



## **RR 2T and X - Trainer oil injection and wiring trouble shooting guide**

## General information

1. Before performing the following diagnostic procedures, check wiring plugs and terminals for corrosion and secure connections.
2. Inspect the wiring harness for any damage.
3. Most problems that occur are usually simple in nature, always check the basics first, spark and fuel being present or not can help determine which areas to explore first.
4. To access some areas will require the removal of the seat, tank and left air box cover, please refer to the bike specific owner's manual if you need information for these procedures.

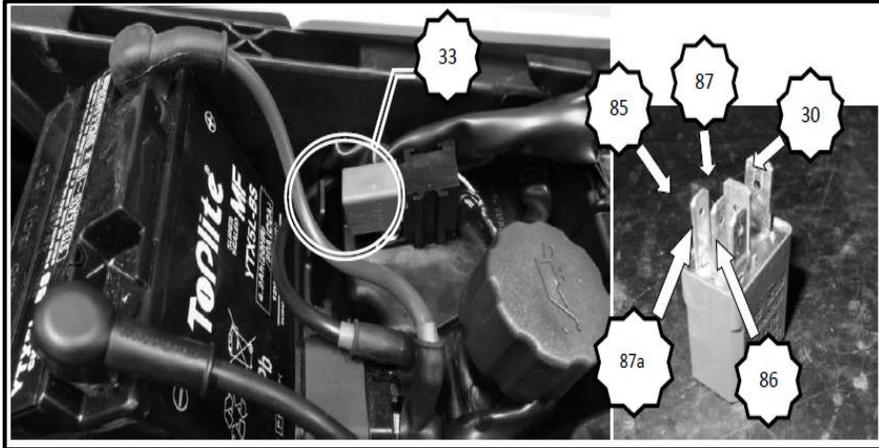
## Table of contents

	<u>Page</u>
Warning light and system diagnoses/ trouble shooting.....	2
Diagnosis relay test (15 X Trainer only) .....	3
Oil pump location and test.....	3
Oil pump volume test.....	4
Diagnoses relay test (15 X Trainer only).....	4
Oil pump control unit (15 X Trainer only).....	4
Voltage regulator.....	5
Throttle position sensor (TPS).....	5
ECU/ Coil.....	6
Stator/ Pick up.....	7
2015 X Trainer wiring diagram.....	8,9
2016 X Trainer wiring diagram.....	10,11
2017 X Trainer wiring diagram.....	12,13
2016 RR 2T Oil injected wiring diagram.....	14,15
2017 RR 2T Oil injected wiring diagram.....	16,17

## Electrical and oil injection trouble shooting

<u>Symptom and warning light</u>	<u>Suggested checks</u>	<u>Page</u>
<b>(No warning light)</b>		
Not charging -----	Voltage regulator	5
Not pumping oil -----	Diagnosis relay ( X Trainer only)	4
<b>(Flashing warning light)</b>		
No oil pumping -----	Oil pump	3,4
	TPS	5
<b>(warning light constant)</b>		
No spark -----	TPS	5
	CDI/ECU, Coil	6
No oil pumping-----	Oil pump control unit ( X Trainer only)	4
	Oil pump	3,4

## Diagnoses Relay (2015 X Trainer only)



Once the seat has been removed, remove the relay from the support and check that the resistance (pins 85 and 86) is approximately 80 Ohm.

Check pin 30 and pin 87a for continuity.

Power the relay coil (pins 85 and 86) with 12V on one terminal and ground on the other.

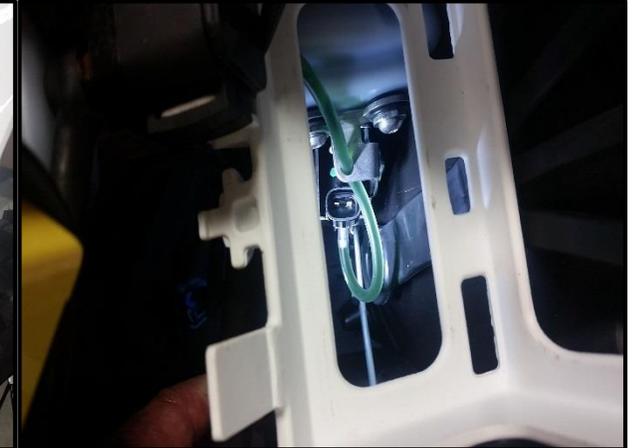
Check pins 30 and 87a are in open circuit and pins 30 and 87 have continuity.

## Oil pump location

Figure 1 (X Trainer)



Figure 2 (RR)



\*The X Trainer oil pump can be tested through the air box (Figure 1) but the RR pump can easily be tested by removing the battery strap from the battery and moving the battery and strap out of the way (Figure 2).

Test the oil pump by removing the wiring plug and checking the resistance between the 2 terminals, 19.5ohms is the correct value, replace the oil pump if you get a reading greatly different then this.

## Oil pump volume test

Step 1



\*Warning light flashing or suspected incorrect oil amount.

Oil flow verification:

Empty the fuel tank then refill with 60:1 premix.

Carefully disconnect the oil tube from the intake manifold and slide a piece of carb vent tubing over the end.

Cap off the inlet jet.

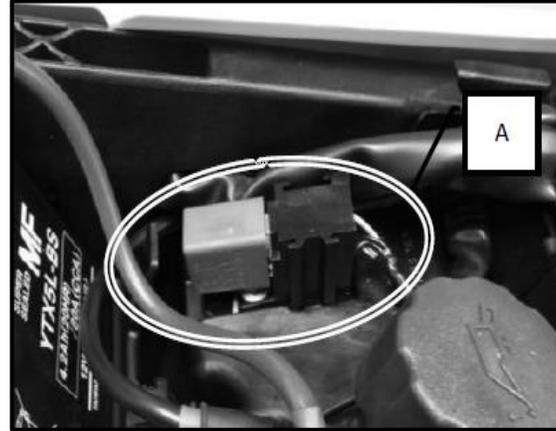
Start the bike and check the amount of oil flowing into the lengthened tubing. At idle there should be about 1" of oil flow in 90 seconds and 1" in 60 seconds revving or holding a higher RPM.

