

MODIFICATION TO SERVICE STATION MANUAL FOR VESPA COMMERCIAL MP, AND VESPACAR Drg. No. 153718

Notice - Except the specific instructions that we have reported in this publication, the same instructions for dismantling, overhauling and reassembly given for **Vespa Commercial MPR, 600 MPM, 600 MPV and Vespa Car** in the Manual are valid also for **Vespacar P 501, P 601, P 601 V and P 2**.

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Fig. 1 - Vespacar mod. P 501



Fig. 2 - Vespacar mod. P 601 - P 601 V



Fig. 3 - Vespacar P 2



PIAGGIO

Performance and specification

Chassis: heavy gauge steel sheet pressing; the rear portion is double box truss.

Cabin: welded to the chassis.

Seats: for two persons.

Steering column - Suspension: the steering column is pivoted on the oscillating front wheel hub. The front suspension consists of a variable rate helical spring. The rear suspension consists of rubber elastic elements with progressive characteristic.

Suspension is completed by hydraulic dampers. **The vehicle runs on gasoline (petrol) - oil mixture** (i.e. 2% Mineral Oil Esso 2-T Motor Oil 40) for the models P 501 and types with station waggon, and on pure gasoline (petrol) for the models with separate lubrication of the engine (device "LS"), models P 601, P 601 V and P 2.

Vespar mod. P 501

Consumption at cruising speed (CUNA Standard): ~ 5 l/100Km. (48 mls/U.S. galls; 57 mls/imp. galls)

Max fuel capacity: ~ 15 l. (3.96 U.S.A. galls; 3.3 imp. galls); inclusive of reserve of about 3.5 liters (0.92 U.S.A. galls; 0.77 imp. galls).

Max speed (Cuna Standard): ~ 60 Km/h (38 mph).

Radius of action: ~ 300 Km (187 mls).

Max useful load:

with open box body: 514 Kg. (1133 lbs)
with closed box body: 494 Kg. (1089 lbs).

Max overall weight: 944 Kg. (2081 lbs).

Total dry weight:

~ 360 Kg. (792 lbs) with normal open box body.
~ 380 Kg. (836 lbs) with closed box body.

Weeltrack: 1260 mm. (49.6").

Overall width: 1490 mm. (58.6).

Weel base: 1920 mm. (74.9").

Minimum turn circle: 2750 mm. (108.2").

Overall length:

2930 mm. (115.3") with open box body.
2965 mm. (116.7") with closed box body.

Max height:

1680 mm. (66.1") with open box body.
1700 mm. (66.9") with closed box body.

Wheels: interchangeable.

Rims: 3.50"

Tyres: 4.00 x 10" 6 p.r.

Tyre pressure:

1.8 Kg/cm² (25.60 p.s.i.) for front wheel.
4 Kg/cm² (58.89 p.s.i.) for rear wheels.

Engine: two stroke rotary distribution with three transfer ports. It is fitted with the gear change and differential on the rear wheel axle. One cylinder.

Bore: 63 mm. (2.48").

Stroke: 60 mm. (2.362").

Displacement: 187.035 cc. (11.413 cu. in.).

Compression ratio: 1:7.8

Spark advance: 22°±1° before T.D.C.

Sparking plug: Marelli CW 7N or Bosch W 240 T1, Champion L 81.

Carburettor: Dell'Orto SHB 27/74.

Air filter: at the inlet duct with filter cartridge made of paper.

Cartridge: AC AIRAC FLAT PACK.

Transmission ratio engine to driving wheels:

Bottom gear: 1/43.57 3rd gear: 1/13.51
2nd gear: 1/24.43 4th gear: 1/ 8.05
Reverse gear: 1/72.62

Identification data:

The identification stampings consist of a prefix MPR 2 T on the chassis, MPR 1 M on the engine, followed by a number.

Vespar mod. P 601 - P 601 V

Consumption at cruising speed (CUNA Standard): ~ 5 l./100 Km. (48 mls/U.S. galls; 57 mls/i. galls).

Gasoline (petrol) capacity: about 15 l. (3.96 U.S. galls; 3.3 imp. galls); inclus. reserve 3.5 l. (0.92 U.S. galls; 0.77 imp. galls).

Oil capacity: about 2.8 l. (0.74 U.S. galls; 0.62 imp. galls); inclus. reserve 0.75 l. (0.19 U.S. galls; 0.15 imp. galls).

Oil capacity (specific for vehicles with tip up open box body): 3 l. (0.78 U.S. galls; 0.63 imp. galls).

Max speed (CUNA Standard): ~ 60 Km/h (~ 38 mph).

Radius of action: ~ 300 Km. (~ 187 mls).

Max useful load:

With normal open box body 616 Kg. (1356 lbs).
With long open box body 606 Kg. (1335 lbs).
With closed box body 596 Kg. (1316 lbs).
With tip up open box body 597 Kg. (1318 lbs).
With station waggon carriage body 480 Kg. (1056 lbs).

Max overall weight: with open box body, closed box body, tip up open box body 1065 Kg (2343 lbs).

Max overall weight: with station waggon carriage body 950 Kg. (2090 lbs).

Total dry weight:

With normal open box body ~ 379 Kg (~ 834 lbs).
With long open box body ~ 389 Kg (~ 856 lbs).
With closed box body ~ 399 Kg (~ 878 lbs).
With tip up open box body ~ 398 Kg (~ 876 lbs).
With station waggon carriage body ~ 400 Kg (~ 880 lbs).

Wheeltrack: 1260 mm. (49.6").

Overall width: 1490 mm. (58.6").

Wheel base: 2140 mm. (84.2").

Min. turn circle: 2900 mm. (114.2").

Overall length:

With normal open box body 3150 mm. (123").
With long open box body 3390 mm. (133").
With closed box body 3175 mm. (124").
With tip up open box body 3200 mm. (125").
With station- waggon carriage body 3150 mm. (123").

Max height:

With open box body, station waggon carriage body and tip up open box body 1680 mm. (66").
With closed box body 1700 mm. (67.6").

Wheels: interchangeable.

Rims: 3.50.

Tyres: 4.50x10" 6 p.r.

Tyre pressure:

2 Kg/cm² (28.5 p.s.i.) **front wheel.**
4.5 Kg/cm² (65.9 p.s.i.) **rear wheels.**

Engine: two stroke rotary distribution with three transfer ports. It is fitted with the gear change and differential on the rear wheel axle. One cylinder.

Bore: 68 mm. (2.67").

Stroke: 60 mm. (2.362").

Displacement: 217.9 cc. (13.296 cu. in).

Compression ratio: 1:7.7.

Spark advance: 20°30' ±1°30' before T.D.C.

Sparking plug: Marelli CW7N or Bosch W 240 T1, Champion L81.

Carburettor: Dell'Orto SHB 22/17 B.

Air filter: at the inlet duct with filter cartridge made of paper.

Cartridge: AC AIRAC FLAT PACK.

Transmission ratio: engine to driving wheels:

P 601 and P 601 V, models: open box body, closed box body and tip up open box body.
Bottom gear: 1/45.55 3rd gear: 1/14.12
2nd gear: 1/25.54 4th gear: 1/ 8.41
Reverse gear: 1/75.92

P 601 and P 601 V, station waggon carriage body,
Bottom gear: 1/45.63 3rd gear: 1/14.14
2nd gear: 1/25.59 4th gear: 1/ 8.42
Reverse gear: 1/53.10

Identification data:

The identification stampings consist of a prefix MPM 2T on the frame for the model with handlebars, MPV 2T for the model with steering wheel and MPB 1M on the engine for both models, followed by a number.

For the version station waggon carriage body the stampings consist of a prefix MPM 1T and MPVC 1T on the frame and MPA 1M on the engine, followed by a number.

Notice - The features of the engine for the model station waggon carriage body, except the

transmission ratio engine to driving wheels, are like those of page 2 concerning Vespacar P 501.

Vespacar P2

Consumption at cruising speed (CUNA Standard): ~ 5 l./100 Km. (48 mls/U.S. galls; 57 mls/l. galls).

Gasoline (petrol) capacity: about 16 l. (4.16 U.S. galls; 3.36 imp. galls); inclus. reserve 3.5 l. (0.92 U.S. galls; 0.77 imp. galls).

Oil capacity: about 3 l. (0.78 U.S. galls; 0.63 imp. galls); inclus. reserve 0.75 l. (0.19 U.S. galls; 0.15 imp. galls).

Oil capacity (specific for vehicles with tip up open box body): 3 l. (0.78 U.S. galls; 0.63 imp. galls).

Max speed (CUNA Standard): ~ 60 Km/h (~ 38 mph).

Radius of action: ~ 300 Km. (~ 187 mls).

Max useful load:

With normal open box body 612 Kg. (1354 lbs).
With closed box body 551 Kg. (1212 lbs).
With tip up open box body 545 Kg. (1200 lbs).

Max overall weight: with open box body, closed box body, tip up open box body 1078 kg. (2372 lbs).

Total dry weight:

With normal open box body ~ 396 Kg. (~ 871 lbs).
With closed box body ~ 457 Kg. (~ 1005 lbs).
With tip up open box body ~ 463 Kg. (~ 1018 lbs).

Wheeltrack: 1260 mm. (49.6").

Overall width:

With open box body and tip up open box body 1450 mm. (56.5").
With closed box body 1470 mm. (57.3")

Wheel base: 2100 mm. (82.0").

Min. turn circle: 2900 mm. (114.2")

Overall length:

With open box body and closed box body 3275 mm. (128").
With tip up open box body 3305 mm. (129").

Max Height:

With open box body and tip up open box body 1480 mm. (58").
With closed box body 1700 mm. (66").

Wheels: interchangeable.

Rims: 3.50"

Tyres: 4.50x10" 6 p.r.

Tyre pressure:

2 Kg/cm² (28,5 p.s.i.) **front wheel.**
4,5 Kg/cm² (65,9 p.s.i.) **rear wheels.**

Engine: two stroke rotary distribution with three transfer ports. It is fitted with the gear change and differential on the rear wheel axle. One cylinder.

Bore: 68 mm. (2.67").

Stroke: 60 mm. (2.362").

Displacement: 217.97 cc. (13.301 cu. in).

Compression ratio: 1:7.7

Spark advance: 20°30' ±1°30' before T.D.C.

Sparking plug: Marelli CW7N or Bosch W 240 T1, Champion L 81.

Carburettor: Dell'Orto SHB 27/20.

Air filter: at the inlet duct with filter cartridge made of paper.

Cartridge: AC AIRAC FLAT PACK.

Transmission ratio engine to driving wheels:

Bottom gear 1/45.55 3rd gear 1/14.12
2nd gear 1/25.54 4th gear 1/ 8.41
Reverse gear 1/75.92

Identification data:

The identification stampings consist of a prefix (AF 1 T on the frame and AF 1 M on the engine) followed by a number.

Vehicles with device for "separate lubrication of the engine".

Vespacars Mod. **P 601, P 601 V and P 2 with separate lubrication of the engine** are provided with two separate tanks: one for petrol (gasoline) and one for oil.

Don't supply the tank for petrol (gas) with petrol - oil mixture but with normal type pure

petrol (gas) for cars. The tank for oil should be filled **with mineral oil SAE 40**, i.e. Esso 2 - T Motor Oil 40, Shell Golden Motor Oil; Shell X - 100 2T; Shell Super 2 T Motor Oil; Total 2 T; Aral 2 T and Super 2 T; Texaco 2 T; BP 2 T Special.

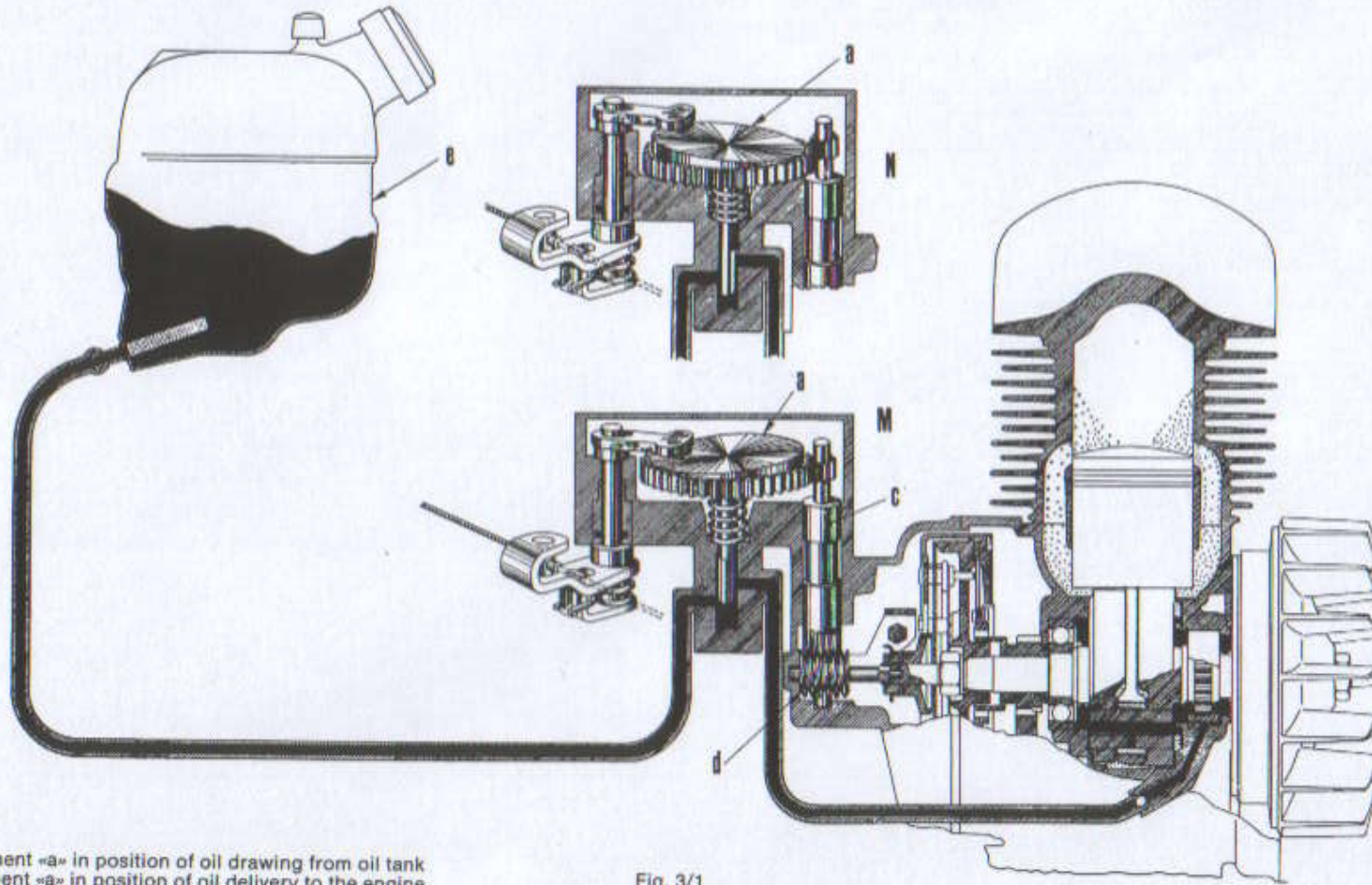
The petrol (gas) is conveyed to the carburettor by means of the normal gravity system; the oil is sprayed into the cylinder by means of a

device "LS.", composed of a piston pump with variable stroke.

The device is controlled by the crankshaft through a gear transmission.

Like the petrol (gas) tank, also the oil tank is provided with a reserve signal connected to a checking lamp (12 V - 3 W) with a red light; this lamp is placed in the cabin, on the dashboard.

Scheme of the «LS» device for separate lubrication



- M) - Pumping element «a» in position of oil drawing from oil tank
- N) - Pumping element «a» in position of oil delivery to the engine
- a) - Pumping element
- c, d) - Reduction helical gears
- e) - Oil tank

Fig. 3/1

Setting the headlamp of Vespacar P 501

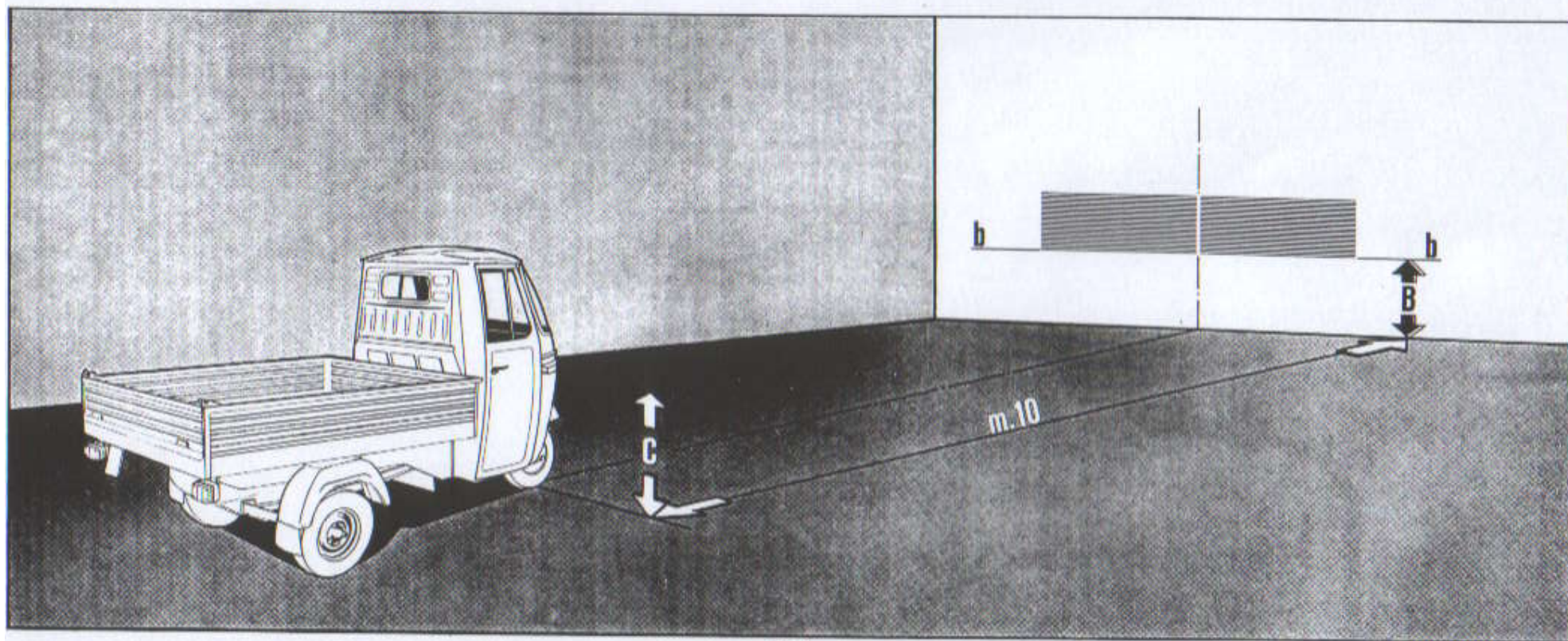


Fig. 4

Fig. 4 - Setting the headlamp:

$B = C \times 0.9$ - C = Height from the ground of headlamps center - $B = C \times 0.92$ when the setting of the headlamps is carried out with the vehicle at 5 m. (16.4 feet) from the screen.

Check the headlamp setting:

Place the unload vehicle on a level floor at 10 m.

(32.8 feet) approx from a twilight white screen (see fig. 4) and take care that the vehicle axis is perpendicular to the screen. Draw a horizontal line "b - b" whose height "B" from the ground correspond to $0.9 \times C$ (see fig. 4); with the headlamps switched on in the dipped beam position, the horizontal line of demarcation between the dark zone and the lighted one should not be above the horizontal "b - b" line.

