MOTO GUZZI

WORKSHOP MANUAL

V10 CENTAURO
DAYTONA RS
1100 SPORT

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INTRODUCTION

Purpose of this manual is to give the necessary instructions for overhauling and carrying out repairs in a rational way.

All data herein contained are meant to give a general knowledge of the main checking operations to be done when overhauling the different component groups.

To this end, the manual contains many illustrations, drawings, diagrams, and tables to assist you in the stripping, checking, and assembling operations.

This manual will also be a guidance for anybody who wishes to familiarize with the manufacturing characteristics of the various component parts of this model.

The knowledge of these will be an essential factor for performing a good job.

EINFÜHRUNG

Dieses Handbuch soll die notwendigen Anlagen zur Durchführung von Überholungen und Reparaturen vermitteln.

Die im Handbuch enthaltenen Daten geben auch einen allgemeinen Überblick darüber, welche Kontrollen beim Überholen der einzelnen Baugruppen durchzuführen sind.

Bilder, Zeichnungen und Diagramme; die für den Abbau, Kontrolle und Montage erforderlich sind, vervollstuandigen die Angaben.

Dieses Handbuch ist ebenso ein Leitfaden für den Kunden, die die Herstellungsdaten und Toleranzen der einzelnen Teile wissen möchte.

Für das Werkstattpersonal ist die Kenntnis dieser Daten eine Voraußetzung zur Durchfuuhrung sauberer Arbeiten.

VOORWOORD

Het doel van dit handboek is de nodige aanwijzingen te verstrekken om revisies en reparaties op rationele wijze uit te kunnen voeren.

De opgenomen gegevens dienen om een algemeen inzicht te krijgen in de belangrijkste controles die tijdens de revisie van de diverse onderdelen verricht moeten worden.

Om de diverse onderdelen makkelijker te kunnen demonteren, controleren en monteren zijn de nodige afbeeldingen, tekeningen en schema's in dit handboek opgenomen.

Dit handboek dient ook als leidraad voor diegenen die de constructieonderdelen van de motorfiets die in dit handboek aan de orde komt willen leren kennen: kennis van deze onderdelen door het personeel dat met de reparaties belast is, is een essentiële factor voor de juiste uitvoering van de reparatiewerkzaamheden.

IMPORTANT

The text is supplemented with schematic illustrations for quick reference and better understanding of the subjects concerned. This manual contains some special remarks:

Accident prevention rules for the mechanic and for the personnel working nearby.

Possibility of damaging the motorcycle and/or its components.

Additional information concerning the job being carried out.

WICHTIG

Zum schnelleren Verständnis wurden die verschiedenen Paragraphen durch Abbildungen vervollständigt, die das behandelte Argument in der Vordergrund stellen. Dieses Handbuch enthält Informationen von besonderer Bedeutung:

Unfallverhütungsnormen für die am Motorrad arbeitende und die in der Nähe arbeitenden Personen.

Es besteht die Möglichkeit das Motorrad und/oder seine Bestandteile zu beschädigen.

Weitere Informationen für den laufenden Arbeitsvorgang.

BELANGRIJK

Om een snel begrip van de tekst te krijgen staan er schematische illustraties bij de diverse paragrafen die het onderwerp dat daarin behandeld wordt laten zien. In dit handboek zijn ter informatie opmerkingen opgenomen die een bijzondere betekenis hebben.

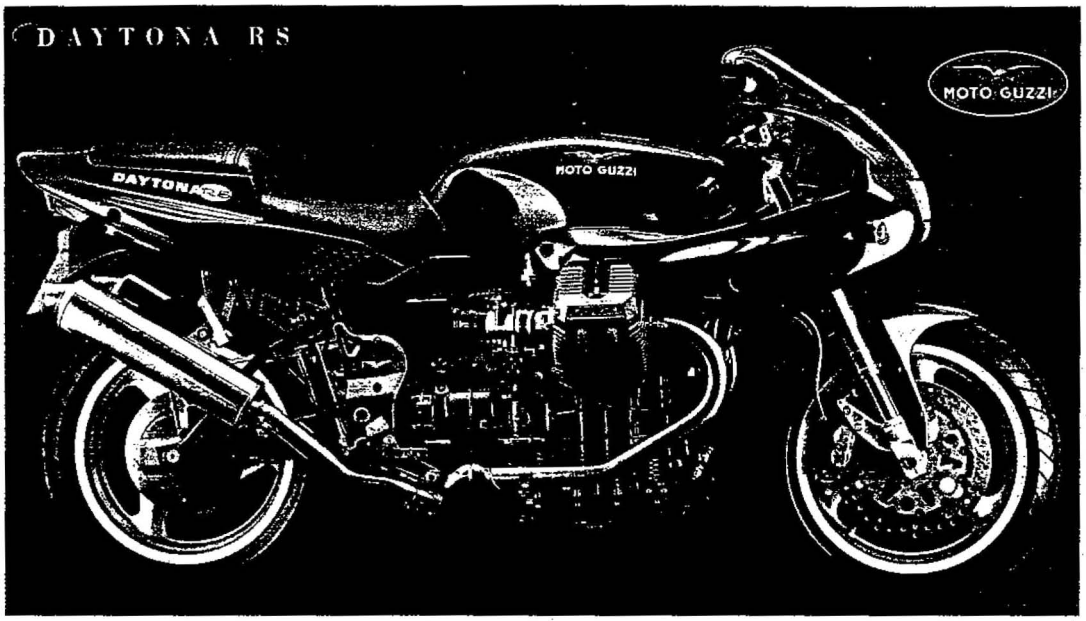
Veiligheidsvoorschriften voor degene die aan de motor werkt of die daar in de buurt van werkt.

De mogelijkheid bestaat dat de motorfiets en/of de onderdelen ervan beschadigd worden.

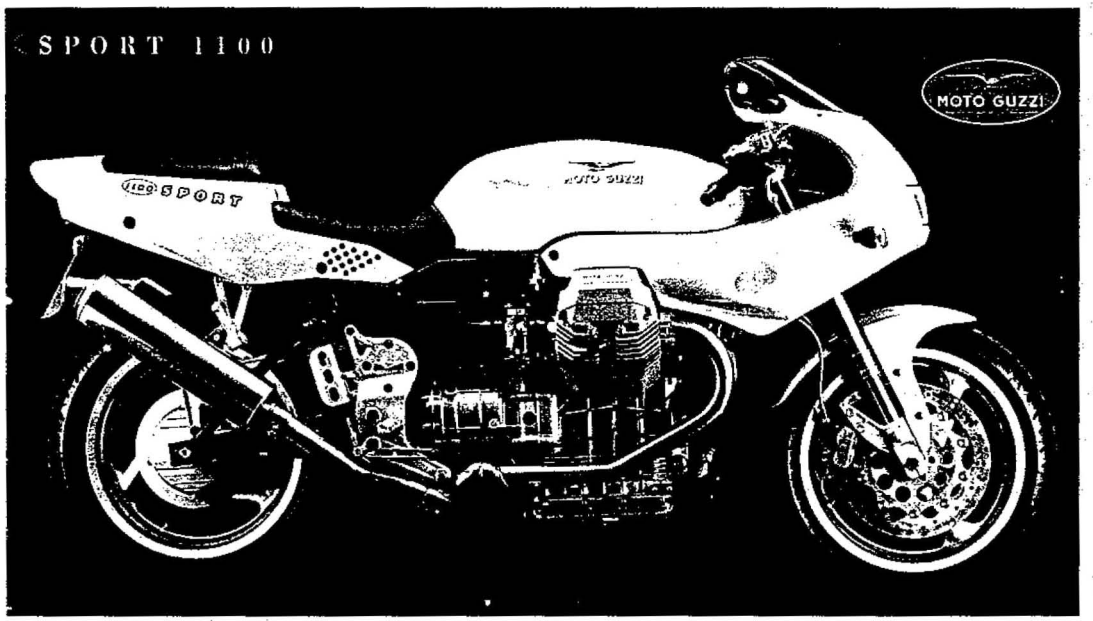
Nadere informatie over de handeling die op dat moment beschreven wordt.

NOTE	**The terms "right" and "left" in the text are to be considered as seen by the rider astride the machine.**
ANM.	***In der Beschreibung erwähntes "Links" oder "Rechts" bedeuten immer in Fahrtrichtung gesehen.***
OPMERKING	**Met "rechts" of "links" wordt de kant bedoeld vanaf de berijdersplaats gezien.**

DAYTONA RS



SPORT 1100



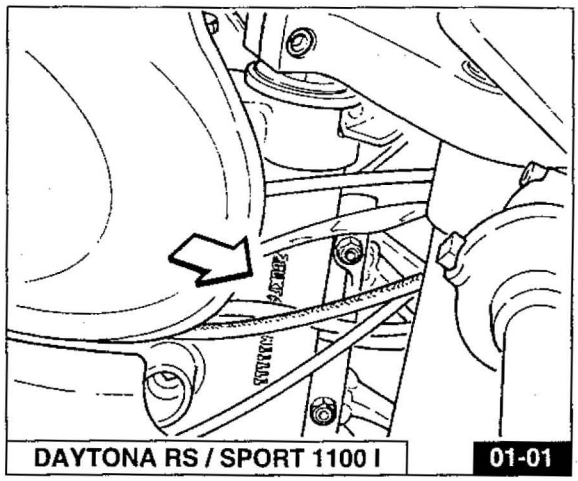
V10 CENTAURO

INDEX

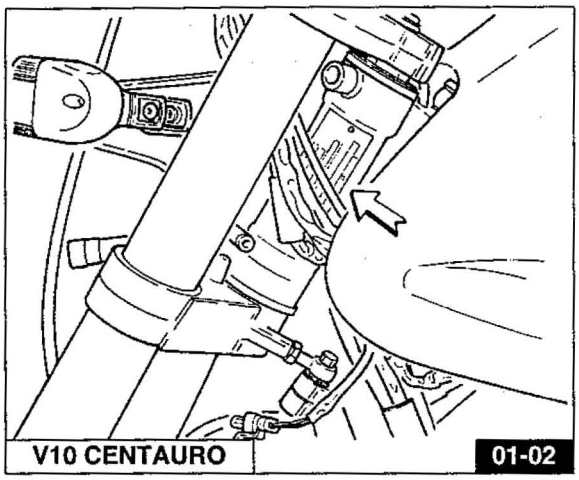
1 IDENTIFICATION DATA

(Fig. 01-01 / 01-02 / 01-03)

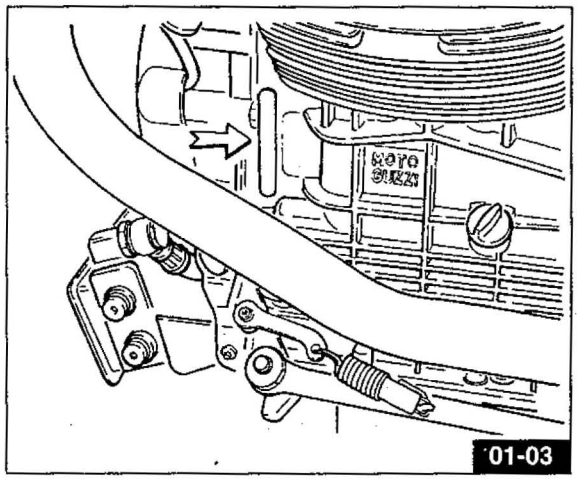
Every motorcycle is stamped with identification numbers on the tubular frame and on the crankcase. The frame number is written in the motorcycle logbook and is the vehicle's legal identification.



DAYTONA RS / SPORT 1100 I 01-01



V10 CENTAURO 01-02



01-03

1.1 SPARE PARTS

Only «**Original MOTO GUZZI Spare Parts**» should be used.
The use of non-original parts invalidates the warranty.

2 GENERAL FEATURES

ENGINE (SPORT 1100 I)
4-stroke, twin cylinder
Cylinder configuration: ..... 90° V-twin
Bore: 92mm
Stroke: ..... 80 mm
Displacement: ..... 1064 cc
Compression ratio: 10,5:1
Max. torque: ..... 97 Nm (9,9 kgm) at 6000 rpm
Max. power: ..... 66 KW (90 CV) at 7800 rpm

ENGINE (V10 CENTAURO AND DAYTONA RS)
NOTE: The data in parenthesis [ ] apply to model DAYTONA RS only.
4-stroke, twin cylinder
Cylinder configuration: ..... 90° V-twin
Bore: 90mm
Stroke: ..... 78 mm
Displacement: ..... 992 cc
Compression ratio: 10,5:1
Max. torque: ..... 88 Nm (9,0 kgm) at 5800 [7800] rpm
Max. power: ..... 70 KW (95 CV) at 8200 rpm [75 KW (102 CV) at 8400 rpm]

VALVE GEAR (SPORT 1100 I)
With rods and rockers and 2 valves per cylinder. One camshaft in the crankcase driven by duplex chain with automatic chain tensioner. The timing data (referring to the 1 mm lift of the tappets) are as follows:
Intake:
open 22° before TDC
close 54° after BDC
Exhaust:
open 52° before BDC
close 24° after TDC
Functioning clearance with a cold engine:
intake valves 0.10 mm
exhaust valves 0.15 mm

VALVE GEAR (V10 CENTAURO and Mod. DAYTONA RS with specifications for USA, SWITZERLAND and SINGAPORE)
Overhead camshaft with 4 valves per cylinder. Straight-tooth gear control, in light alloy and positive drive belt. The timing data (referring to the 1 mm lift of the tappets) are as follows:
Intake:
open 22°30' before TDC
close 57°30' after BDC
Exhaust:
open 49°30' before BDC
close 12°30' after TDC
Functioning clearance with a cold engine:
intake valves 0.10 mm
exhaust valves 0.15 mm

VALVE GEAR (DAYTONA RS - Model with specifications for USA, SWITZERLAND and SINGAPORE excluded)
Overhead camshaft with 4 valves per cylinder. Straight-tooth gear control, in light alloy and positive drive belt. The timing data (referring to the 1 mm lift of the tappets) are as follows:
Intake:
open 22°30' before TDC
close 69°30' after BDC
Exhaust:
open 63°30' before BDC
close 28°30' after TDC
Functioning clearance with a cold engine:
intake valves 0.10 mm
exhaust valves 0.15 mm

Lubrication
NOTE: The data in parenthesis [ ] apply to models DAYTONA RS and V10 CENTAURO.
Pressure fed by gear pump.
Oil filters: wire mesh inside sump and replaceable cartridge filter outside sump.
Normal lubrication pressure 3.8÷4.2 [5] kg/cm², pressure valve, thermostat and cooler.
Low oil pressure sensor (electrical) on crankcase.

GENERATOR / ALTERNATOR
On front of crankshaft (14V - 25A).

IGNITION
"WEBER MARELLI" electronic digital induced discharge, with high-efficiency coil.
Spark plugs:
SPORT 1100I: NGK BPR 6 ES
DAYTONA RS } NGK DR9 EA
V10 CENTAURO }

STARTING
Electric starter (12V-1,2 kW) with solenoid engagement. Ring gear bolted on flywheel.
Starter button (START) « » on right of handlebars.

TRANSMISSION DATA
Clutch
Twin driven plates, dry type, on flywheel. Hand controlled by lever on left of handlebars.

Primary drive
By gears, ratio: 1 to 1.3529 (tooth ratio 17/23).
By gears, ratio: 1 to 1.235 (tooth ratio 17/21). (Switzerland version only for model V10 CENTAURO)

GEARBOX
5-speed, with constantly meshed gears with front dog clutch. Incorporated cush drive.
Pedal operated on the left side of the motorcycle.

NOTE: The SPORT 1100 I and DAYTONA RS models up to gearbox No. CF011499 and CL011199 have been provided with straight teeth; from the gearbox No. CF11400 and CL011200 they have been provided with helical teeth.
The V10 CENTAURO model has a gearbox provided with helical tooth gears.

Gear ratios (DAYTONA RS and SPORT 1100 I):
Low gear = 1 to 1,8125 (tooth ratio 16/29)
2nd gear = 1 to 1,2500 (tooth ratio 20/25)
3rd gear = 1 to 1 (tooth ratio 23/23)
4th gear = 1 to 0,8333 (tooth ratio 24/20)
5th gear = 1 to 0,7308 (tooth ratio 26/19)

Gear ratios (V10 CENTAURO):
Low gear = 1 to 2 (tooth ratio 14/28)
2nd gear = 1 to 1,3158 (tooth ratio 19/25)
3rd gear = 1 to 1 (tooth ratio 23/23)
4th gear = 1 to 0,8462 (tooth ratio 26/22)
5th gear = 1 to 0,7692 (tooth ratio 26/20)

Gear ratios (V10 CENTAURO Switzerland version):
Low gear = 1 to 2 (tooth ratio 14/28)
2nd gear = 1 to 1,3889 (tooth ratio 18/25)
3rd gear = 1 to 1,0476 (tooth ratio 21/22)
4th gear = 1 to 0,8696 (tooth ratio 23/20)
5th gear = 1 to 0,7500 (tooth ratio 28/21)

Secondary transmission
Shaft with universal joint and gears.
Ratio: 1:4,125 (tooth ratio 8/33)

Overall gear ratios (Engine-wheel) (DAYTONA RS and SPORT 1100 I):
Low gear = 1 to 10,1153
2nd gear = 1 to 6,9761
3rd gear = 1 to 5,5809
4th gear = 1 to 4,6507
5th gear = 1 to 4,0783

Overall gear ratios (Engine-wheel) (V10 CENTAURO):

Low gear = 1 to 11,1618
2nd gear = 1 to 7,3433
3rd gear = 1 to 5,5809
4th gear = 1 to 4,7223
5th gear = 1 to 4,2930

Overall gear ratios (Engine-wheel) (V10 CENTAURO) Switzerland version:

Low gear = 1 to 10,1912
2nd gear = 1 to 7,0772
3rd gear = 1 to 5,3382
4th gear = 1 to 4,4309
5th gear = 1 to 3,8217

FRAME

Rectangular section single-beam in NiCrMo steel. Semisupporting engine base.

SUSPENSIONS

Front: White Power upside-down hydraulic telescopic fork with individually adjustable rebound and compression;
Rear: steel swing arm with oval cross section. Single shock absorber White Power with separate adjustment of spring preload and of hydraulic rebound and compression damping.

WHEELS

Light alloy castings with 3 hollow spokes (rear wheel with cush drive unit). Rim sizes:
– front: 3,50x17 MT H2
– rear: 4,50x17 MT H2

TYRES

NOTE: The data in parenthesis [ ] apply to models DAYTONA RS and V10 CENTAURO.
– front: 120/70 ZR 17
– rear: 160/70 ZR 17 [160/60 ZR 17]
Type: Tubeless

BRAKES

Front: two Brembo drilled semi-floating disc brakes in stainless steel for SPORT 1100 and V10 CENTAURO; [two Brembo drilled floating discs, Racing type for DAYTONA RS] with fixed 4 differential piston calipers. Adjustable manual control lever on the right side of the handle-bar;
– Ø disc 320 mm;
– Ø brake cylinder 34/30 mm;
– Ø master cylinder 16 mm.
Rear: stainless steel fixed disc brake with fixed double braking cylinder caliper. Brake pedal on centre-right of motorbike;
– Ø disc 282 mm;
– Ø brake cylinder 32 mm;
– Ø master cylinder 11 mm.

DIMENSIONS AND WEIGHT (SPORT 1100 I AND DAYTONA RS)

NOTE: The data in parenthesis [ ] apply to models DAYTONA RS.

Wheelbase ..... m 1,475
Overall length ..... m 2,125
Overall width ..... m 0,720
Height ..... m 1,125
Ground clearance ..... m 0,160 [0,150]
Weight (dry) ..... kg 221 [223]

DIMENSIONS AND WEIGHT (V10 CENTAURO)

Wheelbase ..... m 1,475
Overall length ..... m 2,180
Overall width ..... m 0,780
Height ..... m 1,094
Ground clearance ..... m 0,154
Driver's seat heigt ..... m 0,820
Weight (dry) ..... kg 232

PERFORMANCE

Max. speed with one rider: 230 km/h for SPORT 1100 I (240 km/h for DAYTONA RS and 218 km/ h for V10 CENTAURO).

Fuel consumption: 4,5 lt/100 km (CUNA).

REFUELINGS (DAYTONA RS AND SPORT 1100 I)

Description	Quantity	Recommended products
Fuel tank (reserve 3 l about)	19 l about	Supergrade petrol (97 NO-RM/min.) Unleaded Petrol (95 NO-RM/min.)
Crankcase sump	3,500 l	«Agip 4T Super Racing SAE 20W50» oil
Gearbox	0,750 l	«Agip Rotra MP SAE 80 W/90» oil
Rear drive box (crown wheel and pinion lubrication)	0,250 of which 0,230 0,020	 «Agip Rotra MP SAE 80 W/90» oil «Agip Rocol ASO/R» oil or «Molykote type A»
Front fork (each leg)	0,400	«WP suspension-REZ 71» oil (SAE 5)
Braking system (front and rear)	—	«Agip Brake Fluid - DOT 4» fluid

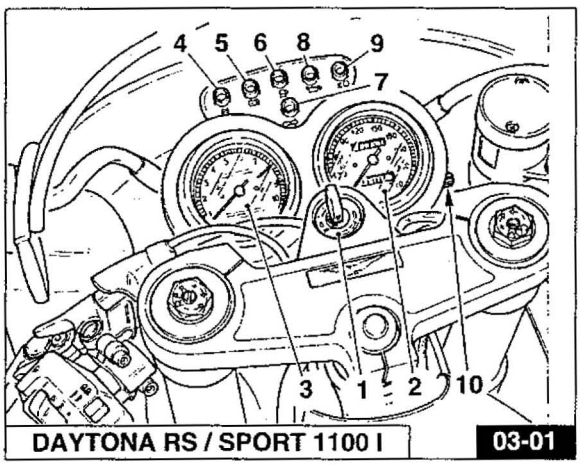
REFUELINGS (V10 CENTAURO)

Description	Quantity	Recommended products
Fuel tank (reserve 5 l about)	18 l about	Supergrade petrol (97 NO-RM/min.) Unleaded Petrol (95 NO-RM/min.)
Crankcase sump	3,500 l	«Agip 4T Super Racing SAE 20W50» oil
Gearbox	0,750 l	«Agip Rotra MP SAE 80 W/90» oil
Rear drive box (crown wheel and pinion lubrication)	0,250 of which 0,230 0,020	 «Agip Rotra MP SAE 80 W/90» oil «Agip Rocol ASO/R» oil or «Molykote type A»
Front fork (each leg)	0,400	«WP suspension-REZ 71» oil (SAE 5)
Braking system (front and rear)	—	«Agip Brake Fluid - DOT 4» fluid

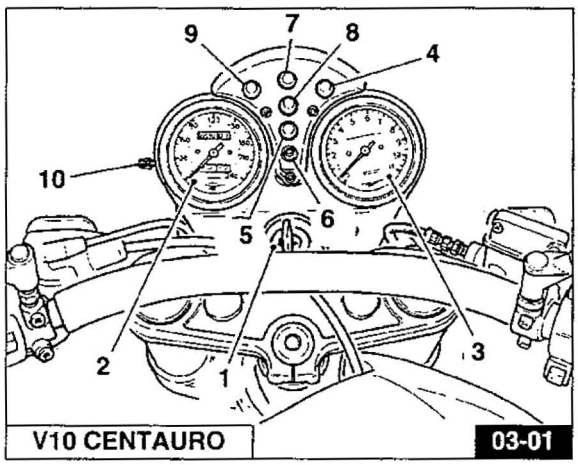
3 INSTRUMENTS AND CONTROLS

3.1 CONTROL PANEL (Fig. 03-01)

1 Key switch for devices and steering lock.
Position OFF «» vehicle stationary. Key removable (no contact).
Position ON «» vehicle ready to be started. All circuits are on. Key not removable.
Position LOCK «» steering locked. Engine off, no contact, key removable.
Position P «» steering locked. Engine off; with switch «**A**» of **Fig. 03-01** in position «» the parking light is on. Key removable.



DAYTONA RS / SPORT 1100 I **03-01**



V10 CENTAURO **03-01**

In order to use the steering lock mechanism, proceed as follows:
■ Turn the handlebars to the left.
■ Press the key downwards and release it, then turn it in an anticlockwise direction to the LOCK «» or P «» position.

WARNING: Never turn the key to position LOCK «» or P «» when the engine is running.

2 Odometer, tachometer.
3 Rev counter.
4 Pilot light (green) «Neutral». Lights up when the gearbox is in neutral.
5 Pilot light (red) for generator current output. Should go out when the engine reaches a certain number of revs.
6 Petrol tank reserve pilot light (orange).
7 Pilot light (green) for flashing indicators.
8 Oil pressure pilot light (red). Goes out when the oil pressure is sufficient to ensure engine lubrication.
9 Pilot light (blue) for main beam.
10 Partial rev counter zeroing.

3.2 LIGHT SWITCHES (Fig. 03-02 / 03-03)

Are fitted to the sides of the handle-bars.

Switch «A»

- Position «●» lights off.
- Position «≫≪» parking lights on.
- Position «☼» twin-filament headlamp on.

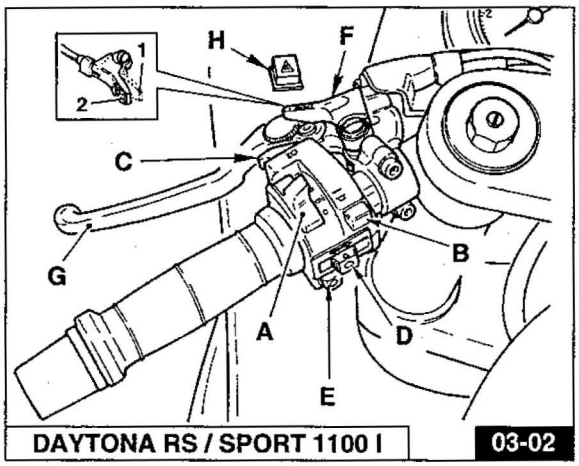
Switch «B»

With switch «A» in position «☼».

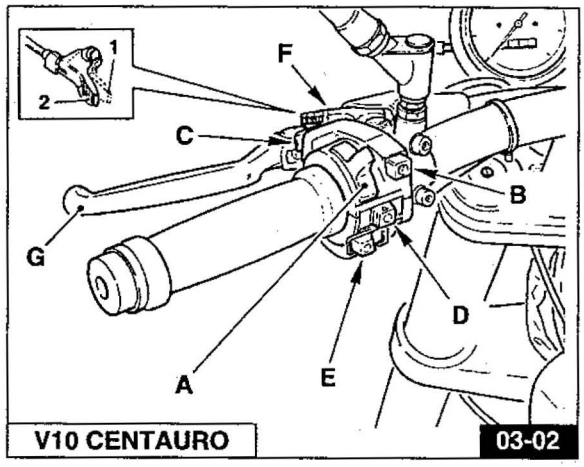
- Position «▪▫» dipped beam.
- Position «–▫» main beam.

3.2.1 SWITCH, HAZARD WARNING LIGHTS («H» DI Fig. 03-02) (DAYTONA RS /SPORT 1100 I)

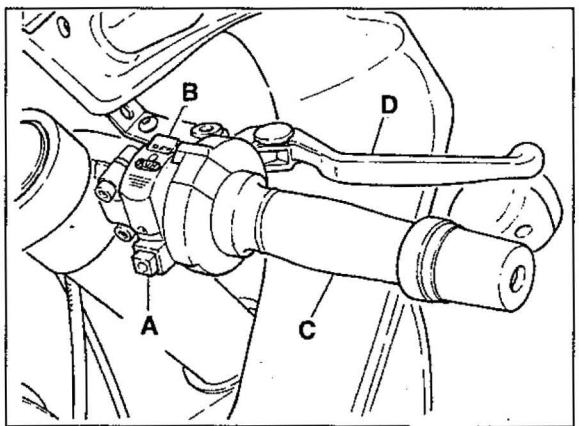
It is installed on the left hand side of the fairing and turns on both flashers at the same time.



DAYTONA RS / SPORT 1100 I 03-02



V10 CENTAURO 03-02



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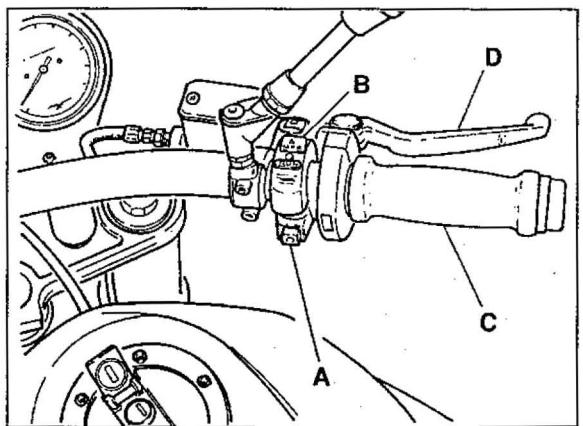


V10 CENTAURO 03-03

3.3 HORN BUTTON, HEADLAMP FLASHER AND DIRECTION INDICATORS (Fig. 03-02)

These are mounted on the left handlebar:

Push-button E «⊷» sounds the electric horn when pressed.

Push-button C «▫» flashing light control.

Push-button «D» (turn).

- Position «⇨» for right turn signals control.
- Position «⇦» for left turn signals control.
- Press the switch to disconnect flashers.

3.4 «CHOKE» CONTROL («F» IN Fig. 03-02)

The «CHOKE» is on the left handlebar and is used for cold starts.

- Position «1» CHOKE on; starting position.
- Position «2» CHOKE off; engine running.

3.5 CLUTCH LEVER («G» IN Fig. 03-02)

This is on the left handlebar and is only to be used when starting or changing gear.

3.6 STARTER BUTTON AND ENGINE STOP SWITCH (Fig. 03-03)

These are mounted on the right handlebar.
With the key «**1**» in **Fig. 03-01** in position **ON** «», the vehicle is ready for starting.
To start the engine:
- check that switch «**B**» is in position (run);
- pull the clutch lever in to disengage the clutch fully;
- if the engine is cold, put the «CHOKE» control «**F**» in the starting position «**1**» (see **Fig. 03-02**).
- press the starter button **A** «» (start).

To stop the engine in case of emergency:
- turn the switch «**B**» to position (off).

Once the engine has stopped, turn the key switch **Fig. 03-01** in position OFF «» remove the key from the switch.

NOTE: Before start, put switch «B» in (RUN) position.

3.7 THROTTLE TWIST GRIP («C» in Fig. 03-03)

The throttle control is on the right handlebar; turning the twist-grip towards the rider opens the throttle, turning it away from the rider closes it.

3.8 BRAKE LEVER, FRONT BRAKE («D» in Fig. 03-03)

This is on the right handlebar and controls the master cylinder of the front brake.

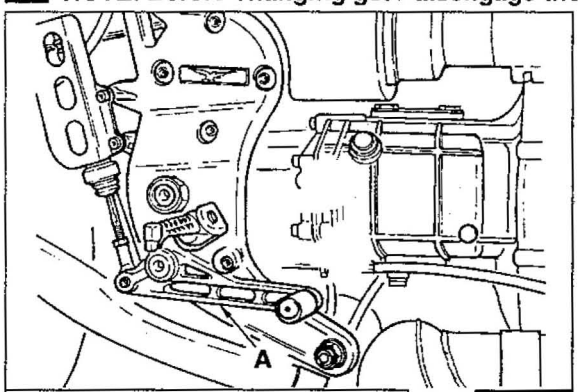
3.9 BRAKE PEDAL FOR REAR BRAKE («A» in Fig. 03-04)

This is centrally located on the right side of the vehicle and is linked to the rear brake master cylinder by a tierod.

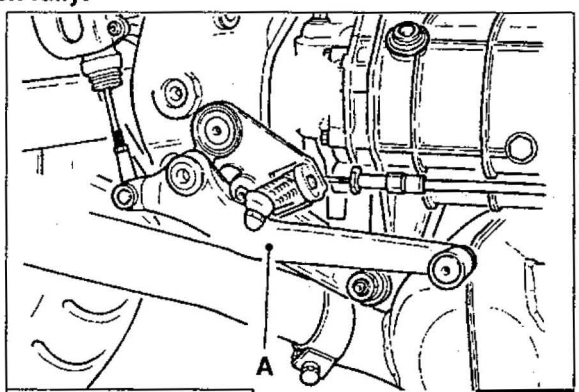
3.10 GEARBOX CONTROL PEDAL (Fig. 03-05)

This is situated on the left of the motorcycle:
- 1st gear: push pedal down;
- 2nd, 3rd, 4th, 5th gears: pull pedal up;
- neutral: between 1st and 2nd gears.

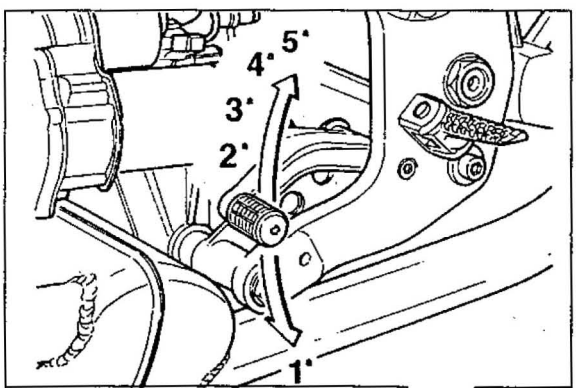
NOTE: Before changing gear disengage the clutch fully.



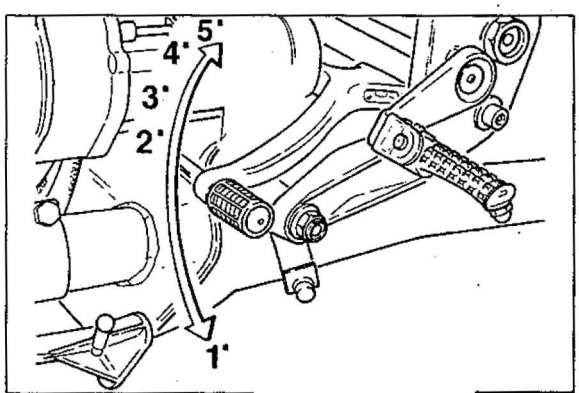
DAYTONA RS / SPORT 1100 I 03-04



V10 CENTAURO 03-04



DAYTONA RS / SPORT 1100 I 03-05

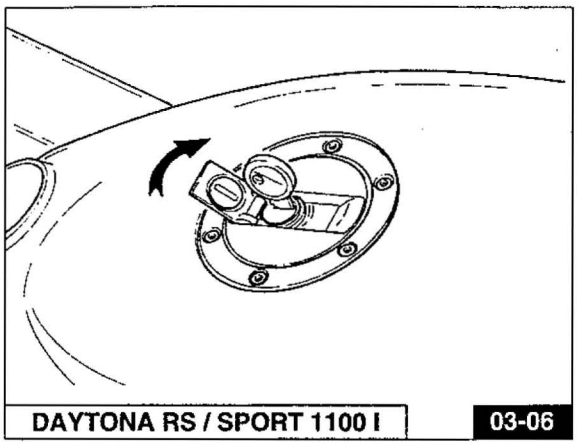


V10 CENTAURO 03-05

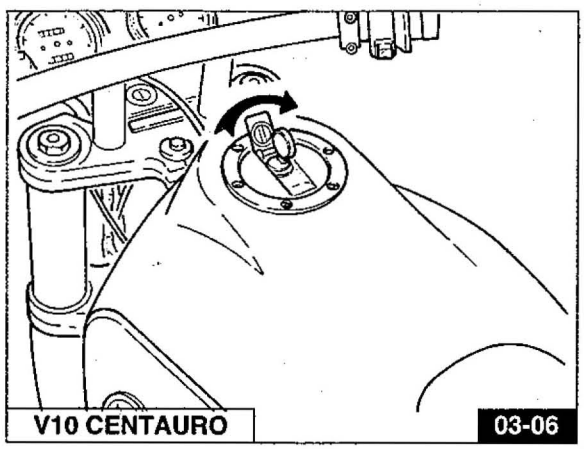
3.11 FUEL FILLER CAP (Fig. 03-06)

To open the filler cap, turn the key clockwise.

NOTE: Fuel spillage caused during refuelling should be cleaned immediately to prevent damage to the fuel tank paintwork.



DAYTONA RS / SPORT 1100 I 03-06



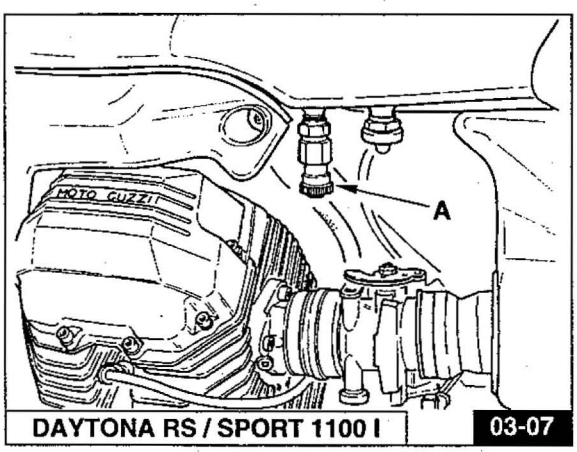
V10 CENTAURO 03-06

3.12 FUEL TAP (DAYTONA RS / SPORT 1100 I) (Fig. 03-07)

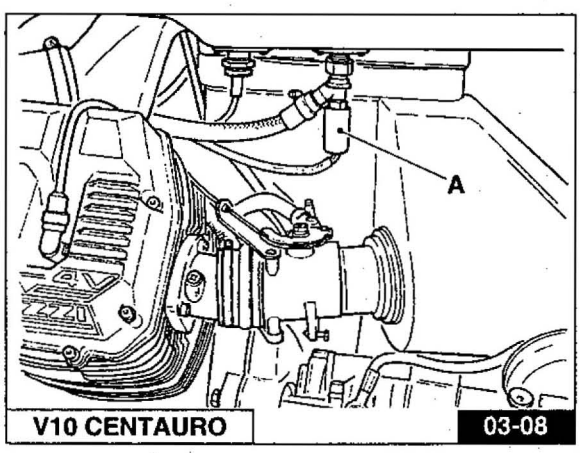
The motor vehicle is fitted with a motor-driven pump that regulates the fuel flow from the tank to the engine.
If the petrol tank has to be removed, before disconnecting the pipes the tap «**A**» on the bottom of the tank on the rear left-hand side must be tightly closed.
Approximately every 10000 km, clean the net filter on the tap.

3.13 ELECTRIC FUEL COCK (V10 CENTAURO) (Fig. 03-08)

The vehicle is provided with an electric cock «**A**» fitted on the left side under the tank, which operates automatically, cutting off fuel flow to the throttle unit when the engine is not running.
It comes into play when the key of the change-over switch «**1**» on **Fig. 03-01** is in its **ON** position «Ω».
Should the cock not be working properly, first check the condition of the fuse «**3**» on **Fig. 03-09**.
Approximately every 10000 km, clean the net filter on the tap.



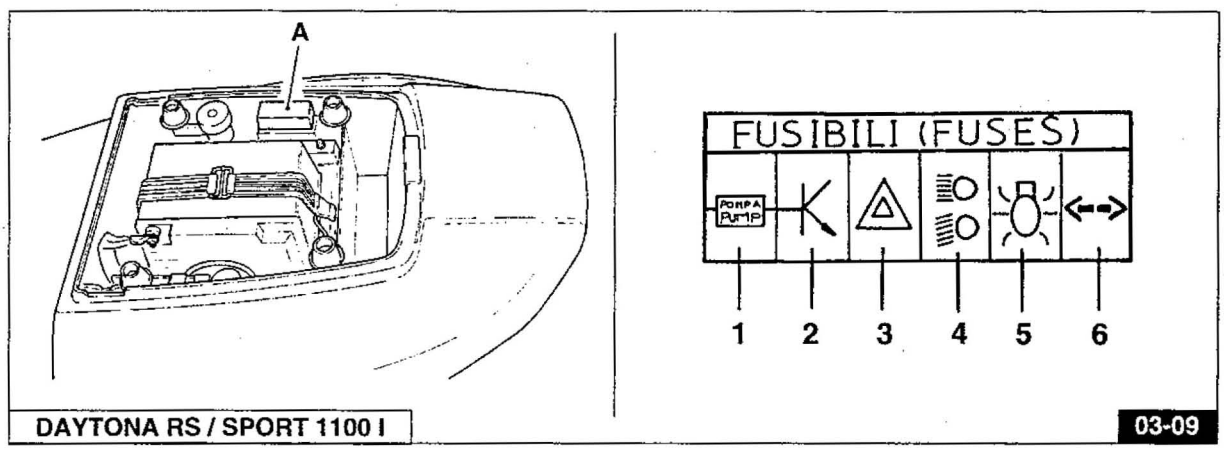
DAYTONA RS / SPORT 1100 I 03-07



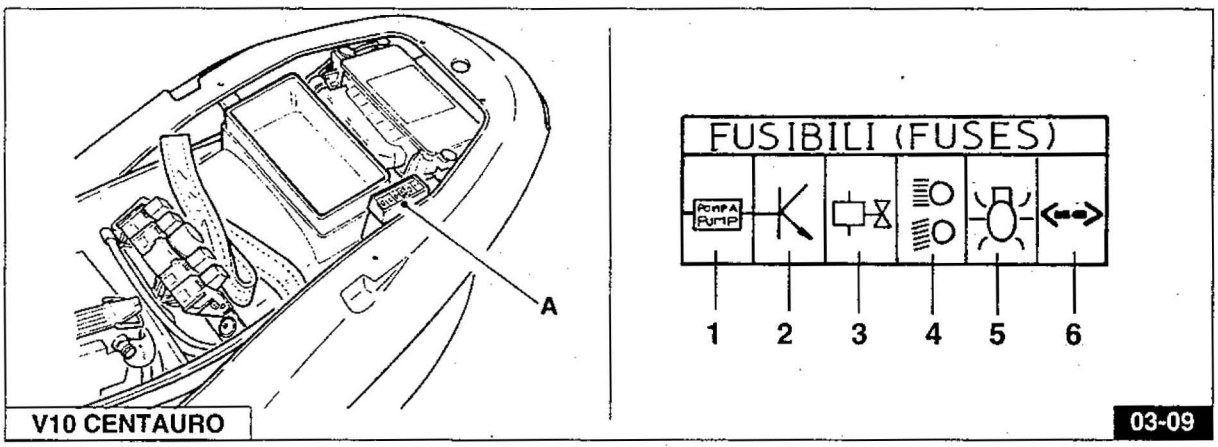
V10 CENTAURO 03-08

3.14 FUSE BOX («A» IN Fig. 03-09)

Situated on the rear right-hand side of the motorbike; remove the passenger seat to access to it **(see Par. 3.20)**.
In the V10 CENTAURO the terminal board is located on the rear left side of the motorcycle; to reach it, remove the saddle.
The fuse box has **6 «15 Amp»** fuses; their functions are indicated by the decal on the cover.
Before changing a burnt fuse, trace and repair the cause of the trouble.
Fuse «1»: fuel pump, coils, electric injectors.
Fuse «2»: electronic box.
Fuse «3»: emergency flashers [electric cock in V10 CENTAURO model].
Fuse «4»: driving beam, traffic beam, passing light, horns, front lever stop light, rear pedal stop ligh, starting motor.
Fuse «5»: tail light, dashboard lights, instruments lighting.
Fuse «6»: blinkers intermittence.



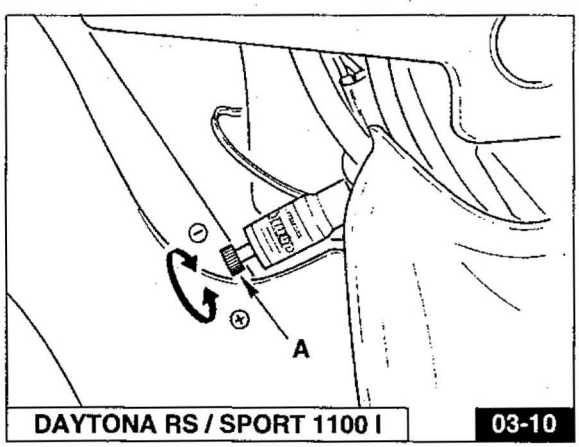
DAYTONA RS / SPORT 1100 I 03-09



V10 CENTAURO 03-09

3.15 STEERING DAMPER (Fig. 03-10)

This is fitted on the front part of the motorbike between the frame and the steering base.
To increase or reduce the braking effect, screw or unscrew the knob «A».

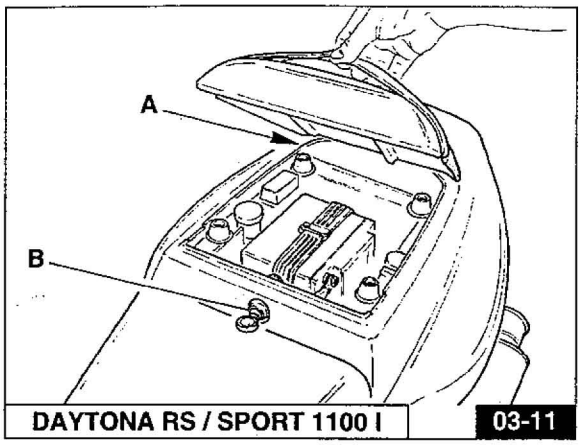


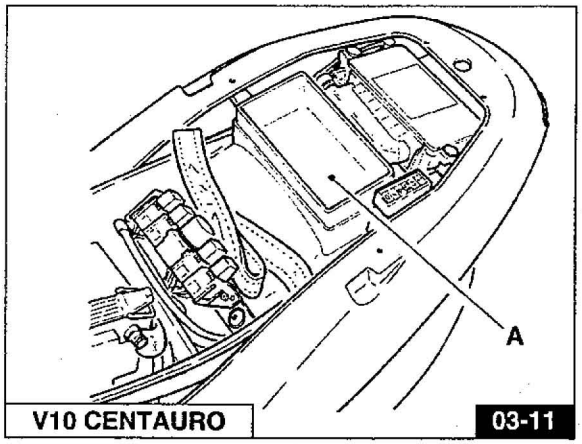
DAYTONA RS / SPORT 1100 I 03-10

V10 CENTAURO 03-10

3.16 DOCUMENTS AND OBJECTS HOLDER («A» Fig. 03-11)

It is located in the motorcycle rear side; to reach it, remove the passenger seat by releasing the lock «**B**» with the same key of the ignition switch.
Model V10 CENTAURO: to reach it, you must remove the saddle (see «Removing the Saddle» on Par. 3.20).

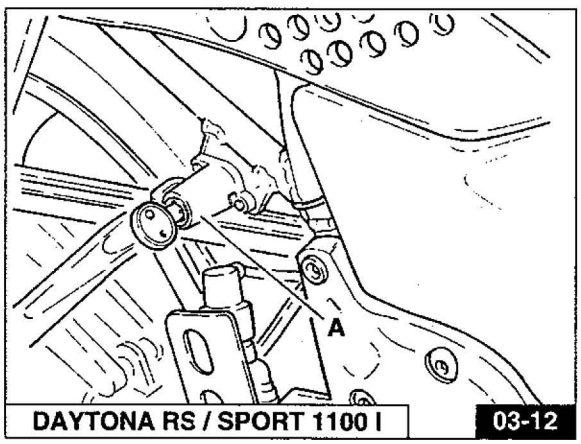


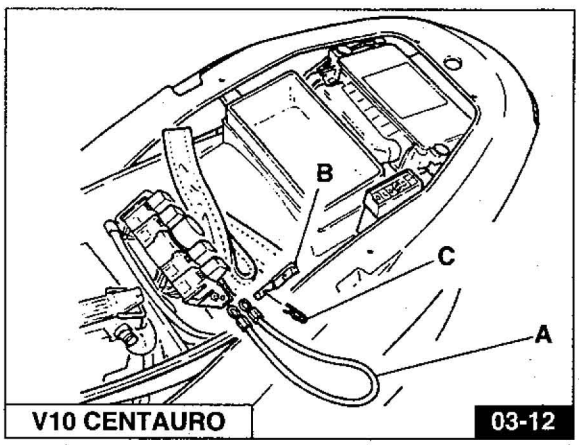


3.17 HELMET HOLDER (Fig. 03-12)

The helmet can be left with the motorcycle, using the helmet holder with lock «**A**».

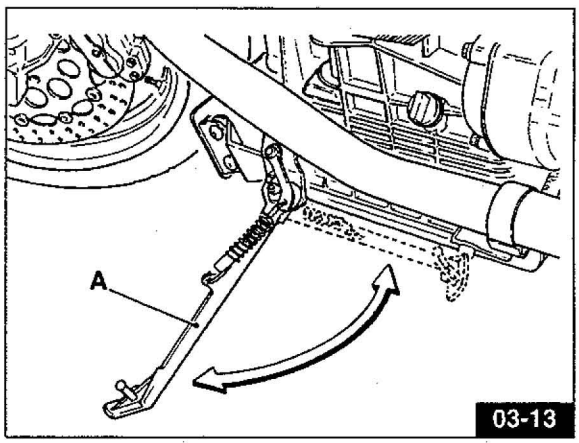
DANGER: Never leave the helmet in the holder when the motorcycle is running, as it may interfere with the moving parts.





3.18 MOTORBIKE LATERAL SUPPORTING ARM («A» - Fig. 03-13) (VALID FOR ALL MODELS MANUFACTURED UNTIL 12/12/1997)

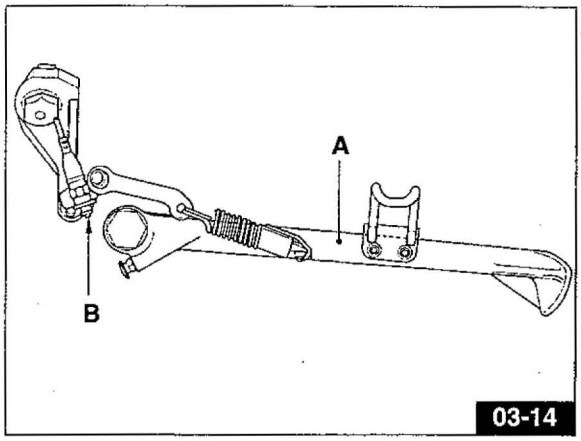
The motorbike is equipped with an arm that serves as a lateral support during parking; when the motorbike is moved to an upright position the lateral arm automatically returns to the rest position.



3.18.1 SIDE STAND FOR MOTORCYCLE SUPPORT WITH SAFETY SWITCH (VALID FOR ALL MODELS MANUFACTURED AFTER JAN. 1 1998)

The motorcycle is equipped with a side stand that supports it during parking (**«A» - Fig. 03-14**).

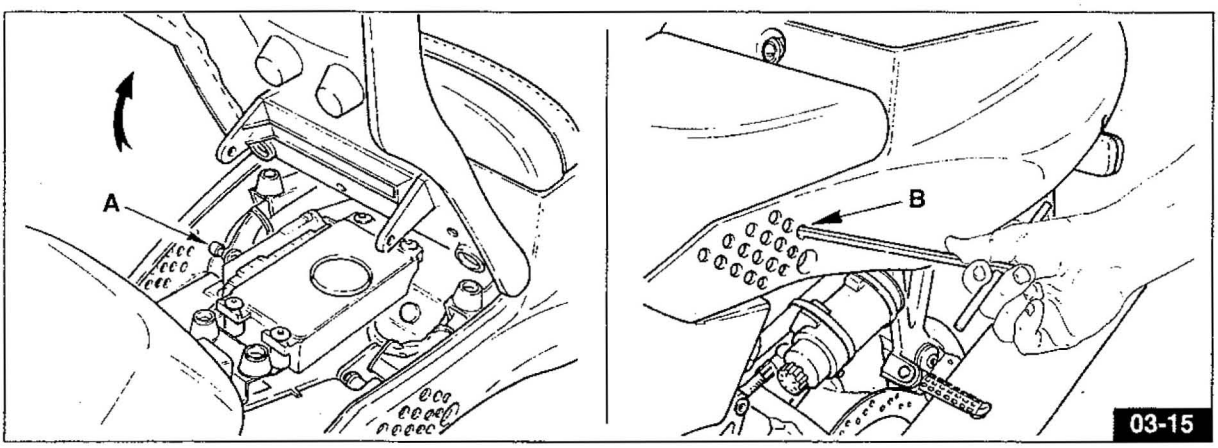
When the stand is in parking position (all out) the microswitch («B» - Fig. 03-14) operates a remote control switch that breaks the current delivery to the starting motor: in these conditions the motor cannot be started.



3.19 DRIVER SEAT REMOVAL (DAYTONA RS AND SPORT 1100 I - Fig. 03-15)

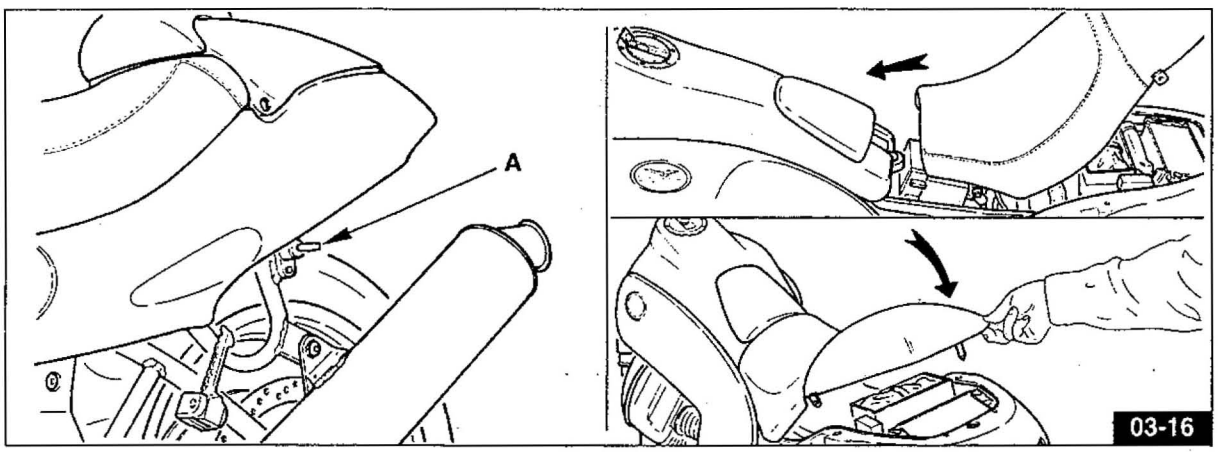
To remove the seat from the chassis use a 6 mm Allen wrench to unscrew, from both sides, the screw-pins **«A»** which can be reached through the holes **«B»** made on the tail side.

NOTE: It is not necessary to completely unscrew the screws, just loosen them as required to remove the seat.



3.20 REMOVING THE SADDLE (V10 CENTAURO - Fig. 03-16)

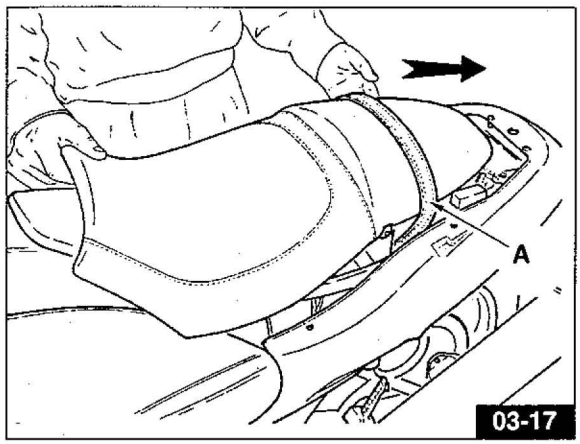
To remove the saddle from the frame, you must: release the saddle using the key **«A»**.
To fasten the saddle, you must fit it into its seat on the fuel tank and then press down on its rear part.



3.21 PASSENGER HOLDING BELT (V10 CENTAURO) (Fig. 03-17)

The motorcycle is equipped with a passenger holding belt originally located underneath the saddle.
To use it proceed as follows:

- Release the saddle from the frame (**Fig. 03-16**);
- Dismantle the saddle-covering fairing (if assembled);
- Lift the belt and insert the saddle between it and the frame;
- Fasten the saddle back in place.



4 LUBRICATION

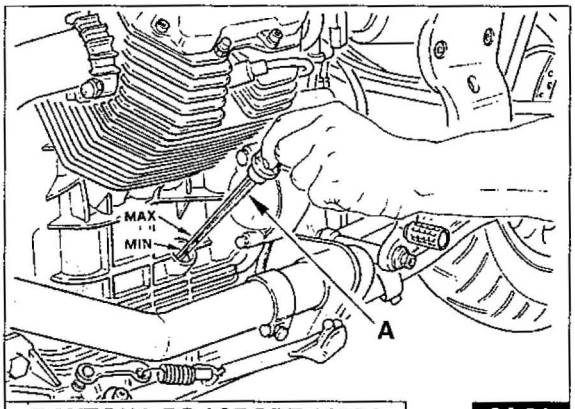
4.1 ENGINE LUBRICATION (Fig. 04-01)

Checking the oil level

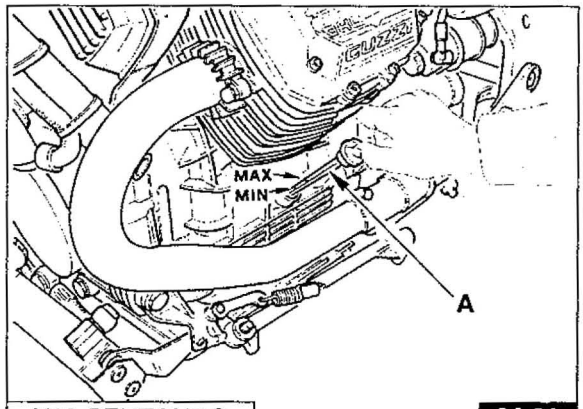
Check the crankcase oil level every 500 km; the oil should reach the «Max» mark of the dipstick «**A**».
If the oil is below this level, top up with the recommended type and grade of oil.
The oil level check should be carried out after the engine has run for a few minutes: the dipstick plug «A» should be screwed fully home.

Oil change

The oil should be changed after the first 500÷1500 km and every 5000 km thereafter. Change the oil when the **engine is warm**.
Allow the sump to drain fully before filling with new oil.
«**A**» Oil filler plug with dipstick **Fig. 04-01**.
«**B**» Oil drain plug **Fig. 04-02**.
Oil required: about 3,5 litres of «Agip 4T Super Racing SAE 20W/50».



DAYTONA RS / SPORT 1100 I 04-01



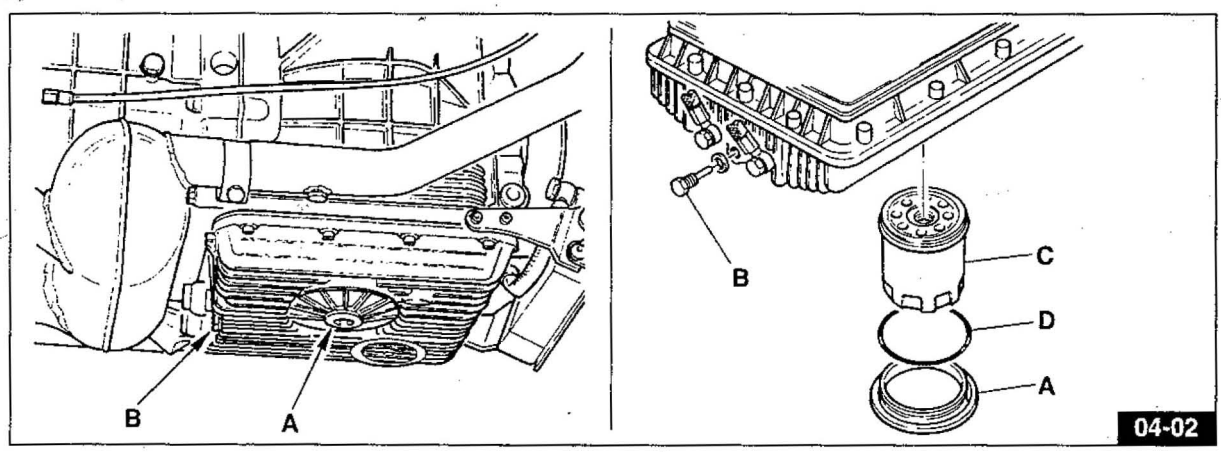
V10 CENTAURO 04-01

4.2 CHANGING THE FILTER CARTRIDGE AND CLEANING THE MESH FILTER (Fig. 04-02)

After the first 500÷1500 km (first oil change) and then every 10,000 km (2 oil changes), replace the filter cartridge as follows:

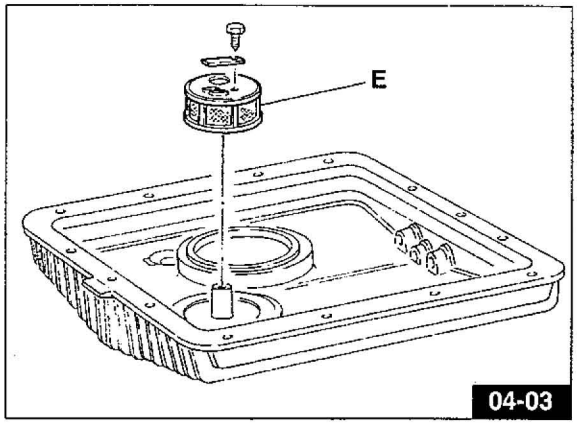
- unscrew the oil drain plug «**B**» and drain all oil out of the sump;
- unscrew the cover «**A**» using the tool code 01929100;
- unscrew the filter cartridge «**C**» using the same tool and replace it with an original cartridge.

When refitting cover «**A**», check its oil seal «**D**» and replace it if necessary.
These operations are best carried out by an authorized dealer.



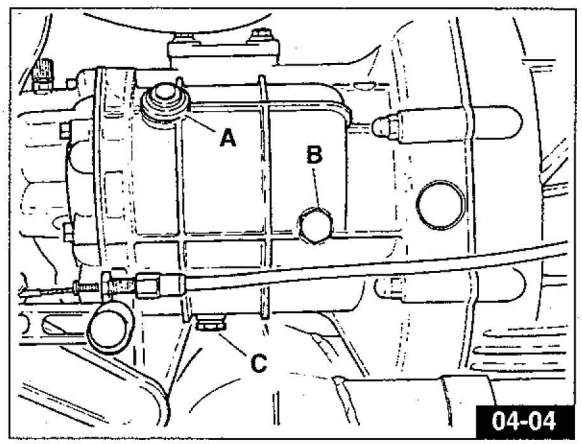
04-02

Washing the wire mesh filter (Fig. 04-03)
After the first 500÷1500 km, (first oil and filter cartridge change), and then every 30.000 km it is recommended to remove the oil sump from the engine block, remove the wire mesh filter «**E**» and wash everything in petrol; then blow the filter with a compressed air jet. Don't forget to fit a new sump gasket when refitting the sump.
These operations are best carried out by an authorized dealer.



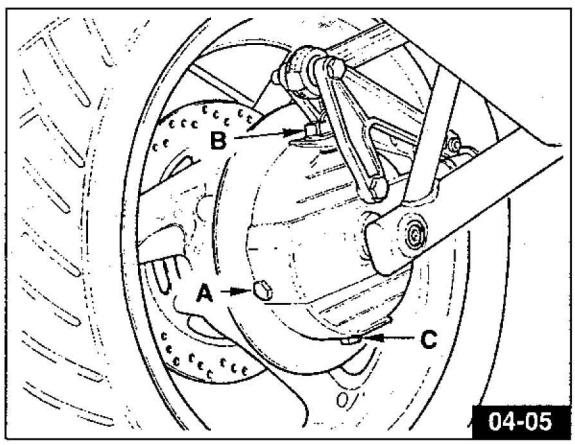
4.3 GEARBOX LUBRICATION (Fig. 04-04)

Checking the oil level
Check the oil level every 5000 km; the oil should just reach the level plug hole «**B**».
If the oil is below this level top up with the recommended grade and type of oil.
Oil change
The gearbox oil should be changed every 10.000 km. Drain the oil when the gearbox is warm as the oil is more fluid and drains more easily. Allow the gearbox to drain fully before filling with new oil.
«**A**» Filler plug.
«**B**» Level plug.
«**C**» Drain plug.
Oil required: 0.750 litres of «Agip Rotra MP SAE 80W/90».



4.4 REAR TRANSMISSION BOX LUBRICATION (Fig. 04-05)

Checking the oil level
Check the oil level every 5000 km; the oil should just reach the level plug hole «**A**».
If the oil is below this level top up with the recommended grade and type of oil.
Oil change
The transmission box oil should be changed every 10.000 km. Drain the oil when the box is warm as the oil is more fluid and drains more easily.
Allow the box to drain fully before filling with new oil.
«**A**» Level plug.
«**B**» Filler plug.
«**C**» Drain plug.
Oil required: 0.250 litres of which:
0.230 lt. is «Agip Rotra MP SAE 80W/90»;
0.020 lt. is «Agip Rocol ASO/R» or «Molykote type A».

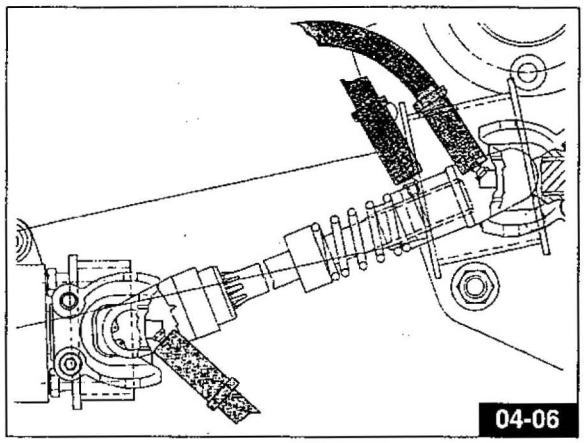


4.5 GREASING THE DRIVING SHAFT (Fig. 04-06)

The vehicle has a driving shaft provided with greasers. The greasing operation of the 3 places shown in figure should be made every 2500 kms (every 1000 Km in case of continuous usage at high speed) or at least once a year if the number of kilometers is lower.
Lubrication is recommended every time the motorbike is washed.

TYPES OF GREASE TO BE USED

- AGIP GREASE 30
- AGIP GR LP2
- ESSO LADEX 2
- MOBIL PLEX 48
- SHELL RHODINA GRIS 2
- SHELL SUPERGRIS EP 2



4.6 FRONT FORK OIL CHANGE

Change fork oil about every 15,000 km or at least once a year.
Amount of oil required: about 0,400 litres cartridge oil «WP suspension - REZ 71 (SAE 5)».

NOTE: For further details on the oil replacement procedure, refer to the fork section in Chapter 17.

4.7 GREASING

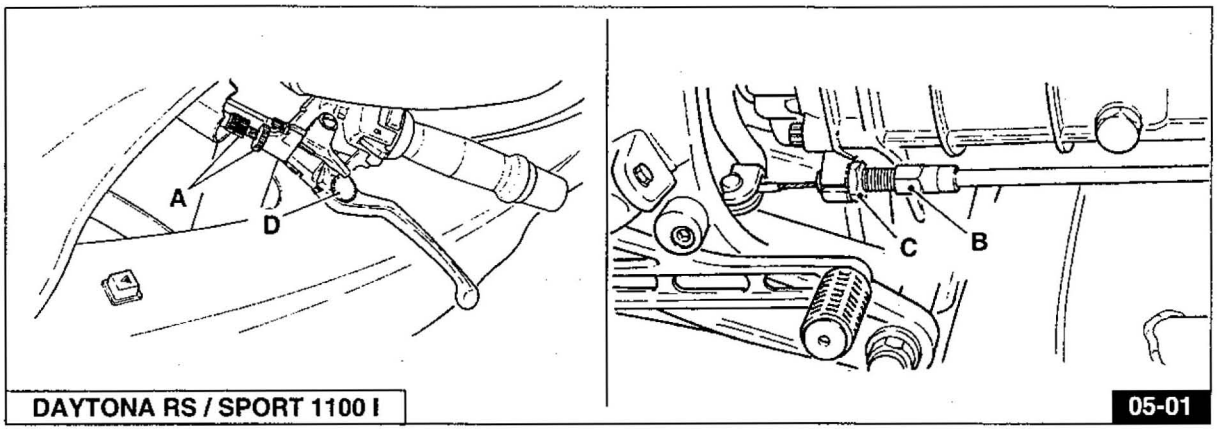
To grease:
- steering bearings;
- swinging arm bearings;
- control rod joints;
- side stand fittings;
- Articulated joints and needle bearing - rear driving box.

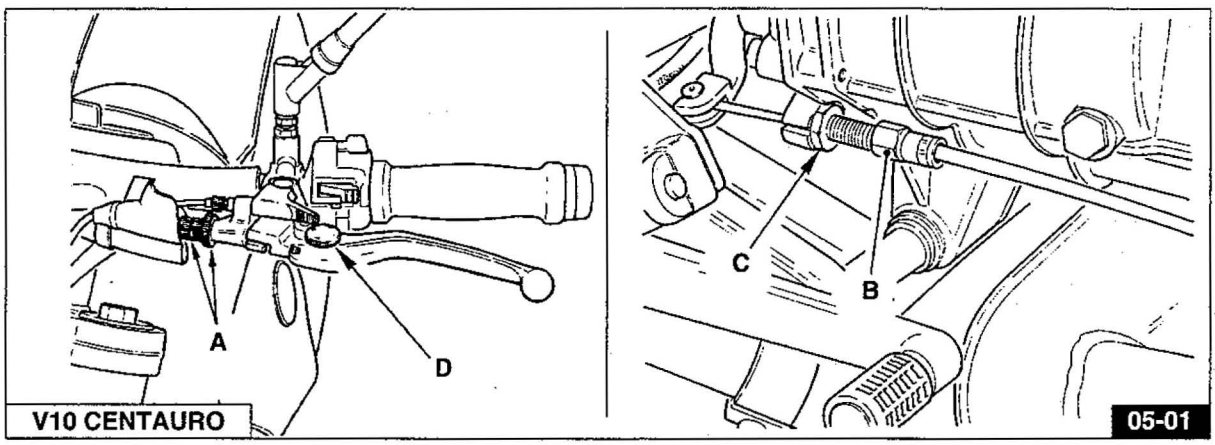
Use: «Agip Grease 30».

5 MAINTENANCE AND ADJUSTMENTS

5.1 ADJUSTING THE CLUTCH LEVER (Fig. 05-01)

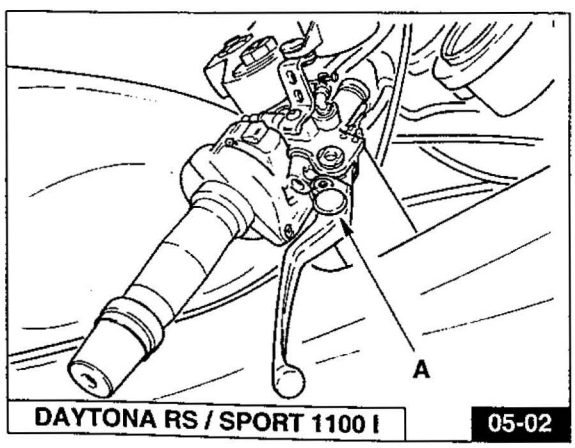
There should be 3÷4 mm of free play at the lever; turn the adjuster screw «**A**» to obtain the desired play
Play can also be adjusted on the cable adjuster «**B**» located on the right side of the gearbox. First loosen the lock nut «**C**» and then adjust.
The distance of the handle lever can be adjusted by turning ring nut «**D**» which has 4 positions.

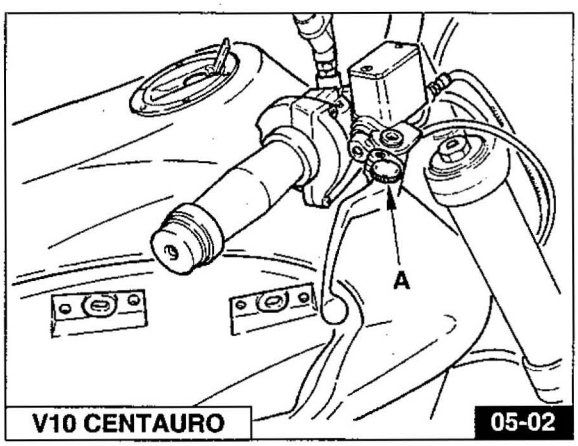




5.2 ADJUSTING THE FRONT BRAKE LEVER (Fig. 05-02)

The distance of the handle lever can be adjusted by turning ring nut «**A**» which has 4 positions.

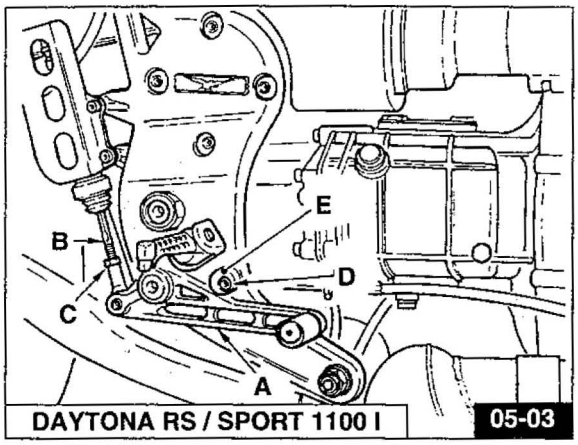




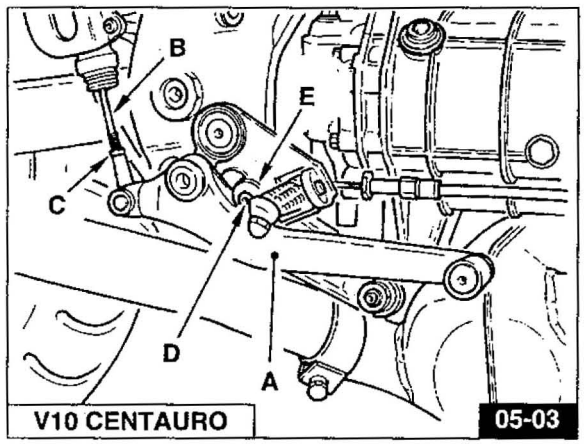
5.3 REAR BRAKE PEDAL ADJUSTMENT (Fig. 05-03)

Check that brake pedal «**A**» has an idle stroke of approx. 5÷10 mm. before the end of rod «**B**» comes into contact with the brake pump master cylinder; otherwise alter the length of rod «**B**» by tightening or untightening it, after having loosened off lock nut «**C**».

To change the position of the pedal «**A**», loosen the screw «**D**» and adjust the cam «**E**»; at the same time vary the length of the rod «**B**» until the correct clearance is obtained.



DAYTONA RS / SPORT 1100 I 05-03



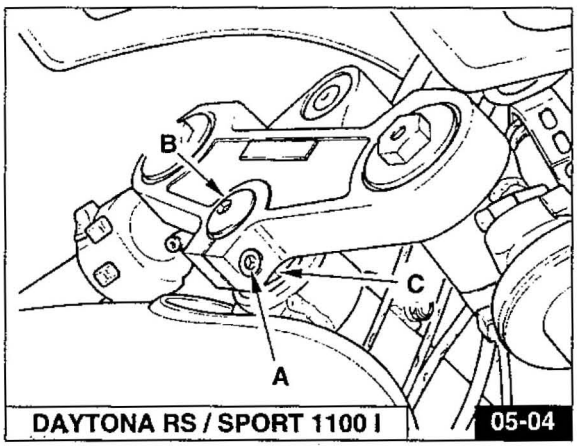
V10 CENTAURO 05-03

5.4 ADJUSTING THE STEERING (Fig. 05-04)

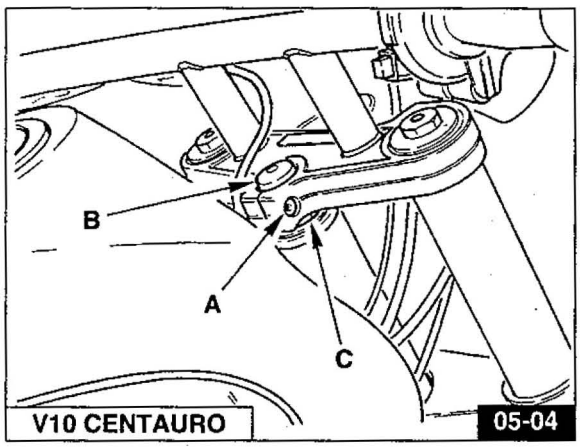
To ensure safe riding, the steering should be adjusted in such a way as to allow free movement of the handlebars without any play.

- loosen the steering head fixing bolt «**A**»;
- undo the steering head nut «**B**»;
- turn the adjuster nut «**C**» to take up any play.

When the play has been adjusted, tighten nut «**B**» and the steering head fixing bolt «**A**».



DAYTONA RS / SPORT 1100 I 05-04

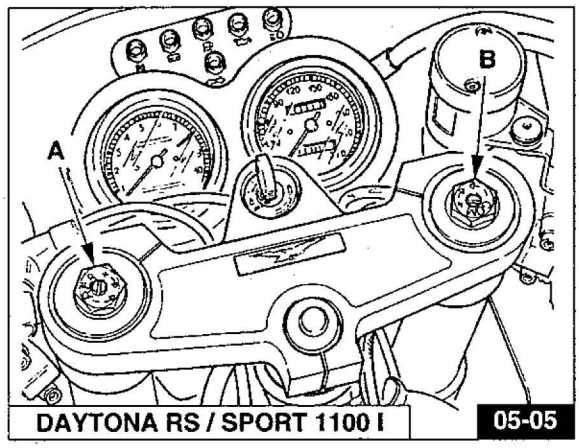


V10 CENTAURO 05-04

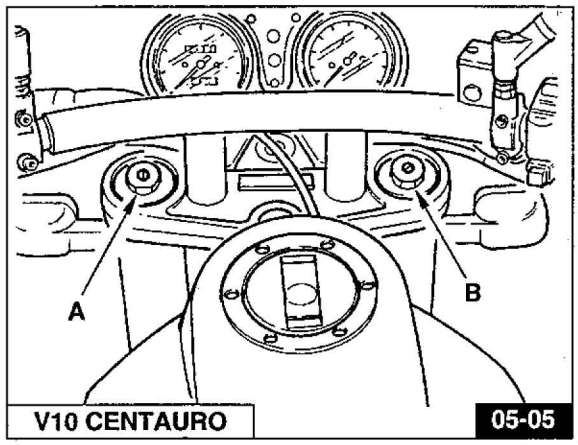
5.5 ADJUSTMENT OF TELESCOPIC FORK (Fig. 05-05)

The motorbike is fitted with an hydraulic telescopic fork with separate adjustment of the rebound damping and compression damping.
Hydraulic damping can be adjusted turning adjuster screws **«A»** and **«B»** with a screw driver.
The left-hand adjuster screw **«A»** adjusts hydraulic rebound damping, the righ-hand screw **«B»** if for compression damping.
Both adjuster screws have several settings (clicks); turning clockwise (+) you will get a stiffer damping, turning anticlockwise (–) will give a softer damping.

NOTE: Do not try to turn the adjusters screws further than their limit positions.



DAYTONA RS / SPORT 1100 I 05-05

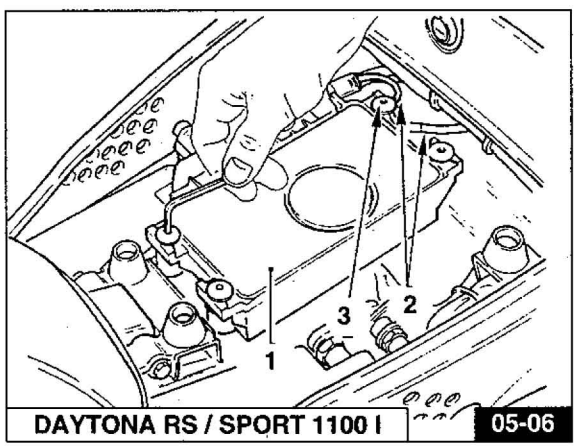


V10 CENTAURO 05-05

5.6 REAR SUSPENSION ADJUSTMENT (Fig. 05-06 / 05-07 / 05-08 / 05-09)

NOTE: The changes concerning the V10 CENTAURO model are shown in brackets [ ].

