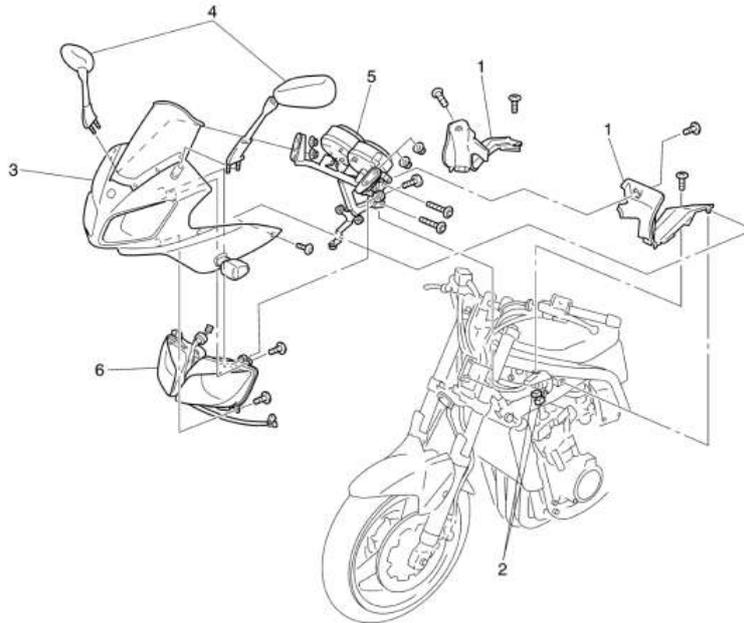
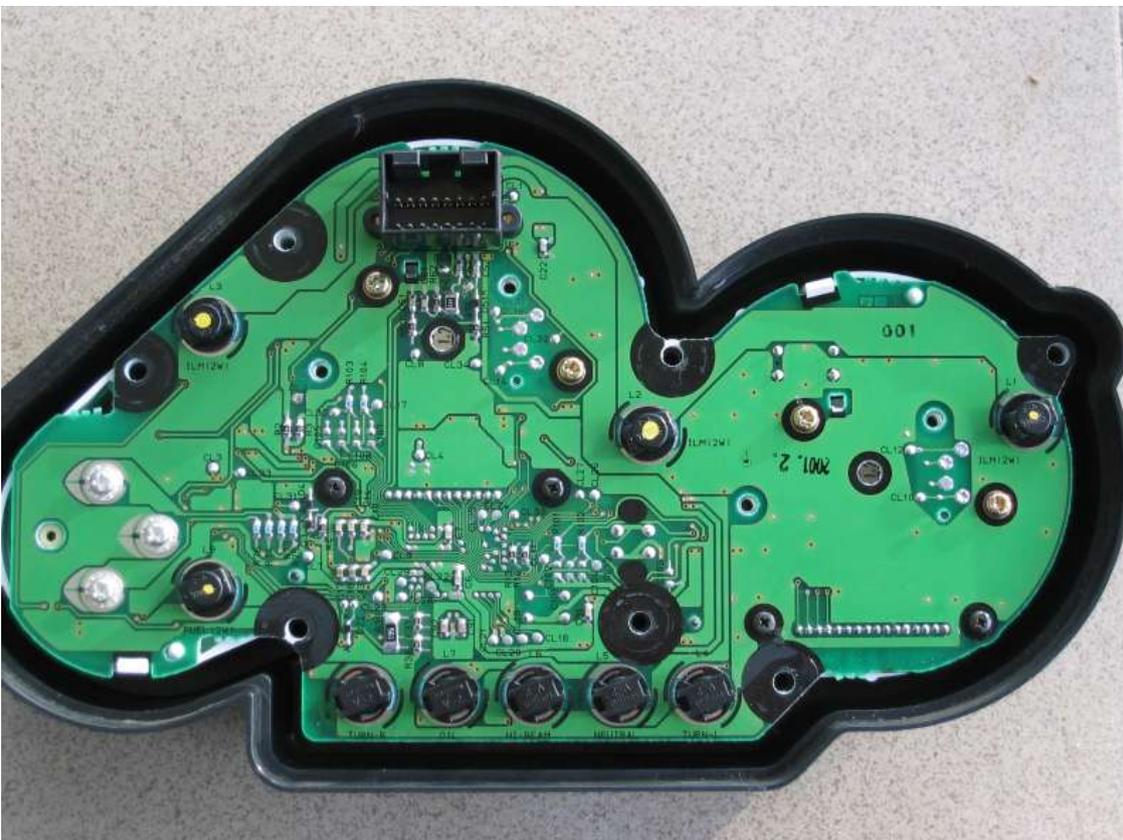