N. B. - On the headlamp there are fitted two setting screws that allow the correction of eventual alterations of the inclination (lower screw) or of the divergence (upper screw) of the luminous beam. In order to operate on the setting screws it is necessary to first take off the outer rim of the headlamp. Before carrying out the mentioned checking, care that front and rear tyres are inflated to the pressure indicated on page 2.

Setting the headlamps of Vespacars P 601 - P 601 V - P 2

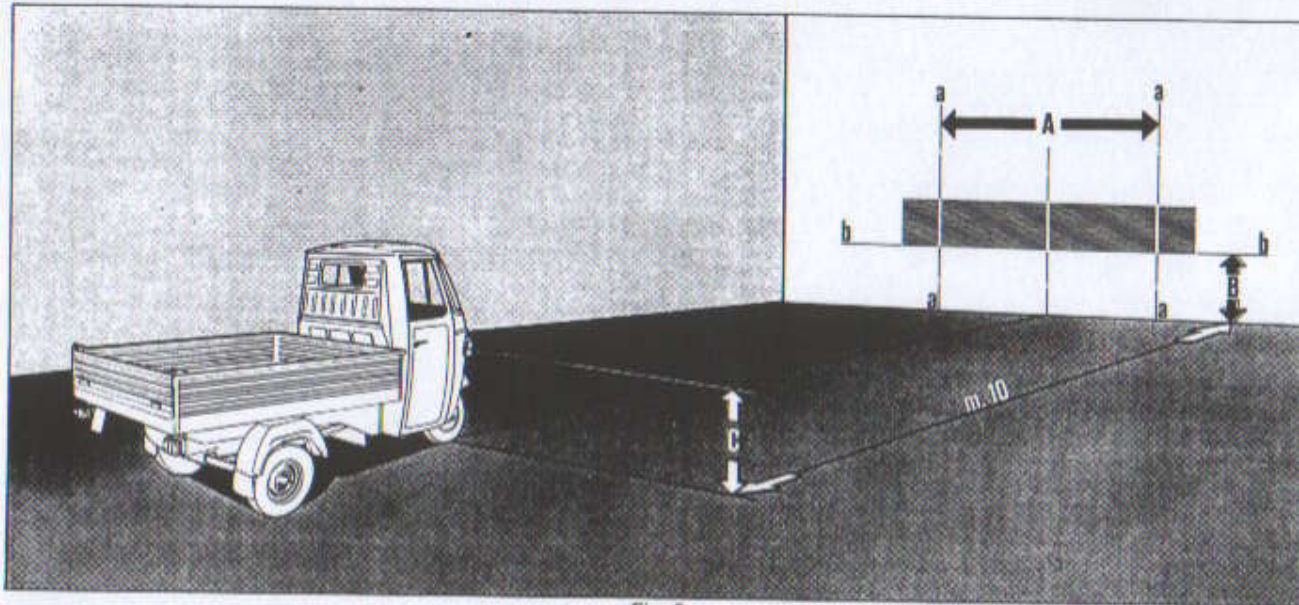


Fig. 5

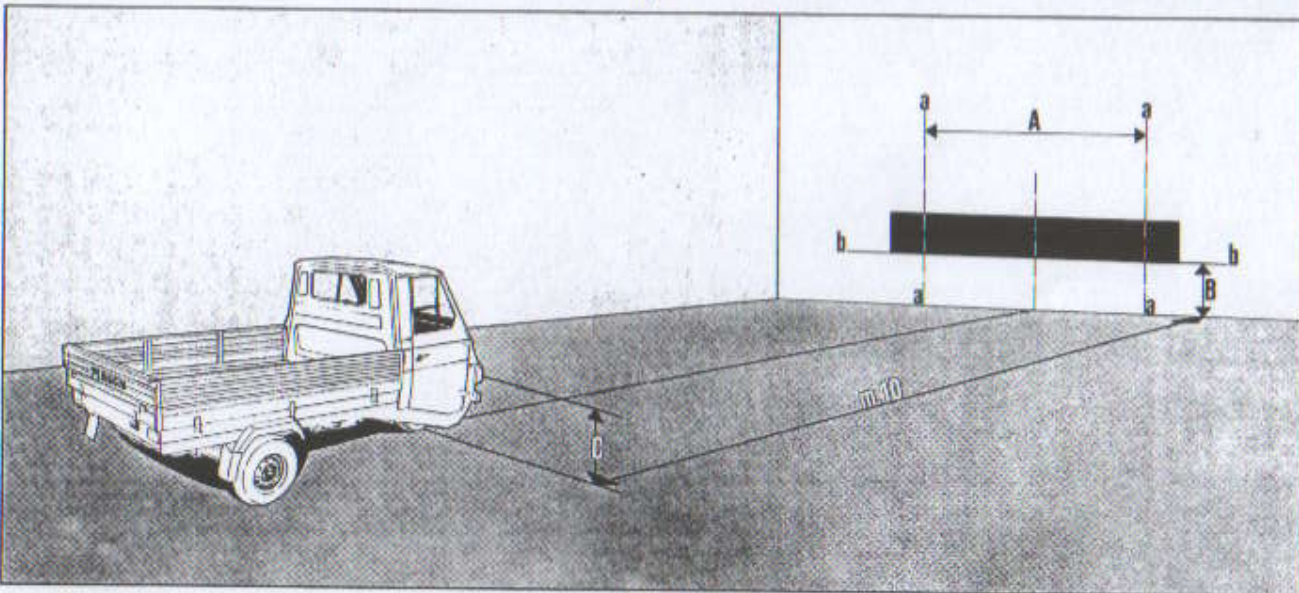


Fig. 6

Fig. 5 - 6 - Setting the headlamps:
 A = Distance between headlamp centers -
 B = $C \times 0.9$ - C = Height from the ground of
 headlamp center - B = $C \times 0.95$ when the setting
 of the headlamps is carried out with the vehicle
 at 5 m. (16.4 feet) from the screen.

Check the headlamps setting:

Place the unload vehicle on a level floor at 10 m. (32.8 feet) approx from a twilight white screen (see fig. 5 - 6) and take care that the vehicle axis is perpendicular to the screen. Draw on the screen two vertical lines "a - a" at the distance "A", corresponding to the distance between headlamp center lines. Draw a horizontal line "b - b" whose height "B" from the ground correspond to $0.9 \times C$ (see fig. 5 - 6); with the headlamps switched on in the dipped beam position, the horizontal line of demarcation between the dark zone and the lighted one should not be above the horizontal "b - b" line. Then switch on the main beams and check that the depth beam center of each headlamp is on the corresponding vertical "a - a" or lightly outside.

N. B. - On both headlamps there are fitted two setting screws that allow the correction of eventual alteration of the inclination (lower screw), or of the divergence (upper screw) of the luminous beam. In order to operate on the setting screws it is necessary to first take off outer rim of the headlamp. Before carrying out the mentioned checking, care that front and rear tyres are inflated to the pressure indicated one page 3.

Installation of electric equipment (voltage 12 V) - Vespacar «P 501» (type «coil-ignition»)

1. Front parking lights, 12V - 3W bulbs - 2. Front turn signal lamps, 12V - 10W - 3. Headlamp: main and dipped beam, 12V - 40/45W bilux bulb. - 4. Horn. - 5. Windshield wiper. - 6. Indicator light checking the insufficient voltage of the dynamo for charging the battery (red light), 12V - 3W bulb - 7. Indicator light for parking light on (green light), 12V - 3W bulb. - 8. Indicator light for turn signal lamps (green light), 12V - 3W bulb. - 9. Indicator light for headlamp main beam (blue light), 12V - 3W bulb. - 10. 12V - 1.2W bulb for speedometer illumination. - 11. Push button for engine starting. - 12. Switch for ignition and circuit for the various units. - 13. 8 A fuses for protecting the electrical equipment. - 14. Switch lever for trafficator lights, switch for main and dipped beam and horn push button. - 15. Voltage regulator - 16. Remote control switch -

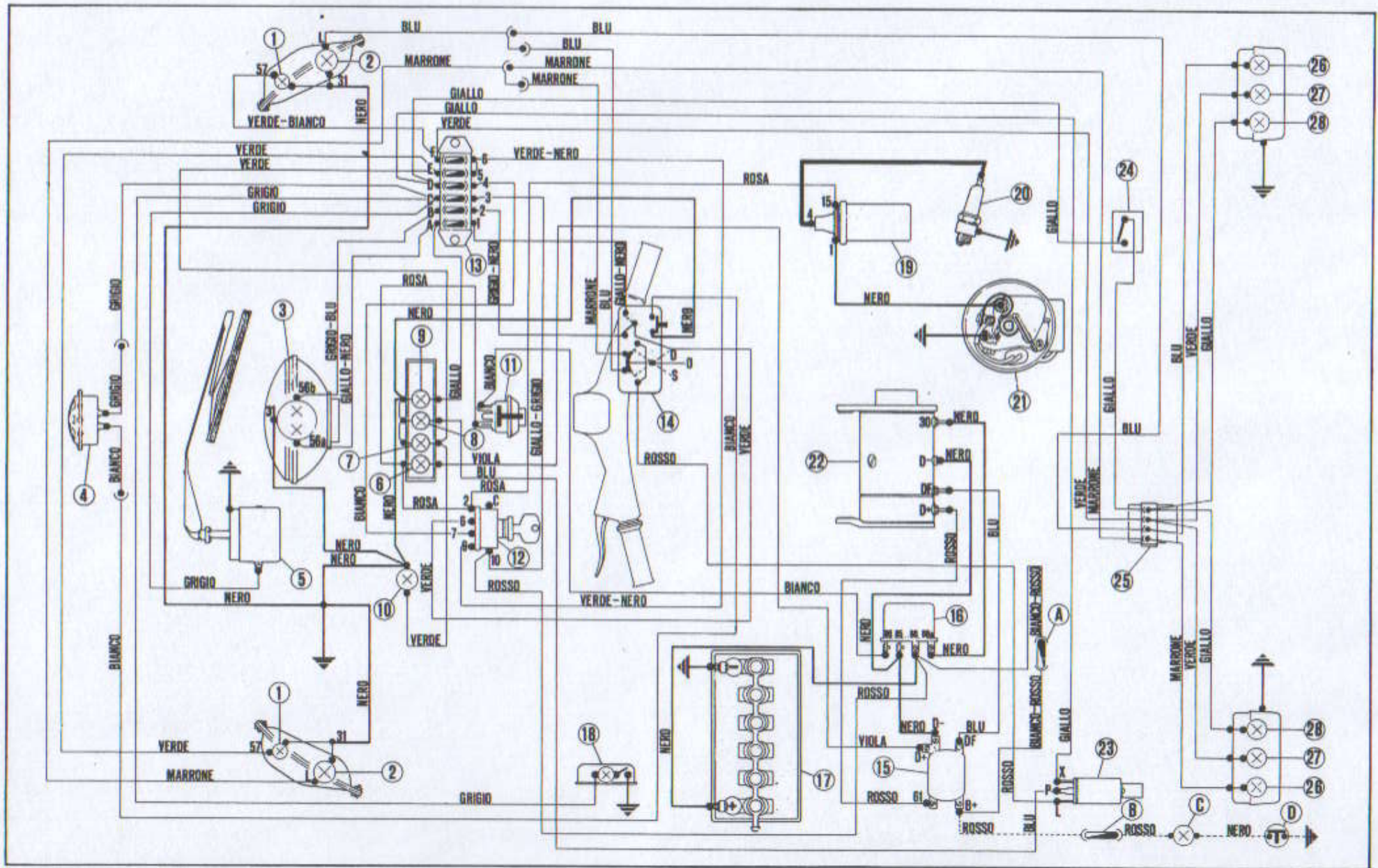
17. 12V - 18Ah battery - 18. Roof lamp for the illumination of the interior of the cabin, 12V - 5W bulb - 19. H. T. coil - 20. Sparking plug - 21. Contact breaker holder plate - 22. Dynastarter - 23. Thermal cutout - 24. Hydraulic pressure switch for rear stop lights - 25. Connector (male and female) for electric equipment - 26. Rear turn signal lamps 12V - 10W bulbs - 27. Rear parking lights 12V - 5W bulbs - 28. Rear stop lights, 12V - 10W bulbs - A. 16A protection fuse.

Notice: The lines indicate the modification on electrical equipment for closed box body.

B. 8A protection fuse - C. 12V - 5W bulb for illumination of the interior of the closed box body - D. Push button for the illumination of the closed box body interior.

Colours:

Nero = Black; Blu = Blue; Giallo = Yellow; Rosso = Red; Viola = Violet; Bianco = White; Rosa = Pink; Marrone = Brown; Verde = Green; Grigio = Grey; Giallo - nero = Yellow - black; Grigio - nero = Grey - black; Verde - nero = Green - black; Grigio - blu = Grey - blue; Verde - bianco = Green - white; Giallo - grigio = Yellow - grey; Bianco - rosso = White - red.



Installation of electric equipment (voltage 12 V) - Vespacar «P 601» («DUCATI» electronic ignition and «LS» device)

1. Front parking lights, 12V - 3W bulbs - 2. Front trafficator lights, 12V - 10W bulbs - 3. Headlamp: main and dipped beam, 12V - 25/25W bilux bulbs - 4. Horn - 5. Switch for outer illumination - 6. Windschield wiper switch - 7. Windshield wiper - 8. Tell tale lamp checking the insufficient voltage of the dinamo for charging the battery, (red light), 12V - 3W bulb - 9. Tell tale lamp for oil reserve, (red light), 12V - 3W bulb - 10. Tell tale lamp for fuel reserve, (orange light), 12V - 3W bulb - 11. Tell tale lamp for the trafficator lights, (green light), 12V - 3W bulb - 12. Tell tale lamp for headlamp main beam on, (blue light), 12V - 3W bulb - 13. Tell tale lamp for parking light on, (green light), 12V - 3W bulb - 14. 12V - 3W bulb for illumination speedometer - 15. Switch for ignition, circuit for the various units and engine starting - 16. 8A fuses for protecting the electrical equipment - 17. Switch lever for trafficator lights, switch for main and dipped beam and horn push button - 18. Voltage regulator - 19. 12V - 24Ah battery - 20. Remote control switch - 21. Roof lamp for the illumination

of the interior of the cabin, 12V - 5W bulb - 22. Electronic control box - 23. Flasher - 24. Dynastarter - 25. Flywheel alternator - 26. Sparking plug - 27. Connector (male and female) for electrical equipment - 28. Hydraulic pressure switch for rear stop lights - 29. Fuel level gauge - 30. Oil level gauge - 31. Rear trafficator lights, 12V - 10W bulbs - 32. Rear parking lights 12V - 5W bulbs - 33. Rear stop lights, 12V - 10W bulbs - A. 16A fuse.

Notice - The lines indicate the modification on electrical equipment for the closed box body and tip up open box body.

B. 8A protection fuse - C. 12V - 5W bulb for illumination of the interior of the closed box body - D. Push button switch for the light for the interior of the closed box body - E. Tell tale lamp for tipped up open box body, 12V - 3W bulb (red light); (this lamp is fitted in place of the light No. 13 of fig. 8) - F. Sensor for illumination of the tell tale lamp « E » operated by the open box body position.

Colours:

Nero = Black; Blu = Blue; Giallo = Yellow; Rosso = Red; Viola = Violet; Bianco = White; Rosa = Pink; Marrone = Brown; Verde = Green; Grigio = Grey; Giallo - nero = Yellow - black; Grigio - nero = Grey - black; Verde - nero = Green - black; Grigio - blu = Grey - blue; Verde - bianco = Green-white; Giallo - grigio = Yellow - grey; Bianco - rosso = White - red; Grigio - rosso = Grey - red.

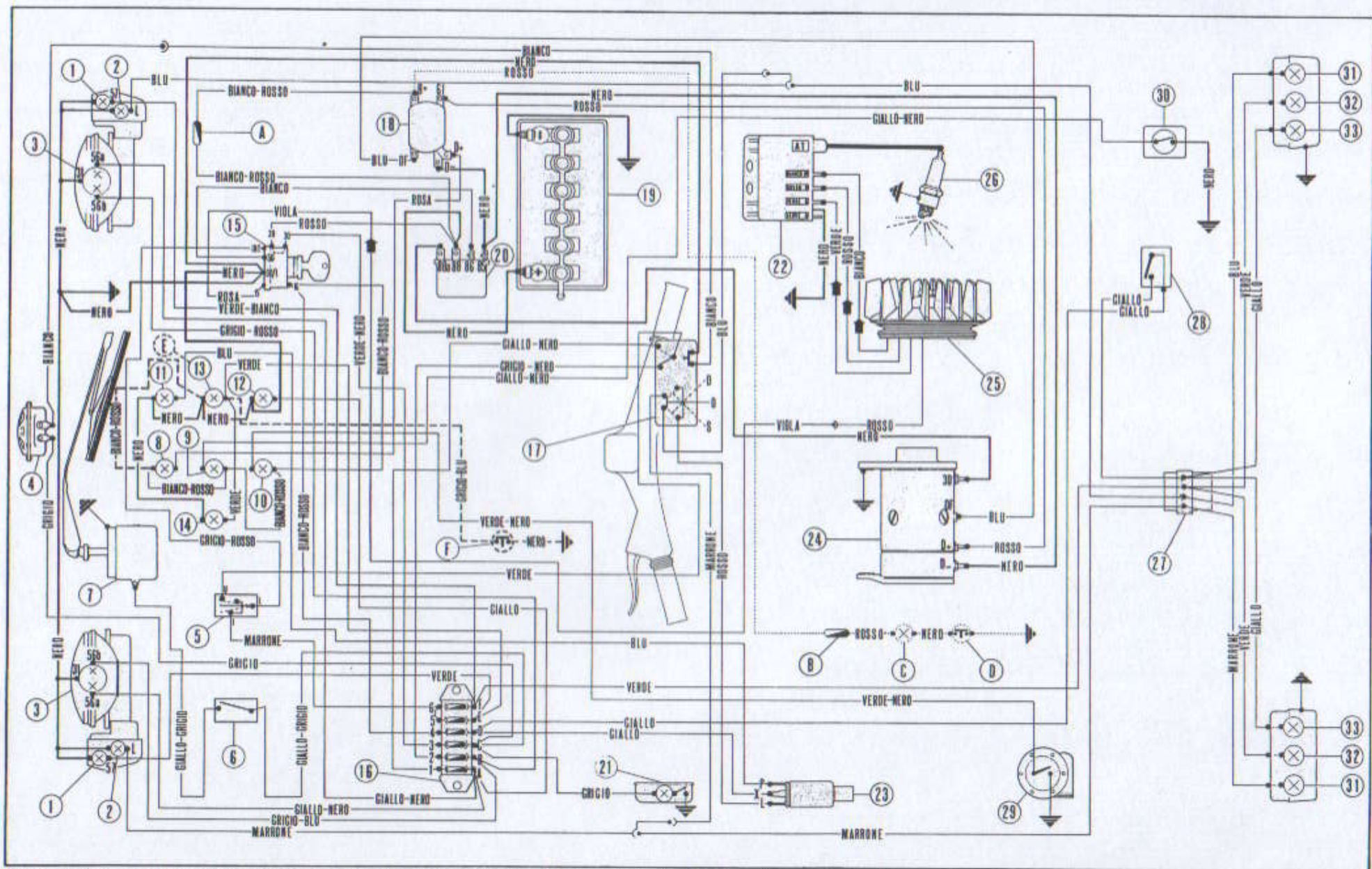


Fig. 8 - Notice - On the possible operation on the electrical equipment, check particularly that the cables marked with an arrow on figure (electronic ignition) are correctly connected

Installation of electric equipment (voltage 12 V) - Vespa car «P 601 station wagon carriage body» (coil-ignition)