The motorcycle is equipped with "WHITE POWER" single shock absorbers with separate adjustment of the springs pre-loading and the rebound damping and compression damping.
The shock absorber is calibrated in the factory to the following standard values:
REBOUND: position 5 [1] (ring nut A)
COMPRESSION: position 4 [1] (knob B)
SPRING PRELOADING: 14 mm [11 mm]
Use the adjusting ring nut **«A»** shown in **Fig. 05-07** to adjust the rebound damping. Access to the ring nut is obtained by removing the rider seat (see Par. 3.19 «REMOVAL OF RIDER SEAT») and the computer box **«1»** shown in **Fig. 05-06.**



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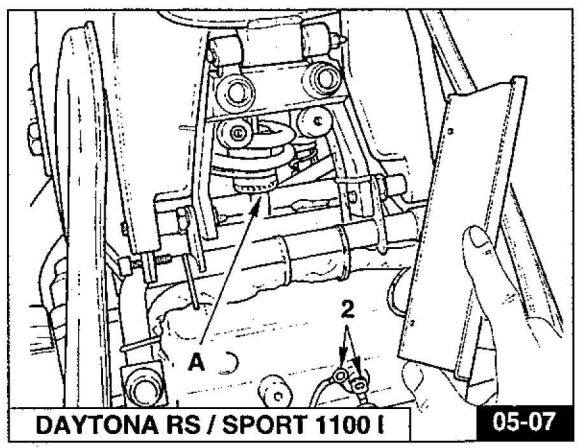
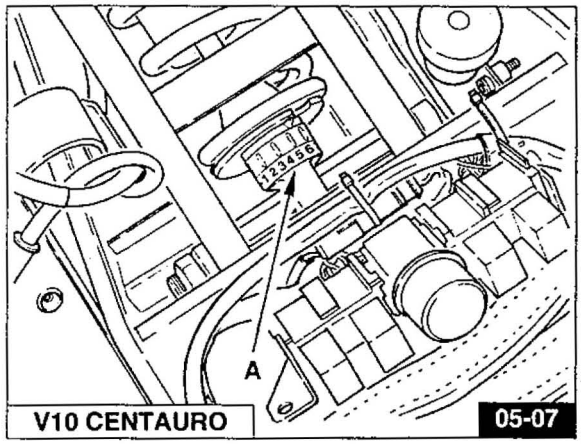


DAYTONA RS / SPORT 1100 I 05-07

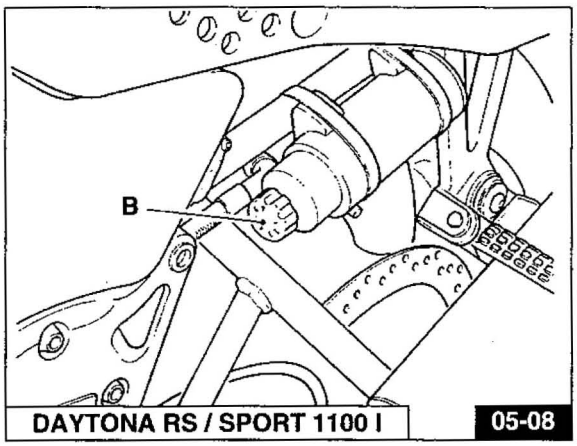
In the V10 CENTAURO model, the adjustment ring nut «**A**» - **Fig. 05-07** can be reached by removing the saddle (see Removing the saddle in Chapter 3.20) and moving the battery.
According to needs and the load on the motorcycle, the damper can be set from position "1" (very soft) to position "11" (very hard).
The hydraulic damper in compression can be set by turning adjusting knob «**B**» in **Fig. 05-08** that has nr. 7 setting positions; from position "1" minimum damping, to position "7" maximum damping.
To adjust the pre-loading of the spring, using the correct wrench, loosen off ringnut «**C**» and adjust ringnut «**D**»; tightening up increases the spring pre-loading (see **Fig. 05-09**).
The spring preload, starting from a completely released spring, is 10 to 18 mm.
The released spring length is 165 mm.

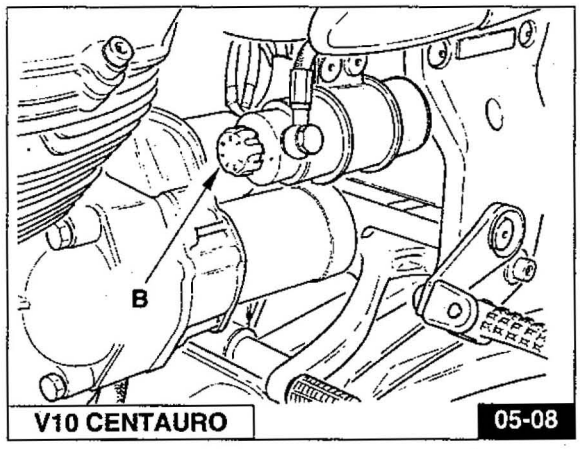


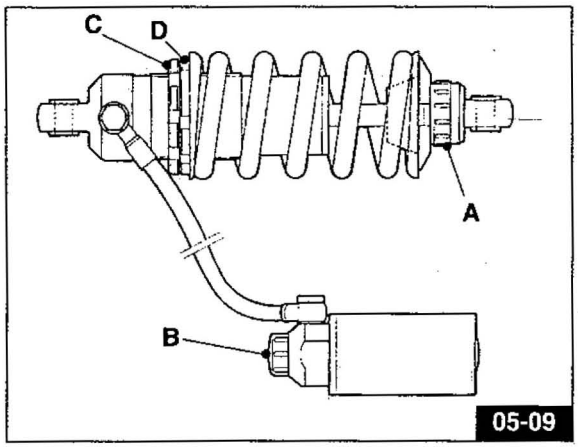
NOTE: To avoid damaging the thread between the damper body and the ring nut «D», lubricated the thread with «SVITOL», with oil or with grease.

WARNING

In the model DAYTONA RS and SPORT 1100 I When refitting the electronic box, do not forget to re-connect the terminals of the ground wires «2» under the fastening screw «3» of the electronic box (see Fig. 05-06 and 05-07).

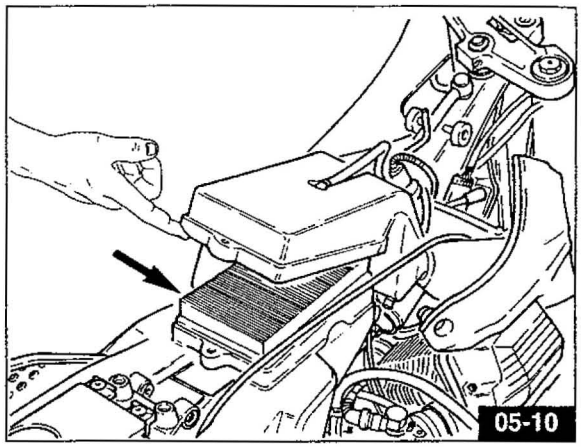


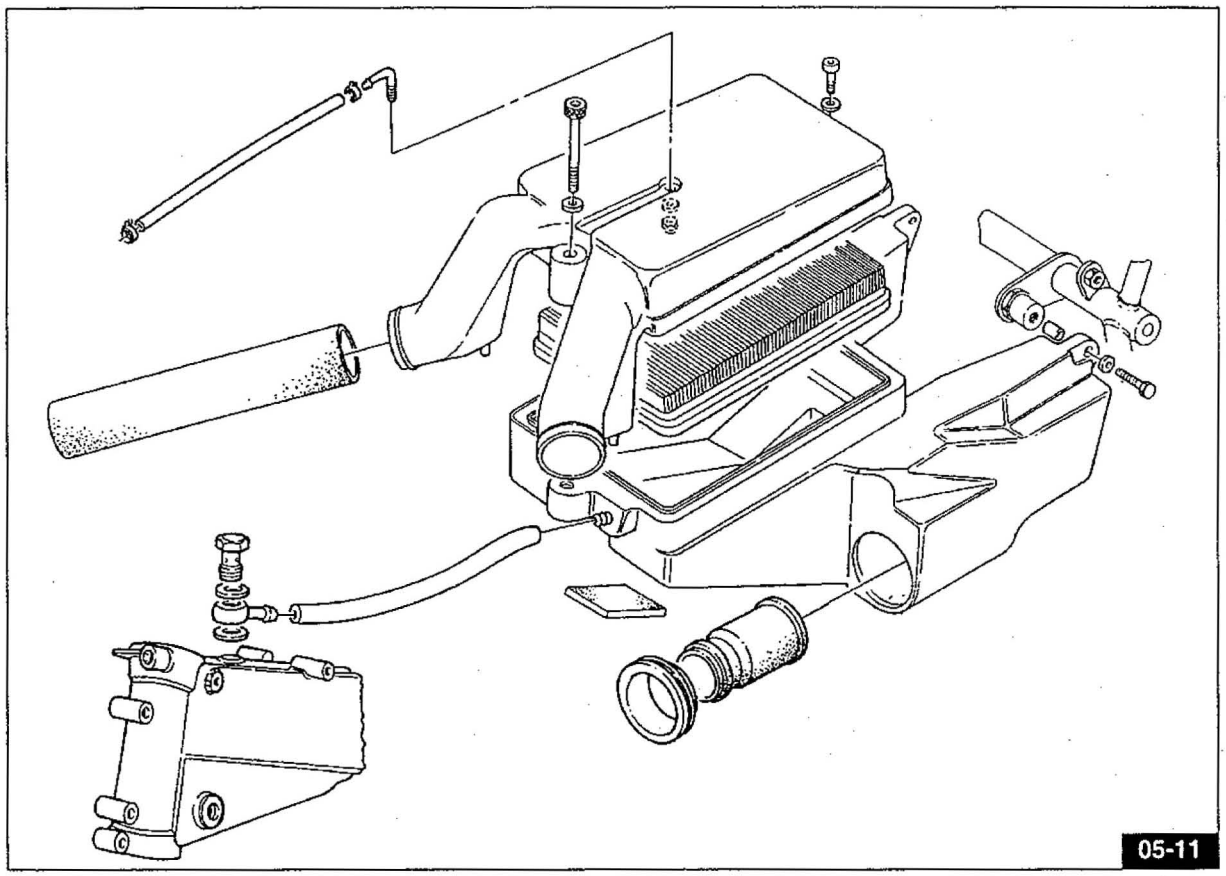




5.7 CHANGING THE AIR FILTER (DAYTONA RS AND SPORT 1100 I - Fig. 05-10)

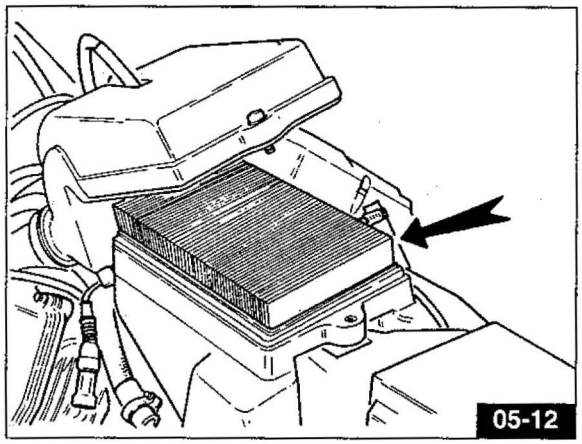
Check the air filter every 5000 km and clean by blowing with compressed air; change every 10.000 km. This filter is installed inside a proper housing over the motor unit. To reach it, remove the driver saddle, the body sides and the fuel tank (see SPECIFIC INSTRUCTIONS par. 9.2).

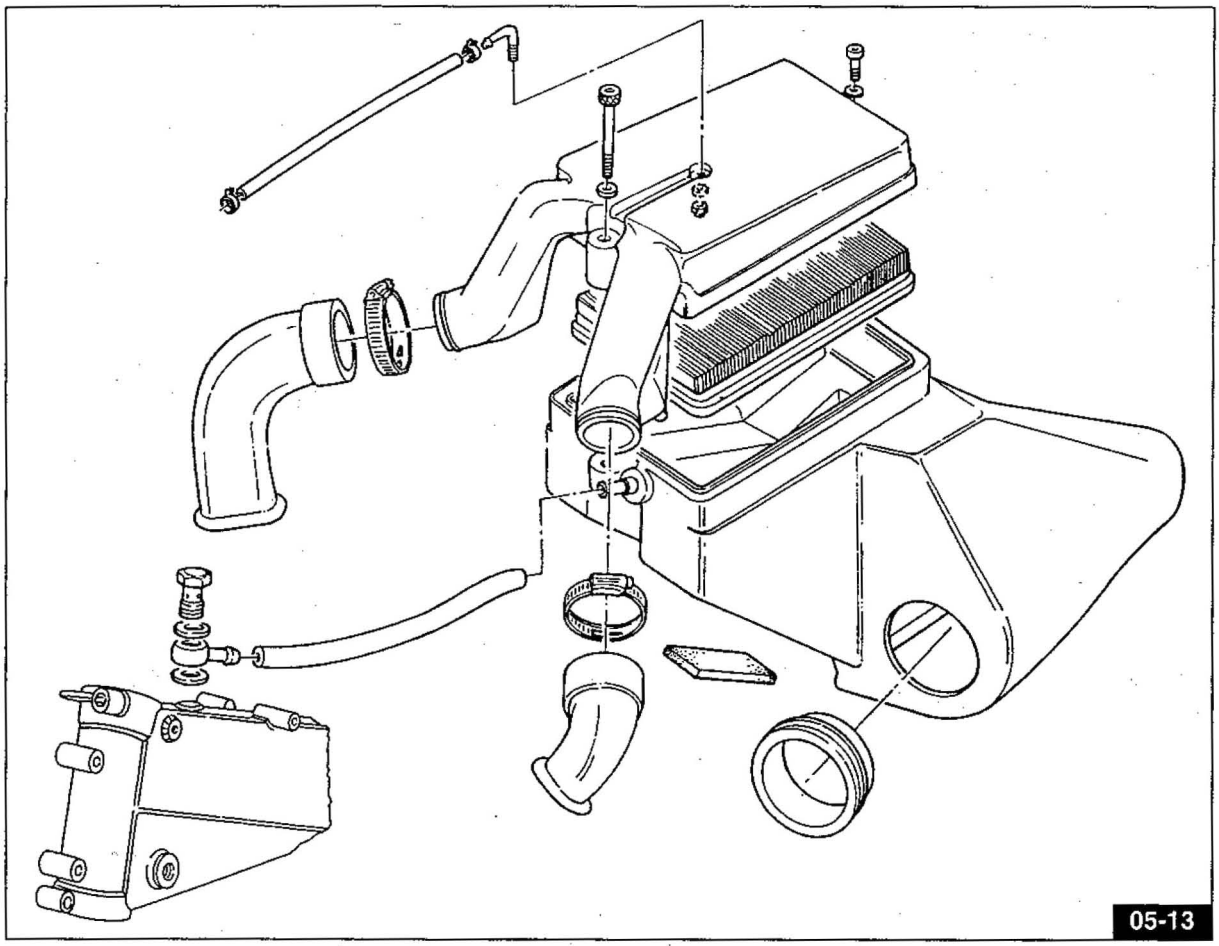




5.7.1 CHANGING THE AIR FILTER (V10 CENTAURO) (Fig. 05-12)

Check the air filter every 5000 km and clean by blowing with compressed air; change every 10.000 km. This filter is assembled in a special housing above the engine unit; to reach it, you must take off the saddle, the sides and the fuel tank (see SPECIFIC INSTRUCTIONS par. 9.1).





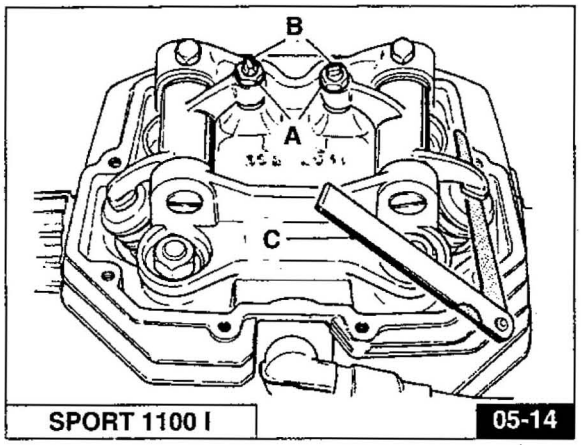
5.8 TAPPET CLEARANCE CHECKING (Fig. 05-14)

After the first 500÷1500 km, and then every 5000 km or when the valves are very noisy, check the clearance between the valves and the rockers.
This check is done on a **cold engine**, with the piston at top dead center «T.D.C.» at the end of the compression stroke (valves fully closed).
Remove the rocker cover and proceed as follows:
1 Loosen nut «**A**».
2 adjust screw «**B**» to set the following clearances, using a feeler gauge:
- intake valve 0.10 mm;
- exhaust valve 0.15 mm.

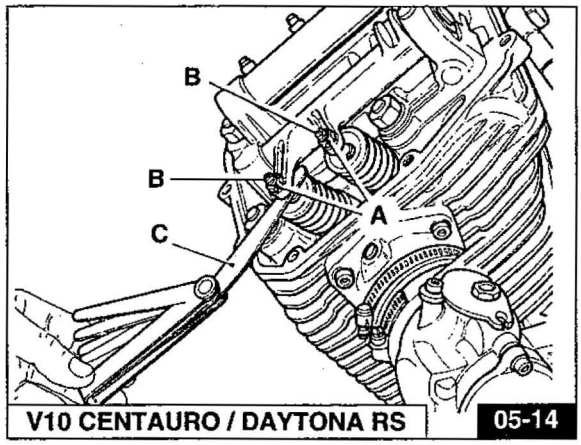
Use a suitable feeler gauge «**C**» to measure the clearance.
Note that excessive clearance causes noise, whereas with insufficient clearance the valves do not close fully, causing:
- compression loss;
- engine overheating;
- valve burning, etc.

5.8.1 TIMING BELTS (DAYTONA RS AND V10 CENTAURO)

Every 30,000 km replace the distribution timing belts.



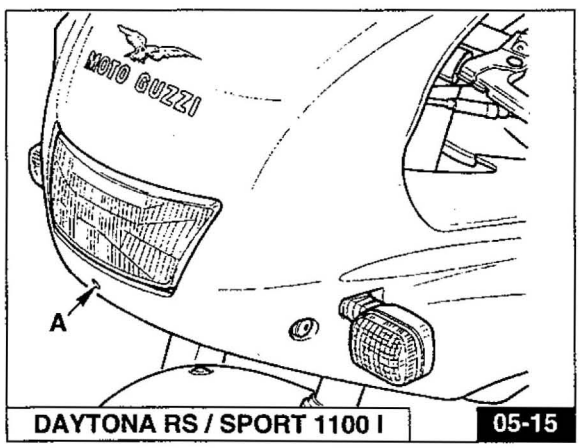
SPORT 1100 I 05-14



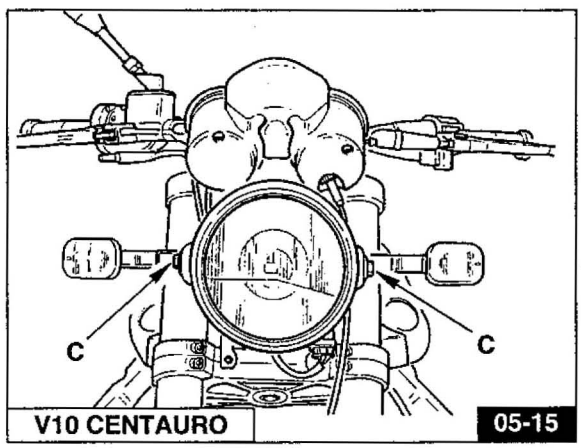
V10 CENTAURO / DAYTONA RS 05-14

5.9 ADJUSTING THE HEADLIGHT BEAM (Fig. 05-15)

The headlight beam should always be kept adjusted to the correct height to ensure good visibility and to avoid dazzling oncoming traffic. For vertical adjustment, turn screw «**A**», and move the light up or down as required. In the V10 CENTAURO model, the vertical orientation can be obtained by loosening the two screws «**C**» which fasten the headlight and manually moving it upward or downward until the required height is reached.



DAYTONA RS / SPORT 1100 I 05-15



V10 CENTAURO 05-15

5.10 CLEANING THE WINDSCREEN

The windscreen can be cleaned using most of the soaps, cleaners, waxes and polishes commercially available for glass and plastic.
The following precautions should be taken:

- **do not wash or polish the windscreen in direct or strong sunlight or when temperatures are high;**
- under no circumstances use solvents, lyes or similar products;
- do not use abrasive substances, pumice, sand/emery paper, files, etc.;
- wash all dust and dirt away before polishing. Small superficial scratches can be removed using a mild polish;
- paint or sealing compound can be removed before harden by using diesel, isopropylic alcohol or butyl cellosolvent (do not use methyl alcohol).

5.11 MOTOR WASHING RULES

Preparations for washing

Before washing the vehicle, the following parts should be covered with a waterproof material: the rear part of the silencers, the clutch and brake levers and pedals, the throttle twist-grip, the left-hand light switch, the ignition key switch, the shaft with driving couplings and the electronic box.

NOTE: The electronic box is located under the seat.
In the DAYTONA RS and SPORT 1100 models, the electronic unit is located under the driver saddle.

Washing

Avoid spraying water too much pressure on the instruments and the front and rear hubs.

WARNING: Do not clean the joints with high-pressure water or with solvents.

Drying

Remove the protective coverings.
Thoroughly dry the vehicle.
Test the brakes before using the vehicle.
It is recommended to grease the shaft with driving couplings (see **Fig. 04-06**).

NOTE: To clean the painted parts of the engine unit (engine, gearbox, transmission box, etc.) the following products may be used: diesel oil, petrol or water-based neutral detergents for car cleaning. These products should be washed off immediately with water; do not use water at high temperatures or pressures.

6 SERVICE SCHEDULE

ITEMS \ MILEAGE COVERED	1500 Km (1000 mi.)	5000 Km (3000 mi.)	10000 Km (6000 mi.)	15000 Km (9000 mi.)	20000 Km (12000 mi.)	25000 Km (15000 mi.)	30000 Km (18000 mi.)	35000 Km (21000 mi.)	40000 Km (24000 mi.)	45000 Km (27000 mi.)	50000Km (30000 mi.)
Engine oil	R	R	R	R	R	R	R	R	R	R	R
Oil filter cartridge	R		R		R		R		R		R
Wire gauze oil filter	C						C				
Air filter		C	R	C	R	C	R	C	R	C	R
Fuel filter			R		R		R		R		R
Ignition phase-setting	A										
Spark plugs	A	A	R	A	R	A	R	A	R	A	R
Rocker clearance	A	A	A	A	A	A	A	A	A	A	A
Distribution timing belts (DAYTONA RS e V10 CENTAURO)	A		A		A		R		A		A
Carburation	A	A	A	A	A	A	A	A	A	A	A
Nuts and bolts	A	A	A	A	A	A	A	A	A	A	A
Fuel tank, tap filter and pipes			A		A		A		A		A
Gearbox oil	R	A	R	A	R	A	R	A	R	A	R
Rear drive box oil	R	A	R	A	R	A	R	A	R	A	R
Shaft with drive joints ●	A	A	A	A R *	R	A	A R *	A	R	A R *	A
Wheel and steering bearings					A				A		
Front forks oil				R			R			R	
Starter motor and generator					A				A		
Brake system fluid	A	A	A	R	A	A	R	A	A	R	A
Brake pads	A	A	A	A	A	A	A	A	A	A	A

A= Maintenance - Inspection - Adjustment - Possible replacement./ C = Cleaning./ R = Replacement.

Occasionally check the level of the electrolyte in the battery and lubricate the rear suspension joints of the controls and the flexible cables, every 500 km check the oil level in the engine.

The engine oil, the front fork oil and the brake fluid must be changed at least once a year.

• Grease every 2500 Km (every 1000 Km in case of continuous use at high speed) or at least once a year in case of less miles covered.

*** In the event of mainly sporting use or regular high speed travel, replace every 15,000 km.**

7 TORQUE WRENCH SETTINGS

7.1 SPORT 1100 I

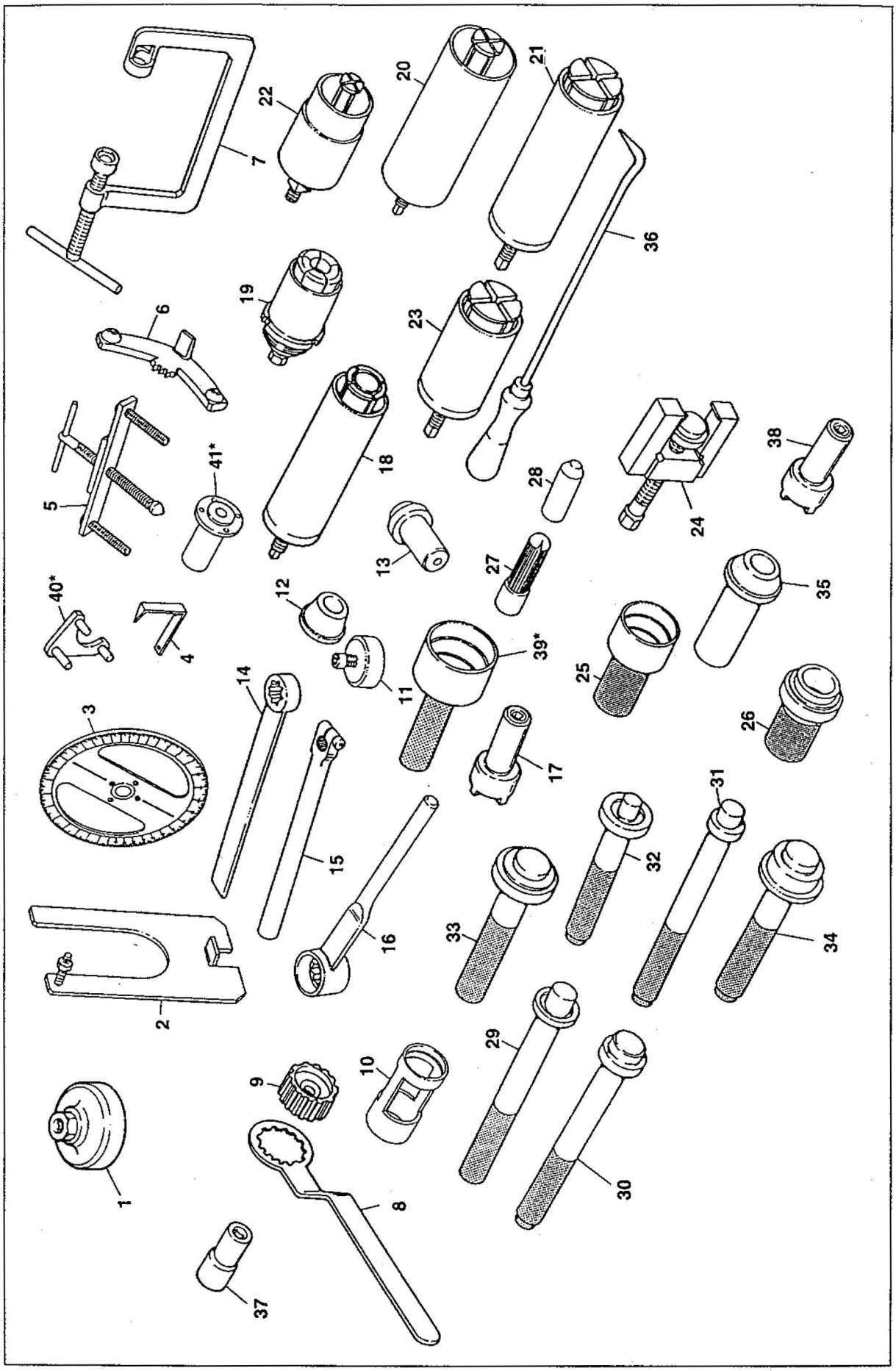
DESCRIPTION	Kgm
Nut and stud for cylinder-head tie rods (dia. 10x1.5)	4÷4,2
Bolt, rocker pin securing	0,6÷0,8
Spark plugs	2÷3
Hollow screws securing pipes delivering oil to the heads (dia. 8x1.25)	1,5÷1,8
Nut, gear to camshaft	15
Screw, intake pipe	2
Connecting rod cap securing screws (dia.10x1)	6,1÷6,6
Connecting rod cap securing screws CARRILLO	8,5÷9,3
Screws securing flywheel to engine shaft (dia.8x1.25) - with Loctite medium compound .	4÷4,2
Screws securing flywheel crown (dia.6x1)	1,5÷1,7
Nut locking the driving shaft pinion (diam. 25 x 1.5)	
Nut locking alternator (dia.16x1.5)	8
Nut locking secondary shaft	16÷18
Cap for topping up oil in gearbox and transmission	3
Safety nut for secondary shaft	7÷8
Nut locking bearing on bevel pinion	18÷20
Screws securing crown to drilled pin	4÷4,2
Screw to fix. side stander support plate	7÷7,5
Front wheel spindle	9÷10
Screw for rear wheel spindle (case side)	12
Fastening screws for front and rear brake discs (Ø8x1.25) - with Loctite 270	2,8÷3
Standard values	
Screws and nuts dia. 4 mm	0,3÷0,35
Screws and nuts dia. 5x0.8 mm	0,6÷0,7
Screws and nuts dia. 6x1 mm	0,8÷1,2
Screws and nuts dia. 8x1.25 mm	2,5÷3
Screws and nuts dia. 10x1.5 mm	4,5÷5

Other tightening torques are indicated on the drawings of the suspension, front wheel, and rear wheel assemblies.

7.2 DAYTONA V10 CENTAURO

DESCRIPTION	Kgm
Nut for cylinder-head tie rods (dia. 10x1.5)	4,2÷4,5
Nut for frame securing screw stud (dia.8x1.25)	2,2÷2,3
Spark plugs	1,5÷2
Hollow screws securing pipes delivering oil to the heads (dia. 10x1.5)	2÷2,5
Head temperature sensor case (with Loctite 601)	1÷1,2
Head temperature sensor	1÷1,2
Air temperature sensor securing screw	0,1
Connecting rod cap securing screws CARRILLO	8,5÷9,3
Screws securing flywheel to engine shaft (dia.8x1.25)	4÷4,2
Screws securing flywheel crown (dia.8x1.25)	3
Nut locking engine shaft pinion (dia.25x1.5)	11÷12
Nut locking alternator (dia.16x1.5)	9÷9,5
Nut securing service shaft pulley (dia.16x1.5)	10÷12
Nut securing timing shaft pulley (dia.14x1.5)	6÷7
Nut securing oil pump gear (dia.8x1) - with Loctite 601	2÷2,2
Pressure control valve (dia.14x1.5) - with Loctite 601	6÷7
Nut locking secondary shaft	16÷18
Cap for topping up oil in gearbox and transmission	3
Cap for measuring oil level and discharge from gearbox and transmission	2,5
Safety nut for secondary shaft	7÷8
Nut locking bearing on bevel pinion	18÷20
Screws securing crown to drilled pin	4÷4,2
Screw to fix. side stander support plate	7÷7,5
Screw for rear wheel spindle (case side)	12
Front wheel spindle	9÷10
Fastening screws for front and rear brake discs (Ø8x1.25) - with Loctite 270	2,8÷3
Standard values	
Screws and nuts dia. 4 mm	0,3÷0,35
Screws and nuts dia. 5x0.8 mm	0,6÷0,7
Screws and nuts dia. 6x1 mm	0,8÷1,2
Screws and nuts dia. 8x1.25 mm	2,5÷3
Screws and nuts dia. 10x1.5 mm	4,5÷5
Other tightening torques are indicated on the drawings of the suspension assemblies.	

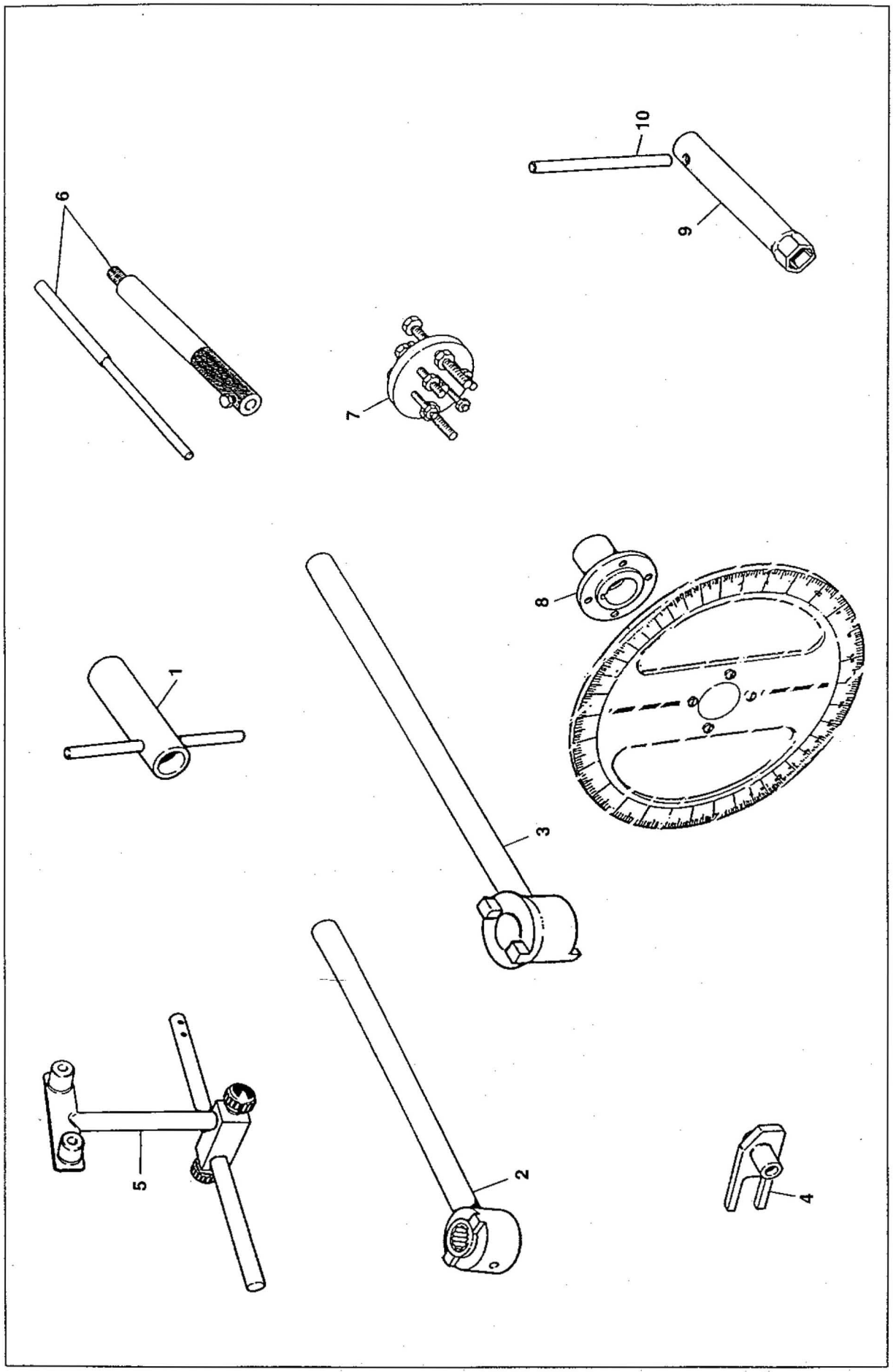
8 SPECIFIC EQUIPMENT



N.	CODE No.	DESCRIPTION
1	01 92 91 00	Cap demounting wrench on cup and filter
2	14 92 96 00	Gear box support
3	19 92 96 00	Setting dial for distribution and ignition phase check
4	17 94 75 60	Arrow for distribution and ignition phase check
5	12 91 36 00	Tool for flywheel side flange disassembly
6	12 91 18 01	Tool for locking flywheel and crown starter
7	10 90 72 00	Tool for valve assembly and disassembly
8	30 91 28 10	Tool for internal clutch body locking
9	30 90 65 10	Tool for clutch assembly
10	12 90 59 00	Tool for clutch shaft disassembly with components
11	14 92 71 00	Instrument to install the sealing ring on the flange, flywheel side
12	12 91 20 00	Tool for flywheel side flange assembly complete with casing on engine shaft
13	14 92 72 00	Tool for distribution cover sealing ring assembly
14	12 90 71 00	Tool for transmission shaft locking
15	14 92 87 00	Tool for pre-selector activation
16	14 90 54 00	Tool for transmission shaft locking nut
17	14 91 26 03	Appropriate wrench for shaft internal clutch body retaining ring nut
18	14 91 31 00	Estractor for needle bearings on main shaft box and on clutch shaft cover
19	14 92 85 00	Tool for extracting the clutch shaft internal bearins track
20	17 94 92 60	Extractor for bearings for clutch shaft on box and transmission shaft on cover
21	17 94 50 60	Extractor for needle external bearings track for transmission shaft on box and external bearings track on casing
22	14 90 70 00	Extractor for ball bearings for main shaft on cover
23	12 90 69 00	Extractor for transmission box needle bearings ring
24	17 94 83 60	Extractor for needle internal bearings track on box holed pin
25	17 94 84 60	Tool for pressing the internal needle bearings track on the transmission box holed pin
26	17 94 88 60	Punch for the bearing external track of the drive shaft sealing ring
27	17 94 54 60	Tool for positioning the internal bearings ring on the main shaft and on the clutch shaft
28	14 92 86 00	Tool for positioning the internal bearing ring on the transmission shaft
29	14 92 89 00	Punch for pressing the clutch shaft bearings on the box, for the transmission shaft cover, and for the transmission box rear sealing ring
30	14 92 91 00	Punch for pressing the transmission shaft external needle bearings ring on the box
31	14 92 88 00	Punch for pressing the main shaft needle bearings on the box and the clutch shaft on the cover
32	17 92 90 00	Punch for pressing the ball bearings for the main shaft on the cover
33	14 92 94 00	Punch for pressing the sealing ring on the clutch shaft gear box
34	14 92 95 00	Punch for pressing the sealing ring on the transmission shaft cover
35	17 94 51 60	Punch for pressing the external bearing tracks on the casing
36	14 92 93 00	Tool for positioning the sliding sleeve fork control
37	01 92 93 00	Locking ring nut wrench for front wheel pin
38	00 95 00 55	Manometer for engine oil pressure and fuel pressure check for vehicles with electronic injection systems
39*	19 92 71 00	Tool for installing seal ring on flange, flywheel side
40*	14 92 73 00	Tool for holding camshaft gear
41*	65 92 84 00	Hub for degree wheil

NOTE: The details with asterisk (*) apply to model SPORT 1100 I only.

8.1 SPECIFIC EQUIPMENT (DAYTONA RS AND V10 CENTAURO)



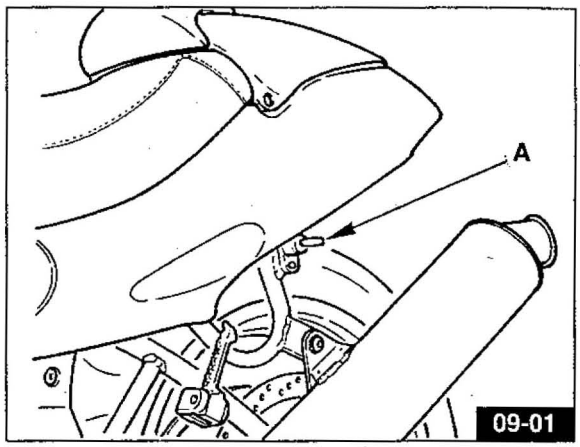
N.	CODE No.	DESCRIPTION
1	30 92 72 00	Tool for rotating cam shaft
2	30 92 73 00	Tool for cam shaft pulley seal with 22 mm socket wrench inserted for pulley nut locking
3	30 92 76 00	Tool for service shaft pulley seal and oil pump gear
4	30 94 86 00	Tool for distribution belt tensor
5	69 90 78 50	Test indicator
6	30 94 82 00	Head test indicator
7	30 94 83 00	Tool for extracting oil pump gear control, service shaft pulley and internal cam shaft pulley gear
8	30 94 96 00	Setting dial hub
9	61 90 19 00	Plug socket wrench
10	30 90 84 00	Pin for socket wrench

9 EMOVING THE PROPULSOR UNIT FROM THE FRAME

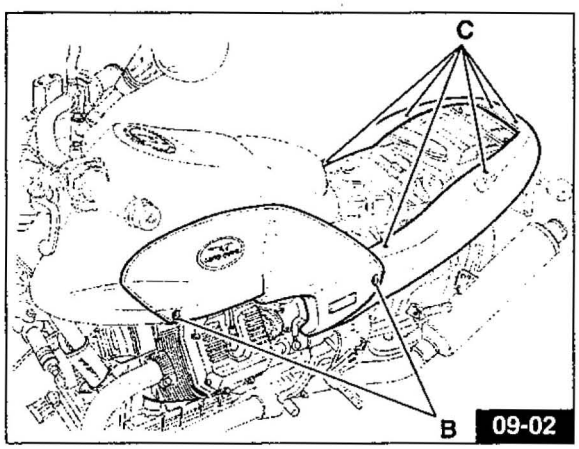
9.1 V10 CENTAURO

To disassemble, proceed as follows:

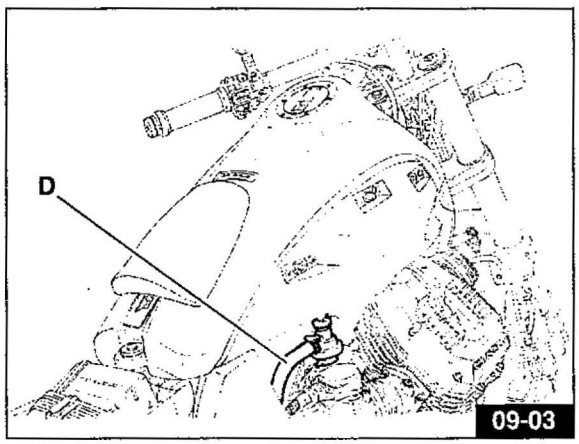
- Remove the saddle from the frame using the wrench «**A**» - **Fig. 09-01**;

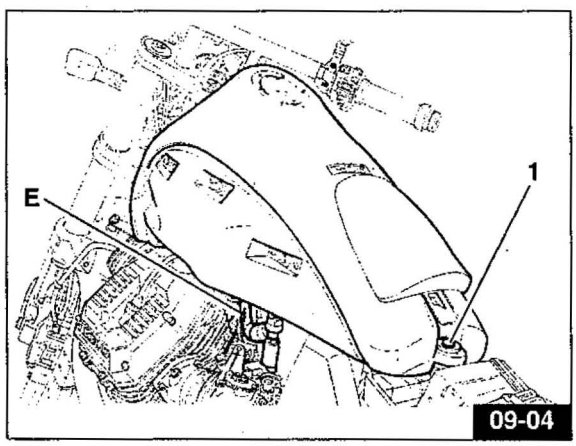


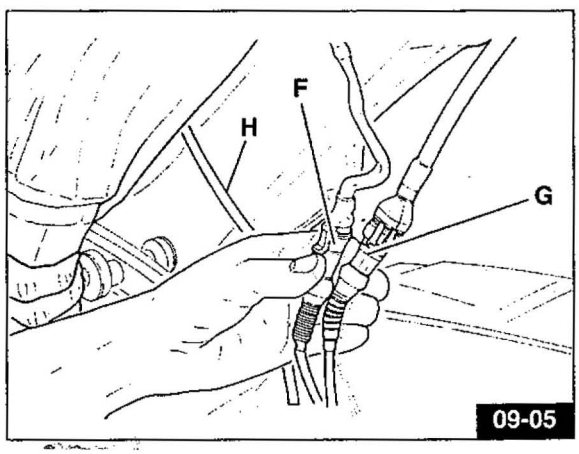
- Remove the body sides by loosening the screws «**B**» - **Fig. 09-02** from both sides of the motorcycle;
- Remove the tail by loosening the 6 fastening screws «**C**» - **Fig. 09-02**;



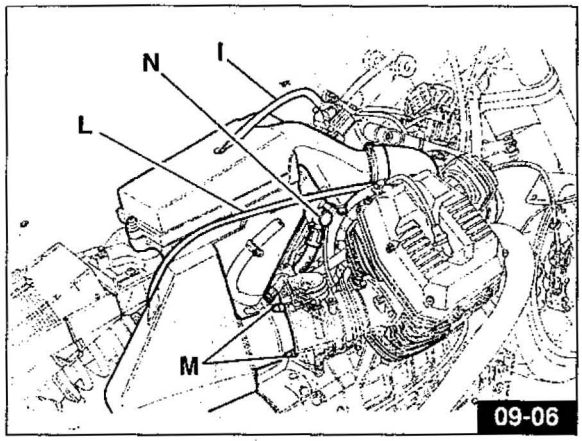
- Disconnect the fuel pipe «**D**» - **Fig. 09-03** from the pressure adjuster and the fuel pipe «**E**» - **Fig. 09-04** from the left electric cock;
- Unscrew the tank rear fastening screw «**1**» - **Fig. 09-04**;
- Disconnect the fuel level indicator connector «**F**» - **Fig. 09-05** and the connector «**G**» - **Fig. 09-05** of the electric cock, then disconnect the exhaust pipe «**H**» - **Fig. 09-05** and remove the tank;





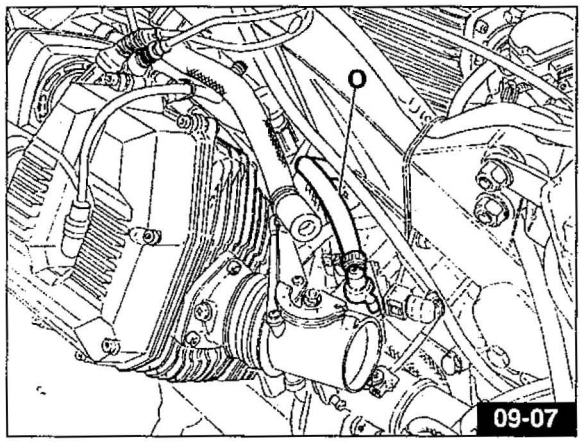


- Disassemble the filter box by disconnecting the connection pipe of the absolute pressure sensor **«I» - Fig. 09-06**, disconnect the speedometer cable **«L» - Fig. 09-06**, unscrew the screws **«M» - Fig. 09-06** which fasten the sleeves to the throttle bodies on both sides of the motorcycle, then remove the filter box;
- Disassemble the exhaust system;
- Disconnect all the electric connectors of the different users connected to the motor block;
- Disconnect the sparking plug cables;
- Disconnect the connection cables between the starter and the battery;
- Disconnect the two oil recovery pipes **«N» - Fig. 09-06** from the frame;



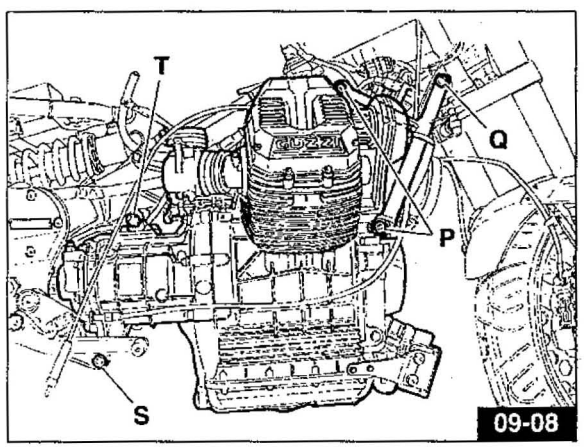
09-06

- From the throttle body, disconnect the pipe connected to the fuel filter **«O» - Fig. 09-07**;
- Disconnect the clutch control transmission cable from the lever on the gearbox cover;
- Disconnect the gearbox lever tie rod from the corresponding selector;
- Place a proper support under the motor block;

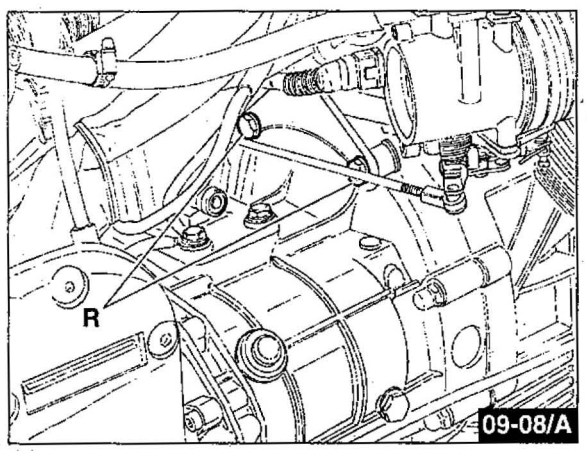


09-07

- Unscrew the fastening screws **«P» - Fig. 09-08** on the front frame from both sides of the motorcycle;
- Unscrew the screws **«Q» - Fig. 09-08** which fasten the front frame to the main frame, then rotate it forward;
- Unscrew the screws **«R» - Fig. 09-08/A** which fasten the clutch housing to the frame;
- Unscrew the nuts **«S» - Fig. 09-08** which lock the side plate connection pin, then extract the pin;
- Unscrew the screw **«T» - Fig. 09-08** which fastens the gearbox, then extract the motor/gearbox block;



09-08



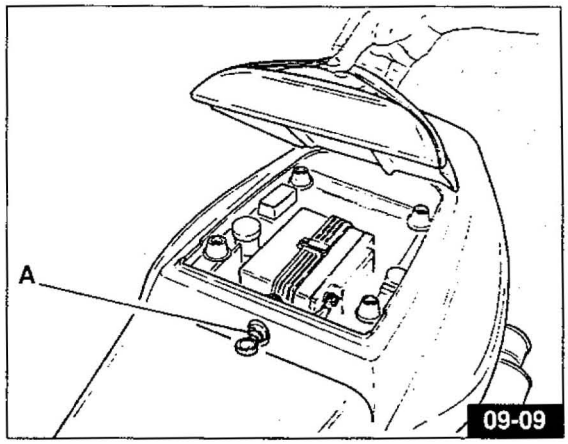
09-08/A

9.2 SPORT 1100 I AND DAYTONA RS

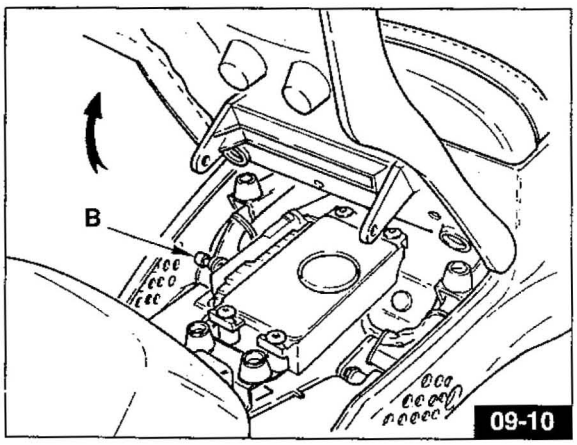
NOTE: The disassembly procedure and operations are the same for both models.

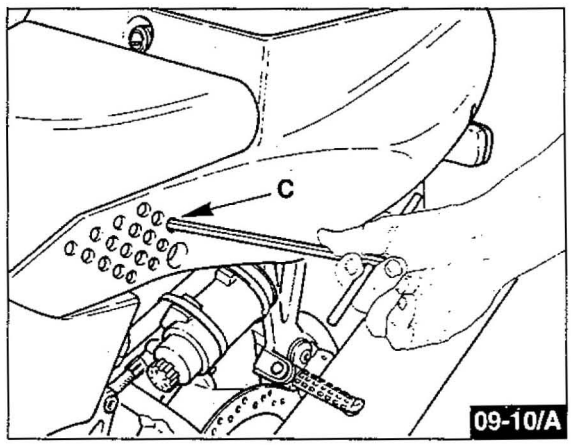
To disassemble, proceed as follows:

- Remove the passenger saddle by releasing the lock «**A**» - **Fig. 09-09** using the same wrench of the ignition switch;



- Remove the driver saddle using a 6 mm Allen wrench, unscrew from both sides the pin screws «**B**» - **Fig. 09-10** which can be accessed through the holes «**C**» - **Fig. 09-10/A** located on the tail side;

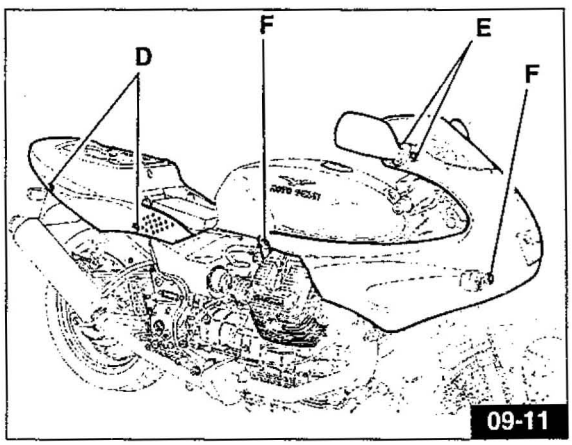




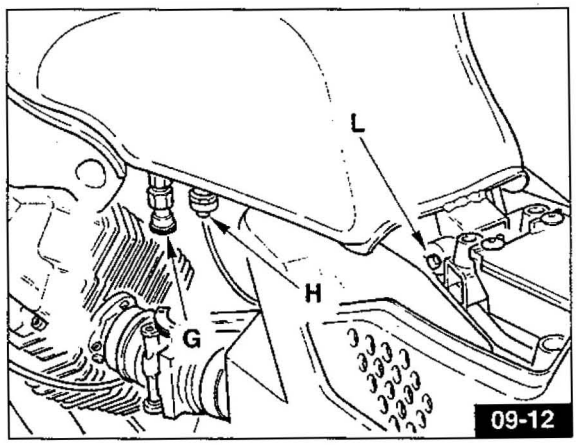
- Unscrew the screws «**D**» - **Fig. 09-11** from both sides of the motorcycle, then remove the tail;
- Unscrew the screws «**E**» - **Fig. 09-11** which fasten the fairing top to the frame.

NOTE: When unscrewing the above screws, the driving mirrors are released too; remove them.

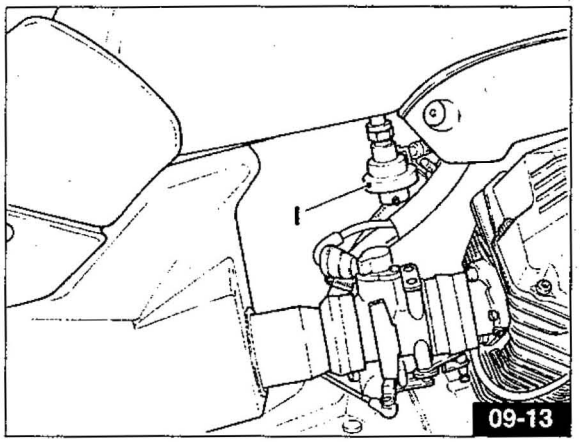
- Unscrew the screws «**F**» - **Fig. 09-11** which fasten the fairing from both sides, then extract the fairing;



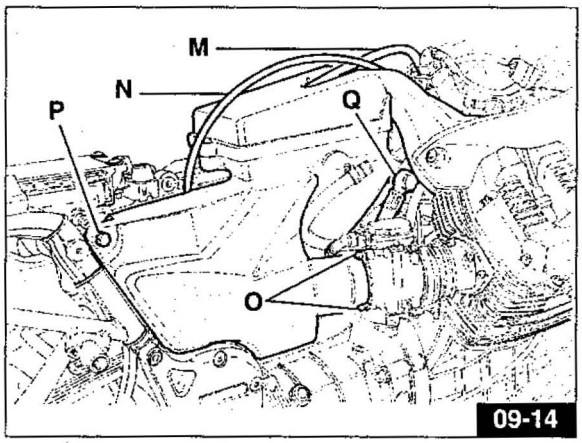
- Close the fuel cock «**G**» - **Fig. 09-12**;
- Disconnect the electric connection of the fuel reserve indicator «**H**» - **Fig. 09-12**;
- Disconnect the fuel pipes from the cock «**G**» - **Fig. 09-12** and from the pressure adjuster «**I**» - **Fig. 09-13**;
- Unscrew the screw «**L**» - **Fig. 09-12**, disconnect the exhaust pipe and remove the tank;



- Disconnect the connection pipe of the absolute pressure sensor «**M**» - **Fig. 09-14**, disconnect the speedometer cable «**N**» - **Fig. 09-14**, then unscrew the screws «**O**» - **Fig. 09-14** which fasten the sleeves to the throttle bodies on both sides of the motorcycle;
- Unscrew the rear fastening screws «**P**» - **Fig. 09-14**, then remove the filter box;
- Disassemble the exhaust system;
- Disconnect all the electric connectors of the different users connected to the motor block;
- Disconnect the sparking plug cables;
- Disconnect the connecting cables between starter and battery;
- Disconnect the two oil recovery pipes «**Q**» - **Fig. 09-14**;

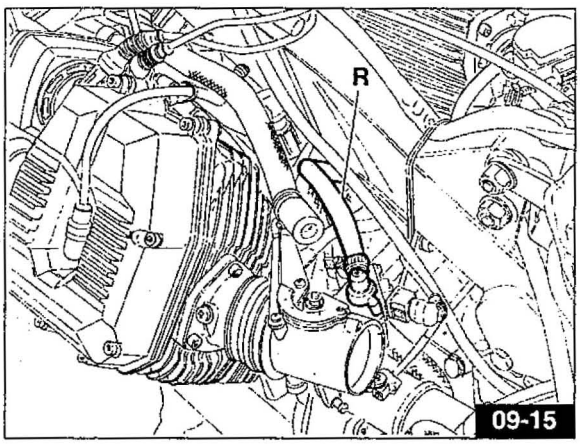


09-13



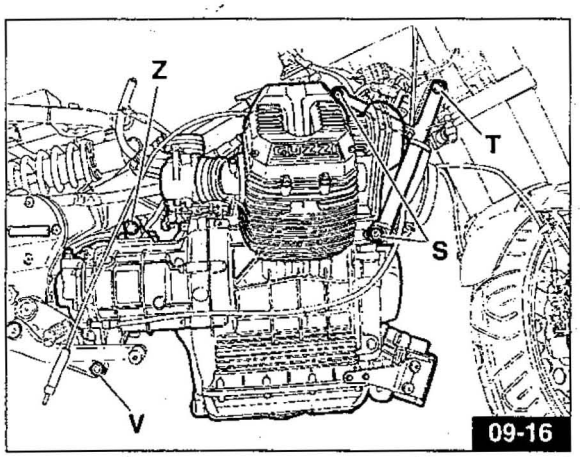
09-14

- From the throttle body, disconnect the pipe connecting to the fuel filter «**R**» - **Fig. 09-15**;
- Disconnect the clutch control transmission cable from the lever on the gearbox cover;
- Disconnect the gearbox lever tie rod from the corresponding selector;
- Place a proper support under the motor block;

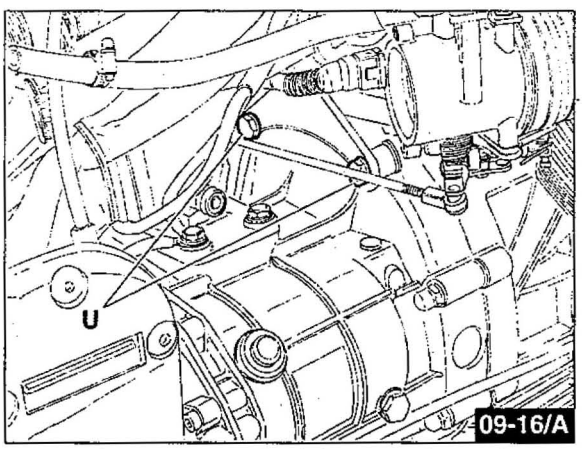


09-15

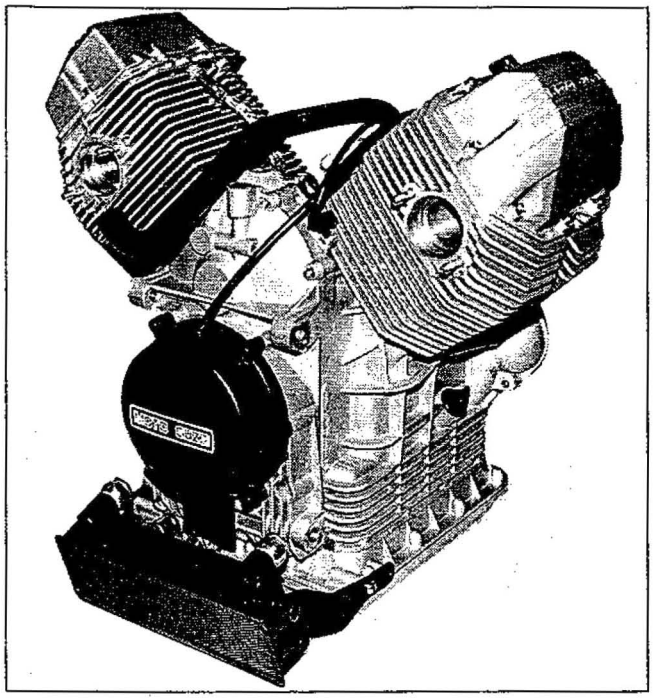
- Unscrew the front frame fastening screws «**S**» - **Fig. 09-16** from both sides of the motorcycle;
- Loosen the screws «**T**» - **Fig. 09-16** which fasten the front frame to the main frame, then rotate it forward;
- Unscrew the screws «**U**» - **Fig. 09-16/A** which fasten the clutch housing to the frame;
- Unscrew the nuts «**V**» - **Fig. 09-16** which lock the side plate connecting pin, then extract the pin;
- Unscrew the screw «**Z**» - **Fig. 09-16** which fasten the gearbox top, then remove the motor/gearbox block;



09-16



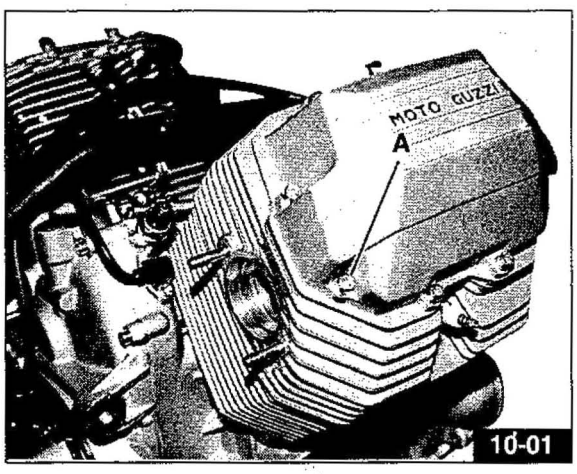
09-16/A



10.1 DISMANTLING THE ENGINE ASSEMBLY (SPORT 1100 I)

NOTE: pages 68 and 69 show the explosion views of the most important motor assemblies.

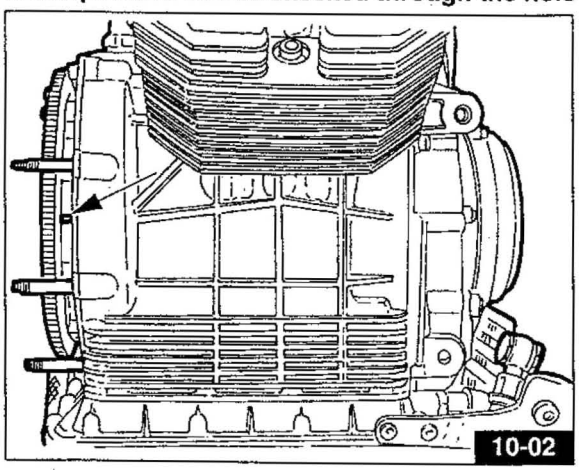
To dismantle the engine assembly, proceed as follows:
- Loosen screws **«A» - Fig. 10-01** that secure the head cover and remove the cover.

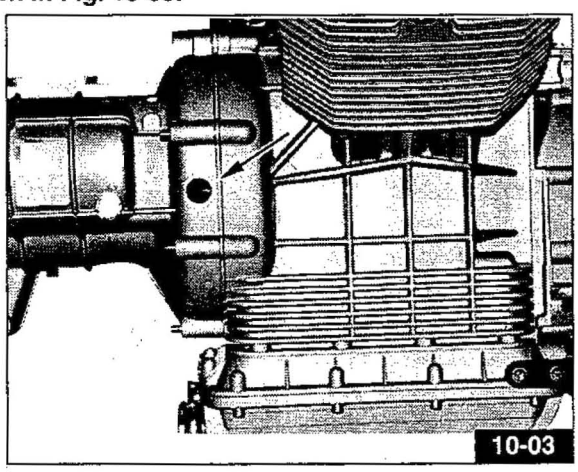


10-01

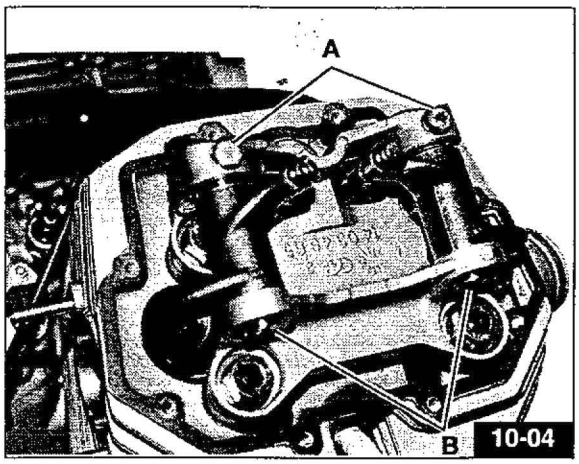
- Turn the crankshaft to the T.D.C. position at the combustion stroke (valves closed) of the L.H. cylinder **Fig. 10-02.**

NOTE: This operation can be done even when the gearbox is assembled to the motor block, as the notch position can be checked through the hole shown in Fig. 10-03.

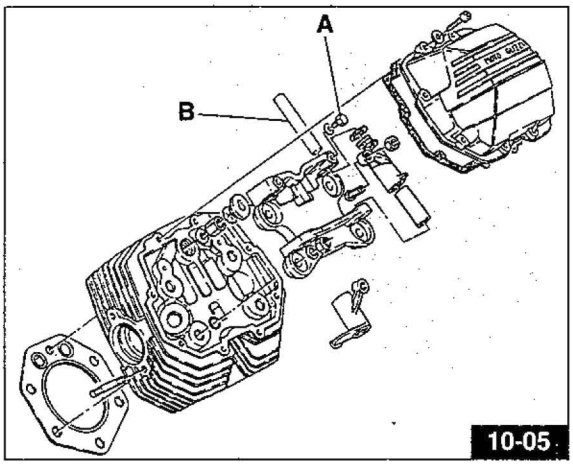

10-02


10-03

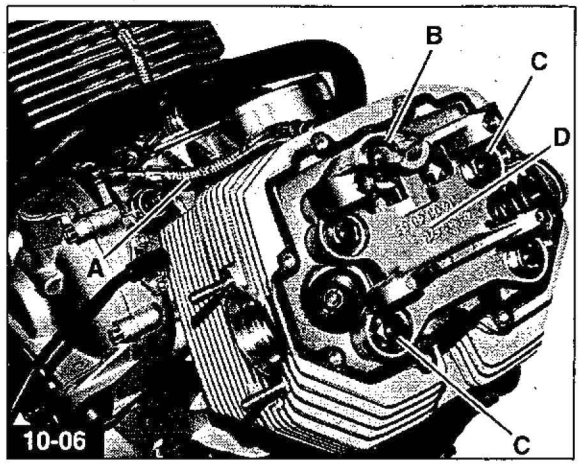
- Remove the two 2 screws «**A**» and draw our the shafts of rocker arms «**B**» easing them out with a screwdriver **(Fig. 10-04 and 10-05)**.
- Disconnect oil delivery piping «**A**» - **Fig. 10-06** to heads; loosen screw cap «**B**» - **Fig. 10-06** and the underlying stud nut and the 5 nuts «**C**» - **Fig. 10-06**; remove the rocker arm support «**D**» - **Fig. 10-06**.
- Move the head slightly apart from the cylinder, remove the 4 oil seals «**A**» and pull the head out **(Fig. 10-07)**.
- Remove gasket «**B**» between head and cylinder, and draw out the cylinder **(Fig. 10-08 / 10-09 and 10-10)**.



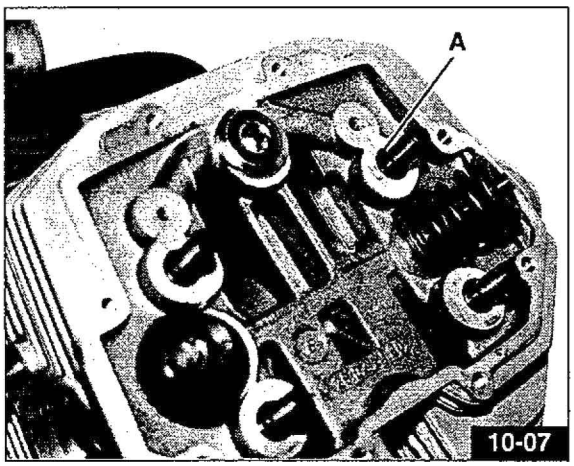
10-04



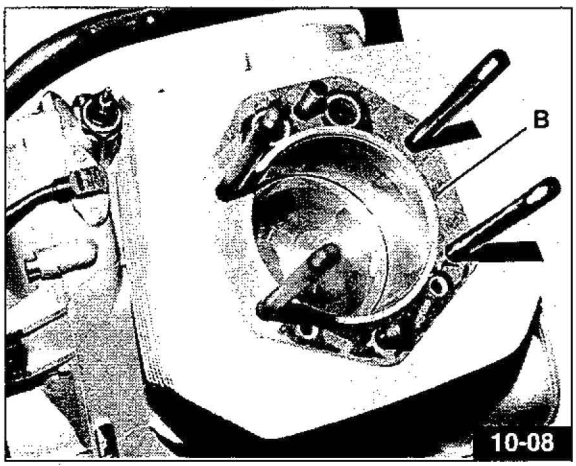
10-05



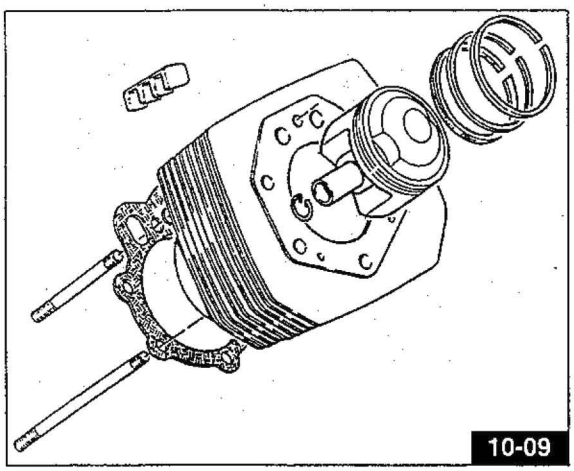
10-06

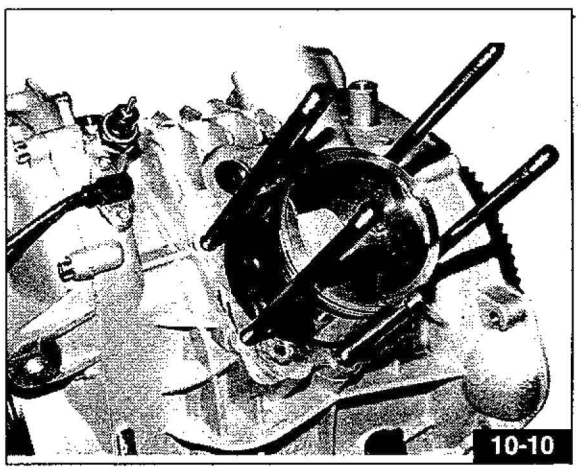


10-07

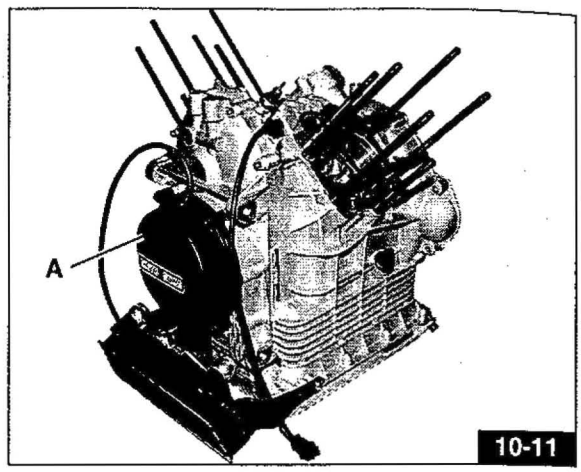


10-08


10-09

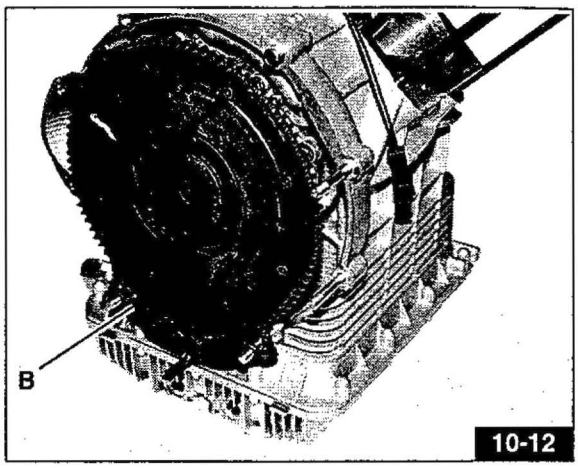

10-10

- Release the piston pin circlips, draw out the piston pin and remove the piston.
  If necessary use the suitable tool available on the market to extract the piston pin.
- Repeat the same procedure on the R.H. cylinder **(Fig. 10-11)**.
- Loosen the 4 fastening screws and take off the alternator front cover **«A» - Fig. 10-11**.



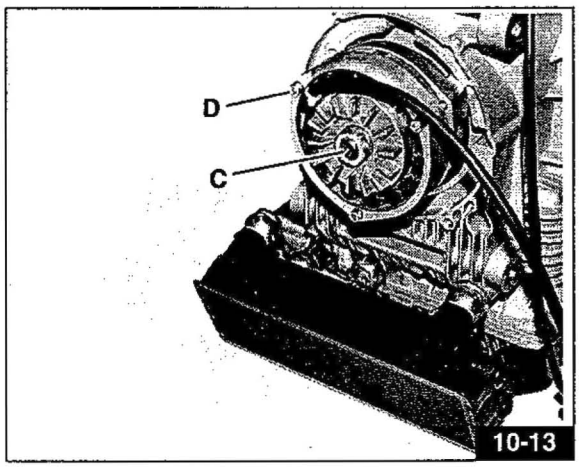
10-11

- Put on the fly wheel the special tool to block it **«B» - Fig.10-12** (cod. 12 91 18 01).



10-12

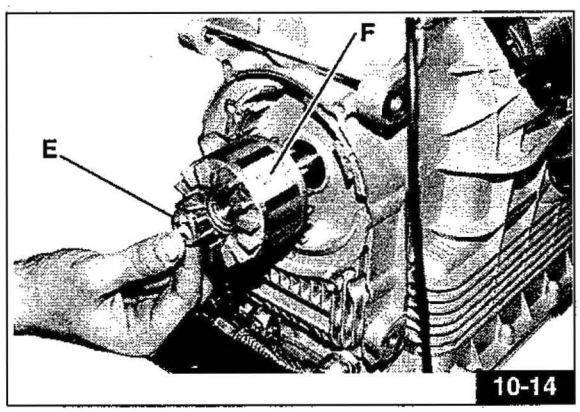
- Unscrew the central nut «C» which blocks the rotor **(Fig. 10-13)**.
- Unscrew the three **«D»** screws of the generator stator and remove it **(Fig. 10-13)**.



10-13

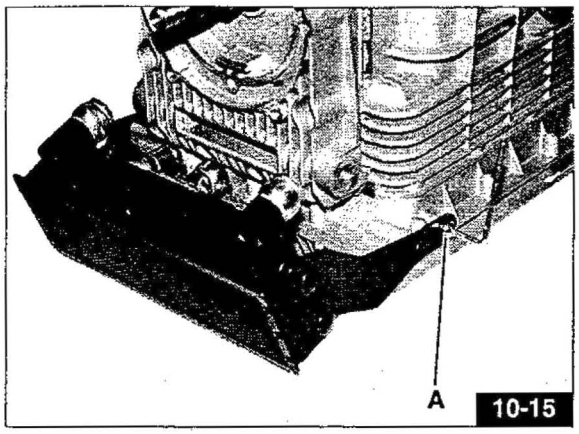
- Remove washer **«E»** and extract rotor **«F» - Fig. 10-14**.

NOTE: to prevent rotor demagnetizing, fit rotor into the stator.



10-14

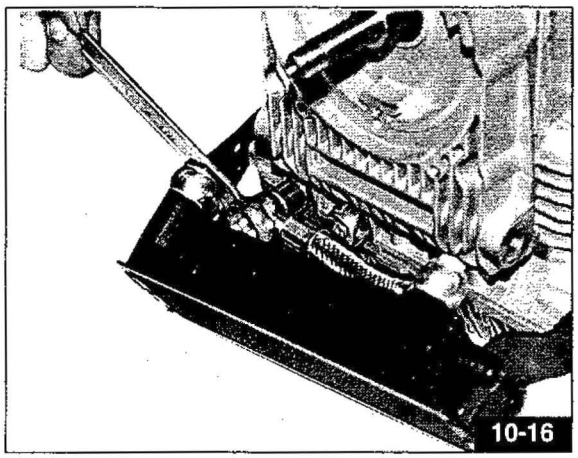
– Disconnect the radiator from the engine supports unscrewing the two screws «**A**» from both sides **(Fig. 10-15)**.



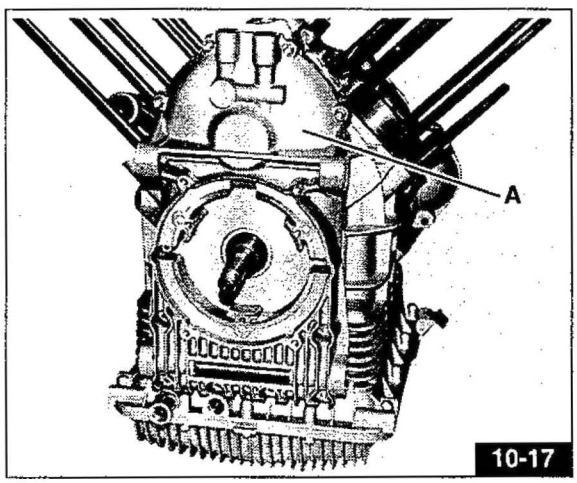
10-15

– Disconnect the oil pipes with a hexagonal spanner **(Fig. 10-16)**.
– Remove the radiator together with supports and pipes.

CAUTION
When reassembling, replace the aluminium gaskets.

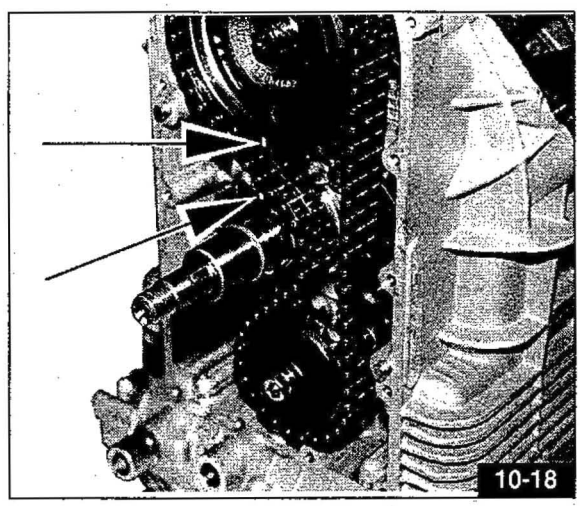

10-16

– Unscrew the 14 screws securing timing system cover «**A**» - **Fig. 10-17** and remove it.



10-17

– The timing marks are highlighted in **Fig. 10-18**. Use this marks for valve timing when reassembling.


10-18

– Use the special tool to hold timing gear «**A**» - **Fig. 10-19** (part no. 14 92 73 00), unscrew the central nut that holds gear «**B**» - **Fig. 10-19** to camshaft.

– Fit tool «**C**» - **Fig. 10-20** (part no. 12 91 18 01) to the flywheel and unscrew central nut «**D**» - **Fig. 10-21** that secures timing drive gear «**E**» - **Fig. 10-21** to crankshaft.

– Remove the spline and extract the spacer ring, **(Fig. 10-22)**.

– After unscrewing the nut holding oil pump drive gear, extract the three gears along with the chain **(Fig. 10-23)**.

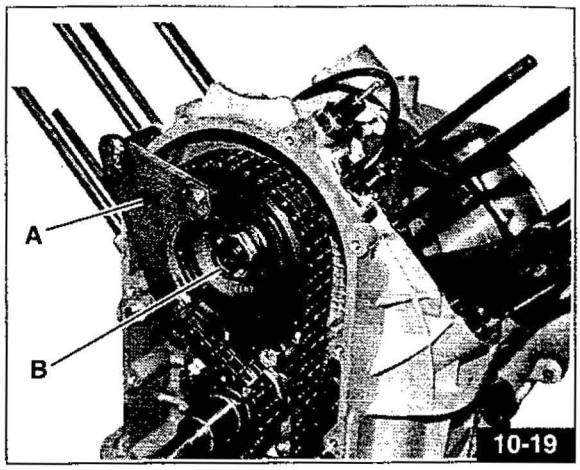
– Remove drive chain tensioner «**A**» and oil pump «**B**» - **Fig. 10-24**.

– Disassemble the phonic wheel «**C**» - **Fig. 10-24**.

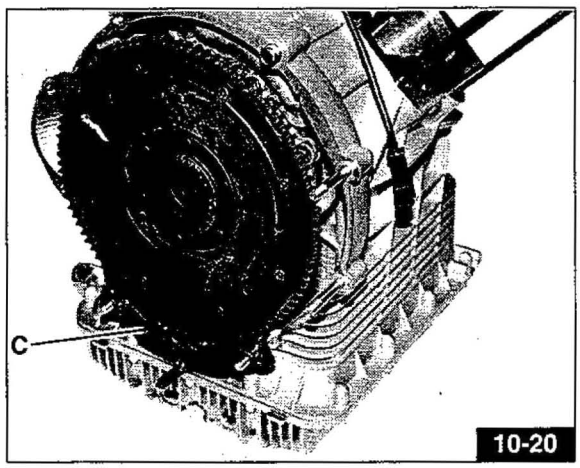
IMPORTANT

When reassembling the phonic wheel be sure that the milled space «D» - Fig. 10-24/A; is positioned on the opposite side of the censor «E» - Fig. 10-24/A.