Multi-gauge installation instructions FZ1gen1/FZS1000 (2002..2005) and FZS600 (2002..2003)

- 1.) Remove windshield and inner fairings(1)
- 2.) Pull off rubber boot and unplug connector from cluster using a flat blade screwdriver
- 3.) Remove 3 nuts and washers (10 mm wrench) on the back side of cluster(5)



- 4.) Flip cluster around and open 7 screws
- 5.) Open cluster. If present, first remove rubber strips with a flat blade screw driver.



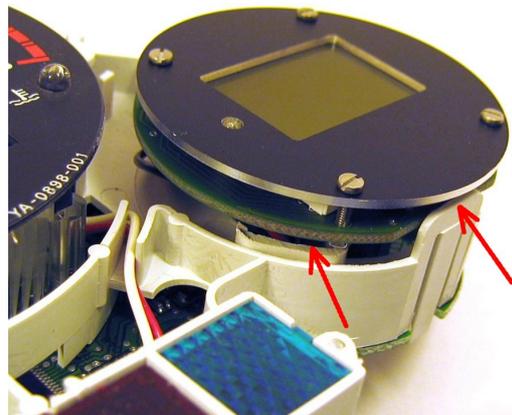
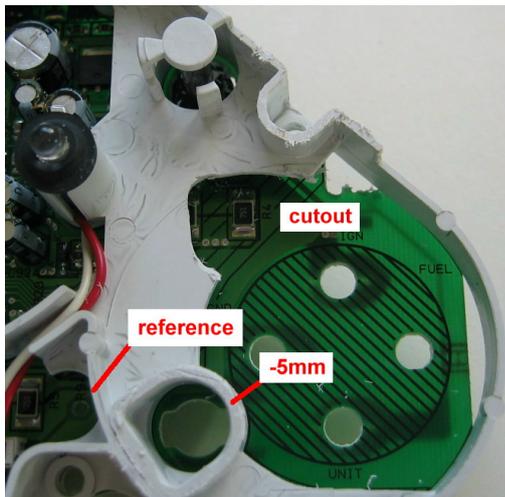
6.) Remove fuel gauge (3 screws)

7.) Pull off fuel warning bulb

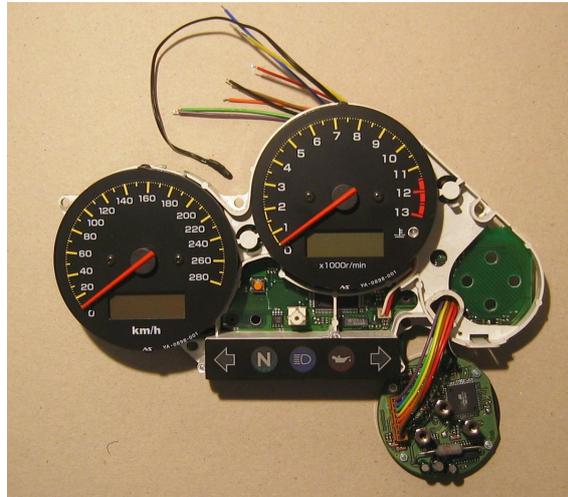
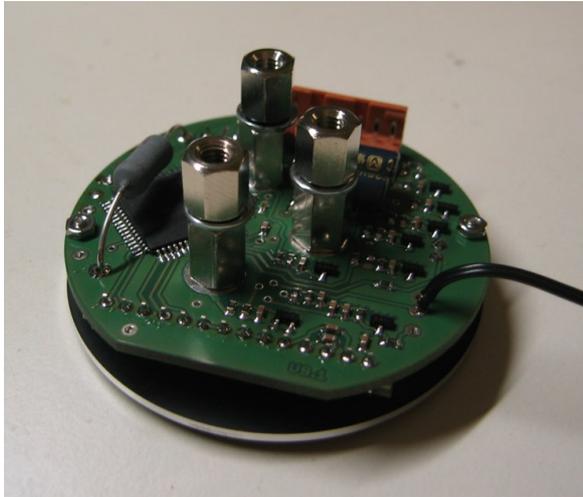
8.) Cut off the plastic tube to be at least flush with the plastic frame. Take a blade, side cutter or dremel to lower it down a few additional millimeter. Also dremel a small cutout into the flat part, beware of the electronic components below.