1. Front parking lights, 12V - 3W bulbs - 2. Front trafficator lights, 12V - 10W bulbs - 3. Headlamps: main and dipped beam, 12V - 25/25W bilux bulbs - 4. Horn - 5. Switch for outer illumination - 6. Windshield wiper switch - 7. Windshield wiper - 8. Tell tale lamp checking the insufficient voltage of the dynamo for charging the battery (red light), 12V - 3W bulb - 9. Tell tale lamp for fuel reserve, (orange light), 12V - 3W bulb - 10. Tell tale lamp for the trafficator lights, (green light), 12W - 3W bulb - 11. Tell tale lamp for headlamp main beam on, (blue light) 12V - 3W bulb - 12. Tell tale lamp for parking light on (green light), 12W - 3W bulb - 13. 12V -

3W bulb for illumination speedometer - 14. Switch for ignition, circuit for the various units and engine starting - 15. 8A fuses for protecting the electrical equipment - 16. Switch lever for trafficator lights, switch for main and dipped beam and horn push button - 17. Voltage regulator - 18. 12V - 24Ah battery - 19. Remote control switch - 20. Roof lamp for the illumination of the interior of the cabin, 12W - 5W bulb - 21. H.T. coil - 22. Flasher - 23. Dynastarter - 24. Contact breaker holder plate - 25. Sparking plug - 26. Connector (male and female) for electrical equipment - 27. Hydraulic pressure switch for rear stop lights - 28 Fuel

level gauge - 29. Rear trafficator lights, 12V - 10W bulbs - 30. Rear parking lights, 12V - 5W bulbs - 31. Rear stop lights, 12V - 10W bulbs - 32. Licence plate light, 12V - 5W bulb - A. 16A fuse

Colours:

Nero = Black; Blu = Blue; Bianco = White; Rosso = Red; Viola = Violet; Grigio = Grey; Marrone = Brown; Giallo = Yellow; Verde = Green; Rosa = Pink; Bianco - rosso = White - red; Verde - bianco = Green - white; Grigio - rosso = Grey - red; Giallo - grigio = Yellow - grey; Giallo - nero = Yellow - black; Grigio - blu = Grey - blue; Grigio - nero = Grey - black; Verde - nero = Green - black

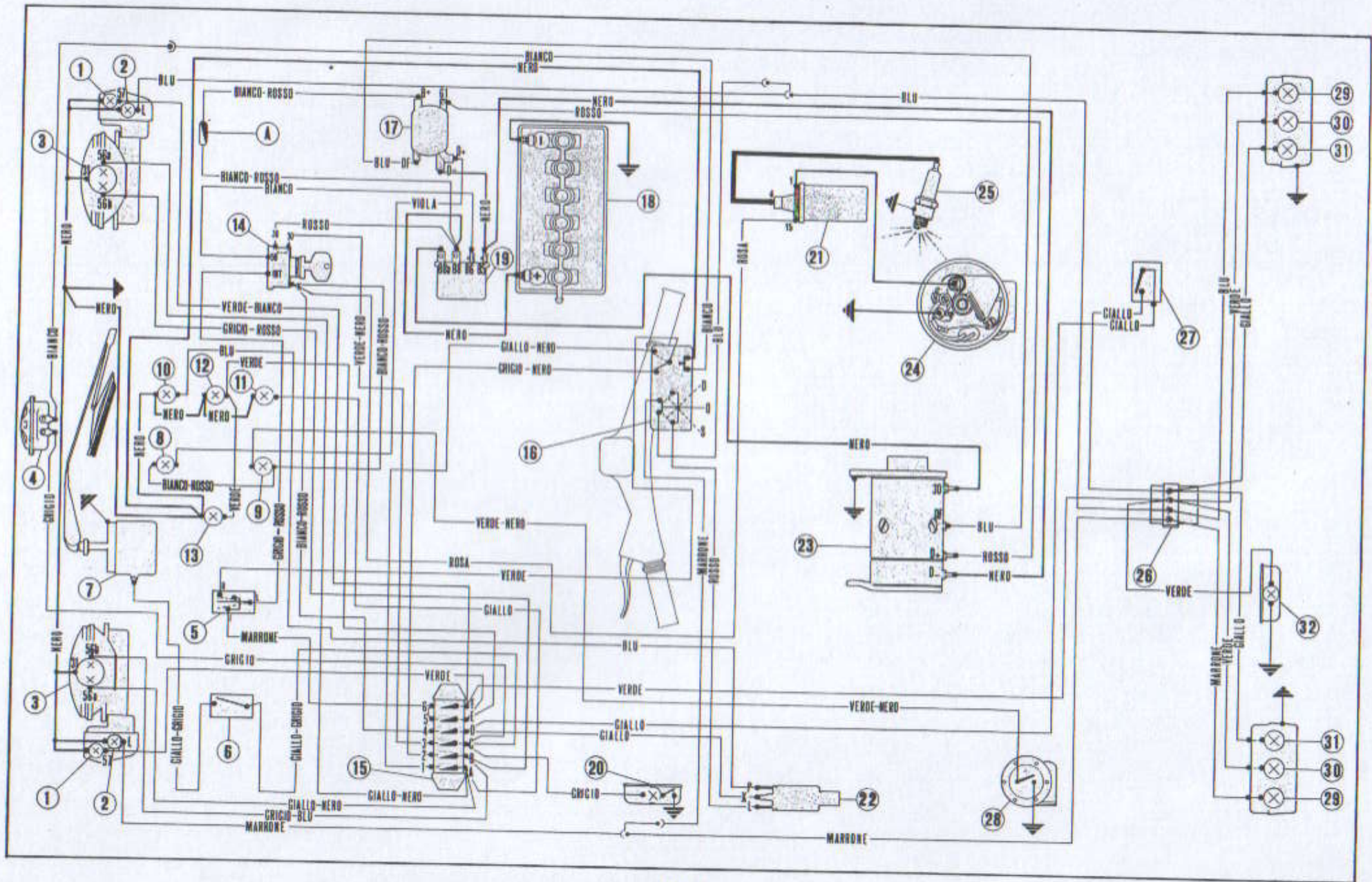


Fig. 9

Installation of electric equipment (voltage 12 V) - Vespacar «P 601 V» (with «DUCATI» electronic ignition and «LS» device)

1. Front parking lights, 12V - 3W bulbs - 2. Front trafficator lights, 12V - 10W bulbs - 3. Headlamps: main and dipped beam, 12V - 25/25W bilux bulbs - 4. Horn - 5. Windshield wiper - 6. Tell tale lamps for fuel reserve (red light), 12V - 3W bulb - 7. Tell tale lamp for headlamp main beam on, (blue light), 12V - 3W bulb - 8. Tell tale lamp for the trafficator lights, (green light), 12V - 3W bulb - 9. Tell tale lamp for oil reserve, (red light), 12V - 3W bulb - 10. Tell tale lamp checking the insufficient voltage of the dynamo for charging the battery, (red light) 12V - 3W bulb - 11. 12V - 3W bulb for illumination speedometer, and tell tale lamp for parking lights - 12. Windshield wiper switch - 13. Switch for outer illumination - 14. Switch for ignition, circuit for the various units and engine starting - 15. Voltage regulator - 16. Remote control switch - 17. Switch lever for outer illumination and for operating the horn - 18. Switch lever for trafficator lights - 19. 8 A fuses for protecting the electrical equipment - 20. 12V - 24Ah battery - 21. Roof lamp for the illumination of the interior of the cabin, 12V - 5W

bulb - 22. Electronic control box - 23. Sparking plug - 24. Flywheel alternator - 25. Dynastarter - 26. Flasher - 27. Hydraulic pressure switch for rear stop lights - 28. Connector (male and female) for electrical equipment - 29. Fuel level gauge - 30. Rear trafficator lights, 12V - 10W - 31. Rear parking lights, 12V - 5W - 32. Rear stop lights, 12V - 10W - 33. Oil level gauge - A. 16A fuse.

Notice - The lines indicate the modification on electrical equipment for the closed box body and tip up open box body

B. 8A protection fuse - C. 12V - 5W bulb for illumination of the interior closed box body - D. Push button for switch on the light, inside the closed box body - E. Tell tale lamp for tipped up open box body 12V - 3W bulb (red light) - F. Sensor for illumination of tell tale lamp « E » controlled by the tip up open box body position.

Colours:

Nero = Black; Blu = Blue; Giallo = Yellow; Rosso = Red; Viola = Violet; Bianco = White; Rosa = Pink; Marrone = Brown; Verde = Green; Grigio = Grey; Grigio - blu = Grey - blue; Grigio - rosso = Grey - red; Giallo - nero = Yellow - black; Bianco - rosso = White - red; Verde - bianco = Green - white; Verde - nero = Green - black; Bianco - verde = White - green.

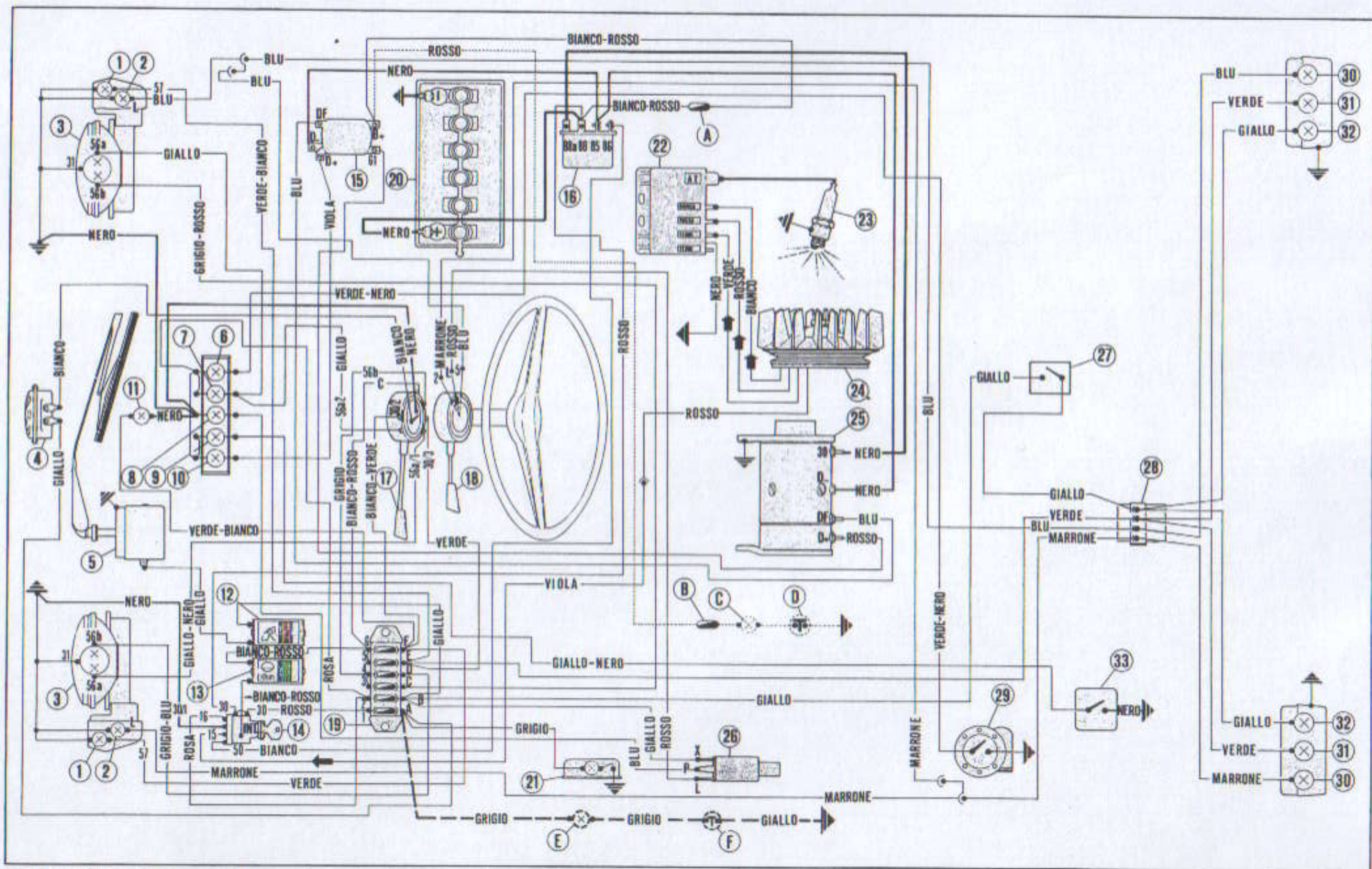


Fig. 10 - Notice - On the possible operation on the electrical equipment, check particularly that the cables marked with an arrow on figure (electronic ignition) are correctly connected

Installation of electric equipment (voltage 12 V) - Vespacar «P 601 V» (with «DUCATI» electronic ignition, «LS» device and flash device)

1. Front parking lights, 12V - 4W bulbs - 2. Front trafficator lights, 12V - 21W bulbs - 3. Headlamps: main and dipped beam, 12V - 45/40W bulbs - 4. Horn - 5. Windshield wiper - 6. Tell tale lamp for fuel reserve, 12V - 3W bulb - 7. Tell tale lamp headlamp main beam on, 12V - 3W bulb - 8. Tell tale lamp for the trafficator lights, 12V - 3W bulb - 9. Tell tale lamp for oil reserve, 12V - 3W bulb - 10. Tell tale lamp checking the insufficient tension of the dynamo for charging the battery, 12V - 3W bulb - 11. 12V - 3W bulb for illumination speedometer, and tell tale lamp for parking lights - 12. Windshield wiper switch - 13. Switch for outer illumination - 14. Switch for ignition, circuit for the various units and engine starting - 15. Voltage regulator - 16. Switch lever for outer

illumination and for operating the horn - 17. Switch lever for trafficator lights - 18. 8A fuses for protecting the electrical equipment - 19. 12V - 24Ah battery - 20. Roof lamp for the illumination of the interior of the cabin, 12v - 5W bulb - 21. Electronic control box - 22. Sparking plug - 23. Flywheel alternator - 24. Dynastarter - 25. Flash device, with 12V - 2W bulb - 26. Remote control switch - 27. Flasher - 28. Control fuel indicator - 29. Control oil indicator - 30. Hydraulic pressure switch for rear stop lights - 31. Connector (male and female) for electrical equipment - 32. Rear trafficator lights, 12V - 21W - 33. Rear parking lights, 12V - 10W - 34. Rear stop lights, 12V - 21W - 35. Licence plate light, 12V - 5W bulb - A. 16 A fuse

Modification for closed box body and tip up open box body.

Notice - The lines --- and --- indicate the modification on electrical equipment for the closed box body and tip up open box body.

B. 8A protection fuse - **C.** 12V - 5W bulb for illumination of the interior of the closed box body - **D.** Push button for switching on the light, inside the closed box body - **E.** Tell tale lamp for tipped up open box body 12V - 3W bulb (red light) - **F.** Push button for illumination of tell tale lamp «E» controlled by the tip up open box body position.

Installation of electric equipment (voltage 12 V) - Vespacar «P 601 V station waggon carriage body» (coil-ignition)

1. Front parking lights, 12V - 3W bulbs - 2. Front trafficator lights, 12V - 10W bulbs - 3. Headlamp: main and dipped beam, 12V - 25/25W bilux bulb - 4. Horn - 5. Windshield wiper - 6. Tell tale lamp for fuel reserve, (red light), 12V - 3W bulb - 7. Tell tale lamp for headlamp main beam on, (blue light), 12V - 3W bulb - 8. Tell tale lamp for the trafficator lights, (green light), 12V - 3W bulb - 9. Tell tale lamp for parking light on, (green light), 12V - 3W bulb - 10. Tell tale lamp checking the insufficient voltage of the dynamo for charging the battery, (red light), 12V - 3W bulb - 11. 12V - 3W bulb for illumination speedometer - 12. Windshield wiper switch - 13. Switch for outer illumination - 14. Switch for ignition, circuit of the various units

and engine starting - 15. Voltage regulator - 16. Remote control switch - 17. Switch lever for outer illumination and for operating the horn - 18. Switch lever for trafficator lights - 19. 8 A fuses protecting the electrical equipment - 20. 12V - 24 Ah battery - 21. Roof lamp for the illumination of the interior of the cabin, 12V - 5W bulb - 22. H.T. coil - 23. Sparking plug - 24. Contact breaker plate - 25. Dynastarter - 26. Flasher - 27. Hydraulic pressure switch for rear stop lights - 28. Connector (male and female) for electrical equipment - 29 Fuel level gauge - 30. Rear trafficator lights, 12V - 10W - 31. Rear parking lights, 12V - 5W - 32. Rear stop lights, 12V - 10W - 33. Licence plate light, 12V - 5W - A. 16 A fuse.

Colours:

Nero = Black; Blu = Blue; Rosso = Red; Bianco = White; Giallo = Yellow; Viola = Violet; Marrone = Brown; Verde = Green; Rosa = Pink; Grigio = Grey; Grigio - rosso = Grey - red; Verde - bianco = Green - white; Verde - nero = Green - black; Bianco - rosso = White - red; Giallo - nero = Yellow - black; Grigio - blu = Grey - blue; Bianco - verde = White - green.

Installation of electric equipment (voltage 12 V) - Vespacar «P 601 V» closed and open box body (coil-ignition)

It is suitable the installation illustrated in fig. 11 with the exception of the licence plate light (No. 33 in fig.) and concerning cable

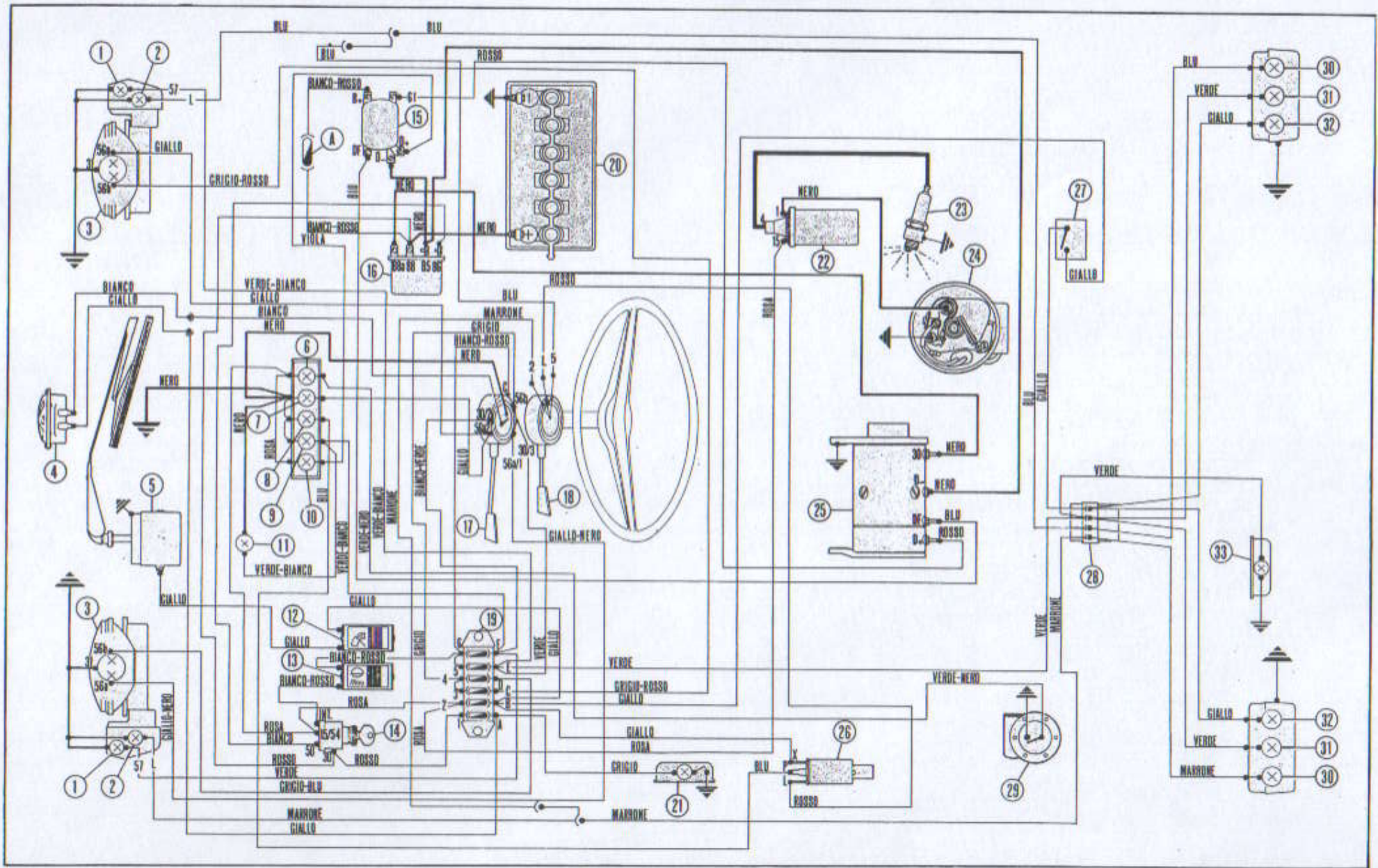


Fig. 11

Installation of electric equipment (voltage 12 V) - «Vespacar P 2» (with «FEMSA» electronic ignition and «LS» device)

1. Front parking lights, 12V - 3W bulbs - 2. Front trafficator lights, 12V - 10W bulbs - 3. Headlamp: main and dipped beam, 12V - 25/25W bilux bulbs - 4. Horn - 5. Switch for outer light units - 6. Windshield wiper switch - 7. Windshield wiper - 8. Lamp for checking the insufficient voltage of dynamo for charging the battery (red light), 12V - 3W bulb - 9. Tell tale lamp for oil reserve (red light), 12V - 3W bulb - 10. Tell tale lamp for the trafficator lights (green light), 12V - 3W bulb - 11. Tell tale lamp for headlamp main beam on (blue light), 12V - 3W bulb - 12. Tell tale lamp for fuel reserve (red light), 12V - 3W bulb - 13. 12V - 3W bulb for illumination speedometer and tell tale lamp for parking lights (green light) - 14. Switch for ignition, circuit for the various units and engine starting - 15. 8 A fuse for protecting the electrical equipment - 16. Switch lever for outer light units and horn - 17. Lever for trafficator lights - 18. Voltage regulator - 19. 12 V - 24 Ah battery - 20. Remote control switch - 21. Roof lamp for the illumination of the interior of the cabin, 12V - 5W bulb - 22. Electronic control box -

23. Flasher - 24. Dynastarter - 25. Rotor with fan - 26. Sparking plug - 27. Connector (male and female) for electrical equipment - 28. Hydraulic pressure switch for rear stop lights - 29. Oil level gauge - 30. Fuel level gauge - 31. Rear trafficator lights, 12V - 10W bulbs - 32. Rear parking lights 12V - 5W bulb - 33. Rear stop lights, 12V - 10W bulbs - 34. Licence plate light, 12V - 5W bulb.