If no oil is pumping, replace the Oil pump control unit 2015 x trainer only and the oil pump on all other bikes.

\*If you have oil flow and flashing warning light , proceed to step 2 on 2015 X trainer only.

## Diagnosis Relay plug (2015 X Trainer only)

Step 2



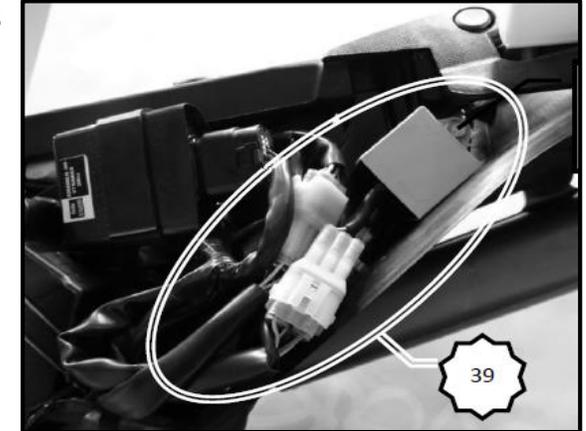
Test for voltage, one lead on the Pink-Black wire of the relay and the other lead to ground.

Start the bike and after 15 seconds, Check that there is 12v . If you see a different voltage, replace the oil pump control unit .

\*See step 3 for oil control pump unit replacement.

## Oil pump control unit (2105 X TRAINER ONLY)

Step 3

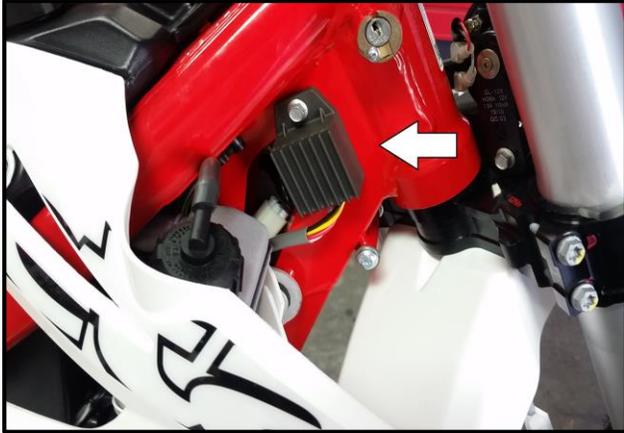


The oil pump control unit is located under the left side air box panel. The removal of the seat, air box cover and rear fender are necessary for replacement.

\*Once the unit has been replaced, test for normal oil flow and if it is corrected, drain the premix out of the tank and refill with standard fuel.

## Regulator

(same location on all bikes)



Check the voltage between the battery terminals with the bike running and with a fully charged battery, if the voltage is less than 13.5v, replace the voltage regulator.

## TPS connector (Figures 1-3) (x Trainer location)

Fig 1



Remove the fuel tank and unplug the TPS connector. Verify a resistance of 4.6 kOhm between the Blue wire and the Black wire. With throttle closed, the resistance between the Yellow wire and the Black wire at 0% throttle should be 0,6 kOhm and 3,2kOhm at 100% throttle.

## TPS connector (RR location)

Fig 2

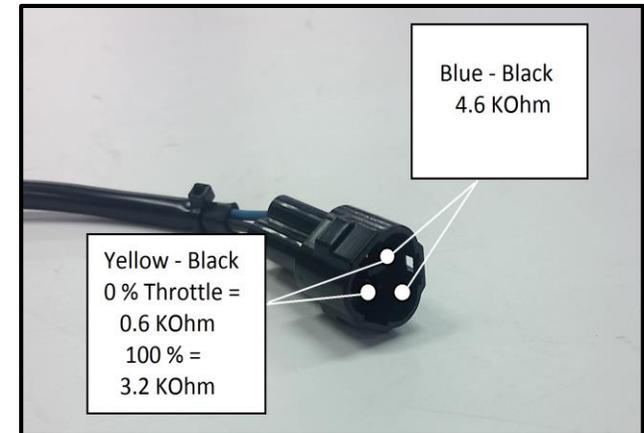


Fig 3

## CDI/ECU

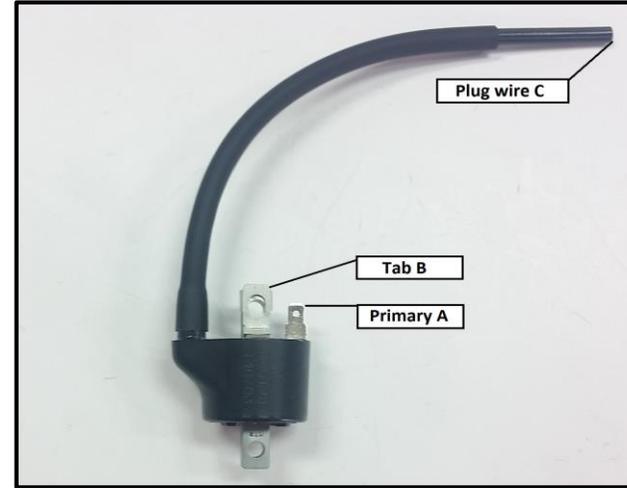
(x trainer location)



The CDI is located behind the air box cover, unplug the connector and check for damaged or oxidized pins and also look for damage to the harness.

If everything checks out ok, proceed to the coil test on this same page.

## Coil



Check that the resistance between tab (A) of the primary circuit and tab (B) is 0.60 Ohms +-20%.  
Check that the resistance between the same tab (B) and the spark plug wire end with the cap removed (C) is 13.20 +-20 %

The resistance measured between the ends of the cap should be 5.KOhms.

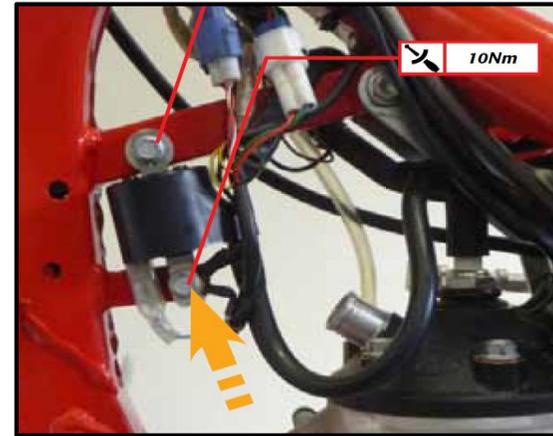
\*Replace the coil or cap if you find them to be out of spec.

