in the compartment at the rear of the case observing the correct polarity by proper use of the polarized connector switch may be fitted in this compartment to switch off the clock. When first powered up in the marshalling clock mode, the message 'not / Set' will flash on the screens. Hold down the H button and whilst the H button is being held press the M button. Release the M button. Release the H button. The clock is in the hours/minutes screen as evidenced by the existence of the centre colon (double dot). The flashing pair of digits can be incremented by multiple presses of the S button, or can be zeroed by the Z button. Pressing the H button will select either the hours digits flashing (24 hour format only) or the minutes digits. In the 'setting' mode, or indeed any mode, the R button will swap screens so that the four digits showing are either the hours and minutes (with colon lit) or seconds and hundredths of a second (with just one decimal point lit). Whilst still in the setting mode with seconds / hundredths showing we can either zero the seconds with the Z button as the full minute comes, or increment full seconds with the S button. When the time has been fully set, press the H button first, then whilst holding the H button press the R button. This will quit the time setting mode, but it is important to note that there is a reliability feature which prevents the clock from inadvertently being altered in the field. Once the 'time setting' mode has been exited, it cannot be re-entered unless the whole clock is powered down for a few seconds by either disconnecting the battery, or switching the power on/off switch to the off position if this is fitted. Timekeeping accuracy is adjustable by the trimmer in the rear compartment.

Use by the Marshal: R button as always toggles between the hours/minutes screen (colon showing) or the seconds/hundredths screen (with just decimal point showing). The marshal can use this button at any time without affecting anything else. When a competitor enters the timed point the S (STOP) button is pressed. This freezes the screen with that competitor's time and also puts this time into the memory location, replacing any previously remembered time. The eight digit time of day can be shown by alternate presses of the R (ROTATE) button which will show the hours/minutes (colon in the centre) then the seconds/hundredths (decimal point in the centre). A press of the Z (END) button restores the screen to the present time of day. If the remembered time is to be recalled, press the M (MEMORY) button. R will still swap screens. Z still restores current time of day to screens.

Marshalling Clock BR42

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The Marshalling Clock (version 1.1) features hours, minutes, seconds and hundredths of a second, spread over two uses of a large format four digit LCD screen. The primary function of a marshalling clock is to hold the time of day for logging purposes when a competitor completes a stage of a competition, then restore the current time of day to the readouts following the noting of the competitor's time. A bonus feature is that this clock holds a memory of the previous frozen time, just in case the screen freeze is released accidentally before the time is fully noted or agreed. A good quality alkaline PP3 battery lasts about a week, but use of the night lights will reduce this life. A lithium type battery is expensive, but can last even longer.

Instructions: Fit the battery in the compartment at the rear of the case observing the correct polarity by proper use of the polarised connector switch may be fitted in this compartment to switch off the clock. When first powered up, the message 'not / SEt' will flash on the screens. Hold down the H button and whilst the H button is being held press the M button. Release the M button. Release the H button. The clock is in the hours/minutes screen as evidenced by the existence of the centre colon (double dot). The flashing pair of digits can be incremented by multiple presses of the S button, or can be zeroed by the Z button. Pressing the H button will select either the hours digits flashing (24 hour format only) or the minutes digits. In the 'setting' mode, or indeed any mode, the R button will swap screens so that the four digits showing are either the hours and minutes (with colon lit) or seconds and hundredths of a second (with just one decimal point lit). Whilst still in the setting mode with seconds / hundredths showing we can either zero the seconds with the Z button as the full minute comes, or increment full seconds with the S button. When the time has been fully set, press the H button first, then whilst holding the H button press the R button. This will quit the time setting mode, but it is important to note that there is a reliability feature which prevents the clock from inadvertently being altered in the field. Once the 'time setting' mode has been exited, it cannot be re-entered unless the whole clock is powered down for a few seconds by either disconnecting the battery, or switching the power on/off switch to the off position if this is fitted.