All this is very important to have enough clearance for the cables. The cables must not obstruct the bolts from resting flat on the green board. Otherwise the bolts might get ripped off when tightening the screws!



9.) Prepare the gauge. Mount the 3 short bolts, including washers, as shown in the picture. Be careful to not apply too much torque, just a bit more than hand-tight is enough. The washers are required to get the correct mounting height and clearance for the cables.



10.) Pull all cables through the warning-light tube/hole. Position the gauge to fit the mounting holes.

11.) Tighten the M3 screws from the back to secure the gauge. Use washers. Do not apply excessive torque! Check once again for sufficient clearance and good fit. The gauge has to rest easily on the mounting bolts and must not be forced down by the screws to get into position. Shorten the plastic tube even more in case of any doubt.

For all further steps, place the dashboard back into the upper housing. This protects the needles and surfaces from being damaged.

Now the "easy" part, soldering:

12.) Identify the proper solder spots on the cluster board, verify with the following pictures. Shorten all wires to the minimum required length, to avoid squeezing during reassembly of the housing:

Configuration:

Version 9:

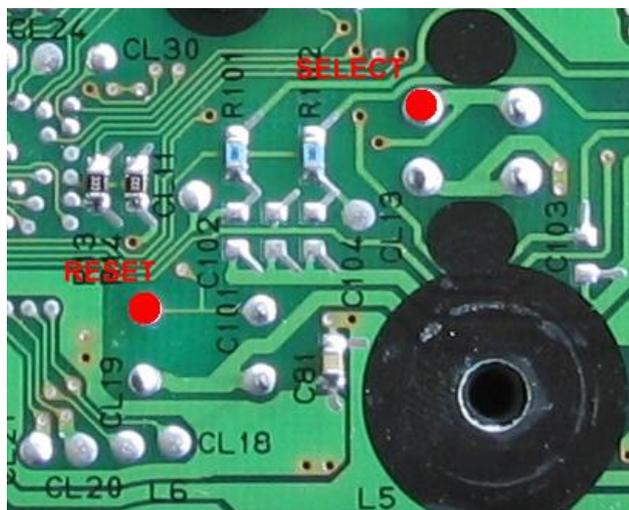
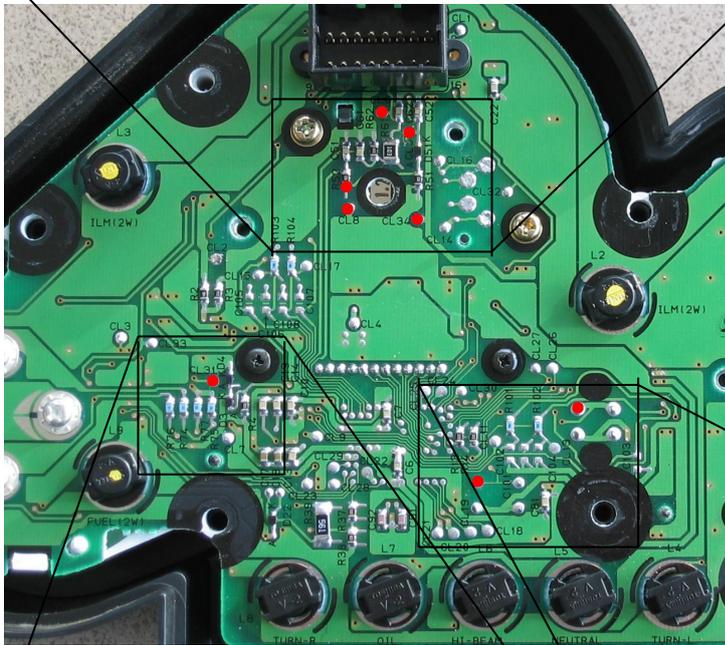
Color	Function	Solder spot
Black	RPM input	CL6
Brown	Water temperature	CL31
Red	Neutral	CL34
Orange	Speedoheater output	New resistor
Yellow	Speedo signal input	CL5
Green	Third button (option)	- (none)
Blue	Button RESET	See picture
Purple	Button SELECT	See picture

The **green** wire is not connected to the cluster board. It's an option for later. Could be connect to an additional third button, for switching viewmodes or stopwatch. Leave it open/unused for now.