## CDI/ECU

(RR location)



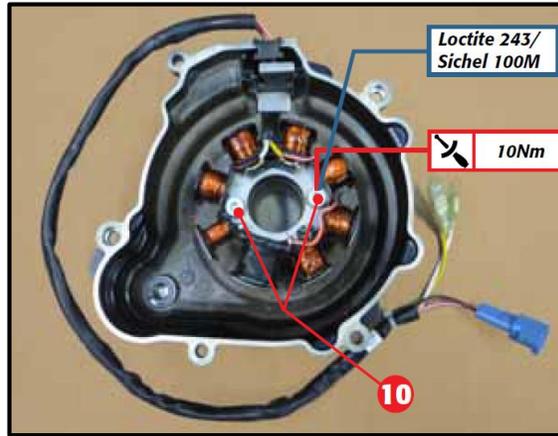
(RR location)



(x trainer location)



## Stator

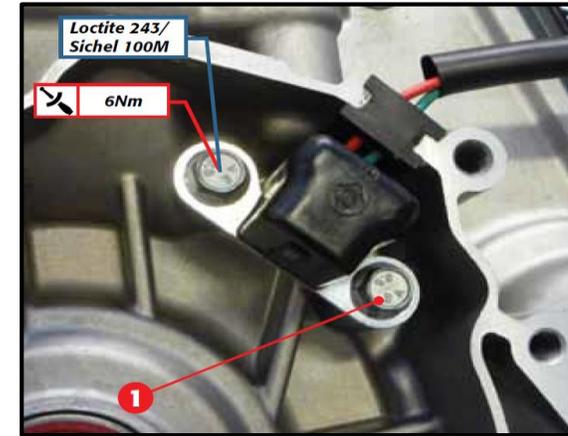


### Wire colors

### Values

<i>Red – Green</i>	<i>100Ω ± 20%</i>
<i>Red/Black – White/Red</i>	<i>14,7Ω ± 15%</i>
<i>Yellow – Mass</i>	<i>0,61Ω ± 15%</i>
<i>Yellow - White</i>	<i>0,18Ω ± 15%</i>

## Pick up

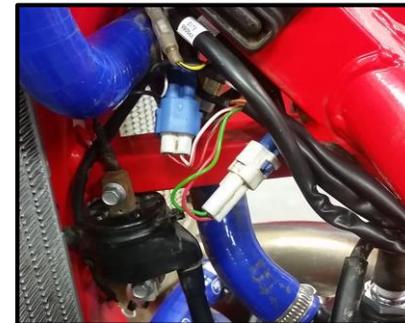


### Wire colors

### Values

<i>Red – Green</i>	<i>100Ω ± 20%</i>
--------------------	-------------------

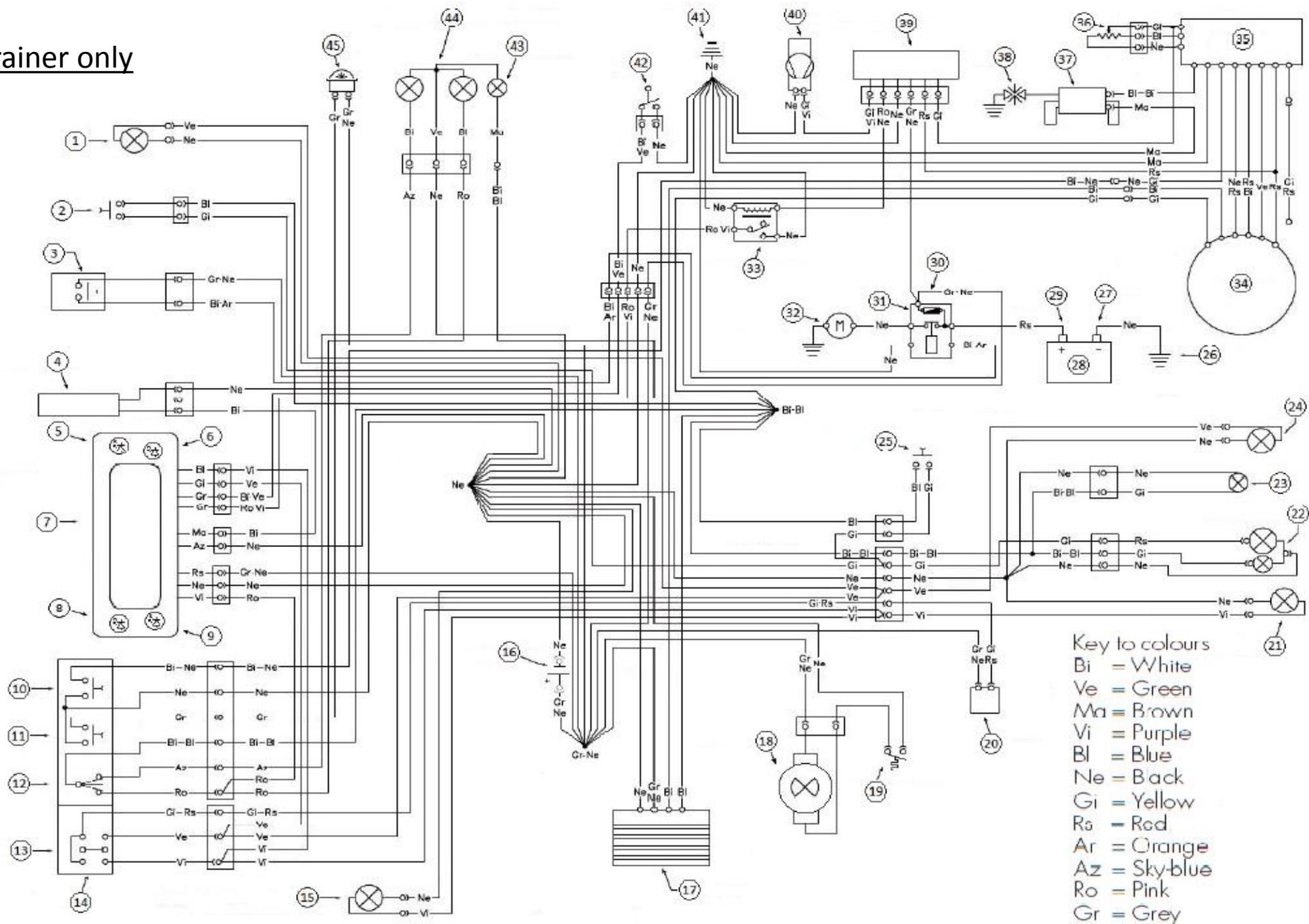
(RR location)