Notice - The lines indicate the modification on electrical equipment for closed box body and tip up open box body.

A. 8A protection fuse - B. 12V - 5W bulb for illumination of the interior of the closed box body - C. Push button switch for light unit controlled by lateral door - D. Push button switch for light unit controlled by rear door - E. 16A fuse - F. Tell tale lamp for tipped up open box body, 12V - 3W bulb, (red light) - G. Sensor for illumination of the tell tale lamp « F » operated by the tip up box body position (raising point).

Colours:

Nero = Black; Blu = Blue; Giallo = Yellow; Rosso = Red; Viola = Violet; Bianco = White; Rosa = Pink; Marrone = Brown; Verde = Green; Grigio = Grey; Grigio - blu = Grey - blue; Giallo - nero = Yellow - black; Bianco - rosso = White - red; Bianco - verde = White - green; Grigio - rosso = Grey - red; Verde - bianco = Green - white; Verde - nero = Green - black.

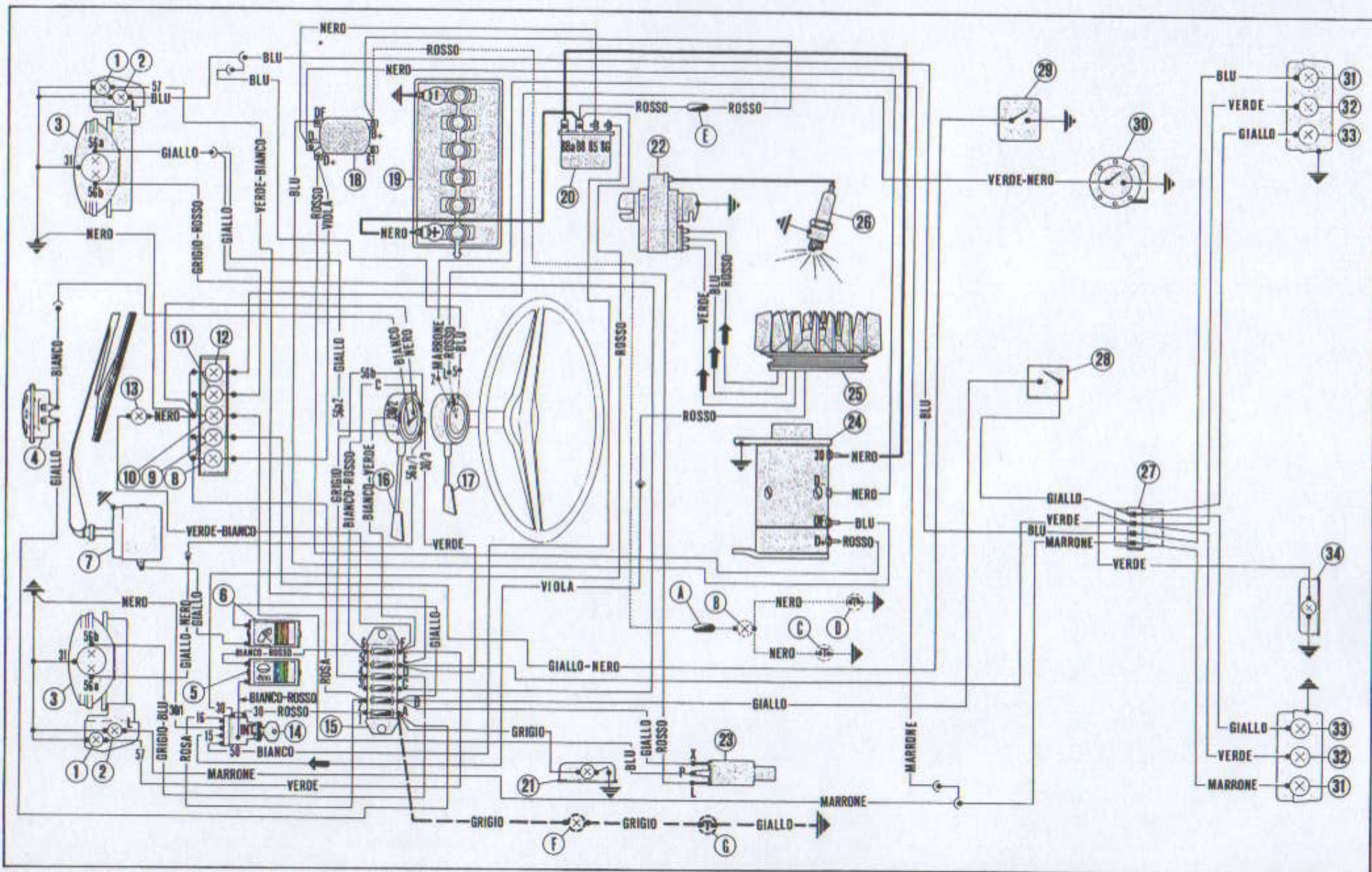


Fig. 12 - Notice - On the possible operation on the electrical equipment, check particularly that the cables marked with an arrow on figure (electronic ignition) are correctly connected

Installation of electric equipment (voltage 12 V) - «Vespacar P 2» (with «DUCATI» electronic ignition and «LS» device)

1. Front parking lights, 12V - 3W bulbs - 2. Front trafficator lights, 12V - 10W bulbs - 3. Headlamp: main and dipped beam, 12V - 25/25W bilux bulbs - 4. Horn - 5. Switch for outer light units - 6. Windshield wiper switch - 7. Windshield wiper - 8. Lamp for checking the insufficient voltage of dynamo for charging the battery (red light), 12V - 3W bulb - 9. Tell tale lamp for oil reserve (red light), 12V - 3W bulb - 10. Tell tale lamp for the trafficator lights (green light), 12V - 3W bulb - 11. Tell tale lamp for headlamp main beam on (blue light), 12V - 3W bulb - 12. Tell tale lamp for fuel reserve (red light), 12V - 3W bulb - 13. 12V - 3W bulb for illumination speedometer and tell tale lamp for parking lights (green light) - 14. Switch for ignition, circuit for the various units and engine starting - 15. 8 A fuses for protecting the electrical equipment - 16. Switch lever for outer light units and horn - 17. Lever for trafficator lights - 18.

Voltage regulator - 19. 12V - 24Ah battery - 20. Remote control switch - 21. Roof lamp for the illumination of the interior of the cabin, 12V - 5W bulb - 22. Electronic control box - 23. Flasher - 24. Dynastarter - 25. Rotor with fan - 26. Sparking plug - 27. Connector (male and female) for electrical equipment - 28. Hydraulic pressure switch for rear stop lights - 29. Oil level gauge - 30. Fuel level gauge - 31. Rear trafficator lights, 12V - 10W bulbs - 32. Rear parking lights 12V - 5W bulbs - 33. Rear stop lights, 12V - 10W bulbs - 34. Licence plate light, 12V - 5W bulb.

Notice - The lines - - - - indicate the modification on electrical equipment for closed box body and tip up open box body.

A. 8A protection fuse - **B.** 12V - 5W bulb for

illumination of the interior of the closed box body - **C.** Push button switch for light unit controlled by lateral door - **D.** Push button switch for light unit controlled by rear door - **E.** 16A fuse - **F.** Tell tale lamp for tipped up open box body, 12V - 3W bulb, (red light) - **G.** Sensor for illumination of the tell tale lamp «F», operated by the tip up box body position (raising point).

Colours:

Nero = Black; Blu = Blue; Giallo = Yellow; Rosso = Red; Viola = Violet; Bianco = White; Rosa = Pink; Marrone = Brown; Verde = Green; Grigio = Grey; Grigio - blu = Grey - blue; Giallo - nero = Yellow - black; Bianco - rosso = White - red; Bianco - verde = White - green; Grigio - rosso = Grey - red; Verde - bianco = Green - white; Verde - nero = Green - black

Installation of electric equipment (voltage 12V) - «Vespacar P 2» (with «DUCATI» electronic ignition, «LS» device and double brake circuit)

It is suitable the installation illustrated in Fig. 13 with the addition of the variation (detail «Fig. 12/1») concerning the device showing that the brakes are not efficient and the tell tale lamp.

H: Tell tale lamp for not efficient brakes, 12V-3W bulb.

I: Device for not efficient brakes.

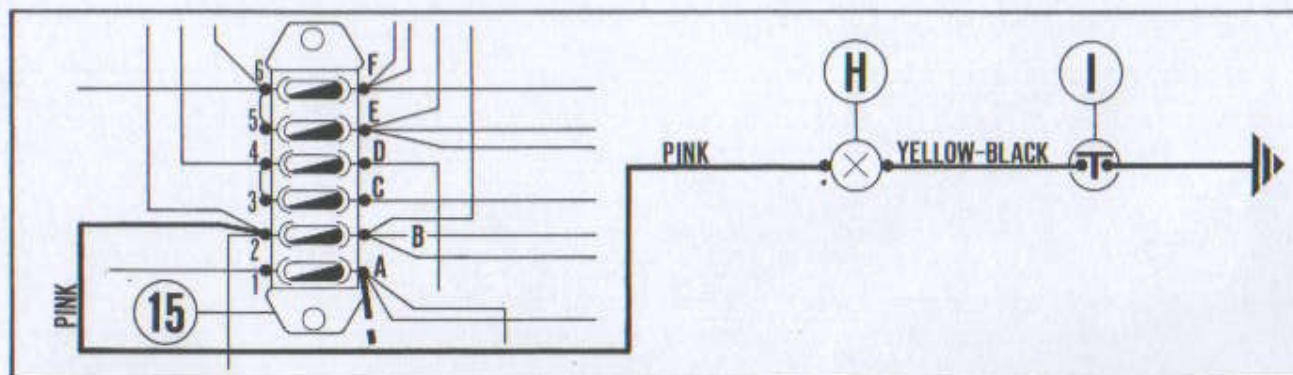
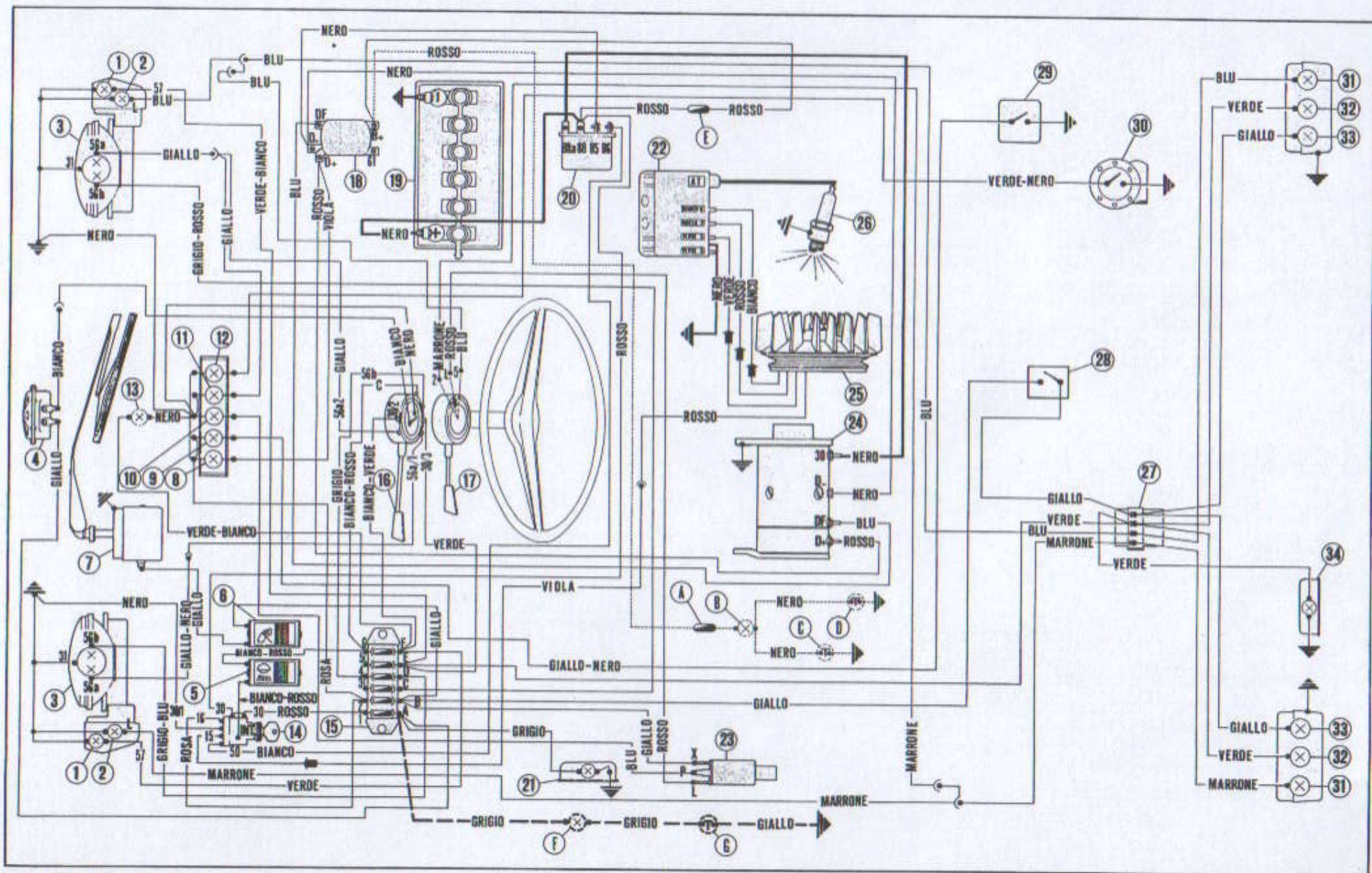


Fig. 12/1



Controls of electrical installation

Vespacar P 501 with coil - Ignition

Fig. 14 - Key operated switch.

Position on switch « A »

P: Engine cut - out - Circuit for horn, windshield wiper and roof lamp - Parking lights on - Contacts 10 - 9.

O: All off - Extractable key - No contact - Circuit for horn, windshield wiper, roof lamp.

1: Running engine - Circuit for horn, windshield wiper, roof lamp, turn signal lamps and stop lights - Contacts 10 - 2 - 7.

2: Running engine - Circuit for horn, windshield wiper, roof lamp, turn signal lamps and stop lights, - Parking lights on - Contacts 10 - 2 - 7 - 9.

3: Running engine - Circuit for horn, windshield wiper, roof lamp, turn signal lamps and stop lights, headlamp (high or low beam) - Parking lights on - Contacts 10 - 2 - 6 - 7 - 9.

Vespacar P 501 - P 601 and P 601 station waggon carriage body.

Fig. 15 - Turn signal lamps and headlamp control lever

Position of the control lever « B »

O: Turn signal lamps off - No contact

D: R.H. turn signal lamps - Contact between red and blue wires.

S: L.H. turn signal lamps - Contact between red and brown wires.

D: Horn on - Contact between white and black wires.

C: Headlamp switch: high beam on, contact between green and yellow - black wires. Low beam on, contact between green and grey - black wires.

Vespacar P 601 with electronic Ignition.

Fig. 16 - Key operated switch.

Positions of the switch « F »

O: All off - Extractable key - Contacts 30 - 1 - 15: feeding coil of the electronic device to earth - Circuit for horn, windshield wiper and roof lamp.

1: Engine ignition - Circuit for various units and outer lights - Contacts 30 - INT. - 30 - 16. Circuit for horn, windshield wiper and roof lamps.

2: Engine starting: not extractable key (after started the key comes back to position « 1 ») - Contacts 30 - 16 - 30 - INT. and 30 - 50.

3: Circuit for outer lights (night - parking) - Extractable key - Contacts 30 - INT. and 30/1 - 15. Circuit for horn, windshield and roof lamp

Position of the switch « E ».

O: Outer lights off - No contact.

1: Parking light on - Contacts L - I.

2: Parking lights - High beam or low beam on - Contacts L - I - U.

Vespacar P 601, station waggon carriage body, coil - Ignition.

Fig. 16 - Key operated switch.

Position of the switch « F »

O: All off - Extractable key - No contact - Circuit for horn, windshield wiper and roof lamp.

1: Engine ignition - Circuit for various units and outer lights - Contact 30 - INT. - 30 - 16 - Circuit for horn, windshield wiper and roof lamp.