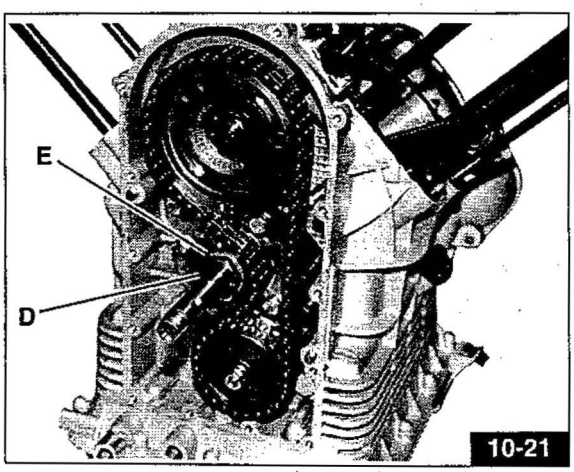
Then check with a thickness gauge that the gap between the phase censor "E" and the teeth of the phonic wheel is between 0,6 and 1.2 mm.



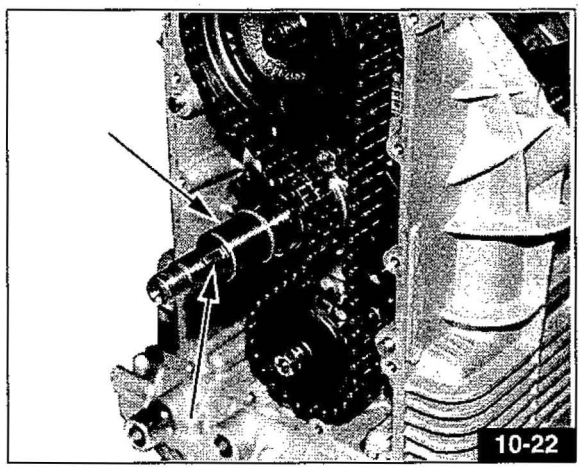
10-19

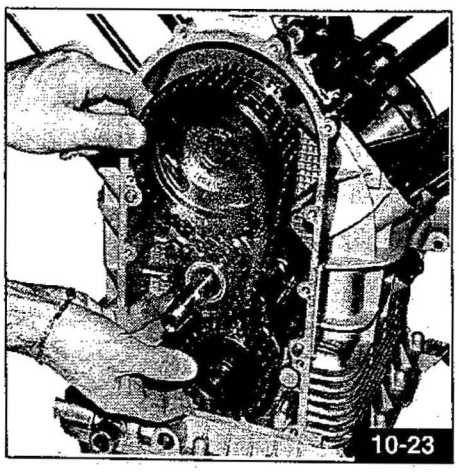


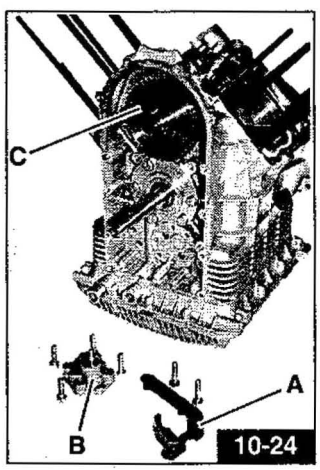
10-20



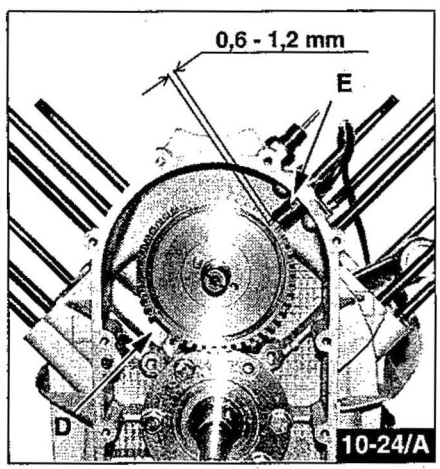
10-21


10-22


10-23



10-24



10-24/A

- Unscrew the 3 screws «C» on flange «D» that holds camshaft «E». Draw out tappets «F» - **Fig. 10-25** from their seats and then the camshaft.

- Fit tool «A» (part no. 12 91 18 01) to the flywheel and tool «B» (part no. 30 90 65 10) to compress clutch springs **(Fig. 10-26)**.

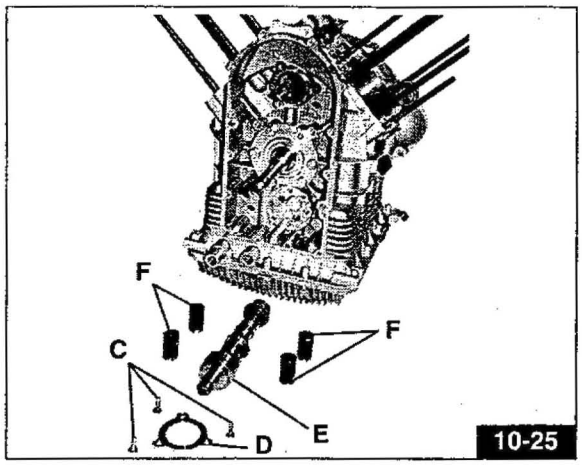
- Unscrew the eight screws «C» holding the ring gear fitted on the engine flywheel **(Fig. 10-26)**.

- Remove ring gear «D» - **Fig. 10-27**. When refitting it later on, remember to line up the marks shown by arrow «E» - **Fig. 10-27**.

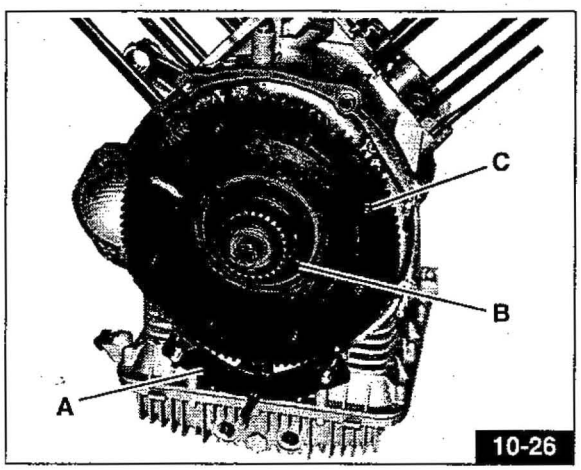
- Take out the clutch plates and the springs from inside the engine flywheel **(Fig. 10-28 and 10-29)**.

NOTE: Position the special blocking tool «A» (code. 12 91 18 01) as shown in Fig. 10-30.

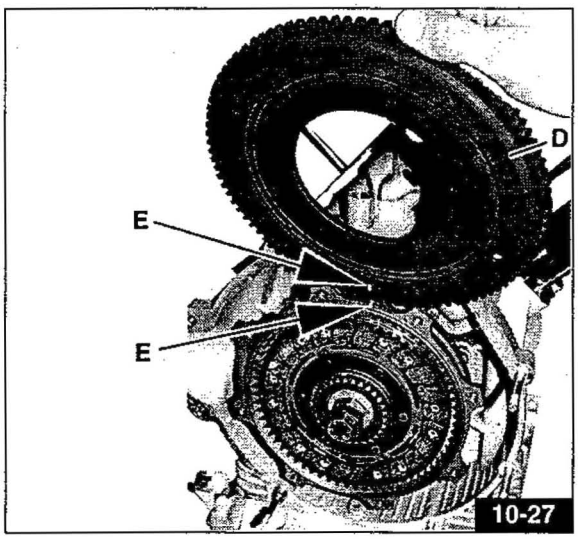
- Unscrew the six screws «B» that hold flywheel to crankshaft and remove the flywheel **(Fig. 10-30)**. These screws must withstand considerable loads and stresses and cannot be reused. Fit new screws when reassembling (use Loctite on the screws and torque up to 4÷4.2 Kgm).



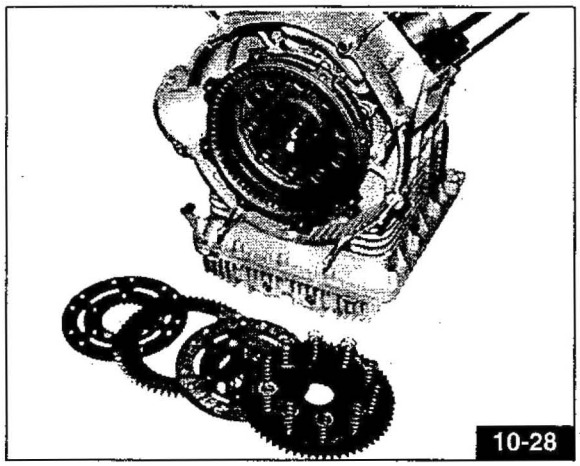
10-25

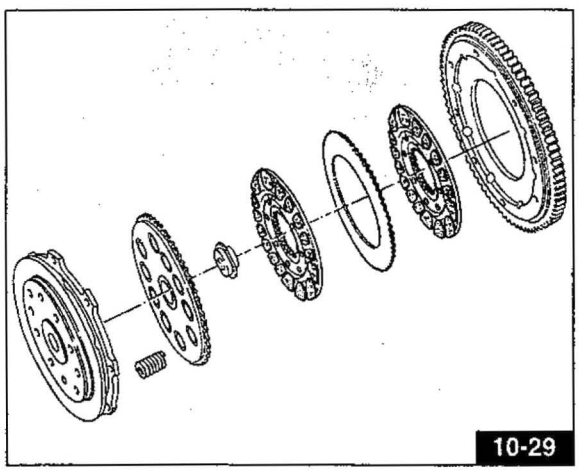


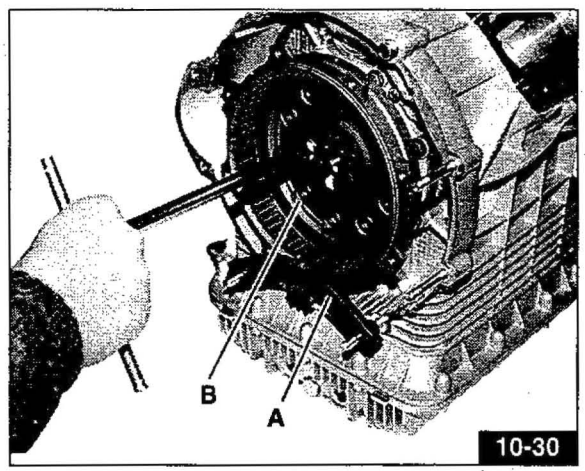
10-26



10-27


10-28


10-29

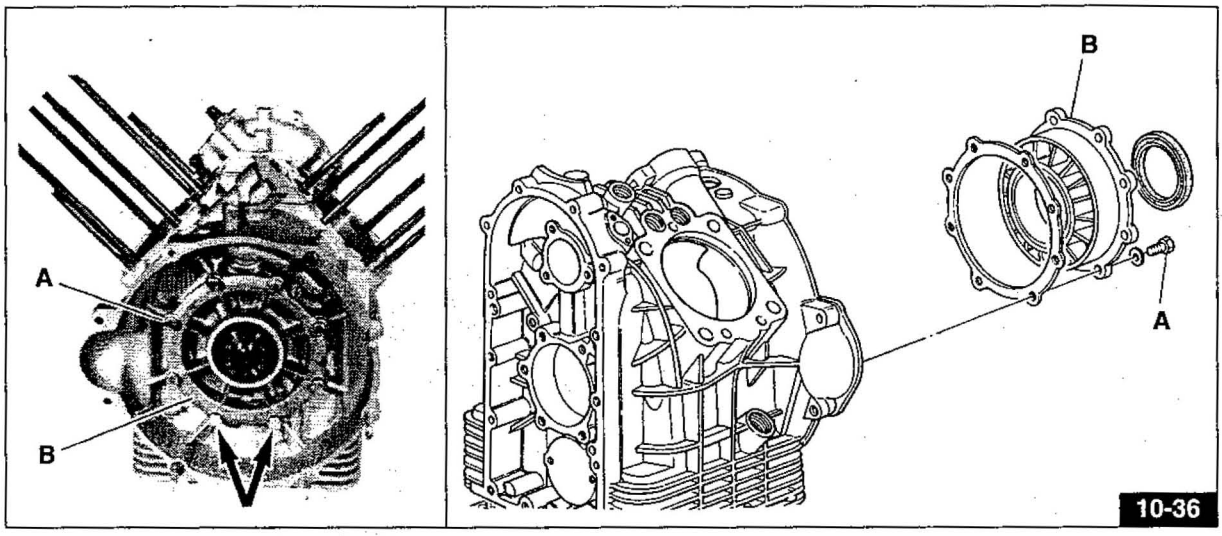


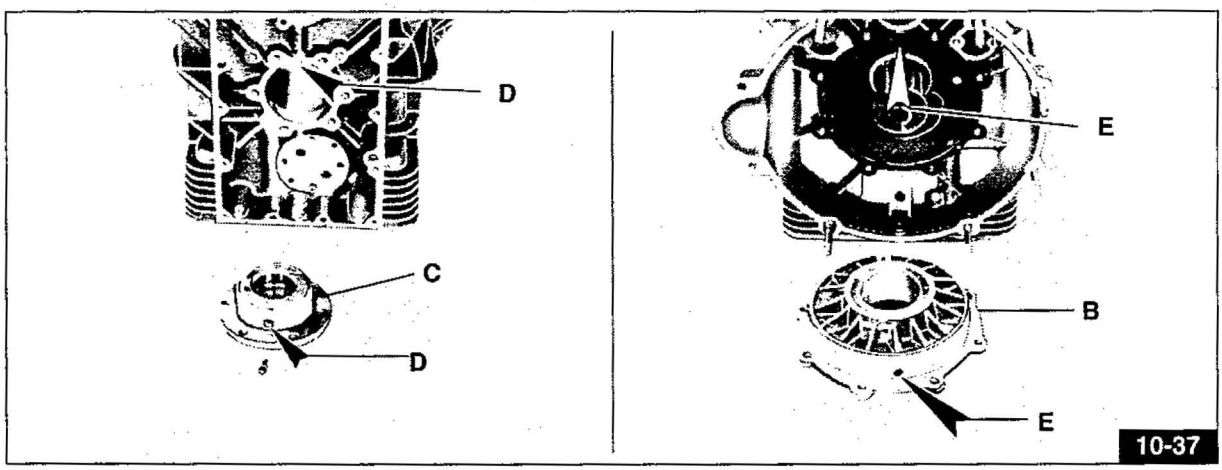
10-30

10.1.1 ENGINE REASSEMBLY

Before reassembling the engine, check all the components carefully, as indicated in the "CHECKING" chapter 10.1.2.

- To reassemble, carry out the dismantling operations in reverse order, remembering the following points:
- To avoid oil leaks from the 2 lower screws «**A**», securing the rear crankshaft support flange «**B**», bind these screws with Teflon tape **(Fig. 10-36)**.
  When fitting flanges «**B**» and «**C**» on the crankcase, observe the assembly position of holes «**D**» and «**E**» - **Fig. 10-37**.

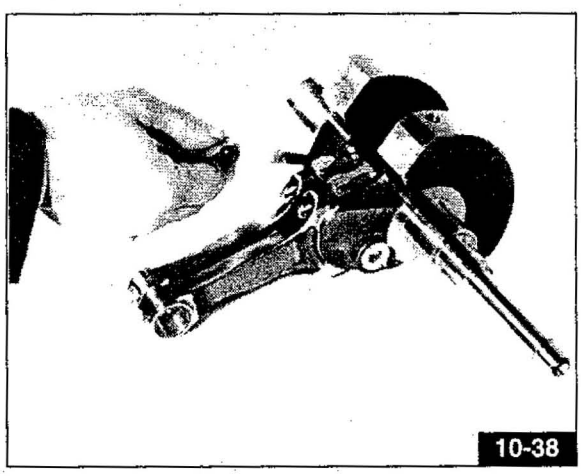




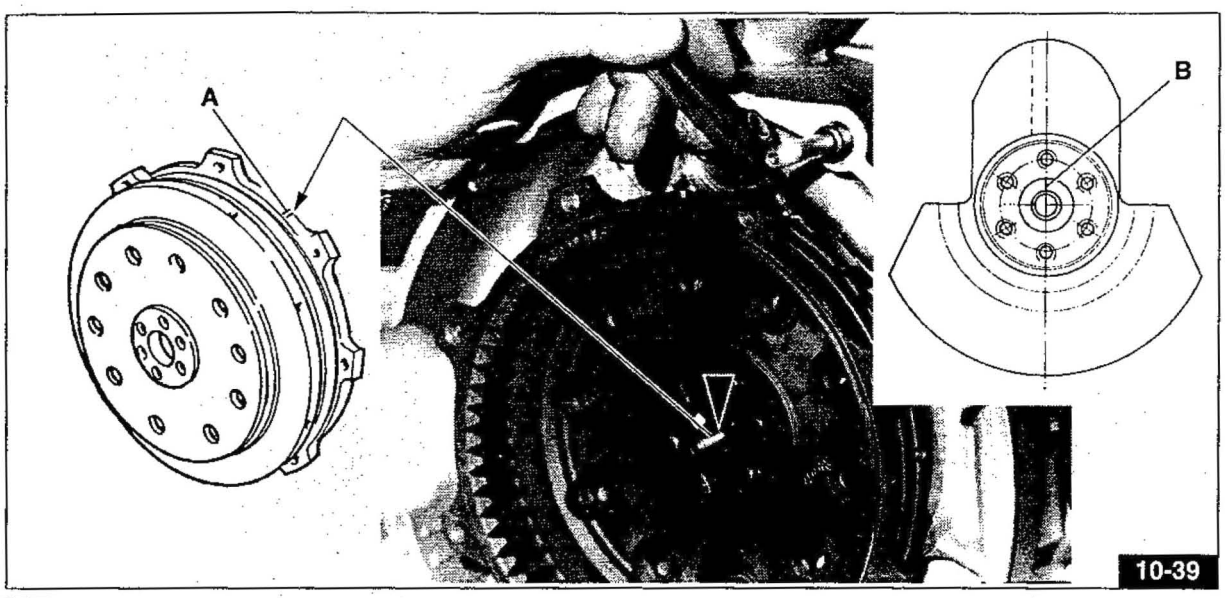
- Check play between con-rod shims and crankwebs (play should be 0.30÷0.50 mm).
  Install crankshaft in the crankcase and torque up con-rod cap screws at 6.1÷6.6 Kgm.

WARNING
Always replace the bolts with new ones because they are heavily loaded and stressed.

NOTE: With the CARRILLO connecting rods the wrench setting talk must be 8.5 ±9,3 Kg. Apply "FEL-PRO" lubricant to the screw thread and the surfaces.



– When refitting flywheel to crankshaft, line up the timing marks as shown in **Fig. 10-39** (arrow «**A**» stamped on the engine flywheel must be lined up with mark «**B**» on the crankshaft).
Torque up the screws securing the flywheel to the crankshaft at 4÷4.2 Kgm (use Loctite medium compound when reassembling).

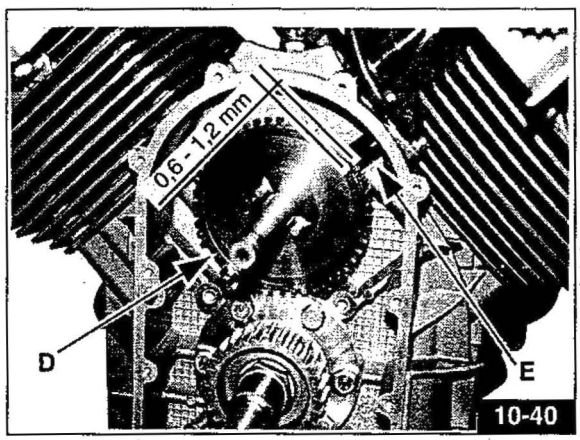


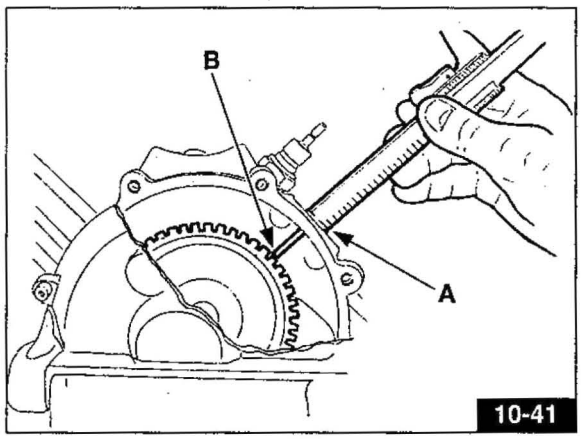
IMPORTANT

When reassembling the phonic wheel be sure that the milled space «D» - Fig. 10-40 is positioned on the opposite side of the phase censor «E» - Fig. 10-40; Then check with a thickness gauge that the gap between the phase sensor «E» and the teeth of the phonic wheel is between 0,6 and 1.2mm

– To measure air gap with the engine coupled to the gearbox proceed as follows:

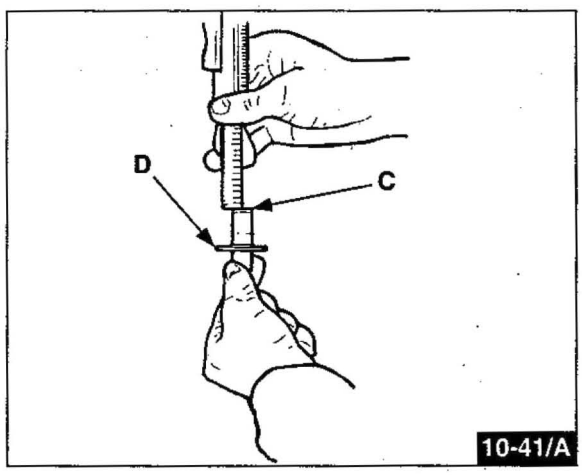
1) measure the distance from sensor seating «**A**» on crankcase to the surface of flywheel tab «**B**» - **Fig. 10-41** with a gauge;



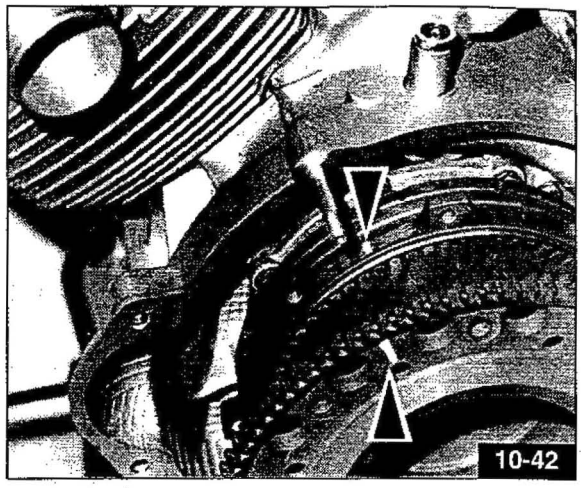


2) measure the distance from sensor tip «**C**» and plate «**D**» of the sensor **(Fig. 10-41/A)**.

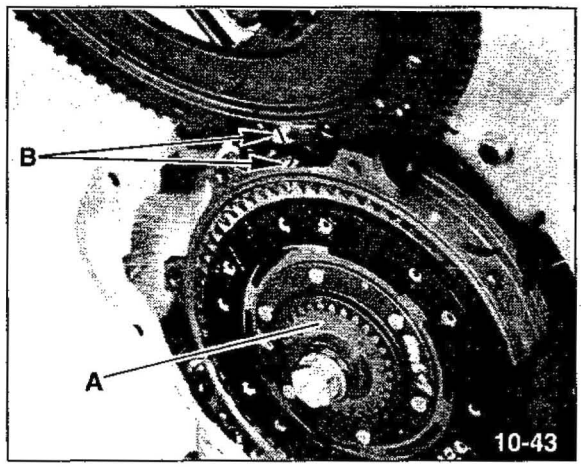
The difference between the two measures gives actual air gap. If necessary, use more or less shims on sensor seating.



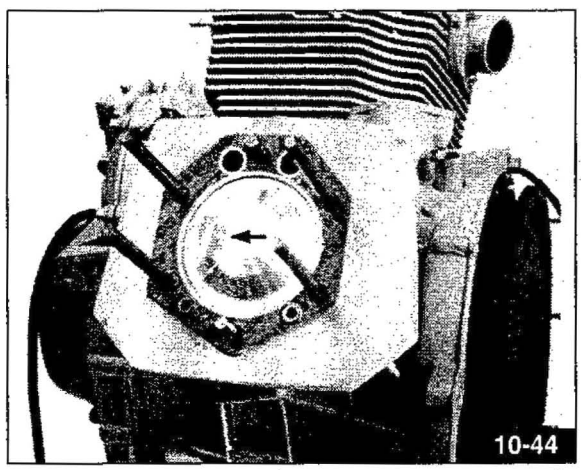
– When reassembling the clutch plate assembly make sure that the reference marks on a tooth of the spring pressure plate are lined up with the reference marks on the flywheel **(Fig. 10-42)**.



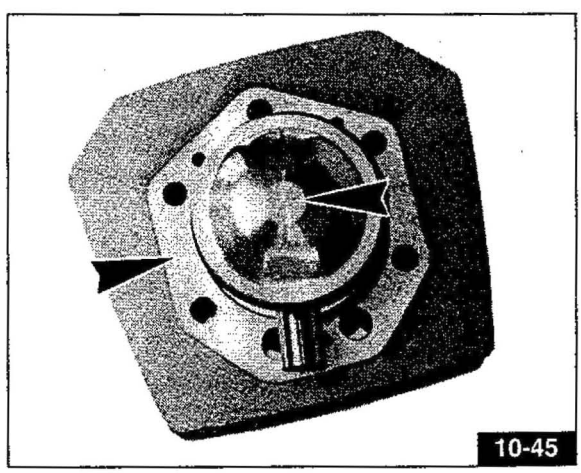
– To centre the clutch plates, use the appropriate tool **«A»** (part no. 30 90 65 10); tighten the screws holding the starting ring gear to the flywheel at 1.5÷1.7 kgm torque.
When fitting the starting ring gear to the flywheel, observe marks **«B»** shown in **Fig. 10-43**.



– The piston has an arrow stamped on it that shows the correct direction for the piston (the arrow must be pointing forward as shown in **Fig. 10-44**).

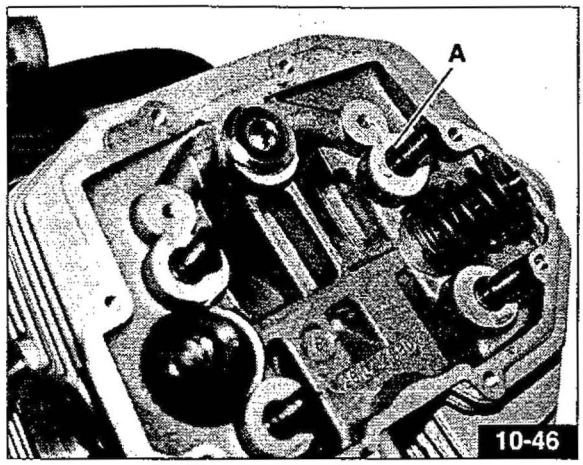


– Cylinder and piston should be matched from the same selection marked with a letter stamped on each of them (A with A, B with B, C with C) **Fig. 10-45**.

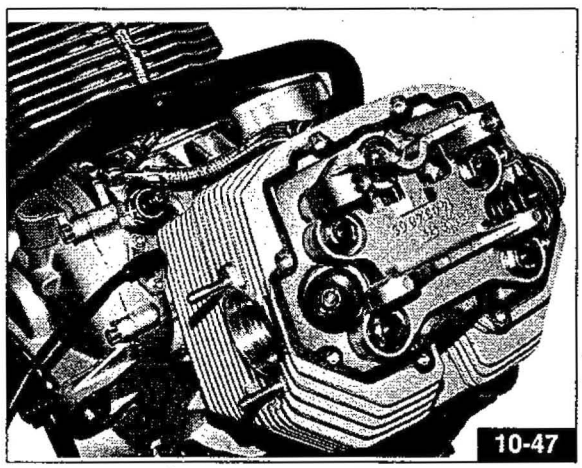


– Before refitting the rocker arms mount, slip the 4 oil seals «**A**» into their seats on the stud bolts **(Fig. 10-46)**.

WARNING
Always replace the OR with new ones.



– Tighten the 5 nuts and the central stud securing head to cylinder in a cross sequence at 4÷4.2 Kgm torque **(Fig. 10-47)**.

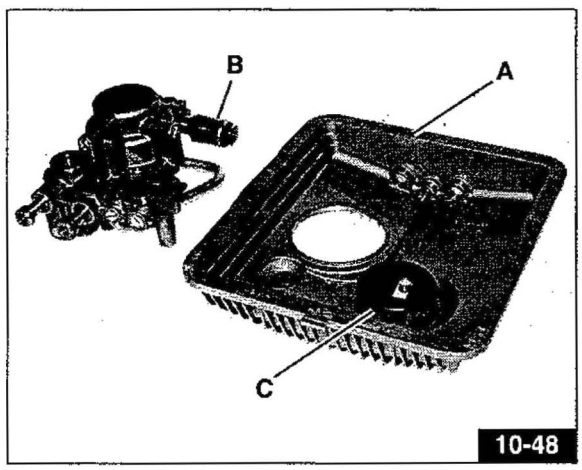


– Before refitting the oil sump, accurately position gasket «**A**» - **Fig. 10-48**.

WARNING
If gasket is installed incorrectly (both on sump and on spacer), this will lead to immediate damage to engine.

To check the setting of oil pressure relief valve «**B**» - **Fig. 10-48**, see page 66.
Strainer «**C**» - **Fig. 10-48** and oil ducts should be cleaned accurately.

IMPORTANT
Always replace the gaskets oil sump and flange.



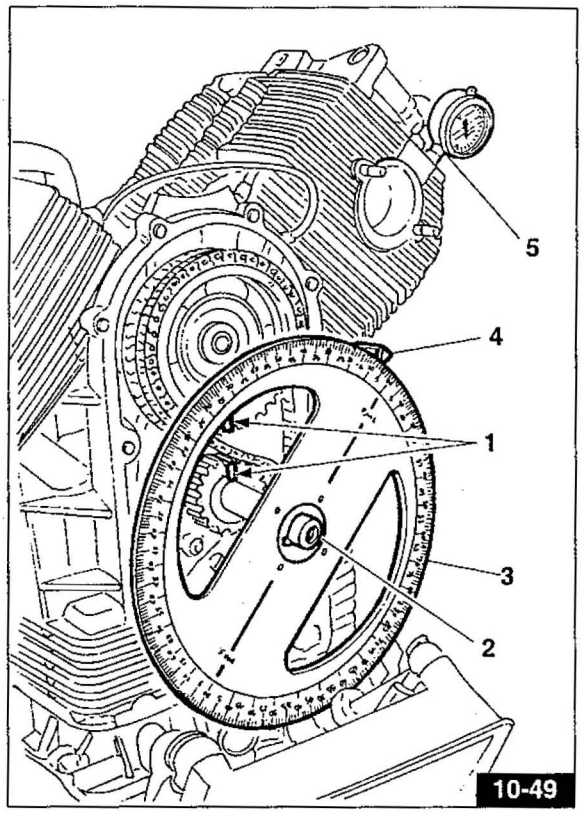
10.1.2 TIMING SYSTEM PHASE-SETTING CHECK (Fig. 10-49)

To check the timing system phase-setting, proceed as follows:

- allow a clearance of 1.5 mm between the rocking levers and the valves;
- unscrew the motor pinion fastening nut;
- insert, on the driving shaft slot, the hub code 65 92 84 00 «**2**» together with the graduated disc code 19 92 96 00 «**3**», and fasten it to the driving shaft through a screw;
- use a screw to fasten the arrow N. 17 94 75 60 «**4**» to the threaded hole of the base;
- on the sparking plug hole of the left cylinder, install a comparator support «**5**», then the comparator itself;
- turn the disc clockwise until the left cylinder piston reaches the top dead centre position (with closed valves), reset the comparator and check that the marks (on the timing gear and the motor pinion) «**1**» are perfectly aligned. Then, through the gear box inspection hole, check that the mark with letter «**S**» is correctly aligned with the mark visible in the middle of the hole;
- now, align the arrow tip with the zero "TDC" on the graduated disc;
- according to the timing chart, check the phase
- screw the support with comparator on the sparking plug hole on the right cylinder head;
- install the control arrow on the base right side;
- turn the disc clockwise until the mark «**D**» is aligned with the mark in the middle of the inspection hole on the gear box (closed valves);
- repeat the operations shown for the left cylinder.

When checking is complete, if everything is correct:

- reset the working clearance between the rocking
- levers and the valves (suction 0.10 mm, exhaust 0.15 mm);
- remove the graduated disc from the driving shaft and the arrow from the base;
- remove the support with comparator from the cylinder head hole, reassemble the sparking plug and complete the assembly.

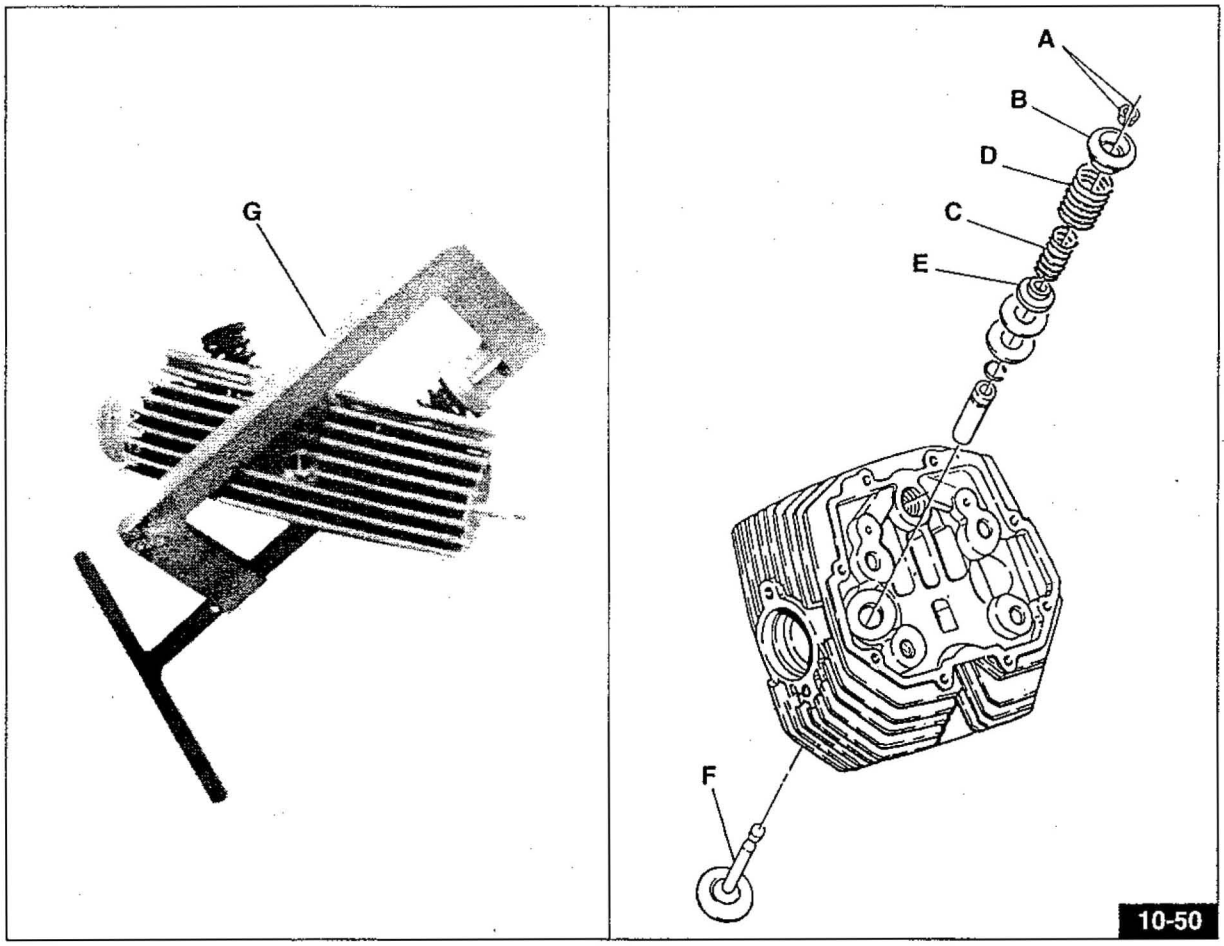


10-49

STRIPPING THE HEADS (Fig. 10-50)

To strip heads proceed as follows:

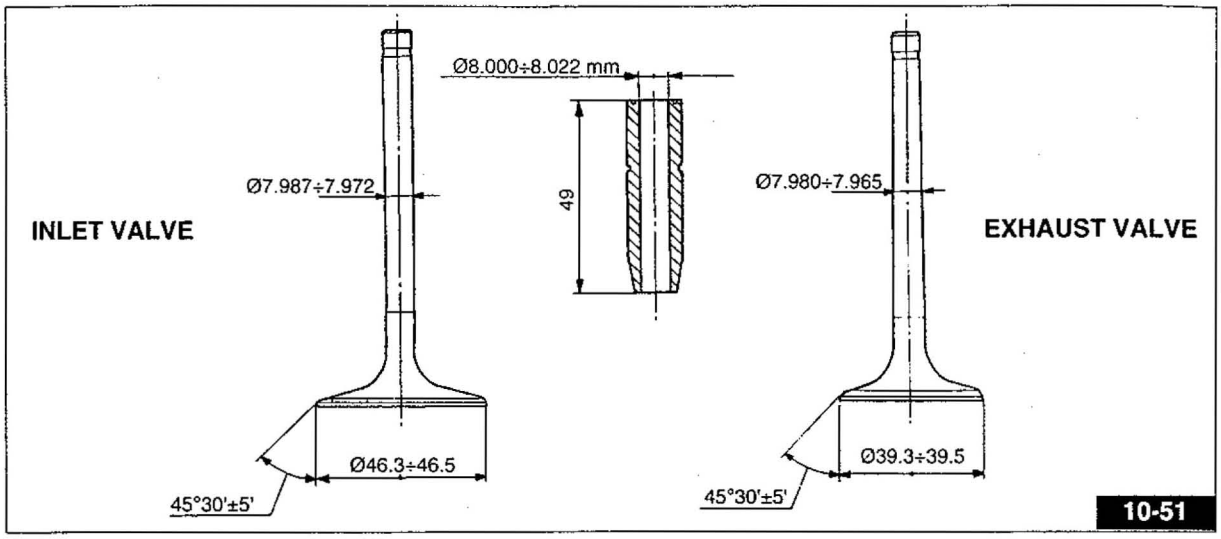
- place tool «**G**» (part no. 10 90 72 00) on the upper valve cap and in the middle of the head of the valve to be removed;
- turn in tool screw until it is tight, then tap on tool head (where it touches the upper valve cap) with a mallet so that the two cotters «**A**» move apart from upper cap «**B**»;
- once the two cotters «**A**» are apart, tigthen the screw further until you can lift the cottters out of the valve seats; loosen the tool and take it off the head; then draw out upper cap «**B**», inner spring «**C**», outer spring «**D**», lower cap «**E**» and eventually the shims, and valve «**F**» from inside the head.



HEADS

Check that:

- the surfaces in contact with the cover and with the cylinder are not scratched or damaged thus preventing a perfect seal;
- check that the tolerance between the valve guide holes and the valve stems are within the prescribed limits;
- check the state of the valve seats.



10-51

VALVE GUIDE

To extract the valve guides from the heads, use a punch.
The valve guides should be replaced when the clearance between the above and the stems cannot be eliminated by replacing the valves alone.

To fit the valve guides on the heads:

- heat the head in an oven to approximately 60°C, then lubricate the valve guides;
- fit the piston rings;
- press the valve guides with a punch; pass a stem borer in the holes of the valve stems, to restore the prescribed internal diameter (**Fig. 10-51**).

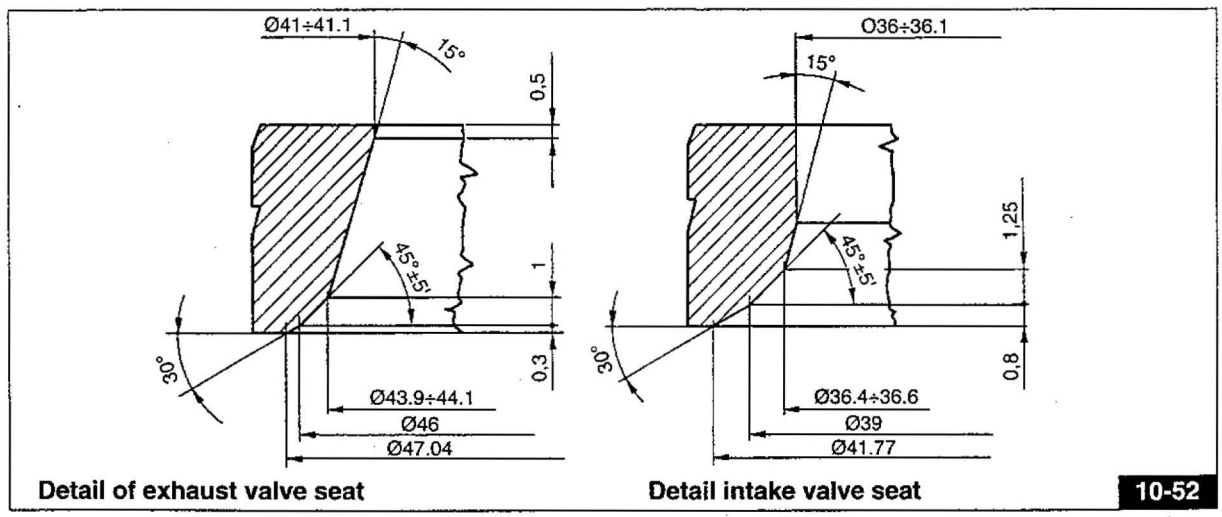
The allowance between the seat on the head and the valve guide must be 0.046÷0.075 mm.

DATA TABLE FOR VALVE AND GUIDE COUPLINGS

	Internal valve guide mm	dia. valve stem dia. mm	fitting clearance mm
Inlet	8,000÷8,022	7,972÷7,987	0,013÷0,050
Exhaust		7,965÷7,980	0,020÷0,057

VALVE SEATS

The valve seats should be milled. The seat inclination is 45°±5'.
After milling, to obtain a good coupling and a perfect seal between the ring nut and the valve mushrooms, use a honing machine.



Detail of exhaust valve seat

Detail intake valve seat

10-52

INSPECTION OF VALVE SPRINGS

Check that the springs are not deformed and have not lost their load:

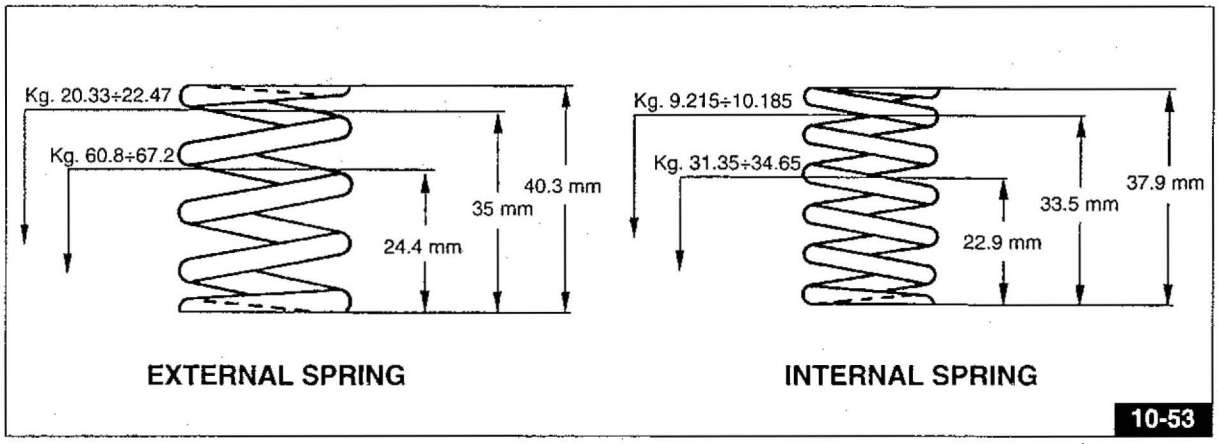
External spring

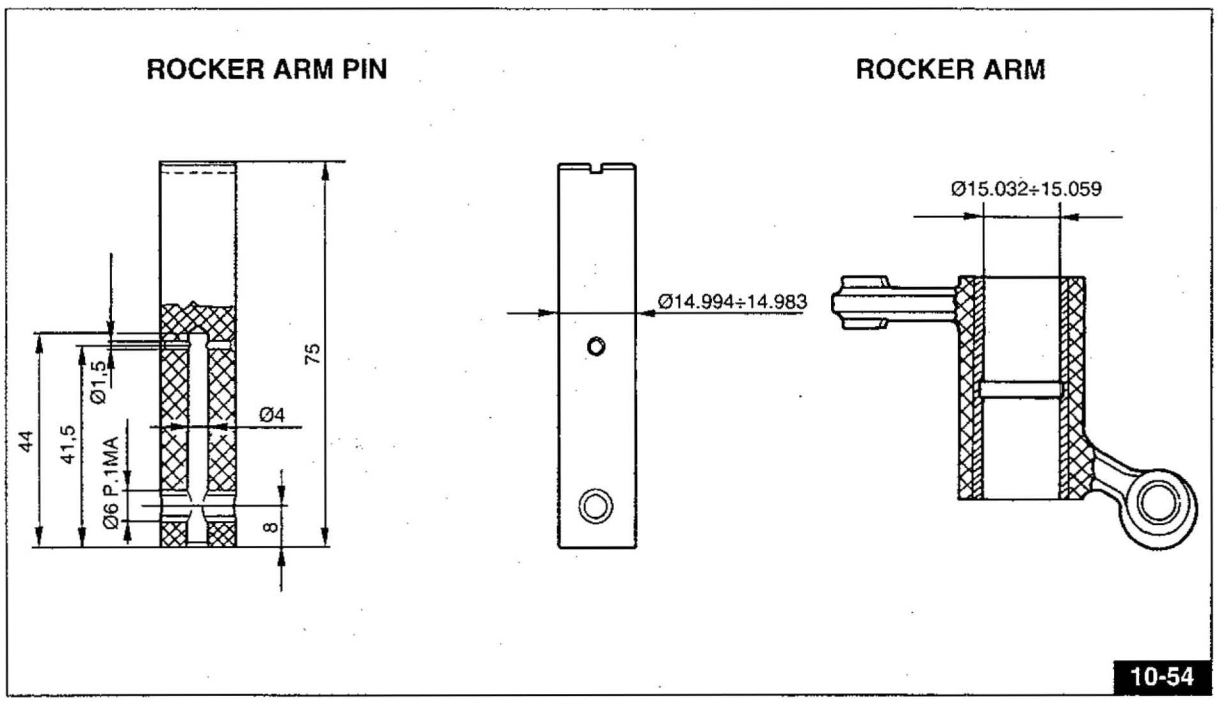
- **free**, has a length of 40,3;
- **with closed valve**, has a length of 35 mm and must give a load of 20,33÷22,47 kg;
- **with open valve**, has a length of 24,4 mm and must give a load of 60,8÷67,2;
- **compressed**, has a length of 21 mm.

Internal spring

- **free**, has a length of 37,9 mm;
- **with closed valve**, has a length of 33,5 mm and must give a load of 9,215÷10,185;
- **with open valve**, has a length of 22,9 mm and must give a load of 31,35÷34,65;
- **compressed**, has a length of 19.6 mm.

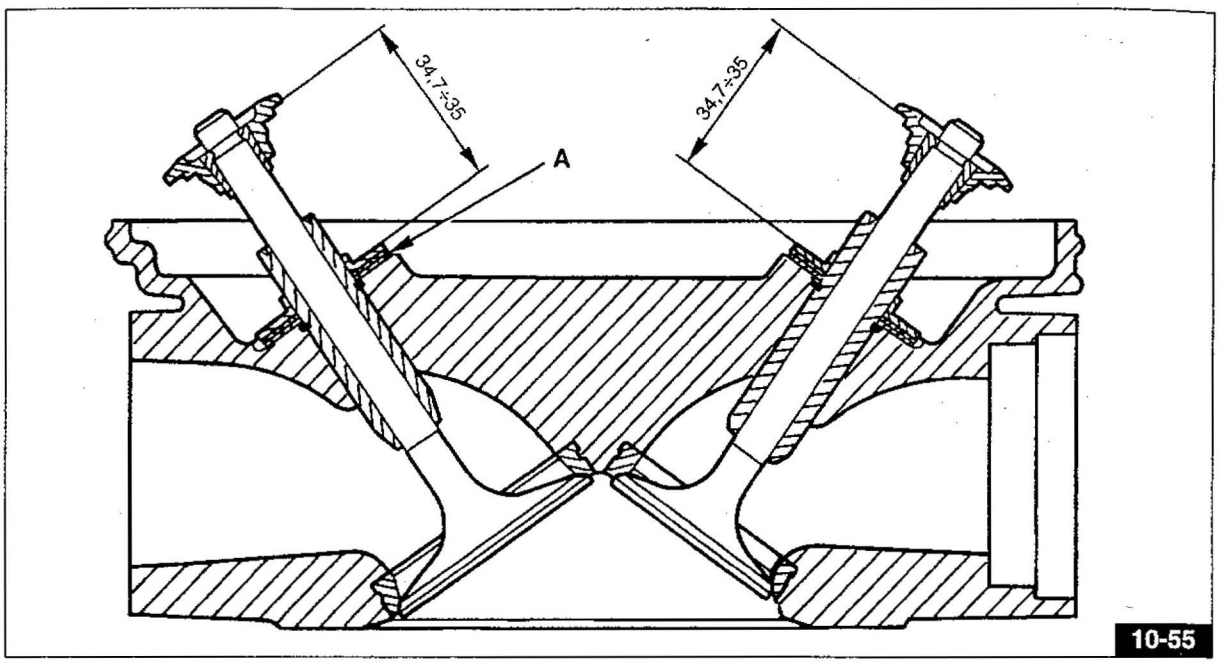
If the springs do not satisfy the above specifications they must be replaced.





CHECK SPRING PACK (Fig. 10-55)

When the valve seats on the heads have been milled it is necessary, after fitting the valves on the heads, to check that the springs are compressed between 34,7÷35 mm; to obtain this value insert «**A**» washers cod. 14 03 73 00 of thicknesses 0.3 mm.



10-55

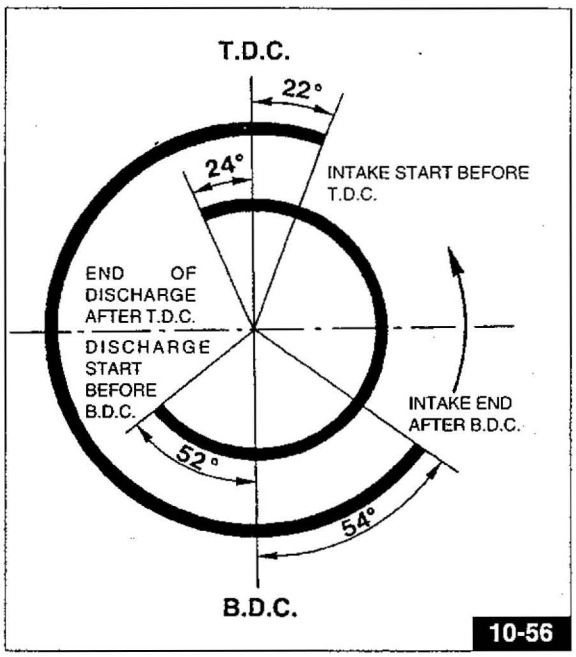
TIMING DATA

The timing data (referring to the control clearance of 1,5 mm between rocker arms and valves) are as follows (see **Fig. 10-56**):

Intake:
- open 22° before TDC (top dead center)
- close 54° after BDC (bottom dead center)

Exhaust:
- open 52° before BDC
- close 24° after TDC

- intake 0.10 mm (USA version: mm 0,05)
- exhaust 0.15 mm (USA version: mm 0,05)



10-56

DIAMETER OF CAMSHAFT BEARINGS AND THEIR HOUSINGS IN CRANKCASE

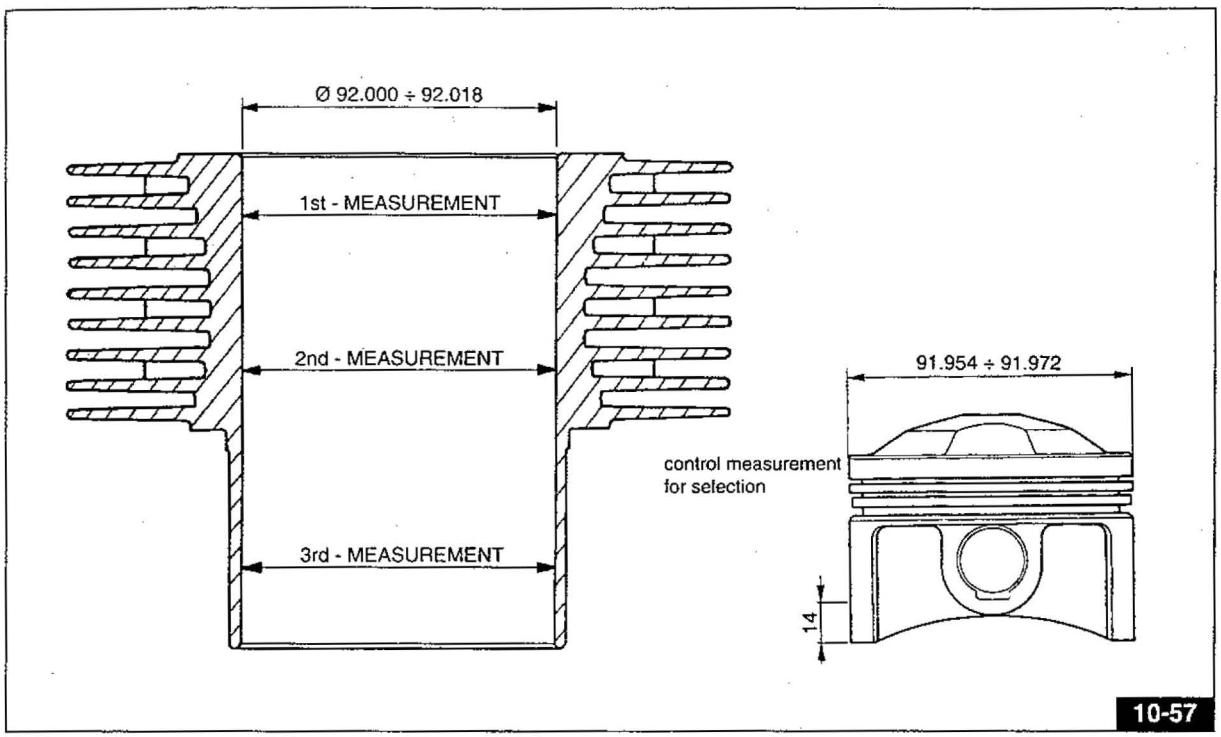
	Ø CAMSHAFT JOURNAL mm	Ø HOUSING IN CRANKCASE mm	FITTING CLEARANCE mm
Timing side	47,000 ÷ 46,984	47,025 ÷ 47,050	0,025 ÷ 0,066
Drive side	32,000 ÷ 31,984	32,025 ÷ 32,050	

TAPPET-GUIDE IN CRANKCASE - COUPLING DATA

	I/D OF GUIDE HOUSING mm	O/D OF TAPPETS mm	FITTING CLEARANCE mm
Original	22,021 ÷ 22,000	21,996 ÷ 21,978	0,004 ÷ 0,043
O/S on dia. mm 0,05	22,071 ÷ 22,050	22,046 ÷ 22,028	0,004 ÷ 0,043
O/S on dia. mm 0,10	22,121 ÷ 22,100	22,096 ÷ 22,078	0,004 ÷ 0,043

CYLINDER WEAR CHECK (Fig. 10-57)

The measurement of the cylinder diameter must be made at three heights, turning the feeler gauge by 90°. It is also important to check that the cylinders and the pistons are of the same selection class (A, B, C).



Grading cylinder diameter

GRADE **A**	GRADE **B**	GRADE **C**
92,000÷92,006	92,006÷92,012	92,012÷92,018

Grading piston diameter

GRADE **A**	GRADE **B**	GRADE **C**
91,954÷91,960	91,960÷91,966	91,966÷91,972

NOTE: The «A», «B», «C» grade cylinders must be coupled with the corresponding pistons in the grades «A», «B», «C» (Fig. 10-46).

The grading measurements indicated in the tables must be taken at 14 mm from the lower edge of the piston, at right-angles to the gudgeon pin axis.

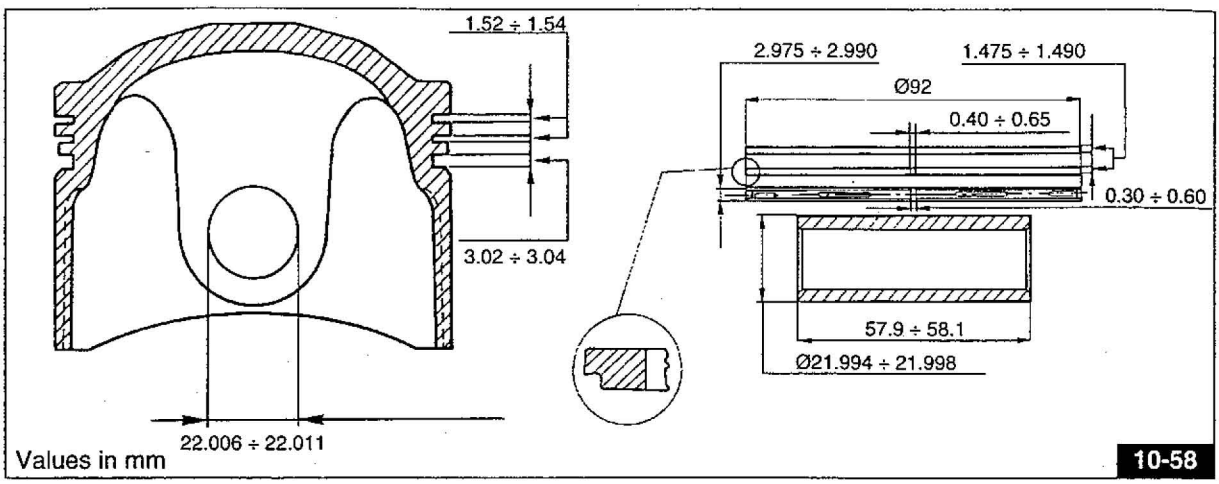
Maximum cylinder ovalization allowed: ..... 0.02 mm.

Maximum clearance allowed between cylinder and piston: ..... 0.08 mm.

PISTONS (Fig. 10-58)

During overhauls, the incrustations must be removed from the piston crowns and the piston ring seats; check the existing clearance between the cylinders and the pistons with the grading diameter; if it is higher than that indicated it is necessary to replace the cylinders and the pistons.

The engine pistons must be balanced; a weight difference of 1.5 grams is allowed.



Coupling data

Dia. PISTON PIN mm	Dia. PISTON HOLES mm	CLEARANCE BETWEEN PISTON PIN & HOLES ON PISTON mm
21,994	22,006	0,008÷0,017
21,998	22,011	

OIL SCRAPER COMPRESSION RINGS

Each piston is fitted with: 1 upper piston ring, 1 intermediate slotted piston ring, 1 oil control ring.

The piston rings must be positioned with the open ends offset to each other.

Assembly clearance measured between ring thickness and piston groove.

Compression ring and oil scraper:0,030÷0,065 mm.

Aperture between the ends of the piston rings fitted on the piston

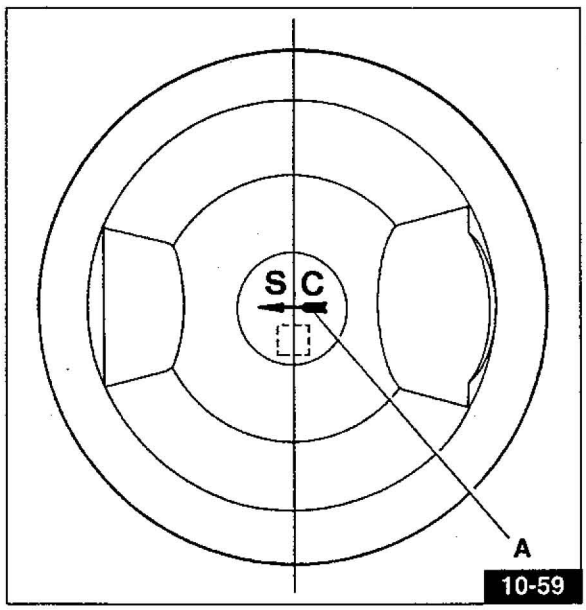
Upper compression ring and slotted ring:

..... 0.40÷0.65 mm.

Oil control ring: ..... 0.30÷0.60 mm.

Fitting of the piston in the little-end bearing (Fig. 10-59)

When the piston is fitted in the little-end bearing, the part marked in the figure with the arrow «**A**» must be turned towards the exhaust manifold.



CONNECTING RODS

When overhauling the connecting rods, carry out the following checks:

- the condition of the bushings and the clearance between these and the gudgeon pins;
- parallelism of the axes;
- connecting rod bearings.

The bearings are of the thin shell type, in babbitt alloy that cannot be adjusted; if there are any traces of seizing or wear they must be replaced.

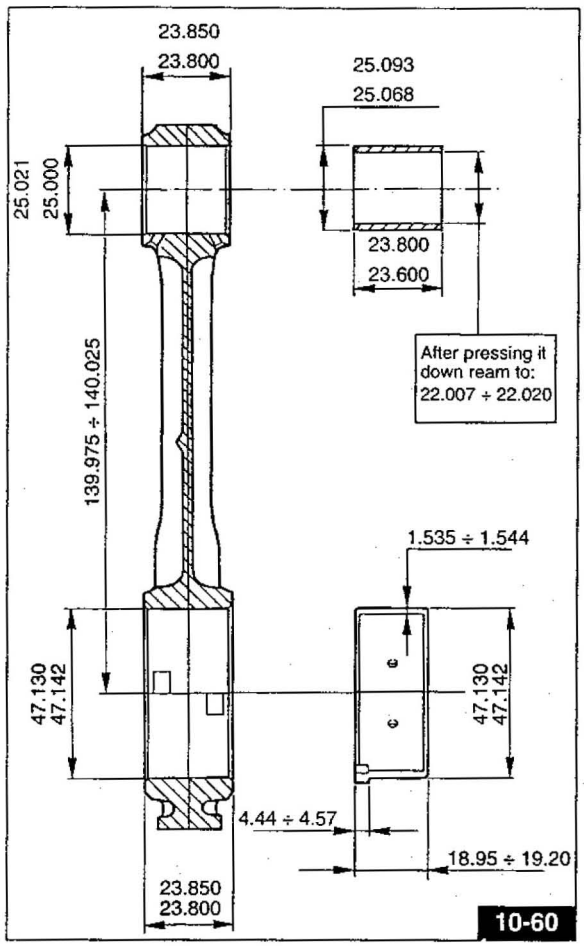
If the bearings are replaced it may be necessary to mill the crankshaft pin.

Before grinding the crankshaft pin, it is advisable to measure the pin diameter in correspondence to the maximum wear **(Fig. 10-62)**; this is to establish to which undersize class the bearing should belong and to what diameter the pin should be ground.

NOTE: On the model SPORT CORSA 1100 the CARRILLO connecting road Cod.3006154 see Fig. 10-61.

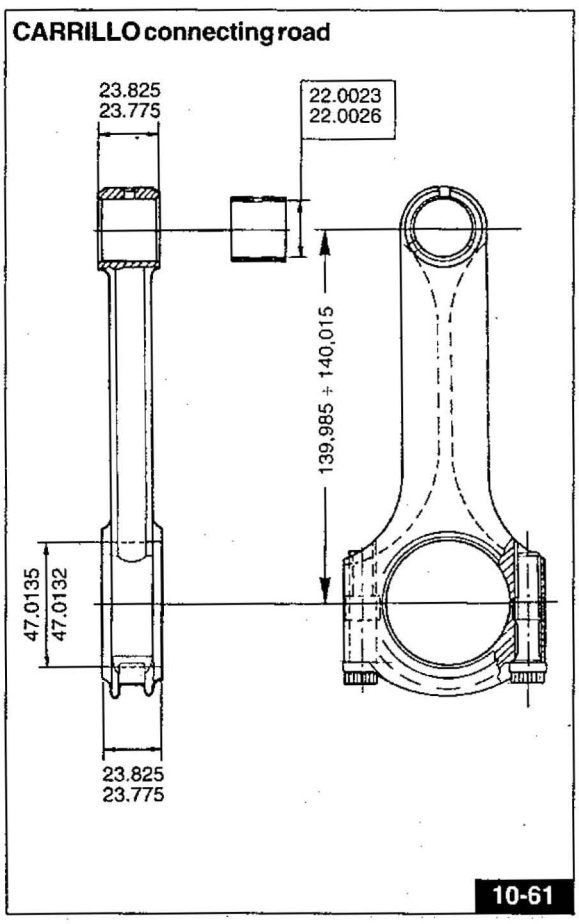
Table of connecting rod weights - Fig. 10-60

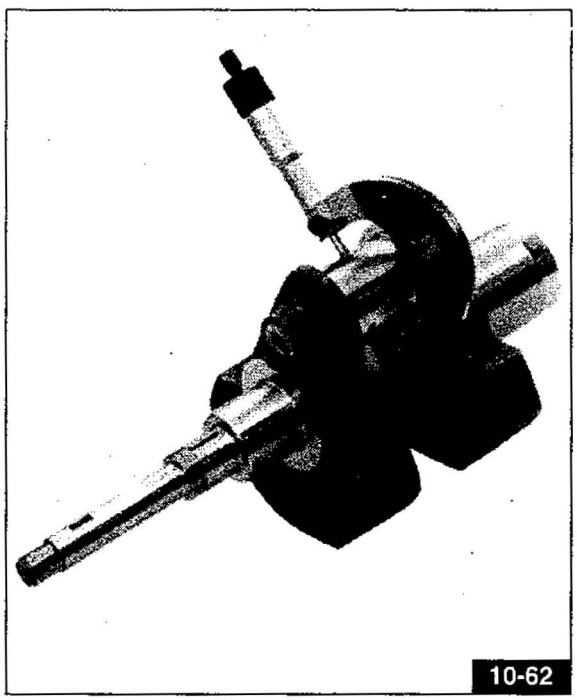
Con-rod total weight	Con-rod small end weight (reciproc.)	Con-rod big end weight (rotating)	Weight selection color coding
g. 634±2	g. 160	g. 474±2	Orange
g. 630±2		g. 470±2	Light blue
g. 626±2		g. 466±2	White



Thicknesses of the connecting rod bearings.

NORMAL BEARING DIA. UNDERSIZED BY MM (PRODUCTION) mm	bearings for connecting rod pin		
	0,254	0,508	0,762
from 1,535 to 1,544	1,662 1,671	1,789 1,798	1,916 1,925





***CRANKSHAFT PIN DIAMETER:**

STANDARD DIA.	UNDER SIZED 0.254 mm	UNDER SIZED 0.508 mm	UNDER SIZED 0.762 mm
44,008÷44,020	43,754÷43,766	43,500÷43,512	43,246÷43,258

***Gudgeon pin and bushing coupling data**

INTERNAL DIA. OF PRESSED AND MACHINED mm	GUDGEON PIM DIA. mm	CLEARANCE BETWEEN GUDGEON PIN AND BUSHING mm
22,007	21,994	0,009÷0,026
22,020	21,998	

***The technical data of Model SPORT CORSA 1100 are listed in the table of page 94.**

Check parallelism of the axes (Fig. 10-63 / 10-63/A)

Before assembling the connecting rods, check the quadrature, i.e. check that the little-ends and the big ends of the connecting rods are parallel and coplanar.

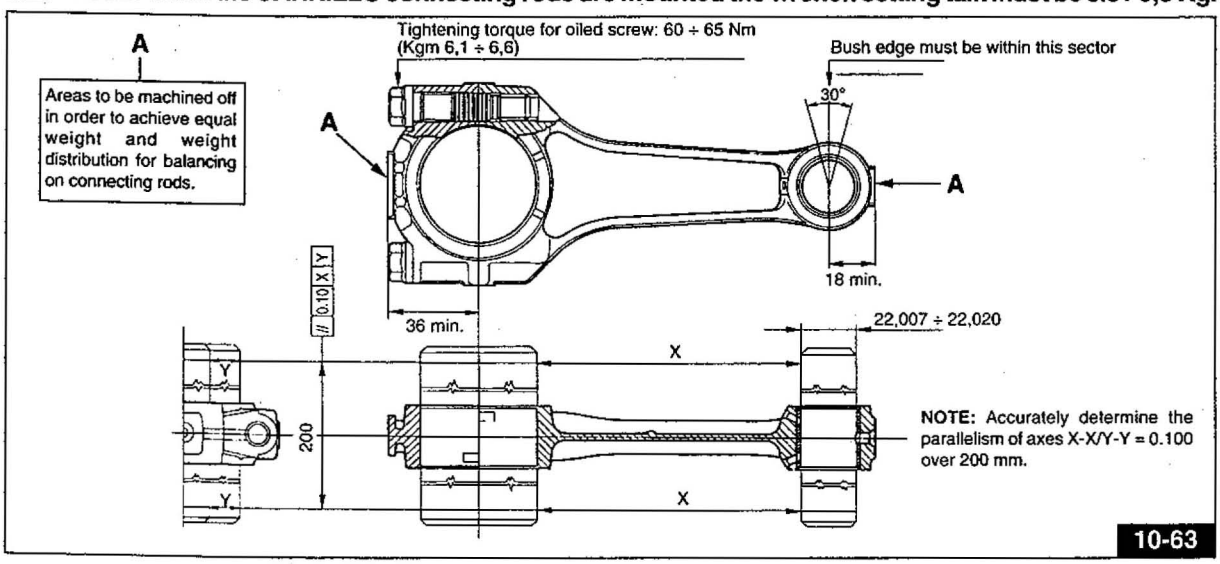
Any minimum deformities can be corrected by adjusting the connecting rod stem.

The maximum parallelism and coplanar error of the two axes of the little-end and the big end measured at the distance of 200 mm must be ±0.10 mm.

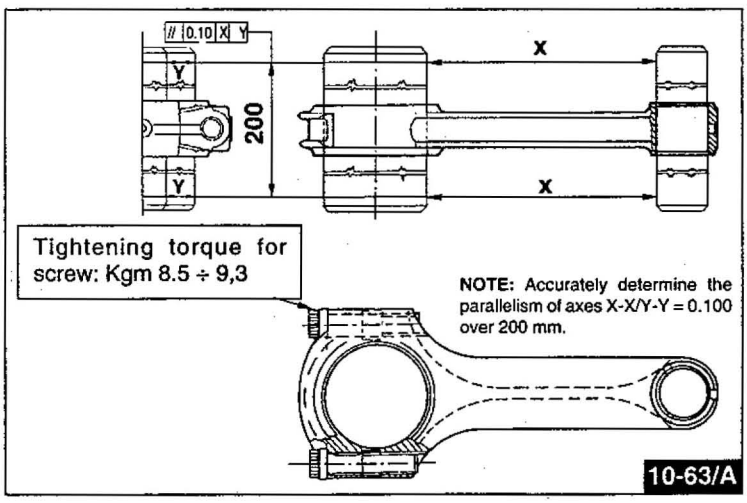
FITTING OF THE CONNECTING RODS ON THE DRIVE SHAFT

The assembly clearance between the bearing and the connecting rod pin ranges from a minimum of 0.022 mm to a maximum of 0.064 mm. The clearance between the connecting rod shim adjustment and those of the crankshaft is 0.30÷0.50 mm. Fit the connecting rods on the crankshaft, tighten the screws on the caps with a dynamometric wrench using a tightening torque of 6,1÷6,6 kgm.

NOTE: When the CARRILLO connecting rods are mounted the wrench setting talk must be 8.5÷ 9,3 Kg.



10-63



10-63/A

CRANKSHAFT

Examine the surfaces of the main journals; if they are grooved or ovalized, the journals must be ground (following the undersize tables), and replace the flanges complete with the main bearings.

The main bearings undersizing scale is as follows: 0.2-0.4-0.6 (see tables on page 64).

The assembly clearances are the following:

- between main bearing and journal timing side 0.028÷0.060 mm
- between main bearing and journal flywheel side 0.040÷0.075;
- between bearing and connecting rod pin 0.022÷0.064 mm.

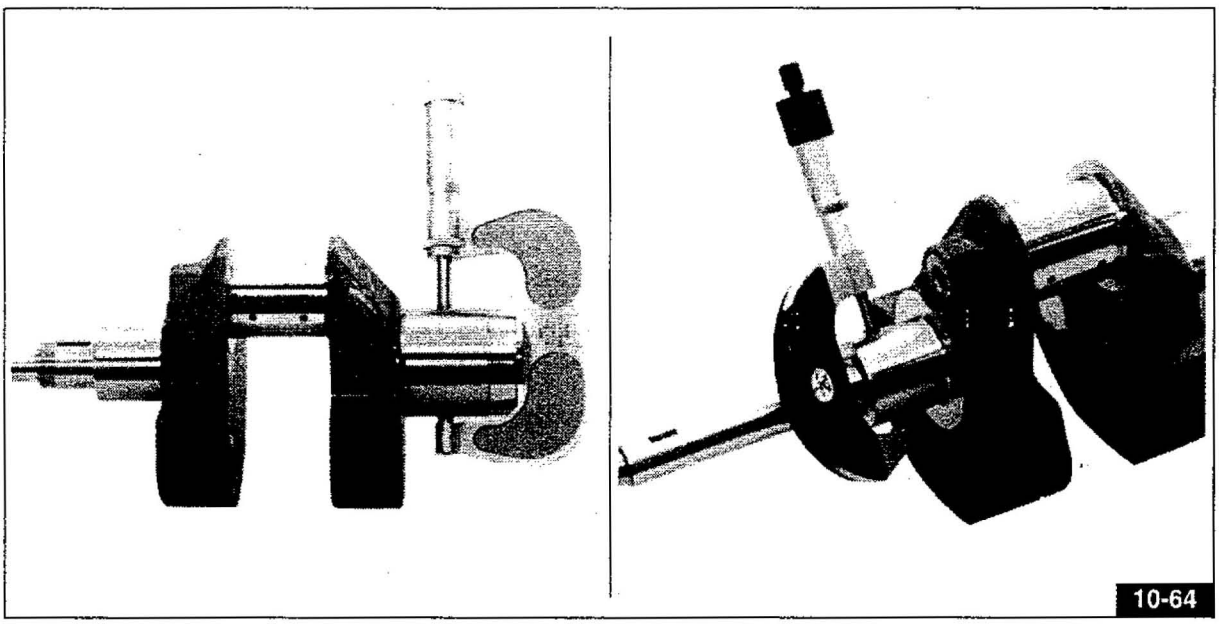
When grinding the crankshaft journals it is necessary to maintain the value of the connecting throw on the shoulders that is: 2÷2.5 mm for the connecting rod pin, 3÷3,2 mm for the main journal on the flywheel side and 1.5÷1.8 mm for the main journal on the timing system side.

Diameter of main journal on flywheel side

NORMAL PRODUCTION mm	UNDERSIZED BY mm		
	0.2	0.4	0.6
53.970 53.951	53.770 53.751	53.570 53.551	53.370 53.351

Diameter of main journal on timing system side

NORMAL PRODUCTION mm	UNDERSIZED BY mm		
	0.2	0.4	0.6
37.975 37.959	37.775 37.759	37.575 37.559	37.375 37.359

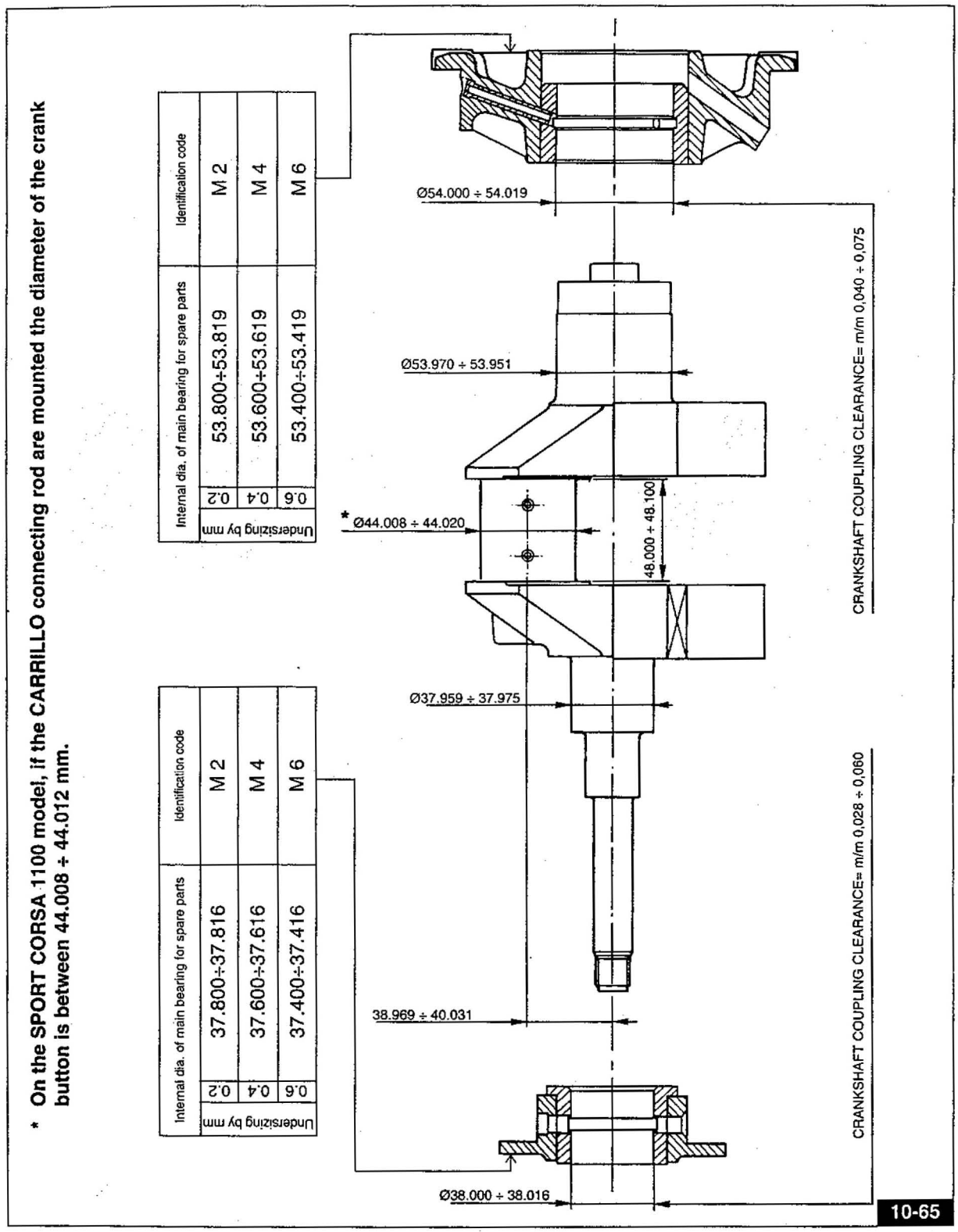


10-64

WEIGHT CHECK FOR CRANKSHAFT BALANCING

The connecting rods complete with screws must have a balanced weight.
There is a tolerance of 4 grams.
(See "Table of connecting rod weights" **Pag. 61**)
For a static balancing of the crankshaft, the pin must bear a weight of: 1,870 kg.

NOTE: When the CARRILLO rods are mounted, in order to set the static balance of the motor shaft a weight of 1.6Kg. must be applied on the button of the crank.