(XT location)



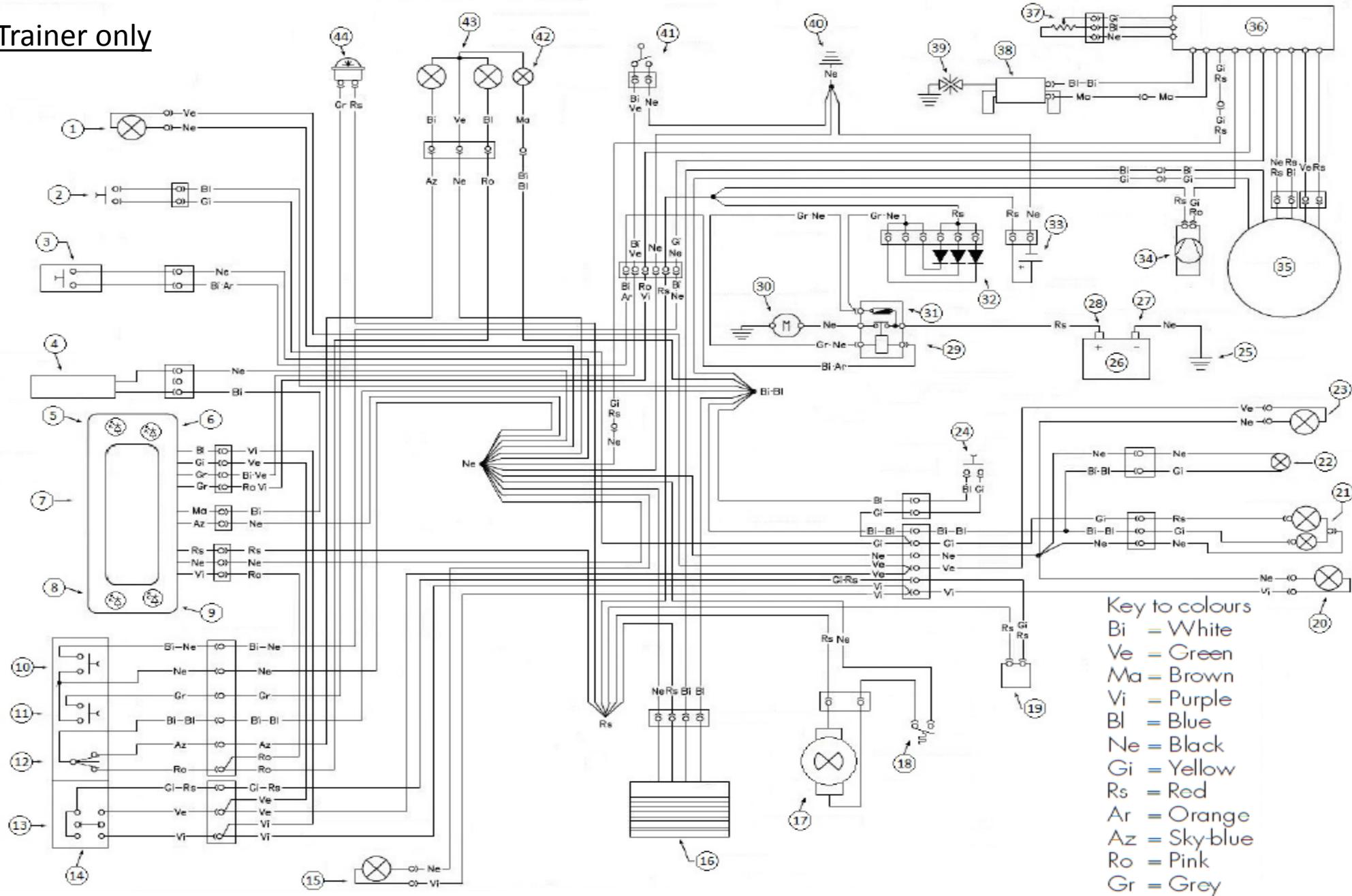
2015 X Trainer only



## 2015 X Trainer electrical diagram legend only

- |     |  |     |  |
|-----|--|-----|--|
| 1)  | RIGHT-HAND FRONT TURN INDICATOR 12V 6W     | 23) | NUMBER-PLATE LIGHT                           |
| 2)  | FRONT BRAKE LIGHT BUTTON                   | 24) | RIGHT-HAND REAR TURN INDICATOR (12V 6W BULB) |
| 3)  | START BUTTON                               | 25) | REAR STOP BUTTON                             |
| 4)  | WHEEL REVOLUTION SENSOR                    | 26) | FRAME EARTH                                  |
| 5)  | TURN INDICATORS WARNING LIGHT              | 27) | BATTERY NEGATIVE TERMINAL                    |
| 6)  | OIL RESERVE WARNING LIGHT                  | 28) | BATTERY 12V 4AH                              |
| 7)  | DASHBOARD                                  | 29) | BATTERY POSITIVE TERMINAL                    |
| 8)  | HEADLIGHT TELL TALE LAMP                   | 30) | STARTER RELAY                                |
| 9)  | MIXER DIAGNOSIS WARNING LIGHT              | 31) | 10A FUSE                                     |
| 10) | ENGINE STOP BUTTON                         | 32) | STARTER MOTOR                                |
| 11) | HORN BUTTON                                | 33) | DIAGNOSIS RELAY                              |
| 12) | HEADLIGHT SELECTOR                         | 34) | GENERATOR                                    |
| 13) | TURN SIGNAL LAMPS SWITCH                   | 35) | ELECTRONIC CONTROL UNIT                      |
| 14) | LEFTHAND CONTROL GROUP                     | 36) | TPS  |
| 15) | LEFTHAND FRONT TURN INDICATOR 12V 6W       | 37) | HT COIL                                      |
| 16) | CONDENSATOR 4700 $\mu$ F                   | 38) | SPARK PLUG                                   |
| 17) | REGULATOR                                  | 39) | OIL PUMP ELECTRONIC CONTROL UNIT             |
| 18) | ELECTRIC FAN                               | 40) | OIL PUMP                                     |
| 19) | THERMOSWITCH                               | 41) | FRAME EARTH                                  |
| 20) | UNIT TURN SIGNAL LAMPS                     | 42) | OIL RESERVE SENSOR                           |
| 21) | LEFTHAND REAR TURN INDICATOR (12V 6W BULB) | 43) | PARKING LIGHT 12V 5W                         |
| 22) | TAIL LIGHT WITH LED                        | 44) | HEADLIGHT (12V-35/35W BULB)                  |
|     |  | 45) | 12V HORN                                     |