Use by the marshal: R button as always toggles between the hours/minutes screen (colon showing) or the seconds/hundredths screen (with just decimal point showing). The marshal can use this button at any time without affecting anything else. When a competitor enters the timed point the S button is pressed. This freezes the screen with that competitor's time and also puts this time into the memory location, replacing any previously remembered time. The eight digit time of day can be shown by alternate presses of the R button which will show the hours/minutes (colon in the centre) then the seconds/hundredths (decimal point in the centre). A press of the Z button restores the screen to the present time of day. If the remembered time is to be recalled, press the M button. R will still swap screens. Z still restores current time of day to screens.

How to Select a Sensor

Brantz rally tripmeters (and precision Survmaster odometers) require a pick-up sensor to send travel information up to the instrument so that it can calculate and display just how far the vehicle has travelled.
The most suitable sensor is chosen from a few key factors appertaining to the vehicle the tripmeter is being installed into.

The criteria are:

1. Reliability. The tripmeter will be of no use if the sensor gets destroyed
2. Accuracy. Different bits of the vehicle travel different distances when rallying
3. Ease of fitting
4. Cost considerations. Remember the cost includes fitting time and servicing time.

The first choice is the screw-on gearbox sensor which is the fastest to fit and the cheapest. It has great reliability as it is not near high heat sources or in the path of flying under-car debris.
We offer two types; one of which fits many Japanese cars which have the M20x1.5 gearbox threaded speedo output fitting (the rotating drive pin is round with a single 'lug' pinched onto one side. The pin is reversible for different length pin requirements) **Part BR3.**

The other gearbox type sensor is threaded M18x1.5 for many European cars which had a speedometer cable drive for their original speedometer. The drive pin is a square section and is also reversible to accommodate different drive pin length requirements. **Part BR4**

If the vehicle has a mechanically driven speedometer but not suitable for the BR3 or BR4, then choose the **BR1 universal speedometer cable sensor** which fits somewhere in the length of the existing speedometer cable. This choice will require the removal and cutting of the speedo cable, which is a little more effort, but is an excellent choice.

The first generation of cars which had an electronically driven speedometer (ie there was no mechanical cable) generated pulses from a device screwed onto the gearbox where the old cable once went, or from a dedicated sender built into the transmission chain somewhere. They are three-wire devices; one wire being ground, one wire being +12v power when the ignition key is ON, and one wire we are interested in which has a digital signal on it. The voltage on this wire if viewed by a voltmeter will go up to 12volts and down to ground a few times per revolution of the transmission. Connect this wire to the single terminal end of our BR5 interface. The other end of the interface goes to the tripmeter. The **BR5** will prevent the car and the tripmeter from hurting each other. The incidental feature of the **BR5** (such as for some Astra cars) allows a very high pulse rate source to be divided down to a reasonable pulse rate so that our tripmeters can calibrate in the normal range. Very quick and easy to fit.

Rally cars competing on loose surfaces use a lot of wheel spin at the driven wheels. This scenario dictates that an accurate tripmeter will need to pick up from a non-driven wheel using the **BR2A wheel sensor**. There is an expectation that this type of sensor will not have a long life due to heat from brakes and flying debris damage.

Customers may wish to fit a backup sensor (possibly of a different type, or maybe the same type fitted onto a different wheel) to cover for damage. The brake heat generated on competitive tarmac events would make this choice of sensor 'optimistic'.

Vehicles which can not use any of the above sensors (and particularly modern vehicles which generate pulses from ABS systems only above 7kph for their own speedometers, and also most 4wd types) should use the **BRH2** sensor fitted to a drive shaft. These are straightforward to fit, but for extreme use, care should be taken to fit them in a location which does not suffer from flying debris etc.
If the choice of sensor results in a particularly low calibration figure; the customer may wish to fit a BR52 pulse doubler in between the sensor and the tripmeter to raise the calibration figure which in turn increases the tripmeter accuracy.

Trouble-Shooting (if things aren't working properly).

INFORMATION about meters accessories and peripherals (Sensors etc) for Brantz products is available at www.brantz.co.uk
Technical support from: Brantz at Right Track Enterprises Ltd UK Tel/Fax No. 0044 (0)1625 669366.

Troubleshooting suspect sensor installations:
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.
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 which has the negative lead connected to ground, (wheel sensor voltage varies as wheel is rotated 2.0 volts to 4 volts approximately) or speedo cable sensor blue connection varies 0v to 5v as internals are 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 mis-operation 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. spark-plug 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 scrutinizing.