* **On the SPORT CORSA 1100 model, if the CARRILLO connecting rod are mounted the diameter of the crank button is between 44.008 ÷ 44.012 mm.**

10-65

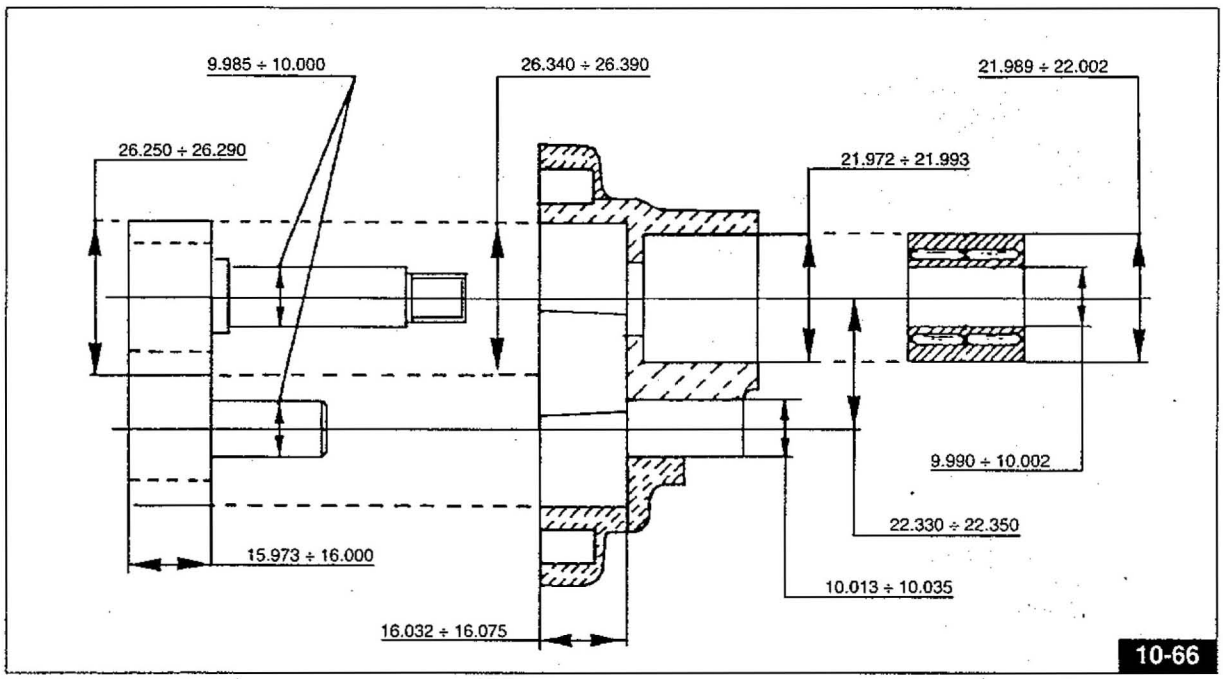
CHECK CRANKCASE (FLYWHEEL FLANGE SIDE) FOR OIL LEAKS

In the event of oil leaks from the rear part of the crankcase (flywheel area), check the following:

- that the seal ring on the flange on the flywheel side is not damaged;
- that there is no blowing in the crankcase. To make this check, rest the engine on a bench with the flywheel side uppermost, after removing the flywheel from the crankshaft;
- fill the upper part of the crankcase with water;
- blow through the breather pipe with low pressure compressed air (to avoid dislodging the oil seals), taking care to hold the seal ring with two fingers;
- In presence of porosity small bubbles will be seen. In this case the porosity must be filled with a suitable commercial compound.

OIL DELIVERY PUMP

In case of improper operation of the oil pump, check accurately the following: depth of gears should be 15.973÷16.000 mm; gear housing in pump body should be 16.032÷16.075 mm.
If not within the above sizes, the parts should be replaced.

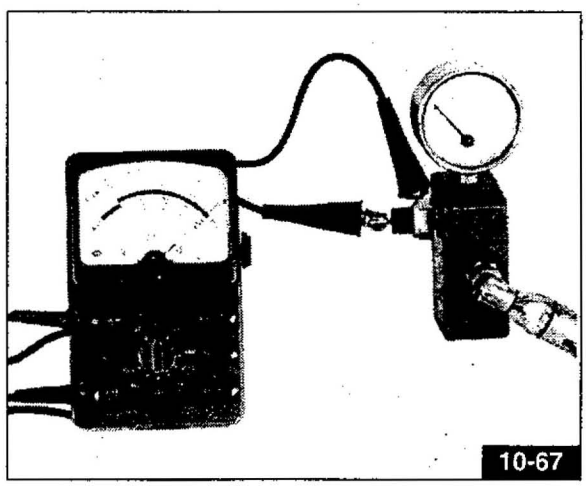


OIL PRESSURE TRANSMITTER

This is fitted on the crankcase, and is connected to the pilot light on the control panel by electric cables; its purpose is to signal insufficient pressure in the lubrication circuit.
When the light on the control panel comes ON (with the engine running), this indicates that the pressure has fallen below the set limits; it is necessary to stop the vehicle immediately and check the cause of the pressure drop.

CHECK OIL PRESSURE TRANSMITTER (Fig. 10-67)

To check the efficiency of the transmitter, fit it on the tool with a gauge fitted; connect the positive lead (+) of the tester to the transmitter and the negative lead (–) to earth, then blow compressed air through the coupling of the above tool, making sure that the indicator on the tester moves when the pressure (looking at the gauge) reaches 0.15÷0.35 kg/sq.cm.



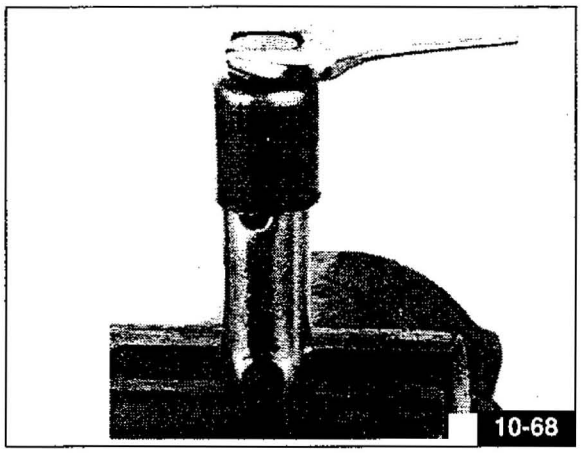
ENGINE OIL PRESSURE ADJUSTMENT VALVE (Fig. 10-68 / 10-69 /10-70)

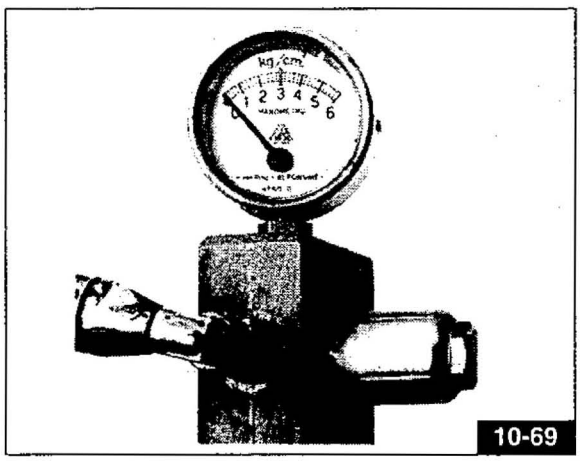
Check the oil pressure valve calibration.

The oil pressure adjustment valve «**A**» is screwed to the oil sump. It must be calibrated to allow a pressure in the delivery circuit of 3,8÷4,2 kg/sq.cm.

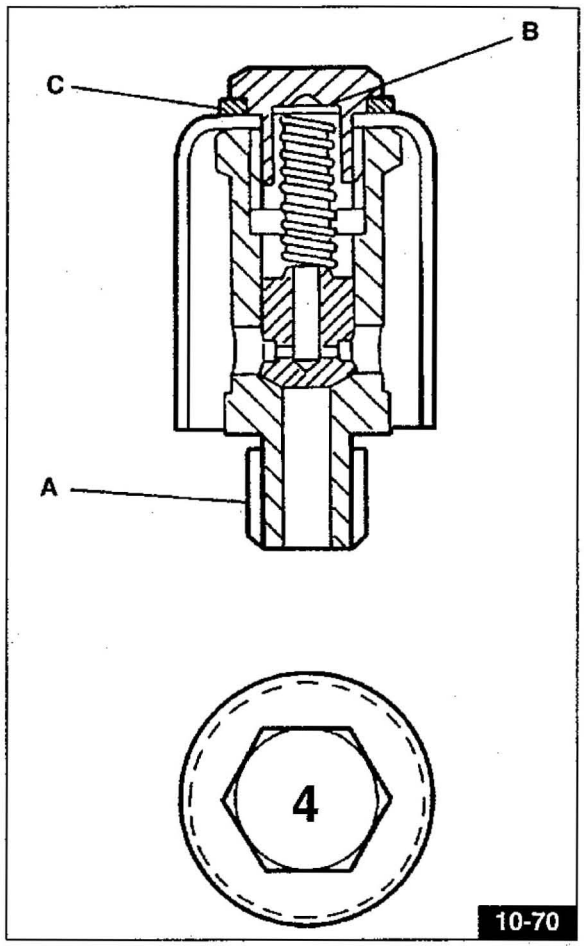
To test the calibration, it is necessary to fit the valve on the appropriate tool with a gauge fitted; blow compressed air through the tool coupling and make sure that the valve opens precisely at the set pressure.

If the valve opens at a lower pressure, place one or more «**B**» shims under the spring; if it opens at a higher pressure, increase the number of «**C**» washers.


10-68



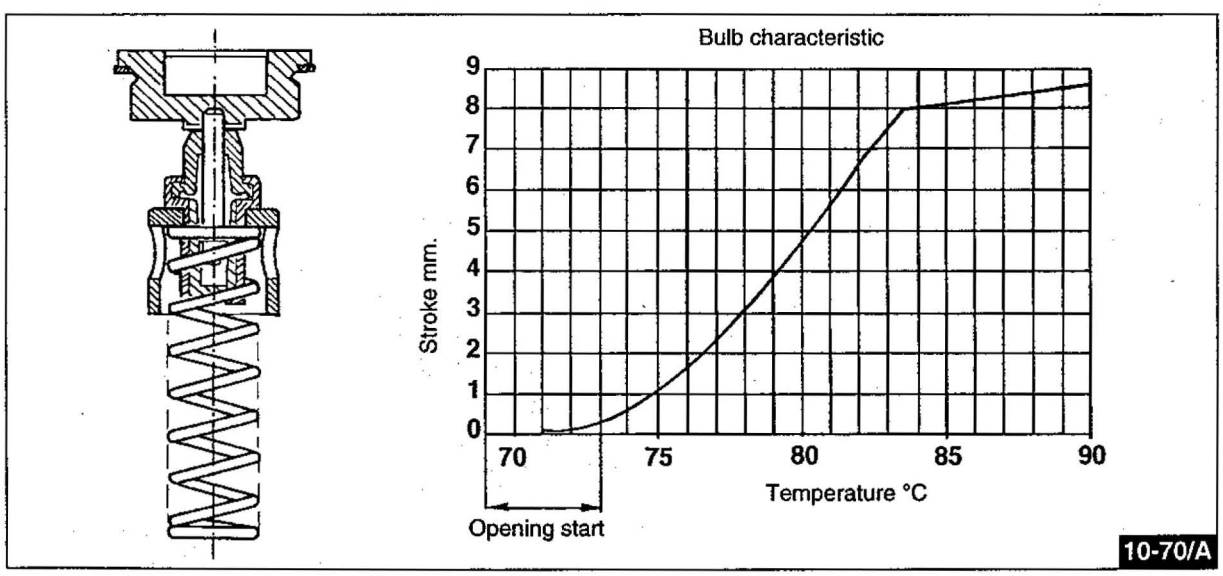
10-69



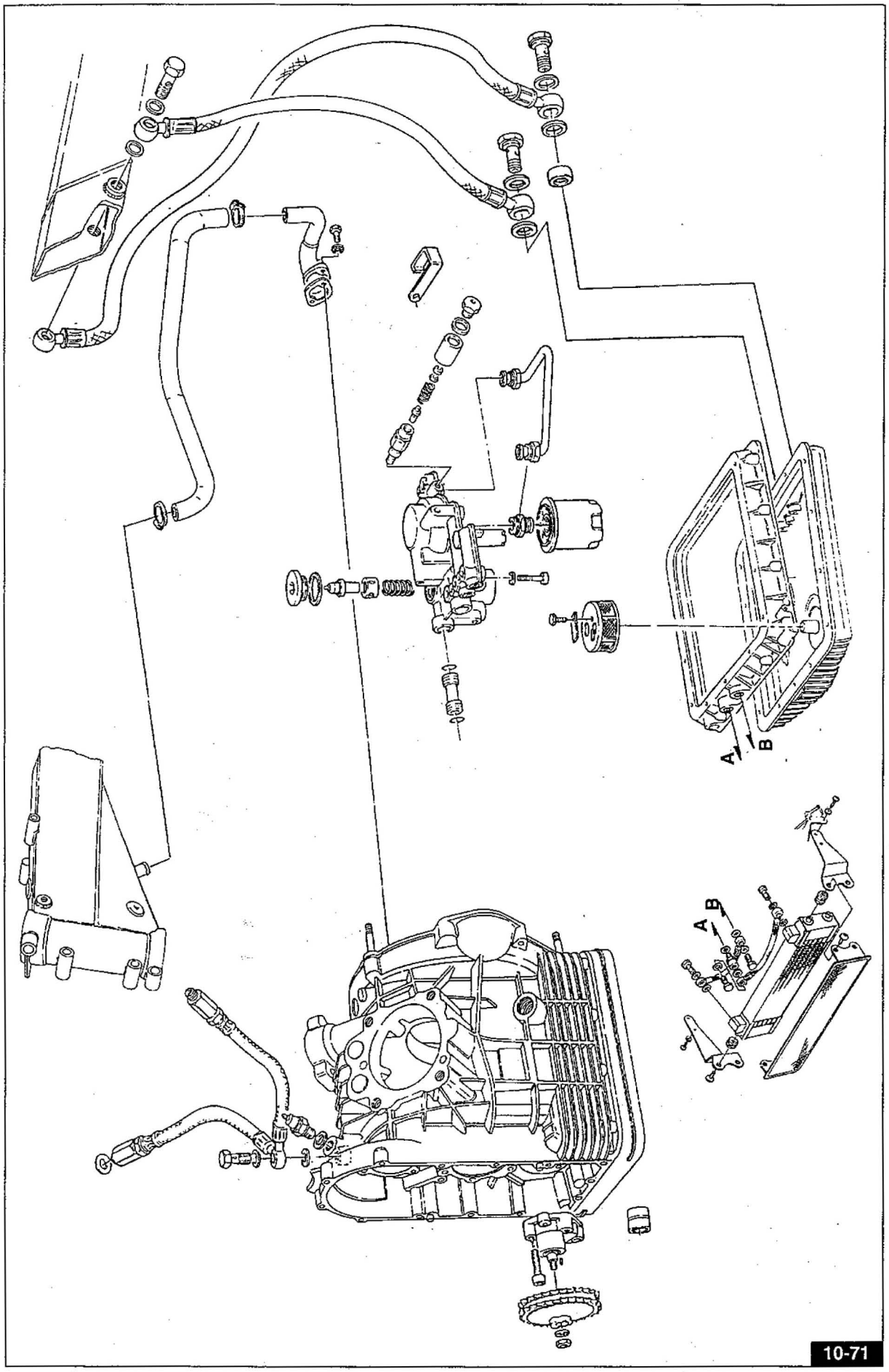
10-70

THERMOSTATIC VALVE (Fig.10-70/A)

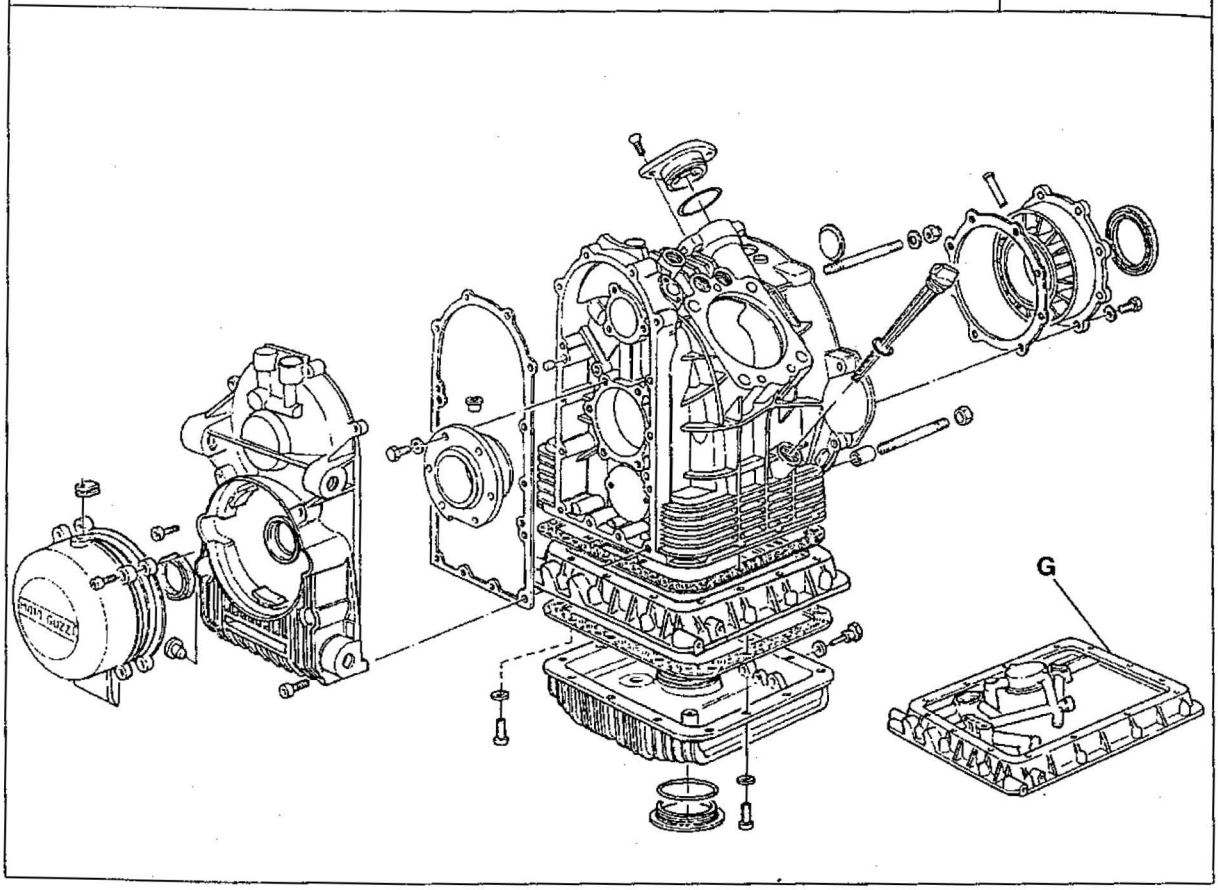
The thermostatic valve opens the oil passage to the radiator when the temperature exceeds 71°c.



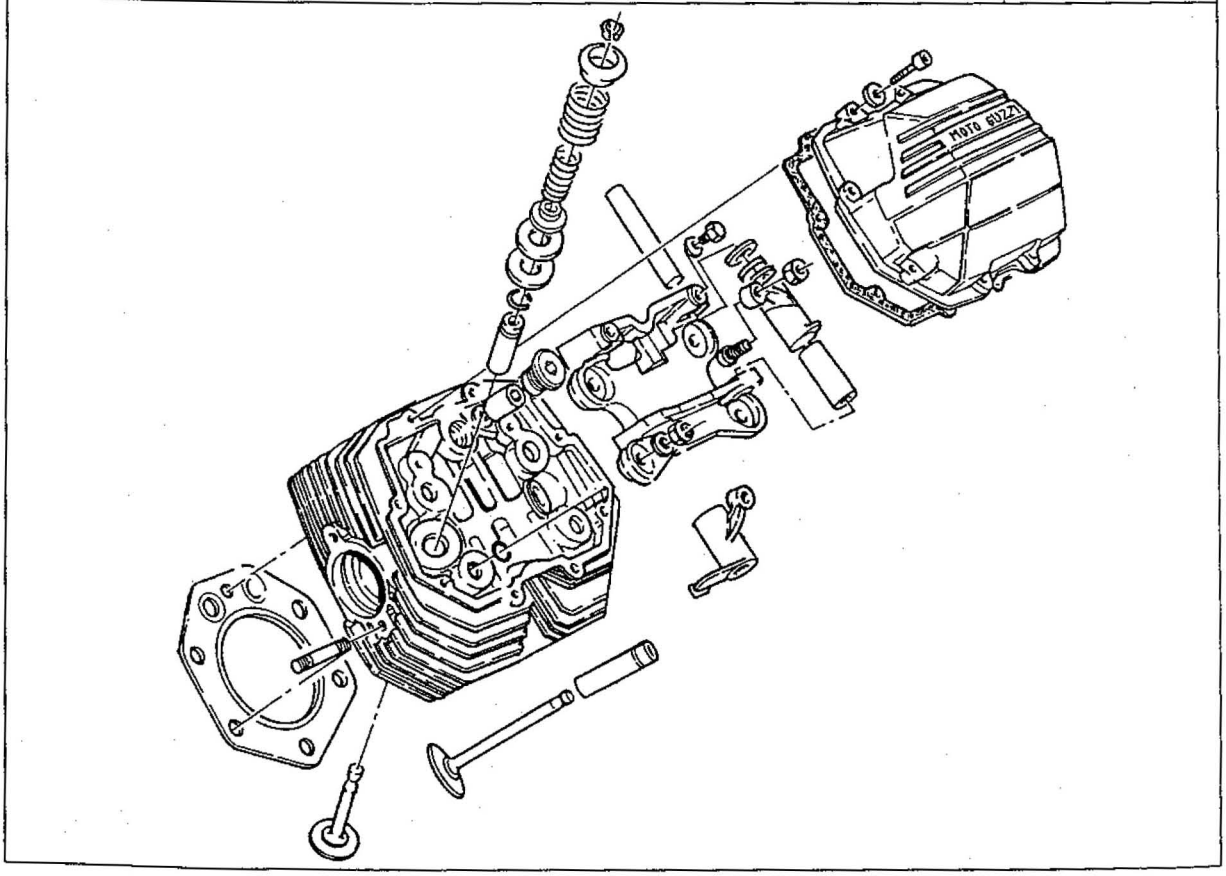
10-70/A


A
B
A
B
10-71

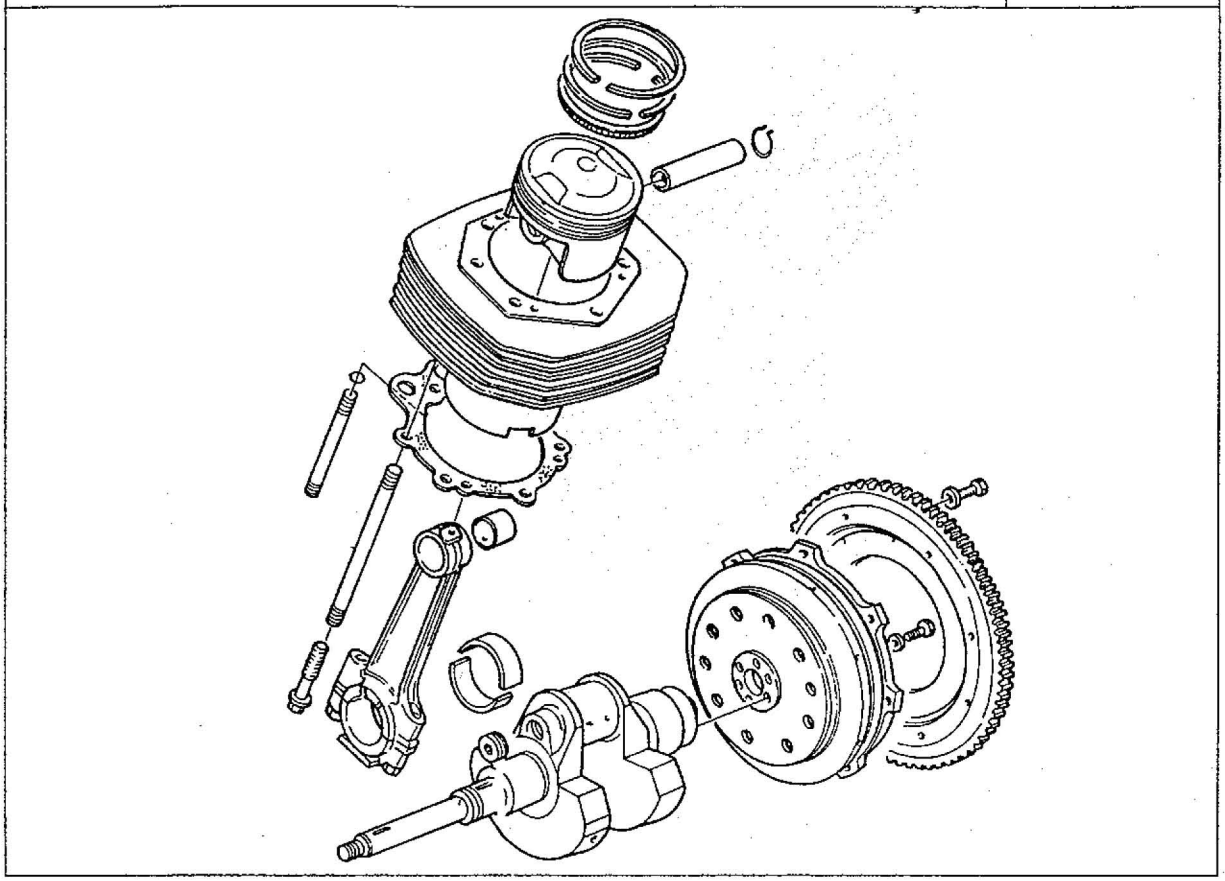
ENGINE BLOCK AND COVERS — Tav. 1



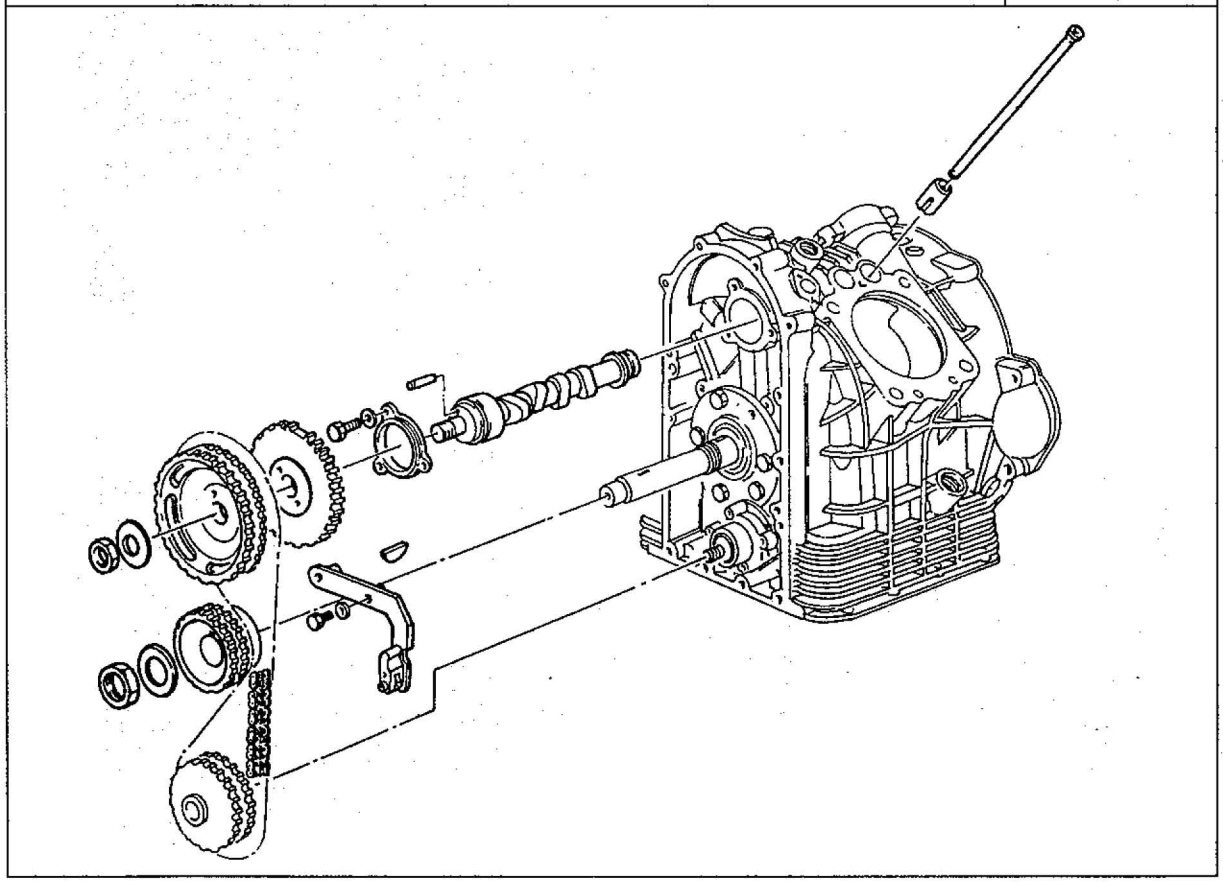
HEADS — Tav. 2



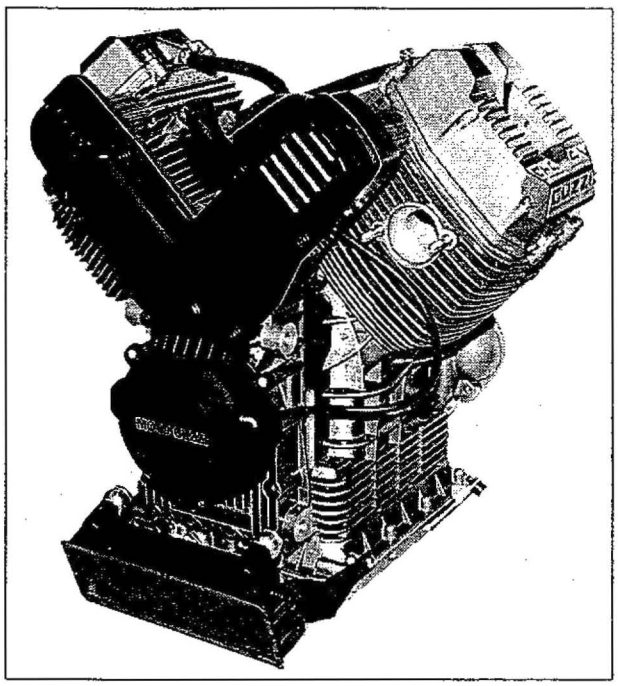
CYLINDERS AND CONNECTING RODS — Tav. 3



DISTRIBUTION — Tav. 4



11 ENGINE UNIT (DAYTONA RS and V10 CENTAURO)

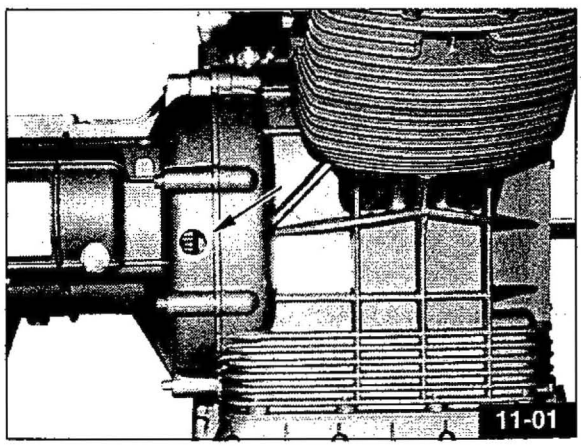


11.1 ENGINE DISMANTLING

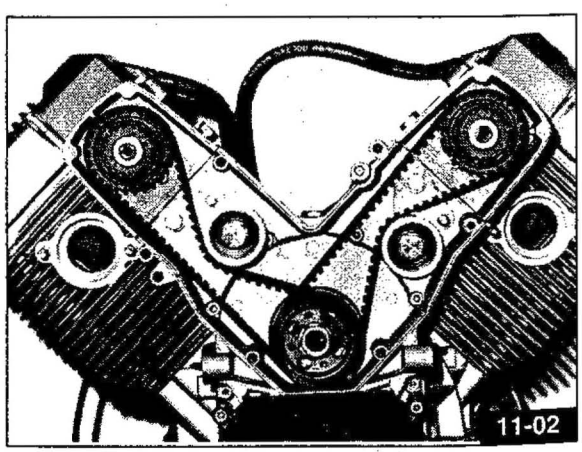
NOTE: On pages 100 / 101 the Assembly drawings of the most important parts of the engine are shown.

For disassemble of the engine follow these steps:
- Remove the front cover from the timing belts
- Place the engine in the TDC position for the left cylinder detonation phase.

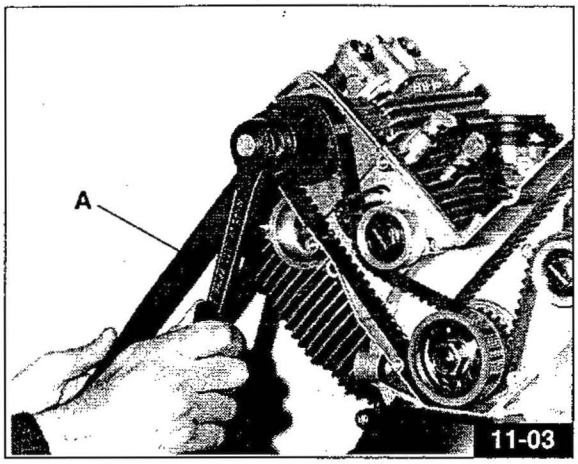
The TDC position can be found by referring to the engine flywheel **Fig. 11-01** or, more precisely, by inserting a feeler gauge in contact with the piston head using the appropriate tool cod. 30 94 82 00 inserted in the spark plug hole.

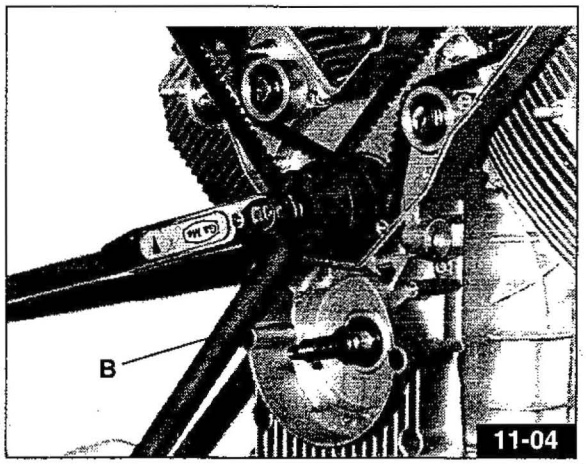


- Check the timing references as indicated in **Fig. 11-02**; if the marks on the pulleys, on the hubs and on the shafts are not clearly visible or are missing, it is necessary to restore these assembly reference marks with indelible paint, according to the lines No.1, 2 and 3 indicated in the drawing.
- The above applies for subsequent reassembly, if it is not necessary to replace any of the timing system parts or only the belts need replacing for periodic maintenance. If the belts already fitted on the engine are to be used again, when they are being removed they should be given reference marks with paint which must be observed during reassembly.

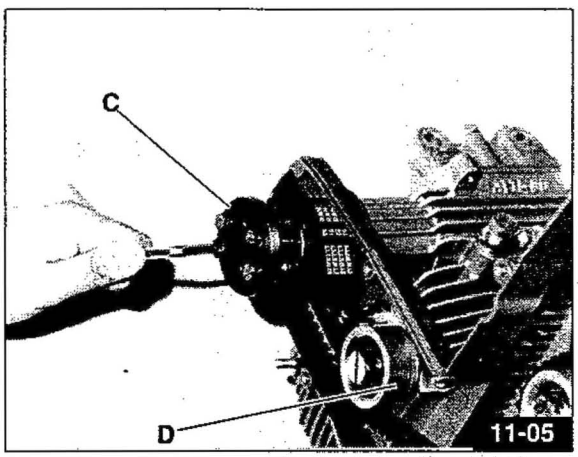


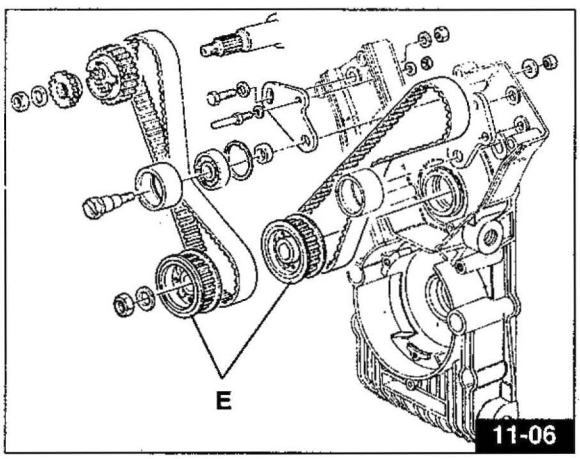
- Remove the head caps.
- Using the appropriate seal tool **«A» - Fig. 11-03** cod. 30 92 73 00, loosen the central securing nuts on the cam shaft pulleys.
- Using the appropriate seal tool **«B» - Fig. 11-04** cod. 30 92 76 00, loosen the nut securing the pulleys on the service shaft.





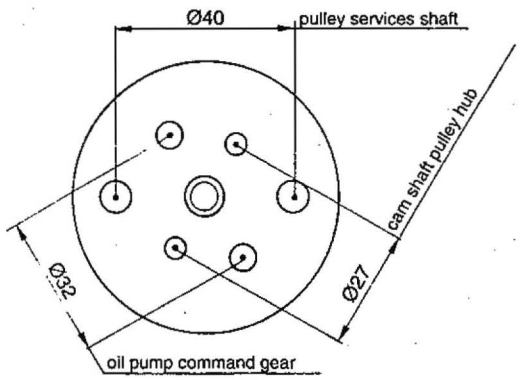
- The pulley drive gear on the cam shafts can be removed using the appropriate extractor tool cod. 30 94 83 00 **«C» - Fig. 11-05 / 11-05/A.**
- Loosen the belt stretcher **«D» - Fig. 11-05** and remove the timing system command pulleys **«E» - Fig. 11-06.**

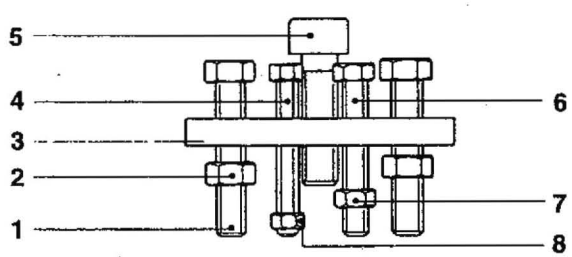




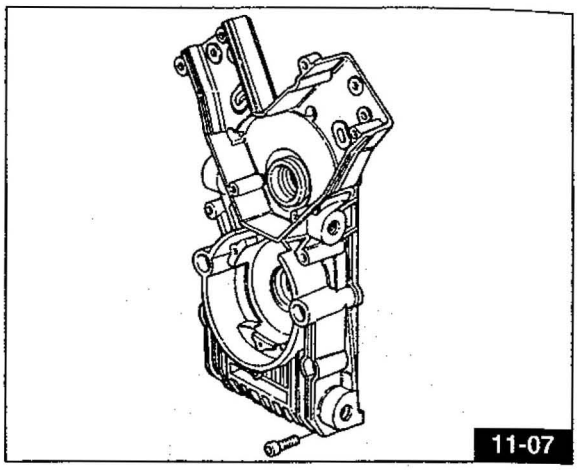
MULTIPLE EXTRACTOR COD. 30 94 83 00

1 Screw
2 Nut
3 Body
4 Screw TE M4x35
5 Screw TCEI M8x30
6 Screw TE M5x35
7 Nut M5
8 Nut M4



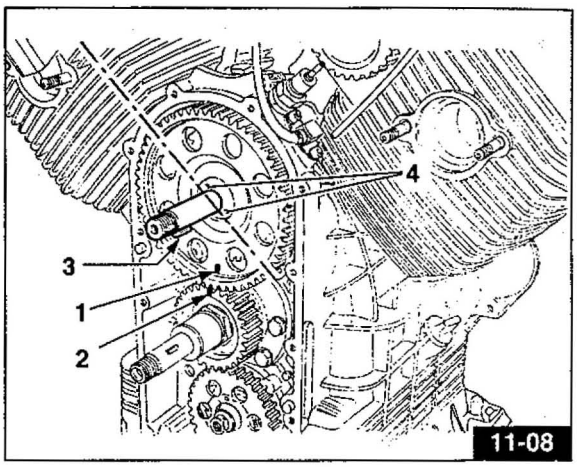


– Remove the alternator and unscrew the seal screws on the timing side cover **(Fig. 11-07)**.

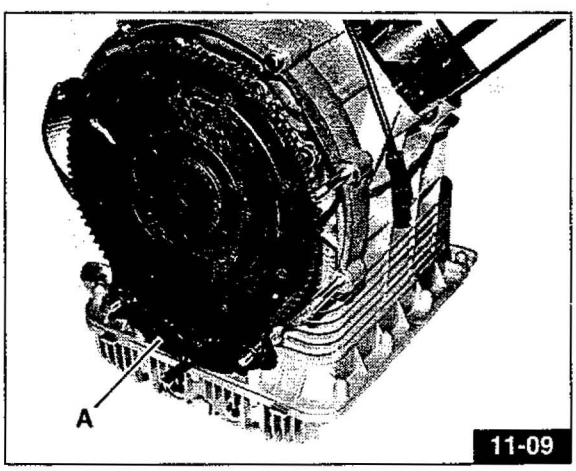


– The timing references between the gear on the engine shaft and the gear on the service shaft are indicated with the arrows «1» and «2» - **Fig. 11-08.**

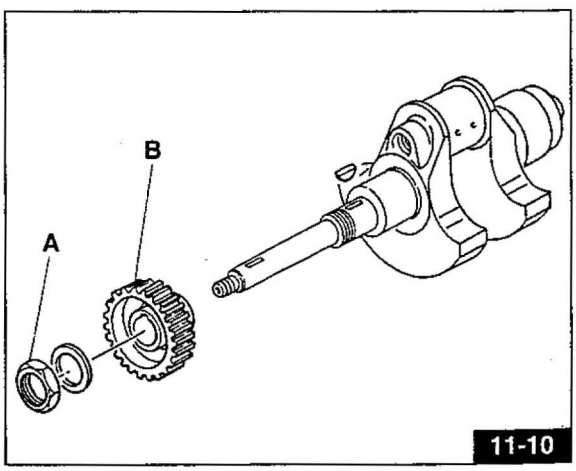
– With the piston positioned at (Top Dead Centre T.D.C.) at the ignition phase, the service shaft must be turned so that the spline «3» - **Fig. 11-08** is pointing downwards and the centring holes «4» - **Fig. 11-08** will be aligned with the centre line of the right cylinder.

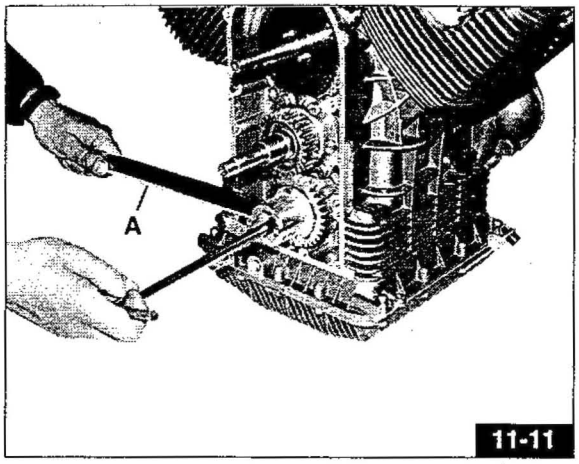


– Using the appropriate seal tool «A» - **Fig. 11-09** cod. 12 91 18 01, lock the engine shaft by means of the starting ring gear .



– Loosen the seal nut «A» - **Fig. 11-10** and remove the gear «B» - **Fig. 11-10** from the engine shaft .





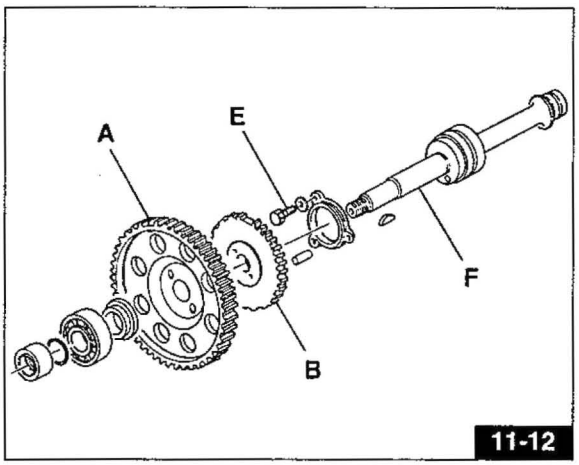
11-11

– Using the seal tool «**A**» - **Fig. 11-11** cod. 30 92 76 00, unscrew the central nut on the oil pump command gear and with the appropriate extractor «**C**» - **Fig. 11-05** cod. 30 94 83 00 remove the gear.

NOTE: When reassembling, the oil pump and the pump shaft command gear cones must be thoroughly degreased with trichlorethylene; "Loctite 601" must be applied to the shaft and on the cones threading; lock the nut with a tightening torque of 2÷2.2 kgm using the seal tool «A» - Fig. 11-11 cod. 30 92 76 00.

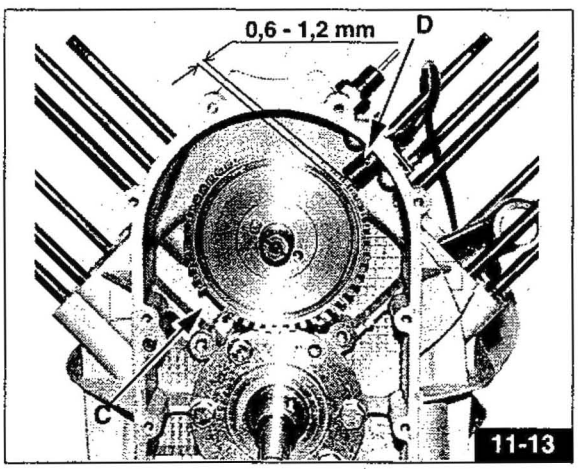
ATTENTION

During the dismantling and reassembly operations, always use the locking tools to avoid any overloading of the Ergal gear teeth; otherwise the gears could be permanently damaged.



11-12

– Extract the service shaft timing command gear «**A**» - **Fig. 11-12**.
– Extract the phonic wheel «**B**» - **Fig. 11-12**.

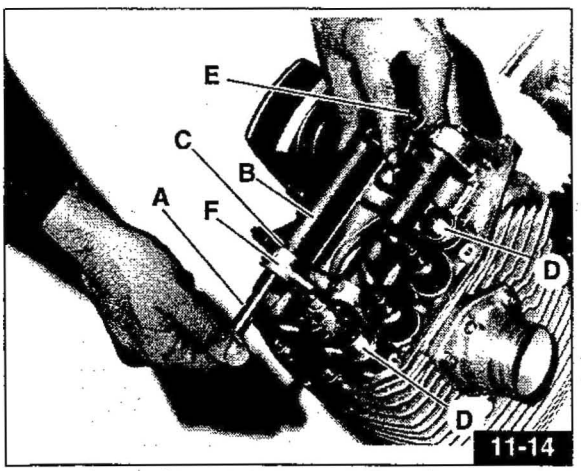


11-13

IMPORTANT

When reassembling the phonic wheel be sure that the milled space «C» - Fig.11-13 is positioned on the other side of the face censor «D» - Fig. 11-13, then check with a thickness gauge the gap between the phase sensors «D» and the teeth of the phonic wheel is between 0.6 and 1.2mm.

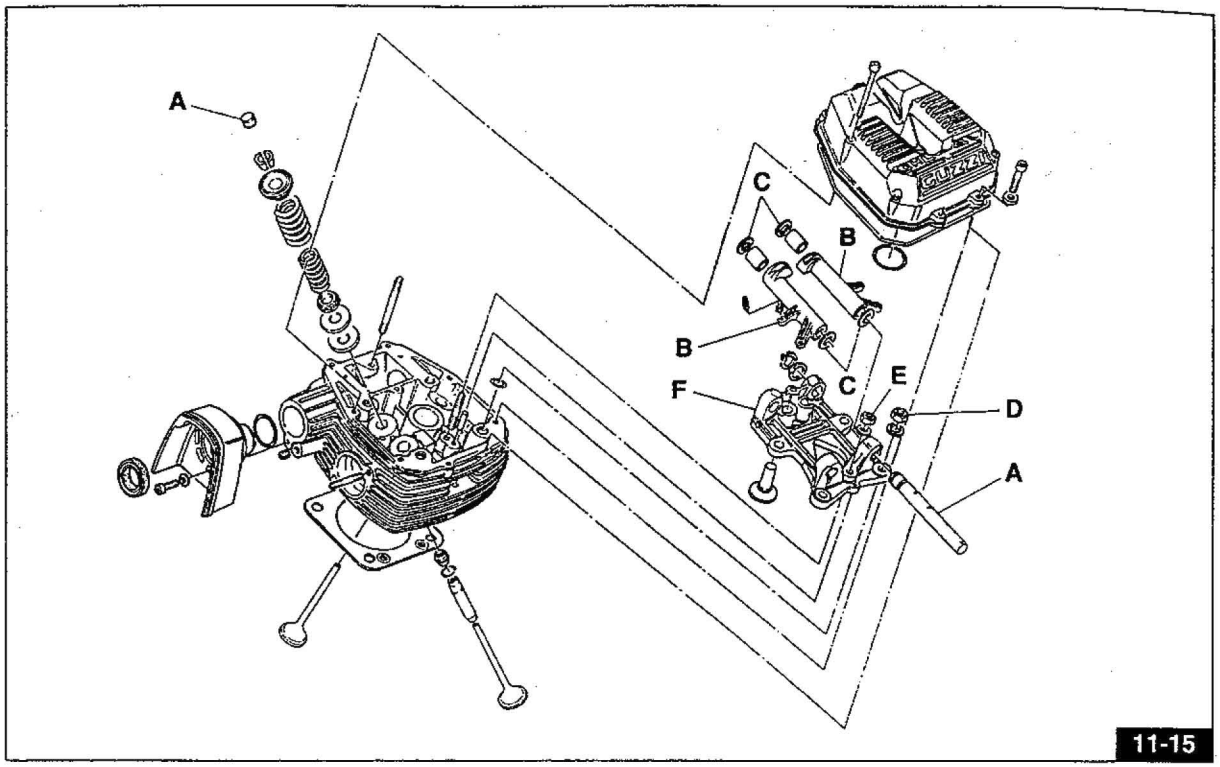
– Remove the seal screws «**E**» - **Fig. 11-12** from the check flange and extract the service shaft «**F**» - **Fig. 11-12**.



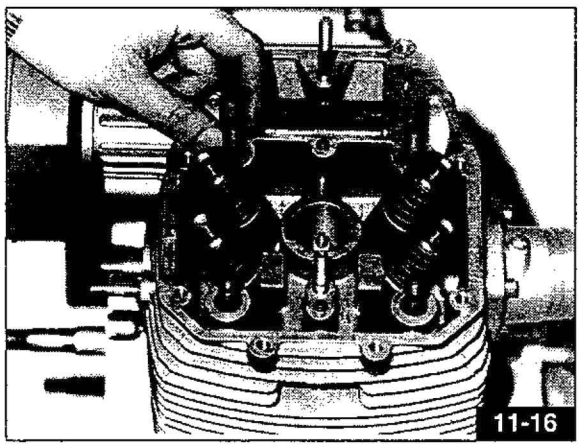
11-14

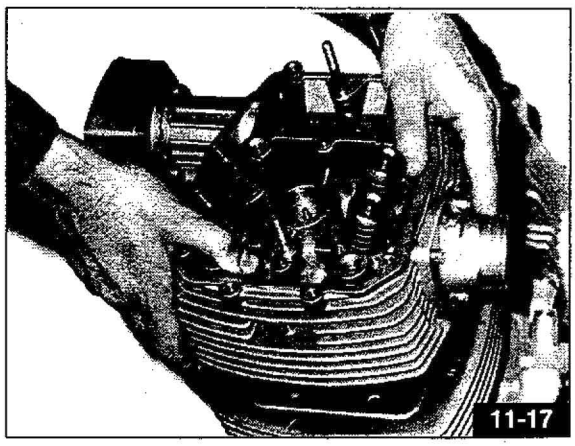
– Remove the cylinder heads as follows:
– Extract the articulation pins «**A**» - **Fig. 11-14** on the rocker arms «**B**» - **Fig. 11-14** and remove the rocker arms and their shims «**C**» - **Fig. 11-14**.
– Remove the 2 nuts «**E**» - **Fig. 11-14** (dia. 8x1.25) and subsequently the 4 seal nuts «**D**» - **Fig. 11-14** (dia.10x1.5) on the rocker arm support «**F**» - **Fig. 11-14** and extract the latter.

NOTE: When reassembling reinsert the caps of the valves («A» - Fig. 11-15).

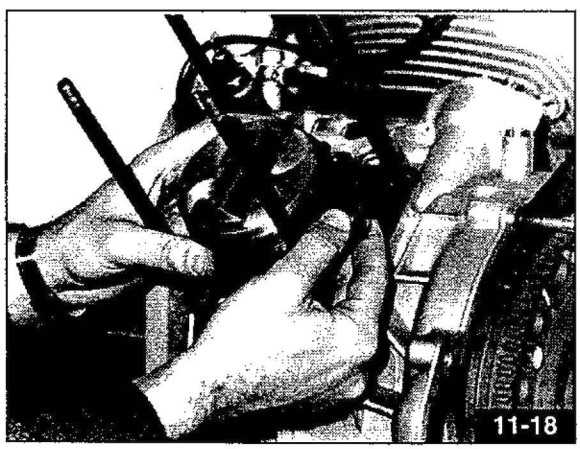


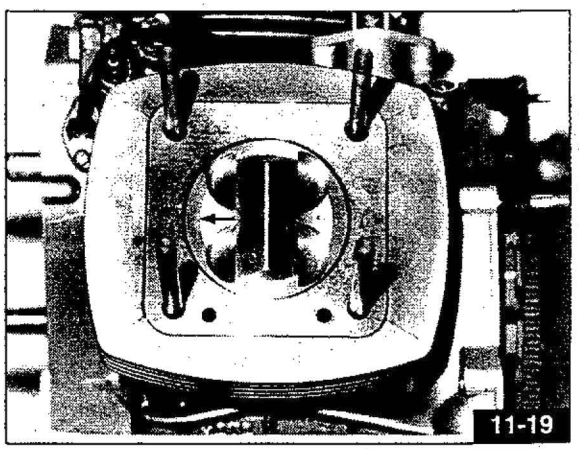
- Remove the 4 OR rings on the cylinder seal stud bolts **(Fig. 11-16)**.
- Extract the head, the gasket between the head and the cylinder, and the cylinder **(Fig. 11-17)**.

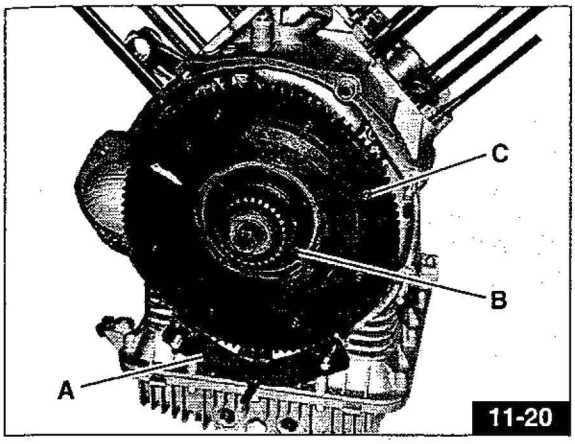




- Remove the gudgeon pin catches, the gudgeon pin and the piston **(Fig. 11-18)**. When reassembling, remember that the arrow on the piston head must be turned towards the discharge **(Fig. 11-19)**.

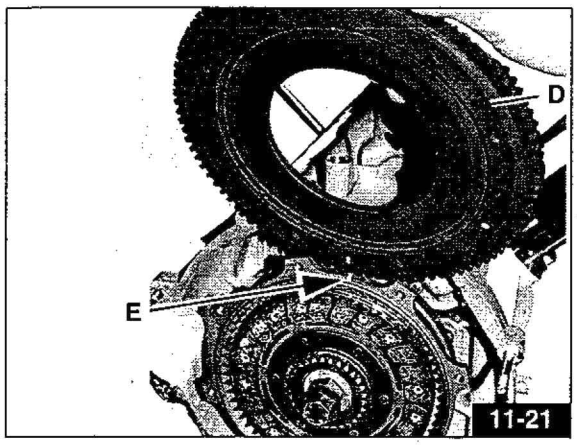




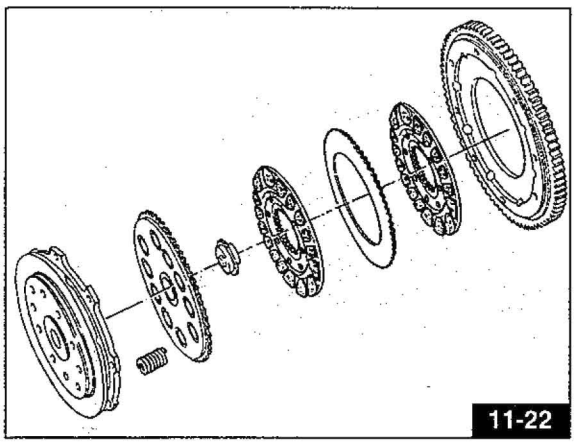


- Fit tool «**A**» (part no. 12 91 18 01) to the flywheel and tool «**B**» (part no. 30 90 65 10) to compress clutch springs **(Fig. 11-20)**.

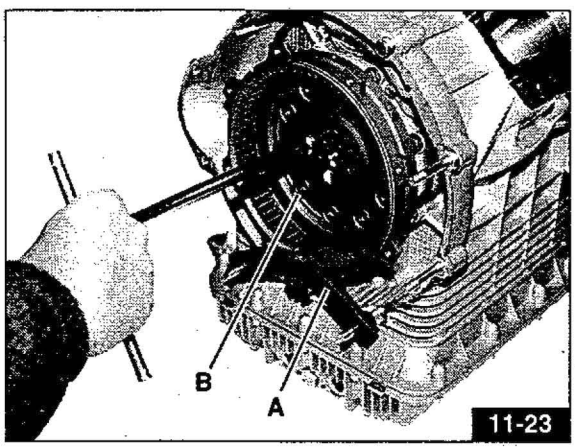
- Unscrew the eight screws «**C**» holding the ring gear fitted on the engine flywheel **(Fig. 11-20)**.



- Remove ring gear «**D**» - **Fig. 11-21**. When refitting it later on, remember to line up the marks shown by arrow «**E**» - **Fig. 11-21**.



- Take out the clutch plates and the springs from inside the engine flywheel **(Fig. 11-22)**.



NOTE: Position the special blocking tool «A» (code. 12 91 18 01) as shown in Fig. 11-23.

- Unscrew the six screws «**B**» - **Fig. 11-23** that hold flywheel to crankshaft and remove the flywheel. These screws must withstand considerable loads and stresses and cannot be reused. Fit new screws when reassembling (use Loctite on the screws and torque up to 4÷4.2 Kgm).

Before removing the oil sump the oil filter can be removed in this way:

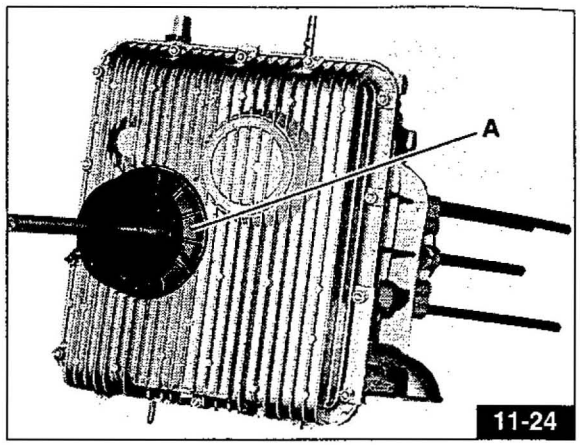
- Unscrew the external cap «**A**» - **Fig. 11-24** with the special tool (Cod. 01 92 91 00).

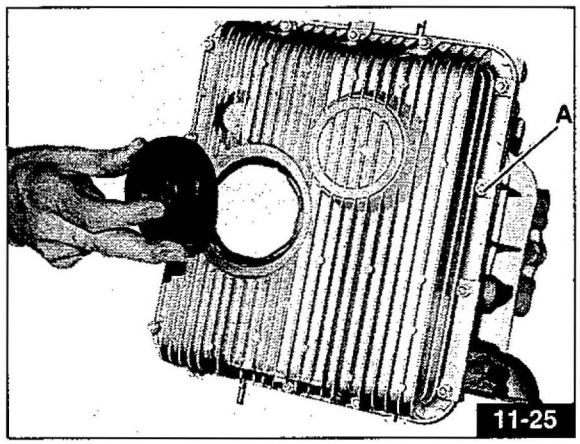
- With the other end if the same tool unscrew the filter. Using the same tool assembly upside down unscrew and extract the filter **Fig.11-25.**

WARNING

Pay attention positioning the OR when reassembling the external oil cap «A» - Fig.11-24 Replace the OR if damaged.

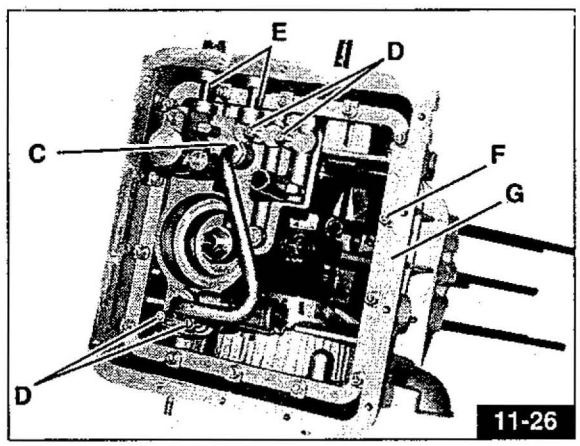
- Unscrew the 14 peripheral sealing screws «**A**» of the oil sump **(Fig. 11-25)**. then disassemble it.

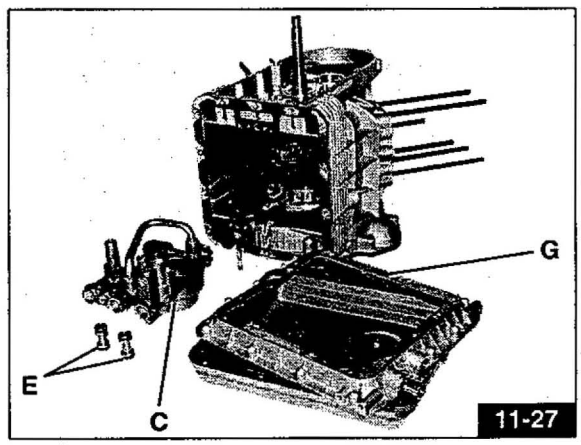


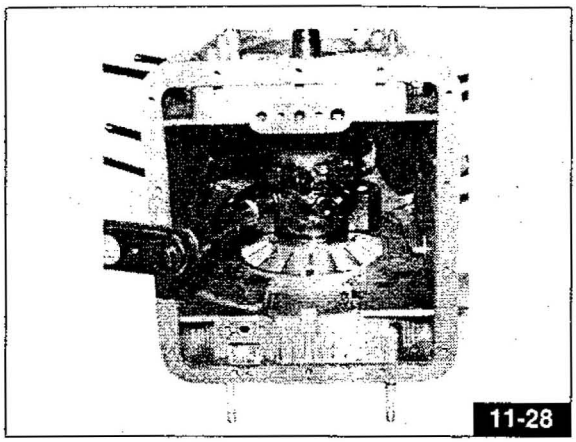


- Disassemble the oil filter support «**C**» - **Fig.11-26**. Unscrewing the fixing bolts «**D**» - **Fig. 11-26**. And removing it the oil pipes «**E**» - **Fig. 11-26**.

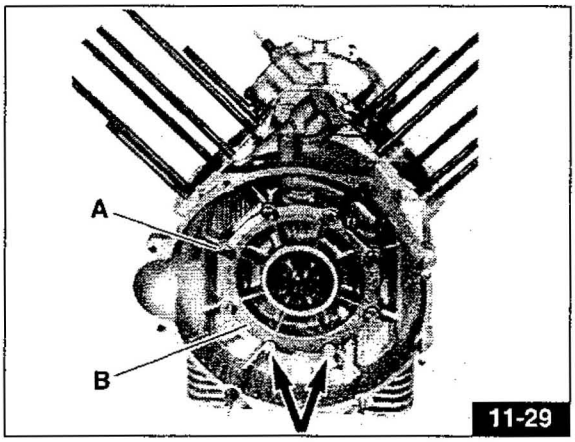
- Unscrew the bolts «**F**» - **Fig.11-26** and remove the flange «**G**» - **Fig. 11-26** and **Fig. 11-27**.



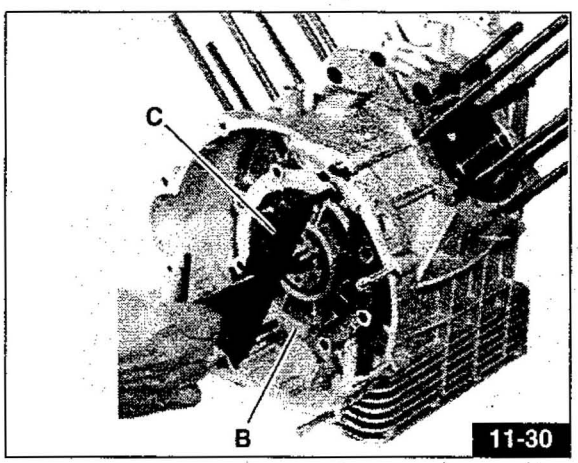




– Unscrew the con-rod screws from inside the crankcase and remove the connecting rods.
When reassembling always replace the bolts with new ones because they are heavily loaded and stressed.
Tighten the bolts with wrench setting talk of 8.5 ± 9,3 Kgm **(Fig. 11-26)**.



– Unscrew the 8 outer screws «**A**» holding the rear flange «**B**» that supports the crankshaft.
When reassembling, use some Teflon tape on the 2 screw marked with the arrow **(Fig. 11-29)** to prevent oil from leaking through.

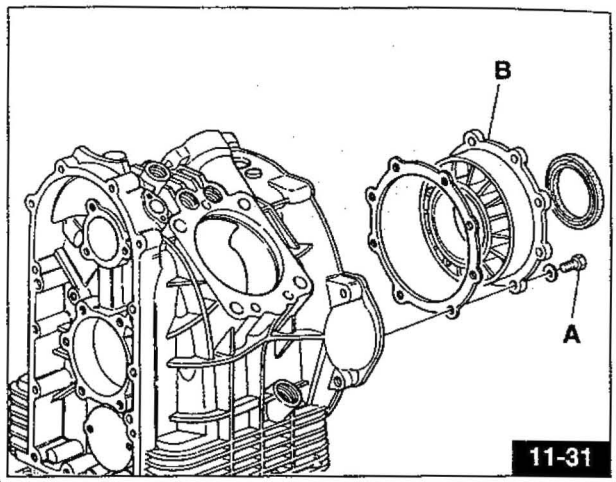


– Fit tool «**C**» (part no. 12 91 36 00) as shown in **Fig. 11-30** to remove rear flange «**B**».
Remove the flange and draw out the crankshaft from the rear.

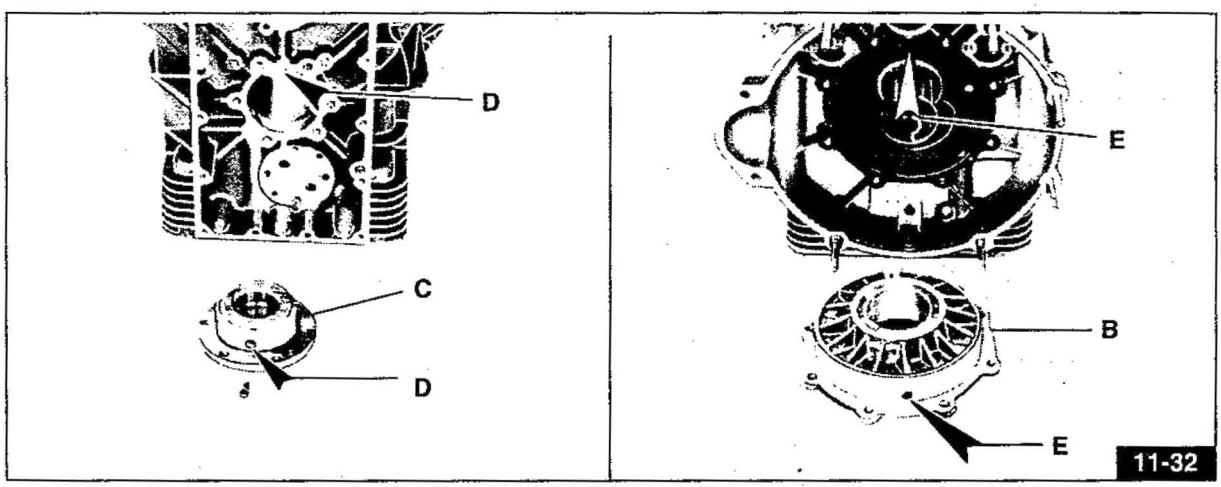
11.2 ENGINE REASSEMBLY

Before reassembling the engine, check all the components carefully, as indicated in the "CHECKING" chapter 11.4.

- To reassemble, carry out the dismantling operations in reverse order, remembering the following:
- To avoid oil leaks from the 2 lower screws «**A**» - **Fig. 11-31**, securing the rear engine shaft support flange «**B**» - **Fig. 11-31**, bind these screws with Teflon tape.
  When fitting the flanges «**B**» and «**C**» - **Fig. 11-32** on the crankcase, observe the assembly position of the holes «**D**» and «**E**» - **Fig. 11-32**.



11-31



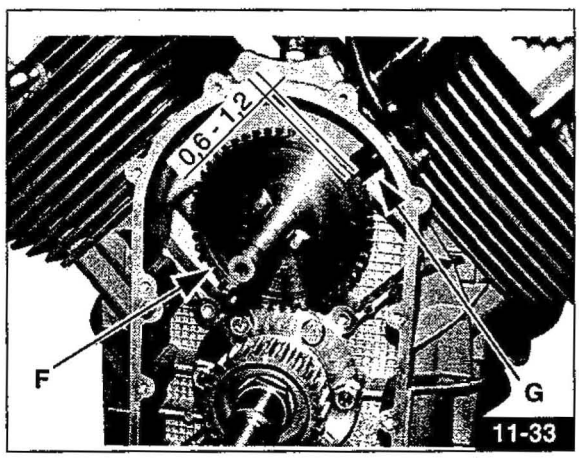
11-32

After having assembled the motor shaft in the base, lock the caps coupling screws at Kgm 8,5÷9,3 torque.

WARNING
In consideration of the high load and stresses these screws undergo, they must be replaced with new ones.

NOTE: Apply some "FEL-PRO" lubricant on the screw thread and on the laying surfaces.

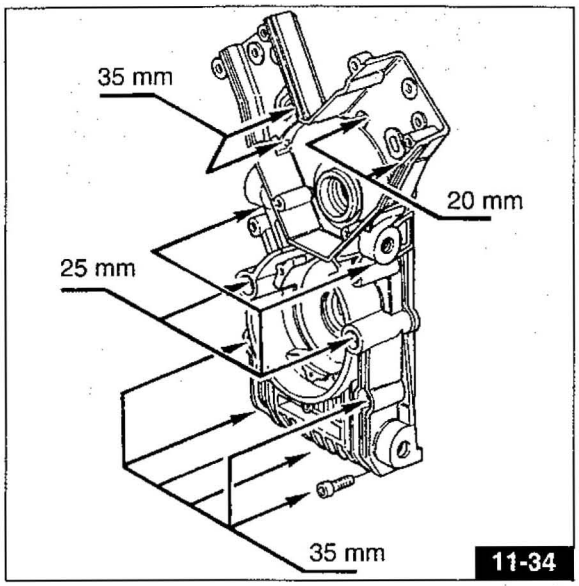
IMPORTANT
In order to obtain a correct phasing of the system be sure that the milled space «F» - Fig. 11-33 is positioned on the opposite side of the phase censor «G» - Fig. 11-33; then check with a thickness gauge that the gap between the phase censor and the teeth of the phonic wheel is between 0.6 and 1.2mm.



11-33

Timing cover securing screws
Replace the timing cover securing screws positioning them according to the lengths indicated in the **Fig. 11-34**.

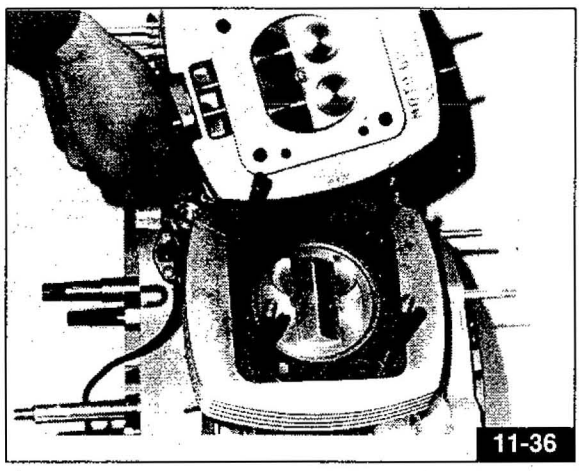
– Before inserting the pistons in the cylinders, position the rings as indicated in the **Fig. 11-35**.



11-34

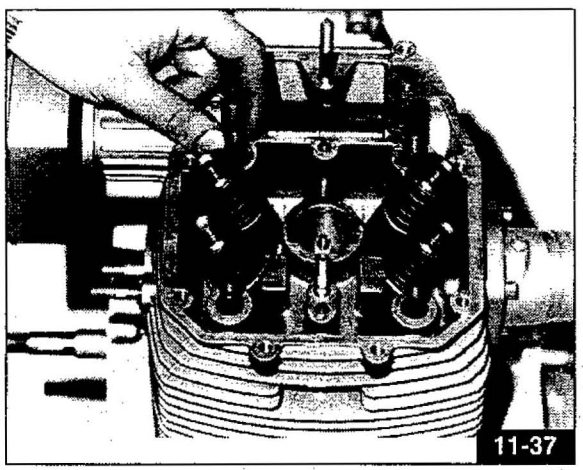

11-35

– When replacing the cylinder head, take care to position the gaskets correctly to avoid blocking the oil passages shown in the **Fig. 11-36**; fit the two cylinder head centering bushings.

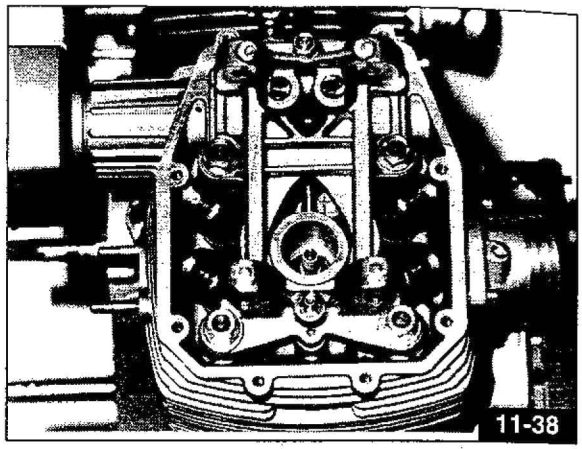

11-36

– Before replacing the rocker arm support frame, fit the 4 OR rings on the tie rods as indicated in the **Fig. 11-37**.

IMPORTANT
When reassembling always reinsert new OR rings.

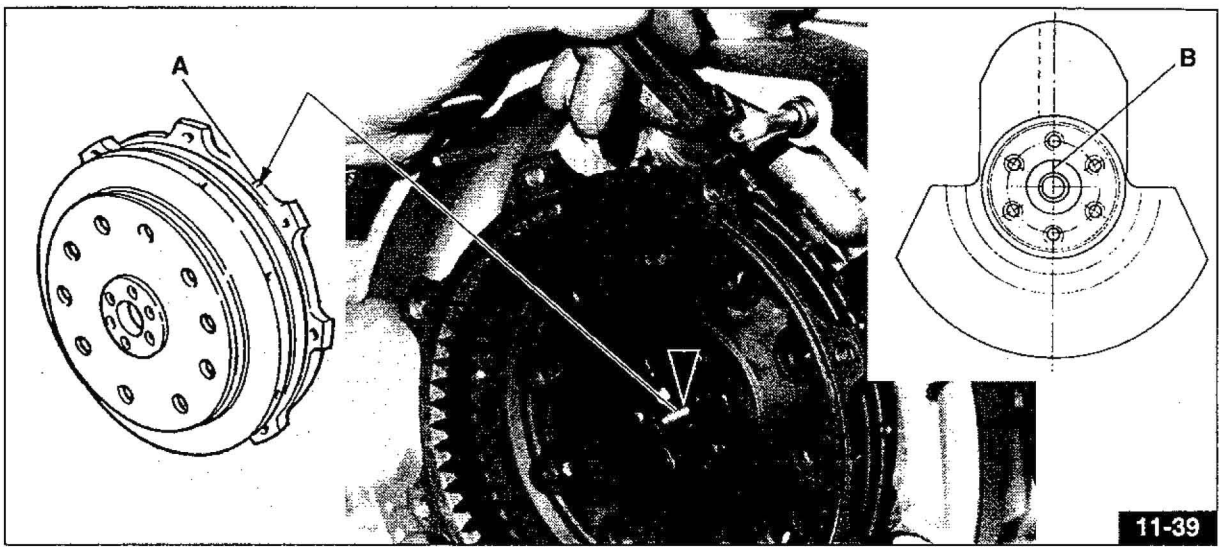

11-37

– Fit the frame and lock the 4 nuts (dia.10x1.5) to the torque of 4.2÷4.5 kgm in a cross-over sequence and subsequently the two nuts (dia. 8x1.25) at the torque of 2.2÷2.3 kgm **(Fig. 11-38)**.



– When refitting the flywheel on the engine shaft, observe the reference marks as indicated in the **Fig. 11-39** (The arrow **«A»** is hobbed on the engine flywheel must be aligned with a mark **«B»** on the motor shaft).

– Tighten the bolts blocking the fly wheel on the motor shaft with a wrench setting talk of Kgm from 4÷4.2 (assemble with locktite medium grade).

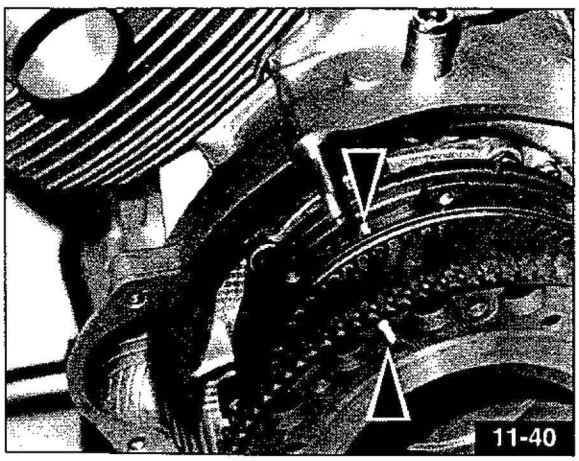


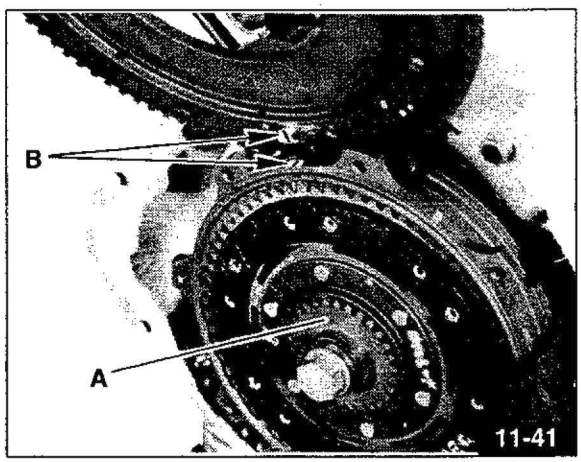
– When reassembling the clutch disk pack take care that the reference marks on a tooth of the spring-holding plate are lined up with the reference marks on the flywheel **(Fig. 11-40)**.

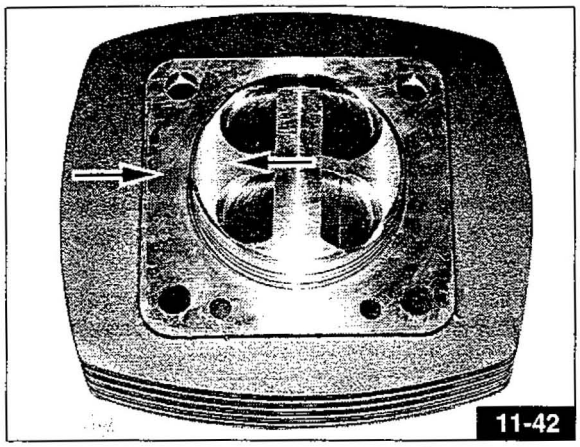
– To centre the clutch disks, use the appropriate tool **«A» - Fig. 11-41** cod. 30 90 65 10;

– Screw the seal screws on the starting ring gear to the flywheel with a tightening torque of 1,5 ÷ 1,7 kgm.