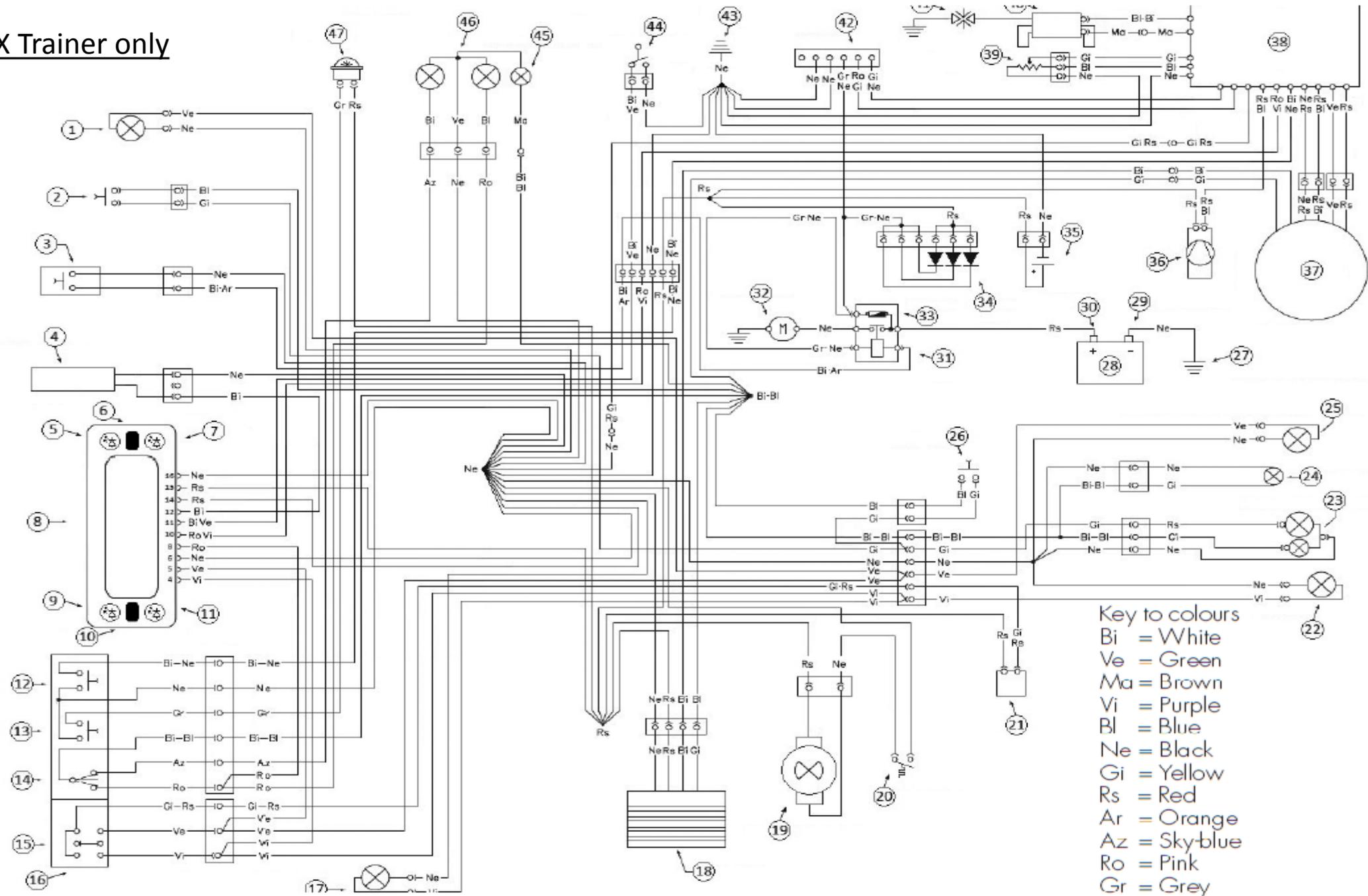
# 2016 X Trainer only



## 2016 X Trainer electrical wiring diagram legend only

- |     |   |     |  |
|-----|---|-----|--|
| 1)  | RIGHT-HAND FRONT TURN INDICATOR 12V 6W      | 23) | RIGHT-HAND REAR TURN INDICATOR (12V 6W BULB) |
| 2)  | FRONT BRAKE LIGHT BUTTON                    | 24) | REAR STOP BUTTON                             |
| 3)  | START BUTTON                                | 25) | FRAME EARTH                                  |
| 4)  | WHEEL REVOLUTION SENSOR                     | 26) | BATTERY 12V 4AH                              |
| 5)  | TURN INDICATORS WARNING LIGHT               | 27) | BATTERY NEGATIVE TERMINAL                    |
| 6)  | OIL RESERVE WARNING LIGHT                   | 28) | BATTERY POSITIVE TERMINAL                    |
| 7)  | DASHBOARD                                   | 29) | STARTER RELAY                                |
| 8)  | HEADLIGHT TELL TALE LAMP                    | 30) | STARTER MOTOR                                |
| 9)  | MIXER DIAGNOSIS WARNING LIGHT               | 31) | 10A FUSE                                     |
| 10) | ENGINE STOP BUTTON                          | 32) | CHARGER DIODES GROUP                         |
| 11) | HORN BUTTON                                 | 33) | CONDENSATOR 4700 $\mu$ F                     |