2: Engine starting - Not extractable key (after started the key comes back to position « 1 ») - Contacts 30 - 16 - 30 - INT. and 30 - 50

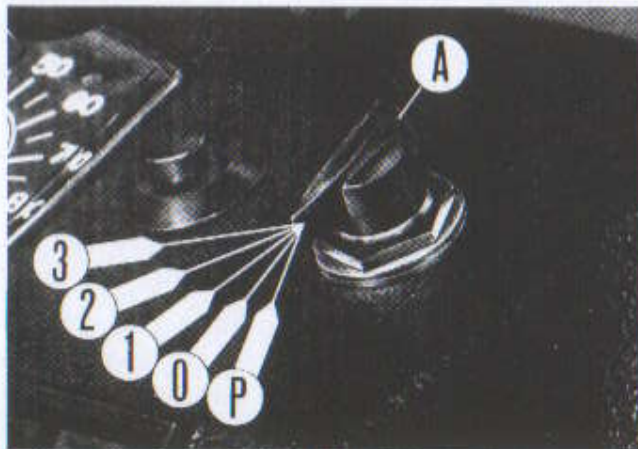


Fig. 14

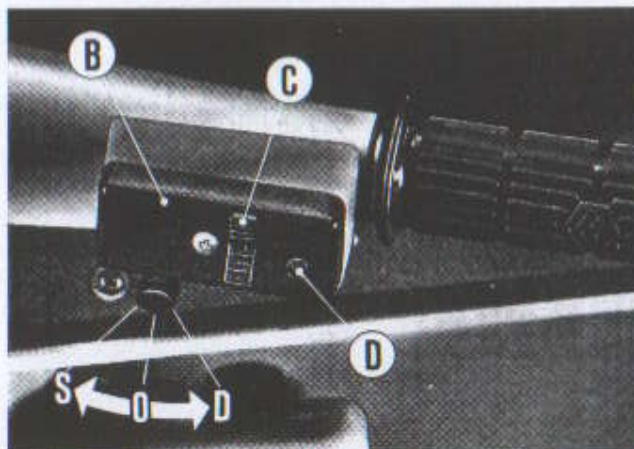


Fig. 15

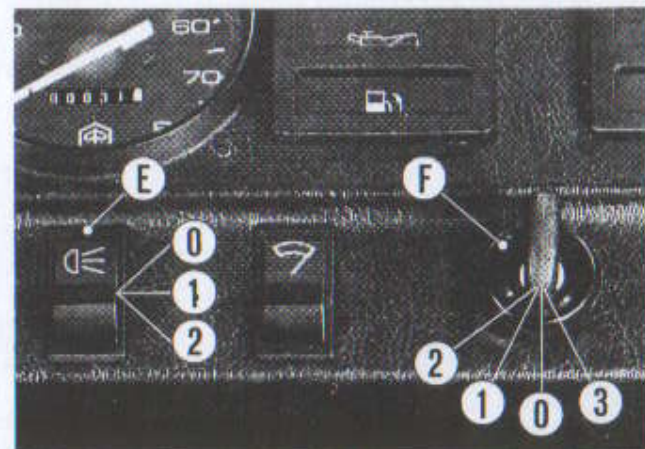


Fig. 16

3: Circuit for outer lights (night - parking) - Extractable key - Contacts 30 - INT.
Circuit for horn, windshield wiper and roof lamp.

Notice - For Vespacar P 501 - P 601 - P 601 version station waggon, the horn, windshield wiper and roof lamp are not depending from the positions of the key operated switch since they are directly fed by the battery.

Position of the switch « E »

O: Outer lights off - No contact.

1: Parking lights on - Contacts L - I.

2: Parking lights, high or low beam on - Contacts L - I - U.

Vespacar P 601 V with electronic ignition

Fig. 17 - Key operated switch

Positions of the switch « A »

O: All off - Extractable key - Contacts 30 - 1 - 15:
feeding coil of the electronic device to earth.
Circuit for horn and roof lamp.

1: Engine ignition - Circuit for the various units and outer lights contacts 30 - INT. - 30 - 16.
Circuit for horn and roof lamp.

2: Engine starting, not extractable key (after started the key comes back to position « 1 ») - Contacts 30 - 16 - 30 - INT. and 30 - 50.

3: Circuit for outer lights (night-parking) - Extractable key - Contacts 30 - INT. and 30/1 - 15.
Circuit for horn and roof lamp.

Vespacar P 601 V, station waggon carriage body, coil-ignition.

Fig. 17 - Key operated switch.

Position of the switch « A »

O: All off - Extractable key - No contact.
Circuit for horn and roof lamp.

1: Engine ignition - Circuit for the various units and outer lights - Contacts 30 - INT. - 15/54.
Circuit for horn and roof lamp.

2: Engine starting, not extractable key (after started

the key comes back to position « 1 ») - Contacts 30 - INT. - 15/54 and 30 - 50.

3: Circuit for outer lights (night - parking) - Extractable key - Contacts 30 - INT.
Circuit for horn and roof lamp.

Vespacar P 601 V with electronic ignition and P 601 V, station waggon carriage body with coil ignition.

Fig. 18 - Turn signal lamps control lever

Position of the lever « C »

O: Turn signal lamps off - No contact.

D: R.H. turn signal lamps on - Contacts L - 5

S: L.H. turn signal lamps on - Contacts L - 2

Fig. 19 - Control lever of headlamp lights and switch for outer lights.

Position of the lever « D » with switch "B" on.

1: Parking lights on - No contact.

2: Low beam on - Contacts C - 56B.

3: High beam on - Contacts 30/2 - 56 a/2 - 30/3 - 56 a/1.

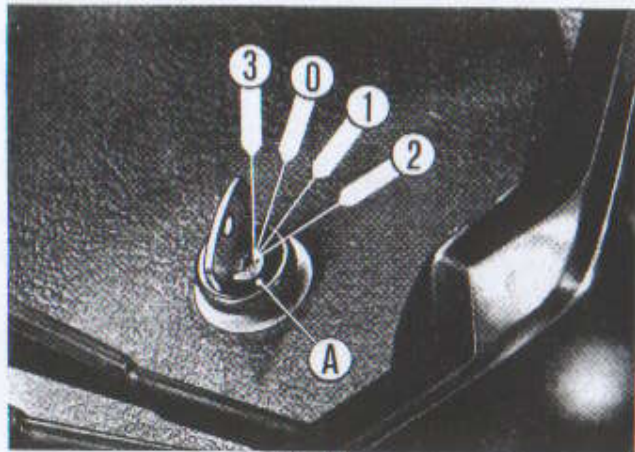


Fig. 17

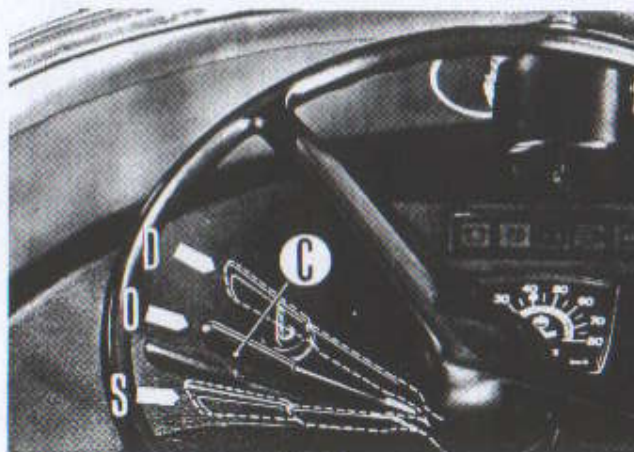


Fig. 18

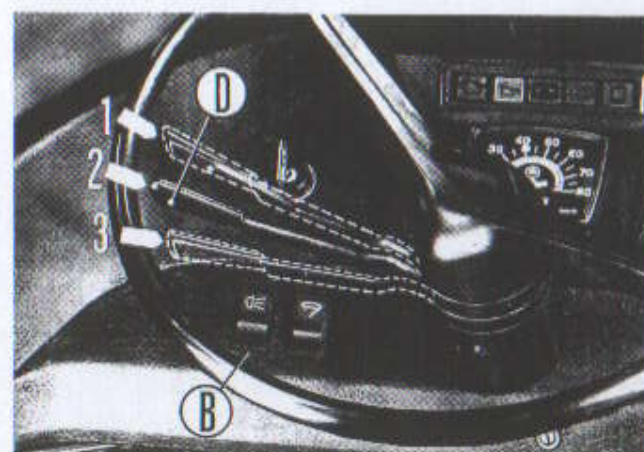


Fig. 19

Vespacar P 2

Fig. 20 - Switch key.

Positions of the switch « A »

- O: All off - Extractable key - Contacts 30/1 - 15: feeding coil of the electronic device to earth. Circuit for horn and roof lamp.
- 1: Engine ignition - Circuit for the various units and outer lights - Contacts 30 - INT. - 30 - 16. Circuit for horn and roof lamp.
- 2: Engine starting - Not extractable key (after

started the key comes back to position "1") - Contacts 30 - 16 - 30 - INT. and 30 - 50.

- 3: Circuit for outer lights (night-parking) - Extractable key - Contacts 30 - INT. and 30/1 - 15. Circuit for horn and roof lamp.

Notice - For Vespacar P 601 V version station waggon and Vespacar P 2, the horn and the roof lamp are not depending from the position of the switch key since they are directly fed by the battery.

Fig. 21 - Turn signal lamps control lever.

Position of lever « C »:

- O: Turn signal lamps off - No contact.
- D: R.H. turn signal lamps on - Contacts L - 5
- S: L.H. turn signal lamps on - Contacts L - 2

Fig. 22 - Control lever of headlamp light and switch for outer lights.

- 1: Parking lights on - No contact.
- 2: Low beam on - Contact C - 56B.
- 3: High beam on - Contacts 30/2 - 56 a/2 - 30/3 - 56 a/1.

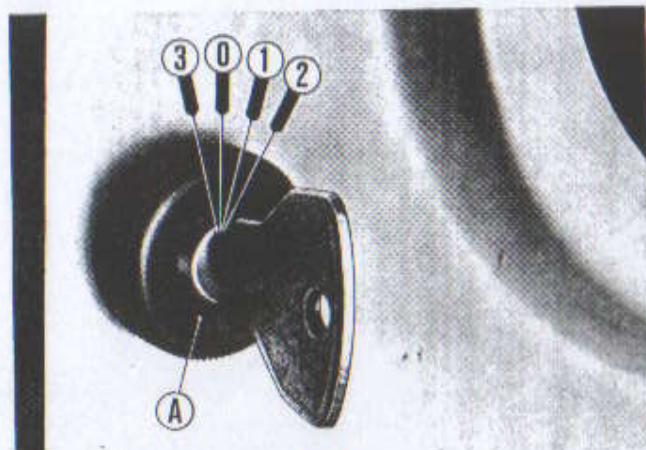


Fig. 20

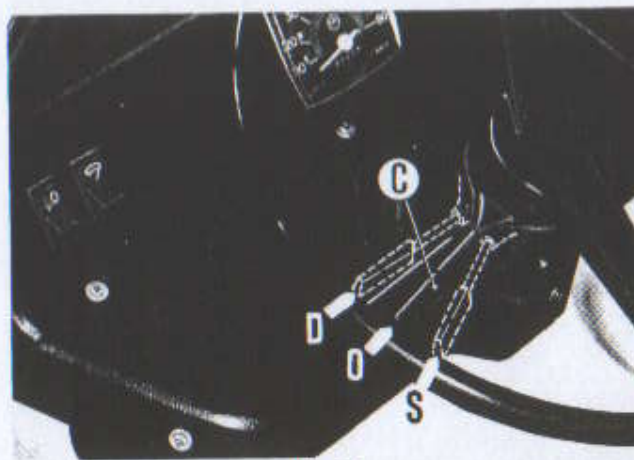


Fig. 21

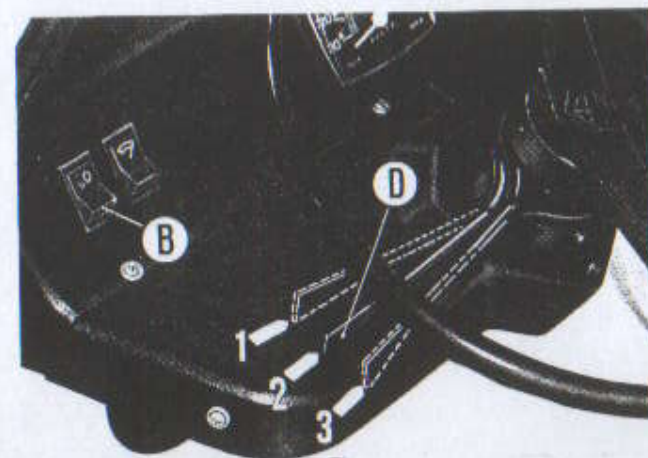


Fig. 22

Electronic ignition («DUCATI» type for Vespacar P 601/ P 601 V and P 2)

1) - Main advantages.

Everybody knows that, in comparison with the traditional ignition, both with a magneto and with a battery, the electronic ignition «with discharge of condenser» presents some advantages of electric and mechanic nature, of which we resume the principal ones:

A) Advantages of electric nature.

The particular characteristics of the H.T. discharge with electronic ignition in comparison with the traditional ignitions, is essentially that to produce **a higher tension peak, reached in very short time and with a shorter total length of the discharge itself.**

It follows:

- Engine regular running also with dirty spark-plugs or with electrode gap not correct.
- Better starting facility with cold engine.
- Higher life of the spark-plugs because of a smaller electrodes wear.
- Less possibilities of arc formation on spark-plug.

B) Mechanic advantages.

The absence of the parts exposed to the wear, as the contact breaker-cam unit, allows:

- Unalterability, during the time, of the ignition advance setting.
- Insensibility to the atmospheric agents.
- Regular engine running also at high speeds.
- Certain ignition functioning also after large periods when the vehicle is not used.

To these advantages prevalently functional it can be added, not less important, the one of an almost total absence of maintenance.

2) Device description.

The fig. 23 shows the main parts of the generator unit and the electronic device with H.T. coil incorporated («electronic control box»).

The generator has an inductor with magnetic strip, magnetized with two polarities which are set in a determined angular position as regards the key-slot; the stator is composed by two induced coils: the first for the charge of the condenser the second for supplying the control signal of the ignition.

The electric diagram of fig. 26 shows the various component parts of the ignition system.

The bipolar rotary inductor generates on winding (B1) an alternating tension that, rectified by the diode (D2) charges the condenser (C1). The winding (B2) also excited by the main inductor, supplies in the wished instant, through the diode (D1) together with the filter group (C2, R1 and R2), the control signal to the diode (SCR); the latter, fired, realizes the discharge of the condenser (C1) on the primary of the ignition coil and produces on the secondary the necessary tension of the spark plug.

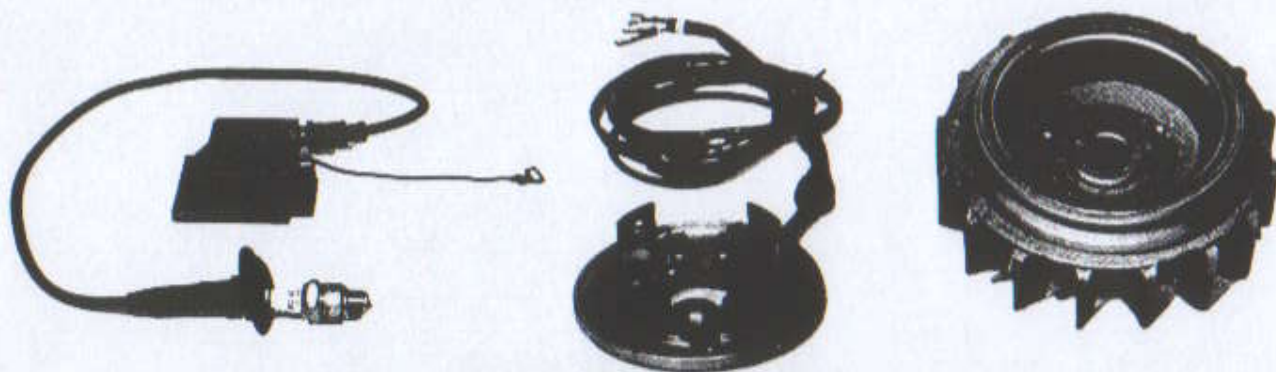


Fig. 23 - Component parts of the generator unit and of the electronic device.

3) Rules to be observed when the electric devices of vehicles with electronic ignition are operated.

A) General information.

The checking or anyway the operation on circuit of the devices for electronic ignition can be easy carried out by the service stations; however it is very important that following notices are observed in that when not respected, the devices can be irreparably damaged.

All checking operations of the electric equipment that involve cable disconnections (checking of the connections and of the devices that are component parts of the ignition circuit, the main switch key operated too) should be **carried out with the engine cut-out**: on the contrary the electronic control box can suffer irreparable damages.

The ignition circuit works with alternating current and obviously it should be separated from d. c. circuit.

In fact, the latter, fed from the battery and from the dynastarter, **serves exclusively** for the units: pilot lights, stop light, horn, headlamp lights and so on.

If a connection of both circuits happens, i. e. if the d. c. runs through the ignition circuit, **the electronic control box is immediately damaged**.

Consequently it is necessary and important that, in the case of dismantling or disconnecting of the cables, specially of those that arrive to the key main switch and to the electronic control box, when reassemble take care to connect correctly each cable to the corresponding clamp (see fig. 24 and 25). **It is advisable always to consult the electrical connections diagrams.**

Key to fig. 24

*Viola (collegato al cavetto rosso della bobina di carica condensatore) corrente alternata: arresto motore = Violet (connected with the red cable of the condenser charging coil) alternating current: engine cut-out.

Nero (massa)* = Black (ground)*

Corrente continua = Direct current: Rosso = Red; Bianco = White; Bianco-Rosso = White-Red; Rosa = Pink.

It is absolutely necessary that, when replacing one or more devices of the equipment (main switch for flywheel backplate unit, electronic control box), a device **alike exactly the pre-existent is used**; if in fact similar devices but not specific for the corresponding equipment were employed, the ignition should not work and we should risk to damage irreparably the electronic control box.

Notice - The cable connections to the main key switch shown in fig. 24 refer to Vespacar P 601 V. For Vespacar P 601 connect to the clamp 16 the **WHITE-RED** cable instead of the **PINK** one, to the clamp 30 connect the **GREEN - BLACK** cable instead of the **RED** one and to the clamp **INT.** connect the **GREY - RED** cable instead of the **WHITE - RED** cable

ATTENTION

The connection marked with (*) in fig. 24 refers to the electronic ignition.

B) Checkings to be carried out in the case of troubles on ignition.

In the case of a defective ignition, which grounds cannot be immediately located with an inspection at first sight, first replace the electronic control box with a corresponding one in perfect condition.

The disconnecting and connecting operations for the replacement of the electronic control box **should be carried out with the engine cut-out**.

***VIOLA** (collegato al cavetto rosso della bobina di carica condensatore) corrente alternata: arresto motore.

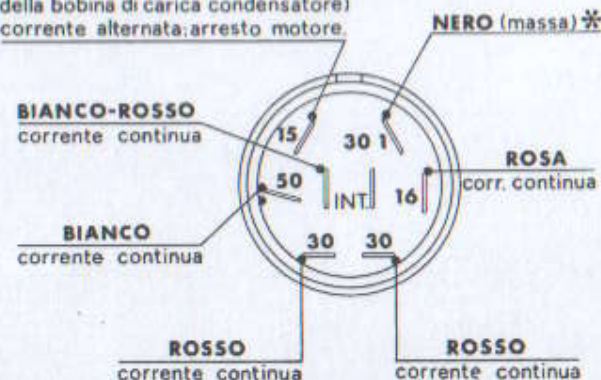


Fig. 24 - Connections on main key switch.

If the replacement restores the ignition, the anomaly is to be found on the electronic control box that should be obviously replaced.

If the ignition is faulty check the generator and the component parts of the backplate as follows: Inspect at first sight connections, backplate and couplings; then by means of an ohmmeter that can measure resistances from 1 up 1000 ohms verify the charge coil and the pick-up as follows:

Connect the tester between the **WHITE** cable and the **GREEN** one (in fig. 27): it should be measured continuity and an ohmic value (470 ± 5 ohms).

Connect the tester clamp + with the **WHITE** cable and the tester clamp - with the **RED** cable (fig. 28): it should be measured continuity and an ohmic value (121 ± 10 ohm).

Because of the presence of the diode in the interior of the coil if the polarity is inverted every measured value will show that the diode in the interior of the coil is faulty.

If after having checked the charge coil and the pick-up some anomalies come out, **replace the backplate or the damaged parts**.

If a tester for checking the backplate is not available, when it is a sure thing that the inconvenient to the ignition is due neither to the electronic control box nor to other visible causes (wrong connections, damaged cables, damaged spark plug) replace the complete backplate.