Fault-Finding Procedures for Brantz Products:
If a tripmeter installation is giving trouble, the recommended way to find faults is by progressively removing areas of the installation so that there is an obvious point at which things are either good or bad. The most important split is to take the customer's car out of the equation by fitting the tripmeter into another car. Often it is not necessary to fit the sensor in the replacement car; simply connect up to the new car's power supply and observe all the tripmeter functions which do not need the distance increments. If the opportunity presents itself, a sensor can be connected to the new car tripmeter installation without the sensor being fitted to the vehicle in a permanent way (i.e. just placed loose inside the car and operated by hand). Only after the above should the following become necessary. Brantz may be able to offer advice about typical car problems, but it is ultimately the car owner's responsibility to have a car with normal trouble-free electrics.

International 1 / International 2 / International 2'S' /Architect 1 / Architect 2 / Laser3/ Surveymaster

1. The meter is installed in a customer's vehicle. The meter digits light up correctly when the meter's ON/OFF switch is switched ON--GOTO4. The meter digits light up incompletely when the meter's ON/OFF switch is switched ON--GOTO13. The meter digits do not light up when the meter's ON/OFF switch is switched ON--GOTO2.

2. Disconnect the Black Power Cable coming from the base of the meter from the vehicle's supply and connect it directly to a spare charged 12 volt battery placed in the vehicle next to the meter. Observe that it is the Black cable which connects to power; Brown to +12 volts, Green/Yellow to -12 volts. Battery chargers are not a suitable power supply as they are not smoothed. There is normally a Blue wire in the Black cable. This Blue wire is not normally connected to anything. If the meter digits light up, find the problem with the vehicle's supply. Often the polarities are reversed or of poor quality. Use Screw-type connections and definitely NOT crimps. If the meter does not light up--GOTO3.

3. Check that the cables (Black and Grey) are not fractured or cut-into by bodywork. Disconnect the sensor from the Grey cable. If the meter lights up--GOTO12. If the meter does not light up--GOTO13.

4. The problem is that on the road the meter digits flash on and off--GOTO2 and 3. The problem is that the digits zero themselves from time to time GOTO3 and 7. The problem is that the digits increment themselves even when the vehicle is standing still--GOTO7. The problem is that the digits do not increment when the vehicle is travelling--GOTO5. The problem is that the meter does read distance but not accurately--too low GOTO5, too high GOTO6.

5. The meter is not seeing all of the pulses from the sensor. This could mean that the sensor is not functioning or that the meter's pulse input is damaged. Connect the negative of a voltmeter to the Green/Yellow wire inside the Grey cable (The sensor Cable). Test the Brown of the Grey cable with the other positive voltmeter lead and see that +5 volts is present. If it is not GOTO13. If it is +5 volts then test the Blue lead in the Grey cable. The voltage in this lead should go up and down as the sensor is rotated (or if a wheel type sensor its' end is touched repeatedly by a steel object. When the Blue wire is in the Low state its' voltage should be less than 2 volts. When the Blue wire is in the High state, its' voltage should be over 4 volts. Note that the meter requires that either state has to be present for more than 2 milliseconds to recognise it, (this can be a problem if the customer is using a wheel type sensor to sense on a drive shaft which rotates very quickly. The answer here is to use a larger target). If the voltage does go up and down sufficiently--GOTO6. If the voltage does not go up and down--GOTO12.

6. The meter is receiving external pulses of energy from interference sources--GOTO7 or the sensor is not reliably detecting rotation--GOTO5 and if a wheel type sensor check for correct gaps on all detected targets and also check that socket head screws are not being detected. Check wheel sensor operation with a voltmeter whilst it is connected to the tripmeter. Voltages should be about 4.0v when sensor is near to metal and about 2.0 volts when not near metal. Remember that gaps can alter whilst the vehicle is being driven due to vehicle parts bending and flexing.

7. Test for interference. This is particularly common when home-made HT sparkplug leads have been used, but can come from damaged alternators or fuel pumps/horn/wipers etc. If interference is present it is always too powerful to defend against and should be fixed at source by suppressors or new silicon leads etc. Take a portable radio, select the AM band (important) and tune into a quiet spot between stations. Turn up the volume and start the vehicle. Listen for loud clicks. That's interference. Compare the vehicle with a normal road car as a guide to what is acceptable. Try other vehicle accessories to locate intermittent sources of trouble.