| 12) | HEADLIGHT SELECTOR                          | 34) | MIXER OIL PUMP                               |
| 13) | TURN SIGNAL LAMPS SWITCH                    | 35) | GENERATOR                                    |
| 14) | LEFT-HAND CONTROL GROUP                     | 36) | ELECTRONIC CONTROL UNIT                      |
| 15) | LEFT-HAND FRONT TURN INDICATOR 12V 6W       | 37) | TPS  |
| 16) | REGULATOR                                   | 38) | HT COIL                                      |
| 17) | ELECTRIC FAN                                | 39) | SPARK PLUG                                   |
| 18) | THERMOSWITCH                                | 40) | FRAME EARTH                                  |
| 19) | UNIT TURN SIGNAL LAMPS                      | 41) | OIL RESERVE SENSOR                           |
| 20) | LEFT-HAND REAR TURN INDICATOR (12V 6W BULB) | 42) | PARKING LIGHT 12V 5W                         |
| 21) | TAIL LIGHT WITH LED                         | 43) | HEADLIGHT (12V-35/35W BULB)                  |
| 22) | NUMBER-PLATE LIGHT                          | 44) | 12V HORN                                     |

2017 X Trainer only

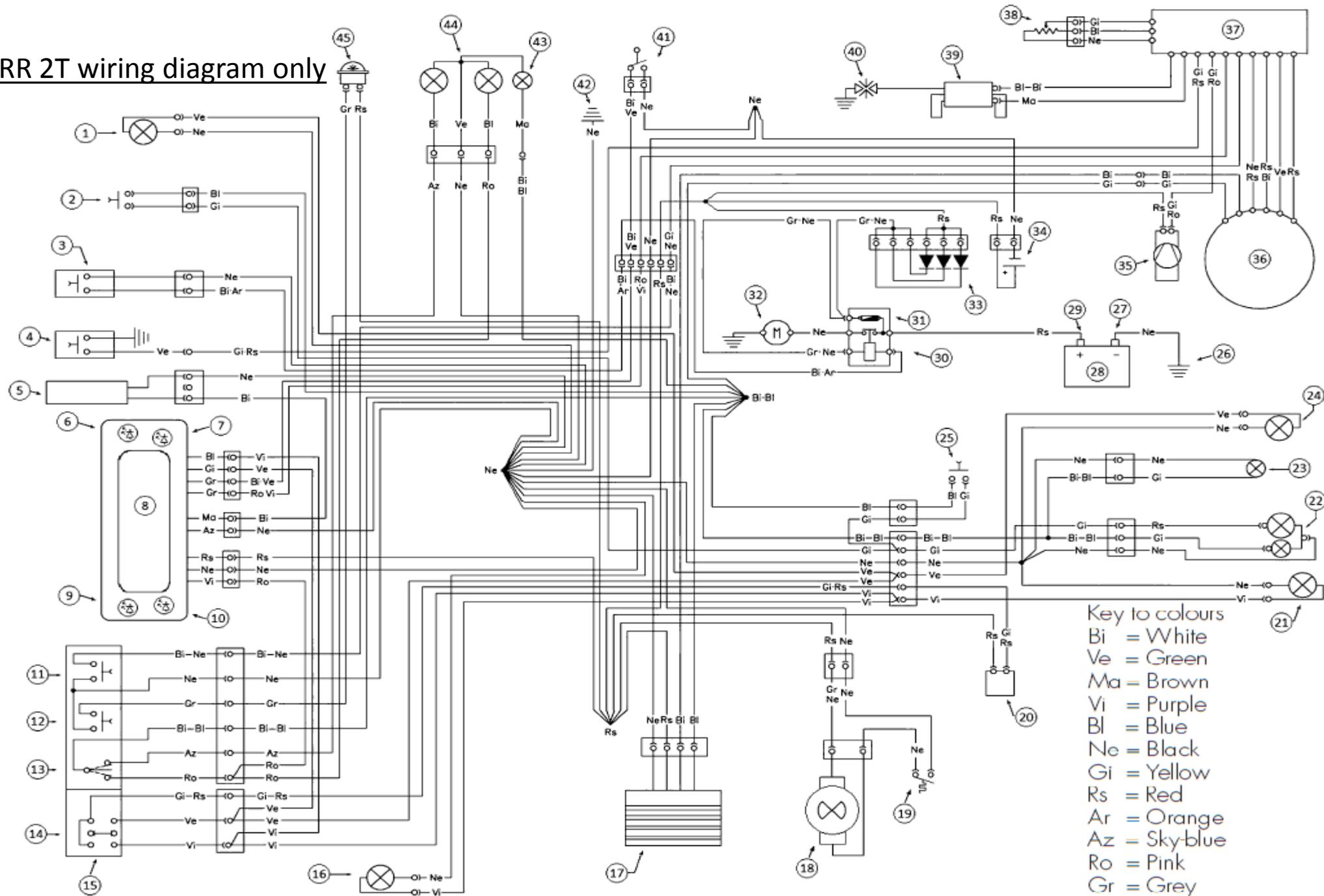


Key to colours  
 Bi = White  
 Ve = Green  
 Ma = Brown  
 Vi = Purple  
 Bl = Blue  
 Ne = Black  
 Gi = Yellow  
 Rs = Red  
 Ar = Orange  
 Az = Sky-blue  
 Ro = Pink  
 Gr = Grey