In reference to the previous points it is advisable to include, in the checking tools, also an ohmmeter with the characteristics carried out at the point B).

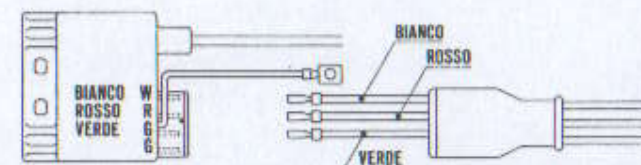


Fig. 25 - Connections on electronic control box

Key to fig. 25

Bianco = White; Rosso = Red; Verde = Green.

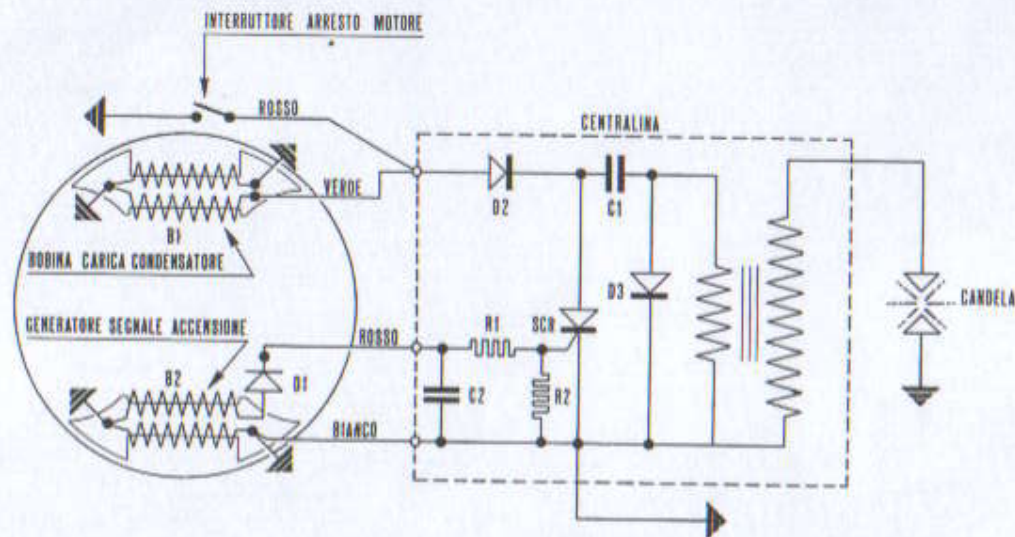


Fig. 26 - Electric diagram for electronic ignition unit.

Key to fig. 26

Interruttore arresto motore = Engine cutout; Bobina carica condensatore = Coil for charging the condenser; Generatore segnale accensione = Generator for ignition (pick-up); Centralina =

Electronic control box; Candela = Sparking plug; Rosso = Red; Verde = Green; Bianco = White.

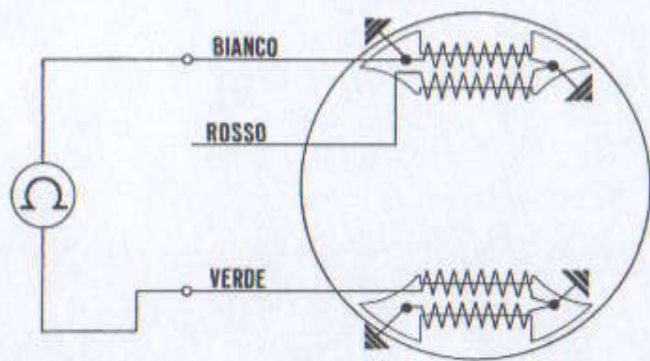


Fig. 27

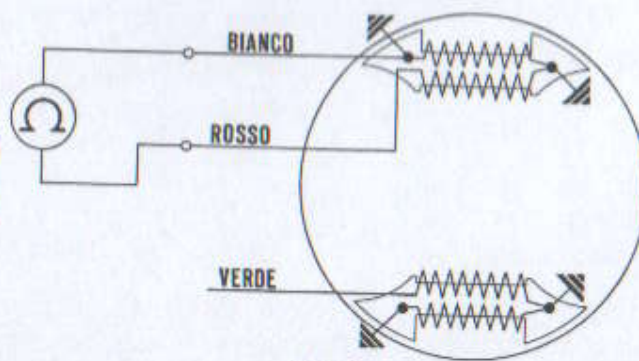


Fig. 28

Key to fig. 27 - 28 - Bianco = White; Rosso = Red; Verde = Green.

C) Checking ignition timing.

The checking of the timing can be for instance useful when the engine does not run regularly (difficult starting; reduction of efficiency and H. P.; difficult or irregular pickup); if the anomaly does not proceed from the carburation it can derive from irregularities of ignition timing.

This case is rather unusual, in that, for the characteristics of ignition system, the timing is unalterable in the long time; as the inconvenient proceeds in the most of cases from the irregular working of the electronic control box, in order to ascertain it, operate as explained on the previous pages for the checking of such device. If, moreover, the checking of the electronic control box and the carburation haven't given the results required and if the anomalies can be derived by same irregularities of the ignition timing, proceed to its checking operating as follows:

— Insert on the hole « F » (see fig. 20 at page 33 of the "Service Station Manual" Vespa Commercial mp) a rod Ø5; turn the engine by hand until the rod end corresponds to the other hole machined on the rotor.

In this condition the engine is in the spark advance position.

— Mark with white print both the flywheel rotor, and the crankcase with two aligned and corresponding marks.

— Connect a stroboscopic lamp (capacitive pick up) to the ignition; the connection is realized directly on the spark plug; or to the H.T. cable etc. according to the available type of the stroboscopic lamp and to the specific instructions of employment.

Then start the engine.

— The engine presents a correct timing when the two printed marks are aligned at the lamp or, at the most, out of its place of 4° (i. e. between 2° on the R. H. side and 2° on the L. H. side of the alignment position).

— If the flywheel rotor mark results out of its place beyond the admitted tolerance as regards that one on the crankcase (or appear at the checking other irregularities) provide for the stator replacement.

Backplate overhauling

For the replacement of the coils follow these instructions: fit the efficient coils (delivered with already turned pole shoes) without locking the securing screws.
Apply the ring T.0046016 for centering the coils and then lock the screws.

Generator unit

Battery 12V - 18Ah. for Vespa P 501
Battery 12V - 24Ah. for Vespa P 601 - P 601 V and P 2.

Maintain the battery always clean and dry specially the top side; clean with a hard bristles brush. Periodically (at least once a month) add distilled water. For the charging, follow the instructions carried out on the battery sheet.
To avoid corrosion on the cable terminals maintain them well clean and covered with a coat of pure vaseline; do not use lubricating grease, that reacting with the acid of the battery or with the vapours of it forms conductor - salts so causing leakage of current by activating the corrosion.
The clamps on the terminals must be well tightened to reduce the contact resistance.
The disconnection and connection of the cable to the battery positive (+) must be always carried out after having disconnected the negative cable (grounded on the chassis) from the battery.
Pay attention that the terminals + (positive) and - (negative) must be well connected with the respective cables; **in particular the connection to the negative pole has to be connected to the grounded cable on the chassis.**

Important - The battery is of the type «dry charged» and when the vehicle is forwarded by means of lorries or railway wagons, it is fitted **discharged** and with the clamps disconnected; when the vehicles are received, or however before the delivery to the customers, **it is necessary to put in service the batteries following the instructions carried out on the warranty sheet.**

Remember that the vehicle is provided with electrical starter unit and this latter cannot function if the battery is discharged or not connected.

Main characteristics of the dynastarter:

- Type BOSCH G 14 V 11 A 39. 12 V 0,9 PS.
- Type EFEL 12 V. 0,9 PS. 11 A.
- Rated voltage 12 V.
- Rated output:
Starting motor 0.9 H.P.

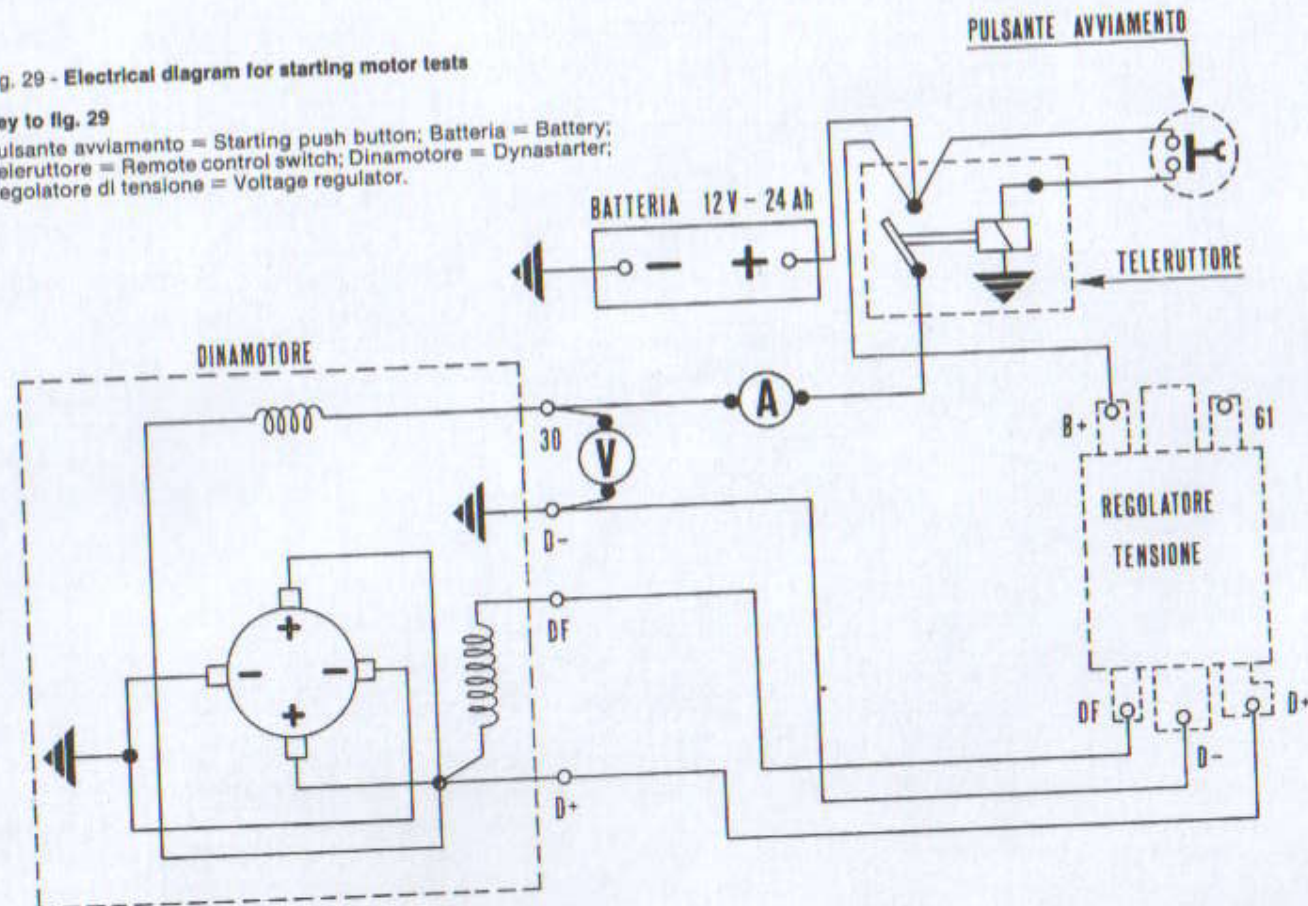
- Dynamo 90 W.
- Weight 7.6 Kg. (16.75 lbs).
- R. H. Rotation.
- Connection with the Vespa engine by means of belt drive.
- Push button and relay control.

Tests on the bench in case of overhauling of the groups dynastarter - voltage regulator.
Starting motor of dynastarter type BOSCH or EFEL.
Fig. 29 - Test of electromechanical characteristics:

Fig. 29 - Electrical diagram for starting motor tests

Key to fig. 29

Pulsante avviamento = Starting push button; Batteria = Battery; Teleruttore = Remote control switch; Dinamotore = Dynastarter; Regolatore di tensione = Voltage regulator.



1) - Unloaded test: the starting motor when unloaded should absorb a maximum of 15 A with 11.5 - 12 V (voltage) and should rotate at ≥ 2500 r.p.m.
 2) - Loaded test: by braking the motor so that it absorb 120 A with a voltage of 9.2 - 9.4 V, a minimum torque of ≥ 520 Kgm. at not less than 1000 r.p.m.

3) - Take - off test: with locked rotor and a voltage of 7.5 - 7.8 V, the absorbed current should not exceed 260 A and the torque should not be less than 1200 Kgm.

Notice - These characteristic have to be taken after that the dynastarter has run for 30" under the conditions of point 1.

The measurements have to be carried out with connected regulator, as illustrated in the diagram of fig. 29.

bring it up to 6000 r.p.m. In this condition the voltage at concerning loads has to show the values of following tables:

Regulator type BOSCH

- Load 0 A	14.3-15.4V.
- Load 6 A	13.8-15.2V.
- Load 11 A	13.2-14.5V.

Regulator type EFEL

- Load 0 A	14.3-15.8V.
- Load 6 A	14 -14.9V
- Load 13 A	13.6-14.6V.

Closing voltage of the automatic cutout: 12.4÷13.1V.
 Back current: 2-7.5 A.

The characteristics of the instruments used for the above mentioned tests, are as follows:

- Amperometer in D.C., minimum full-scale 20 A.
- Voltmeter in D.C., minimum full-scale 20 V., class 1.
- Rheostat 7Ω, 17A.
- Battery 12V, 24Ah.

Notice - The voltage regulator must be placed on a bench which doesn't present vibrations but shows a good thermal conductivity.

Section generator type BOSCH and type EFEL.

Outer characteristic checking.

Realize an electrical diagram as indicated in fig. 30 and proceed as follows: maintain on variable ohmic load a steady voltage of 13.5 V and after thermal stabilization, obtained with the generator functioning at 90 W for 15', proceed at the measurement of the values of the generator outer characteristic, which have to be as indicated on the tables:

Generator type BOSCH.

- 3850 r.p.m. ~	10 W. ~
- 3900 r.p.m. ~	50 W. ~
- 4000 r.p.m. ~	90 W. ~
- 4100 r.p.m. ~	130 W. ~

Generator type EFEL.

- 3350 r.p.m. ~	10 W. ~
- 3400 r.p.m. ~	50 W. ~
- 3500 r.p.m. ~	90 W. ~
- 3600 r.p.m. ~	130 W. ~

Voltage regulator type BOSCH and type EFEL.

Regulation characteristic checking.

Realize an electrical diagram as indicated in fig. 31 and let the dynastarter run steady at 6000 r.p.m., carry out the thermal stabilization, obtained with the regulator running in the condition of no-load for 15', then connect it to a charged battery for 5'. Stop the dynastarter and then start it newly and

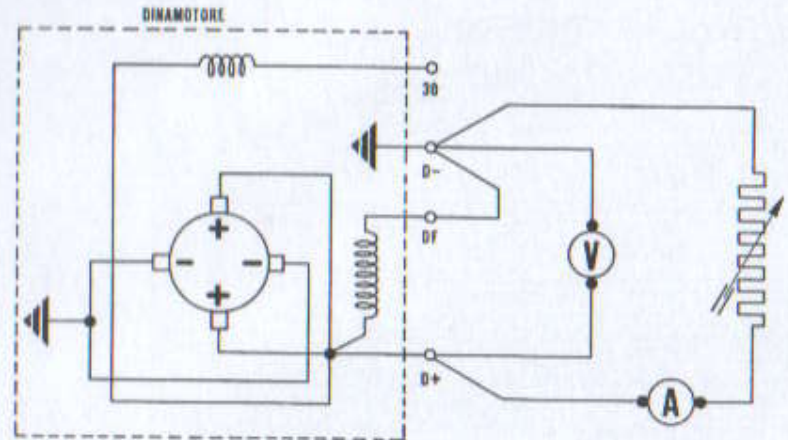


Fig. 30 - Electrical diagram for generator checking

Key to fig. 30

Dinamotore = Dynastarter

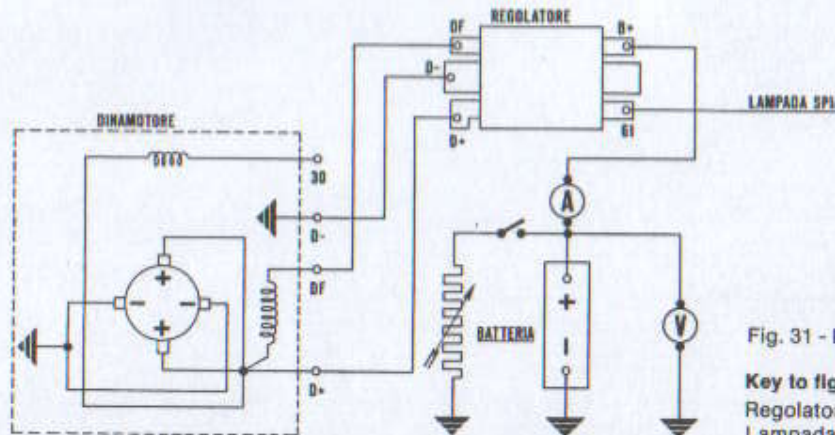


Fig. 31 - Electrical diagram for voltage regulator checking

Key to fig. 31

Regolatore = Regulator; Dinamotore = Dynastarter; Lampada spia = Indicator light; Batteria = Battery.

Assembly play

Piston and cylinder supplied by the factory as spares are marked with letters of the alphabet. In the case where a cylinder or a piston is to be substituted it should be countersigned with the same letter as the mating component.

In the case of a rebored cylinder, the dimension «E» (fig. 32) should exceed the dimension «C» on the piston to be fitted (marked on the piston itself), by the value indicated for each vehicle, «clearance on assy».

19.1.20000 Tool for overhauling the front suspension group (the use of the tool is illustrated on pages 37-38-39).

T. 0046010 Extractor for clutch case.

T. 0046016 Tool for centering the coils of electronic ignition group.

T. 0018119 Tool for assy shafts and axles.

— Added parts 19 and 20 for assy. the crankshaft on the engines with «LS»-device for separate lubrication.

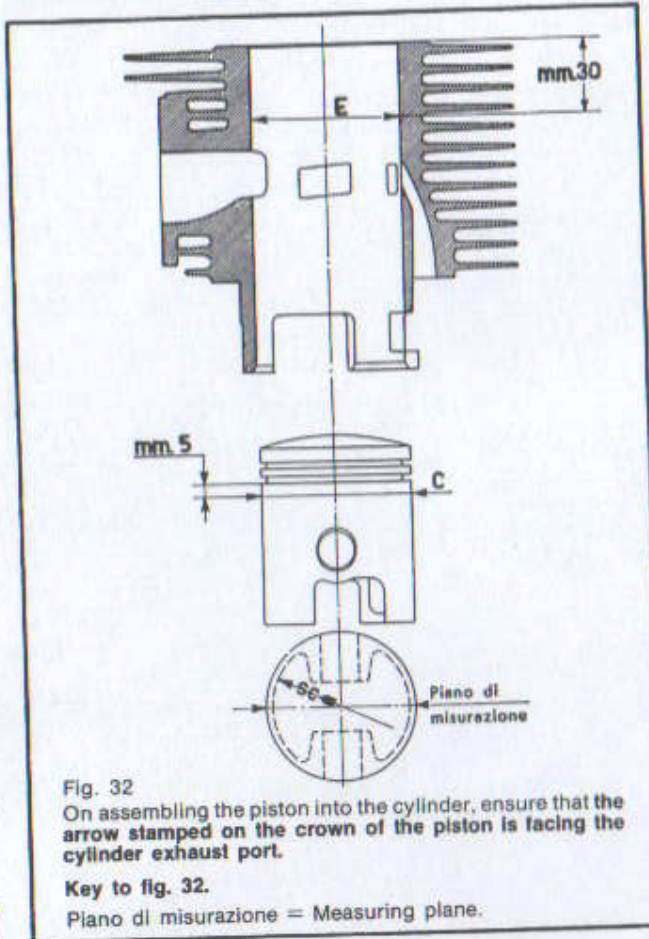


Fig. 32
On assembling the piston into the cylinder, ensure that the arrow stamped on the crown of the piston is facing the cylinder exhaust port.