8. &12. The sensor is damaged. Replace and install new unit with best chance of survival against heat and shock etc. Use first class connections.

13. The meter's internal circuit is damaged so the meter and sensor must be returned to the factory for service or replacement. Installation tips: On receipt of a tripmeter test it on the bench with a charged battery (NOT a battery charger as the current is not smoothed) and its' sensor connected. Before installing into a vehicle, do the vehicle interference checks as in 7) and operate other car accessories to see if any of them produce interference type clicks etc.. Always derive 12volt power AND the ground lead DIRECTLY from the two battery TERMINALS. Use screw connections (NEVER use crimp connections. These are almost always loose and account for the vast majority of unreliable customer installations). Support cables at terminal entry points to prevent them from pulling on connectors.

Laser 3

See the general information for International tripmeters as above document. Additional facilities exist in the Laser 3 which could give the appearance of faults, but are due to mis-operation of the additional facilities:

A/ Wheel sensor does not work with the Laser3 though other sensors do. There is an internal switch in the centre of the circuit board (Remove the back cover to see it) marked PULL-UP. Switch should normally be ON. (The facility to switch OFF provides for a high impedance input which can connect directly to the digital Electronic speedometer pulse supply of some vehicles without using a Pre-scaling Interface Board.

B/ The Radio Remote control does not zero readouts. The internal switch adjacent to the one described above disables the Laser's radio receiver in the OFF position.

C/ Hard-wired remote button lights the –dist button. Menu has set the RR input terminal to –dist (Reversing-light detector) instead of 'TRIP' zeroing. This one connection can be used as either function.

D/ Fuel gauge does not calibrate. Check the fuel sender on your vehicle is generating a compatible signal. If the tank sender is connected to the vehicle's own level gauge (ie volts-on) check with a voltmeter that when empty the signal wire is reading several volts positive with respect to chassis, and when it is full, the signal wire reads a much lower voltage (probably less than one volt).

If the tank sender is not connected to the rest of the vehicle, check that the sender resistance is more that 60 ohms to chassis when empty, and less than 10 ohms to chassis when full. Parameters outside the above cannot be reliably read by the Laser 3.

E/ Time of day is lost when Laser3 is disconnected from the power source. Internal backup battery needs to be changed.

Retrotrip 2 and Retrotrip 3

Carefully read the TROUBLESHOOTING documents to reduce to a minimum the shortcomings of the old technology which is the basis of the retrospective design.

Testing a RetroTrip on the workshop bench:

Connect the power cable (black sheath) to a 12 volt battery, brown to +12 volts, green/yellow to -12 volts. Note that testing can NOT be done reliably when connected to a battery charger, as the current is not smoothed. If the Retrotrip has customer-installed connectors, especially crimp types, push & pull these gently, then firmly, to check tightness. Solder them in place wherever possible.

Test (1) Switch on the Retrotrip. Observe the top lights go on. Switch off.

Test (2) (Optional test for dealers with Brantz test equipment. Others go straight to test 3) Put the Retrotrip calibration switches (some may be pen-push types) to 555. Connect the grey cable to a Brantz 'Rolling Road Tester' taking care to connect the right colours. Zero the two readouts. Switch on the Retrotrip. Note the two counters click over together. Change the calibration figures (there is a limit as to how fast the counters can go, so the calibration figure cannot be too low. Switch off the Retrotrip. Remove the 'Rolling Road Tester'.

Test (3) Connect a sensor to the grey cable carefully observing the colour codes (see the sensor information sheet). Select a low calibration figure. Switch on the Retrotrip. Rotate the sensor mechanism (or for a wheel sensor touch a steel object onto the tip of the sensor many times). See the counters click over.