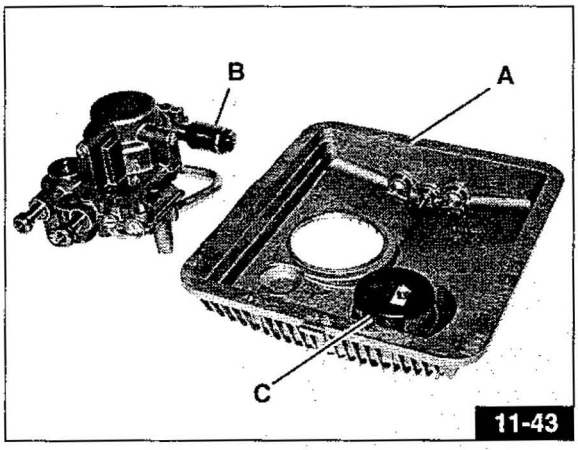
– Mounting the starting crown on the fly wheel pay attention to the signs **«B»** shown on **Fig. 11-41.**






11-42

- The cylinder and piston group must be assembled matching the same selection class hobbed on both components (A with A, B with B and C with C) **Fig. 11-42.**



11-43

Before mounting the oil sump carefully position the gasket **«A» - Fig. 11-43.**

WARNING
The wrong assembly of the gasket (either of the oil sump or on the flange) will seriously damage the engine.

To check the set up of the oil pressure control valve **«B» - Fig. 11-43** see page 97.

The strainer **«C» - Fig. 11-43** in the oil ducts must be carefully cleaned.

IMPORTANT
When reassembling always change the gasket of the oil sump and the flange.

11.3 ENGINE TIMING

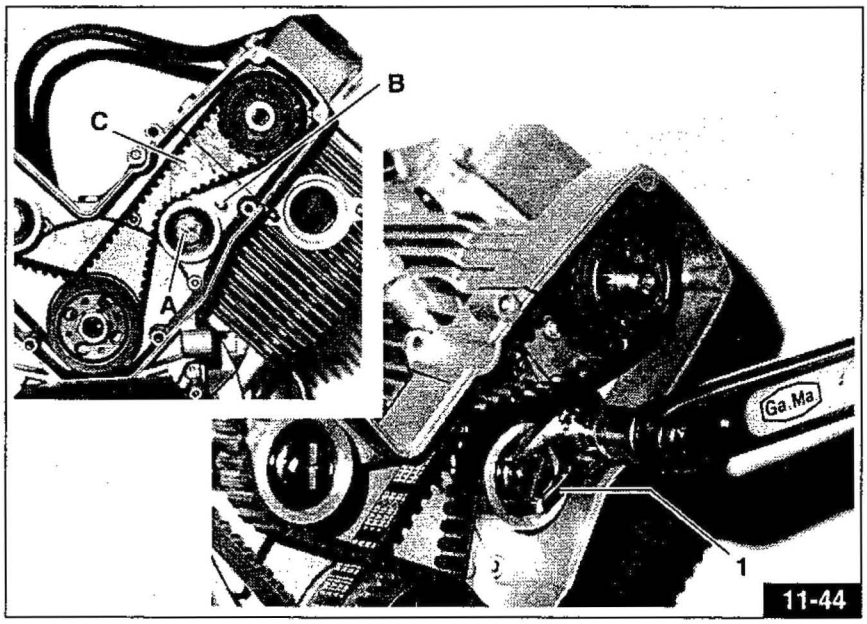
- If none of the timing system components have been replaced, timing should be carried out as described in Par. 11.1 "ENGINE DISMANTLING".
- To stretch the belts, fit the tool **«1» - Fig. 11-44** cod. 30 94 86 00, as indicated in the figure, after loosening the 3 belt-stretcher seal nuts by a few turns.

Using a dynamometric wrench, apply a torque of 0.4÷0.48 kgm to the tool and under these conditions tighten in the following order:

- pin **«A»** nut
- fulcrum **«B»** stud bolt;
- screw **«C»**.

The belts must be replaced every 30,000 km without fail, or when, during a inspection, there is any sign of wear or damage.

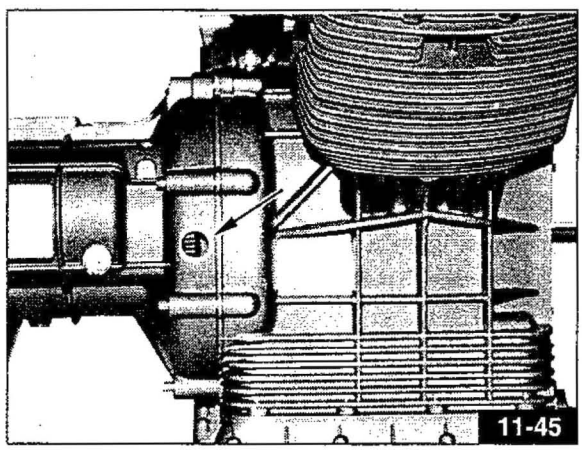
NOTE: The belts must always be stretched with the piston in the TDC position, in the combustion phase (closed valve) or with the upper cam shaft drive pulley without inner gears as shown in Fig. 11-44.



- If any of the timing components have been replaced, or for an accurate adjustment of the timing, proceed as below.

DETERMINATION OF THE TDC AND TIMING

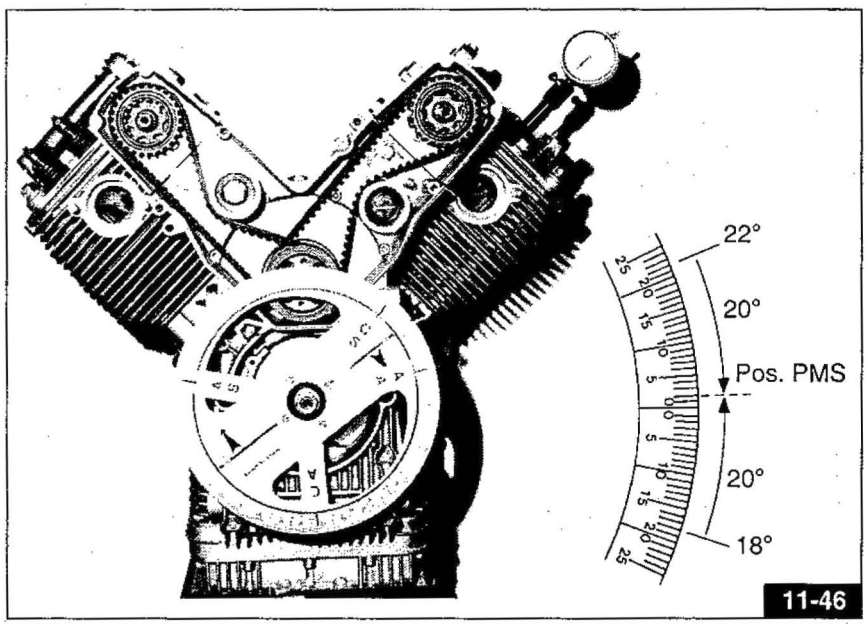
The TDC is indicated by the marks on the engine flywheel **(Fig. 11-45)**.



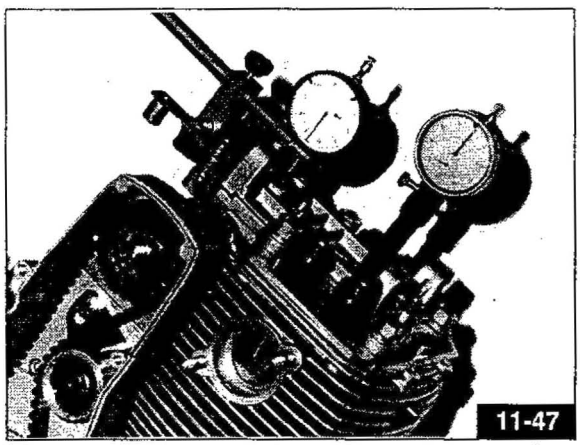
For a more accurate determination of the TDC it is however necessary to proceed as follows:
place a feeler gauge with support cod. 30 94 82 00 in the spark plug hole of the left cylinder **Fig. 11-46** and position the piston at TDC. Fit the graduated disk cod. 19 92 96 00 on the crankshaft with hub cod. 30 94 96 00 and relative index cod. 17 94 75 60.

- Turn the crankshaft until the piston is lowered by 3 mm and note the degrees indicated on the graduated disk index (e.g. 22 degrees).
- Turn the drive shaft in the opposite direction until the piston is lowered by 3 mm and read the number of degrees on the graduated disk (e.g. 18 degrees).
- The exact position of the TDC is therefore indicated on the graduated disk by the middle between the two extreme readings and is given by (22°+18°): 2=20°.

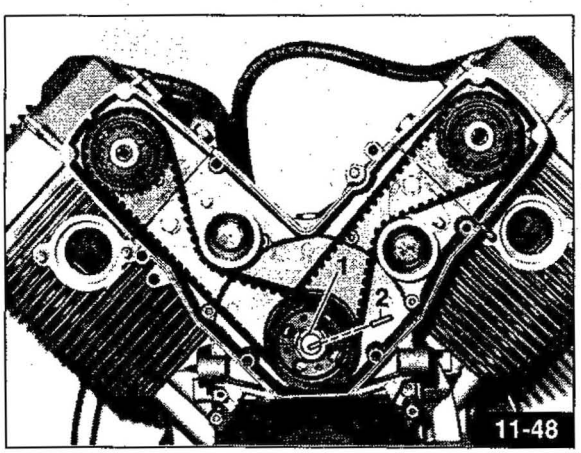
Starting therefore from the position of 22° or 18° move the drive shaft forwards or backwards by 20°; in this position zero the graduated disk holding the crankshaft still.



11-46

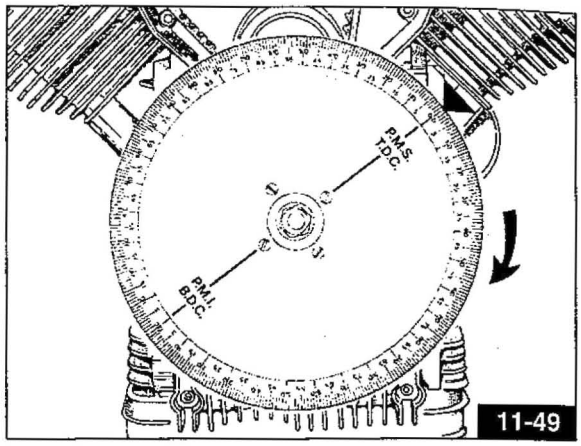

11-47

- With the engine without the rocker arms, fit a feeler gauge on the left (Induction Control ducket) cylinder discharge command points using the tool cod. 69 90 78 50 as indicated in the **Fig. 11-47**.
  The upper timing command pulleys must be without the inner drive gears as indicated in the **Fig. 11-47**.
  The drive belts must be stretched correctly.

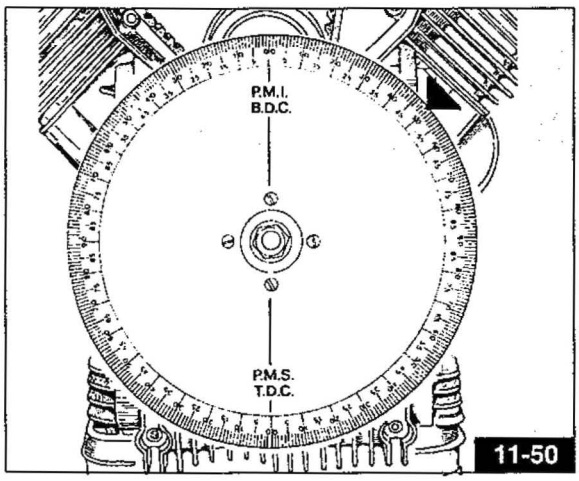

11-48

- After placing the engine in the TDC position, in the left cylinder combustion phase, check that reference «1» - **Fig. 11-48** on the service shaft is lined up with reference «2» - **Fig. 11-48** on the timing cover.

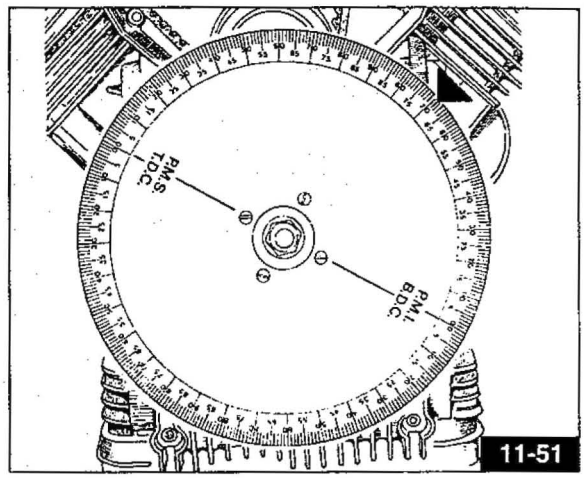
- For the model V10 CENTAURO and for the models DAYTONA RS with special instructions for USA. SWITZERLAND and SINGAPORE, starting from the Top Dead Centre T.D.C. left cylinder, indicated in **Fig. 11-49**. Turn the motor shaft clockwise (seen from the front) and position it to 49° 30 + 1° before the bottom dead centre (B.D.C.) **Fig. 11-50**.
- For the model DAYTON RS (excluding the version with specifications for USA. SWITZERLAND and SINGAPORE) starting from the Top Dead Centre (T.D.C) left cylinder indicated in **Fig. 11-49**, turn the motor shaft clockwise (seen from the front) and position it to 69° 30'+1° after the bottom dead centre **Fig. 11-51**.



11-49

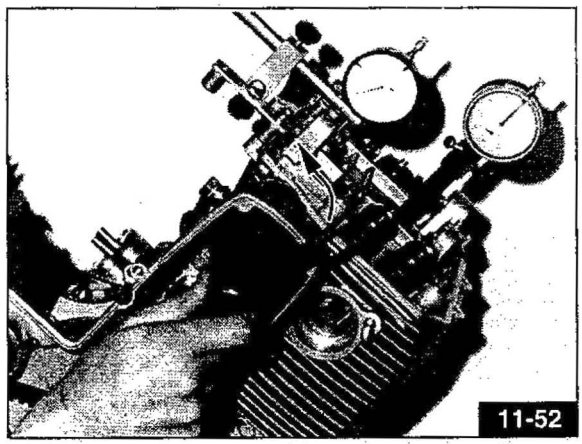


11-50

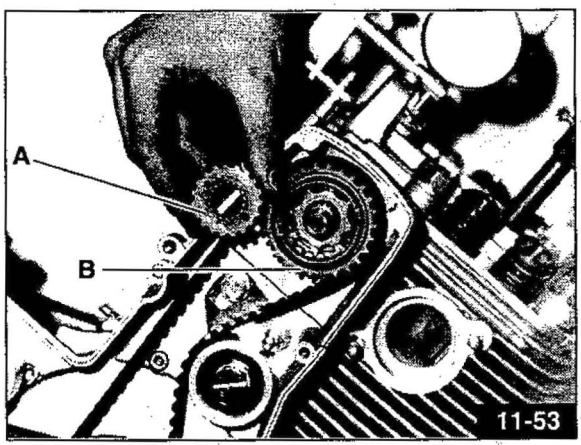


11-51

- Using the appropriate tool cod. 30 92 72 00, turn the left cylinder **(Fig. 11-52)** cam shaft in an anti-clockwise direction until the cam, starting from the lowered position (feeler gauge reading on the points 0), gives a lift value tappet exhaust of induction of 1mm.


11-52

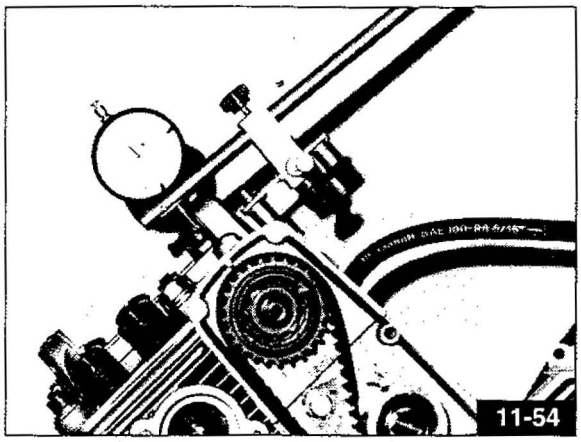
- At this point insert the drive gear **«A» - Fig. 11-53** in the toothed pulley **«B» - Fig. 11-53**, finding the free insertion position by turning just the gear.
- Turn the drive shaft 2 turns in a clockwise direction, return the left cylinder to the TDC position in the combustion phase and check timing again (1 mm lifting of exhaust tappet at 49°30'±1° before BDC. For DAYTON RS (excluding the version with specifications for USA. SWITZERLAND and SINGAPORE) lift 1mm for the valve tappet induction at 69° 30'+1° after the Bottom dead centre (B.D.C).



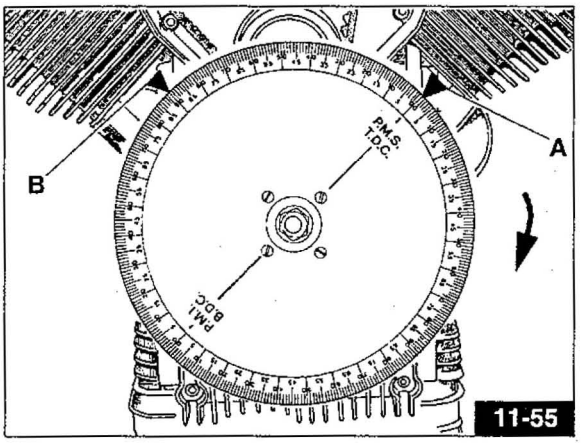
11-53

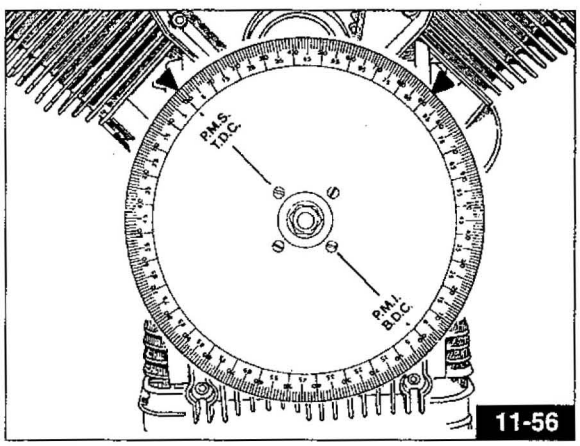
RIGHT CYLINDER TIMING

– Position the comporator on the exhaust of the induction valve tappet of the right cylinder **(Fig. 11-54)**.



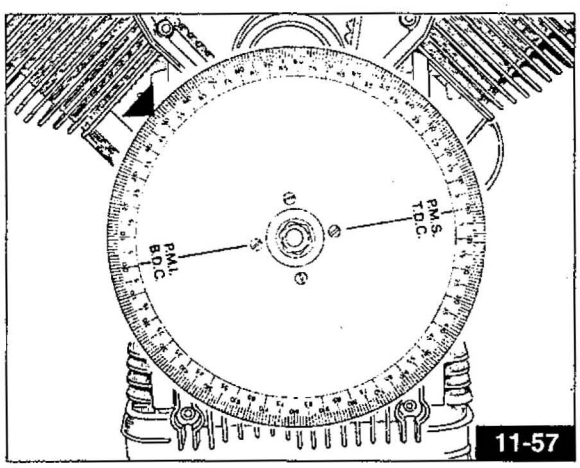
– With the graduated disk zeroed with respect to the «**A**» index and the engine in the TDC position (combustion phase) of the left cylinder, fit a second index «**B**» in the position shown in **Fig. 11-55** (90° from «**A**» index). Turn the crankshaft in a clockwise direction by 270°; this gives the TDC position (combustion phase) of the right cylinder, with the graduated disk zeroed with respect to the «**B**» - **Fig. 11-56** index.

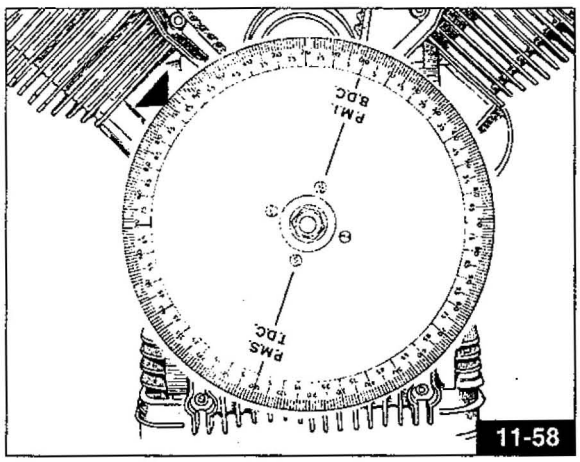




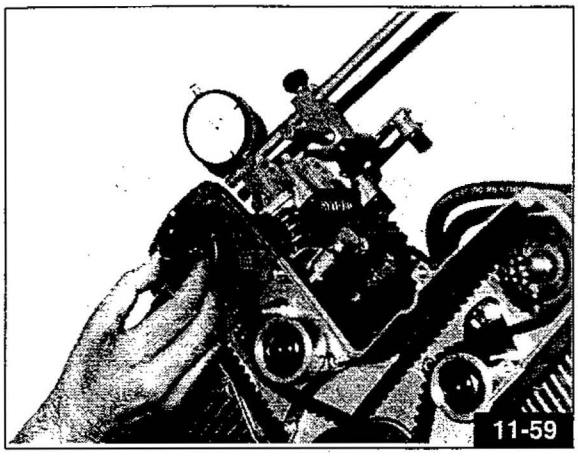
– For the model V10 CENTAURO and DAYTONA RS (excluding the version with specifications for USA. SWITZERLAND and SINGAPORE) do the phasing as already explained for the left cylinder (elevation of 1mm. Of the exhaust value tappet at 49° 30'+1° before the Bottom Dead Centre B.D.C.) **(Fig. 11-57)**.

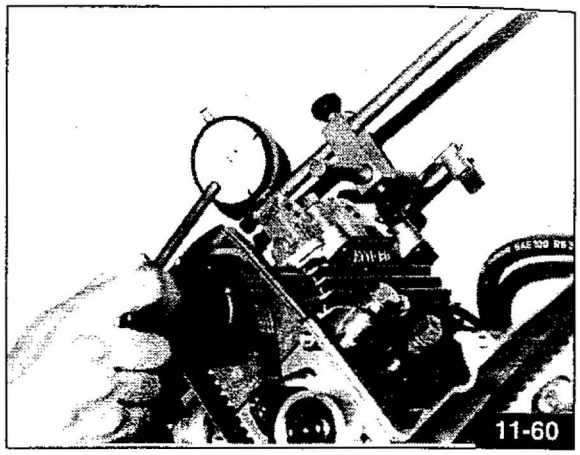
– For the model DAYTON RS (excluding the version with specifications for USA.SWITZERLAND and SINGAPORE) do the phasing as already explained for the left cylinder (lift 1mm. The induction valve tappet at 69°-30'+1° after the Bottom Dead Centre B.D.C.) **(Fig. 11-58)**.





Subsequently check the right cylinder timing as already indicated for the left cylinder and complete the reassembling of the engine unit **(Fig. 11-59 / 11-60)**.


11-59


11-60

COMBUSTION SEQUENCE

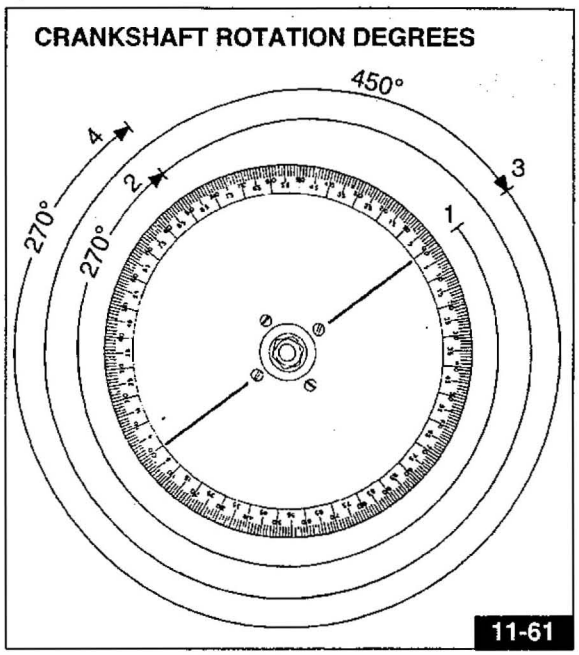
During engine timing remember that the correct combustion sequence is the following:

1 – Left cylinder combustion

2 – After 270° (360°–90°) right cylinder combustion

3 – After 450° (360+90°) left cylinder combustion

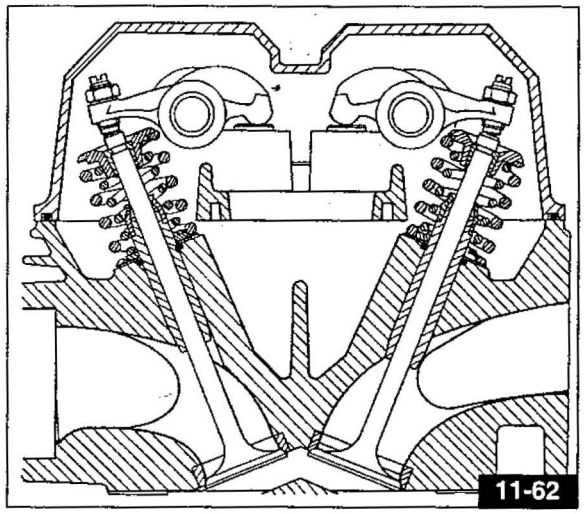
4 – After 270° (360°–90°) right cylinder combustion, etc.



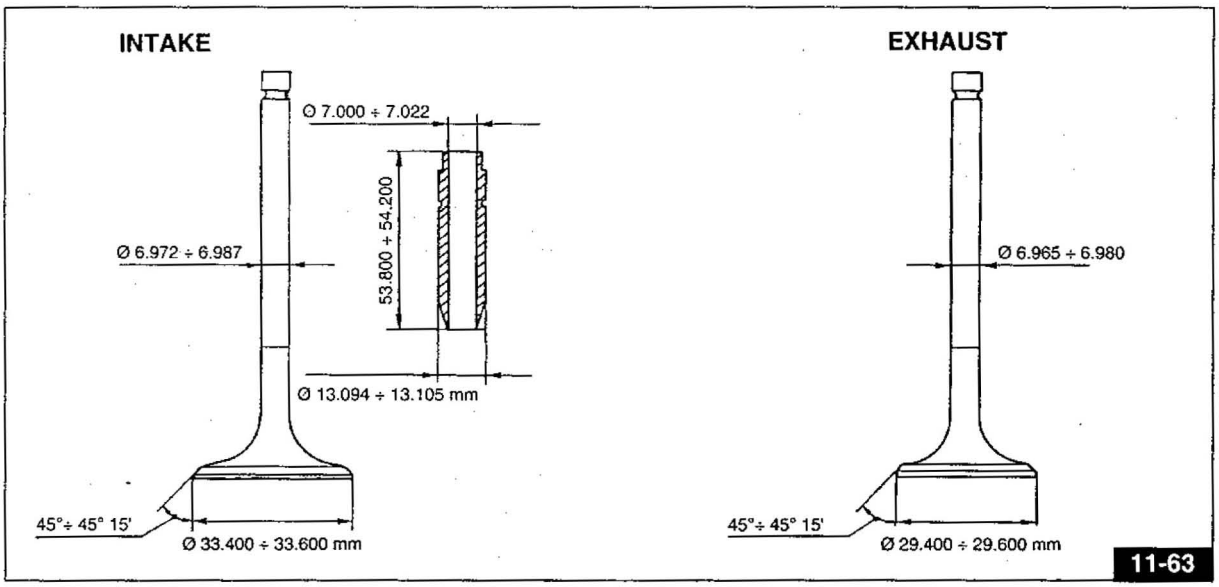
11-61

11.4 CHECKS

HEADS (Fig. 11-62)
Check that:
- the surfaces in contact with the cover and with the cylinder are not scratched or damaged thus preventing a perfect seal;



- check that the tolerance between the valve guide holes and the valve stems are within the prescribed limits **(Fig. 11-63)**;
- check the state of the valve seats.



VALVE GUIDE
To extract the valve guides from the heads, use a punch.
The valve guides should be replaced when the clearance between the above and the stems cannot be eliminated by replacing the valves alone.

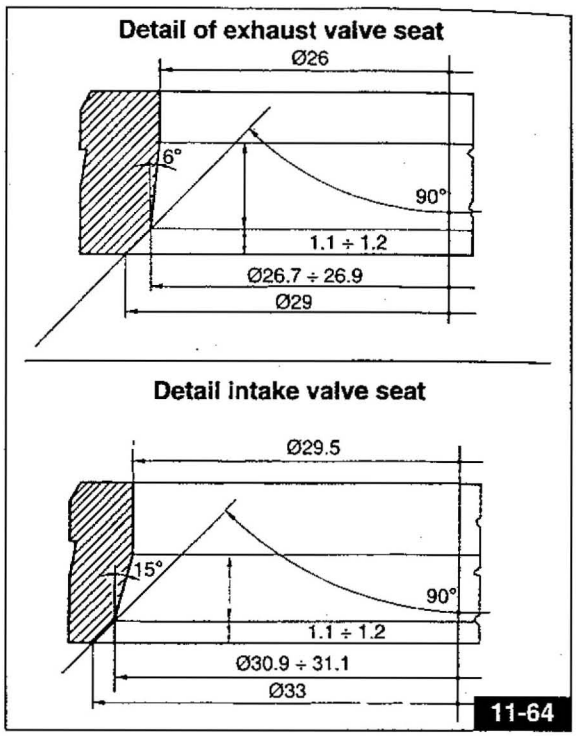
To fit the valve guides on the heads:
- heat the head in an oven to approximately 60°C, then lubricate the valve guides;
- fit the piston rings;
- press the valve guides with a punch; pass a stem borer in the holes of the valve stems, to restore the prescribed internal diameter.

The allowance between the seat on the head and the valve guide must be 0.057÷0.064 mm.

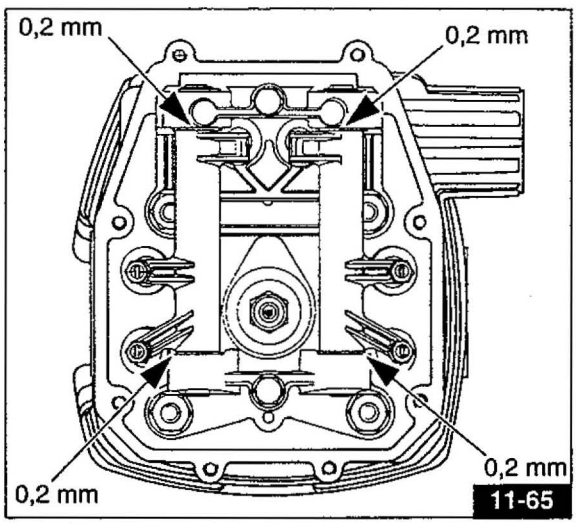
DATA TABLE FOR VALVE AND GUIDE COUPLINGS

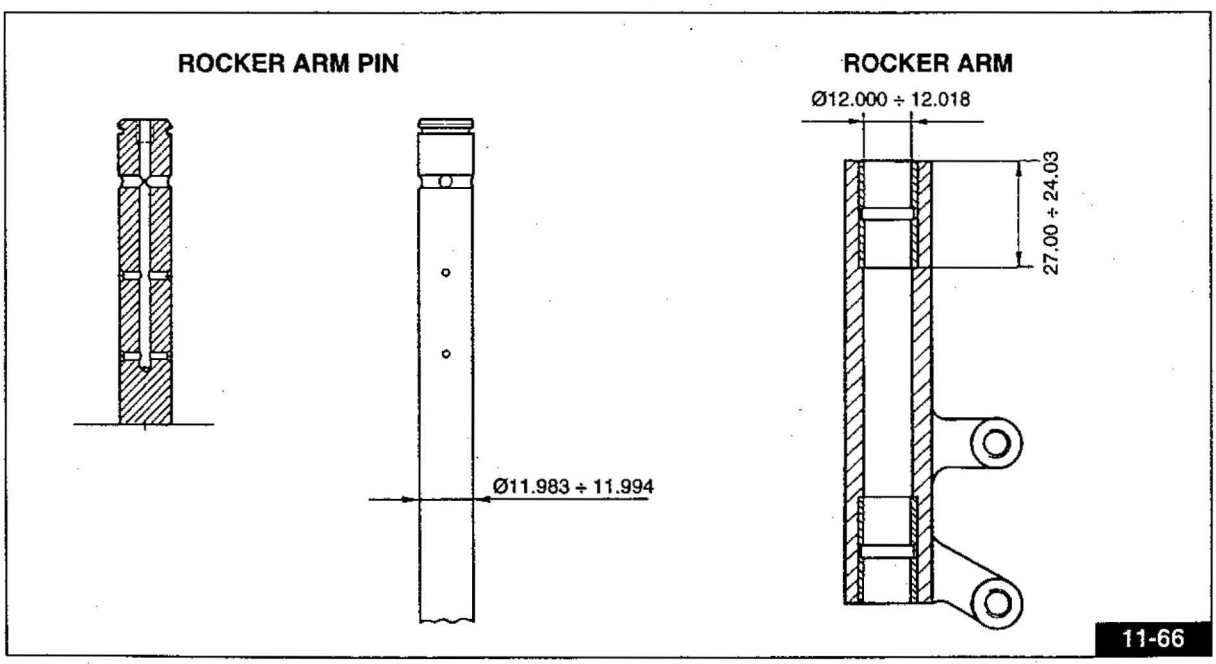
	internal valve guide dia. mm	valve stem dia. mm	fitting clearance mm
Inlet	7,000÷7,022	6,972÷6,987	0,013÷0,050
Exhaust		6,965÷6,980	0,020÷0,057

VALVE SEATS (Fig. 11-64)
The valve seats should be milled. The seat inclination is 90°.
After milling, to obtain a good coupling and a perfect seal between the ring nut and the valve mushrooms, use a honing machine.

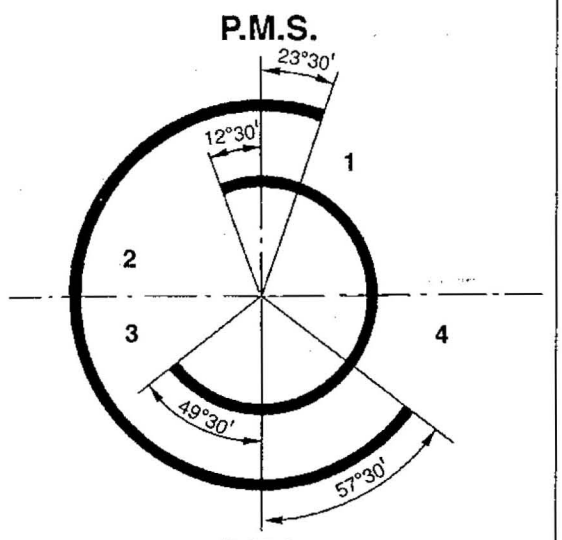


Lateral clearance between rocker arms and rocker arm support housing 0.2 mm **(Fig. 11-65)**; the shim washers are supplied with thicknesses of 1 mm and 1.2 mm.





1 = Intake start before TDC
2 = End of exhaust after TDC
3 = Exhaust start before BDC
4 = Intake end after BDC



11-67

TIMING DATA

For the models V10 CENTAURO and DAYTON RS (excluding the version with specifications for USA. SWITZERLAND and SINGAPORE) Fig. 11-67.

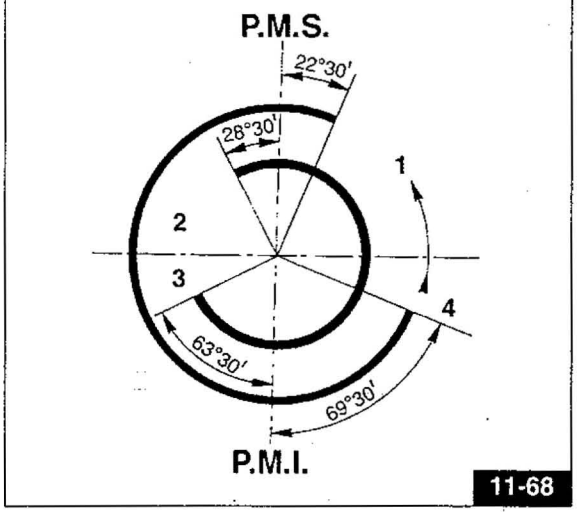
The timing data (referring to the 1 mm lift of the points) are as follows:

Intake:
open 23°30' before TDC
close 57°30' after BDC

Exhaust:
open 49°30' before BDC
close 12°30' after TDC

Functioning clearance with a cold engine:
intake valves 0.10 mm
exhaust valves 0.15 mm

1 = Intake start before TDC
2 = End of exhaust after TDC
3 = Exhaust start before BDC
4 = Intake end after BDC



11-68

DAYTON RS (excluding the version with specifications for USA. SWITZERLAND and SINGAPORE) Fig. 11-68.

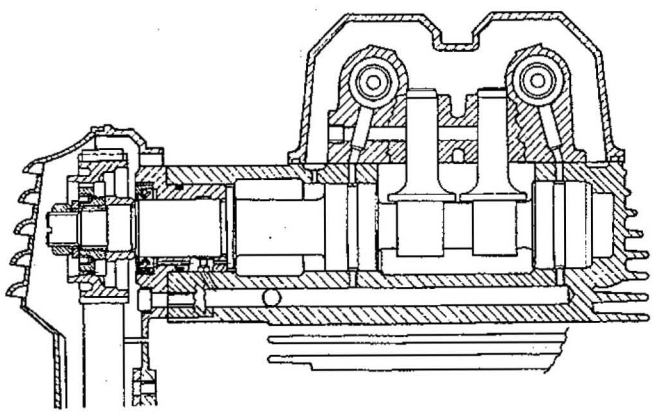
The timing data (referring to the 1 mm lift of the points) are as follows:

Intake:
open 23°30' before TDC
close 69°30' after BDC

Exhaust:
open 63°30' before BDC
close 28°30' after TDC

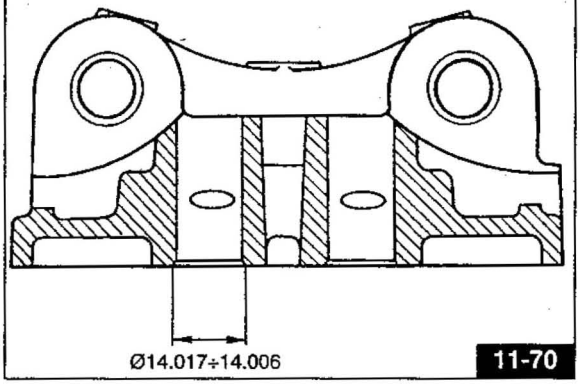
Functioning clearance with a cold engine:
intake valves 0.10 mm
exhaust valves 0.15 mm

CAMSHAFT AND LUBRICATION SYSTEM ASSEMBLY



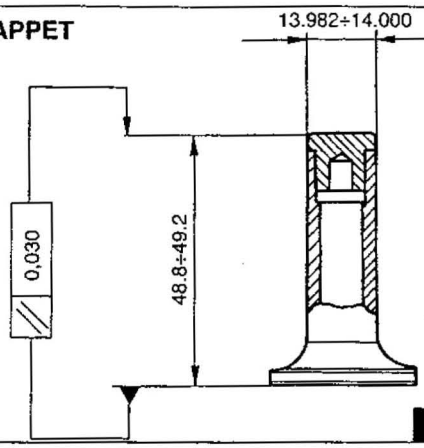
11-69

ROCKER ARM SUPPORT



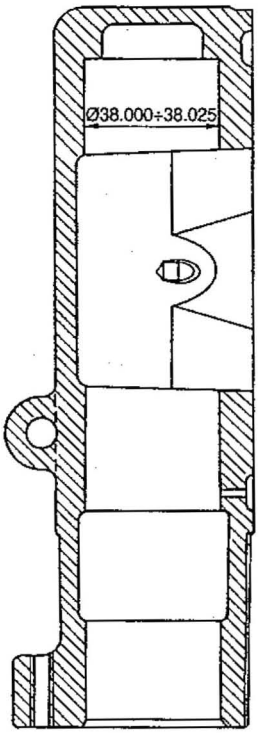
11-70

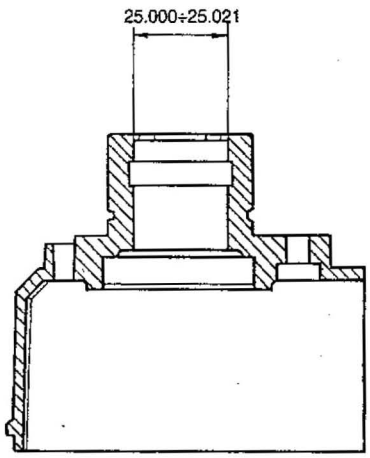
TAPPET



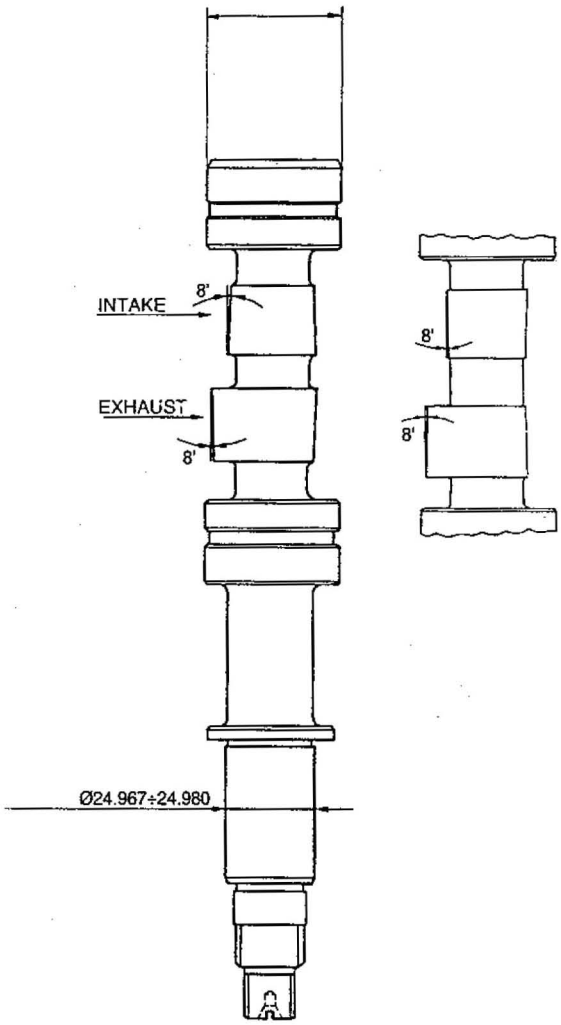
11-71

CAM SHAFT HOUSING





CAM SHAFT

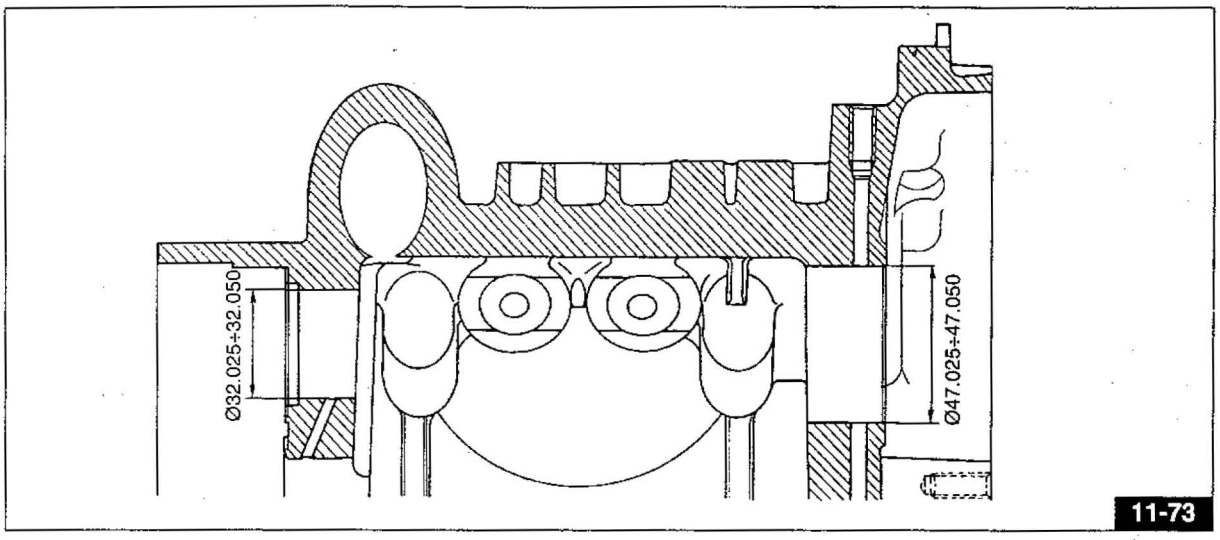


IDENTIFICATION CODE

S = left
D = right

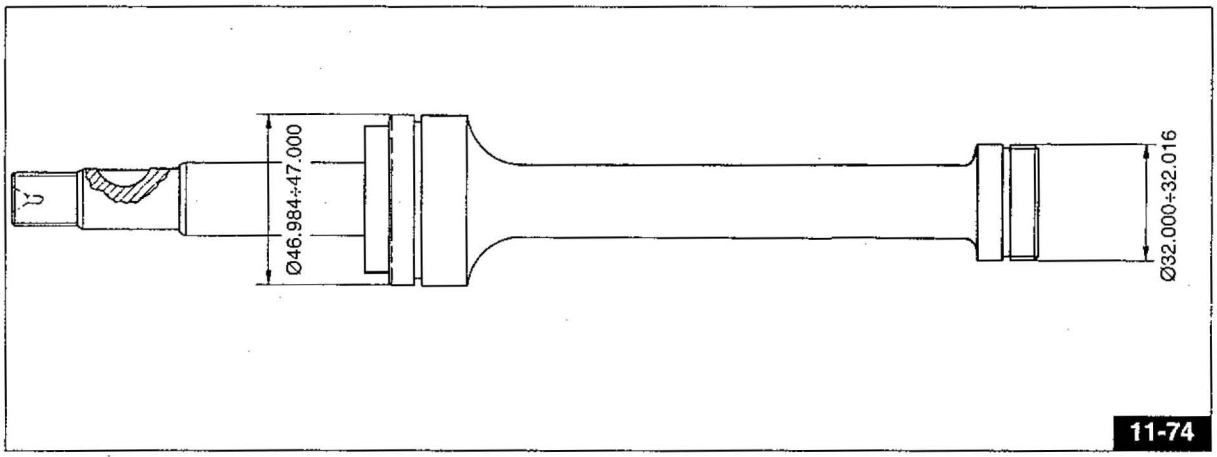
11-72

SERVICE SHAFT HOUSING



11-73

SERVICE SHAFT

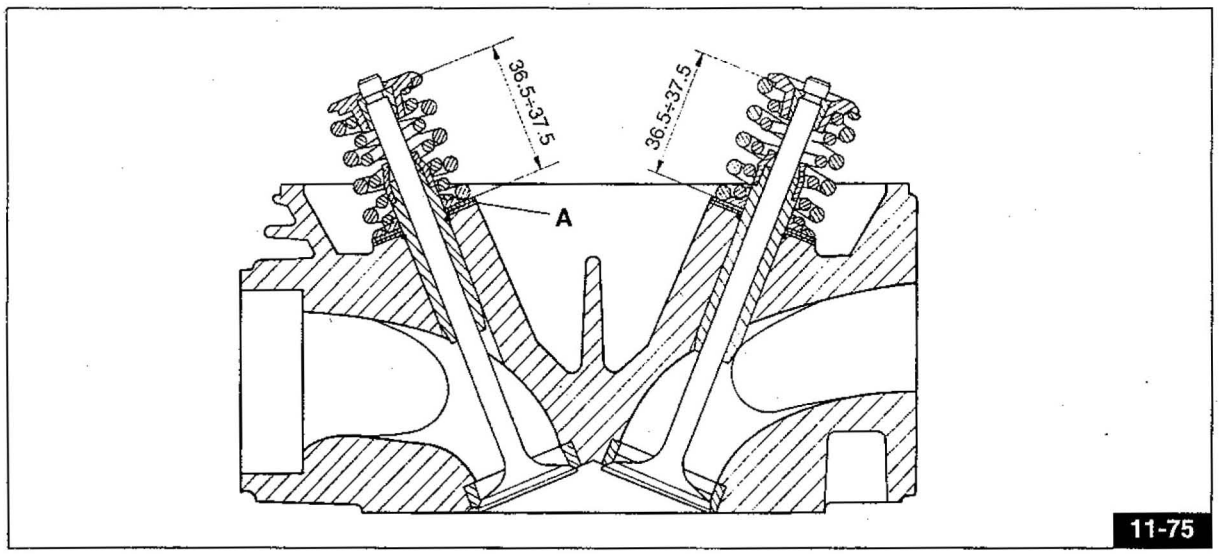


11-74

SPRING SET CHECKING

NOTE: The Data in square brackets refer to the Model DAYTONA RS except for Models with specifications for USA. SWITZERLAND and SINGAPORE - Fig. 11-75

When the valve seats on the heads have been milled it is necessary, after fitting the valves on the heads, to check that the springs are compressed between 36.5 ÷37.5 mm [36 ÷ 36,5]; to obtain this value insert «**A**» washers of appropriate thicknesses (these are supplied in thicknesses of 1 mm and 1.5 mm).



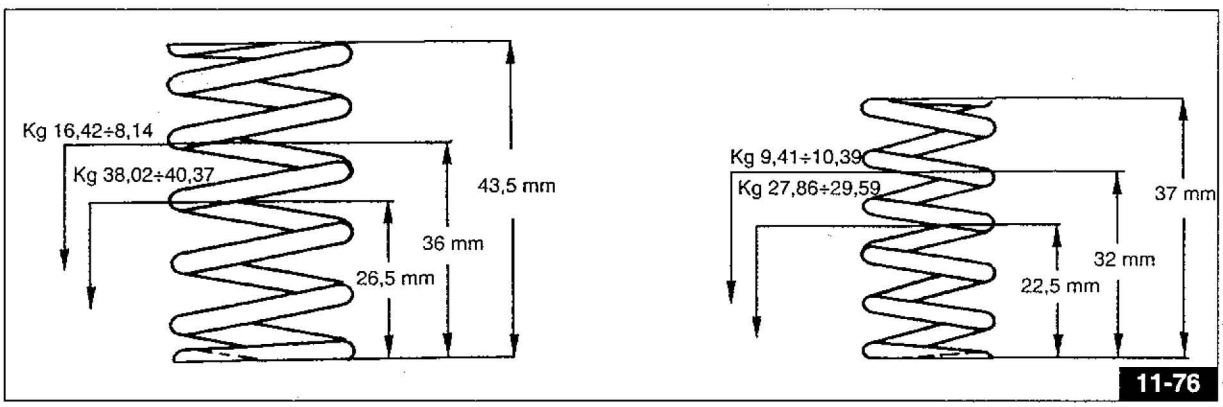
11-75

INSPECTION OF VALVE SPRINGS - Fig. 11-76
Check that the springs are not deformed and have not lost their load:

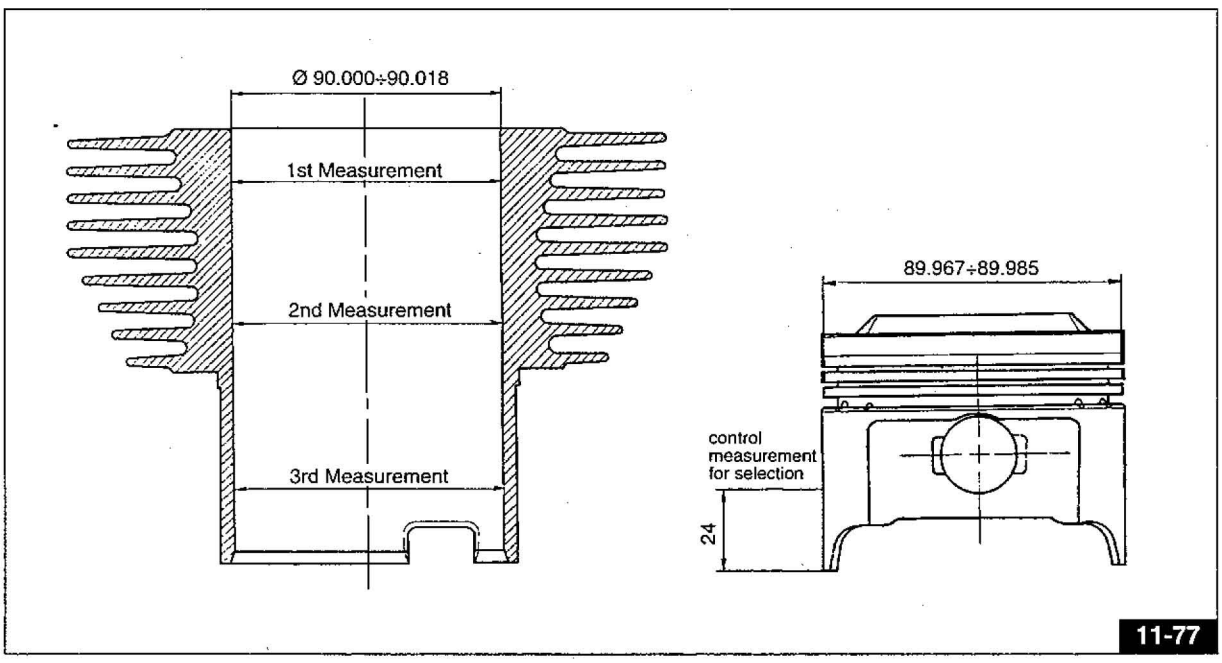
External spring
- **free**, has a length of 43.5;
- **with closed valve**, has a length of 36 mm and must give a load of 16.42÷18.14 kg;
- **with open valve**, has a length of 26.5 mm and must give a load of 38.02÷40.37;
- **compressed**, has a length of 22.5 mm.

Internal spring
- **free**, has a length of 37 mm;
- **with closed valve**, has a length of 32 mm and must give a load of 9.41÷10.39;
- **with open valve**, has a length of 22.5 mm and must give a load of 27.86÷29.59;
- **compressed**, has a length of 20.3 mm.

If the springs do not satisfy the above specifications they must be replaced.



Cylinder wear check - Fig. 11-77
The measurement of the cylinder diameter must be made at three heights, turning the feeler gauge by 90°. It is also important to check that the cylinders and the pistons are of the same selection class (A, B, C).



Grading cylinder diameter

GRADE **A**	GRADE **B**	GRADE **C**
89,967÷89,973	89,973÷89,979	89,979÷89,985

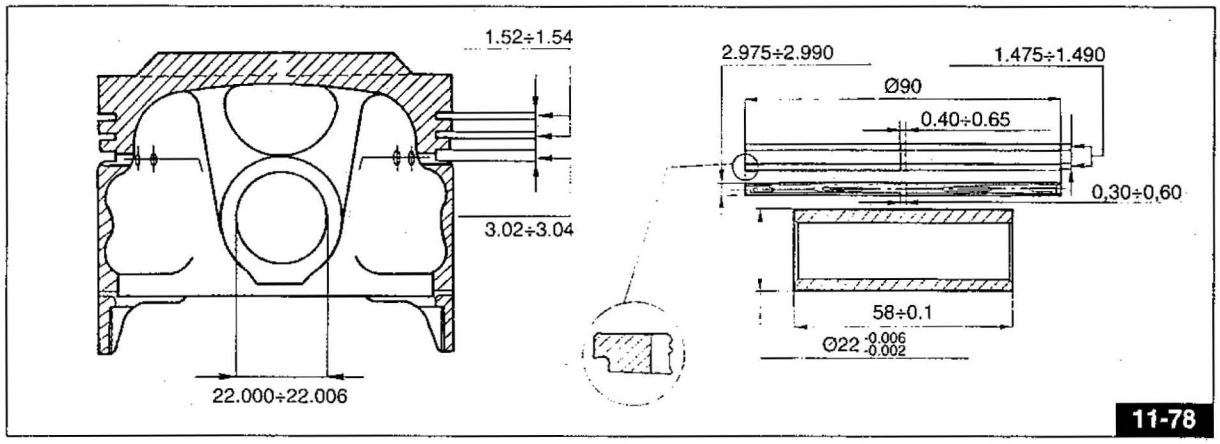
Grading pistons diameter

GRADE **A**	GRADE **B**	GRADE **C**
89,967÷89,973	89,973÷89,979	89,979÷89,985

NOTE: The «A», «B», «C» grade cylinders must be coupled with the corresponding pistons in the grades «A», «B», «C».

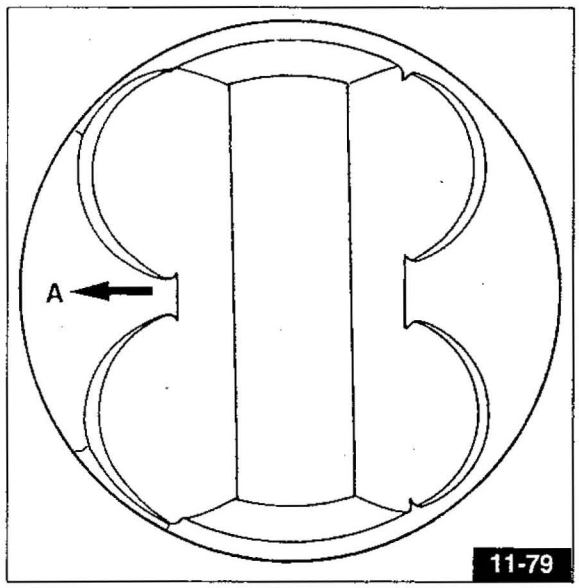
The grading measurements indicated in the tables must be taken at 24 mm from the lower edge of the piston, at right-angles to the gudgeon pin axis.
Maximum cylinder ovalization allowed: ..... 0.02 mm.
Maximum clearance allowed between cylinder and piston: ..... 0.08 mm.

PISTONS
During overhauls, the incrustations must be removed from the piston crowns and the piston ring seats; check the existing clearance between the cylinders and the pistons with the grading diameter; if it is higher than that indicated it is necessary to replace the cylinders and the pistons.
The engine pistons must be balanced; a weight difference of 1.5 grams is allowed.



Coupling data

Dia. PISTON PIN mm	Dia. PISTON HOLES mm	CLEARANCE BETWEEN PISTON PIN & HOLES ON PISTON mm
21,994	22,000	0,012÷0,002
21,998	22,006	



OIL SCRAPER COMPRESSION RINGS
Each piston is fitted with: 1 upper piston ring, 1 intermediate slotted piston ring, 1 oil control ring.

Aperture between the ends of the piston rings fitted on the piston
Upper compression ring
and slotted ring: ..... 0.40-0.65 mm
oil control ring: ..... 0.30-0.60 mm

Fitting of the piston in the little-end bearing.
When the piston is fitted in the little-end bearing, the part marked in the figure with the arrow **«A»** must be turned towards the exhaust manifold.

CONNECTING RODS

When overhauling the connecting rods, carry out the following checks:

- the condition of the bushings and the clearance between these and the gudgeon pins;
- parallelism of the axes;
- connecting rod bearings.

The bearings are of the thin shell type, in babbitt alloy that cannot be adjusted; if there are any traces of seizing or wear they must be replaced.

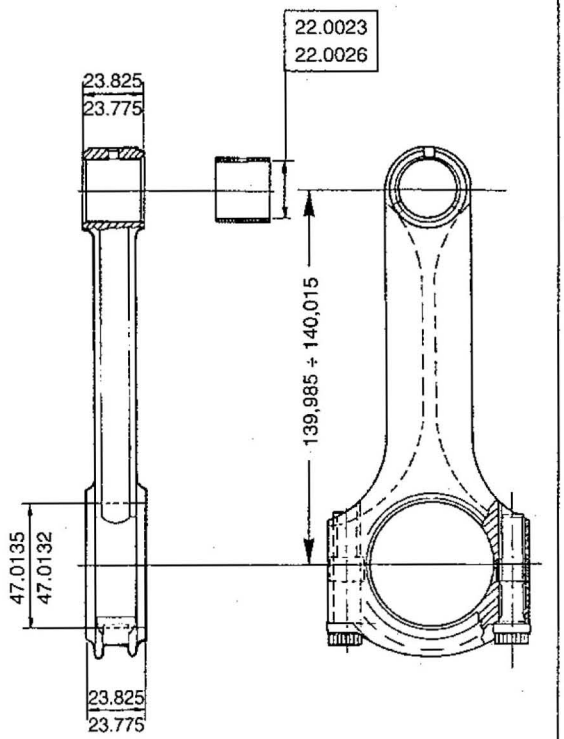
If the bearings are replaced it may be necessary to mill the crankshaft pin.

Before grinding the crankshaft pin, it is advisable to measure the pin diameter in correspondence to the maximum wear **(Fig. 11-81)**; this is to establish to which undersize class the bearing should belong and to what diameter the pin should be ground.

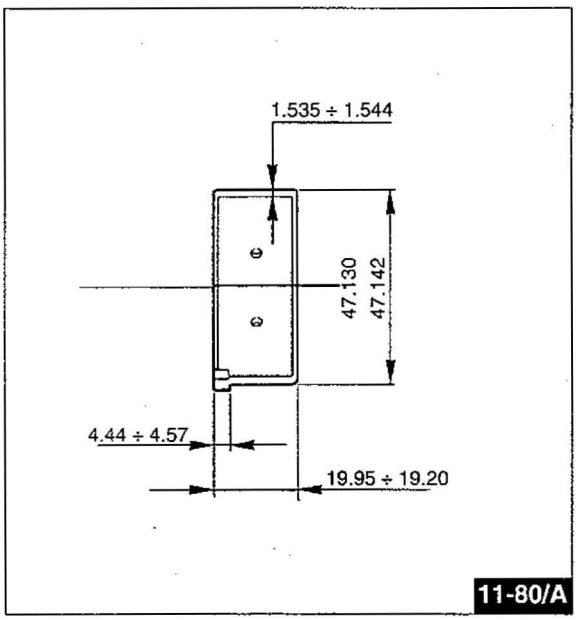
Thicknesses of the connecting rod bearings

NORMAL BEARING (PRODUCTION) mm	bearings for connecting rod pin dia. undersized by mm		
	0,254	0,508	0,762
from 1,535 to 1,544	1,662 1,671	1,789 1,798	1,916 1,925

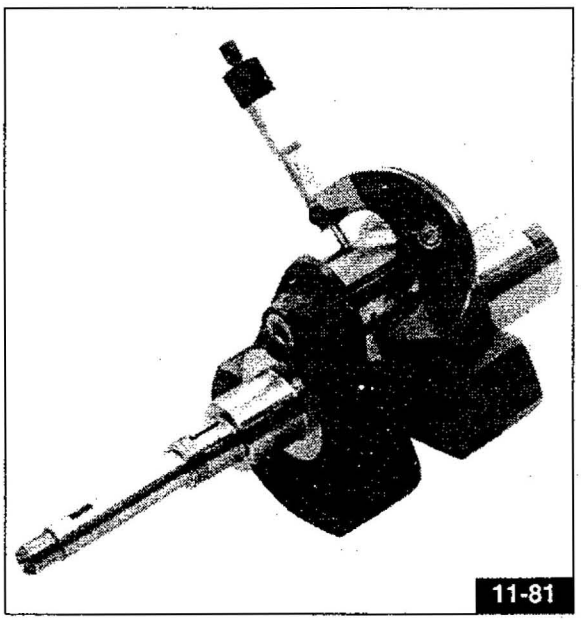
CARRILLO connecting rods



11-80



11-80/A



11-81

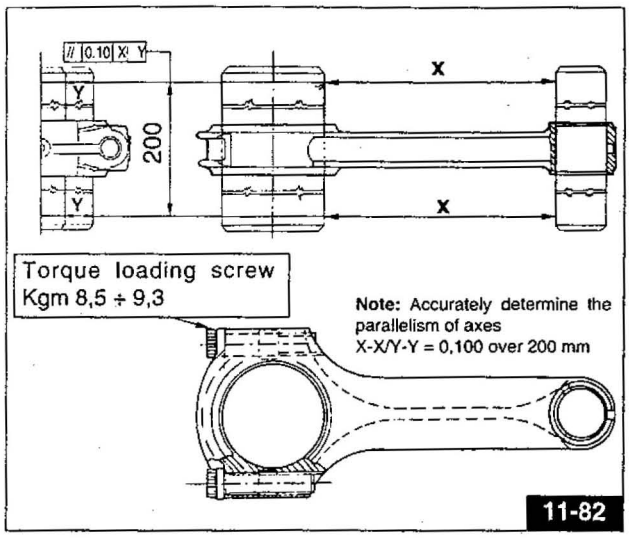
CRANKSHAFT PIN DIAMETER:

STANDARD DIA.	UNDER SIZED 0.254 mm	UNDER SIZED 0.508 mm	UNDER SIZED 0.762 mm
44,008÷44,012	43,754÷43,758	43,500÷43,504	43,246÷43,250

Gudgeon pin and bushing coupling data

INTERNAL DIA. OF PRESSED AND MACHINED mm	GUDGEON PIN DIA. mm	CLEARANCE BETWEEN GUDGEON PIN AND BUSHING mm
22,0023 22,0026	21,994 21,998	0,25÷0,32

Check parallelism of the axes.
Before assembling the connecting rods, check the quadrature, i.e. check that the little-ends and the big ends of the connecting rods are parallel and coplanar. Any minimum deformities can be corrected by adjusting the connecting rod stem.
The maximum parallelism and coplanar error of the two axes of the little-end and the big end measured at the distance of 200 mm must be ±0.10 mm.



FITTING OF THE CONNECTING RODS ON THE DRIVE SHAFT
The assembly clearance between the bearing and the connecting rod pin ranges from a minimum of 0.022 mm to a maximum of 0.064 mm.
The clearance between the connecting rod shim adjustment and those of the crankshaft is 0.30÷0.50 mm. Fit the connecting rods on the crankshaft, tighten the nuts on the caps with a dynamometric wrench using a tightening torque of 8,5÷9,3 kgm.

CRANKSHAFT
Examine the surfaces of the main journals; if they are grooved or ovalized, the journals must be ground (following the undersize tables), and replace the flanges complete with the main bearings.
The main bearings undersizing scale is as follows: 0.2-0.4-0.6 (see table).
The assembly clearances are the following:
- between main bearing and journal timing side 0.028÷0.060 mm
- between main bearing and journal flywheel side 0.040÷0.075;
- between bearing and connecting rod pin 0.022÷0.064 mm.

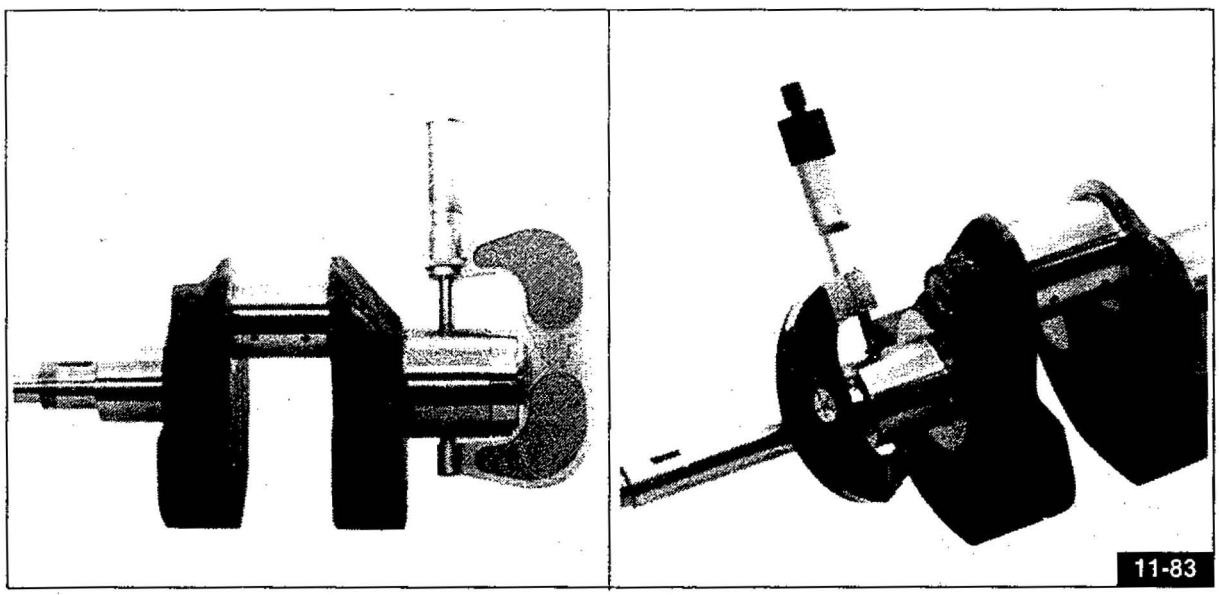
When grinding the crankshaft journals it is necessary to maintain the value of the connecting throw on the shoulders that is: 2÷2.5 mm for the connecting rod pin, 3 mm for the main journal on the flywheel side and 1.5÷1.8 mm for the main journal on the timing system side.

Diameter of main journal on flywheel side

NORMAL PRODUCTION mm	UNDERSIZED BY mm		
	0.2	0.4	0.6
53.970 53.951	53.770 53.751	53.570 53.551	53.370 53.351

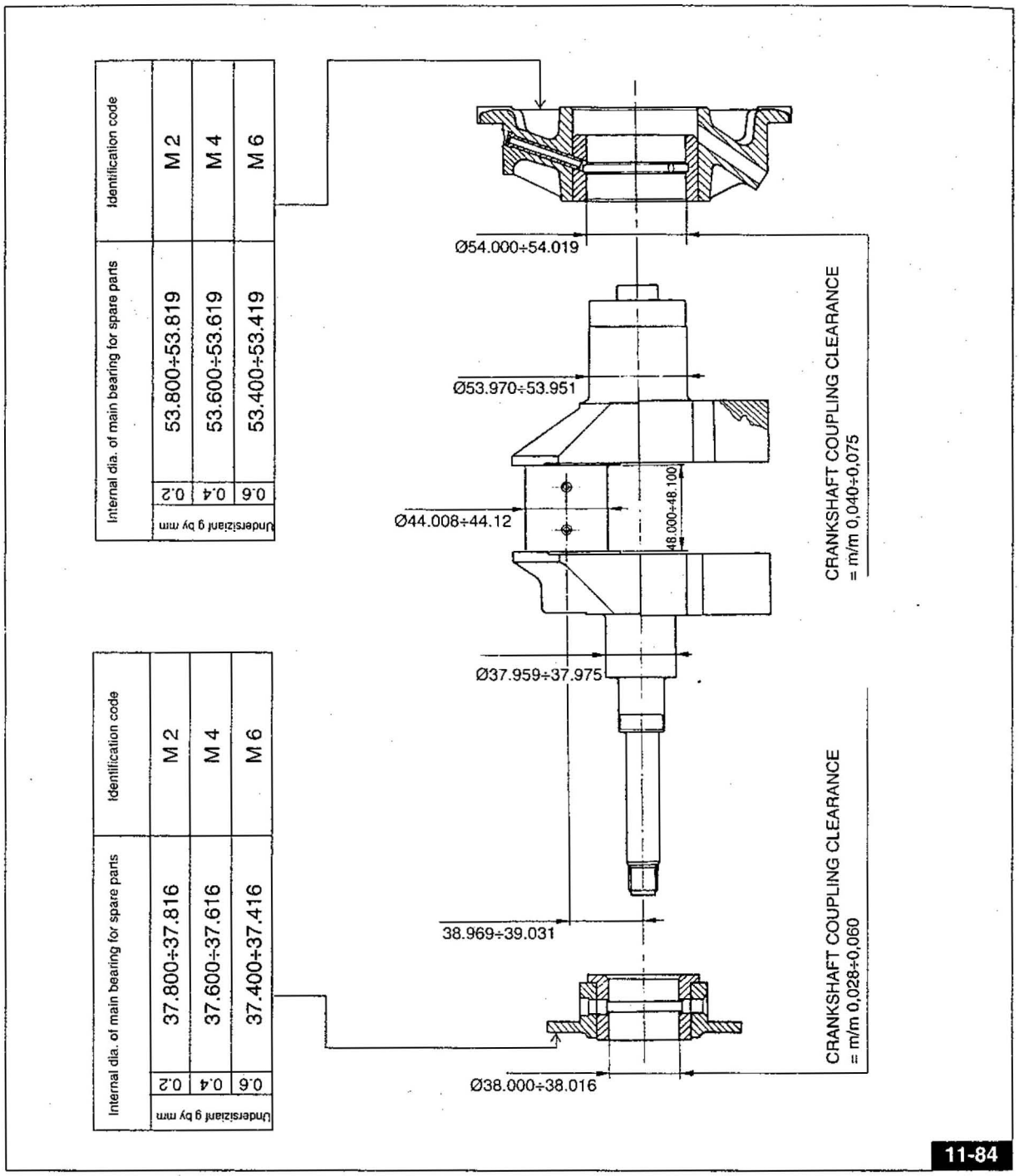
Diameter of main journal on timing system side

NORMAL PRODUCTION mm	UNDERSIZED BY mm		
	0.2	0.4	0.6
37.975 37.959	37.775 37.759	37.575 37.559	37.375 37.359



WEIGHT CHECK FOR CRANKSHAFT BALANCING

The connecting rods complete with nuts and bolts must have a balanced weight.
There is a tolerance of 4 grams.
For a static balancing of the crankshaft, the pin must bear a weight of Kg. 1558±3.



CHECK CRANKCASE (FLYWHEEL FLANGE SIDE) FOR OIL LEAKS

In the event of oil leaks from the rear part of the crankcase (flywheel area), check the following:

- that the seal ring on the flange on the flywheel side is not damaged;
- that there is no blowing in the crankcase. To make this check, rest the engine on a bench with the flywheel side uppermost, after removing the flywheel from the crankshaft;
- fill the upper part of the crankcase with water;
- blow through the breather pipe with low pressure compressed air (to avoid dislodging the oil seals), taking care to hold the seal ring with two fingers;
- if there are leaks, bubbles should appear. In this case the porosity must be filled with a suitable commercial compound.

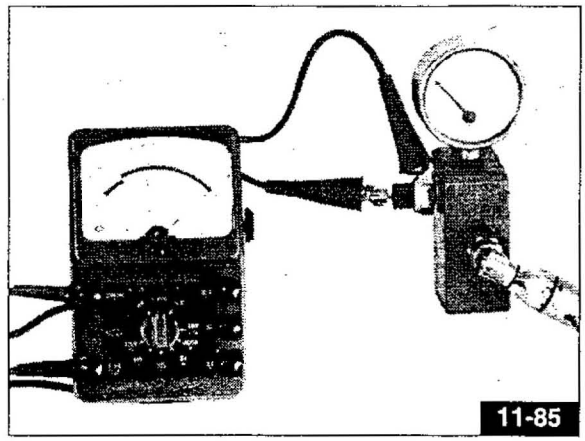
OIL PRESSURE TRANSMITTER

This is fitted on the crankcase, and is connected to the pilot light on the control panel by electric cables; its purpose is to signal insufficient pressure in the lubrication circuit.

When the light on the control panel comes ON (with the engine running), this indicates that the pressure has fallen below the set limits; it is necessary to stop the vehicle immediately and check the cause of the pressure drop.

CHECK OIL PRESSURE TRANSMITTER (Fig. 11-85)

To check the efficiency of the transmitter, mounted it on the special tool equipped with a pressure gauge; connect the positive lead (+) of the tester to the transmitter and the negative lead (–) to earth, then blow compressed air through the coupling of the above tool, making sure that the indicator on the tester moves when the pressure (looking at the gauge) reaches 0.15÷0.35 kg/sq.cm.


11-85

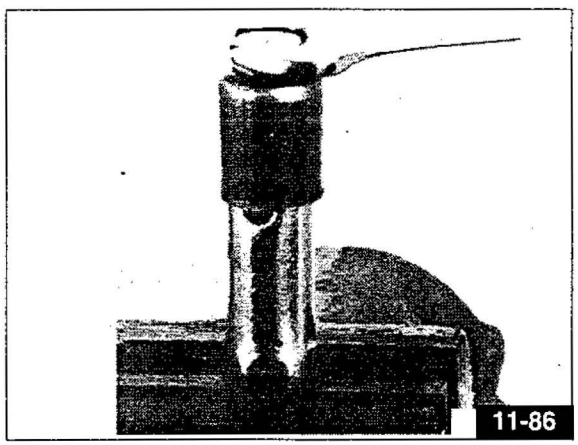
ENGINE OIL PRESSURE ADJUSTMENT VALVE (Fig. 11-86 / 11-87 / 11-88)

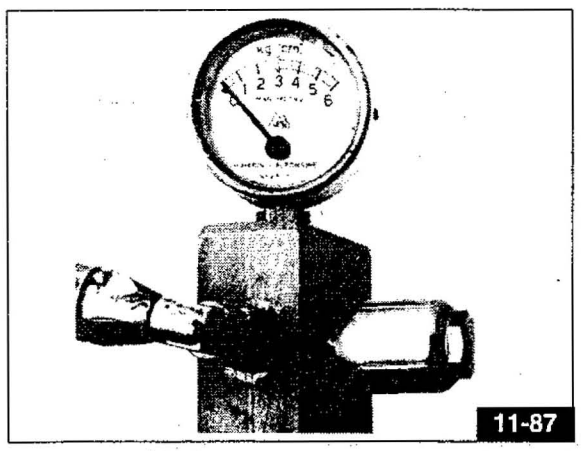
Check the oil pressure valve calibration.

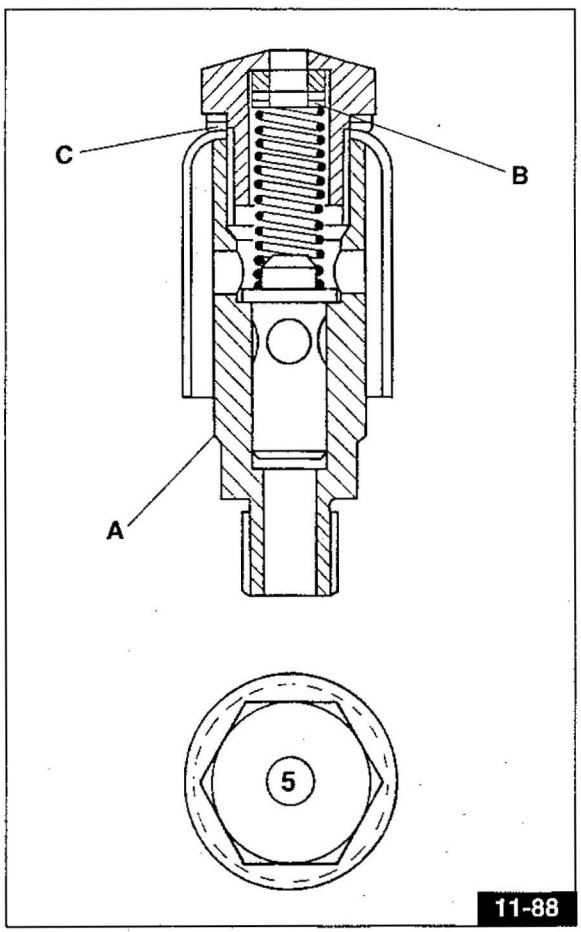
The oil pressure adjustment valve «**A**» is screwed to the oil sump. It must be calibrated to allow a pressure in the delivery circuit of 5 kg/sq.cm.

To test the calibration, it is necessary to fit the valve on the appropriate tool with a gauge fitted; blow compressed air through the tool coupling and make sure that the valve opens precisely at the set pressure.

If the valve opens at a lower pressure, place one or more «**B**» washers under the spring; if it opens at a higher pressure, reduce the number of «**B**» washers or increase the number of «**C**» washers as appropriate.