## 2017 X Trainer electrical wiring diagram legend only

- |     |  |     |  |
|-----|--|-----|--|
| 1)  | RIGHT-HAND FRONT TURN INDICATOR 12V 6W     | 24) | NUMBER-PLATE LIGHT                           |
| 2)  | FRONT BRAKE LIGHT BUTTON                   | 25) | RIGHT-HAND REAR TURN INDICATOR (12V 6W BULB) |
| 3)  | START BUTTON                               | 26) | REAR STOP BUTTON                             |
| 4)  | WHEEL REVOLUTION SENSOR                    | 27) | FRAME EARTH                                  |
| 5)  | TURN INDICATORS WARNING LIGHT              | 28) | BATTERY 12V 9AH                              |
| 6)  | RIGHT BUTTON                               | 29) | BATTERY NEGATIVE TERMINAL                    |
| 7)  | OIL RESERVE WARNING LIGHT                  | 30) | BATTERY POSITIVE TERMINAL                    |
| 8)  | DASHBOARD                                  | 31) | STARTER RELAY                                |
| 9)  | HEADLIGHT TELL TALE LAMP                   | 32) | STARTER MOTOR                                |
| 10) | LEFT BUTTON                                | 33) | 10A FUSE                                     |
| 11) | MIXER DIAGNOSIS WARNING LIGHT              | 34) | RECHARGE DIODES GROUP                        |
| 12) | ENGINE STOP BUTTON                         | 35) | CONDENSATOR 4700 $\mu$ F                     |
| 13) | HORN BUTTON                                | 36) | MIXER OIL PUMP                               |
| 14) | HEADLIGHT SELECTOR                         | 37) | GENERATOR                                    |
| 15) | TURN SIGNAL LAMPS SWITCH                   | 38) | ELECTRONIC CONTROL UNIT                      |
| 16) | LEFTHAND CONTROL GROUP                     | 39) | TPS  |
| 17) | LEFTHAND FRONT TURN INDICATOR 12V 6W       | 40) | HT COIL                                      |
| 18) | REGULATOR                                  | 41) | SPARK PLUG                                   |
| 19) | ELECTRIC FAN (OPTIONAL)                    | 42) | DIAGNOSIS CONNECTOR                          |
| 20) | THERMOSWITCH                               | 43) | FRAME EARTH                                  |
| 21) | UNIT TURN SIGNAL LAMPS                     | 44) | OIL RESERVE SENSOR                           |
| 22) | LEFTHAND REAR TURN INDICATOR (12V 6W BULB) | 45) | PARKING LIGHT 12V 5W                         |
| 23) | TAIL LIGHT WITH LED                        | 46) | HEADLIGHT (12V-35/35W BULB)                  |
|     |  | 47) | 12V HORN                                     |