Self Test Facility for more recent models of Retro (AUG 2001):

Connect the Retrotrip to a charged battery supply (sensor is not needed). Put the rotary calibration switches to 000 / 000. Turn on the power. Within eight seconds of turning the power on, change all the calibration switches to 888 / 888. After a few seconds the counters will start to self-step themselves in groups of eight for as long as the power remains connected. This enables the simulation of great distances on the bench. If all the above functions are correct then any problem is likely to be with the car and/or the installation. See the trouble-shooting tips on the sensor sheet and MOST IMPORTANTLY - try the meter on another car. Derive power directly from the battery TERMINALS not the chassis or fuse panel. This is the single most important installation recommendation, and it is the one most resisted by customers as it is frequently inconvenient. Low battery voltage at the trip will cause trouble (see recommended power conditioner below). **Popular problems are:** Reversed power, loose crimp type connectors, even more loose connectors, battery under voltage, poor quality wiring with still more loose connectors, and earthing derived from chassis instead of battery, radio interference from HT spark plugs / pumps / horn / wipers / dynamo / alternator etc. See the sensor sheet for a very simple interference test. N.B. PREVENT

VIBRATION! - Excessive vibration can cause one counter to disagree with the other as can poor power supplies. Remember that the counter technology of the Retrotrip is necessarily over fifty years old and today's expectation of perfect performance is a little harder to achieve. Older cars with 6 volt electrics or poorly performing or less reliably performing 12 volts charger systems should use a BRANTZ POWER CONDITIONER which will always produce a correct voltage source for the Retrotrip. If any of the above recommendations have been followed, please make a list of them with your observations, and have that list to hand before calling a technical helpline. Detailed operating and installation information is available on www.brantz.co.uk or www.retrotrip.net

If you are experiencing difficulties with your Retrotrip installation:
In order that we can help you, please complete the following tests and indicate every item as 'good' or explain the observation if not good. Fax back to us on 0044 (0) 1625 669366 or Email: sales@brantz.co.uk and we will respond.

Test 1) Check to see if battery is 12volt or 6volt. If 12 volt go to test 2. If 6 volt test the Retrotrip from a temporary 12 volt battery connected only to the Retrotrip. Observation:

Test 2) Check to see that Power is derived directly from the TWO battery terminals not fuse panel etc or chassis.
Indicate 'Good' or observation:

Test 3) If the Retrotrip has customer-installed connectors, especially crimp types, push & pull these gently, then firmly, to check tightness. Solder them in place wherever possible or use screw-type connectors. Indicate 'Good' if not crimp type or observation:

Test 4) Test for interference. This is particularly common when home-made HT sparkplug leads have been used, but can come from damaged alternators or fuel pumps/horn/wipers etc. If interference is present it is always too powerful to defend against and should be fixed at source by suppressors or new silicon leads etc. Take a portable radio, select the AM band (important) and tune into a quiet spot between stations. Turn up the volume and start the vehicle. Listen for loud clicks. That's interference. Compare the vehicle with a normal road car as a guide to what is acceptable. Try other vehicle accessories to locate intermittent sources of trouble. Indicate 'Good' or observation:

Test 5) SELF TEST FACILITY FOR MORE RECENT MODELS (May 1999 onwards): Connect the Retrotrip to a charged battery supply (sensor is not needed). Put the rotary calibration switches to 000. Turn on the power. Within eight seconds of turning the power on (Important / less than 8 seconds is not a very long time!!!), change all the calibration switches to 888. After a few seconds the counters will start to self-step themselves in groups of eight for as long as the power remains connected. This enables the simulation of great distances on the bench. If all the above functions are correct then any problem is likely to be with the car and/or the installation. Indicate 'Good' or observation:

Test 6) If test 5 fails, connect the Retrotrip power wires directly to a spare 12volt battery which is not connected to your car. Repeat test 5. Indicate 'Good' on spare or observation:

Test 7) Connect a sensor to the grey cable carefully observing the colour codes (see the sensor information sheet). Select calibration figure(s) 009. Switch on the Retrotrip. Rotate the sensor mechanism (or for a wheel sensor touch a steel object onto the tip of the sensor many times). See the counters click over. Indicate 'Good' or observation:

Test 8)If all the above tests are 'Good' Try the meter on another car. Indicate 'Good' on the other car, or observation:

Note that testing can not be done reliably when connected to a battery charger, as the current is not smoothed.

Rallytimer 32.

In order that we can help you, please complete the following tests and indicate every item as ‘good’ or explain the observation if not good.