11-86

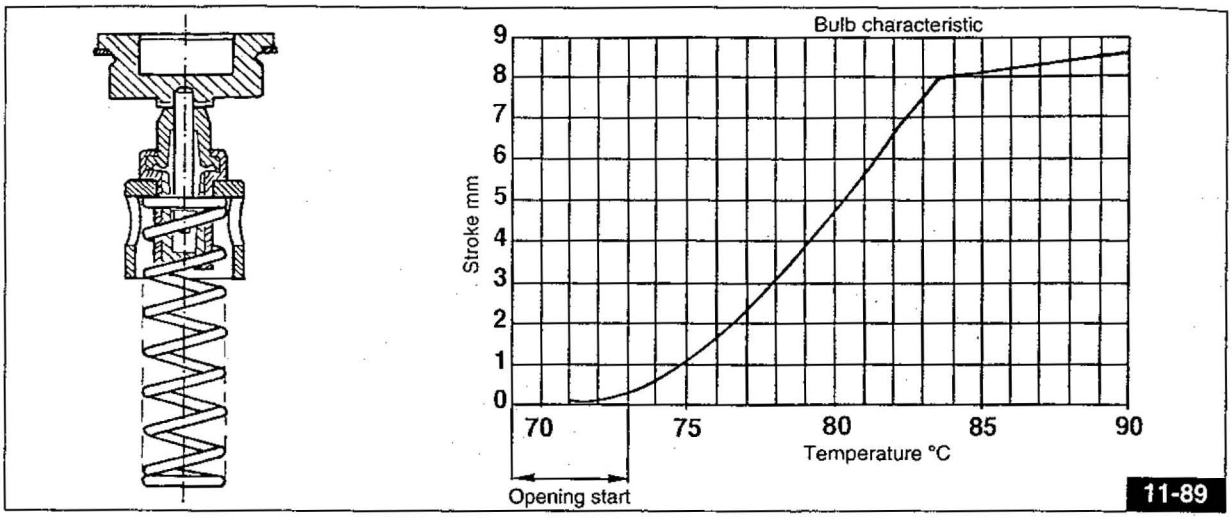

11-87



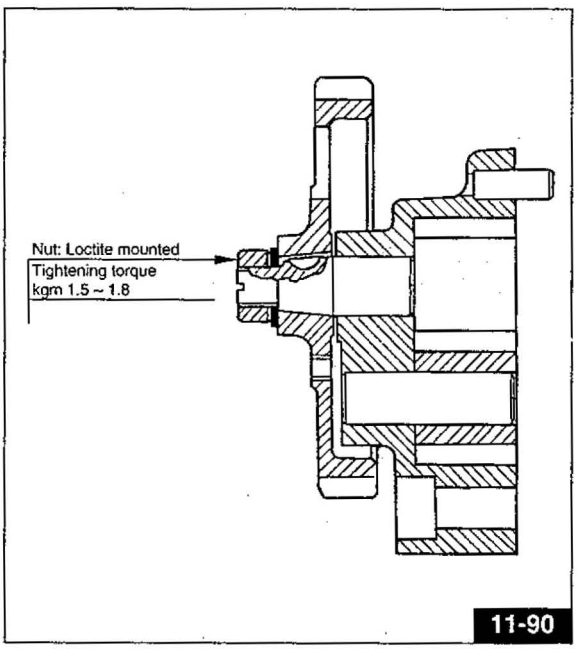
11-88

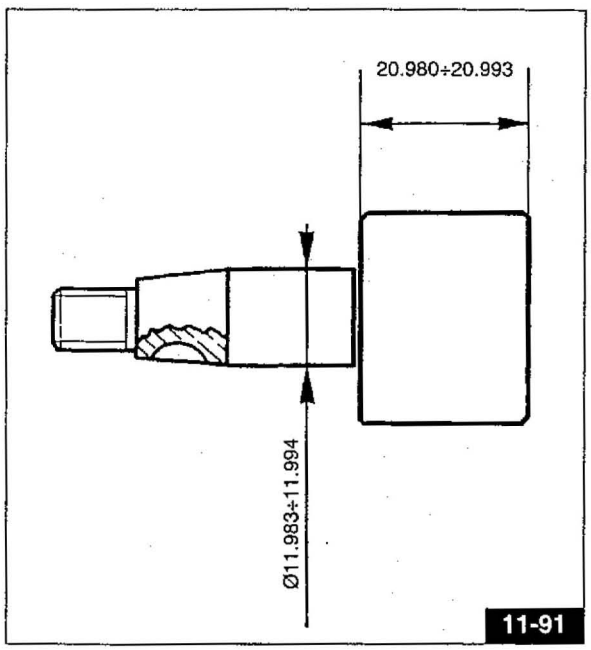
THERMOSTATIC VALVE (Fig.11-89)

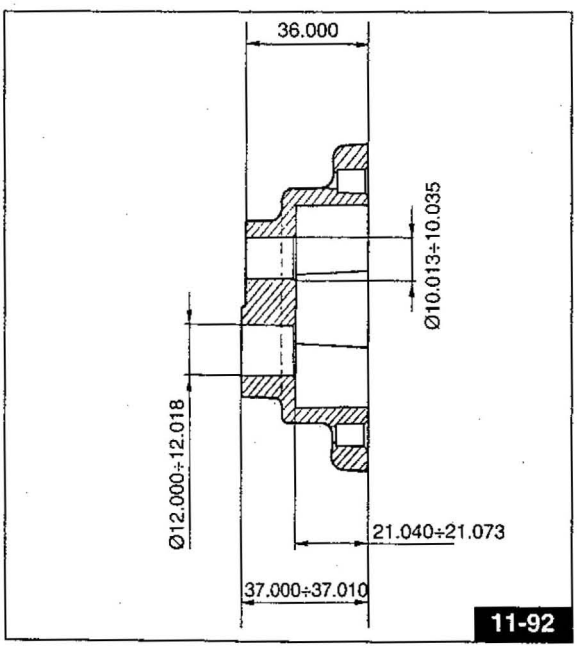
The thermostatic valve opens the oil passage to the radiator when the temperature exceeds 71°c.

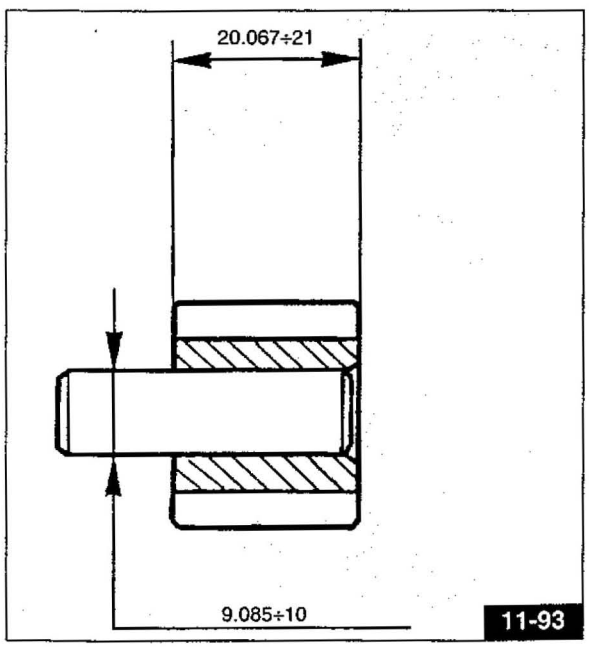


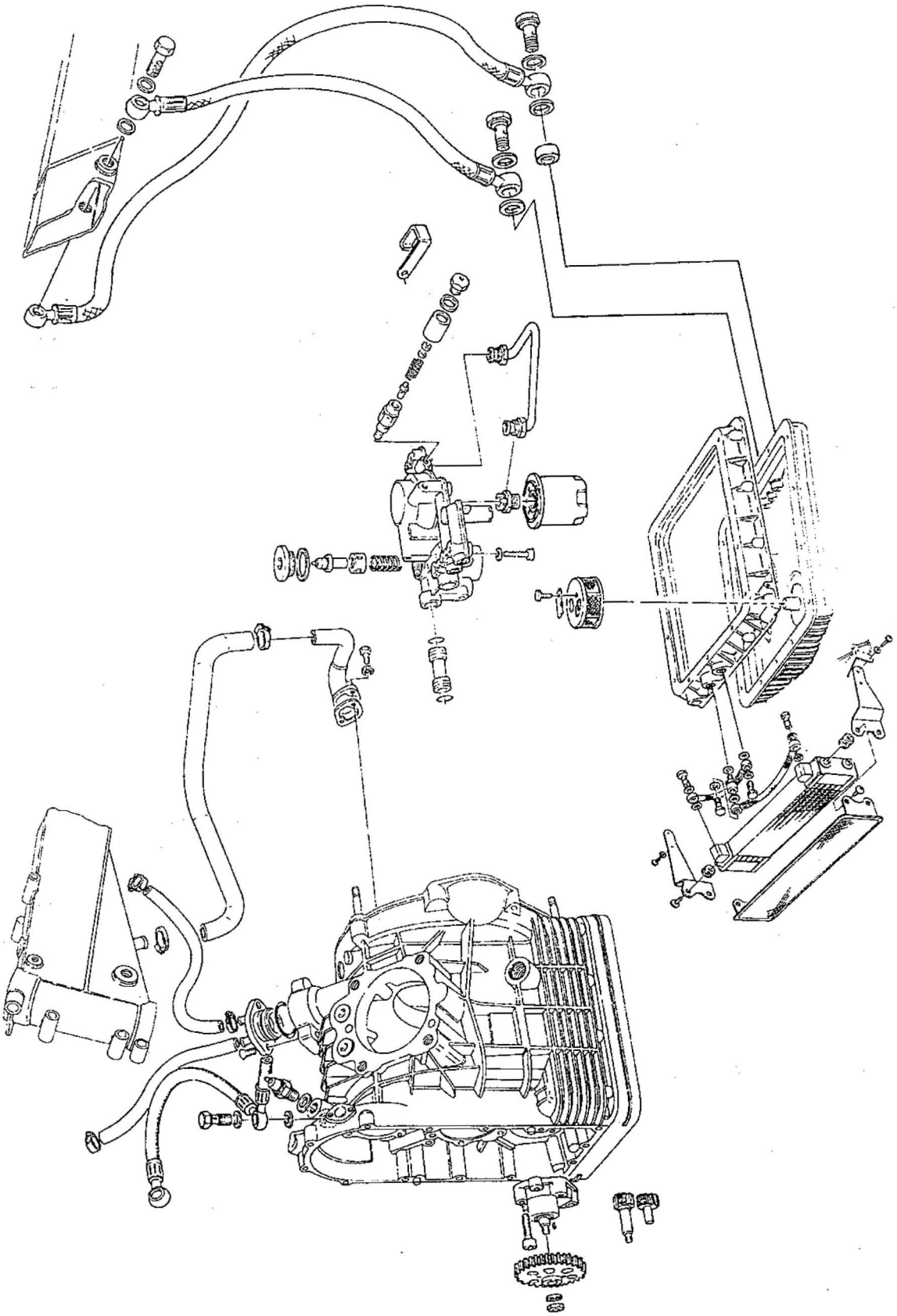
OIL PUMP





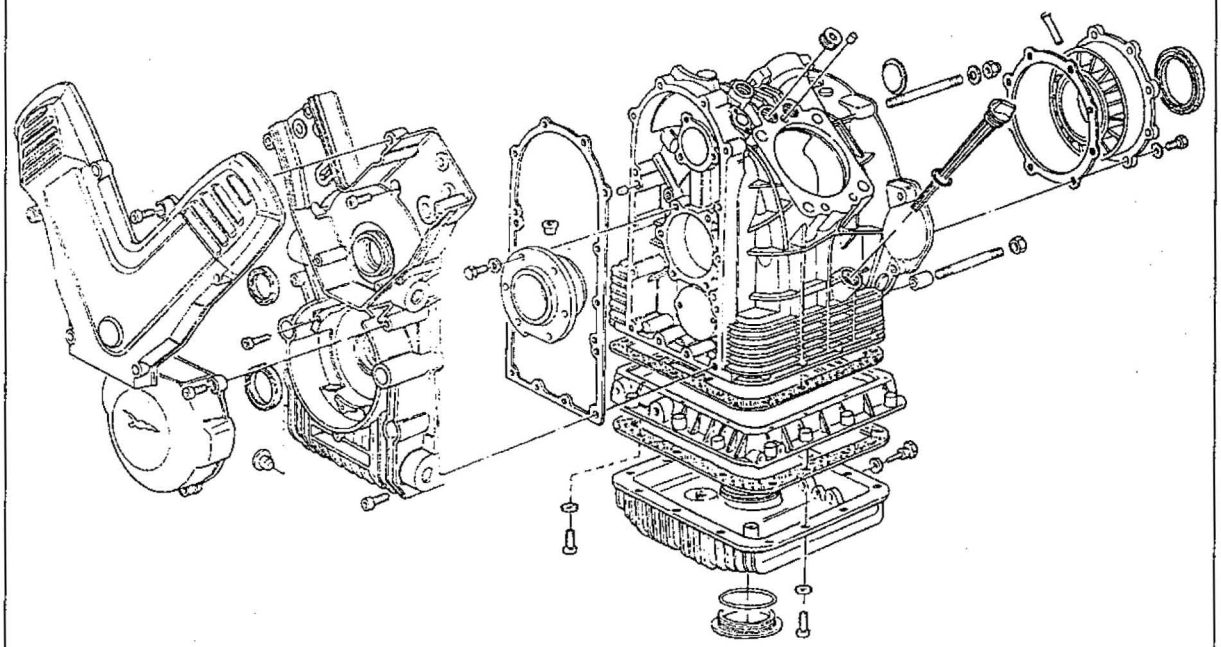




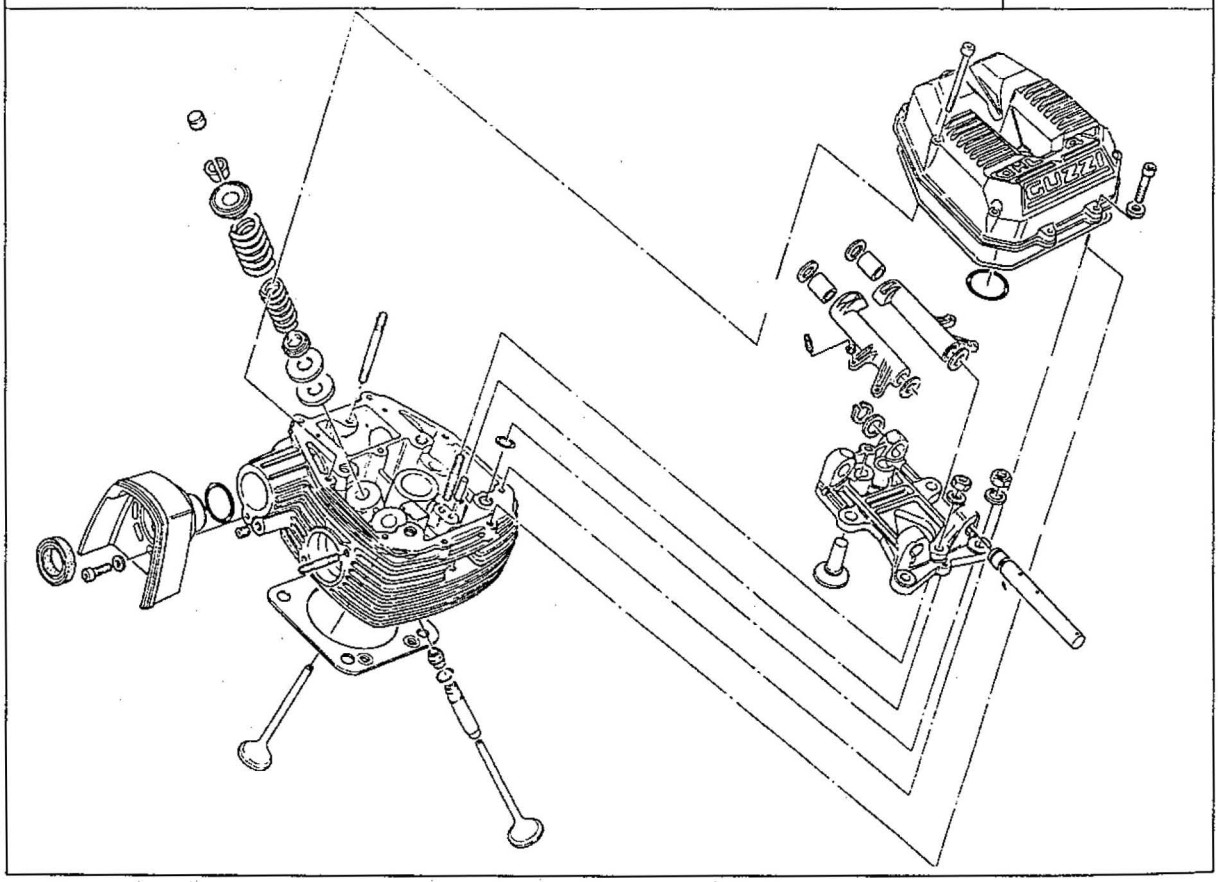


11-94

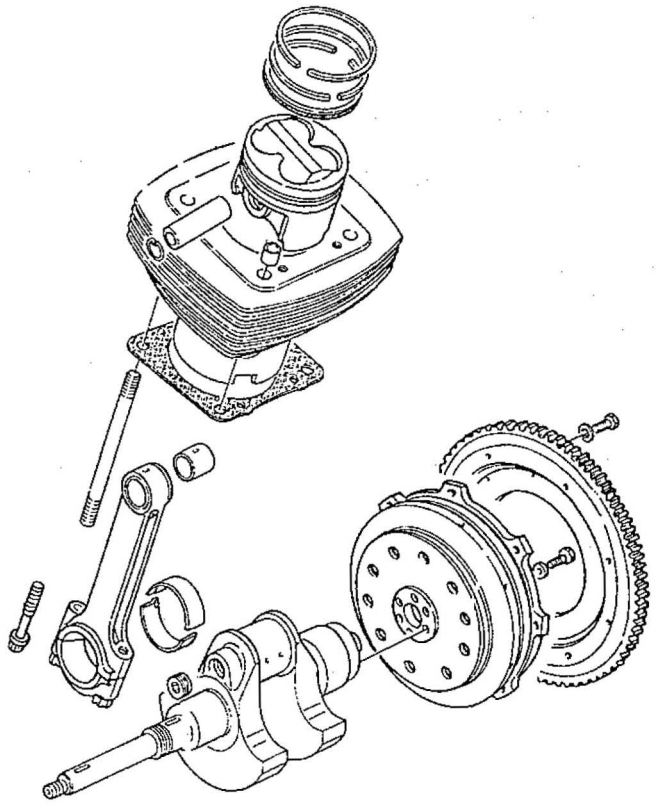
ENGINE BLOCK AND COVERS — Tav. 1



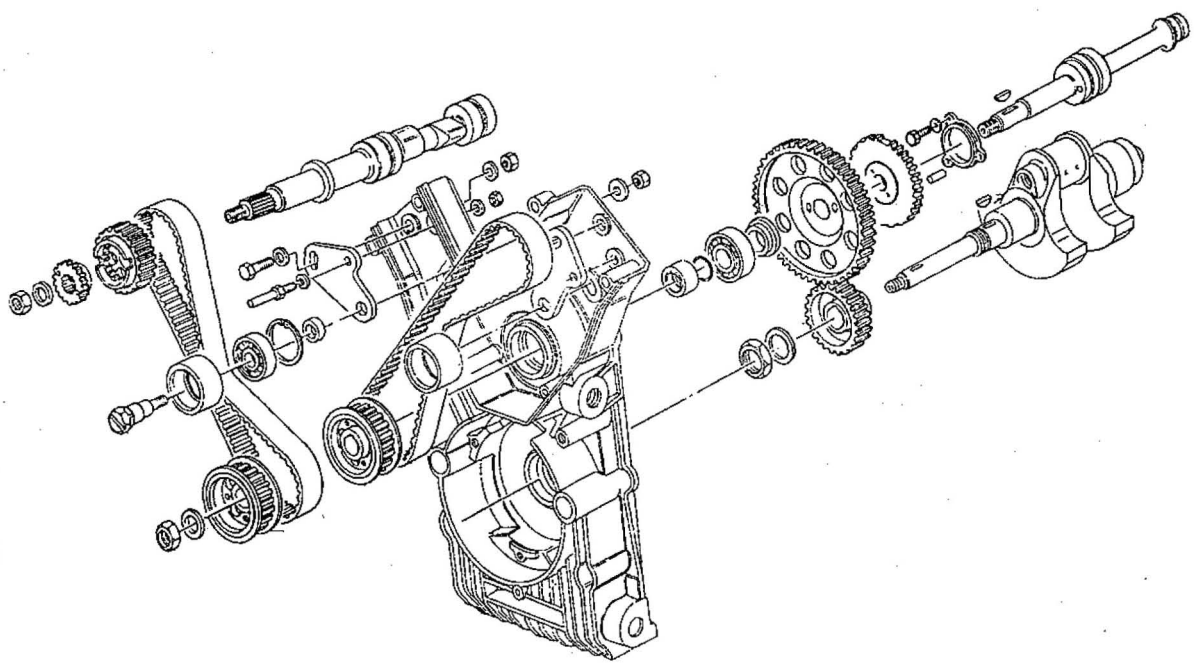
HEADS — Tav. 2



CYLINDERS AND CONNECTING RODS — Tav. 3



DISTRIBUTION — Tav. 4



12 WEBER INJECTION-IGNITION SYSTEM

In the Weber injection-ignition system type "alfa/N" the engine speed and the throttle position are used to measure the quantity of sucked air; when the quantity of air is known, measure the fuel quantity in relation with the desired strength. Other sensors in the system allow to adjust the main operation, on particular condition. Moreover, the engine speed and the throttle angle allow to calculate the optimal ignition advance on every operation condition.
The quantity of air sucked from each cylinder per cycle, depends on the air density in the suction manifold, on the single displacement and on the volume efficiency. The volume efficiency is experimentally calculated on the whole operation field of the motor (rpm and engine load) and is stored in the electronic unit. The control of the injectors, each cylinder, is "time-sequenced", i.e. the two injectors are controlled on the basis of the suction sequence, while the delivery can already begin, for each cylinder, from the expansion phase until the suction phase, already begun. The timing for the initial delivery is contained in the electronic unit.
The ignition type is an inductive spark by static electronic devices, whose control pattern is memorised on an EPROM in the central electronic control system.

12.1 SYSTEM COMPONENTS

Fuel circuit
Includes **fuel tank, fuel pump, filter, pressure control system, and electronic injections.**
The fuel is injected in the induction duct of each cylinder before the induction valve.

Intake Air Circuit
The circuit includes air filter induction duct and butterflied body .
The potentiometer which gives the butterflied position attached on the small shaft of the butterfly.
The absolute pressure transducer is on the filter box and is connected to it with a small tube. When the motorbike speed increases, the pressure transducer detects the air pressure increase in the filter box which is due to the increase of the air inflow from the air intake.
This pressure rise in the transducer into an electrical system, which modifies the injection timing of the mixture in, order to optimise the carburation.
The air temperature transducer is in front and inside the fairing in order to avoids the direct influence of the engine heat.

NOTE: For the model V10 CENTAURO the air temperature transducer is mounted on the right head lamp holder.

Electric circuit
Includes **the battery, the ignition distributor, to relays the electronic central system, the ignition group, absolute pressure transducer air temperature transducer, butterflied position transducer (potential meter). Two injectors, oil temperature transducer, phase and RPM transducer.**
The electric circuit gives to the electronic control unit all the information about the engine conditions and transmits the signals for the fuel injection and the variable advanced ignition control.

12.2 OPERATION PHASES

Normal operation
When the engine is in standard thermic conditions, the I.A.W. 16M unit calculates the phase, the injection time, the ignition advance, only by interpolation on the corresponding stored presettings, according to rpm and throttle position.
The resulting amount of fuel is delivered to the two cylinders with two subsequent injections.
The count of the initial delivery moment, for each cylinder, is made by means of a presetting that depends on the number of revolutions.

Starting phase
When the ignition switch is in operation, the I.A.W. 16M unit feeds the fuel pump for few time and detects the throttle angle and the temperature of the engine.
After starting the engine, the unit receives the revolution and phase signals, which allow it to control the injection and the ignition.
To make the starting phase easy, an enrichment of the main quantity, upon the oil temperature, is performed.
After the starting phase, the unit begins the check of the advance.

Acceleration operation

During acceleration, the system increases the delivered fuel quantity, in order to obtain the best way of guide. This condition is detected when the throttle angle variation reaches appreciable values, the enrichment factor is determined upon the oil and air temperatures.

WARNING!

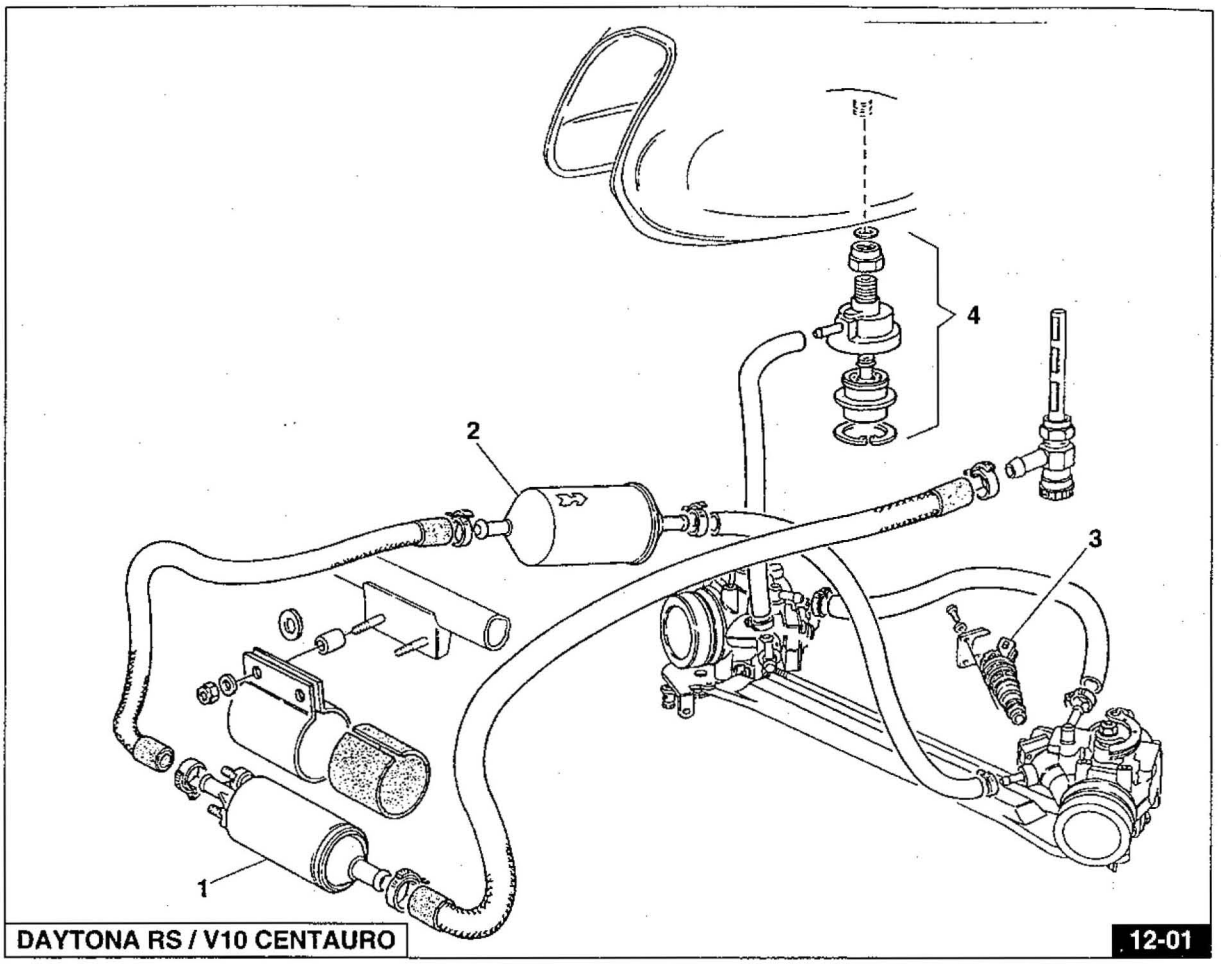
In order not to cause damages to the electronic ignition system, follow the precautions hereunder:

- **in case of battery removal or refitting, be sure that the ignition switch is in position OFF «»;**
- **do not disconnect the battery with engine on;**
- **be sure of the perfect efficiency of earth cables of electronic boxes;**
- **do not electric weld on the vehicle;**
- **Put the ignition key in the OFF «» position and wait at least ten seconds before disconnecting the electronic control unit.**
- **do not use other electric devices for starting;**
- **to avoid either malfunctioning or inefficiencies of the ignition system, the spark plug wire connections (spark plug cap) and the spark plugs must be of the recommended type (as original equipment);**
- **do not make any plug current check if the original spark plug cap are not fitted otherwise the electronic power box would be irreparably damaged;**
- **in case of assembling of antitheft devices or other electric devices, absolutly do not touch the electric ignition/injection system.**

In the electronic injection/ignition system is not possible to adjust the carburattor setting (air/gasoline ratio).

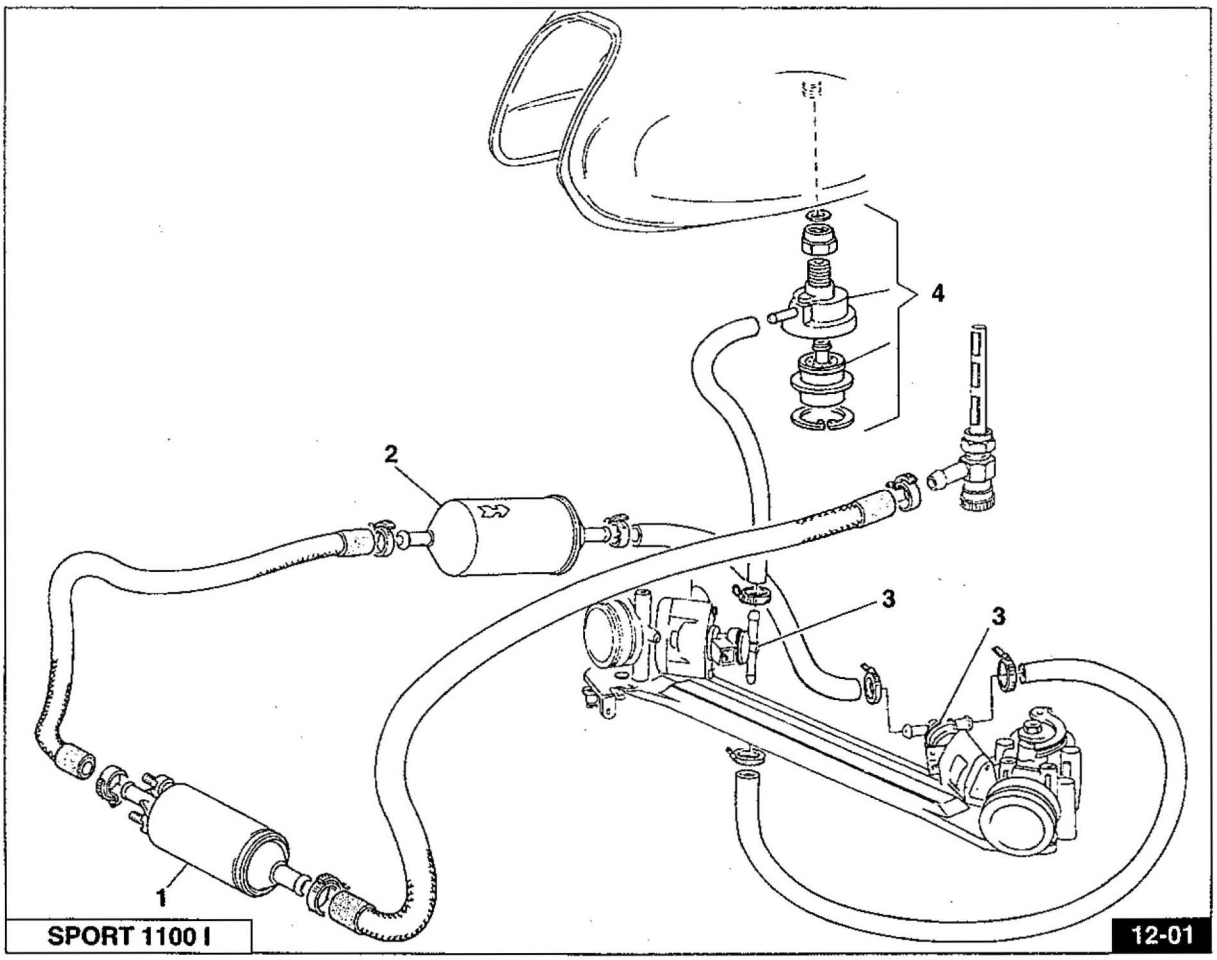
IMPORTANT

Do not adjust the mechanical and electronic components in the electronic injection/ignition system.



DAYTONA RS / V10 CENTAURO

12-01



SPORT 1100 I

12-01

12.3 FUEL CIRCUIT (Fig.12-01)

The electric pump "1" sends the tank fuel through a filter «2» to the electro-injectors «3».
The fuel pressure in the circuit is kept at a fixed level by the pressure control «4», which controls the amount of fuel flowing back to the tank.

Fuel electric pump «1»

The pump is a positive displacement roller type and the driving electric motor is fully immersed in the fuel.
The motor is a brushed type and excited with permanent magnets.
When the electric motor drives the rotor of the pump volumes of fuel are continuously displaced from the intake to the delivery output.
These volumes are the spaces between the rollers of the pump rotor that rotates along the external ring of the pump body.
The pump is equipped with a check valve to prevent emptying the fuel circuit when the pump is not working,
The same pump is also equipped with a pressure-limiting valve which puts in short circuit the input and the output of the pump when a pressure in excess of 5 bar occurs.
In that way it's possible to prevent the overheating of the pump electric motor.
The technical data of the system are: Flow rate 100 litres per hour at 3 bar; electrical voltage 12 volts; load current 4÷5Amps.

NOTE: It is highly recommended to clean accurately the whole parts in case of disassembling.

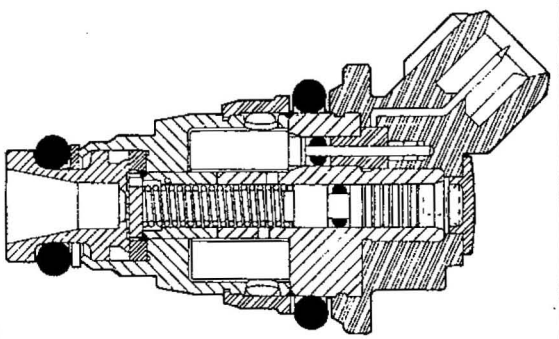
Fuel filter «2»

The filter has a paper-filtering element with a surface of 1200 sqcm, and the mesh size of 10 microns.
This element is absolutely necessary to prevent clogging in the injectors elements which are very sensitive to unwanted particles.
The filter is mounted between the fuel pump and the left throttle and an arrow is hobbed on the filter case that indicates the flow of the fuel.
The filter must be substituted every 10.000 Km.

Electro-injectors «3»

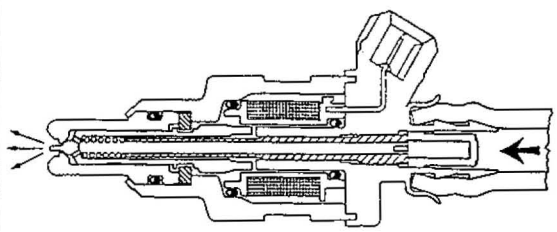
These devices control the fuel quantity injected into the engine.
The injectors are a bi-stable control elements that is they can only be in one of the two positions "open" or "closed".
The injectors are basically a needle valve where the needle is actuated by a small electro magnet attached to it.
The needle is kept in the "closed" position against the seat of the valve by a cylindrical compression spring whose load can be adjusted by a spring loader.
The solenoid of the magnet is embedded in the rear part of the injector body.
The seat of the needle valve and the needle guide are located in the front part of the injector.
The position of the needle is controlled by the impulses of the electronic control unit.
Each impulse creates a magnetic field in the solenoid that attracts the needle towards the "open" position.
The timing of the "open" position of the needle valve is given by the electronic control unit. This determines the fuel injection control in relation to the power demand of the engine.
The fuel, injected with a pressure of 3 ± 0.2 bar, nebulizes in a cone of about 30°.
The Ohmic resistance of the solenoid is 12 Ohms.
To check the injector electrically, apply a voltage not exceeding 6 Volts, for very short periods.

INJECTOR IW724



DAYTONA RS / V10 CENTAURO 12-02

INJECTOR IW031

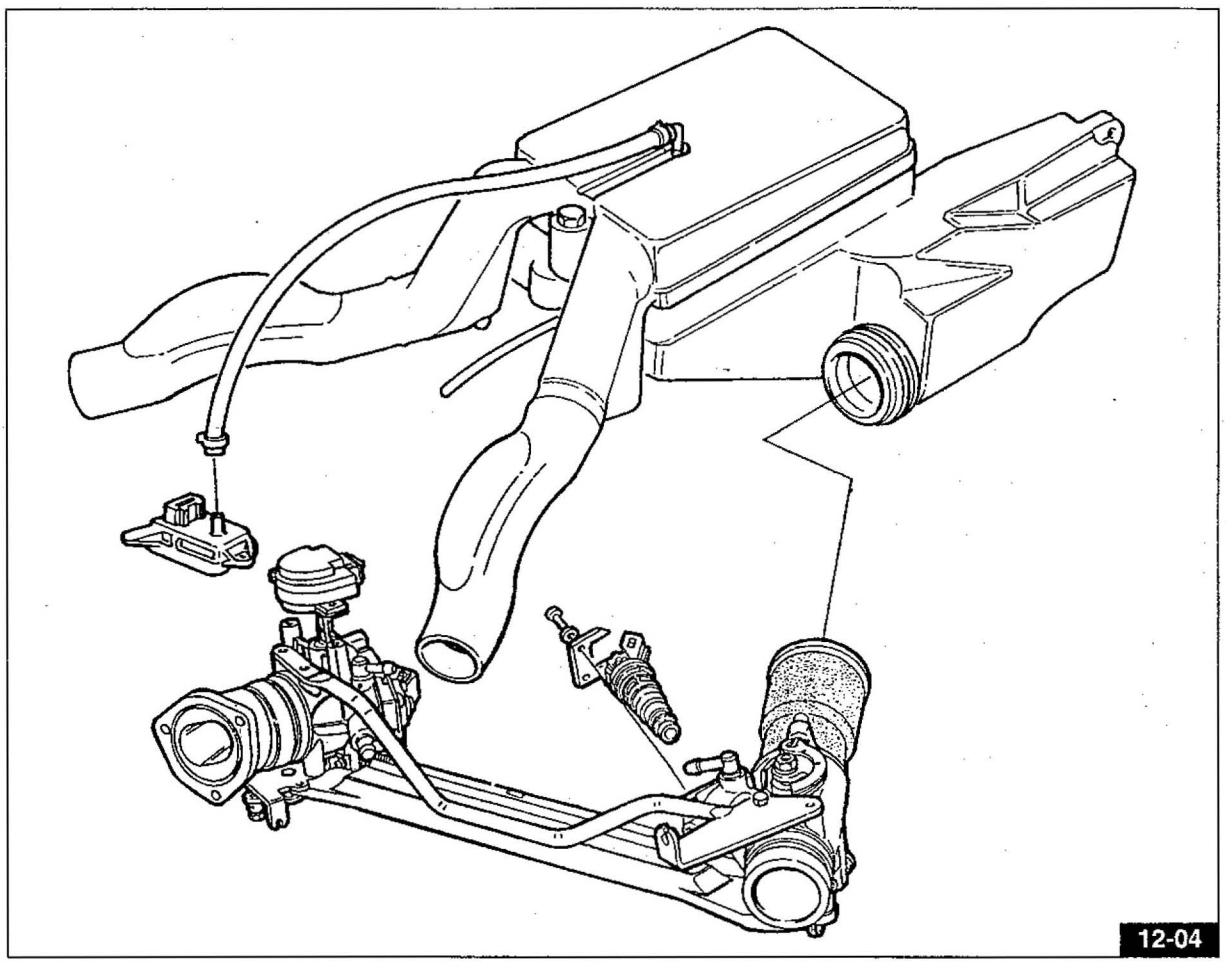


SPORT 1100 I 12-03

Pressure Regulator «4»
The pressure regulator is needed in order to maintain a constant pressure difference on the injectors.
The pressure regulator is a membrane differential type that is set to 3 ± 0.2 bar during the assembling.
If the fuel pressure exceeds the setting an internal duct is opened and the fuel in excess re flows toward the tank.
Remember that in order to have a constant pressure difference on the injectors, the pressure difference between the fuel pressure and the intake pressure must be constant.

12.4 AIR CIRCUIT (Fig. 12-04)

The air circuit includes: the throttle body and the air filter system.
Air intake and throttle body.
The throttle opening controls the quantity of induction air on each cylinder.
The air induction for the minimum r.p.m. goes through a by-pass channel which is trimmed by a screw. Turning the screw its possible to control the minimum air intake and therefore the minimum r.p.m.
A second screw controls the right closure position of the throttle in order to avoid possible friction blockage with the body walls. This screw must not used to set the minimum r.p.m.

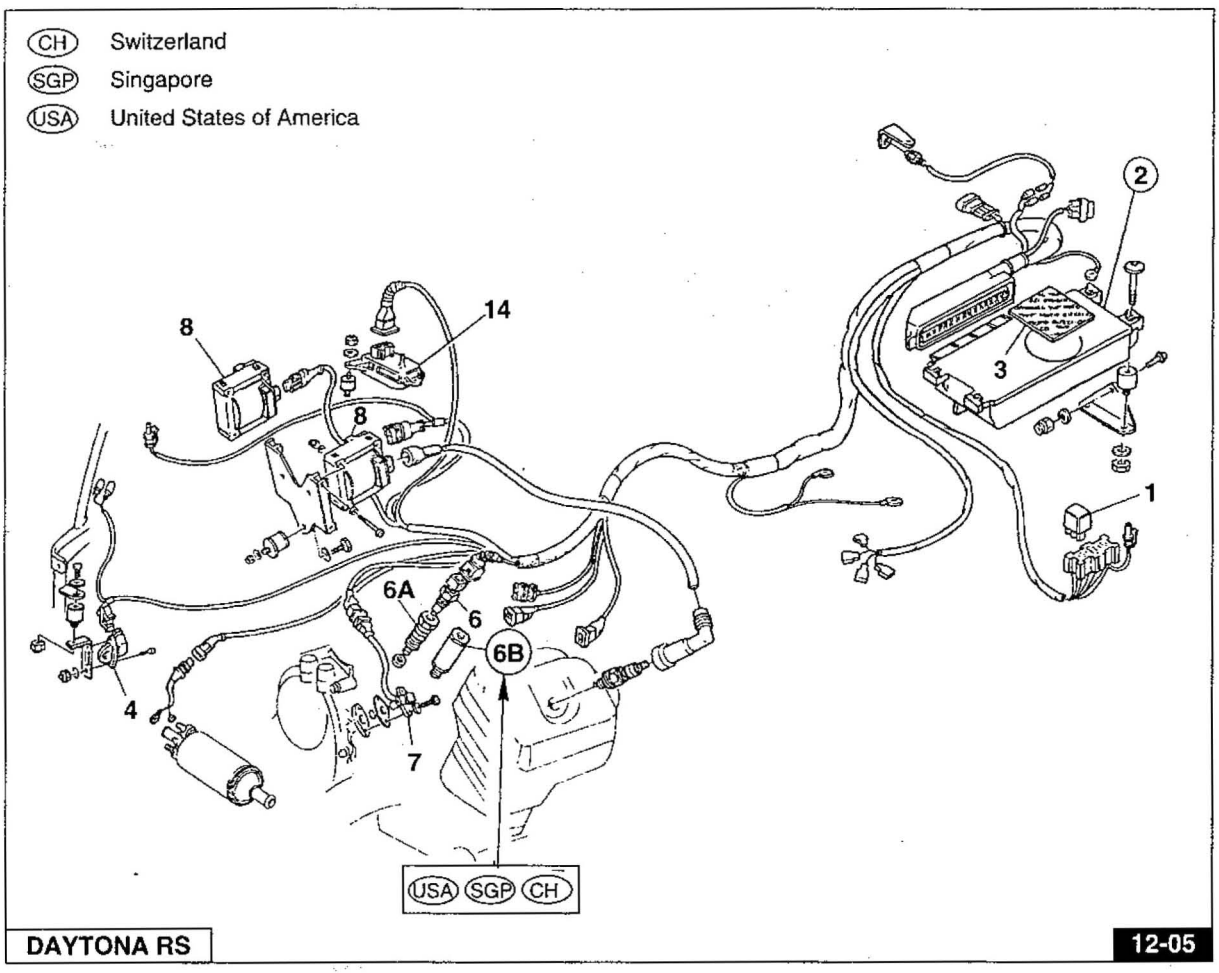

12-04

12.5 ELECTRIC CIRCUIT (Fig. 12-05)

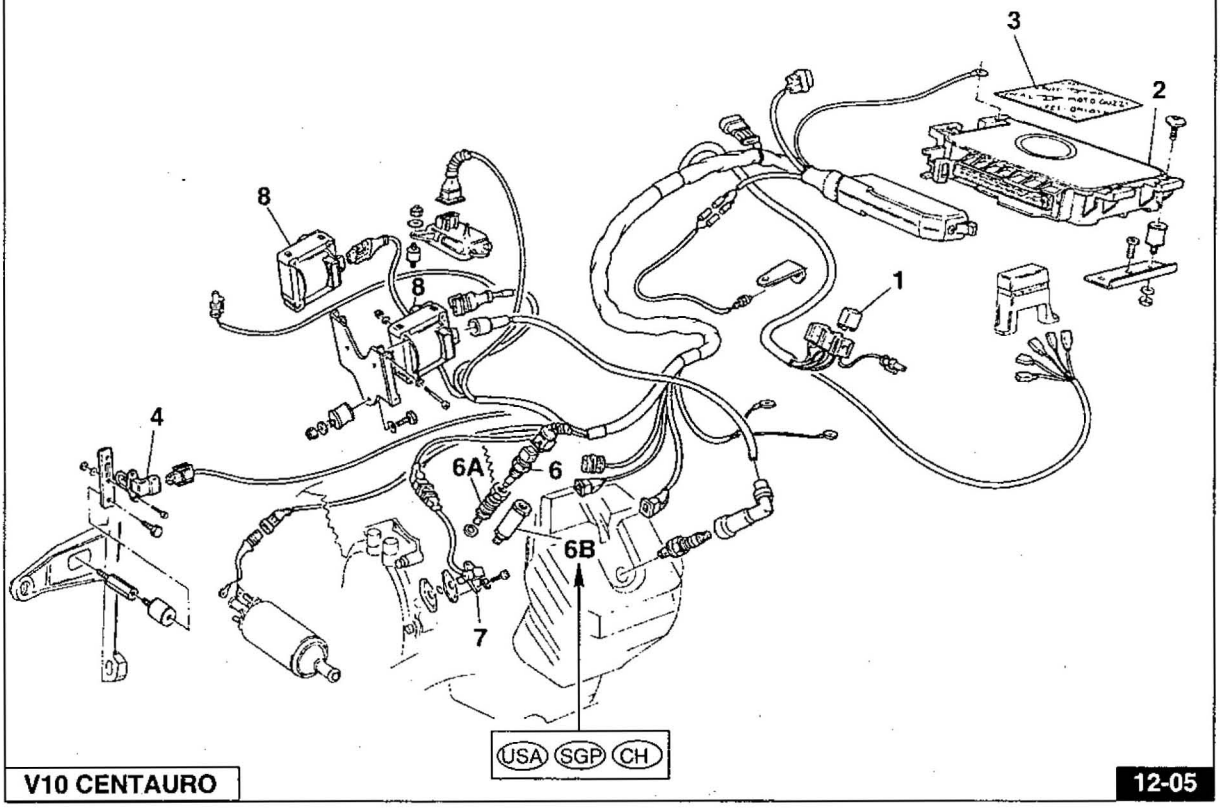
Relay «1»

In the injection-ignition Weber system, two normal motorcar type relays are used.
The ground connection of the relay solenoid, is in the electronic control unit with an inverse polarity protection.
The two relays performs the following controls:

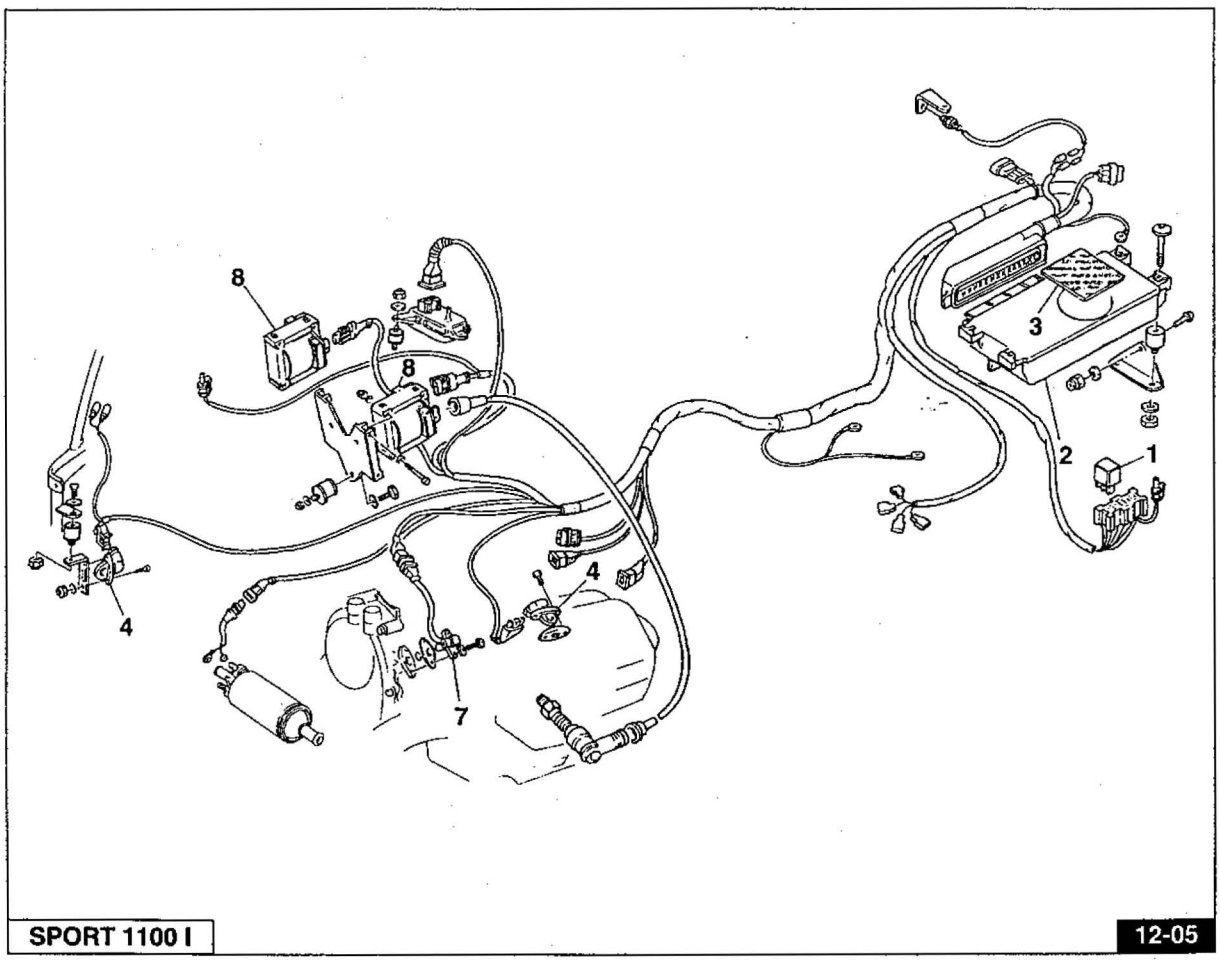
- Fuel pump and injection solenoids controls
- Electronic control unit.



(CH) Switzerland
(SGP) Singapore
(USA) United States of America



V10 CENTAURO 12-05



SPORT 1100 I 12-05

ELECTRONIC CONTROL UNIT TYPE I.A.W.16M «2» - Fig.12-05

The electronic controller of injection-ignition Weber system is based on a microprocessor that optimises the following parameters:

- optimum fuel quantity for each cylinder in the right sequence (1-2) in the same feeding duct.
- right injection phase in relation with the induction of each cylinder.
- proper ignition advance which is calculated with an algorithm based an the following parameters:
  - absolute pressure
  - temperature of the air induction
  - oil temperature (for the SPORT 1100 I) or engine temperature (for the DAYTONA RS and V10 CENTAURO)
  - R.P.M. and phase of the engine
  - battery voltage
  - throttle position.

Security adhesive «3» -Fig. 12-05

Absolute pressure transducer «4» -Fig. 12-05

This transducer is powered by the electronic control centre and gives information about the absolute pressure in the air filter box.

This transducer is connected to the filter box through a small pipe. Its output signal will produce a correction signal as function of the barometrical pressure.

Air temperature transducer «5» - Fig. 12-05 / Fig.12-06

This transducer gives an electrical signal which is a function of the air temperature.

This signal is fed into the electronic control centre and will produce the correction factor as a function of the air temperature. The transducer consist of a NTC thermistor with a plastic capsule.

In order to avoid damages to the transducer it must be mounted with the right wrench setting torque.

Oil temperature transducer «5A» - Fig. 12-05 / Fig. 12-06 (Only for SPORT model 1100 I)

This transducer gives an electrical signal which is a function of the oil temperature.

This signal is fed into the electronic control centre and will produce the correction factor as a function of the oil temperature. The transducer consist of a NTC thermistor with a plastic capsule.

In order to avoid damages to the transducer it must be mounted with the right wrench setting torque.

Engine temperature transducer «6» - Fig.12-05 / 12-06 (only for V10 CENTAURO and DAYTONA RS)

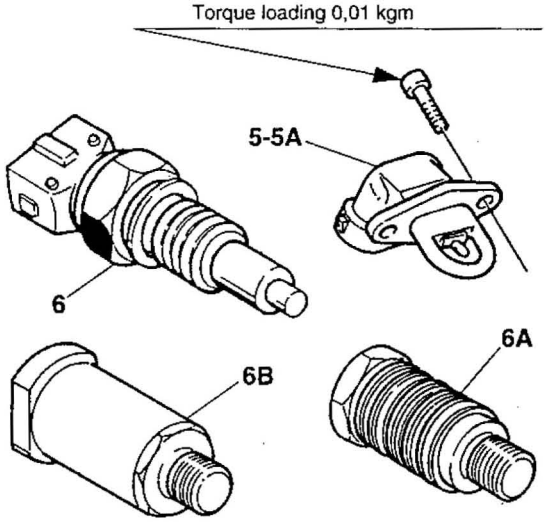
This transducer gives an electrical signal which is a function of the engine temperature. This signal is fed into the electronic control centre and will produce the correction factor for the mixture strength as a function of the engine temperature.

The transducer consist of a NTC thermistor can be contained in a brass threaded capsule **«6A»** or in a plastic one **«6B» - Fig.12-05** and **Fig. 12-06.**

In order to avoid damages to the transducer it must be mounted and blocked with a moderate torque.

The sealing washer at each disassembly.

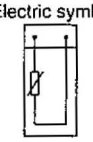
NOTE: NTC means that the thermistor resistance decreases with the temperature increase.



6A - Validity ends 31/12/97 with the exception of the models with specifications for USA SWITZERLAND and SINGAPORE.

6B - Code 02163300 validity ends 31/12/97 with the exception of the models with specifications for USA SWITZERLAND and SINGAPORE.
For the model V10 CENTAURO starting from chassis N° KK112565 is valid for all the versions.

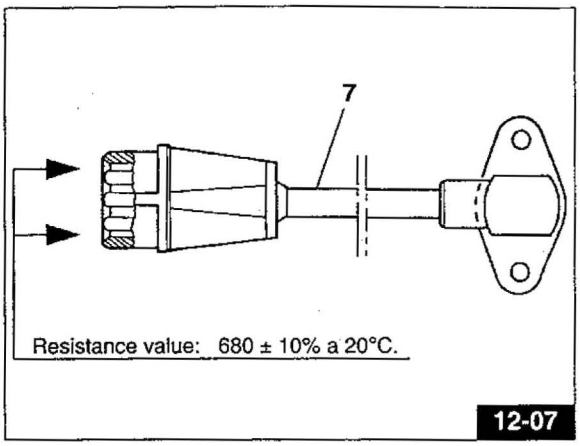
Electric symbol



Theoretical data

Temp. °C	Resistance Kohm
-40	100,950
-30	53,100
-20	29,121
-10	16,599
0	9,750
+10	5,970
+20	3,747
+25	3,000
+30	2,417
+40	1,598
+50	1,080
+60	0,746
+70	0,526
+80	0,377
+90	0,275
+100	0,204
+110	0,153
+ 125	0,102

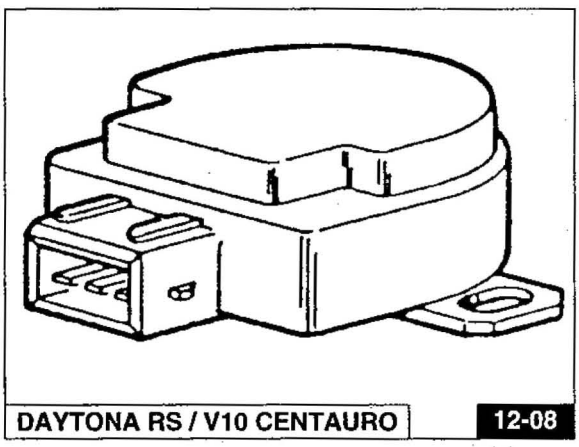
12-06

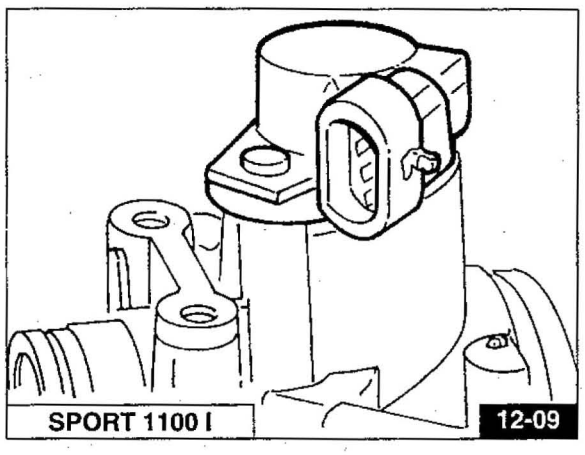


R.P.M (Runs Per Minute) and T.D.C (Top Dead Centre) transducer «7» - Fig. 12-05 and 12-07
The transducer gets the signal from a phonic wheel mounted on the cam-shaft (for SPORT 1100 I) or on the service-shaft (DAYTONA RS and V10 CENTAURO).
The signal frequency gives the R.P.M. and the position of the cam-shaft (for SPORT 1100 I) or the cam-shafts (for DAYTONA RS and V10 CENTAURO), this gives the position of the cylinders referred to the T.D.C.(Top Dead Centre) explosion point.

Solenoids «8» - Fig. 12-05
The ignition is an induction static type.
The ignition signal comes from the electronic control centre with an appropriate spark advance.

Throttle position transducer (Fig. 12-08/12-09)
This transducer is a potentiometer is fed by the electronic control unit which receives the feedback of the throttle position.
This information is used to adjust the basic mixture, the jumps in power demand and phase adjustments at the start.



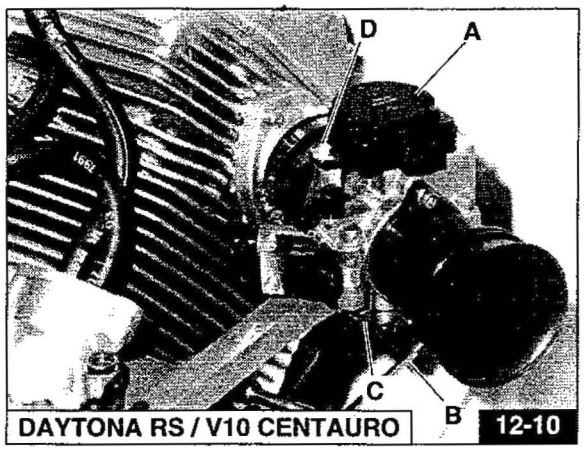


12.6 CALIBRATION RULES FOR CARBURATION AND REGULATION OF THE ENGINE

IMPORTANT

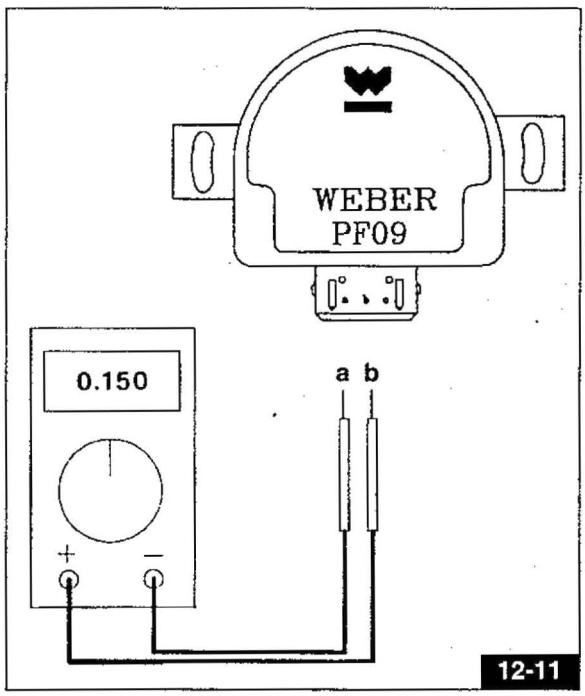
Check carefully that there is no leakage from the exhaust pipe and from the induction pipe coupling.

1) Check that the choke command is OFF.
   If the potentiometer «**A**» - **Fig.12-10** (transducer of the throttle position) has been substituted, disassembled or misadjusted, as a first step adjust the potentiometer position as follows:
2) Disconnect the connecting rod «**B**» - **Fig. 12-12** between the bodies

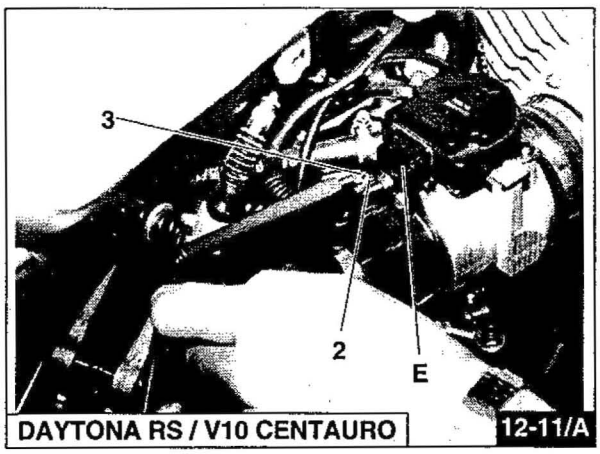


DAYTONA RS / V10 CENTAURO 12-10

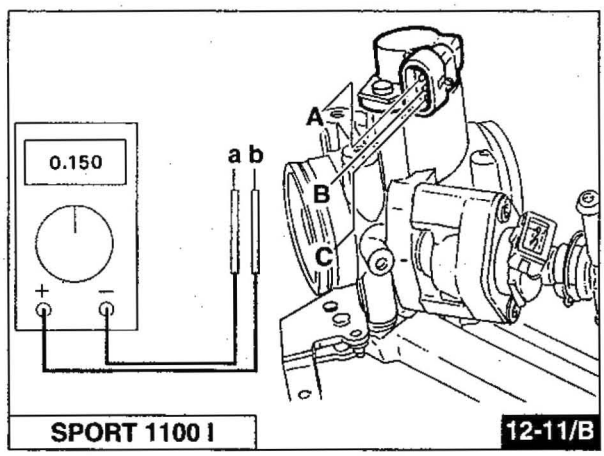
3) With the plug «**E**» - **Fig. 12-11/A** connected and the ignition switch in the "**ON**" «🔑» position, check with an electronic tester that the throttle potentiometer with the butterfly closed, gives a voltage signal of 150mV ± 15mV .
   This measurement has to be done between the leads «**a**» and «**b**» - **Fig.12-11** of the potentiometer (or pins «**3**» and «**2**» of the plug **Fig. 12-11/A** for DAYTONA RS and V10 CENTAURO models, or pins «**A**» and «**B**» of the plug **Fig. 12-11/B** for SPORT 1100 I model).
   To adjust the potentiometer position:
   -If the throttle body has only one stop screw on the left side, the disconnection of the connecting rod is sufficient .
   -If the throttle body has the stop screws on both sides is necessary to unscrew the adjustment screw «**C**» - **Fig. 12-10** of the right throttle body.
   In case the potentiometer does not give the right signal equal to 150mV ± 15mV, the two fixing screws «**D**» - **Fig.12-10** of the potentiometer must be loosen and it must be correctly repositioned.



12-11

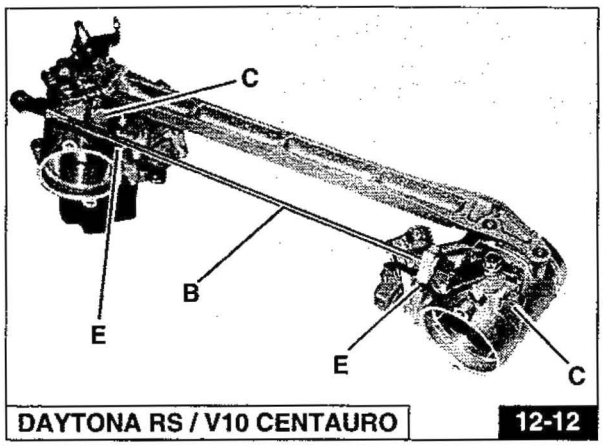


DAYTONA RS / V10 CENTAURO 12-11/A

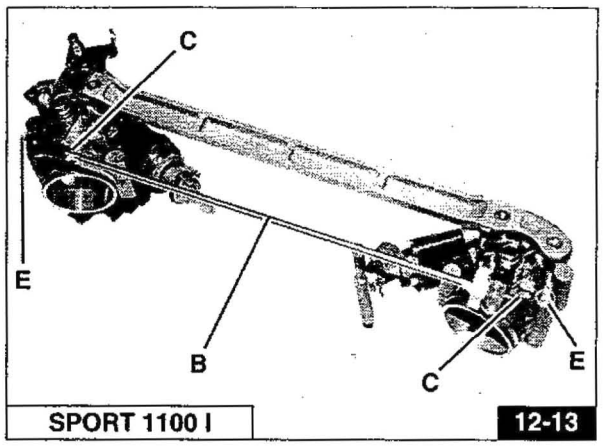


SPORT 1100 I 12-11/B

4) Reconnect the connecting rod between the two throttle bodies.
5) Adjust the throttle bodies with the adjusting screw «**C**» - **Fig. 12-12** and **Fig. 12-13** of the left body until a voltage reading of 378mV ±10mV on the potentiometer is shown.
6) If a right throttle body is present, adjust the screw «**C**» until it touches the butterfly **Fig. 12-12** and **Fig.12-13**.
7) Rise the oil temperature to 100 °C ± 10°C.
8) Open by one turn the by-pass screws «**E**» - **Fig.12-12** and **Fig.12-13** of both throttle bodies.



DAYTONA RS / V10 CENTAURO 12-12



SPORT 1100 I 12-13

9) Check with a gas analyser that the CO content of the exhaust gas is between 1% and 2%.
10) Connect a vacuometer to the taps of the induction manifolds.
11) Adjust the balance of the two cylinders by the synchronising screws of the throttle bodies.
12) Check that increasing the RPM the depression balance between the cylinders is maintained.
13) Check that at the minimum the RPM is equal to 1200 ± 50 RPM.
14) Use the adjusting trimmer on the electronic control unit so that the CO content of the exhausts corresponds to the values in the table above.

IMPORTANT
The maximum difference of the values must be about 3% for the CO value and about 7 mbar for the depression.

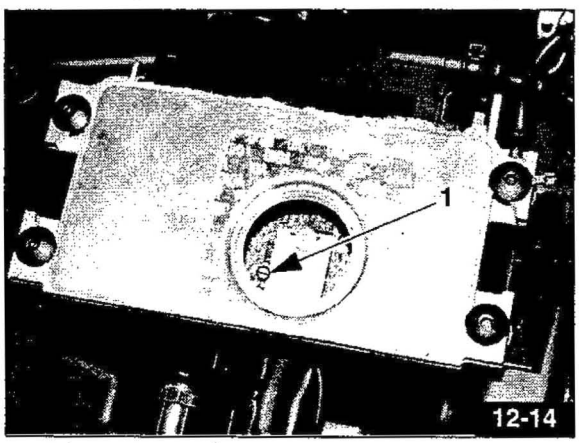
12.7 TRIMMER OPERATION ON THE ELECTRONIC CONTROL UNIT TYPE IAW 16M («1» - Fig. 12-14) FOR CO REGULATION.

The trimmer for the CO adjustment is located on the electronic circuit board of the I.A.W. 16M control unit and can be accessible by removing the rubber cap under the sticky label.
To rotate the trimmer a 2mm plastic screw drive is necessary.

WARNING
The use of metal tools on the electronic control unit board can seriously damage the circuits.

The trimmer rotation span is 270° therefore rotating the trimmer clock wise 135° from the centre position, the maximum **"lean mixture"** is obtained; and by turning the trimmer 135°anticlock wise the maximum **"rich mixture"** is obtained.

WARNING
The rubber cap is not water proof therefore the of the sealing MOTO GUZZI adhesive is compulsory each time the cap is removed.



12-14

NOTE: The original adhesive has a red brand name Moto Guzzi.
The Moto Guzzi spare part (code 01732001) is available and has a green brand name.

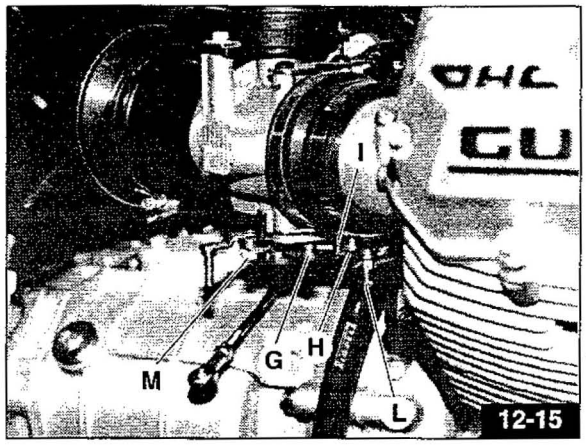
The CO regulation trimmer is operating at the **minimum RPM only** and its influence is measurable up to 3000 RPM.
Therefore if an adjustment has to be done in presence of major modifications to the exhaust system of the engine, the EPROM the electronic control unit has to be replaced in order to keep the CO values in the specified range.

12.8 STARTER LEVER ADJUSTMENT (Fig.12-15)

In order to avoid errors in the starter lever adjustment, check that while the lever "CHOKE" in the start position is off, the starter adjustment control does not induce the partial opening of the gas valve; in fact there should be a certain clearance (0.2 ÷ 0.3mm) between the roller «**G**» and the lever «**H**».

To restore if necessary the above gap proceed as follows:

1) In case the «**H**» lever is not at the end of the excursion against the stop limit «**I**», loosen the «**L**» screw releasing the command cable and push the lever «**H**» against the stop limit «**I**» then block again the «**L**» screw.
2) Loosen the «**M**» screw to obtain the clearance between the rollers «**G**» and the lever «**H**».



12.9 ADJUSTMENT OF THE STARTER RPM (Fig. 12-15)

To be certain that the minimum speed regulator is correct with the following steps:
After the warm up of the engine put the starter lever to the maximum position and check that the speed is about 4000 R.P.M; to adjust this value release the command cable loosening «**L**» screw.
When the starter is completely excluded the small stud «**G**» must not come in to contact with the «**H**» lever.

12.10 INDUCTION SYSTEM CONTROL

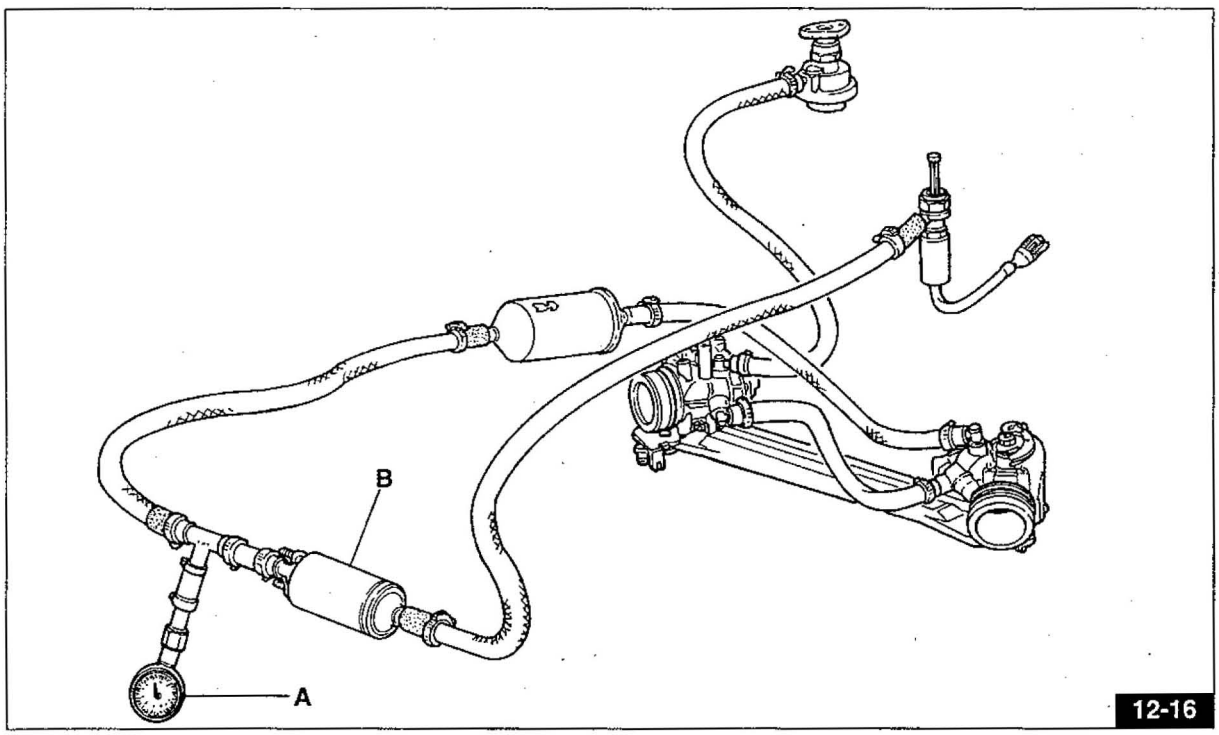
Prepare the vehicle as described as following:

- Disassemble the fitting of the output fuel tube from the pump and insert the manometer gauge «**A**» - **Fig. 12-16** for the circuit pressure control.
- Insert the ignition key without starting the motor (in this way you excite the fuel pump «**B**» - **Fig.12-16** for about 5" seconds).

IMPORTANT

While the pump rotates the pressure must be 3 ± 0.2 bar.

When the pump stops, the pressure decreases and remains stable at a value lower than 2.5bar.



The value pressure must remain the same for several minutes.

- If the pressure should lower in a short time proceed as follows:

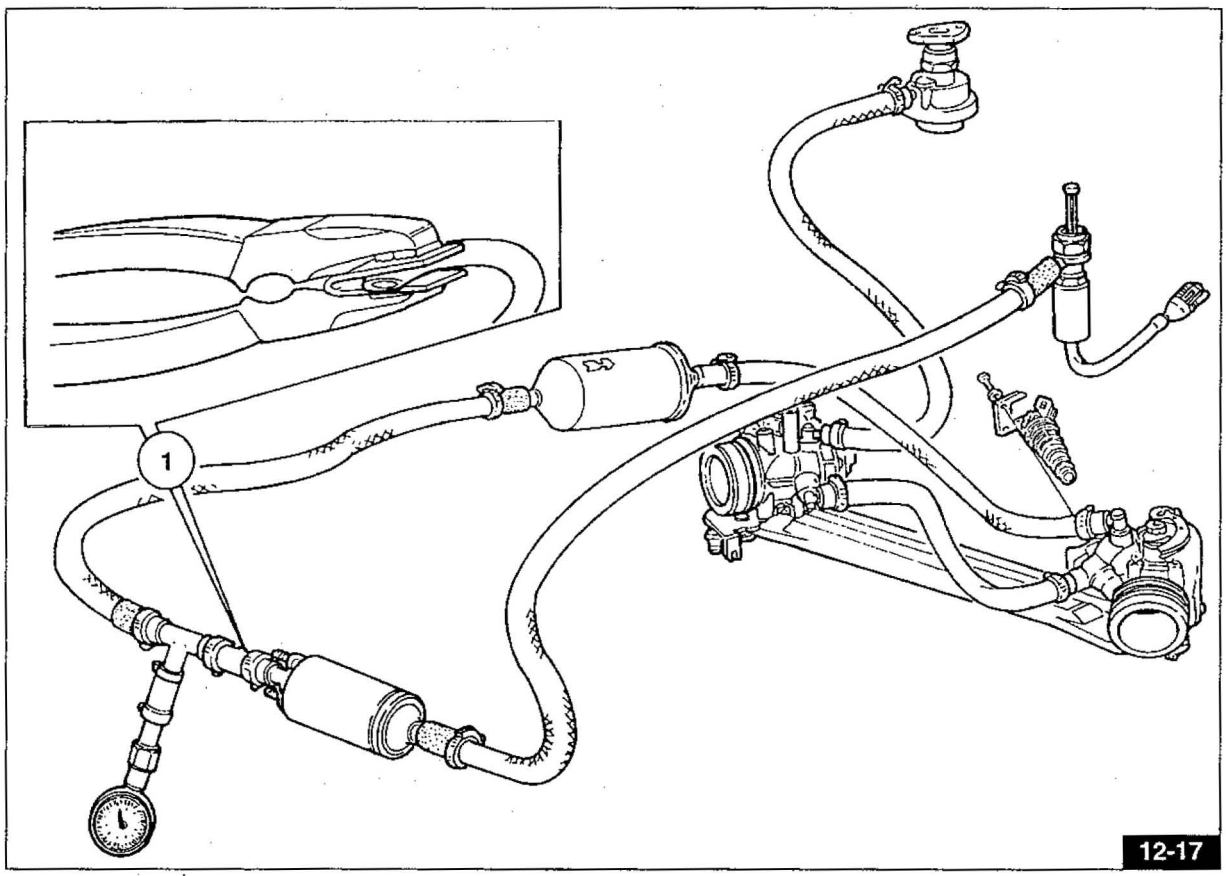
- Insert the ignition key and while the pumps is running close the tubes in the position «**1**» using the tripping pliers with two pieces of steel foil in order to avoid damages to the tube **Fig. 12-17**.
  The pressure reading of the manometer **«A» - Fig. 12-17** must be stable in the range of 3 ± 0.2bar.
  If the pressure lowers this is due to the not perfect sealing of the non return valve of the fuel pump **«B» - Fig. 12-17**.
  If the circuit pressure should continue to decrease the cause might be due to the pressure regulator or in an injector which does not close perfectly.

- If the pressure reading of the manometer is lower than 3 ± 0.2bar or reaches 3 ± 0.2 bar very slowly that can be caused by a blockage between the pump and the fuel filter or from some obstruction in the induction to the pump.

WARNING

The filter must be changed every 10.000 Km.

While installing the feeding circuit be very careful that no dirt or dust enters the conduits, because this could damage the components.



12-17

12.11 USE OF THE CHECK LAMP FOR THE DEFECTS DETECTION

The "CHECK LAMP" is a simple tester that allows the show if there is any fault that is detected by the electronic control unit I.A.W. during the motor operation.
The signalling of the faults is coded by a series of light pulses of the check lamp.
The decoding and the explanation of these pulses together with further information on how to operate will be described further on in this manual.
The electronic control unit I.A.W. equipped with this fault detection system are usually called "Electronic control unit with self diagnosis".
This is because the system is able to detect the type of faults, and memorise them even if the faults are no longer there. The "CHECK LAMP" tester system will allow the operator to retrieve this information.
Therefore the "CHECK LAMP" more than a tester, can be considered as a real automatic **"diagnosis system"**.

It is in fact the most simplest part which is visible but the heart of the system is the program (software) of the electronic control unit that detects either incoming or out going errors.

It memorises the errors and is able to display them even though they are no longer present but have occurred during the motor functioning (intermittent faults).
Which means that turning the key in the **OFF** «» position the electronic control unit does not "resets".

Having removed the faults it is necessary to reset the electronic control unit with a precise procedure (See.parag.12-14); this will prepare the electronic control unit for detection of subsequent faults.
In case the reset procedure is not done, after starting the motor 30 (thirty) times for the duration of about 1 (one) minute, the electronic control unit will automatically "reset".

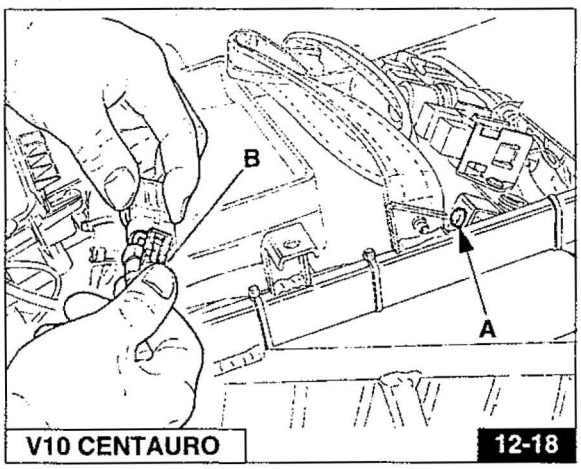
"Check lamp" Codes: The signalling consists of series of flashes and intervals of different lengths.
Every error code is represented by two number figures, every number is identified by an equivalent number of flashes. When there is a longer pause between the flashes, it means that this is the space between one number and the following number; the start and finish of the code is indicated by a series of continuous flashing.

IMPORTANT
The check lamp transmits one code at a time. Therefore it is necessary to note not only the first code transmitted, but all the subsequent different codes until the sequence is repeated.