The **ambient temperature sensor** is located at the end of the **black double-wire**, no soldering required. Place it anywhere outside the cluster.

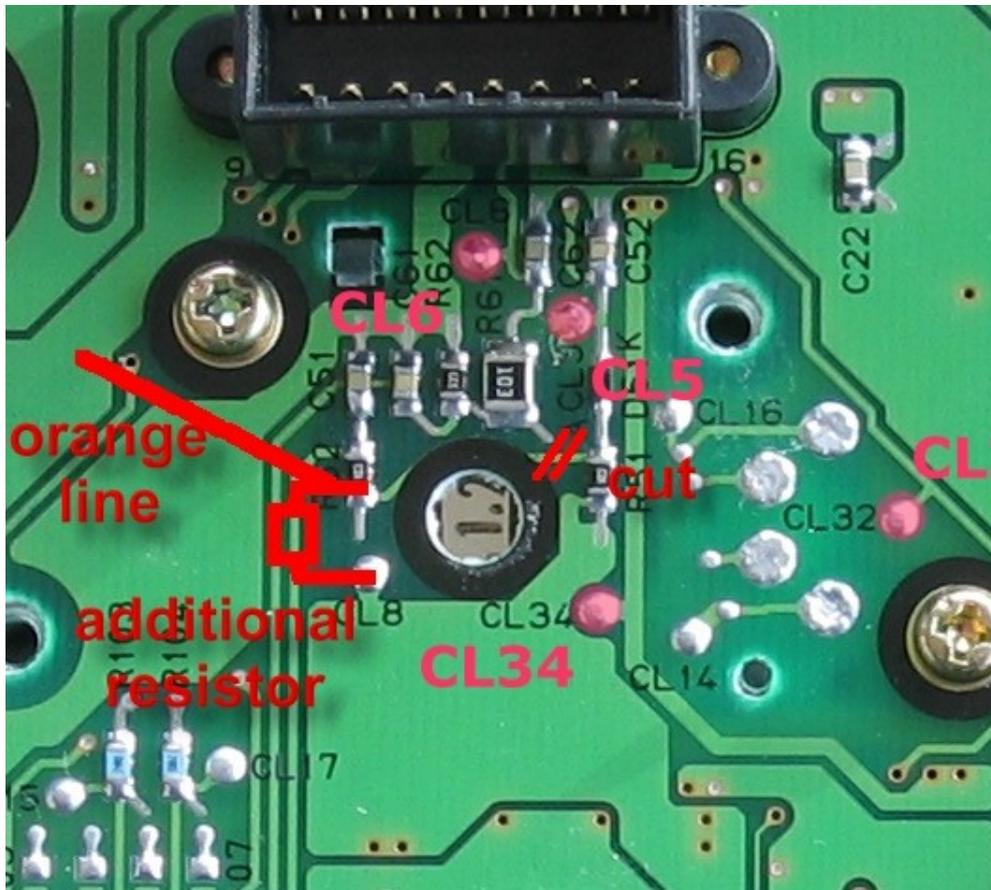


8-pin-header:	
black	-> CL6
brown	-> CL31
red	-> CL34
orange	-> (speedohealer)
yellow	-> CL5
green	-> (outside)
blue	-> RESET
purple	-> SELECT



12a.) The following modifications only have to be applied if the build-in speedo-correction functions are desired:

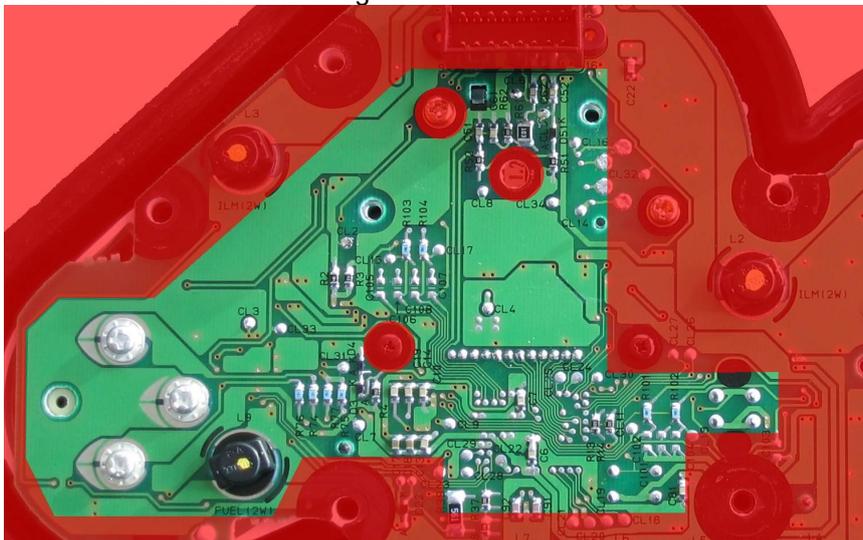
- Make a cut to the copper line on the board, this signal must be interrupted.
- Solder the additional resistor to the position shown below.
- Solder the orange wire to it.



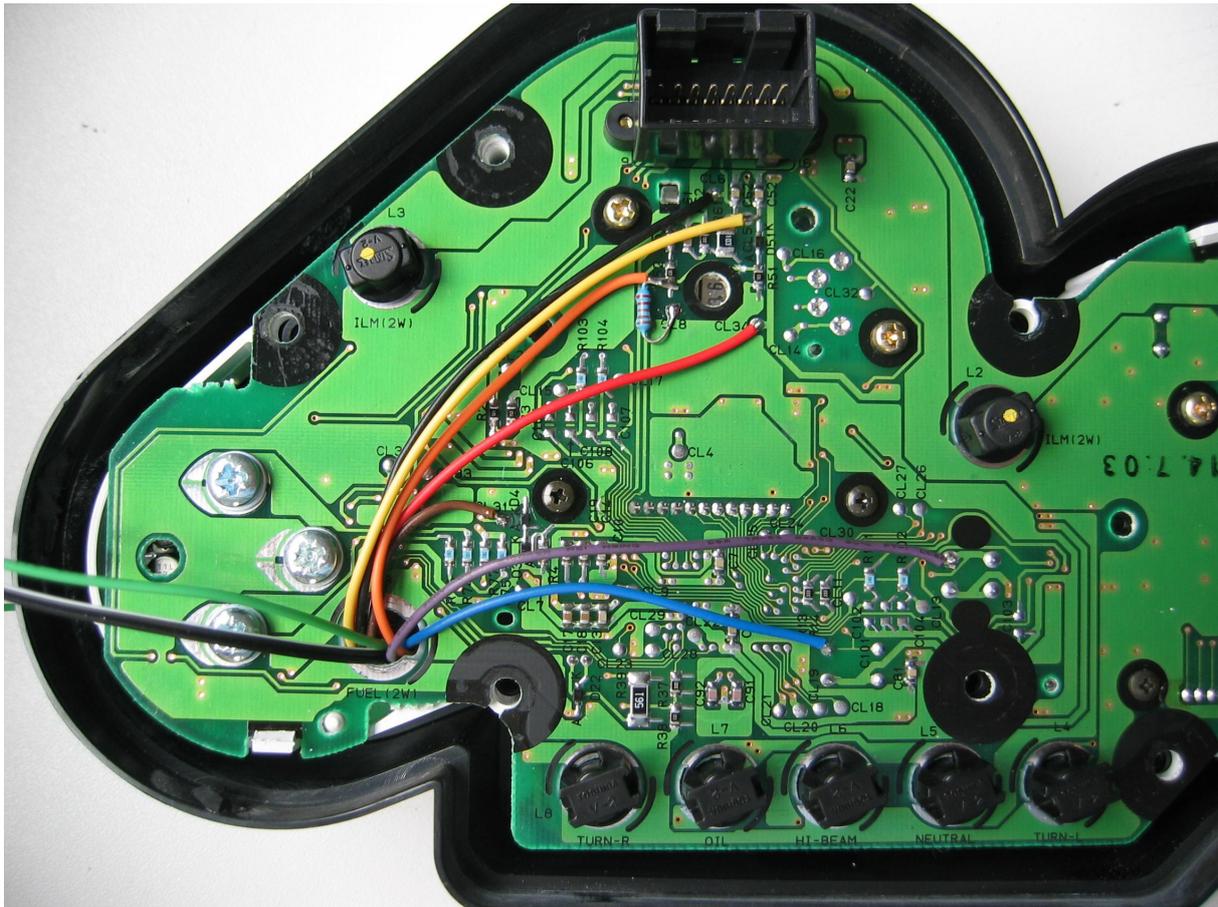
13.) Check the pictures twice to make sure that the correct solder spots have been used.