Fax back to us on 0044 (0) 1625669366 or email sales@brantz.co.uk and we will respond.

Test 1) Check to see if battery is 12volt or 6volt. If 12 volt go to test 2. If 6 volt test the RallyTimer from a temporary 12 volt battery connected only to the RallyTimer.

Observation:

Test 2) Check to see that Power is derived directly from the TWO battery terminals not fuse panel etc or chassis. Note Brown is positive, Green/Yellow is negative.

Indicate ‘Good’ or observation:

Test 3) If the Rallytimer has customer-installed connectors, especially crimp types, push & pull these gently, then firmly, to check tightness. Solder them in place wherever they occur or use screw-type connectors.

Indicate ‘Good’ if not crimp type or observation:

Test 4) Test for interference. This is particularly common when home-made HT sparkplug leads have been used, but can come from damaged alternators or fuel pumps/horn/wipers etc. If interference is present it is always too powerful to defend against and should be fixed at source by suppressors or new silicon leads etc. Take a portable radio, select the AM band (important) and tune into a quiet spot between stations. Turn up the volume and start the vehicle. Listen for loud clicks. That’s interference. Compare the vehicle with a normal road car as a guide to what is acceptable. Try other vehicle accessories to locate intermittent sources of trouble.

Indicate ‘Good’ or observation:

Test 5) Connect the Rallytimer power wires directly to a spare 12volt battery which is not connected to your car.

Indicate ‘Good’ on spare or observation:

Test 6) If all the above tests are ‘Good’ but the instrument still misbehaves, try the meter temporarily connected up in another car. Indicate ‘Good’ on the other car, or observation:

Test 7) Re-initialize the clock by disconnecting from power. Hold down the ‘C’ button and then whilst holding down ‘C’ connect the power to the clock.

Indicate ‘Good’ or observation:

Note that testing can not be done reliably when connected to a battery charger, as the current is not smoothed.

Current Price List

		RRP
BRANTZ Competition Tripmeters		
International 1 Pro	BR13	£105.84
International 2 Pro	BR6	£141.12
International 2 'S' Pro	BR7	£174.19
Laser 3	BR34	£219.94
Hard-wired Remote Zero	BR44	£11.02
Retrospective Historic Rallymeters		
Retrotrip2 Classique	BR9C	£247.59
Retrotrip2 Mulsanne	BR9M	£267.59
Retrotrip3 Classique	BR10C	£327.70
Power Conditioner (for 6volts or Dynamo 12volts)	BR21	£31.97
Sensors		
Universal Speedo Cable.	BR1	£23.70
Universal Wheel Cable (M12 dia)	BR2A	£23.70
Japanese M22 Gearbox	BR3	£23.70
Japanese M22 Gearbox (High Grade)	BR3HG	£34.47
Ford / GM M18 Gearbox	BR4	£29.40
Drive Shaft Sensor	BRH2	£66.00
Sensor Pulse Doubler (For increased calib accuracy)	BR52	£52.00
Dividing Prescaler Interface (For electronic pulse sources)	BR5	£46.00
Accessories		
Rally Timer 32(Clock/Stopw.) (with 12 month backup battery)	BR32	£99.00
Speed Table (Average Speed Calculator + Marshalling Clock)	BR19(5A)	£156.00
Speed Table (Average Speed Calculator + Marshalling Clock)	BR19(9A)	£146.00
Marshalling Clock...(Special Order)	BR42	TBA
Plug Kit for Tripmeters	BR43	£19.84
Wiring Kit for Laser 3 (inc Sensor Cable + Mounting accessories)	BR341	£11.02
Wiring Kit Plus for Laser 3 (above plus Power Cable & Fuse)	BR342	£14.95
Sensor Extension Cable (3M)	BR2x	£10.00
Manuals for most of the Brantz products Description... English, French, German, Spanish, Italian. On paper or CD for 'MS Word' or Adobe PDF	BR23-BR27	£7.00

All prices plus shipping, and VAT where appropriate

Contact Us:
BRANTZ at Right Track Enterprises Ltd, 34 Union Road, Macclesfield, Cheshire, SK11 7BN, UK
Tel/Fax: 0044 (0) 1625 669366
Email: sales@brantz.co.uk

BRANTZ Rallymeters