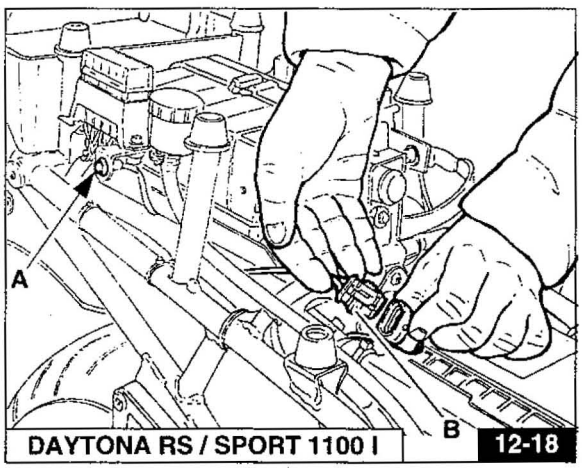
- **"CHECK LAMP" connection and operation «A» - Fig.12-18**

To reach the "CHECK LAMP" in the V10 CENTAURO model, de disassembly of the saddle is necessary as described in Par. 9.1 while in the DAYTONA RS and SPORT 1100 I models is necessary to disassemble the passenger and pilot saddle and also the tail following the procedure of Par. 9.2
The "CHECK LAMP" must be connected with the ignition key in the **ON** «» position with the engine off.

Auto diagnosis Plug connection
- Remove the cap from the socket
- Insert the plug of the motor into the socket **«B» - Fig.12-18**



V10 CENTAURO 12-18



DAYTONA RS / SPORT 1100 I 12-18

Error absence (or not detectable through the auto diagnosis).

With the key in the Pos. **ON** «⚷» the CHECK LAMP remains off .

NOTE: It is possible that the problem is in the memory of the electronic control unit but could be impossible to see it on the CHECK LAMP.

Possible Causes

CHECK LAMP wrongly connected or there is a fault in the auto diagnosis cables.
The CHECK LAMP does not work.

CHECK LAMP control

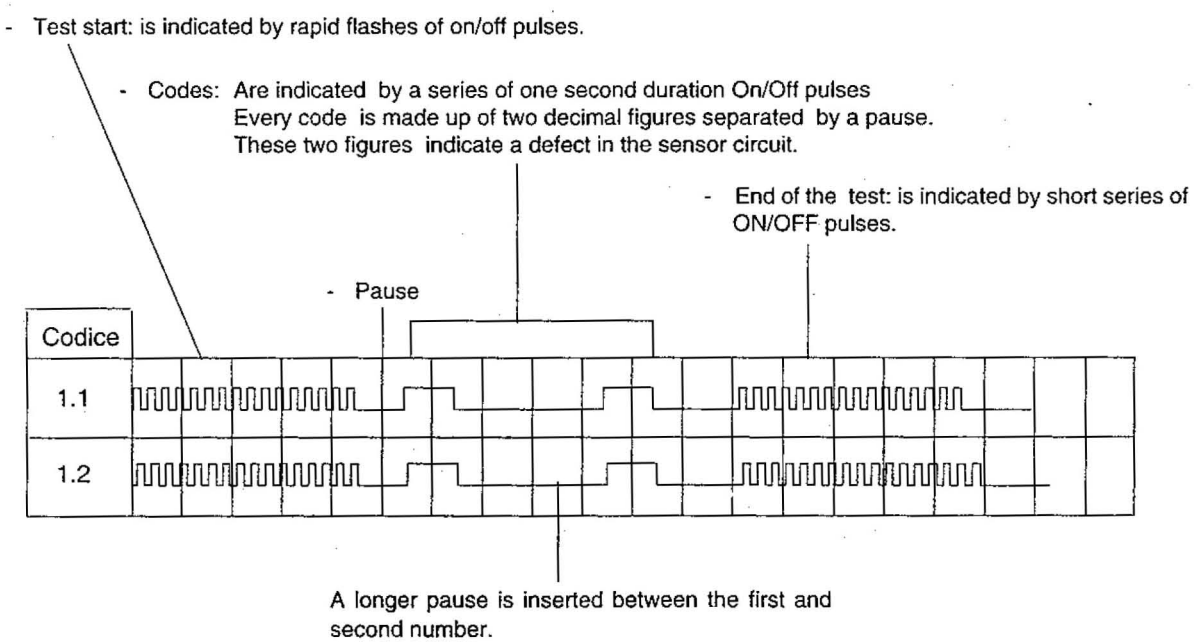
Control the CHECK LAMP (with the key inserted in the control board) through the following steps:

- Cause an intentional failure , unscrewing a sensor.
- If this failure is detected it means that the CHECK LAMP works, but the electronic control unit did not memorise any previous fault. Therefore it is possible that a failure is present somewhere in the circuit and is not detectable with the auto diagnosis system.

In case the CHECK LAMP does not detect the failure, control its connections and if necessary substitute it.

Failure presence

With the key in the **ON** «⚷» position the CHECK LAMP does a series of flashing followed by a pause then the code flashes that transmit every twenty seconds the error code.
The indicate the start and finish of the error code.



IMPORTANT

On the IAW system 16M the phase sensor and RPM is not controlled by the electronic control unit, that means that if there is an error it should be detected by progressive exclusion of the possible causes.

If the check of output signals (IAW 16M control system) are necessary then the motor must rotate (the action of the starting electric motor is sufficient).

How to interpret the codes of the CHECK LAMP:

ERROR CODE 1.1
The signal of the throttle potentiometer is incorrect.
The problem can be:
- That the potentiometer does not function correctly.
- Cabling harness/connection is damaged or is not correct.

ERROR CODE 1.2
Incorrect Signal from absolute pressure transducer
The problem can be:
- That the pressure transducer does not function correctly.
- Cabling harness/connection is damaged or is not correct.

ERROR CODE 1.4
Incorrect signal of oil temperature
The problem can be:
- That the temperature transducer (interrupted or in short circuit).
- Cabling harness/connection (interrupted or in short circuit).

ERROR CODE 1.5
Incorrect signal of air temperature
The problem can be:
- That the air temperature transducer (interrupted or in short circuit).
- Cabling harness/connection (interrupted or in short circuit).

ERROR CODE 1.6
Wrong Battery voltage
- A signal is sent when the output voltage of the battery is less than 8V or greater than 16 V.

ERROR CODE 2.3
Error on the injector 1
The problem can be:
- Cabling harness/connection damaged or not correct.

ERROR CODE 2.4
Fault on solenoid 1
The problem can be:
- Primary coil damaged.
- Cabling harness/connection damaged or not correct.

ERROR CODE 2.5
Fault on solenoid 2
The problem can be:
- Primary coil damaged.
- Cabling harness/connection damaged or not correct.

ERROR CODE 3.2
Error on the injector 2
The problem can be:
- Cabling harness/connection damaged or not correct.

ERROR CODE 3.3
Remote control switch of the fuel pump
The problem can be:
- Defective switch
- Cabling harness/connection damaged or not correct.

12.12 RESET PROCEDURE FOR THE ELECTRONIC CONTROL UNIT IAW 16M

Insert in the socket «B» - **Fig. 12-18** (located near the electronic control unit)the short circuit plug supplied. With the key in the **ON** «🔑» position, switch in **RUN** position and engine off the CHECK LAMP flashes so as to indicate that there is a fault; the RESET procedure must be done during these flashes as follows:

1) Remove the short circuit plug while the CHECK LAMP is flashing and put it back in place after 3 seconds. After this operation the CHECK LAMP lights steadily.
2) Wait until the CHECK LAMP flashes again (about 20 seconds).
3) Remove the short circuit plug; after two or three flashes the CHECK LAMP will light permanently
4) Wait 5 or 6 seconds and then put the key on the **OFF** «🔑» position.
5) Wait until the relay of the electronic control unit goes off (about 10 seconds) .
6) Close the circuit again inserting the short circuit plug and check that there isn't any error.

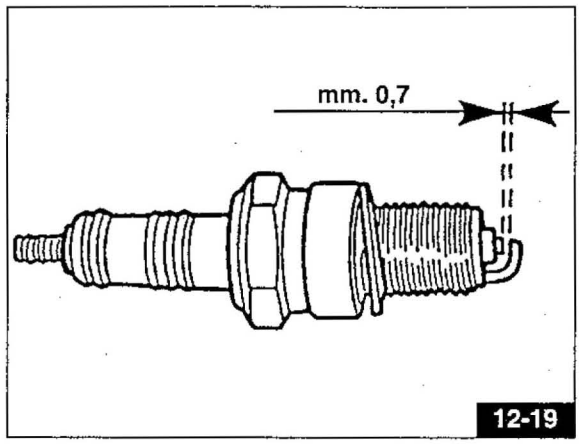
12.13 SPARK PLUGS (Fig. 12-19)

Use the following types of spark plug:

- **DAYTONA RS e V10 CENTAURO** - NGK DR 9 EA
- **SPORT 1100** - NGK BPR 6 ES

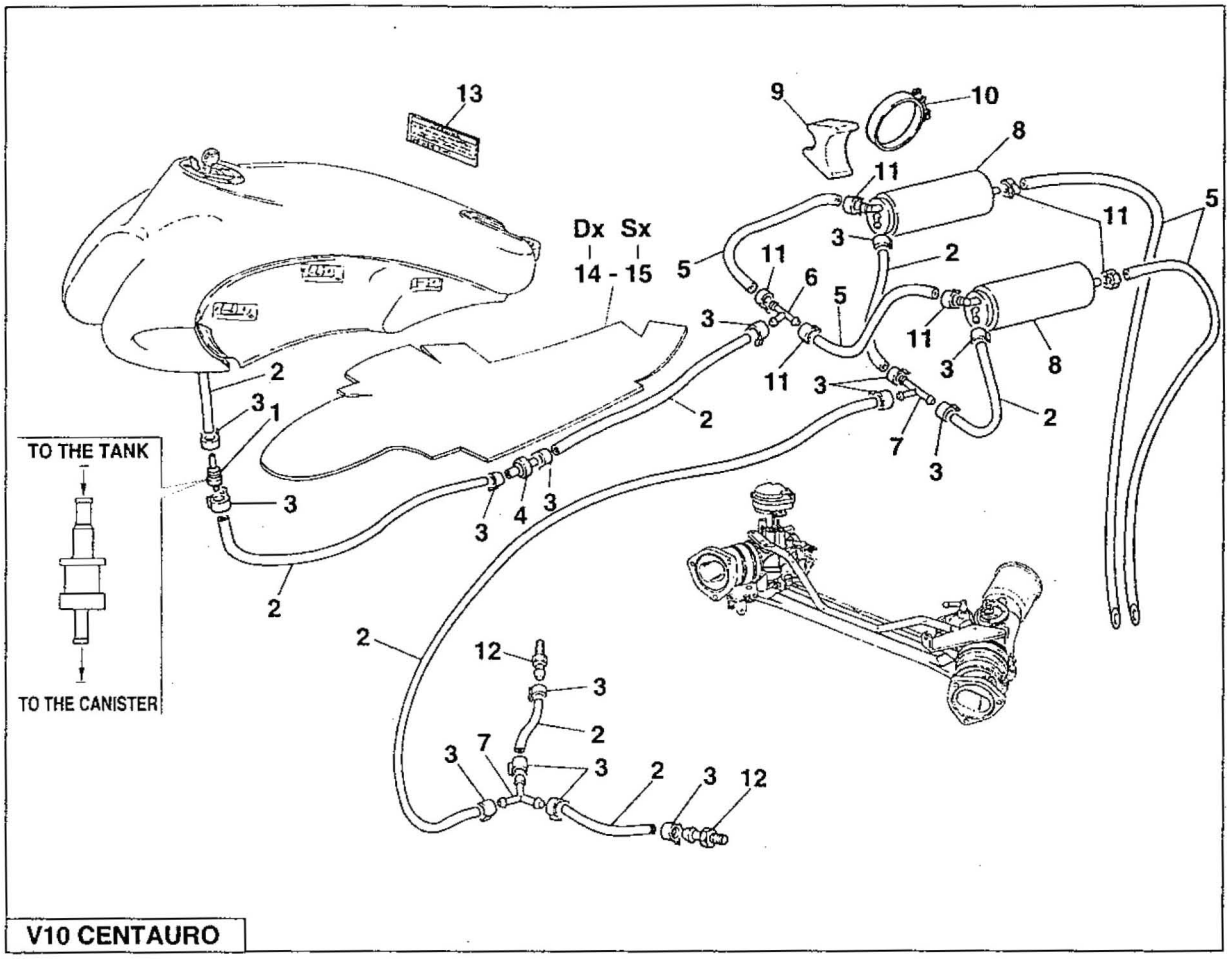
Spark plug gap: 0.7 mm.

Remove the spark plugs for cleaning and checking at the intervals indicated in the **Maintenance Schedule**. Refit the plugs by hand taking care not to cross thread them, they should screw home easily; it is then recommended to tighten them manually for some turns and to use the provided suitable key, in order to lock them when the **engine is cold**. Even if used plugs appear to be in good condition, they should be replaced every 10.000 km.



WARNING: Values lower than 0.7 mm can compromise the engine life.

12.14 EVAPORATIVE EMISSION CONTROL SYSTEM (USA-SGP)



V10 CENTAURO

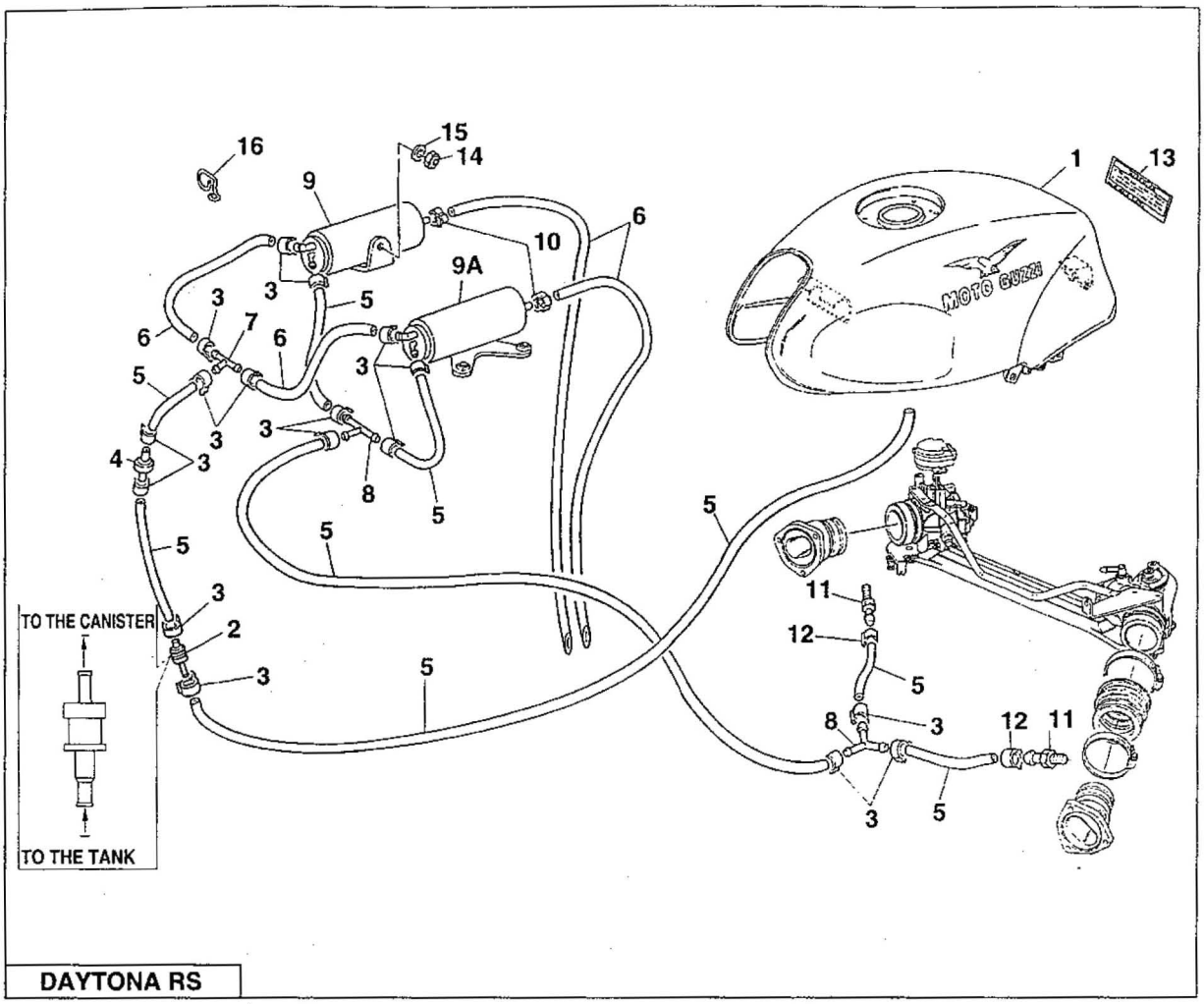
NOTE: The anti-overturning valve Ref. «1» should be vertically installed at ± 30° as regards the exhaust gas inlet located as shown in figure.

1 Check valve
2 Pipe (Ø6x12)
3 Clamp
4 Pressure valve

5 Pipe (Ø8x14)
6 Three-way union
7 Three-way union
8 Carbon canister

9 Rubber spacer
10 Clamp
11 Clamp
12 Union on the intake pipes

13 Warning plate for vehicle use
14 R.H. thermic insulating material
15 L.H. thermic insulating material



DAYTONA RS

NOTE: The anti-overturning valve Ref. «2» should be vertically installed at ± 30° as regards the exhaust gas inlet located as shown in figure.

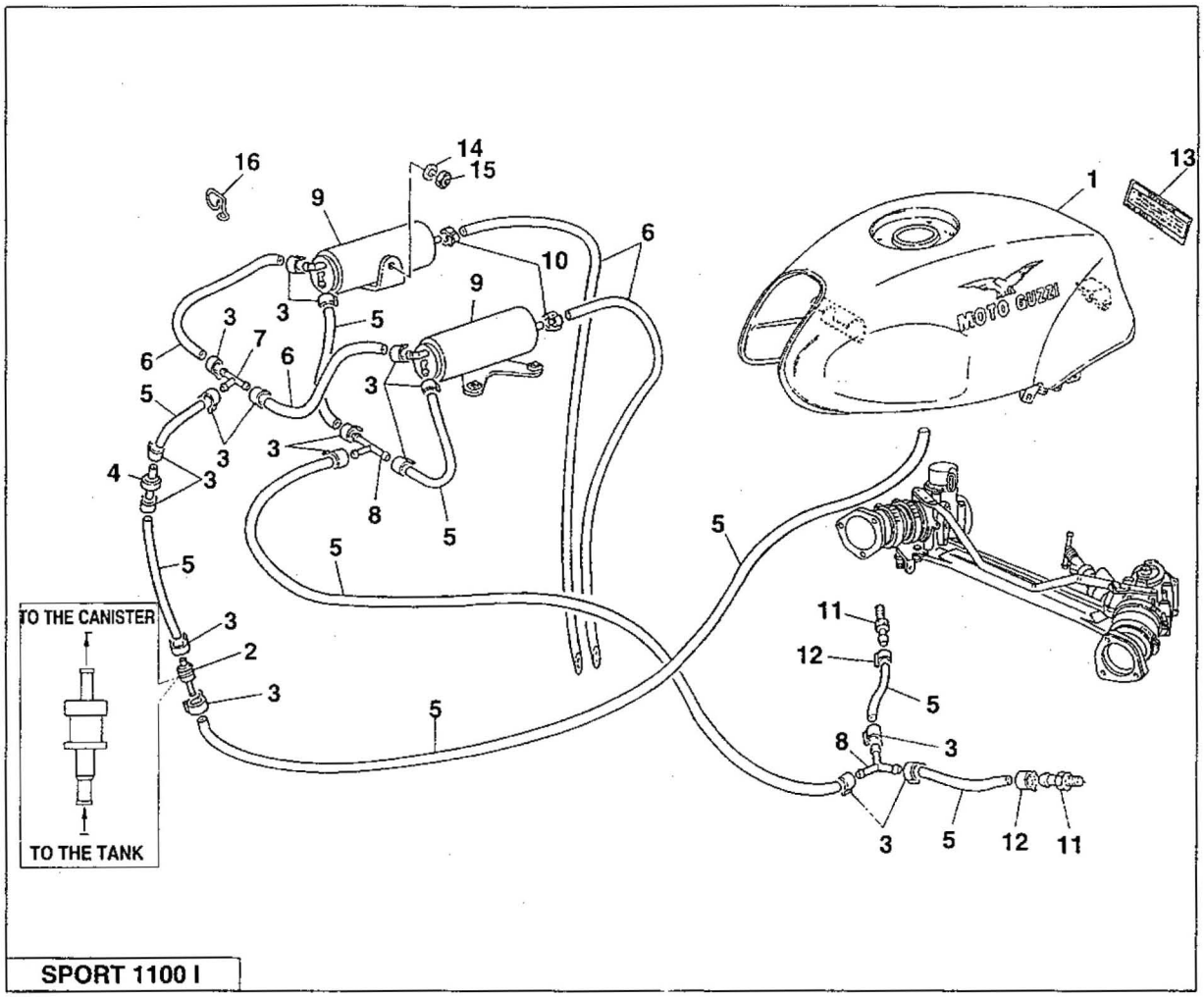
1 Fuel tank
2 Check valve
3 Fascetta
4 Pressure valve

5 Pipe (Ø6x12)
6 Pipe (Ø8x14)
7 Three-way union
8 Three-way union

9 R.H. carbon canister
9A L.H. carbon canister
10 Clamp
11 Union on the intake pipes

12 Clamp
13 Warning plate for vehicle use
14 Nut
15 Washer

16 Eye



SPORT 1100 I

NOTE: The anti-overturning valve Ref. «2» should be vertically installed at ± 30° as regards the exhaust gas inlet located as shown in figure.

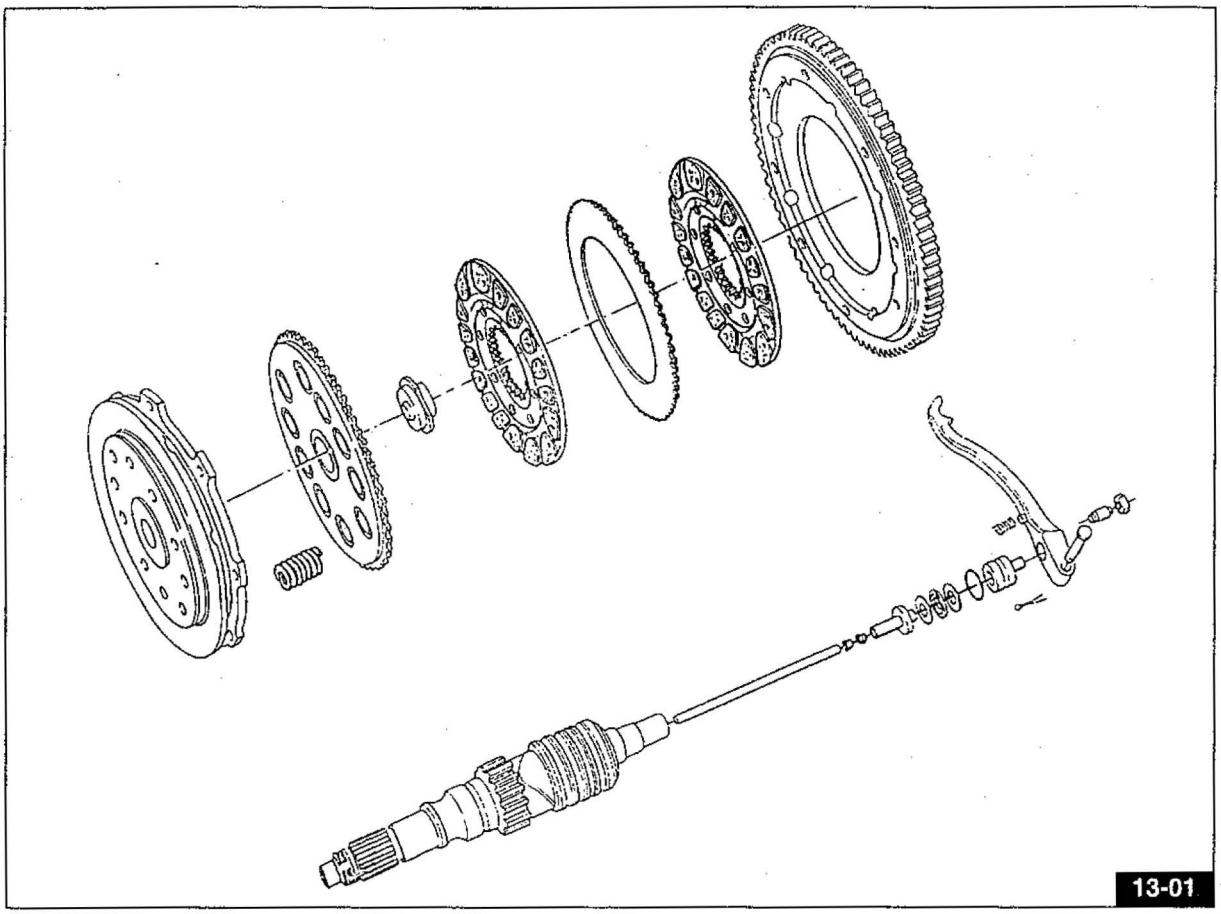
1 Fuel tank
2 Check valve
3 Fascetta
4 Pressure valve

5 Pipe (Ø6x12)
6 Pipe (Ø8x14)
7 Three-way union
8 Three-way union

9 R.H. carbon canister
9A L.H. carbon canister
10 Clamp
11 Union on the intake pipes

12 Clamp
13 Warning plate for vehicle use
14 Nut
15 Washer

16 Eye



Clutch springs (Fig. 13-02)
Check that the springs have not lost their elasticity and are not deformed;
the springs compressed to 20 mm should give a load of 21÷21.5 kg
the springs compressed to 17 mm should give a load of 28.7÷29.7 kg

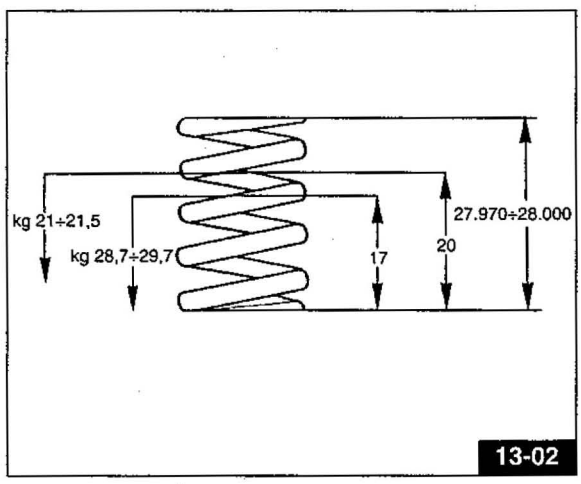
Spring pressure plate
Check that the plate is not worn in the hole where the command cap operates, and that the surfaces where it rests on the driven plate are perfectly flat.
Check that the teeth inside the flywheel are in excellent condition.

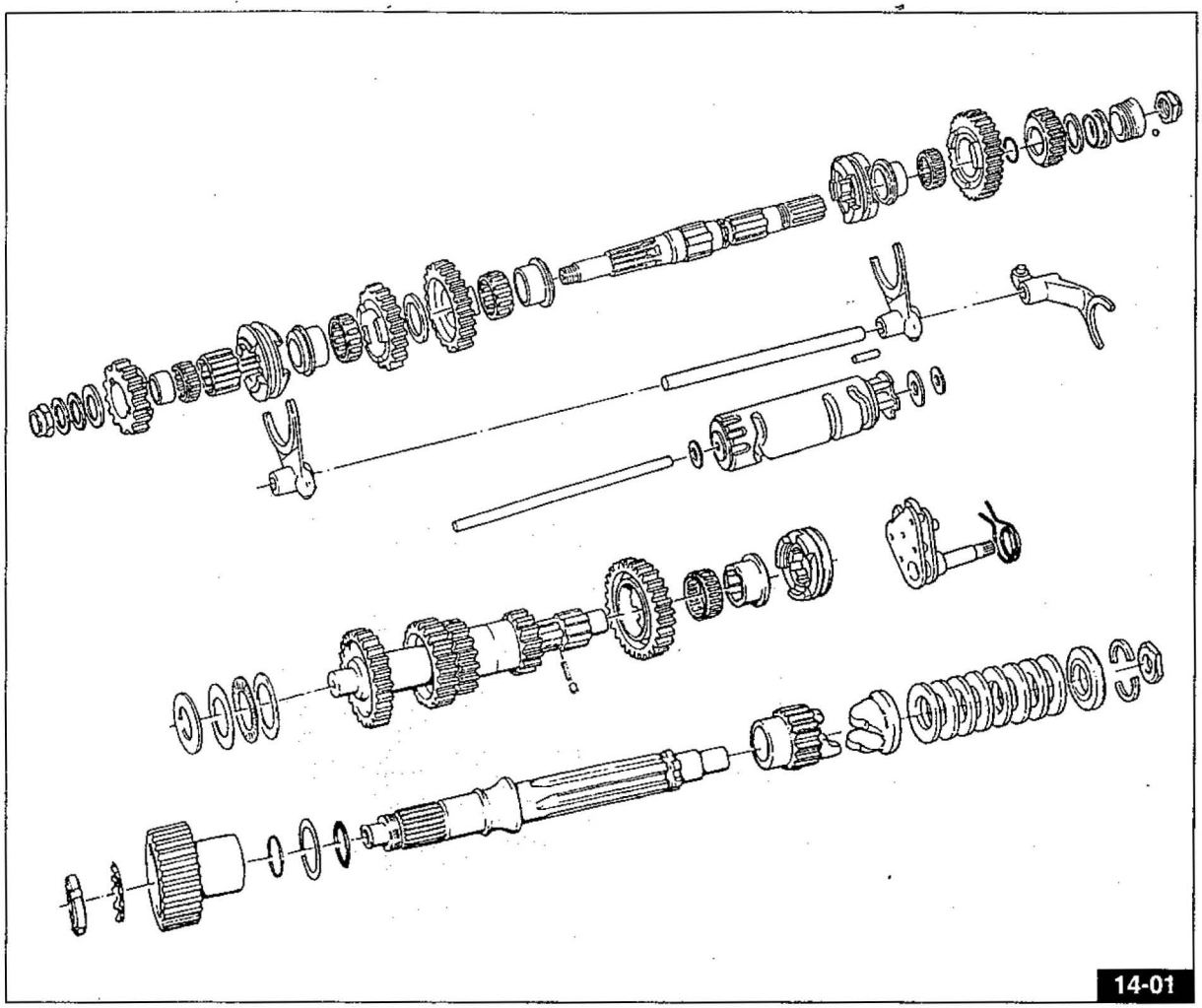
Driven plates
The thickness of the plate when it is new is 8 mm. The maximum wear thickness is 7.5 mm. Check the state of the teeth.

Intermediate plate
Check that the surfaces resting against the driven plates are perfectly smooth and flat and that the external teeth that engage inside the flywheel are not worn, otherwise replace.

Starting ring gear
Check that the surfaces resting on the driven plate are perfectly smooth and flat; check that the teeth that engage the pinion of the starter motor are not worn or damaged, otherwise replace.

Internal clutch body
Check that the teeth do not show signs of wear from contact with the plates.





Ratio engine- gearbox 1:1.3529 (Z = 17/23).

Gearbox
Five speeds straight-tooth, frontal engagement constant mesh gears. Cush drive incorporated.
Controlled by means of foot pedal fitted on the left hand side of the vehicle.

NOTE: On the model SPORT 1100 I and DAYTONA RS equipped with gear boxes up to the numbers CF011499 and CL011199 straight tooth gears, with gear boxes from N°CF011500 and N° CL011200 the spiral gears have been used.
For the model V10 CENTAURO only spiral teeth gears have been used.

Gearbox ratio (SPORT 1100 I and DAYTONA RS):
1st speed = 1:1.812 (Z = 16/29)
2nd speed = 1:1.250 (Z = 20/25)
3rd speed = 1:1 (Z = 23/23)
4th speed = 1:0.833 (Z = 24/20)
5th speed = 1:0.730 (Z = 26/19)

Gearbox ratio (V10 CENTAURO):
1st speed = 1:1.2 (Z = 14/28)
2nd speed = 1:1.3158 (Z = 19/25)
3rd speed = 1:1 (Z = 23/23)
4th speed = 1:0.8462 (Z = 26/22)
5th speed = 1:0.7692 (Z = 26/20)

Gearbox ratio (V10 CENTAURO SWITZERLAND version):
1st speed = 1:1.2 (Z = 14/28)
2nd speed = 1:1.3889 (Z = 18/25)
3rd speed = 1:1,0476 (Z = 21/22)
4th speed = 1:0.8696 (Z = 23/20)
5th speed = 1:0.7500 (Z = 28/21)

14.1 GEARBOX LUBRICATION (Fig. 14-02)

Checking the oil level

Checking the oil level every 5000 km check that the oil just reaches the level at plug hole «**B**».

If the oil is below the level, top up with the recommended grade and type of oil.

Oil change

The gearbox oil should be changed every 10.000 km approx. Drain the oil when the gearbox is warm as the oil is more fluid and drains more easily.

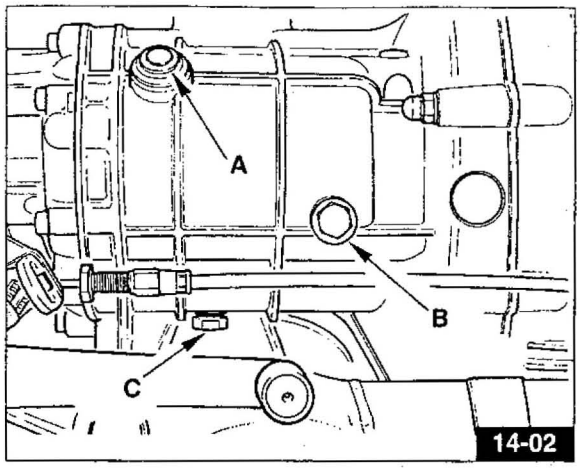
Remember to allow the gearbox to drain fully before filling with new oil.

«**A**» Filler plug.

«**B**» Level plug.

«**C**» Drain plug.

Quantity required: 0,750 liters of «Agip Rotra MP SAE 80 W/90» oil.



14.2 DISASSEMBLY

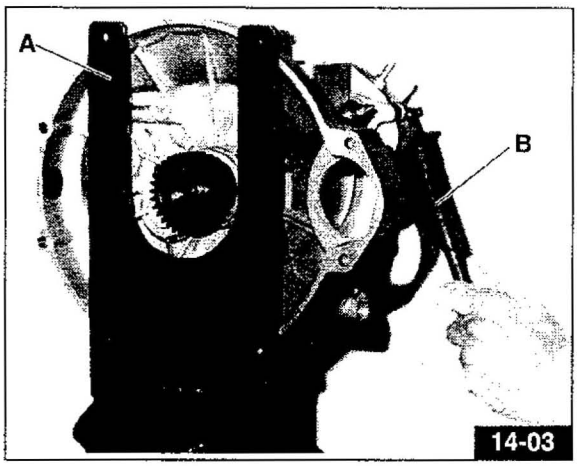
NOTE

The disassembly sequence and operations are identical for the gear boxes with straight teeth gear or spiral teeth gears.

In order to disassemble the gearbox into its various elements, proceed as follows:

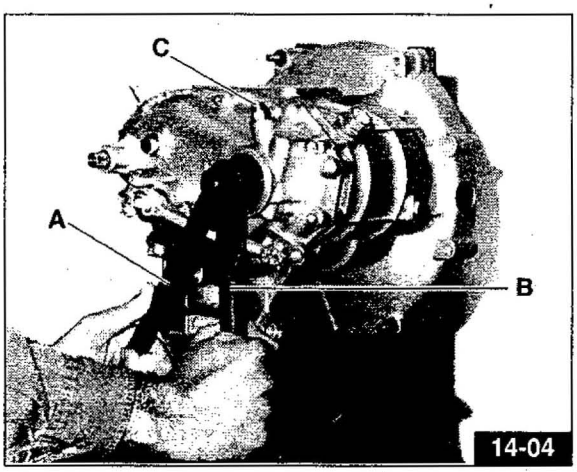
lock the gearbox support device «**A**» - **Fig. 14-03**, code 14 92 96 00, in a vice, and position the gearbox on the support.

In order to easily follow the disassembly operations, it is advised that the gearbox is positioned in the neutral position, using device «**B**» - **Fig. 14-03**, code 14 92 87 00.



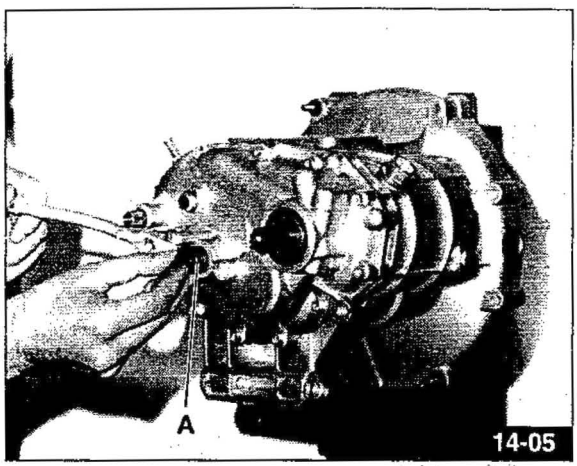
Loosen the locking nut from the layshaft with wrench «**A**» - **Fig. 14-04**, code 12 90 71 00, and «**B**» - **Fig. 14-04**, code 14 90 54 00.

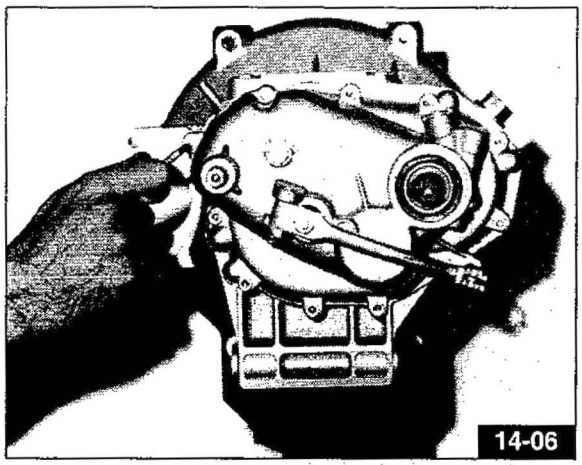
Loosen the odometer control spindle «**C**» - **Fig. 14-04** and remove the odometer control gear, including the relative locking sphere, from the layshaft.



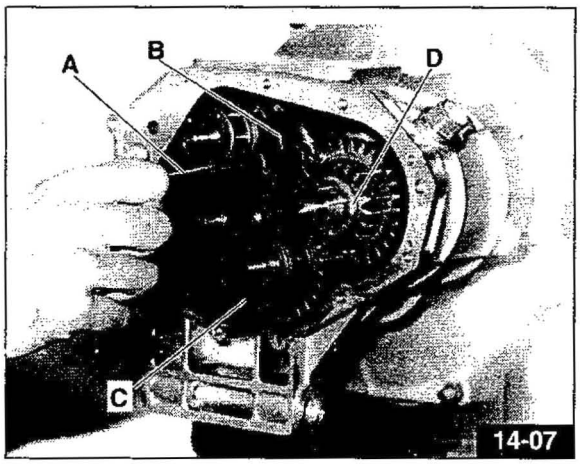
Remove the external clutch control «**A**» - **Fig. 14-05** with the relative thrust support bearing and internal casing.

Remove the rear gearbox cover **(Fig. 14-06)**.



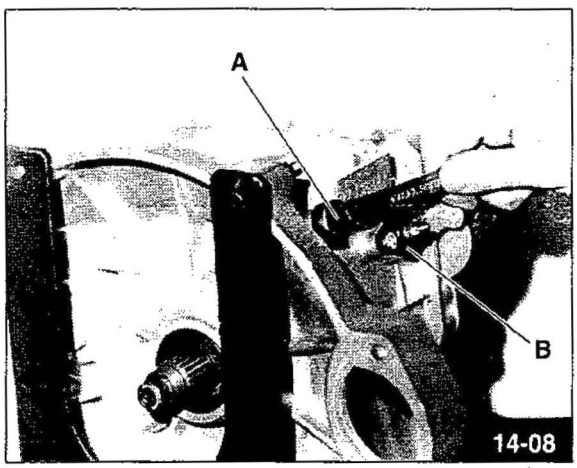


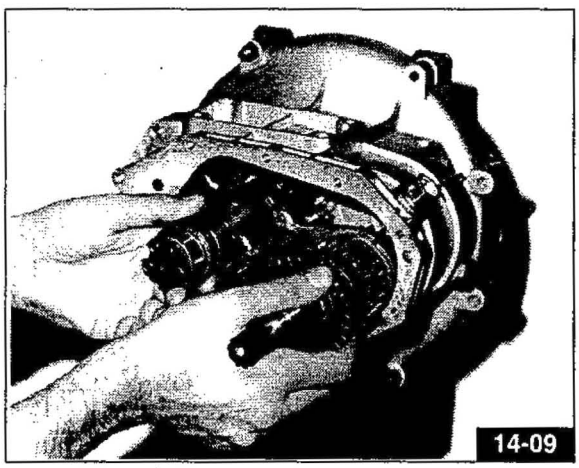
Slide out the fork support rod «**A**» - **Fig. 14-07**, the 5th speed fork «**B**» - **Fig. 14-07** with the relative coupling «**C**» - **Fig. 14-07**, the 5th speed gear «**D**» - **Fig. 14-07**.



Loosen plug «**A**» - **Fig. 14-08** and remove the spring and stopping pawl, disassemble the neutral indicator «**B**» - **Fig. 14-08**.

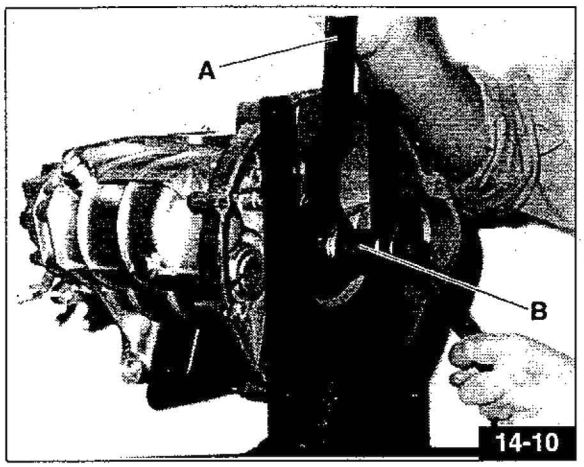
Slide out the layshaft, complete with gears and forks, the main shaft and splined cylinder with guide rod **(Fig. 14-09)**.

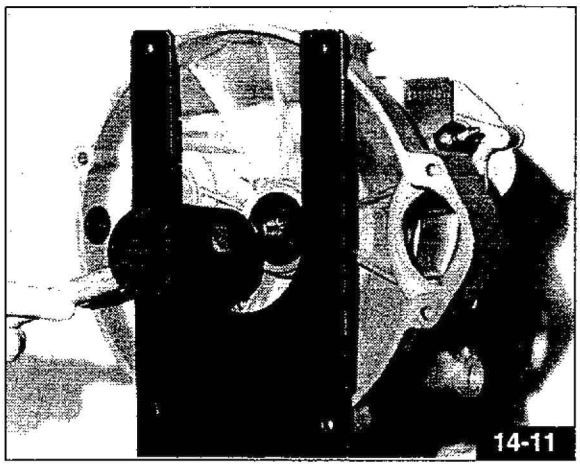




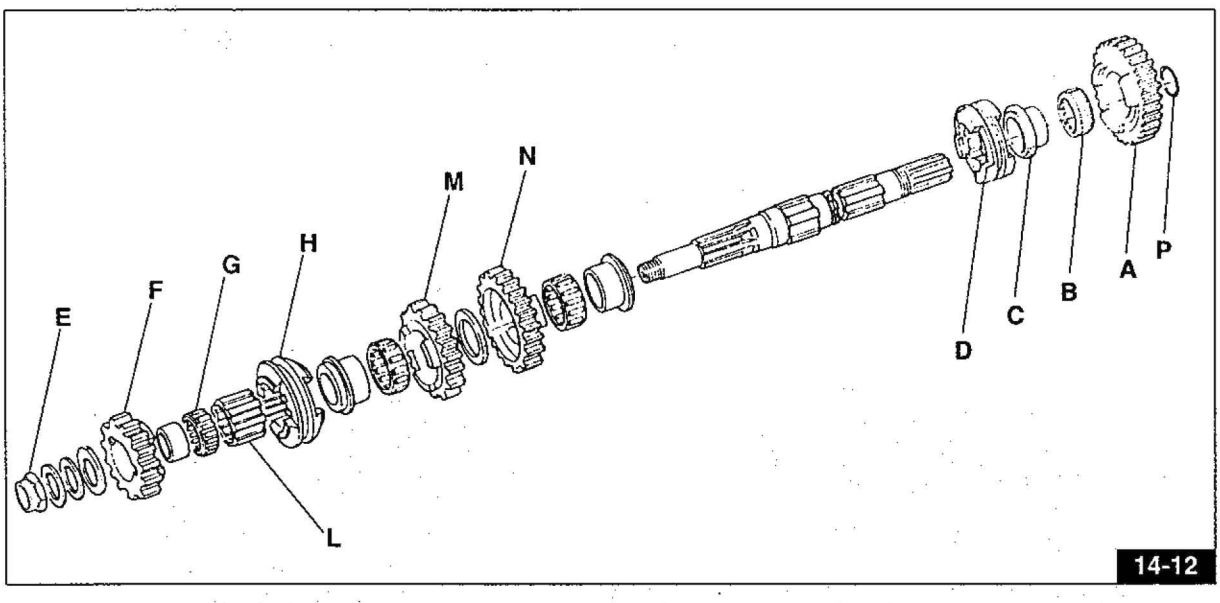
Loosen the internal clutch casing locking ring nut, using the supplied wrenches «**A**» - **Fig. 14-10**, code 30 91 28 10 and «**B**» - **Fig. 14-10**, code 14 91 26 03 and remove the internal clutch casing using, if necessary, a universal extractor.

Using a mallet, move the clutch shaft backwards, remove the rubber sealing ring then completely remove the shaft **(Fig. 14-11)**.

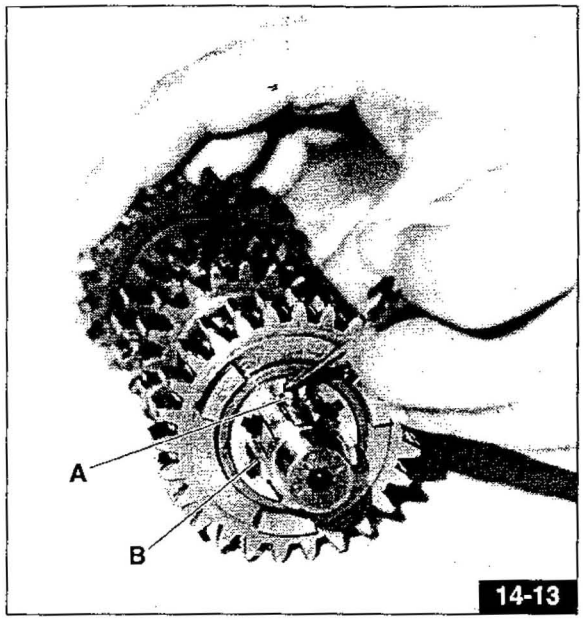




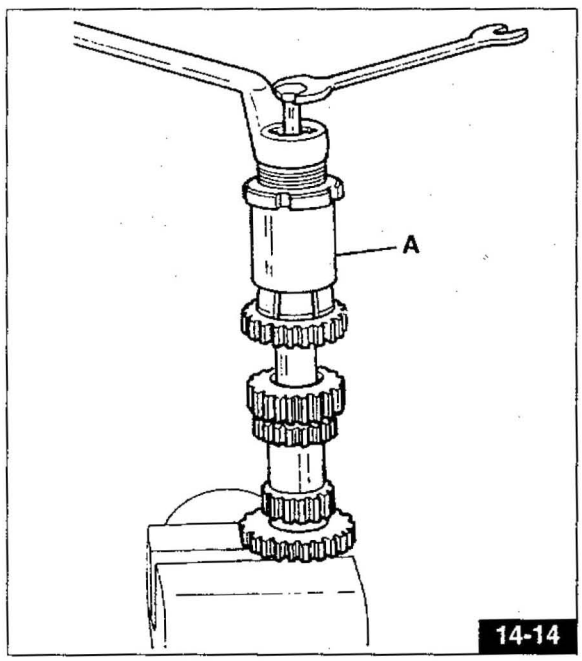
Layshaft disassembly (Fig. 14-12)
Remove the 1st speed gear «**A**» with the relative roller cage «**B**», remove the rubber sealing ring, slide out bushing «**C**» and remove sliding sleeve «**D**» from the 1st and 2nd speeds.
Lock the shaft in a vice, with ductile metal protection on the vice jaws.
Loosen sealing nut «**E**» in the right hand direction.
Remove the bearing, the 4th speed gear «**F**» with the shimming washers, remove roller cage «**G**».
Remove sliding sleeve «**H**» from the 4th and 3rd speeds, sliding out the fixed splined sleeve «**L**» and remove the 3rd speed gear «**M**» with its bushing, roller cage and intermediate washer.
Finally, remove the 2nd speed gear «**N**» with relative roller cage and bushing.

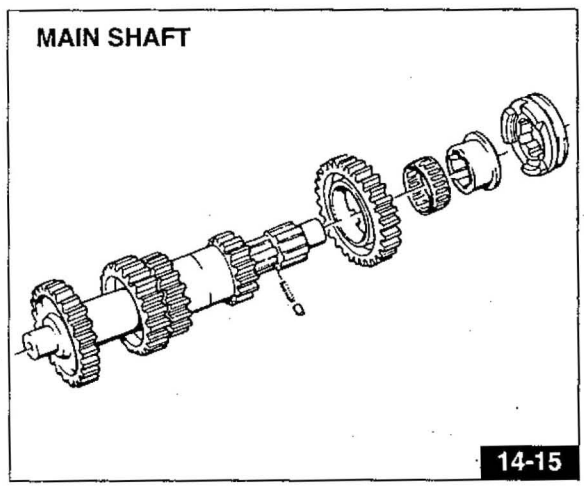


Main shaft disassembly (Fig.14-13)
Using the correct punch press stopping pawl «**A**» completely down, and rotate bushing «**B**» so that it disengages from the splines.



Extract the bushing, remove the pawl, spring, roller cage and 5th speed gear; with the correct extractor, code 14 92 85 00 («**A**» - **Fig. 14-14**) slide out the internal track of the needle bearings.

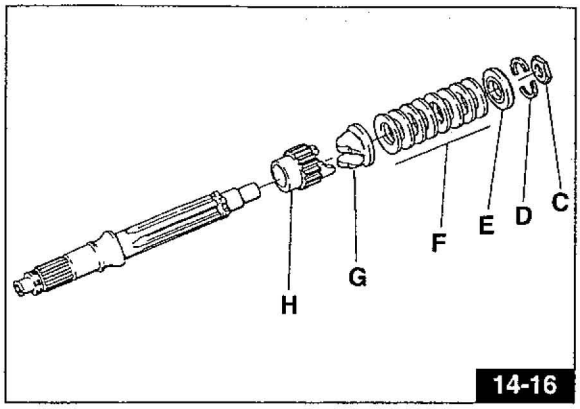




Clutch shaft disassembly

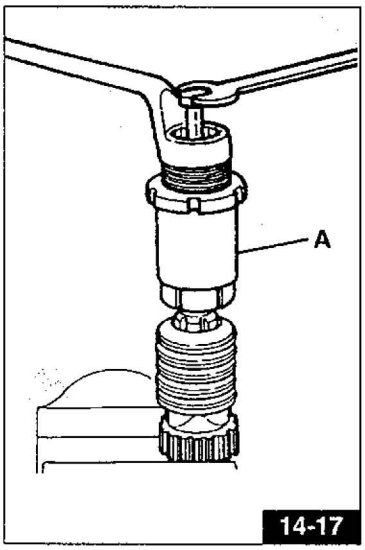
- Using the extractor, code 14 92 85 00 «**A**» - **Fig. 14-17** slide out the internal track of the needle bearings and the shimming nut «**C**» - **Fig. 14-16**.
- Place the complete shaft on a press and, using extractor No. 12 90 59 00 «**B**» - **Fig. 14-18**, compress the springs so that the two flexible coupling sealing plate half sections «**D**» - **Fig. 14-16** can be slid out, then slide out:

– flexible coupling plate «**E**» - **Fig. 14-16**;
– springs «**F**» - **Fig.14-16**;
– clutch sleeve «**G**» - **Fig. 14-16**;
– intermediate gear «**H**» - **Fig. 14-16**.

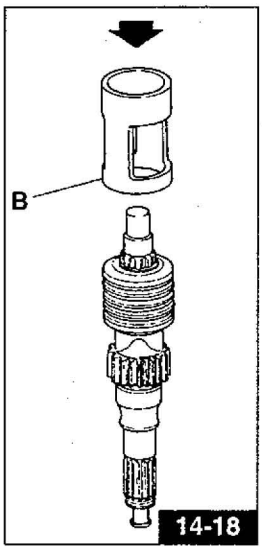


14-16

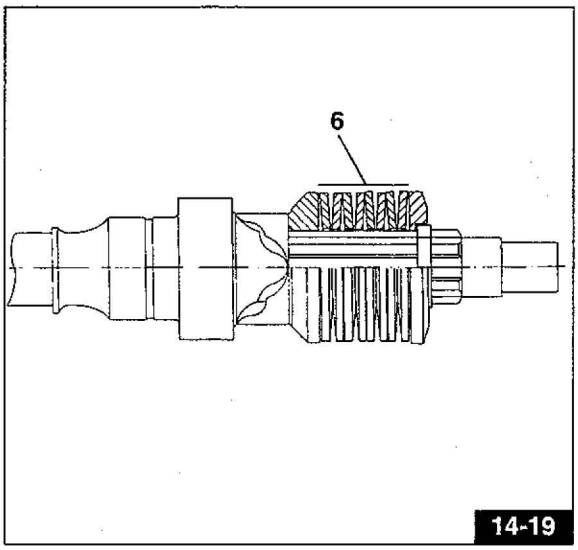
NOTE: The Fig. 14-19 shows the right assembly position of the cup springs «6».



14-17

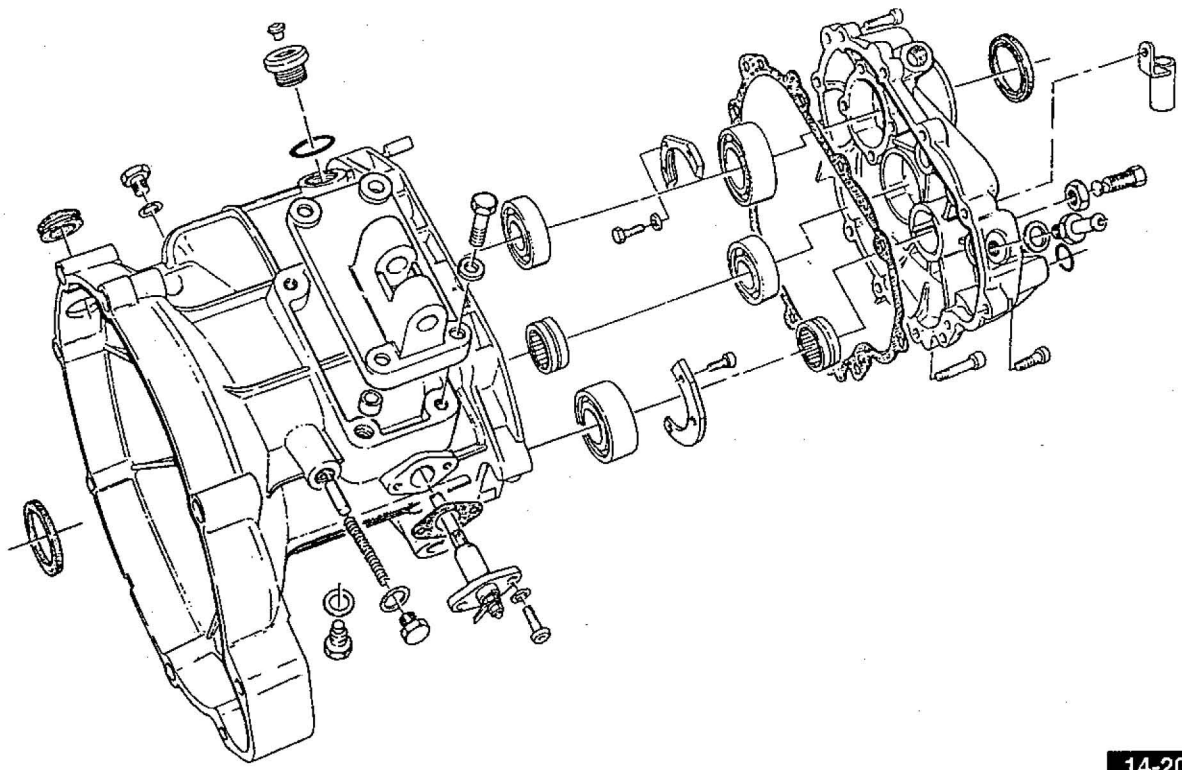


14-18



14-19

GEARBOX AND COVER


14-20

14.3 REASSEMBLY

Before carrying out reassembly operations, carefully check all the components.

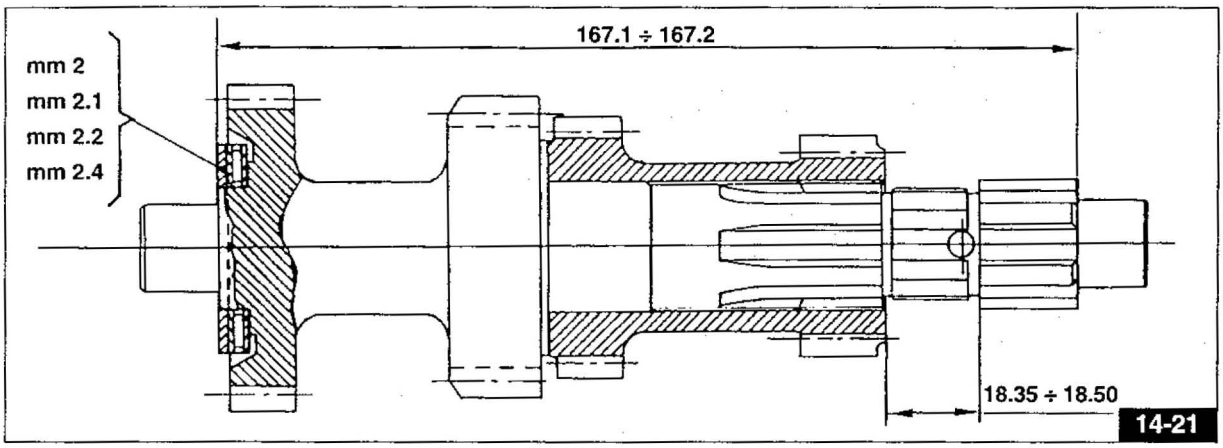
- In order to carry out the reassembly operation, follow the disassembly operations in reverse order, paying attention to the following procedures:

Primary shaft reassembly on the gearbox

Before assembling the primary shaft on the gearbox, it should be shimmed so that there is a distance of 167.1÷167.2 mm between the gearbox and the cover bearing (see **Fig. 14-21**).

In order to obtain this measurement the shim adjustment washers should be corrected, these washers are supplied in the following measures: 2 - 2.1 - 2.2 - 2.4 mm.

These washers should be fitted between the gearbox bearing and the thrust bearing.



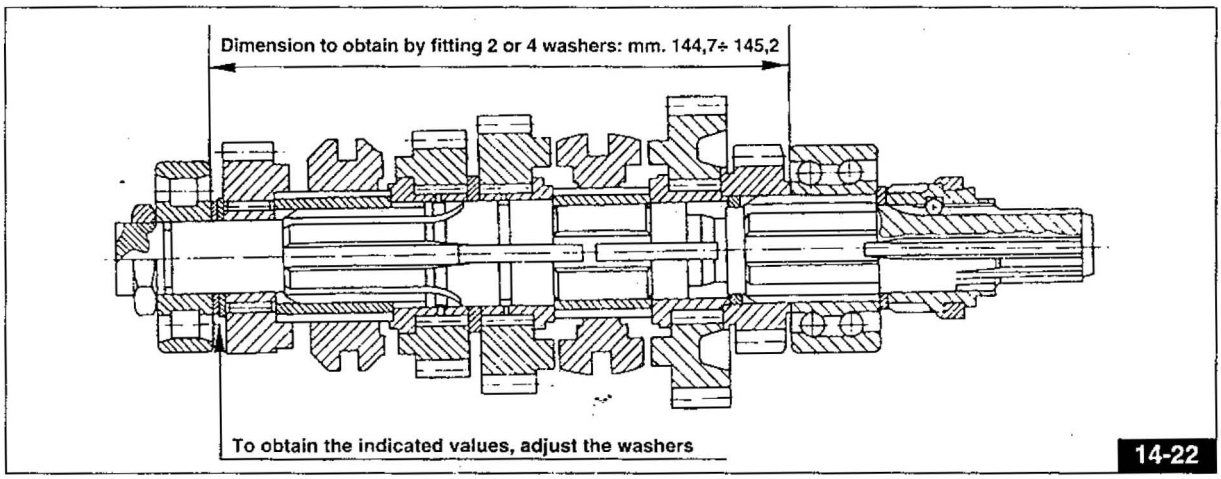
Secondary shaft shimming (Fig. 14-22)

■ fit the shoulder washer on 4th speed side, or the adjusting washers, until the distance between the adjusting washers and the 5th speed gear reaches a preset distance of 144.7÷145.2 mm.

(In order to carry out this measurement remove the OR ring between 1st gear and 5th speed) (**«P» - Fig. 14-12**);

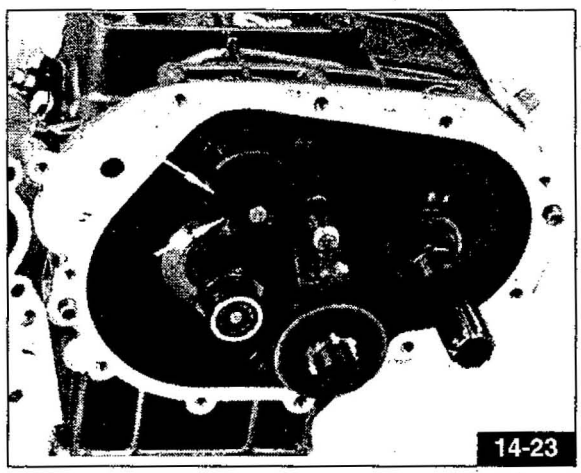
■ position the roller bearing on the 4th speed side of the shaft;

■ tighten the nut on the 4th speed layshaft side with "Loctite 601", then by caulking.

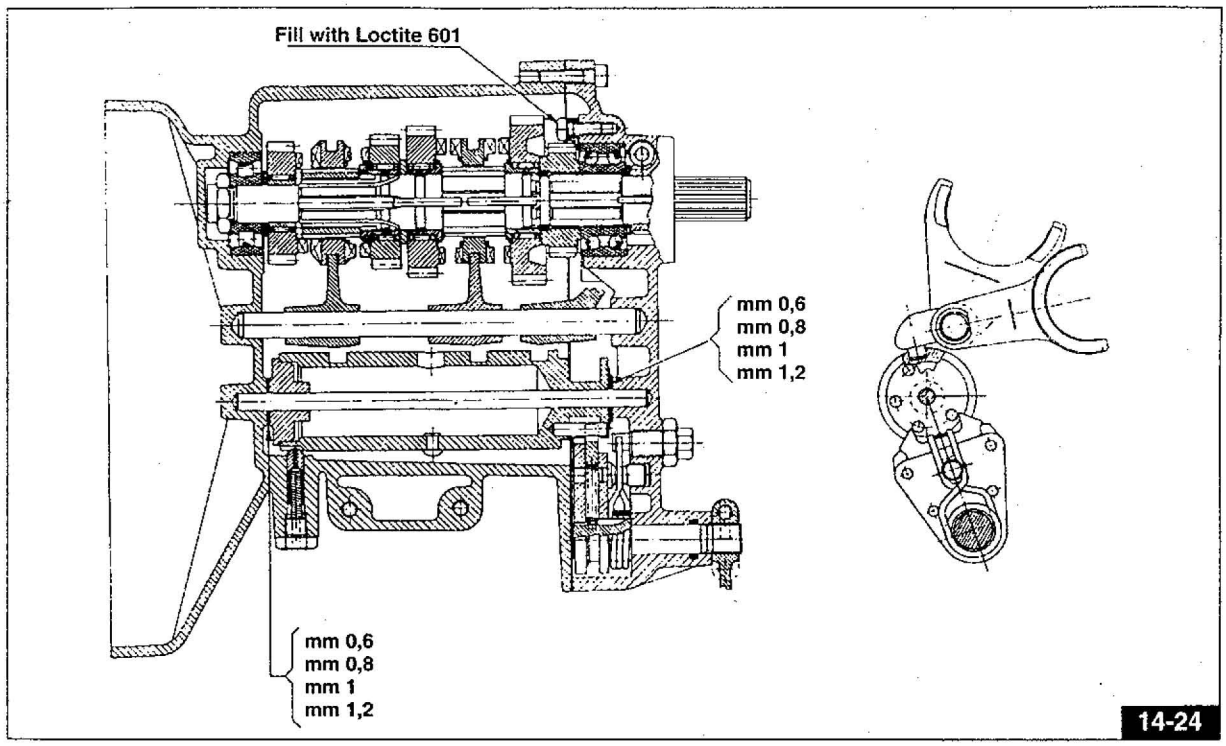


Cover assembly on gearbox

NOTE: When reassembling the complete gearbox cover, check that the gear control splined cylinder is in the neutral position, if the cylinder is in a different position the preselector teeth would interfere with the cylinder crown, instead of moving freely in the two control marks, shown by the arrows (Fig. 14-23).

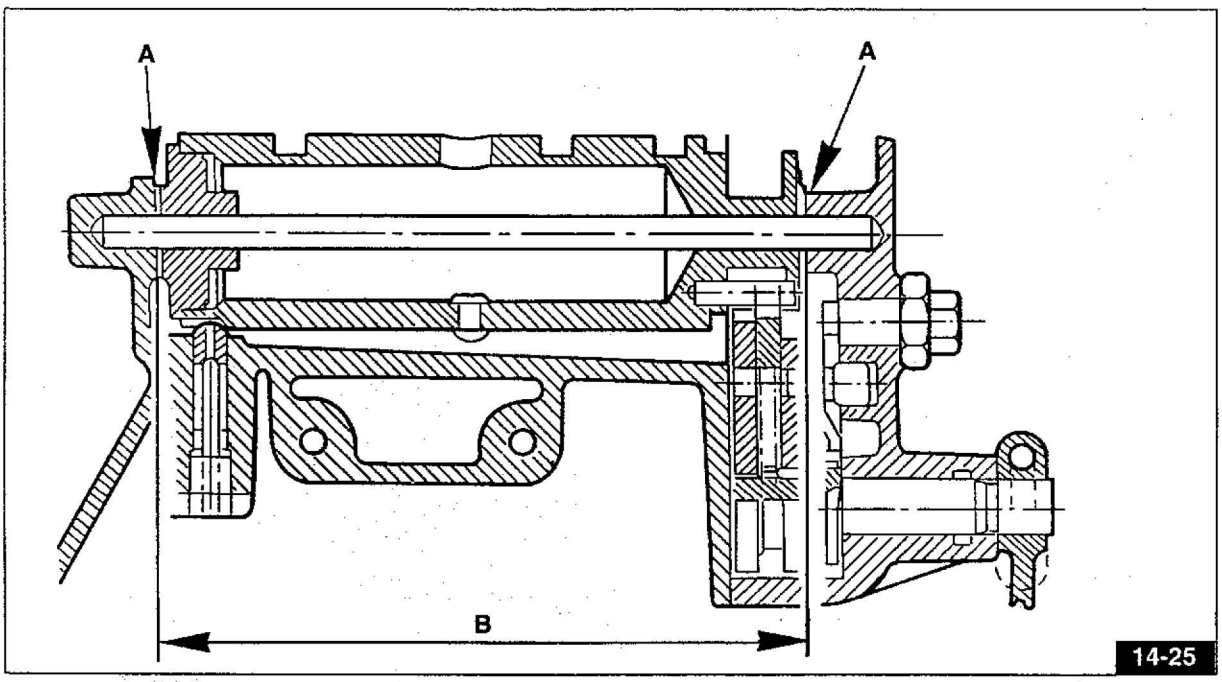


■ check the gear engagement in the 1st to the 5th speeds, then by changing down from the 5th to the 1st, and, finally, in "neutral". If the engagement operation appears to be difficult, the cover should be disassembled again and the distance between the gearbox and the cylinder should be shimmed once more; if the engagement operation appears to be difficult between the 1st and the 2nd speeds, the distance between cylinder and the cover should be adjusted, as with 2nd an 4th speeds. The shimming washers are supplied in the following dimensions: 0.6 - 0.8 - 1 - 1.2 (**Fig. 14-24**).

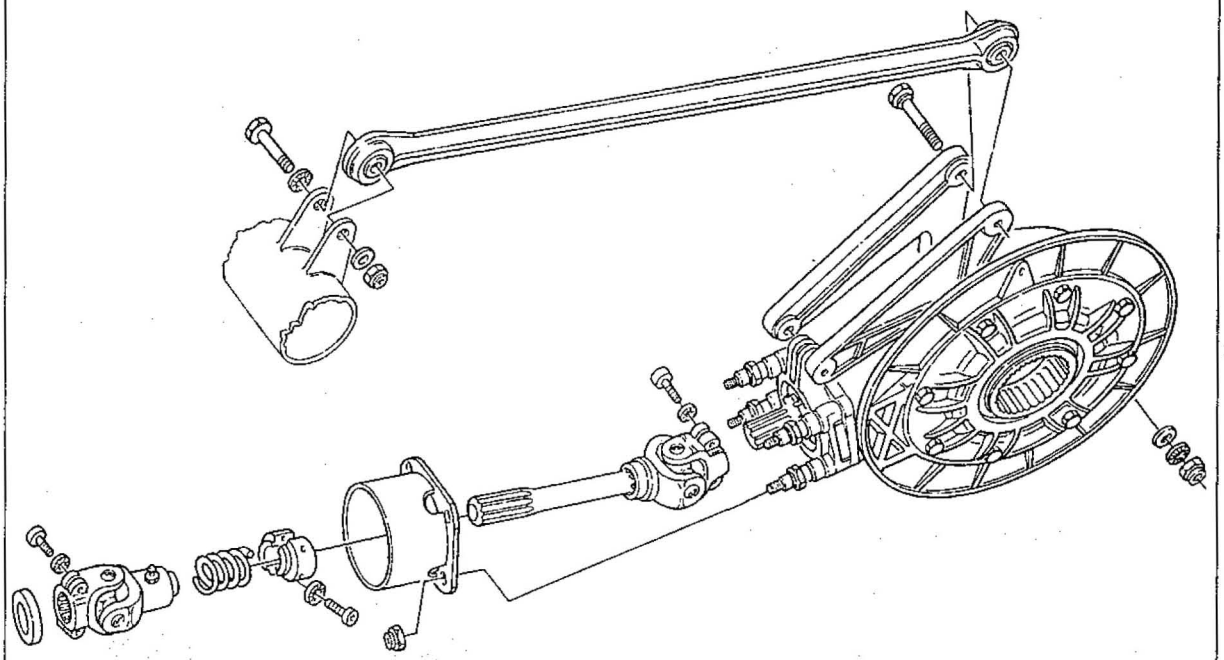


NOTE: The total measurement of control fork shaft «B» - Fig. 14-25 inclusive of lateral shim adjustments, must be less than 0.2 ÷ 0.3 mm. at the level of lateral housing stops «A» - Fig. 14-25; this is necessary to permit the control fork shaft to rotate freely.
To measure level «A» - Fig. 14-25, use a depth gauge, adding the distance from the box/cover attachment surface and the respective internal stops, and taking into consideration the thickness of the gasket.

Special tools, indicated in section 8 "SPECIFIC EQUIPMENT", have been provided for removal/insertion of shafts, bearings, oil seal rings, etc.

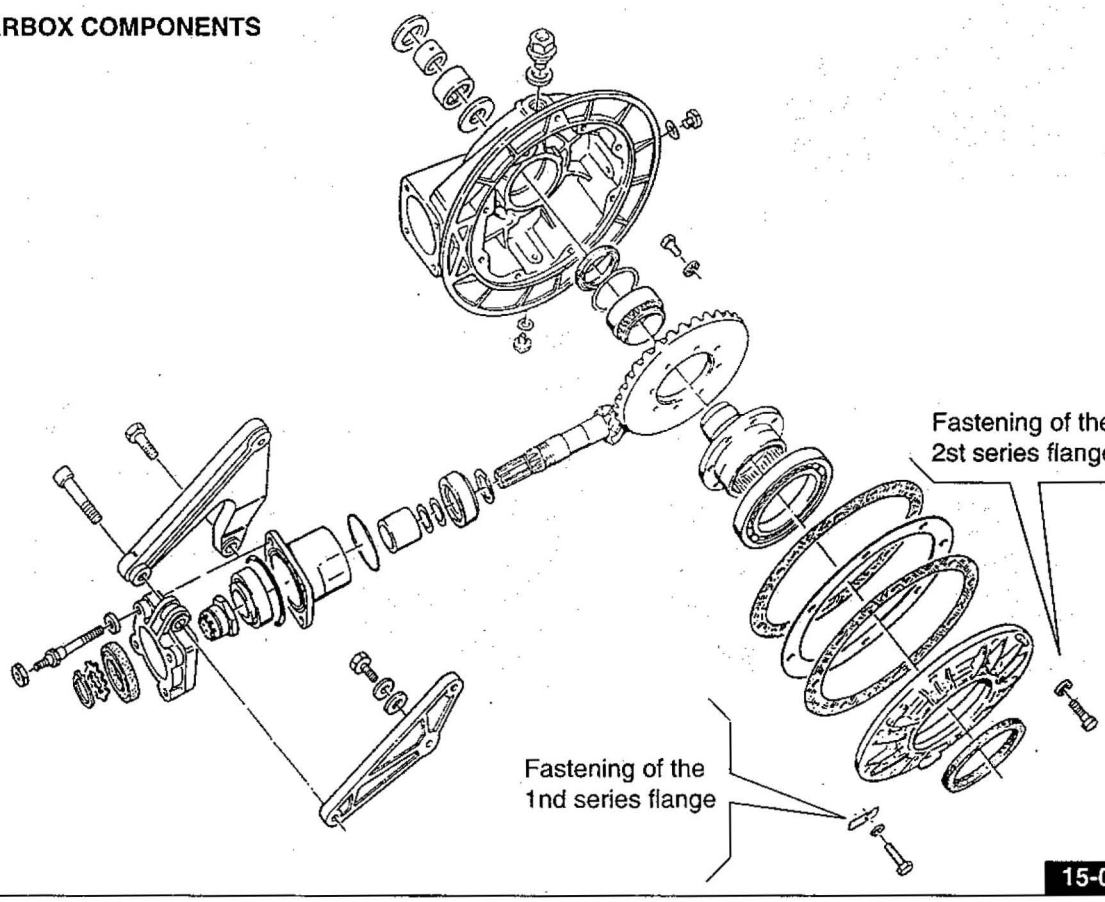


COMPLETE BOX / TRANSMISSION SHAFT WITH UNIONS / COUNTERACTION ROD



15-01

GEARBOX COMPONENTS



15-02

15.1 REAR DRIVE BOX LUBRICATION (Fig. 15-03)

Checking the oil level

Every 5000 km check that the oil just reaches the level at plug hole «**A**».

If the oil is below the level, top up with the recommended grade and type of oil.

Oil change

The gearbox oil should be changed every 10.000 km approx. Drain the oil when the gearbox is warm as the oil is more fluid and drains more easily.

Remember to allow the gearbox to drain fully before filling with new oil.

«**A**» Level plug.

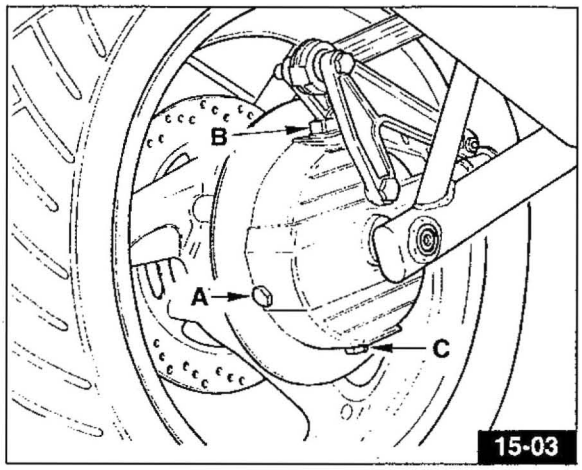
«**B**» Filler plug.

«**C**» Drain plug.

Required quantity, 0.250 liters of which:

0.230 liters of «Agip Rotra MP SAE 80 W/90» oil.

0.020 liters of «Agip Rocol ASO/R» or «Molykote type-A»

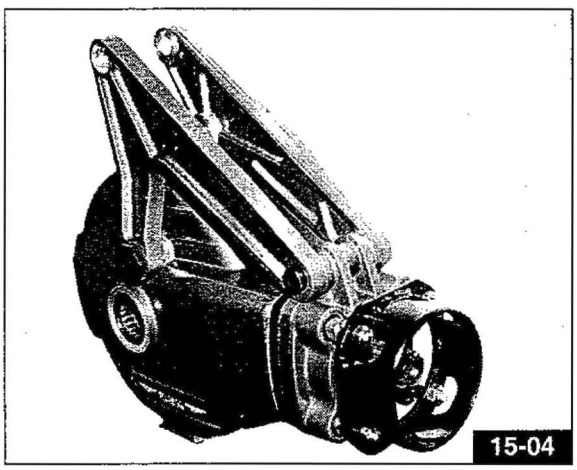


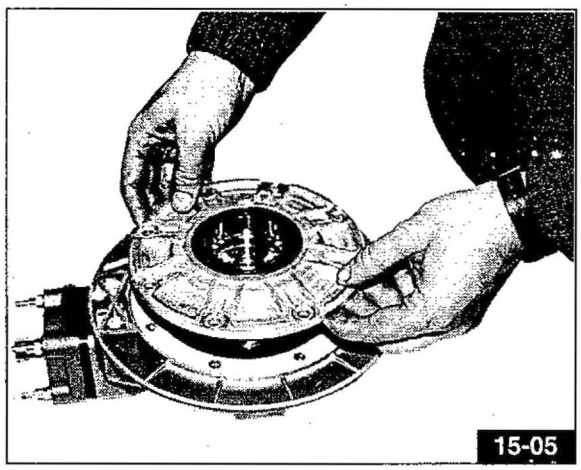
15-03

15.2 DRIVE BOX DISASSEMBLY

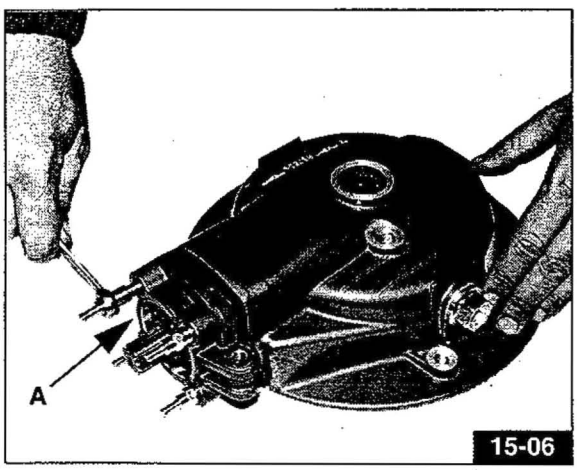
NOTE: Before proceeding with transmission box disassembly, take out the oil.

Loosen the 8 retaining screws **Fig. 15-04** and completely remove the crown unit cover **Fig. 15-05**.

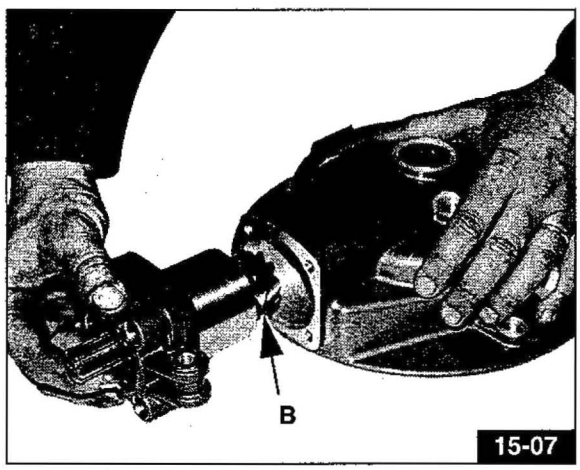

15-04


15-05

Remove the cover «**A**» - **Fig. 15-06** and slide out the pinion unit, together with its casing «**B**» - **Fig. 15-07**.