14.) Make sure the wires are not squeezed when putting the housing back on. A blob of glue might help to keep them in place.

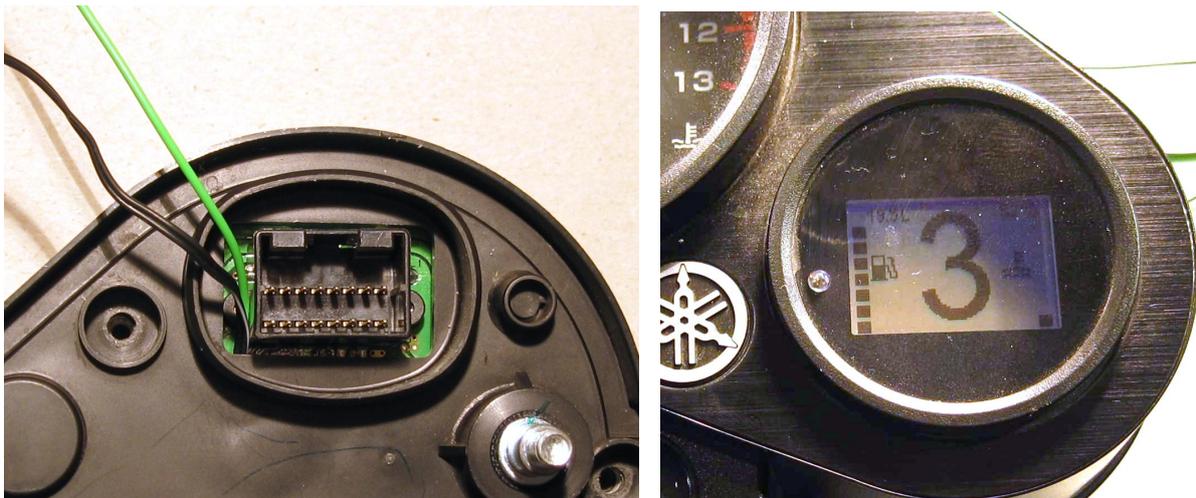
Do not route the cables in the red marked regions.



The final wiring should ideally look as follows (including speedo-healer, remember the “cut”):



15.) Route the black double-wire (ambient temperature sensor) and the green cable through the opening in the rear compartment before reassembling the cluster. Check once again the correct/horizontal alignment of the gauge in relation to the other instruments. Close the housing with 7 screws. Glue the rubber strips back on (not present on all model years).



- 16.) Connect the cluster to the harness for testing.
- 17.) Reverse points 1.) to 3.)
- 18.) Set the cluster's clock (trip counter will be lost..).
- 19.) Enjoy :)

Operation and settings

The multi-gauge is operated by using the **SELECT** and **RESET** button on the cluster.

During normal usage the **RESET** button is used to toggle between different view-modes.

To access the settings menu press and hold the **SELECT** button until the display shows the menu screen. To avoid interferences with the odometer the multi-gauge only reacts if **SELECT** is pressed for more than two seconds.

Don't get confused by the naming of the buttons, their function is not related to the naming.