Key to fig. 32.

Piano di misurazione = Measuring plane.

Cylinder-Piston (Fig. 32)

Part name	P 501 * P 601 * P 601 V	P 601 P 601 V P 2	Limits
Cylinder normal	E=63	E=68	+ 0.025 - 0.005
Piston normal	C=62.81	C=67.76	+ 0.025 - 0.005
Cylinder 1st o/s.	E=63.2	E=68.2	- 0 + 0.02
Piston 1st o/s.	C=63.01	C=67.96	- 0 + 0.02
Cylinder 2nd o/s.	E=63.4	E=68.4	- 0 + 0.02
Piston 2nd o/s.	C=63.21	C=68.16	- 0 + 0.02
Cylinder 3rd o/s.	E=63.6	E=68.6	- 0 + 0.02
Piston 3rd o/s.	C=63.41	C=68.36	- 0 + 0.02

Clearance on assy

- mm. 0.19
- P 501
- * P 601
- * P 601 V
- mm. 0.24
- P 601
- P 601 V
- P 2

Notice - The vehicles P 601 and P 601 V marked with * are of the version station waggon carriage body, with engine displacement of 190 cc.

Piston rings (Fig. 33)

Part name	P 501 P 601 P 601 V	P 601 P 601 V P 2	Clearance «A»	
			On assy.	Admissible after use
Upper and lower normal piston ring	63	68	0.25 - 0.40	2.0
Piston ring 1st o/s.	63.2	68.2		
Piston ring 2nd o/s	63.4	68.4		
Piston ring 3rd o/s	63.6	68.6		

Small end - Wrist pin - Roller cage (Fig. 46).

The con-rods and roller cages are subdivided in 4 categories and the category number is marked on every con-rod and cage.

Assemble:

- 1st category con-rod with 4th category cage
- 2nd category con-rod with 3rd category cage
- 3rd category con-rod with 2nd category cage
- 4th category con-rod with 1st category cage

N.B. - If the engine is noisy use cages of the next inferior category.

For the wrist pin, that is coupled with a 0 clearance on assembly, the max. clearance admissible after use is 0.02 mm.

Crank shaft - Ball bearing (clutch side)

The crankshaft and ball bearing are subdivided in 2 categories "I and II., marked by the half shaft clutch side and on the outer ring of the ball bearing (drg. 77684) and that for increasing the shrinkage allowance of the bearing on the shaft. When overhauling and substituting these parts assemble shafts and bearings of the same categories.

Notice - On the shaft without markings assemble ball bearing of category "II., (inner ring undersized).

Spacer washer (fig. 35)

Part name	Clearance «A» On assy.	
Spacer washer, normal	1	$\begin{matrix} + 0 \\ - 0.06 \end{matrix}$
Spacer washer, 1st o/s.	1.1	$\begin{matrix} + 0 \\ - 0.06 \end{matrix}$
Spacer washer, 2nd o/s.	1.2	$\begin{matrix} + 0 \\ - 0.06 \end{matrix}$
Spacer washer, 3rd o/s.	1.3	$\begin{matrix} + 0 \\ - 0.06 \end{matrix}$
Spacer washer, 4th o/s.	1.5	$\begin{matrix} + 0 \\ - 0.06 \end{matrix}$

0.15 - 0.40

Vespacar
P 501
P 601
P 601 V
P 2

N. B. - If the clearance «A» is not obtained using the normal spacer washer «B», substitute the latter with a suitable oversize washer, so as to obtain the prescribed clearance. Use a feeler gauge (e. g. drg. T. 0060824), for inspection.

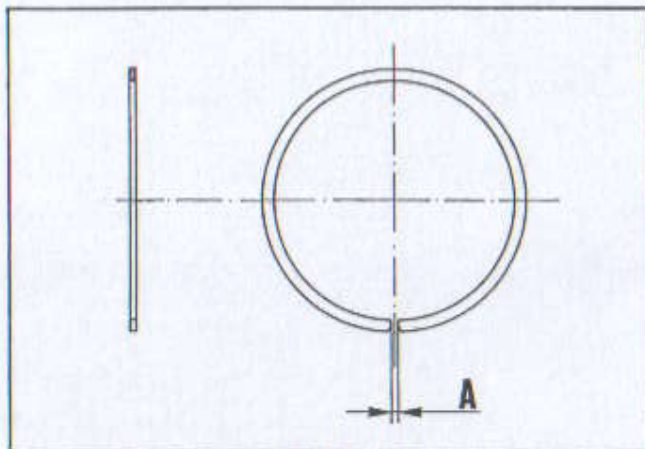


Fig. 33

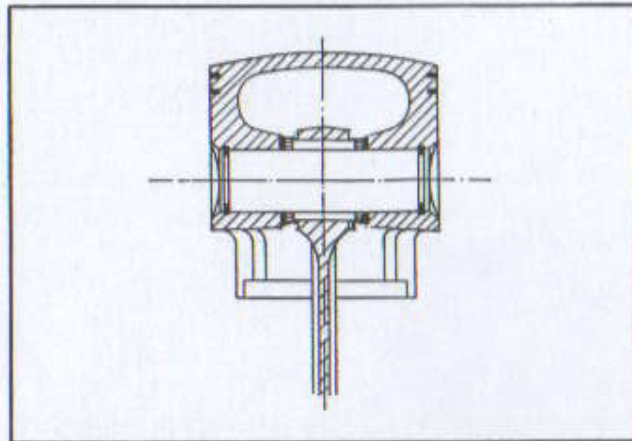


Fig. 34

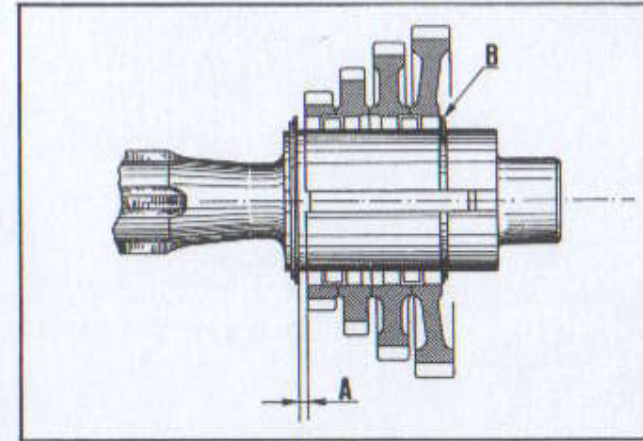


Fig. 35

Carburettor: characteristics - tuning

Carburettor: characteristics

Characteristics	P 501 P 601 ● P 601 V ●	P 601 P 601 V	Vespacar P 2
Dell'Orto	SHB 27-24	SHB 22-17	SHB 27-20
Venturi	mm. 24	mm. 17	mm. 20
Main jet	120/100 short	90/100 long	90/100 long
Slow running jet	50/100	55/100 long	60/100 long
Minimum air gauge	120/100	100/100	100/100
Max air gauge	180/100	150/100	150/100
Starter jet	70/100	70/100	70/100

●) Vehicles version station waggon carriage body with engine displacement of 190 c.c.

Notice - Check that the carburettor, jet cover and jointing pieces to the inlet pipe are securely fitted so as to avoid undesirable air filtrations which could affect the carburation.

On cleaning, wash the parts in neat gasoline and air blast dry; under no conditions should the jets air calibrator holes be cleared using steel wire or similar devices which could easily damage them.

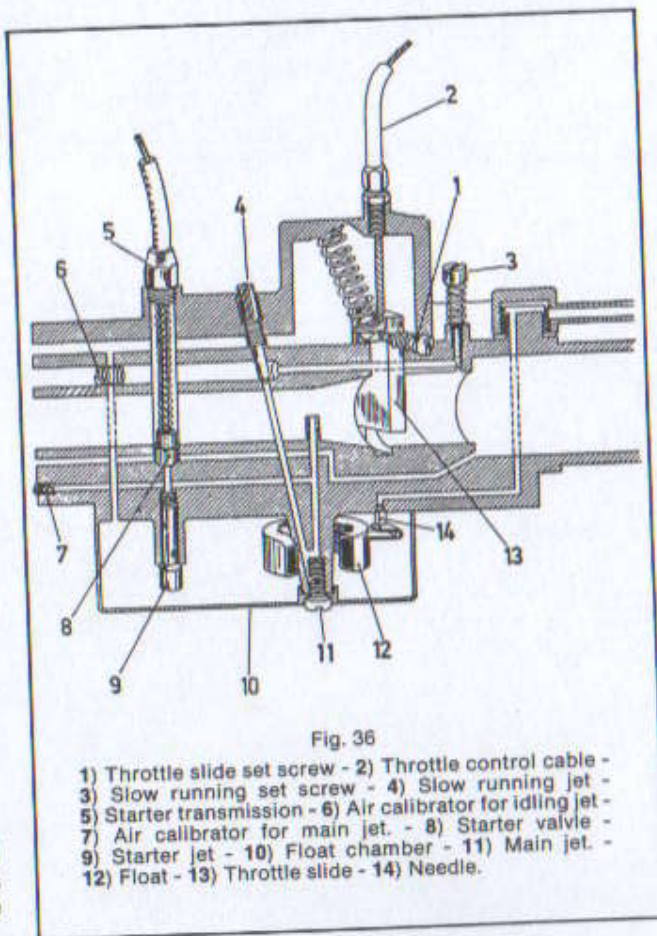


Fig. 36

- 1) Throttle slide set screw - 2) Throttle control cable -
 3) Slow running set screw - 4) Slow running jet -
 5) Starter transmission - 6) Air calibrator for idling jet -
 7) Air calibrator for main jet. - 8) Starter valve -
 9) Starter jet - 10) Float chamber - 11) Main jet. -
 12) Float - 13) Throttle slide - 14) Needle.

Slow running setting

In order to avoid self-ignition defects, the slow-running setting has to be carried out as follows:
 a) - Tune the throttle slide set screw (No. 1 in fig. 36) so that said screw reaches the point near the engine running stop limit. At this condition tune the slow running set screw (No. 3 in fig. 36) in order to increase the engine revolutions; if with this operation the increase of the engine revolution is excessive, reduce it: i.e. by means of the screw (No 1 in fig. 36) let further down the throttle slide till the nearest position to that one of the engine running stop limit, already described, is reached.

Characteristics of the «LS» device (separate lubrication).
 (See the scheme on page 5)

Times that are necessary for the consumption of 1 cm³ of oil:

- With gas control lever at max: 24"–27"
- With gas control lever at minimum: 1'45"–2'35"

Said times have to be checked with the mixer control gear running at 5000 r.p.m.

General instructions for maintenance and lubrication

Group	After the first 1000 Km.	Every 4000 Km.	Every 8000 Km. *Every 15000 Km.	In case of overhaul	Lubricants
Engine	Check carburettor fastening.	Remove carbon from piston, cylinder head, cylinder ports. Clean exterior of cylinder.	-	Remove deposit from engine parts	
Gear box	Change oil (◀-A)	Check and top up oil level (◀) to level of filler hole	Change oil (◀-A)	Change oil (◀)	
Air filter	-	Dismantle and clean with gasoline (petrol) and blow dry with air jet	★ Replace filter cartridge (AC AIRAC FLAT PACK).	-	
Contact breaker group (vehicles without electronic ignition)	-	-	Clean contact breaker points, adjust max. gap 0.4--0.5 mm. and check the timing	Replace contact breaker (if necessary) or clean and adjust points	(◀) Esso 2-T Motor Oil 40; Shell Super 2-T Motor Oil; Total 2-T Motor Oil; Chevron 2-T Motor Oil; Aral 2-T Motor Oil.
Spark plug	Check electrode gap	Clean, decoke, adjust gap (0.6 mm.)	-	Replace spark plug	
Silencer	-	Decoke exhaust pipe (B)	-	Decoke exhaust pipe (B)	(●) Esso Beacon 3-Fiat Z 2.
Bearings	-	Lubricate	-	Grease (●)	(*) Liquido Fiat Etichetta Azzurra DOT3
Lever fulcrum points and control levers (engine side)	-	-	-	Lubricate	
Hydraulic brake	-	Check and top up oil level (*)	-	-	
Control cables	Adjust	-	Grease (●)	Grease (●)	
Flywheel felt	-	-	Grease (●)	Grease (●)	
More important nuts and bolts of the vehicle	Check tightness (see locking torque table on page 36)	-	-	Check tightness (see locking torque table on page 36)	

If the vehicle is to be stored, proceed as follows: 1) Clean the vehicle - 2) Drain off all fuel - 3) Take out the air filter and with the engine running at idling revs, pour about 30 cc. of oil (see ◀) into the Venturi of the carburettor - 4) Smear unpainted metallic parts with antirust grease - 5) Raise the vehicle wheels off ground.

A) Operation to be carried out with warm engine. Quantity of fresh oil about 885 grams, when checking the oil level must always be between the markings "min..." and "max...", on the tap dipstick.

B) Operation to be carried out by using a hooked wire or by blowing through air jet from the inlet and after having previously externally heated the exhaust tube.

★) If the vehicle is used prevalently on dusty roads clean the air cleaner case and replace the cartridge more frequently.

Bolts and Nuts: Locking torques (Kgm.)

PART	Torques in Kgm.		PART	Torques in Kgm.	
	P 501 - P 601 P 601 V P 2			P 501 - P 601 P 601 V P 2	
Engine unit			Group front suspension		
Selector spindle	1.9-2.1		Nut securing the upper side of the damper	3-4	
Spindle guide bush, bottom and 2nd gear	2.5-3 a)		Nut securing the inferior side of the damper	10-13	
Sparking plug	1.8-2.4		Ring nut securing steering column upper bearing	5-7	
Short bolt securing dynastarter to differential case	3-3.5		Nut securing wheel rim to drum	10-16	
Short bolt securing dynastarter to crankcase	2-2.5		Central nut securing wheel	10-12	
Bolt securing locking plates and clutch case	1-1.2		Nut securing steering control lever	4.7-5 b)	
Nut securing clutch unit	4-4.5				
Nut for pin of the gear cluster	3.5-4		Group rear suspension		
Nut securing flywheel fan	6-6.5		Nut securing wheel rim to the drum	4,7-6	
Nut securing exhaust pipe	1.9-2.1		Bolt securing brake jaw support disc	10-16	
Bolt securing clutch cover	1.3-1.7		Nut securing the inferior side of damper	3.4-4.6	
Nut securing cylinder head	1.7-2.3		Nut securing the upper side of damper	3-4	
Engine rear fastening: nut securing buffer to the engine	2.9-3.1		Nut securing swinging arm	4-5	
Engine rear fastening: nut sec. buffer to engine holder frame	3-3.5		Nut for elastic coupling	4-5	
Nut sec. crossbeam buffer to the engine holder frame	4-5		Nut securing hub to shaft	5-7	
Nut securing engine to the crossbeam	1.9-2.9		Wheel axle punched nut	14-18	
Oil drainage magnetic plug	2.2-2.5				
Bolt securing case halves	1.3-1.5		Group frame		
Nut securing dynastarter pulley	3.5-4		Nut securing the bolt of pedal lever group	1.5-2.5	
Long bolt securing dynastarter	2-2.5		Stop switch at hydraulic system fitting	4.8-3.5	
			Bolt securing cabin doors	2.3-3	
Group differential			Nut securing motor for windscreen wiper	0.8-0.9	
Bolt securing drive gear to differential case	5.4-6		Nut securing brake master cylinder	0.8-1.2 a)	
Bolt securing differential cover	1.3-1.7				

a) Specific Vespacar P 2 - b) Vespacar P 601 V and P 2.

Overhauling

Front suspension unit overhauling

The overhauling operation of front suspension - steering column unit, here below described, is essentially carried out for the replacement of the connecting parts (pin, «NADELLA» needle bushes, oil seals and dust cover unit) between steering column and front wheel swinging arm and is realized by means of a proper tool 19.1.20000 and a 10 M.T. minimum power hydraulic press.

N. B. - Before carrying out the mentioned overhauling, make sure that steering column and swinging arm, with a special attention to the working zone of the roller bearing on wheel shaft, are in good conditions: in such case only it is admissible to realize the overhauling.

Note that, if the steering column has been deformed, it is always absolutely necessary to **replace it with a new one.**

Engine Single plate clutch

On the engines with new single plate clutch for extracting the group use the tool T. 0046010 illustrated on page 32.

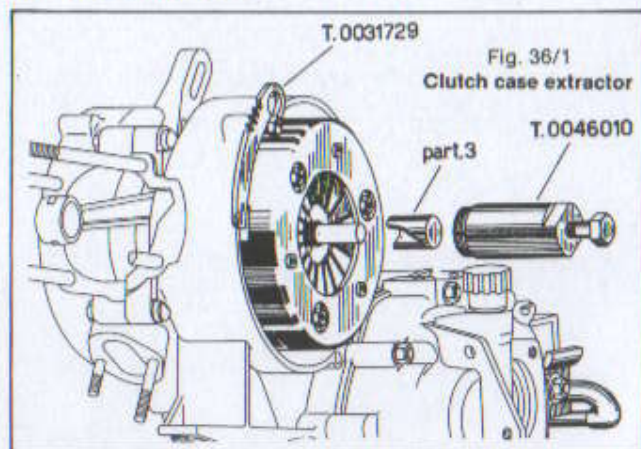


Fig. 37 - Dismantling of the two retaining washers

Operation, to be carried out by hand, without the press.
- Use a proper punch of the dimensions as in fig. 37, act with mallet blows until the squashing of the retaining washer and remove it with a point.
- For the second washer repeat the operation by using the punch on the opposite side to the one shown in fig. 37.

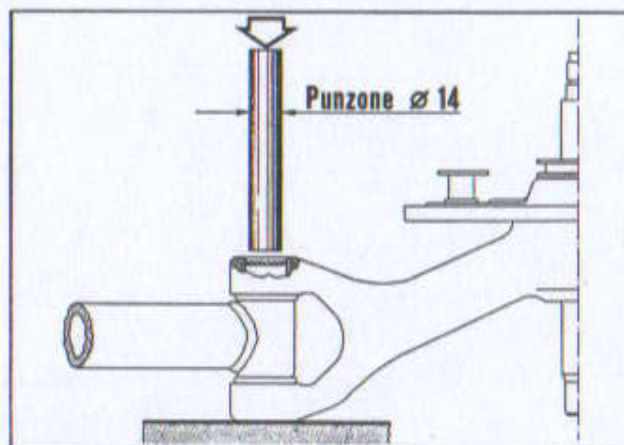


Fig. 37
Punzone Ø 14 = Ø 14 punch

Fig. 38 - Dismantling of pin and «NADELLA» needle bushes

- Place on tool 19.1.20000, equipped with details 1 - 6 and 18, the suspension unit as in fig. 38 and act with the press until contemporaneously pin and «NADELLA» opposite to the press action are expelled.

- After having removed the pin and the first «NADELLA», the swinging arm is quite released from steering column.