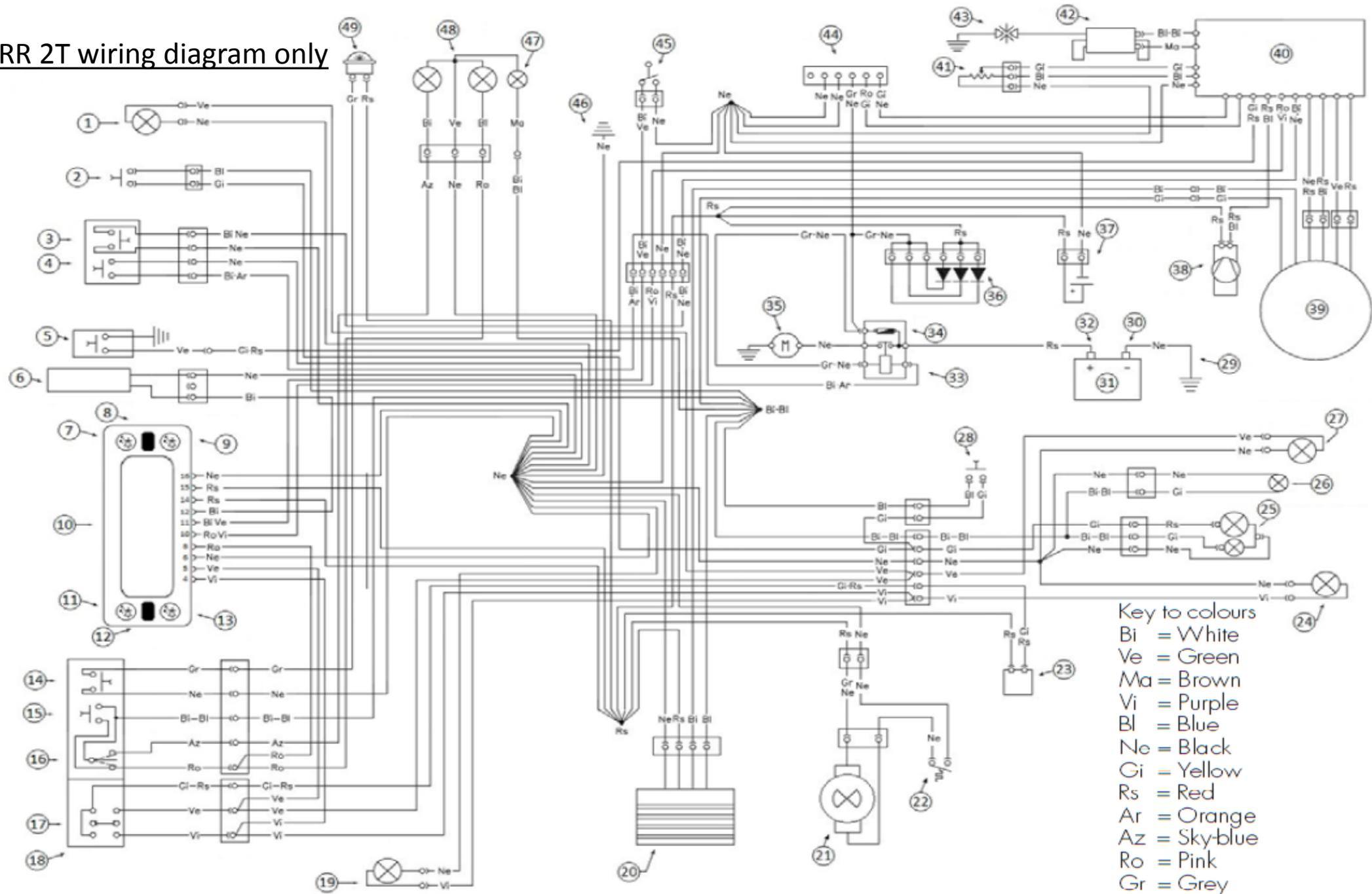
# 2016 RR 2T wiring diagram only



## 2016 RR 2T wiring diagram legend only

- |     |   |     |  |
|-----|---|-----|--|
| 1)  | RIGHT-HAND FRONT TURN INDICATOR 12V 6W      | 23) | NUMBER-PLATE LIGHT                           |
| 2)  | FRONT BRAKE LIGHT BUTTON                    | 24) | RIGHT-HAND REAR TURN INDICATOR (12V 6W BULB) |
| 3)  | START BUTTON                                | 25) | REAR STOP BUTTON                             |
| 4)  | SECOND MAP SWITCH (OPTIONAL)                | 26) | FRAME EARTH                                  |
| 5)  | WHEEL REVOLUTION SENSOR                     | 27) | BATTERY NEGATIVE TERMINAL                    |
| 6)  | TURN INDICATORS WARNING LIGHT               | 28) | BATTERY 12V 4AH                              |
| 7)  | OIL RESERVE WARNING LIGHT                   | 29) | BATTERY POSITIVE TERMINAL                    |
| 8)  | DASHBOARD                                   | 30) | STARTER RELAY                                |
| 9)  | HEADLIGHT TELL TALE LAMP                    | 31) | 10A FUSE                                     |
| 10) | MIXER DIAGNOSIS WARNING LIGHT               | 32) | STARTER MOTOR                                |
| 11) | ENGINE STOP BUTTON                          | 33) | DIODES GROUP                                 |
| 12) | HORN BUTTON                                 | 34) | CONDENSATOR 4700 $\mu$ F                     |
| 13) | HEADLIGHT SELECTOR                          | 35) | OIL PUMP                                     |
| 14) | TURN SIGNAL LAMPS SWITCH                    | 36) | GENERATOR                                    |
| 15) | LEFT-HAND CONTROL GROUP                     | 37) | ELECTRONIC CONTROL UNIT                      |
| 16) | LEFT-HAND FRONT TURN INDICATOR 12V 6W       | 38) | TPS  |
| 17) | REGULATOR                                   | 39) | HT COIL                                      |
| 18) | ELECTRIC FAN (OPTIONAL)                     | 40) | SPARK PLUG                                   |
| 19) | THERMOSWITCH                                | 41) | OIL RESERVE SENSOR                           |
| 20) | UNIT TURN SIGNAL LAMPS                      | 42) | FRAME EARTH                                  |
| 21) | LEFT-HAND REAR TURN INDICATOR (12V 6W BULB) | 43) | PARKING LIGHT 12V 5W                         |
| 22) | TAIL LIGHT WITH LED                         | 44) | HEADLIGHT (12V-35/35W BULB)                  |
|     |   | 45) | 12V HORN                                     |

2017RR 2T wiring diagram only



Key to colours  
 Bi = White  
 Ve = Green  
 Ma = Brown  
 Vi = Purple  
 Bl = Blue  
 Ne = Black  
 Gi = Yellow  
 Rs = Red  
 Ar = Orange  
 Az = Sky-blue  
 Ro = Pink  
 Gr = Grey

## 2017 RR 2Twiring diagram legend only

- |     |   |     |  |
|-----|---|-----|--|
| 1)  | RIGHT-HAND FRONT TURN INDICATOR 12V 6W      | 25) | TAIL LIGHT WITH LED                          |
| 2)  | FRONT BRAKE LIGHT BUTTON                    | 26) | NUMBER-PLATE LIGHT                           |
| 3)  | ENGINE STOP BUTTON                          | 27) | RIGHT-HAND REAR TURN INDICATOR (12V 6W BULB) |
| 4)  | START BUTTON                                | 28) | REAR STOP BUTTON                             |
| 5)  | SECOND MAP SWITCH (OPTIONAL)                | 29) | FRAME EARTH                                  |
| 6)  | WHEEL REVOLUTION SENSOR                     | 30) | BATTERY NEGATIVE TERMINAL                    |
| 7)  | TURN INDICATORS WARNING LIGHT               | 31) | BATTERY 12V 9AH                              |
| 8)  | RIGHT BUTTON                                | 32) | BATTERY POSITIVE TERMINAL                    |
| 9)  | OIL RESERVE WARNING LIGHT                   | 33) | STARTER RELAY                                |
| 10) | DASHBOARD                                   | 34) | 10A FUSE                                     |
| 11) | HEADLIGHT TELL TALE LAMP                    | 35) | STARTER MOTOR                                |
| 12) | LEFT BUTTON                                 | 36) | DIODES GROUP                                 |
| 13) | MIXER DIAGNOSIS WARNING LIGHT               | 37) | CONDENSATOR 4700 $\mu$ F                     |
| 14) | HORN BUTTON                                 | 38) | OIL PUMP                                     |
| 15) | FLASH-TO-PASS BUTTON                        | 39) | GENERATOR                                    |
| 16) | HEADLIGHT SELECTOR                          | 40) | ELECTRONIC CONTROL UNIT                      |
| 17) | TURN SIGNAL LAMPS SWITCH                    | 41) | TPS  |
| 18) | LEFT-HAND CONTROL GROUP                     | 42) | HT COIL                                      |
| 19) | LEFT-HAND FRONT TURN INDICATOR 12V 6W       | 43) | SPARK PLUG                                   |
| 20) | REGULATOR                                   | 44) | DIAGNOSIS CONNECTOR                          |
| 21) | ELECTRIC FAN (OPTIONAL)                     | 45) | OIL RESERVE SENSOR                           |
| 22) | THERMOSWITCH                                | 46) | FRAME EARTH                                  |
| 23) | UNIT TURN SIGNAL LAMPS                      | 47) | PARKING LIGHT 12V 5W                         |
| 24) | LEFT-HAND REAR TURN INDICATOR (12V 6W BULB) | 48) | HEADLIGHT (12V-35/35W BULB)                  |
|     |   | 49) | 12V HORN                                     |