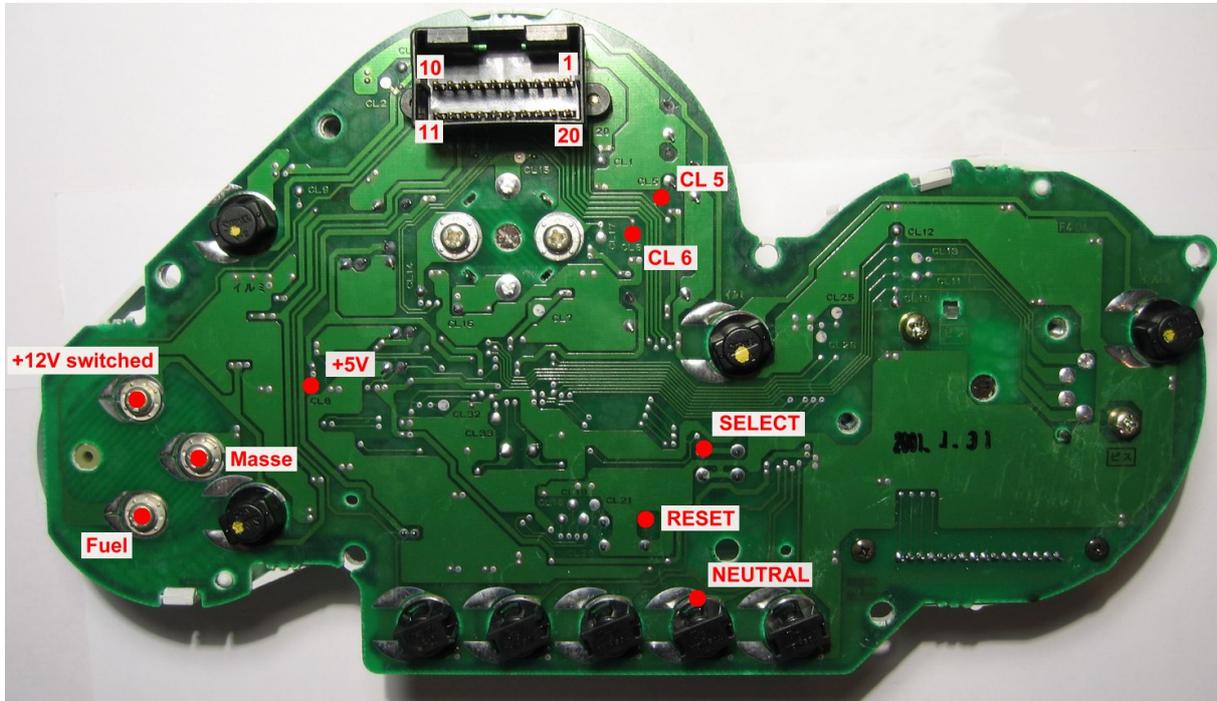
During menu operations the **SELECT** button serves to move the cursor on the screen, **RESET** is used to execute the selected action. Best practice is to keep **SELECT** pressed, release if the desired menu item is reached. The cursor runs through the items in a cycle.

A separate document with a detailed description of all functions and settings is available. Consult this document before modifying any settings.

FZS600 2000 – 2001

These cluster differ significantly from the FZ1:

- No water temperature sensor is present. Aftermarket sensors can be used instead.
- The speedo sender is located at the front wheel. Therefore applying the speedo-healer gives not much gain (and is quite tricky to be wired).
- The cockpit board has a totally different layout, the solder spots are at different locations.



Color	Function	Solder spot
Black	RPM input	CL6
Brown	Watertemperatur	See below
Red	Neutral	Near Neutral bulb
Orange	Speedohealer output	Not used
Yellow	Speedo signal input	CL5
Green	Third button (optional)	- (none, see FZ1)
Blue	Button RESET	See picture
Purple	Button SELECT	See picture

Take special care to select the correct spot for CL5, don't connect it to the nearby lead! The printing on the board is misleading. The red dot indicates the exact position. CL5 is the flat test point.

Pay special attention to NEUTRAL. The pad is quite difficult to contact. Be carefull to not shorten it with the larger nearby pad while soldering!

Sensor for water or oil temperature, FZS600

Some internal modifications inside the gauge are required! Request before ordering!

The early FZS600 models (only those before 2002!) do not provide a water-temperature sensor. But the gauge is prepared to support aftermarket sensors, preferably from KOSO. Those sensors are available in various threads and sizes for water or oil.

Koso partnumbers:

Water: BF030125-n, PT1/8 x28

Oil: BF140150-n, M14xP1.5

Extension cable, fits both sensors: BO002000

This picture shows the thermostat housing.



The **yellow** switch (single contact) controls the over-temperature warning light. It has to be replaced by the Koso water sensor. The new warning light function is provided by the gauge.

The **blue** switch (two contacts) controls the fan and should be left untouched.

Alternatively the oil drain plug could be replaced by a sensor (dimension M14 x 1,5mm). But accuracy and tracking is not the best due to its bad position and loose thermal coupling.