N. B. - The tool 19.1.20000 should be always equipped with detail 1 (on upper side) and 18 (on lower base) see fig. 38.

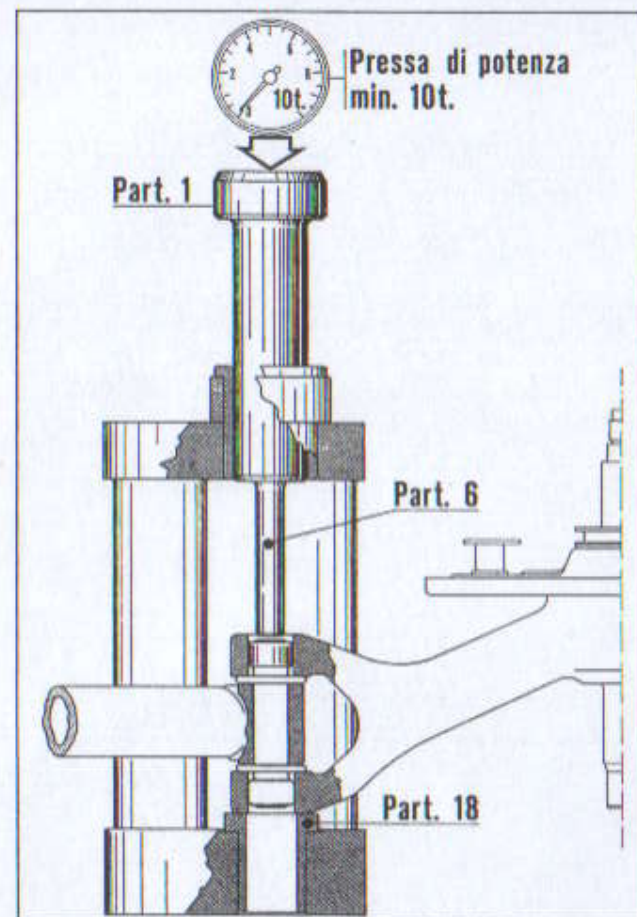


Fig. 38

Pressa di potenza min. 10 t. = 10 M.T. min. power press

Fig. 39 - Removing of 2nd NADELLA

(Operation to be carried out by hand, without the press).

- For removing the 2nd «NADELLA» use the detail 9, as shown in fig. 39 and act with mallet blows.

Reassembly

Important: During the mentioned dismantling operations the needle bushes are destroyed when the press is operated. Consequently when reassembling use **new bushes, pin oil seals and dust covers**.

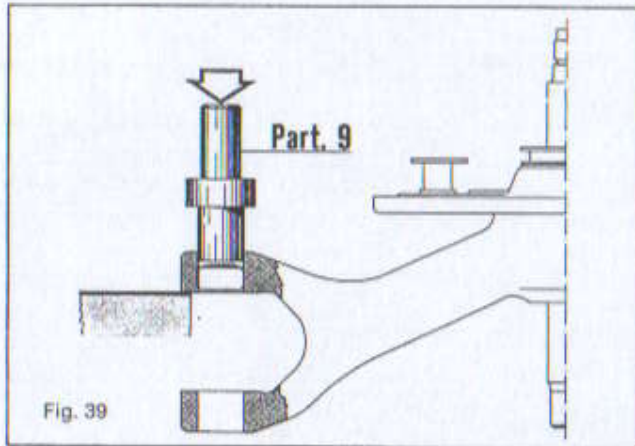


Fig. 39

Fig. 40 - Pin assembling

- Connect by hand the swinging arm to the steering column by means of the guide pin detail 12.
N.B. - Before carrying out the mentioned connection fit the two dust covers «P» on the swinging arm as shown in fig. 40 detail «A».
 - Prepare the tool 19.1.20000 by connecting to detail 1, lower end, the detail 9 and on tool lower base the detail 11 as shown in fig. 40.
 Place the unit swinging arm - steering column, endowed with guide pin, on the tool 19.1.20000 already prepared as above; introduce the pin previously greased with lubricant with **Molykote powder** basis or **Molubrol mixed with tallow** on the detail 9 and by acting the press push it until detail 9 butts against the steering column.

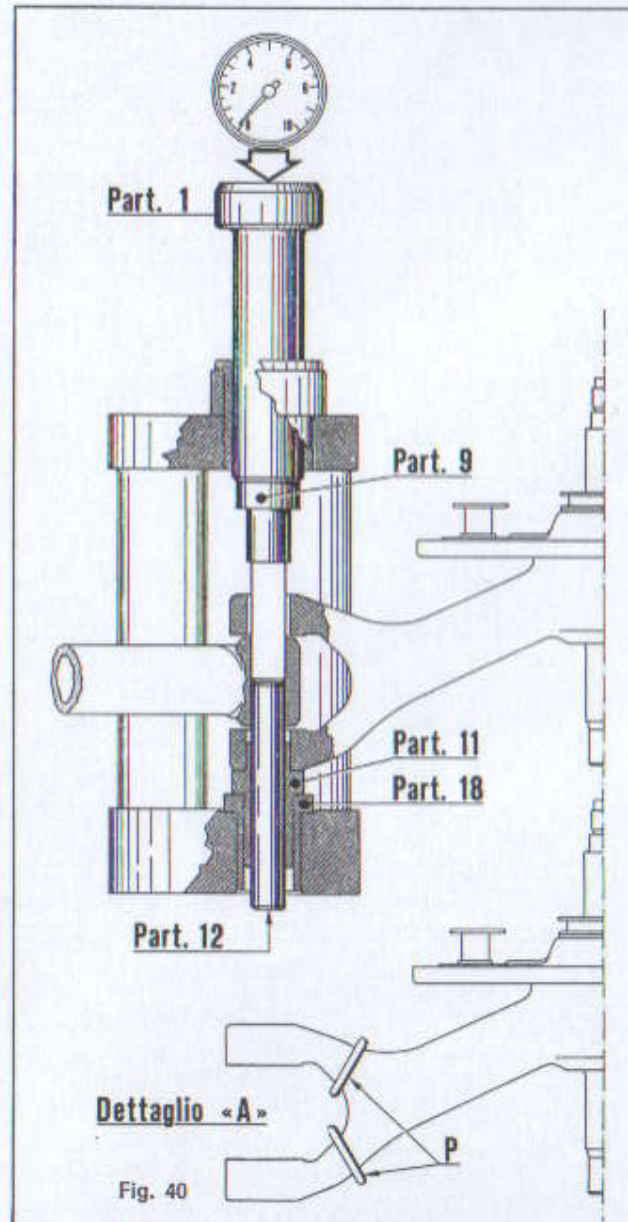


Fig. 40

Fig. 41 - Oil seal assembly

(Operation to be carried out by hand without the press).

- When the pin has been fitted, take off the unit from the tool and introduce, with mallet light blows both spacers det. 14 (see fig. 41).

Notice - The fitting of the spacers should be carried out by maintaining concentricity and separation in respect of the pin, as illustrated in fig. 41 detail «B»; in fact, a wrong placement of the mentioned spacers (notch of detail 14 in contact with the pin)

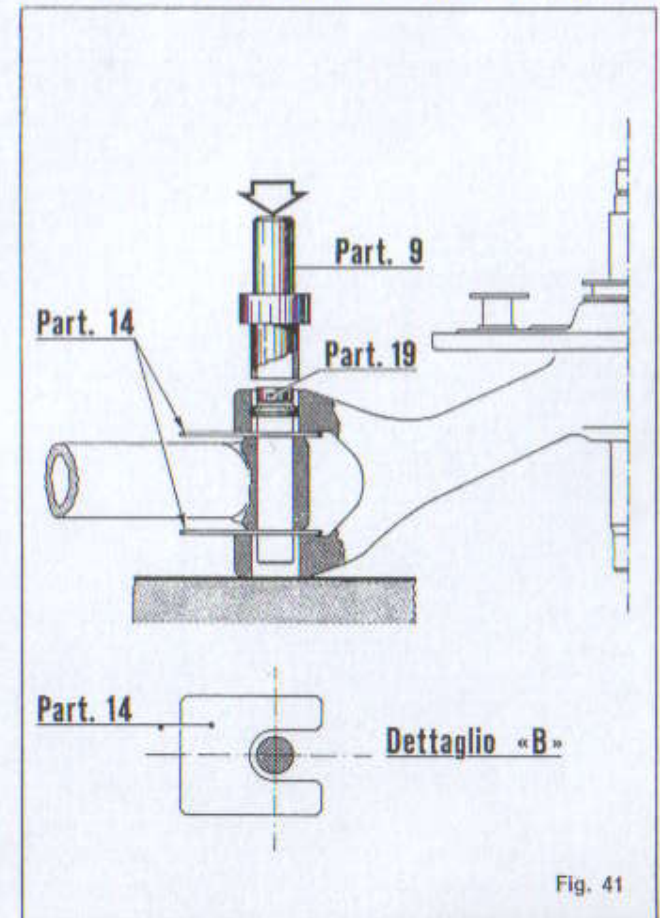


Fig. 41

shouldn't permit the passing of the oil seals during the assembling, see below:

- Introduce by hand on the pin the two oil seals, previously immersed in mineral oil, by leaving uncovered the pin upper end on which the detail 19 will be placed; then by using detail 9 push, with mallet light blows, the oil seals until the detail 9 butts against the pin.

- In order to fit the other two oil seals, repeat such operation by acting on the opposite side to the one shown in fig. 41.

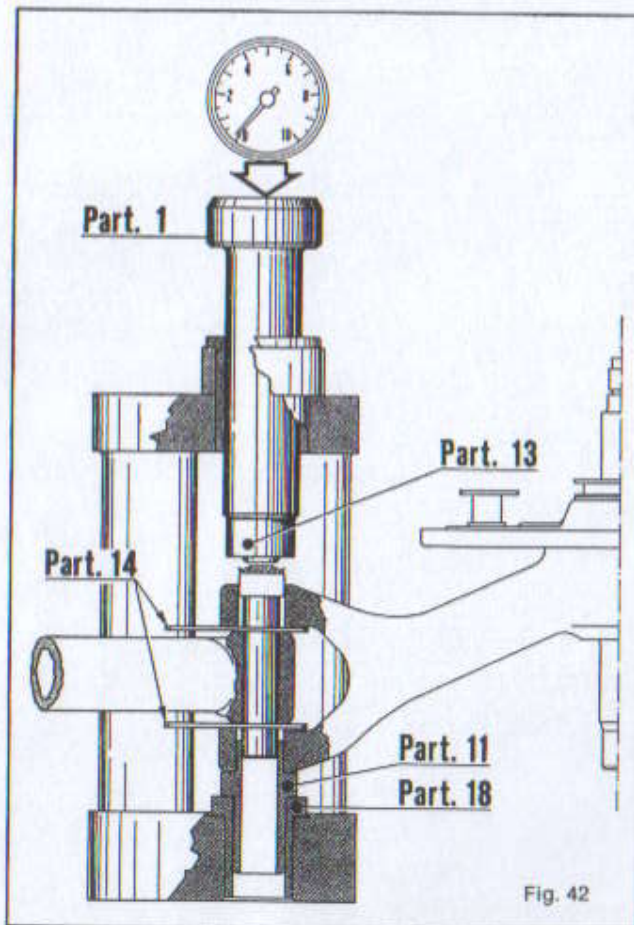


Fig. 42

Fig. 42 - **Fitting of «NADELLA» needle bushes complete with shoulder washers**

- Introduce, by hand on the pin the needle bush with shoulder washer.

Notice - Before carrying out the mentioned preassembly, «NADELLA» needle bushes (previously washed in pure petrol (gasoline) or neutral kerosene in order to eliminate protective anti-rust) should be half filled with **FIAT Z 2 grease**.

- Take off from the base of the tool 19.1.20000 the detail 12 partially expelled during pin assembling (fig. 40) by leaving detail 11 always fitted.

- Place detail 13 on detail 1 (see fig. 42), instead of the pre-existing det. 9 (see fig. 40).

- Place the suspension unit on the tool and push by the press, the shoulder washer-needle bush unit until the detail 13 butts against the swinging hub. With such operation the 1st «NADELLA» is fitted.

- In order to fit the 2nd «NADELLA» position in the tool always equipped with detail 13, the detail 15 in place of detail 11: **with the suspension unit upset**, position corresponding to the one shown in fig. 43, repeat the operation indicated in the preceding point, so as to fit the second unit shoulder washer - «NADELLA» needle bush.

Fig. 43 - **Final positioning of «NADELLA» needle bushes on pin (pin end in contact with «NADELLA» inner bottom)**

- Remove the detail 13 from detail 1 of the tool (see fig. 42) and introduce the detail 16 (see fig. 43); install in the lower base the detail 17 as in fig. 43; act the press (with ~ 3 M.T. force) until «NADELLA» needle bushes are definitely fitted.

- Wedging of the washers

- Use the tool endowed with det. 9 and 11 as shown in fig. 40 for fitting the pin, and push with press action **with about 1.8 M.T. charge**, until the washers are wedged on swinging arm.

- Now remove both spacers (det. 14 fig. 43) and, after having completely filled up with **FIAT Z 2 grease** the space between steering column and swinging arm, displace the dust covers («P» fig. 40) until they are in the correct position into the mentioned space.

- With the above wedging operation of the washers the reassembly of the front suspension is completed.

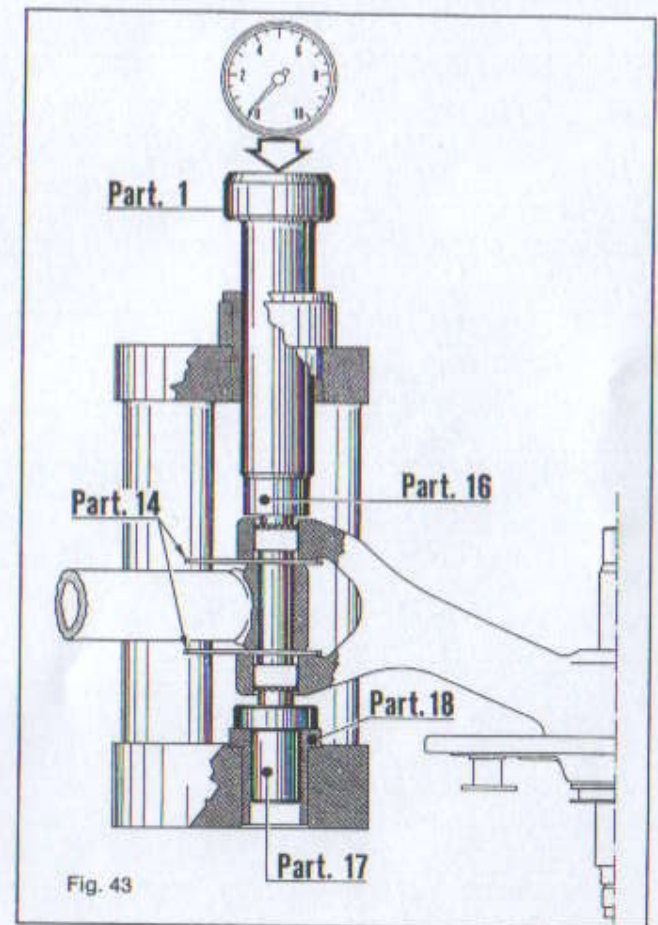


Fig. 43

Fig. 44 - Door window regulator (Vespacar P2).

The door window regulator is of the steel wire rope type and it is locked in the inner frame of the door with 6 screws. The wire rope slides on 3 pulleys, 2 of which are locked on the inner guide «T», where the plate for anchoring the glass supporting section iron slides. The third pulley

(control pulley) is locked with three screws «B» on the inner structure of the door.

The wire rope is maintained stretched by means of two pieces of sheath fitted between the pulley carrier inner guide and the control pulley.

The glass is fastened with two centering spacers and sized with THIO BOSTIK 64-V on a supporting section iron, which is locked on the sliding plate with two screws «A».

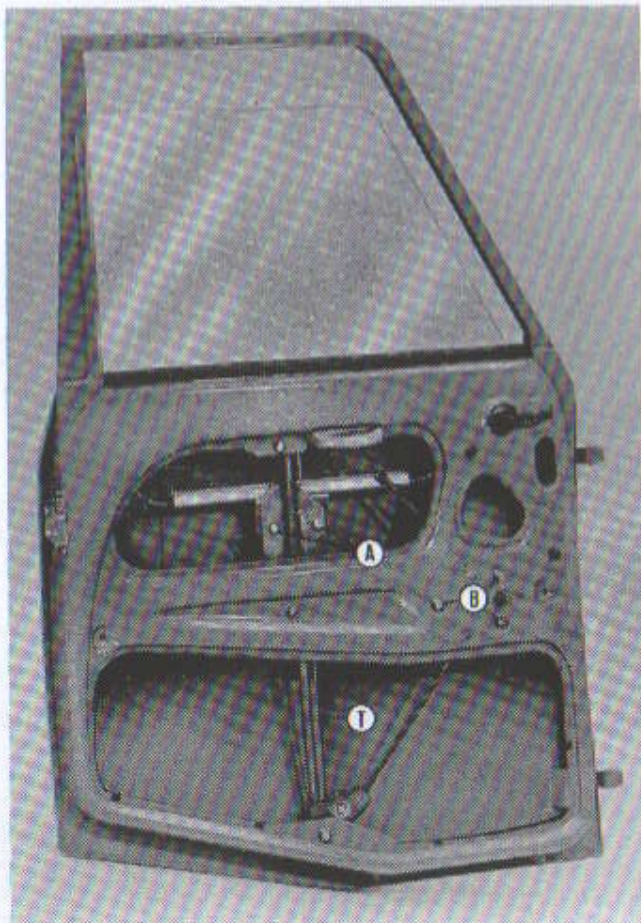


Fig. 44

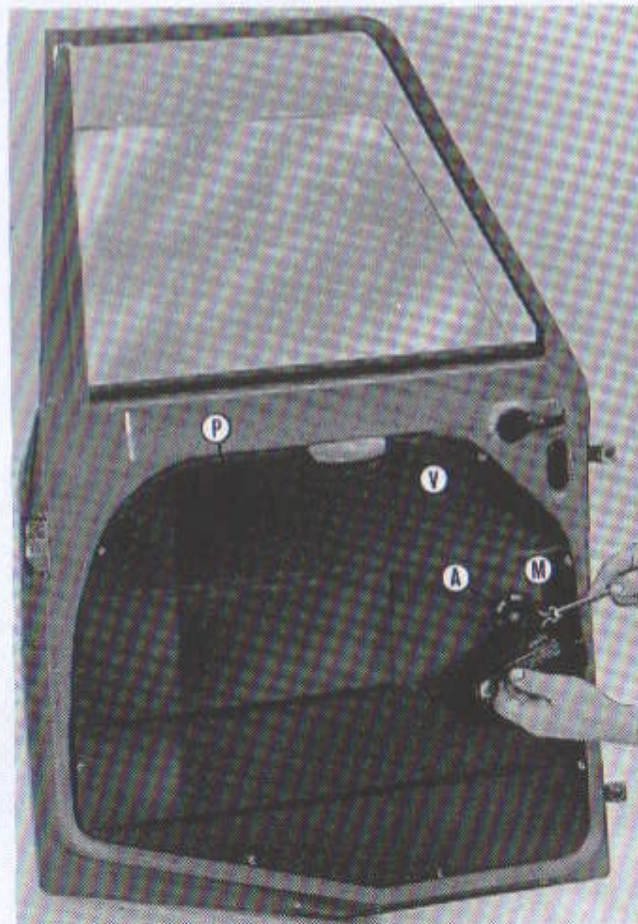


Fig. 45

Notice - In order to make easier the assembly (centering) of the glass and of the door window regulator unit the holes on the door inner structure and on the sliding plate are slotted.

Fig. 45 - Door lining panel

To access the door window regulator unit for checking or overhauling, it is necessary to remove the door lining panel «P» in this way: press the plastic escutcheon plate «A» of the window regulator control lever and by means of a hooked steel wire remove the securing spring «M» and then the lever. Now unscrew the 7 securing screws «V» and take the lining panel off.

Check the wear-condition of the wire rope, pulleys and other component parts, if necessary change the window regulator unit.

Should the fault be due to oxidation or lack of lubrication of the slide component parts (wire rod, pulleys, etc.), clean and lubricate with grease **FIAT Z2**.

Notice - On the vehicles with frame number before AFIT - 48076 the door window regulator is different from this one because the transmission for the glass regulation is obtained with 5 pulleys and appropriate lateral grooves locked on the internal door structure.