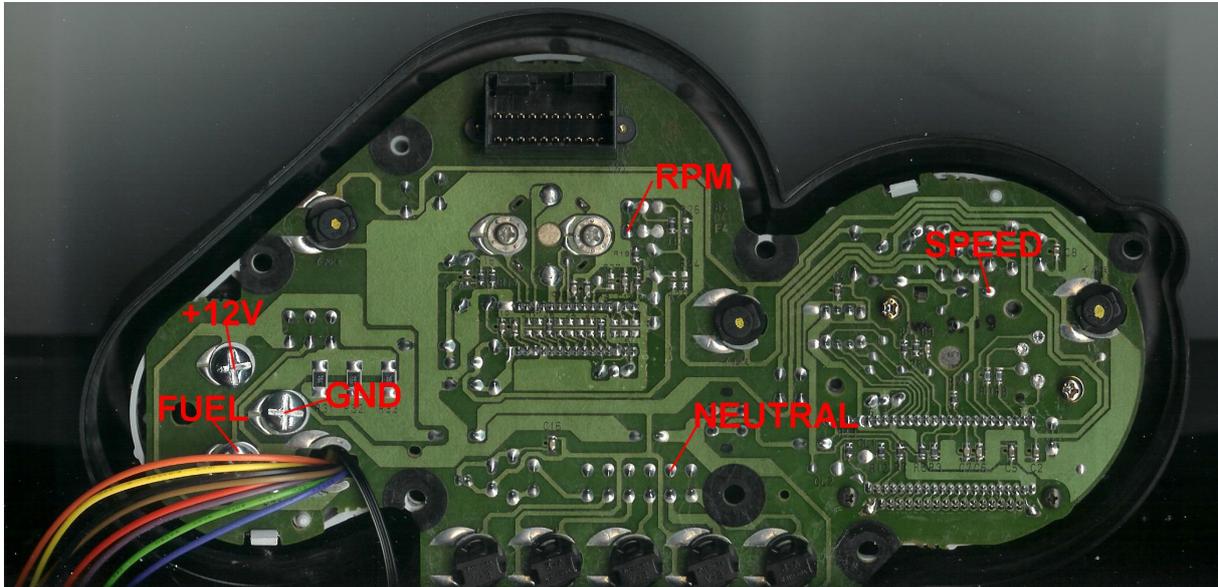
A few others sensors are also supported by the gauge

- VDO NTC 1K #10034663 (Louis Motorrad)
- VDO Type 1, 323-801-005-005D, 51 Ohm @ 90°C, available in several housing variants.
- VDO Type 2, 36 Ohm @ 120°C (= #10034663 Louis)

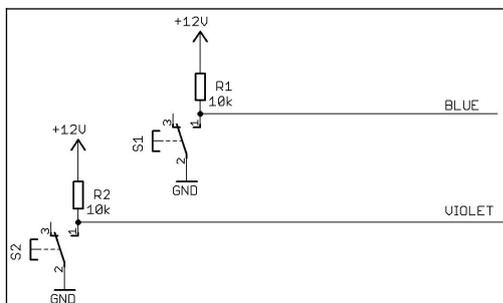
The Koso type is the preferred choice as it comes with a water-proof plug and optional cabling (recommended to be used).

FZS600 1998-1999

The same restrictions as before apply to the FZS600-1998 (water sensor is missing). In addition there is also one button missing, needed to fully control the gauge.



Solution with 2 additional buttons, the present one is not used for the gauge:



The buttons require separate pull-up resistors.

Example parts from „Conrad-Elektronik“:

- Button: #700182
- Sealed Cap: # 700506

2 of each are needed.

The 10k resistors are 0.25 or 0.125 W types.

FZS600 Model Years

The Yamaha FZS 600 model history comprises 3 different variants (to my knowledge):

Model year **1998**:



Time frame 1998 – 1999
Model Code 5DM1 / 4
Fuel 18 liter
Rectangular headlights (“box eye”)
Cockpit with only 1 button, 20-pin connector

Model year **2000**:



Time frame 2000 – 2001
Model Code 5DM7 / 8 / 9 / A / C
Fuel 20 liter
Same look as 1998
Rectangular headlights (“box eye”)
Cockpit has 2 buttons now, 20-pin connector

Model year **2002**:



Time frame 2002 – 2003
Model Code 5RT1 / 4
Fuel 22 liter
Curved headlights (“fox eye”, like FZS1000)
Cockpit with 2 buttons and clock, 16-pin connector (almost identical to FZS1000)