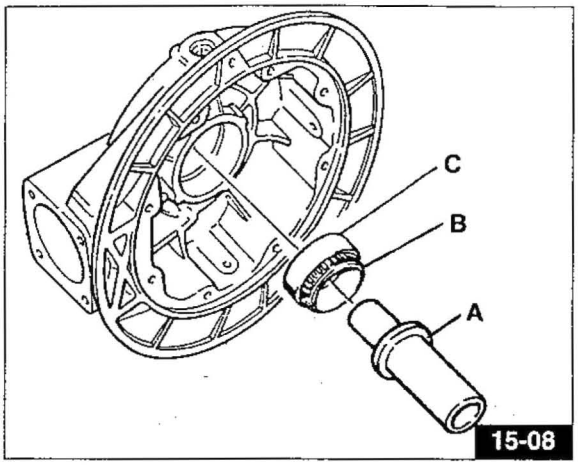


15-06

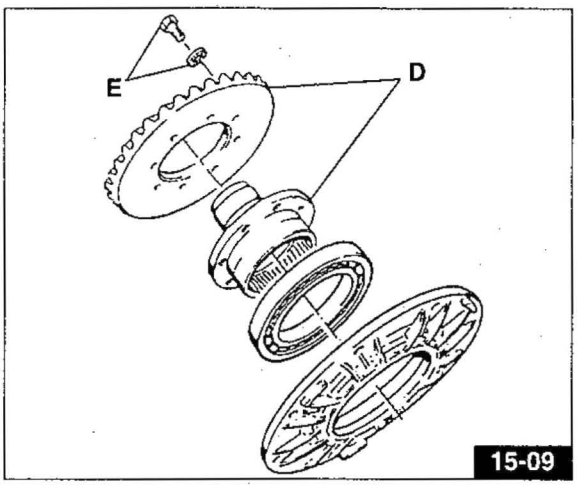


15-07

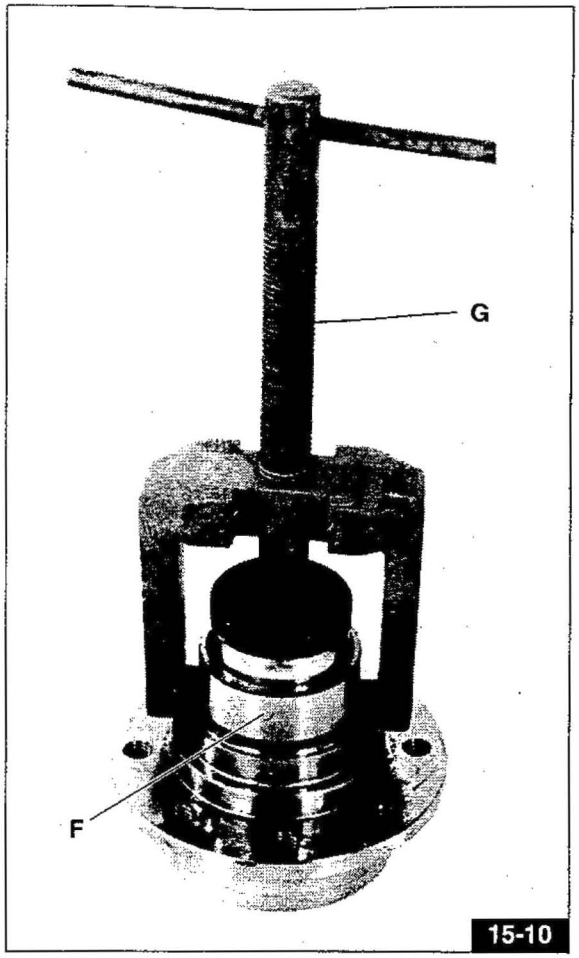
From inside the box, slide out the wheel pivot spacer «**A**» - **Fig. 15-08**, remove roller cage «**B**» - **Fig. 15-08** and, using extractor, code 12 90 71 00, remove the external needle bearing track «**C**» - **Fig. 15-08** from inside the box.
Extract through the side flange of the transmission box the gear group crown-hollow shaft «**D**» - **Fig. 15-09**.
Extract the fixing screws «**E**» - **Fig. 14-09** fixing the crown to the hollow shaft.
Remove the internal needle bearing track «**F**» - **Fig. 15-10** using extractor «**G**» - **Fig. 15-10**, code 17 94 83 60.



15-08

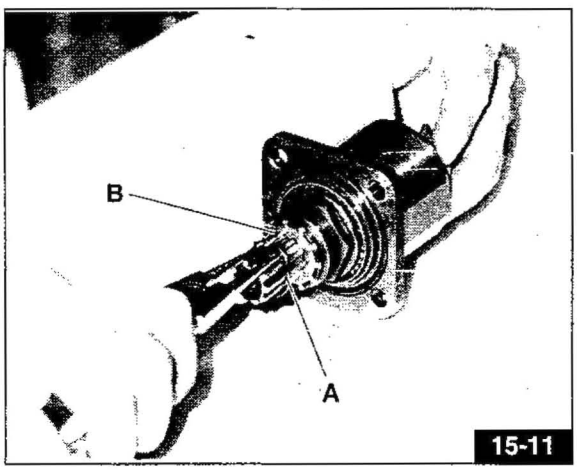


15-09

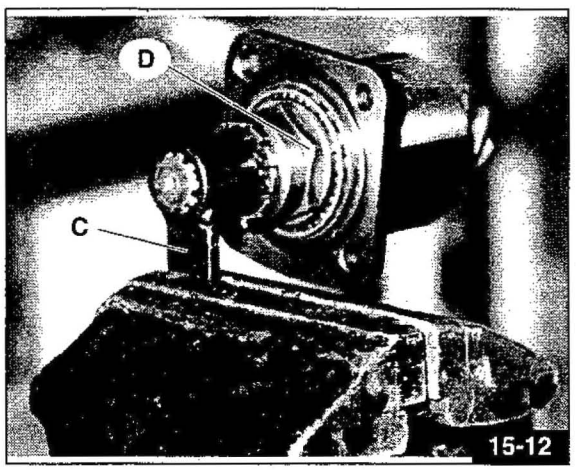


15-10

Disassemble the conical pinion support unit.
Remove the seeger ring «**A**» - **Fig. 15-11** and sealing ring «**B**» - **Fig. 15-11**; using the correct blocking instrument «**C**» - **Fig. 15-12** of the pinion unit, code 12 90 71 00, loosen sealing nut «**D**» - **Fig. 15-12**.

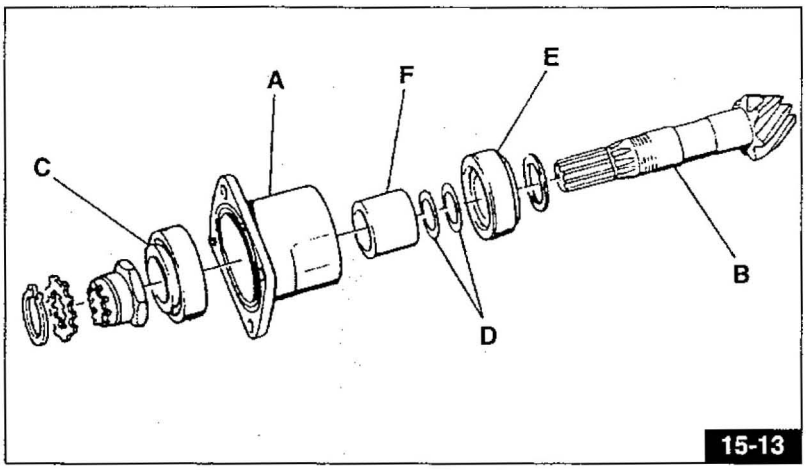


15-11

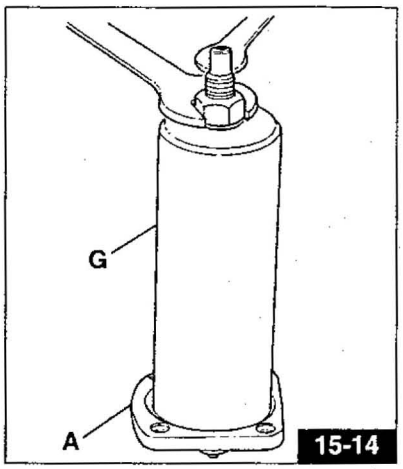


15-12

Remove pinion «**B**» - **Fig. 15-13**, external bearing «**C**» - **Fig. 15-13**, internal spacers «**D**» - **Fig. 15-13**, pinion side bearing «**E**» - **Fig. 15-13** and base spacer «**F**» - **Fig. 15-13** from casing «**A**» - **Fig. 15-13**.
In order to remove the external tracks of conical bearings («**C**» and «**E**» - **Fig. 15-13**) from casing «**A**» - **Fig. 15-14**, use the correct extractor «**G**» - **Fig. 15-14**, code 17 94 50 60.



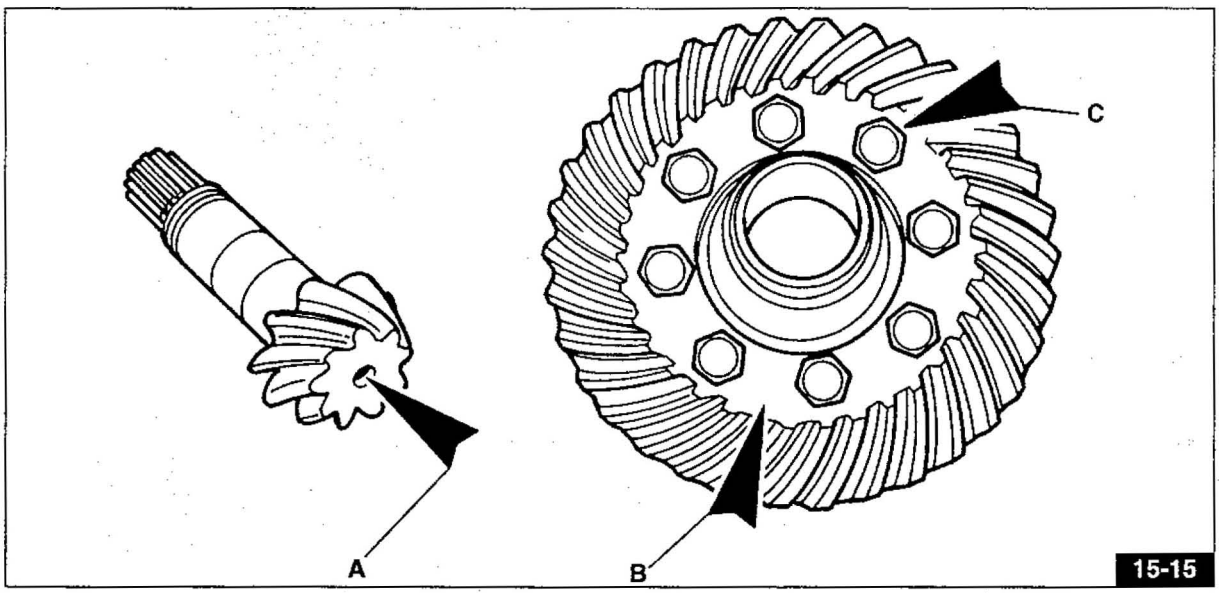
15-13



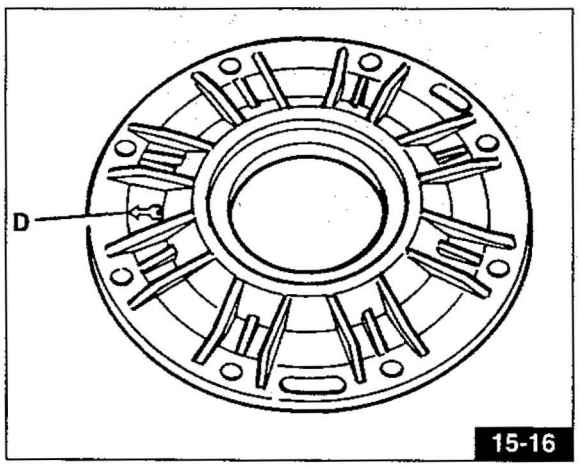
15-14

15.3 REASSEMBLY

Before carrying out reassembly operations, carefully check all the components.
In order to carry out the reassembly operation, follow the disassembly operations in reverse order, paying attention to the following procedures:
Assemble the crown, checking that the references for the selection of the pinion - crown coupling («**A**» and «**B**» - **Fig. 15-15**) coincide.



15-15

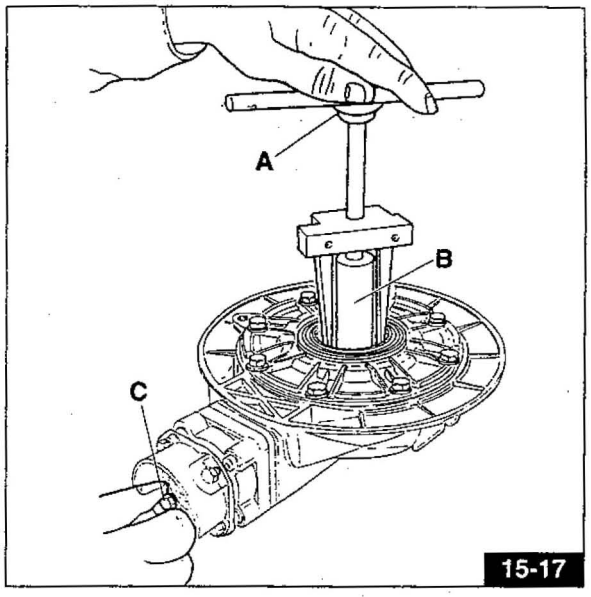


15-16

Screws «**C**» - **Fig. 15-15** will always have to be changed; before assembly, carefully degrease the threads in the drilled pin with trichloroethylene to ensure good adhesion of the "LOCTITE 601", previously applied to the threads of the screws themselves. Secure with a torque of 4 ÷ 4.2 Kgm.
Arrow «**D**» - **Fig. 15-16** on the cover, should be pointing towards the front.

In order to check the coupling of the pinion and crown, cover the pinion teeth, on the drive side, with one of the many products available on the market.
Apply a universal extractor «**A**» - **Fig. 15-17** with an appropriate spacer «**B**» - **Fig. 15-17**, so that the bored pivot - crown unit is held tightly against the cover side; rotate pinion «**C**» - **Fig. 15-17** in the working operation direction, whilst locking the crown.

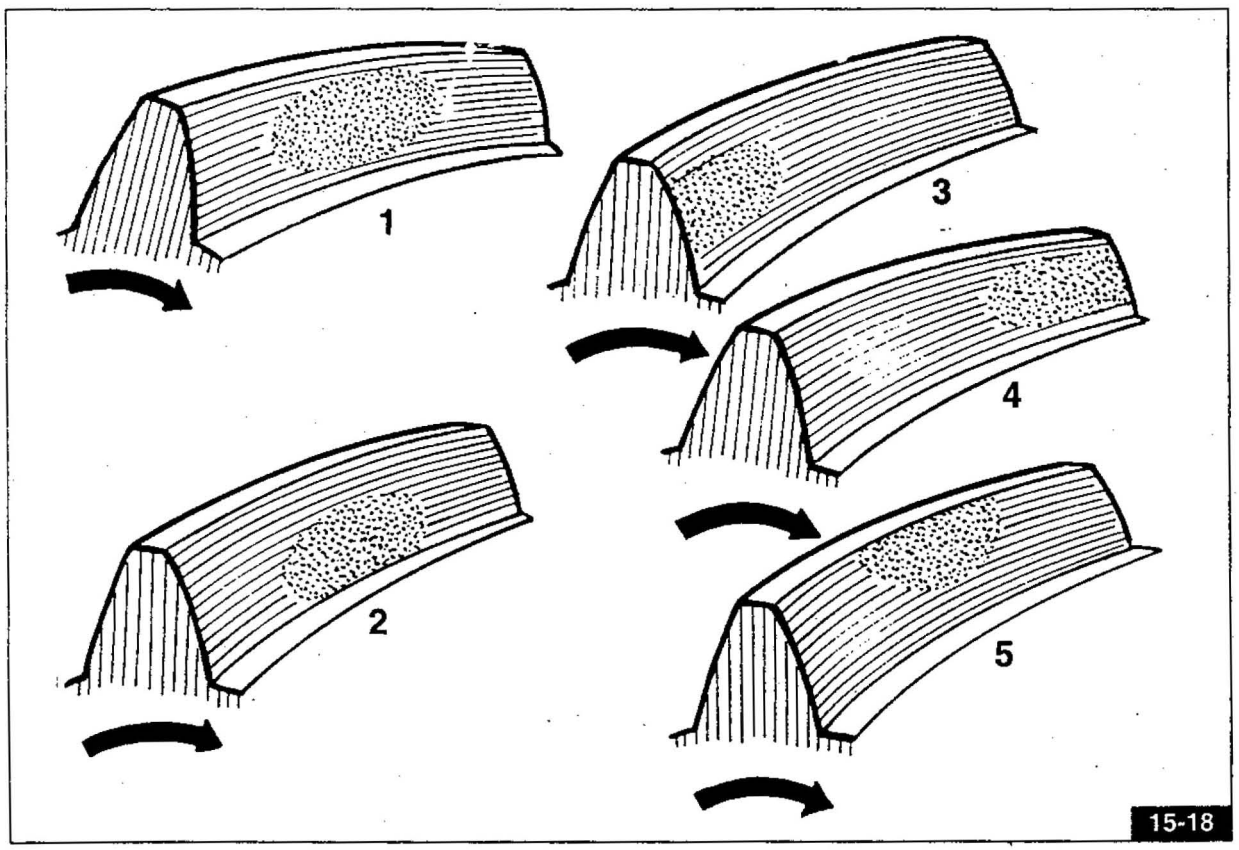
Remove the extractor, remove the cover and check the contact zone on the pinion teeth.



15-17

Contact control (Fig. 15-18)

- if the contact is correct the traces on the pinion teeth will be seen as shown in detail 1 (the pinion is seen from the drive shaft side);
- if the contact is the same as detail 2 the crown is too near to the pinion rotation axis: move the crown away by increasing the thickness of the spacers between the box and the cover;
- if the contact is the same as detail 3 the pinion is too near to the crown rotation axis: move the pinion away by reducing the thickness of the spacers between the bearings and the pinion;
- if the contact is the same as detail 4 the pinion is too far away from the crown rotation axis: move the pinion closer by increasing the thickness of the spacers between the bearings and the pinion;
- if the contact is the same as detail 5 the crown is too far away from the pinion rotation axis: move the crown nearer by reducing the thickness of the spacers between the box and the cover;
- with a correct coupling the play between the pinion teeth and the crown teeth should be between 0.10 mm and 0.15 mm.

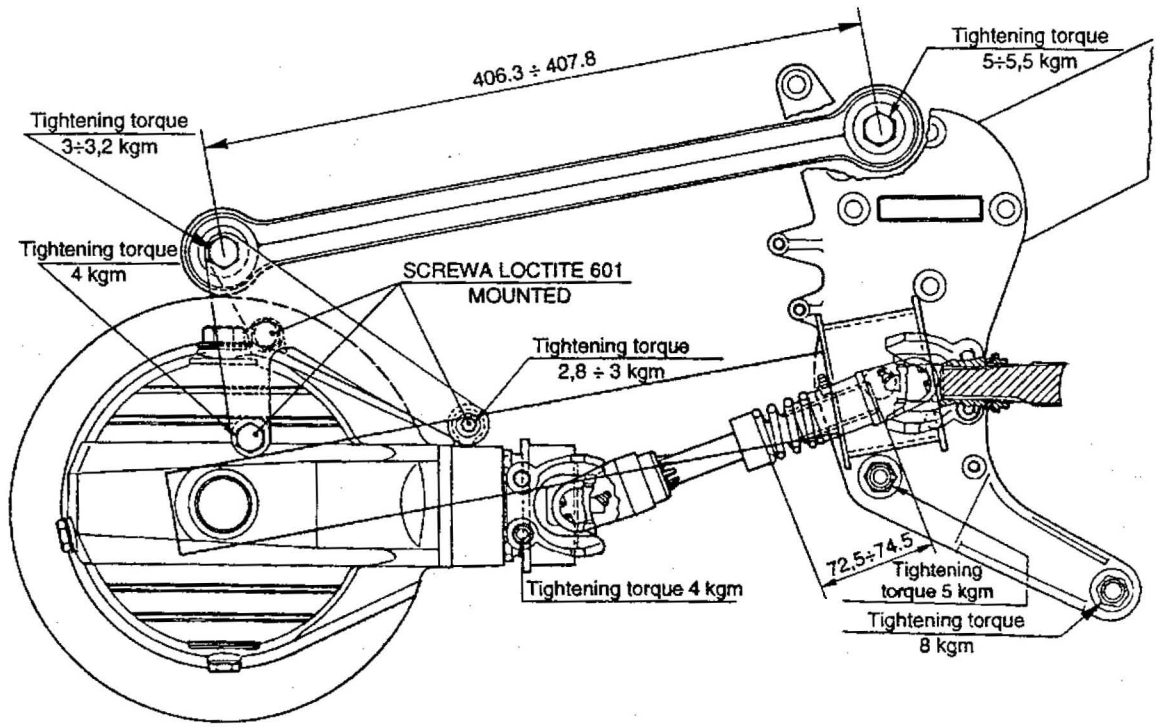


15-18

15.4 TRANSMISSION SHAFT

Replace the shaft with drive joints every 20.000 Km; if used for sporting purposes, or used at continuous high speeds, replace every 15.000 Km.
For transmission shaft lubrication see Par. 4.5.

DIAGRAM FOR THE ASSEMBLY OF THE REAR TRANSMISSION ASSY

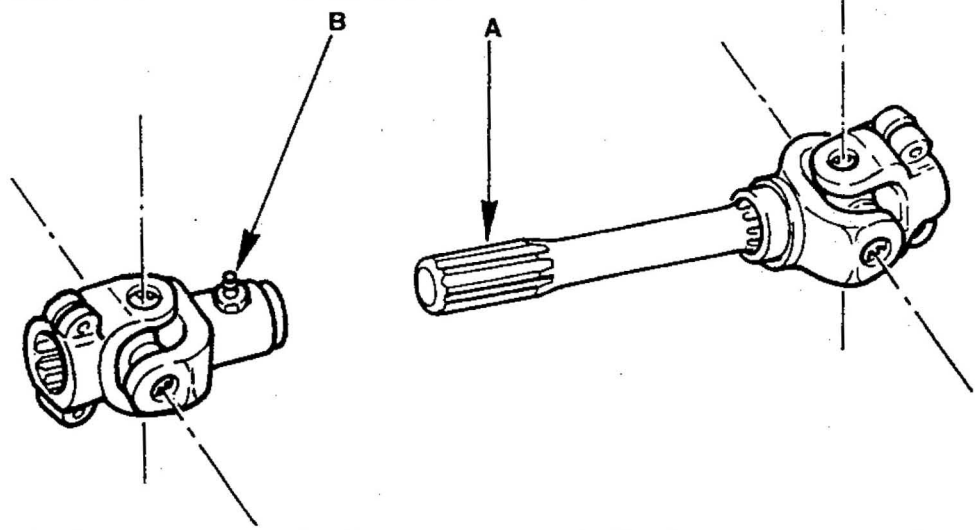


15-19

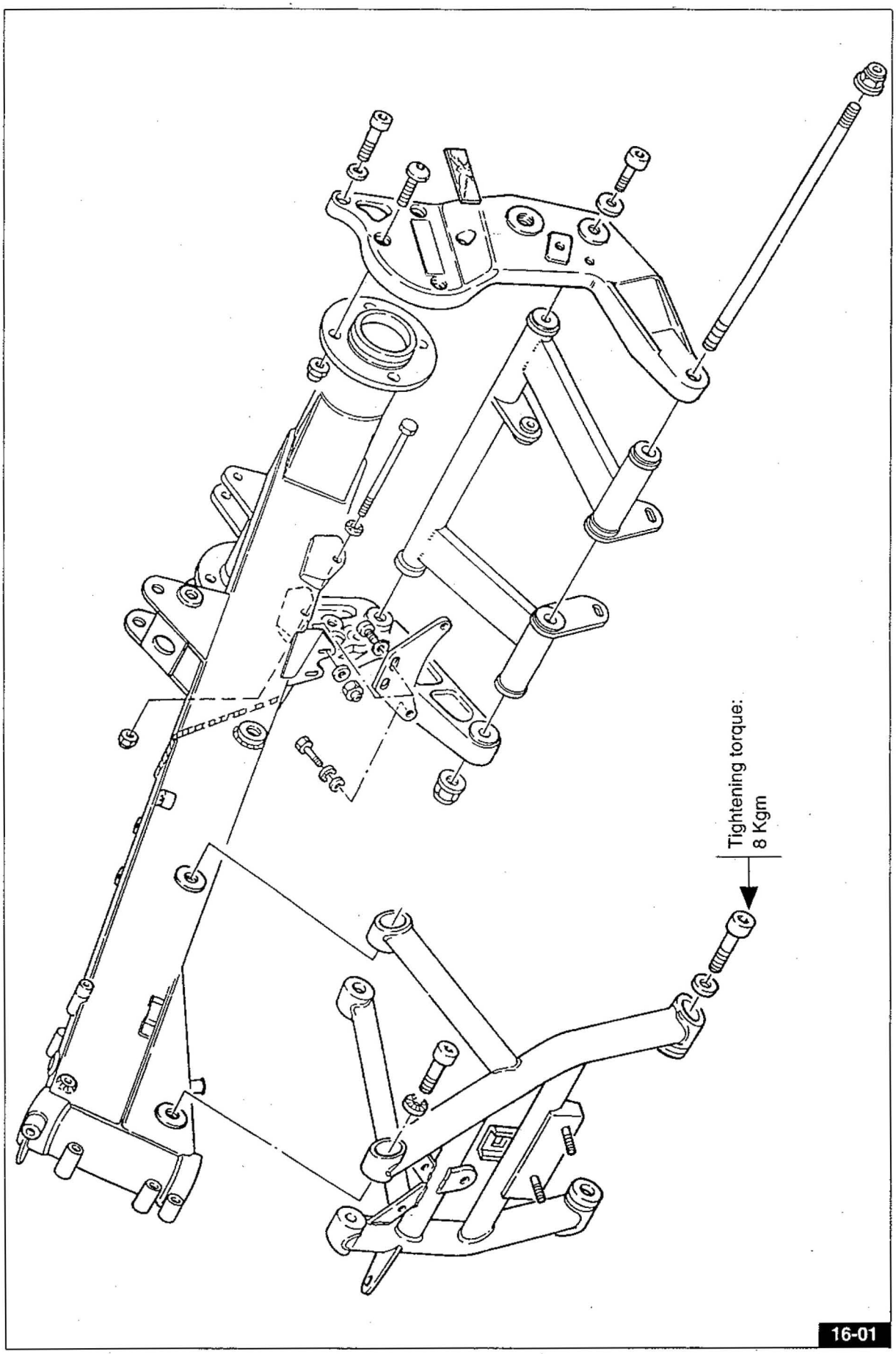
WARNING !

In order not to damage the drive shaft - joint unit, if the unit is replaced, it is essential that the drive joint is reassembled in the position shown in the Fig. 15-20.

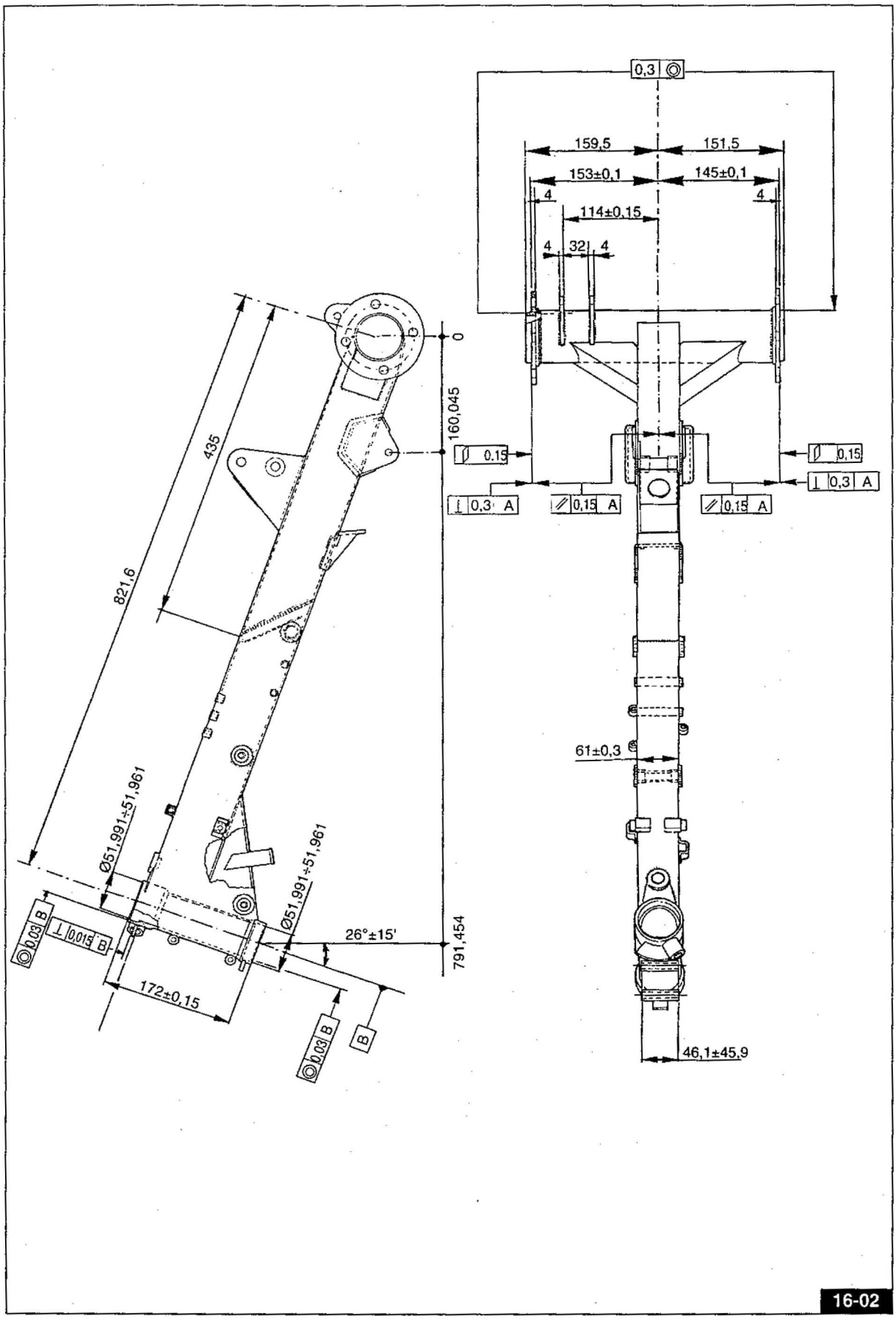
DIAGRAM FOR THE TRANSMISSION UNION POSITIONS



15-20

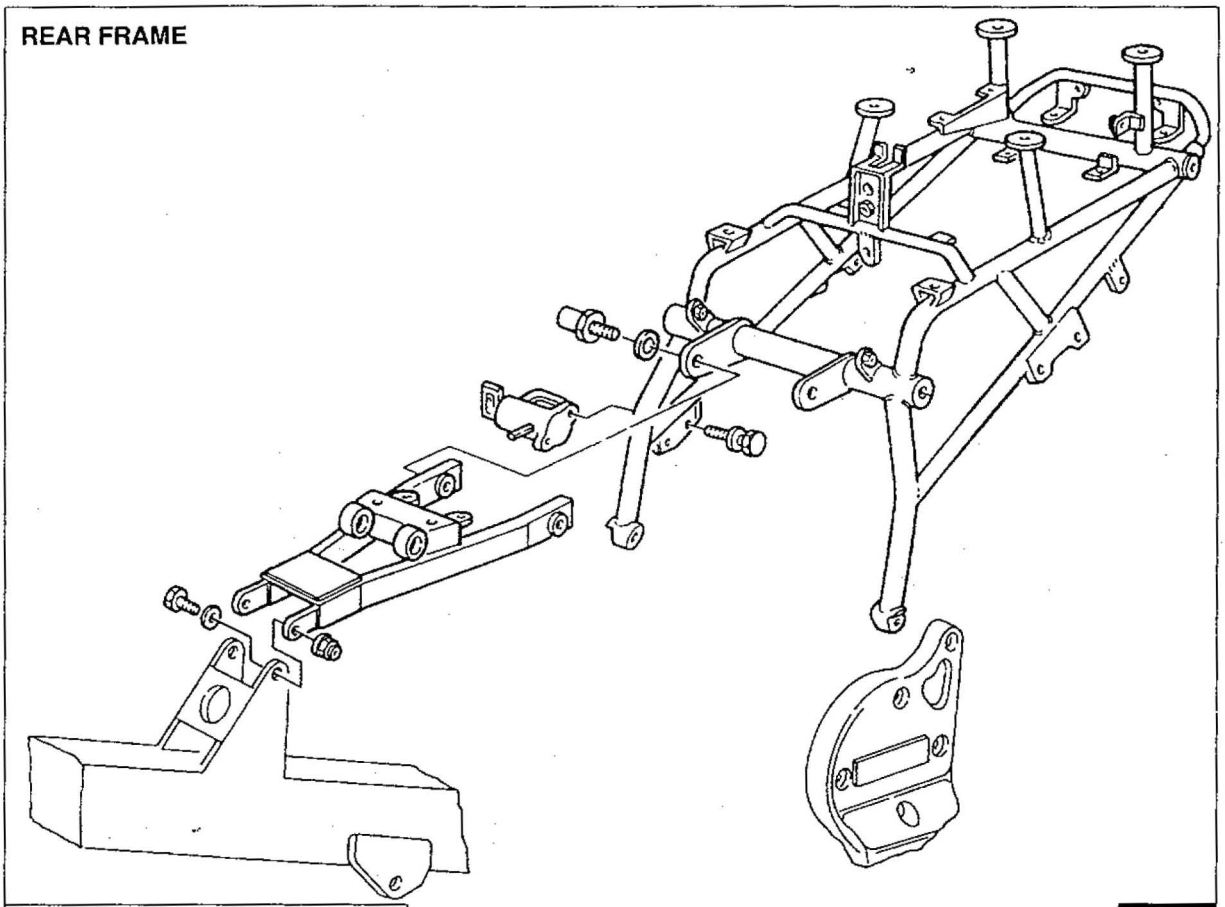

Tightening torque:
8 Kgm
16-01

Checking and repair of frame.
The frame must be repaired after an impact.
When performing a check, observe the measurements shown in **Fig. 16-03 / 16-04 / 16-05**.



16-02

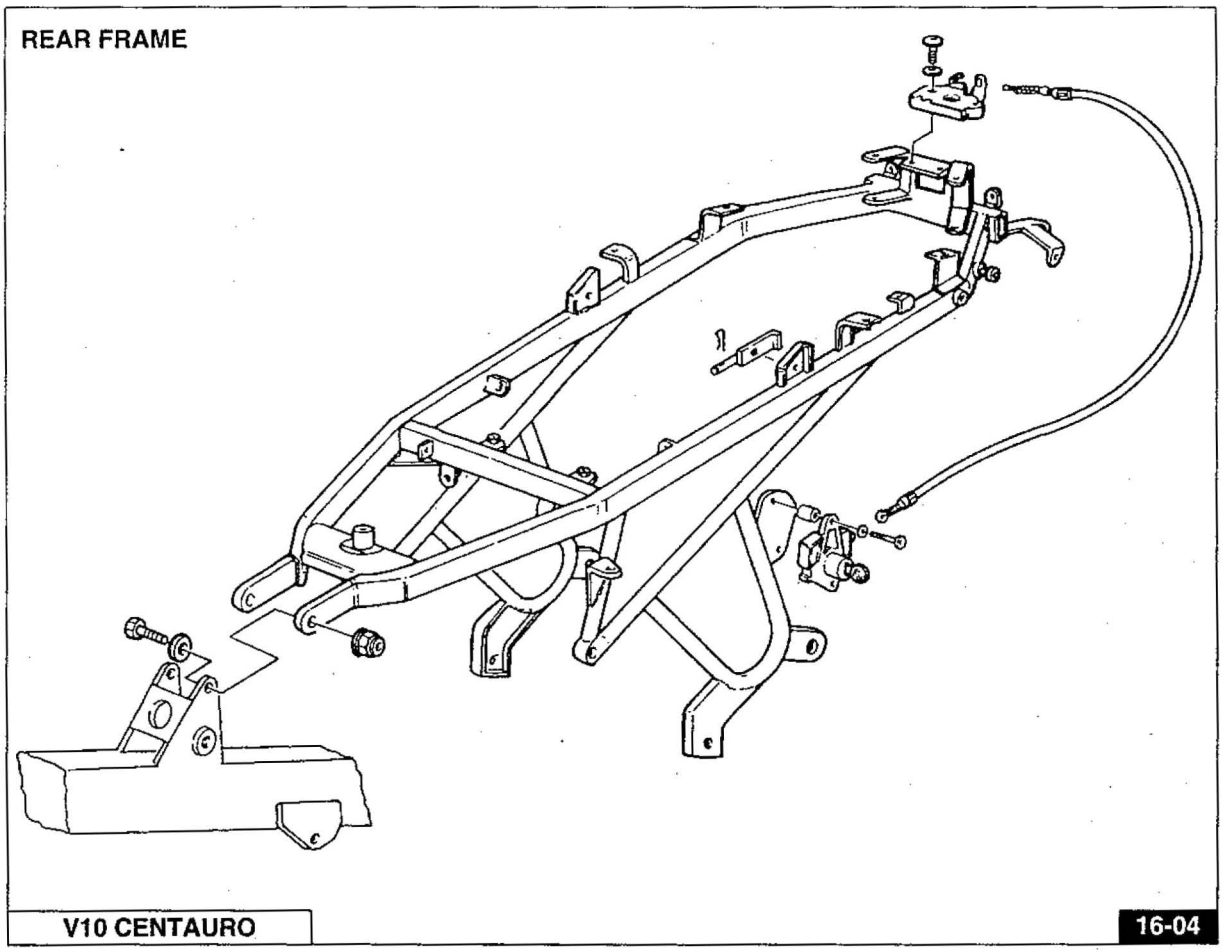
REAR FRAME



DAYTONA RS / SPORT 1100 I

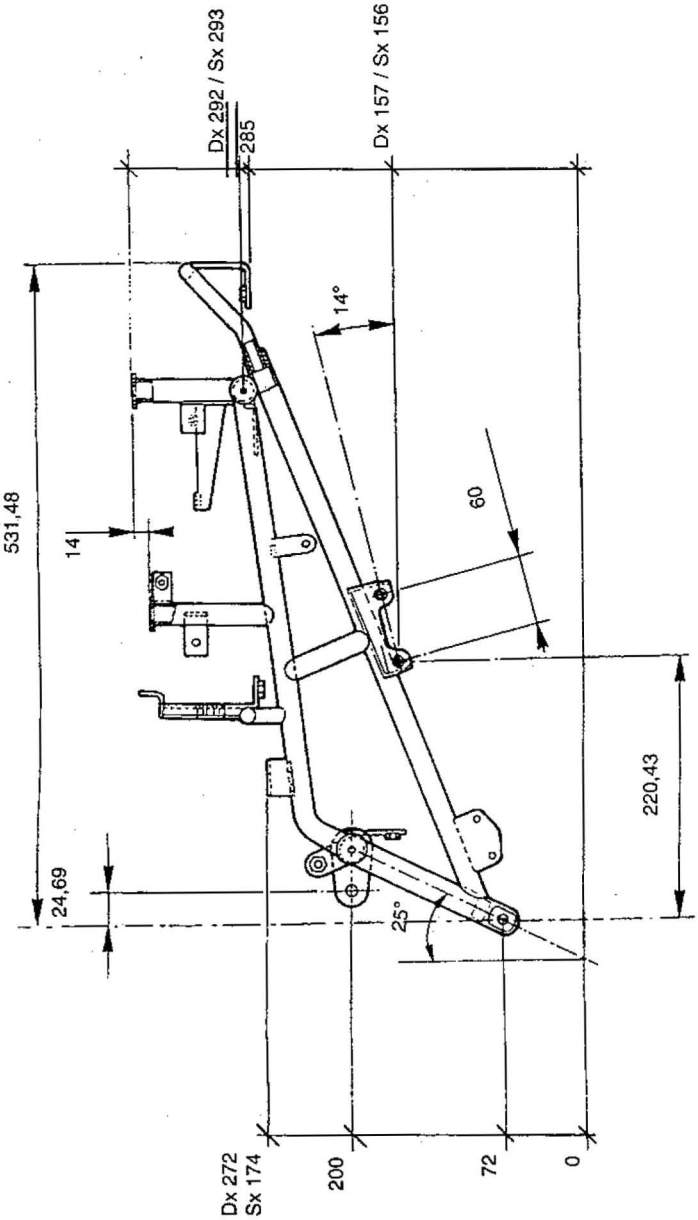
16-03

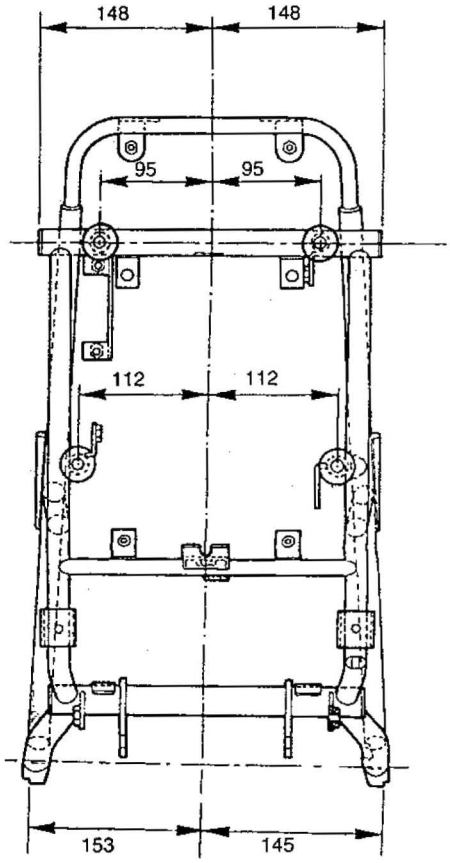
REAR FRAME

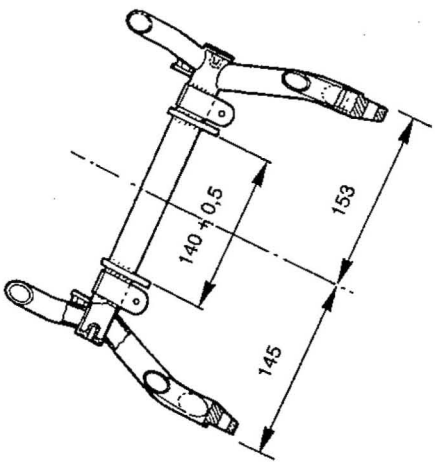


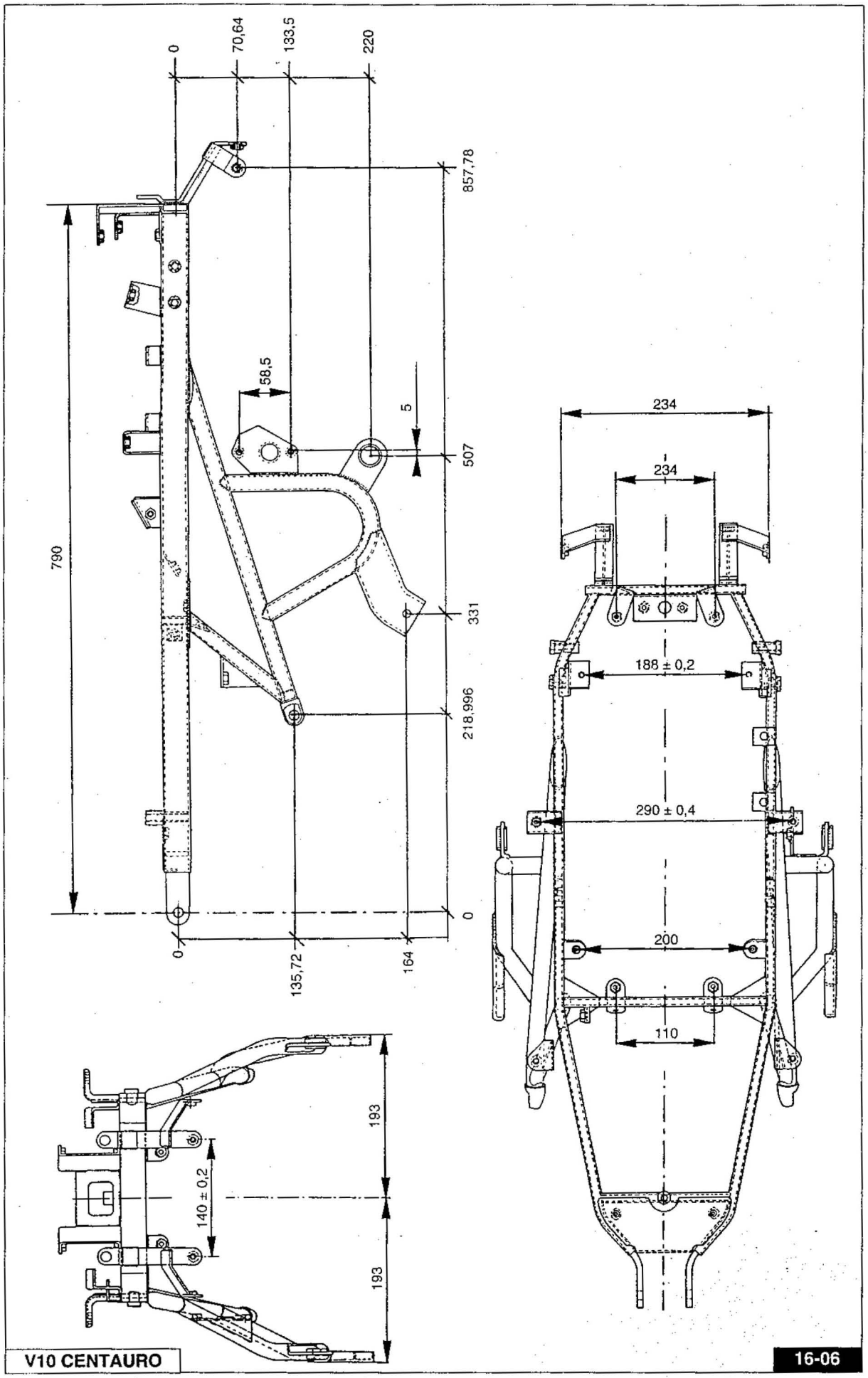
V10 CENTAURO

16-04


Dx 292 / Sx 293
285
Dx 157 / Sx 156
14°
531,48
14
60
220,43
24,69
25°
Dx 272
Sx 174
200
72
0


148
148
95
95
112
112
153
145


140 +0,5
153
145



V10 CENTAURO

16-06

17 FRONT FORK

NOTE: For the regulation of the adjustable telescopic fork, see paragrah.5.5

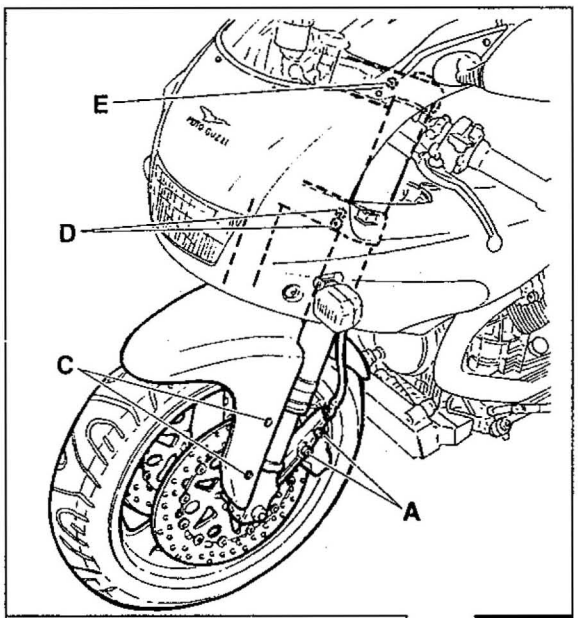
17.1 CHANGE THE FORK OIL

About every 15.000 Km or thereabout a year the fork oil must be changed .
The quantity needed for each shank is about 0.400 litre of oil per "WP suspension - REZ 71 (SAE 5)" cartridge.

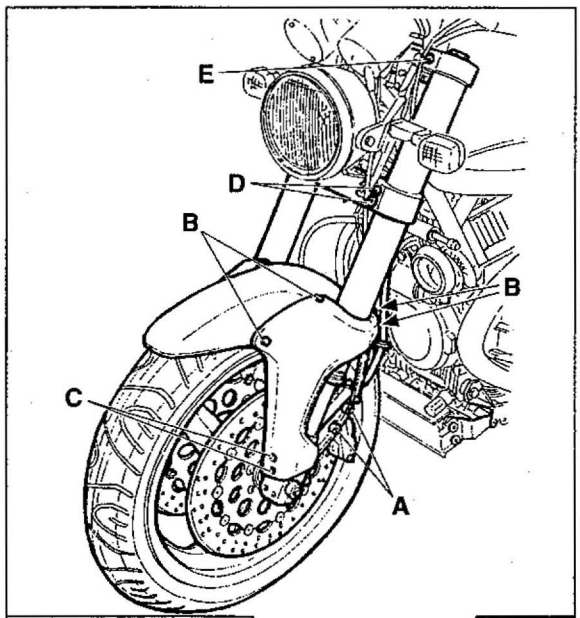
17.2 DISASSEMBLE FORK STEM (Fig. 17-01)

To disassemble the front fork proceed as follows

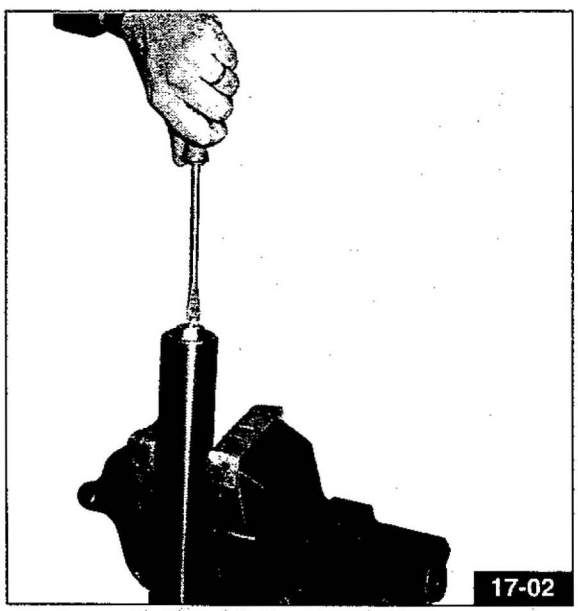
- Remove the clamps from the fork shanks unscrewing the screws «**A**» from both sides of the motor bike.
- Disassemble the front wheel following the procedure indicated in paragraph 19.1.
- Unscrew the screws «**B**» from both sides of the motor bike, thus freeing the central part of the mudguard (only for Mod.V10 CENTAURO).
- Unscrew from both sides the screws «**C**» that connect the mudguard to the foot of the fork, then remove it. (Mod. DAYTONA RS and SPORT 1100 1).
- Unscrew from both sides the screws «**C**» that fix the small body side panels to the foot of the fork, then remove them. (Mod. V10 CENTAURO)
- Loosen the screws «**D**« and «**E**» of the blockage plate from both sides of the motor bike, then remove the stems of the fork.



DAYTONA RS / SPORT 1100 I — 17-01



V10 CENTAURO — 17-01

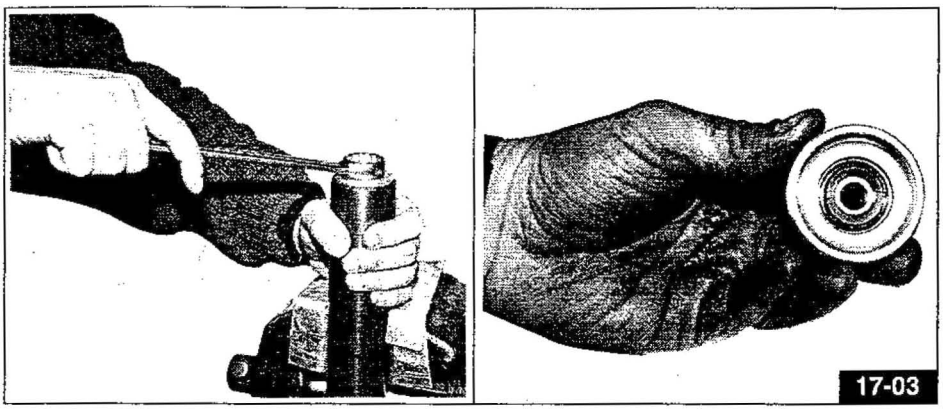


17-02

17.3 REMOVAL OF THE SCREWED CAP

- Clamp the upper arm of the fork in a aluminium protected mechanical jaw, to avoid damages. Before disassembling the screw cap, adjust the brakes device at a minimum damping (turn the brake adjuster anti clock wise) **Fig. 17-02.**

- Unscrew the cap of the fork arm using a size 24 polygonal spanner **Fig. 17-03**. Release from the clamp the fork arm, then slide the external tube down until the ledge of the lower leg is reached **Fig. 17-04**.
- Insert a stud (diameter max: 5mm) or a small Allen wrench in one of the cartridge holes **Fig. 17-05**.
- Turn the spring a little, in order to free the plates so that it is possible to remove them **Fig. 17-05**.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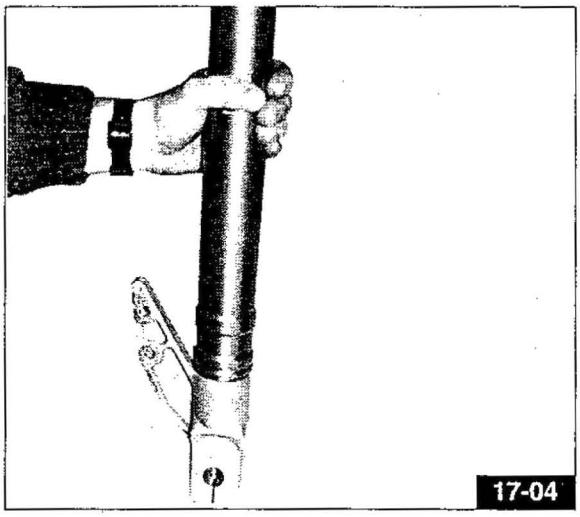
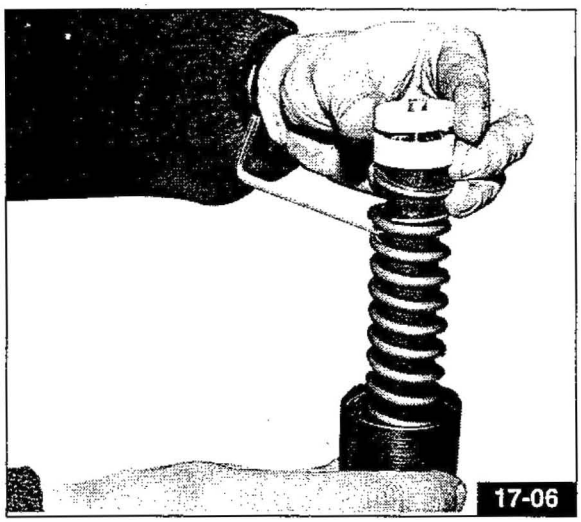
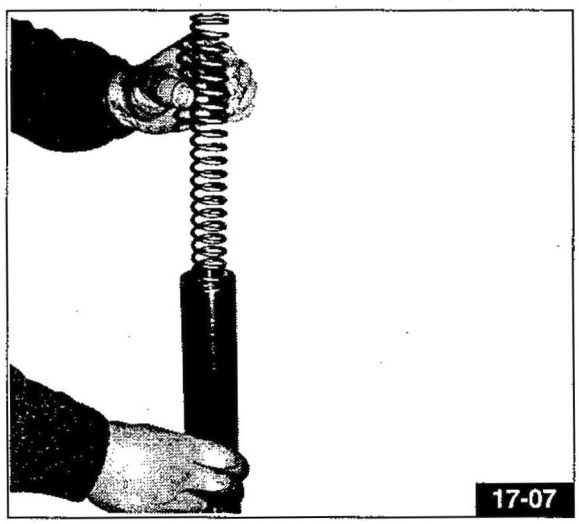
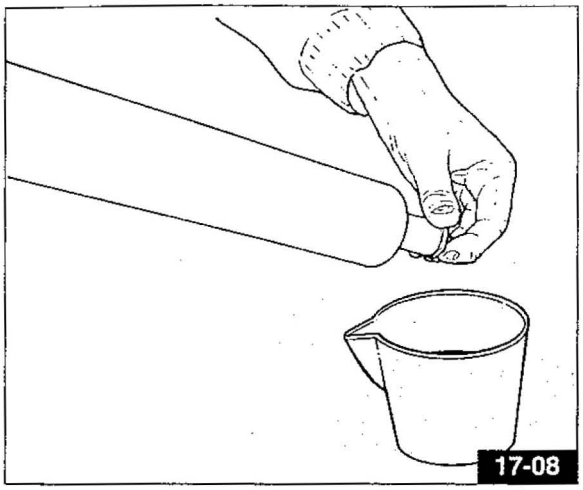

17-04


17-05

- Remove the pre loading steel bush ring which is on the spring **Fig. 17-06**. Then let the cartridge come down slowly (stopping) in the internal arm.
- Remove the spring slowly from the fork arm **Fig.17-07** so that the oil can flow.


17-06

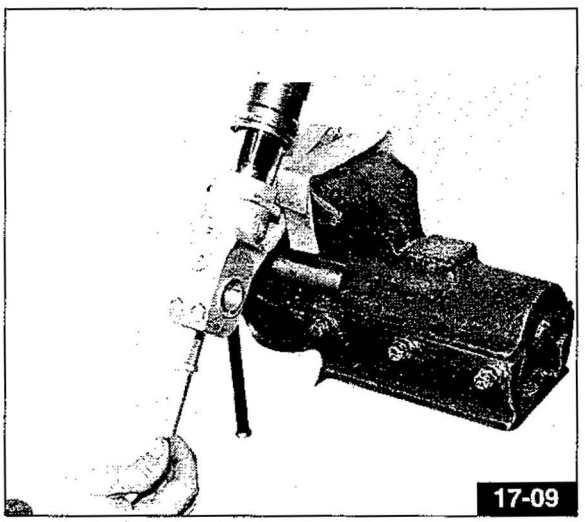

17-07

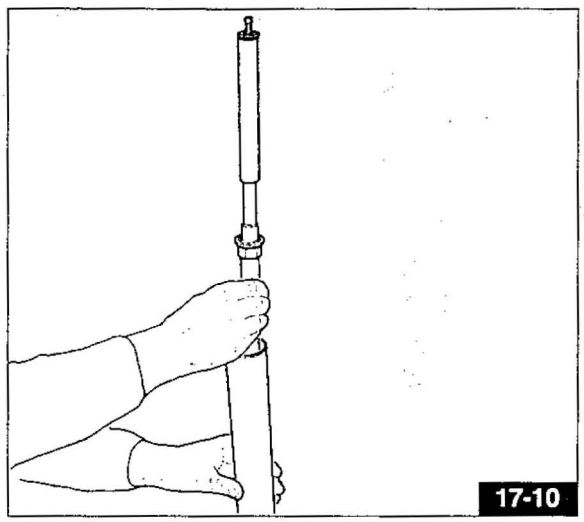


17.4 OIL DRAINING

Let the cartridge slip down into the fork arm and drain the oil in an appropriate can or container **Fig. 17-08**.

- Clamp the leg and tighten it so that the fork arm is slanting at about 45° **Fig. 17-09**. Clean the screw which is below the fork and unscrew it **Fig. 17-09**.
- After having unscrewed the lower M8 screw it will be possible to extract the whole cartridge from the fork **Fig.17-10**. If the cartridge is blocked, screw again the M8 screw which is mounted under the lower leg and hit the screw head gently until the cartridge is unblocked.
- Turn the fork upside down on the container, so that all the oil comes out.



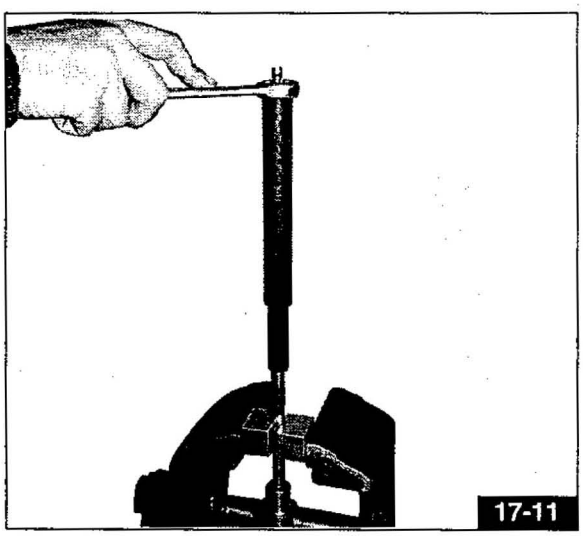


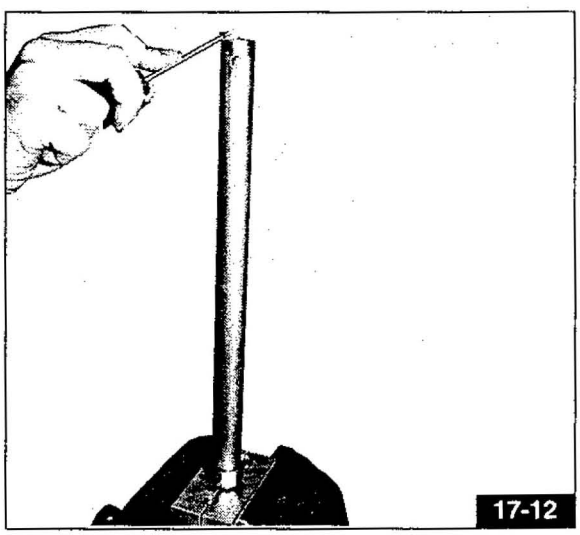
17.5 CARTRIDGE DISASSEMBLY

When the inside components of the external arm have been removed, the plastic pipe of the hydraulic blockage must be unscrewed from the cartridge tube **Fig. 17-11**. So as not to damage any components during this operation, the cartridge tube must be tightened in a clamp using special tightening blocks WP, at the level of the pressurising piston in the lower tube. (**Fig. 17-11**).

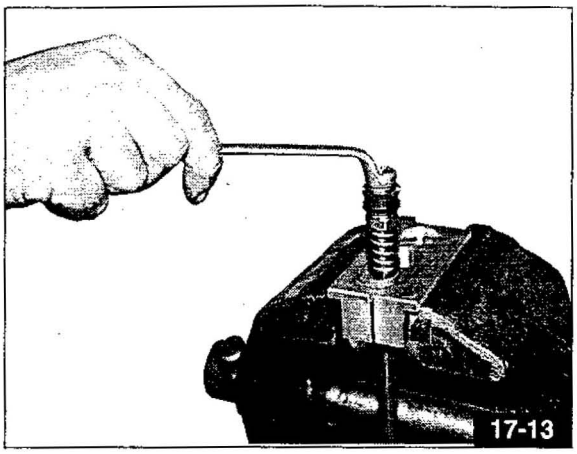
When the plastic tube has been unscrewed, it will be possible to extract the stem with the extension piston from the cartridge tube.

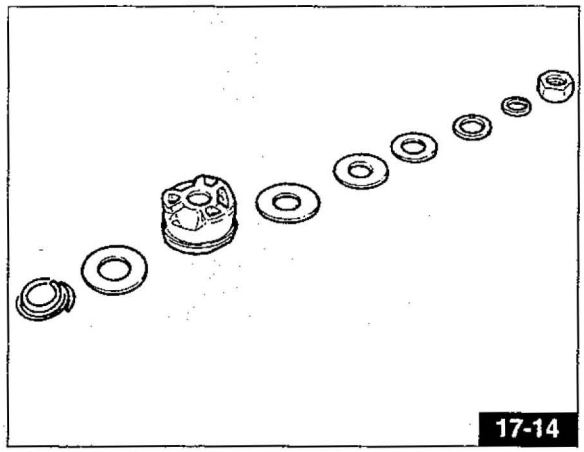
Around the extension piston there is an elastic ring **Fig. 17-12**,that should be substituted in case it should get damaged.





Now it will be possible to get out from the upper end of the cartridge the compression piston **Fig. 17-13.** Clean the piston thoroughly and make sure that it is not damaged. If it is necessary change the O-ring gasket. After checking that the cartridge components (**Fig. 17-14**) are not damaged and that they do not show any sign of excessive wear, the cartridge can be reassembled following the operations in reverse order.


17-13


17-14

17.6 OIL REFILLING

- Clamp the lower leg, with a slant of 45°. Insert the lower M8 screws with a new copper washer, and tighten it to a torque of 20-25 NM.
- Push the external arm downwards until it reaches the lower leg and lift up the cartridge carefully and refill the fork with new oil (use oil for the cartridges "WP Shock absorbers REZ71 (SAE5)" (**Fig. 17-15**).
- Move the shaft cartridge slowly up and down so that it fills up with oil.

Continue to fill until, by pulling upwards, a uniform resistance can be felt along the entire stroke. At this point all the air in the cartridge will be bleedt.

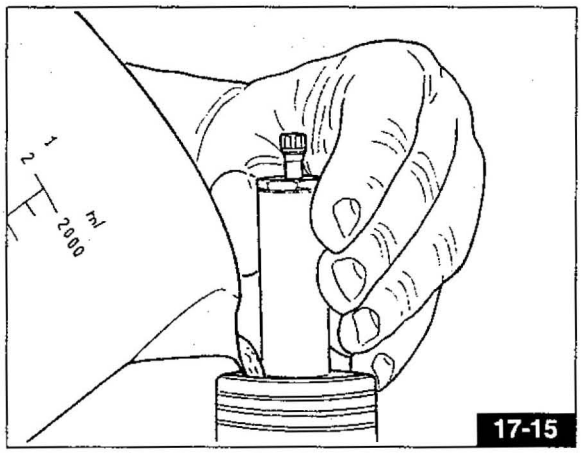
- When the cartridge is filled by oil it will be possible to insert the spring in the cartridge and mount it on the external arm together with the ring, the pre loading bushes and the caps.

NOTE: Pour on each stem an amount of oil equal to 400 cc.

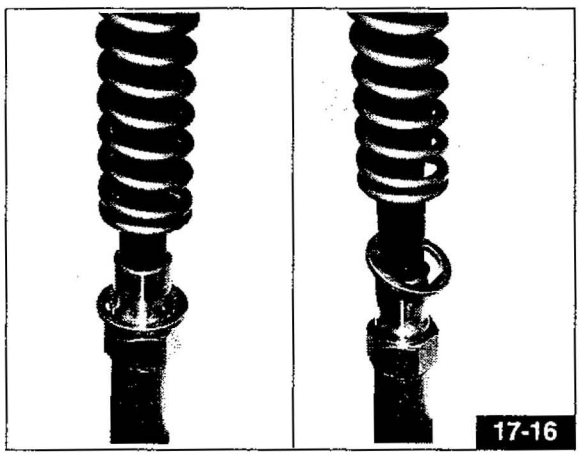
WARNING

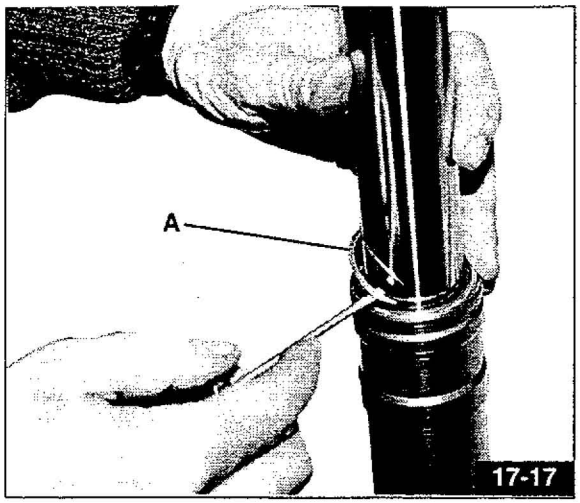
During the spring assembly, make sure that the lower support washer matches correctly on the hexagon of the cartridge.

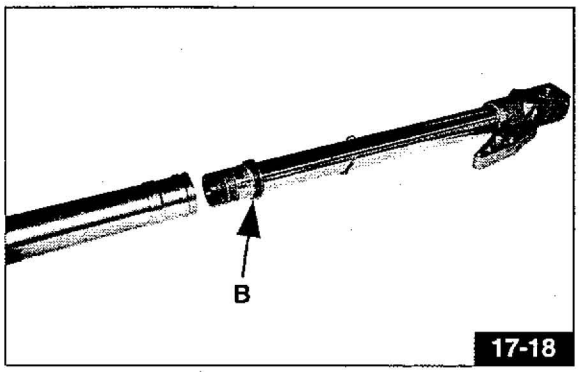
If the assembling of the spring is done too quickly then there is a dangerous possibility that the washer gets stuck on the sleeve of the hydraulic stop Fig. 17-16.

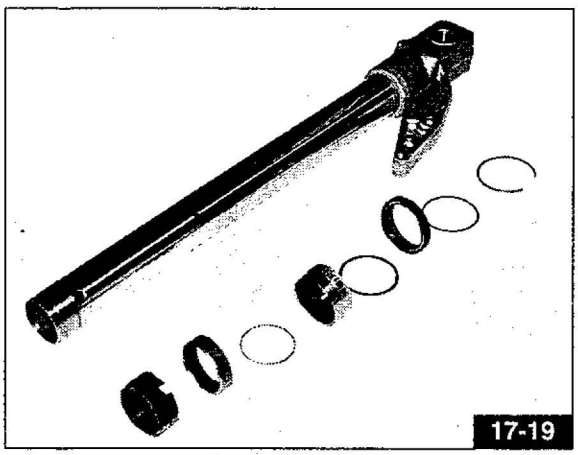


17-15


17-16







17.7 SUBSTITUTING THE OIL RETAINER BUSHING

- Remove the oil from the fork before starting to work.
- Take off the stop ring «**A**» - **Fig. 17-17**.
- Pull out firmly the internal arm from the external arm **Fig.17-18**.
- Remove the security red bush «**B**» - **Fig. 17-18** which has a three marks.

Be careful when extracting the arm, as more oil can come out.

- Extract all the components as illustrated in **Fig. 17-19**.

WARNING

Check that all the bearings and the oil retainers on both forks, and if necessary change them.

WARNING

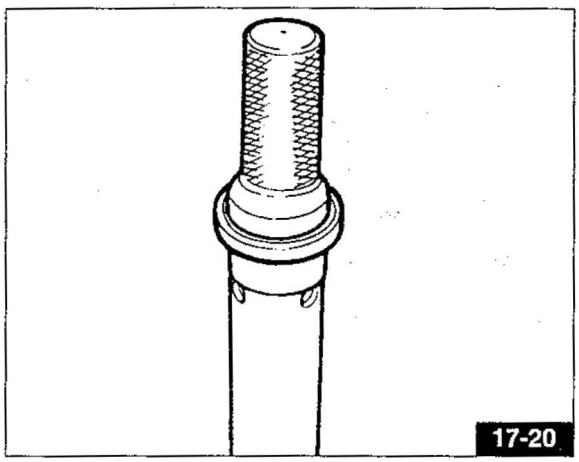
If the surface of the bearings are dirty, or if the bronze can be seen under the coating surface, then the bearings must be changed.

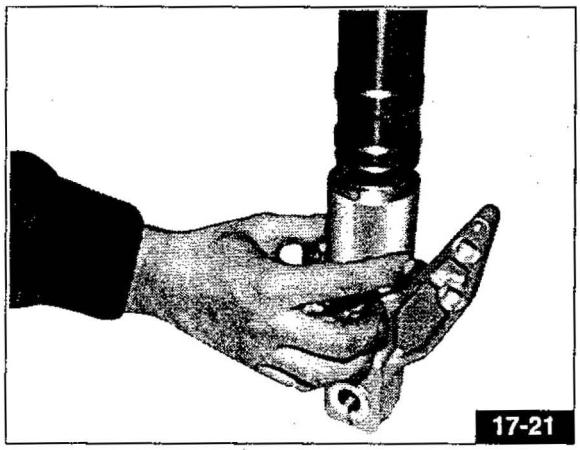
WARNING

Because while disassembling the oil retainers are damaged, they must be substituted with new ones each time.

NOTE: Assemble and disassembling rules for the components: stopping ring, shim ring, Red/Brown Oil retainer, support ring, lower sliding bush, higher sliding bush and red security bush Fig. 17-19.

- Assembly of the oil retainer ring
- Before assembling plunge the oil retainer ring in oil.
- Assemble the oil retainer guard on the internal tube using the W.P. tool as illustrated in **Fig.17-20:**
- Assemble all the other components as shown in **Fig. 17-19;**
- Insert the internal tube with all the other components assembled and with the red security bushing correctly fixed on the external tube.
- Insert the oil retainer guard in the seat of the external tube, with the W.P. tool in place (**Fig.17-21**) hit the upper part of the external tube with a plastic hammer until the oil retainer ring is inserted correctly in place (the sound should tell that it matches perfectly).
- Reassemble the lock ring (**Fig. 17-17**)

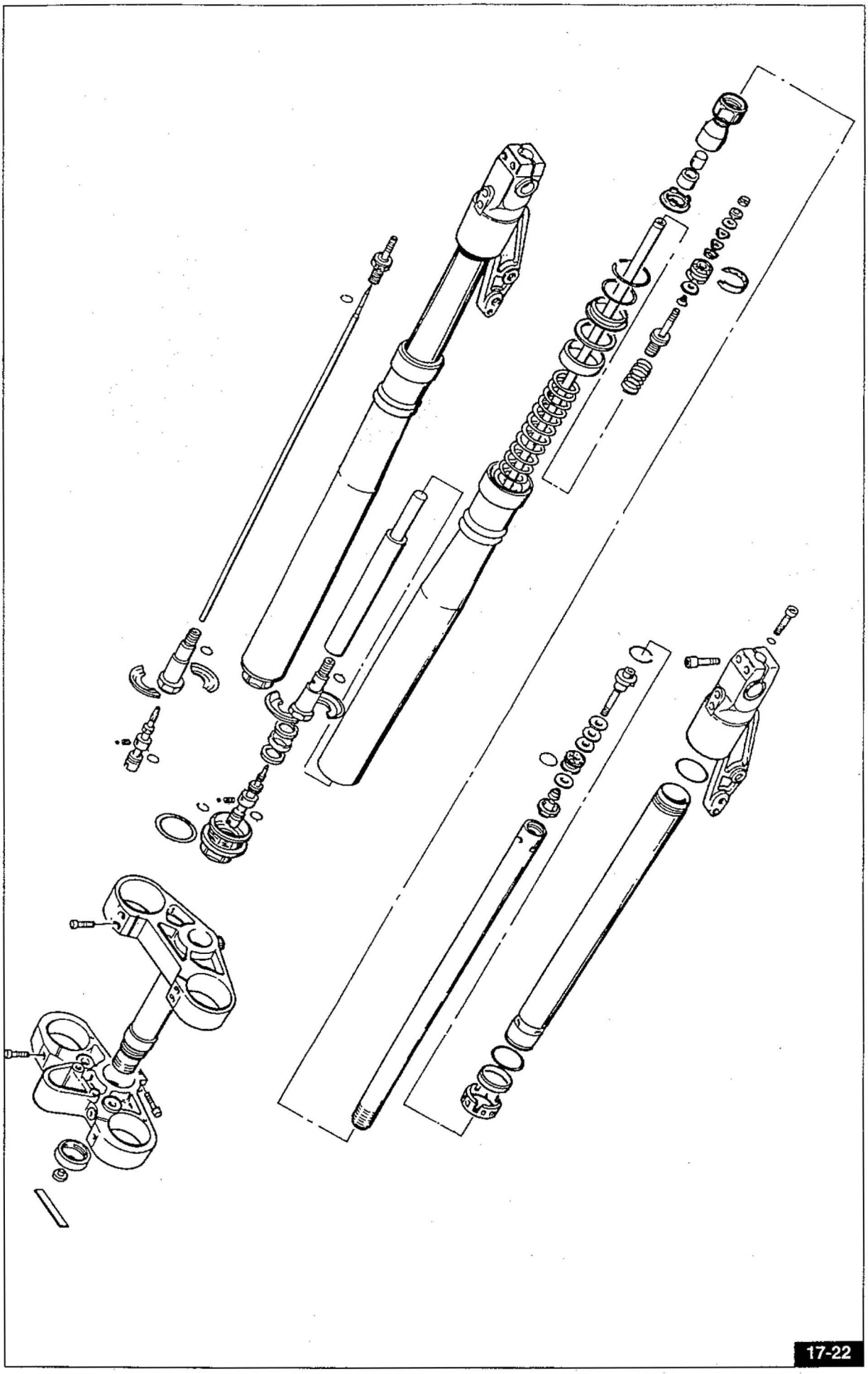

17-20


17-21

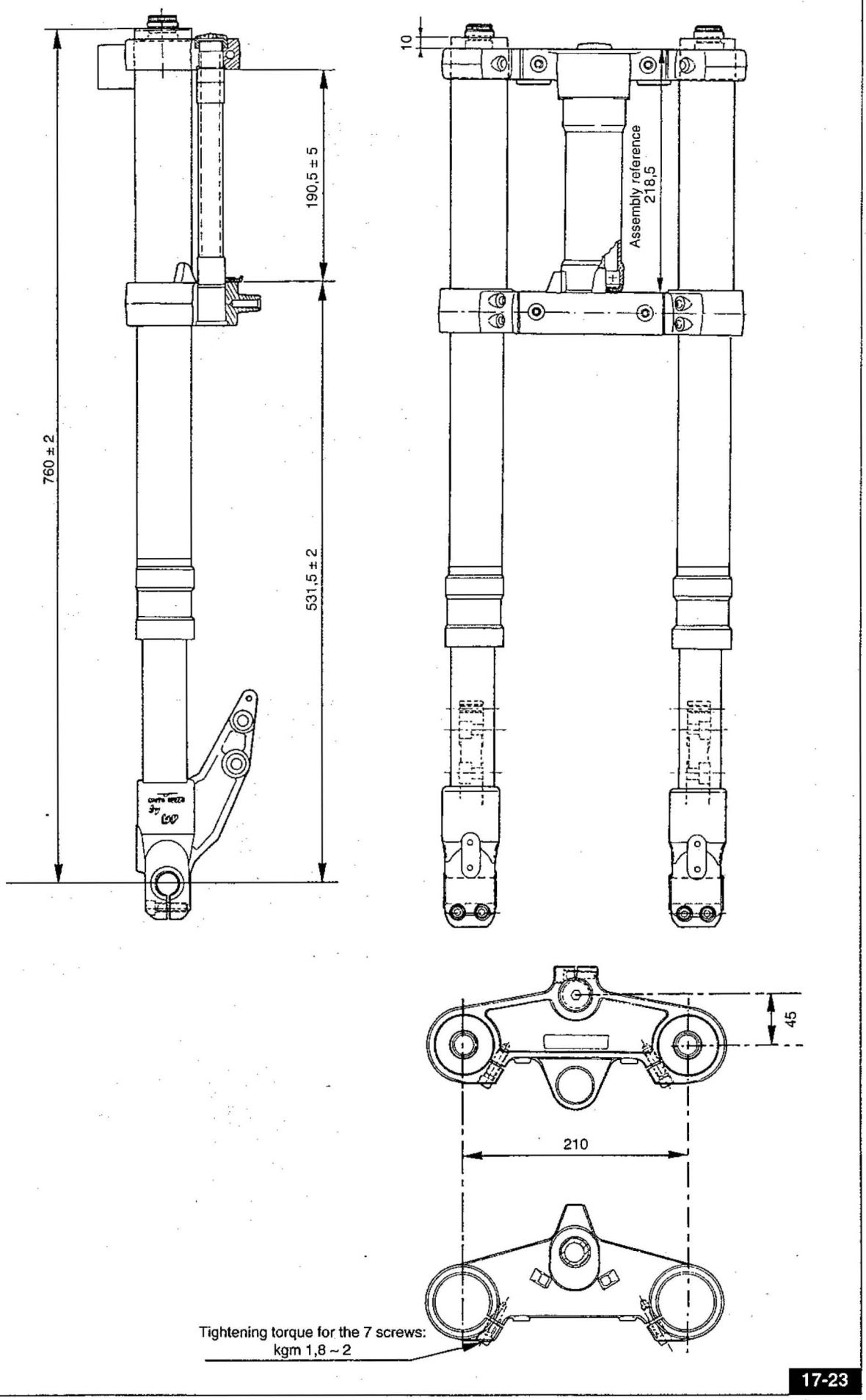
17.8 ASSEMBLING OF THE FORK ON THE MOTORCYCLE

- The right and left arms are not the same. The right arm (according to driver position) includes the adjustment device for the hydraulic brake in compression, while the left arm includes the adjustment device for the hydraulic brake in rebound.
- When assembling the fork, the arms and the plates should be perfectly clean.

Complete the forecarriage assembly by reversing the order of the operations described at par. 17.2.



17-22


760 ± 2
190,5 ± 5
531,5 ± 2
10
Assembly reference
218,5
45
210
Tightening torque for the 7 screws:
kgm 1,8 ~ 2
17-23

Before removing the oil sump the oil filter can be removed in this way:

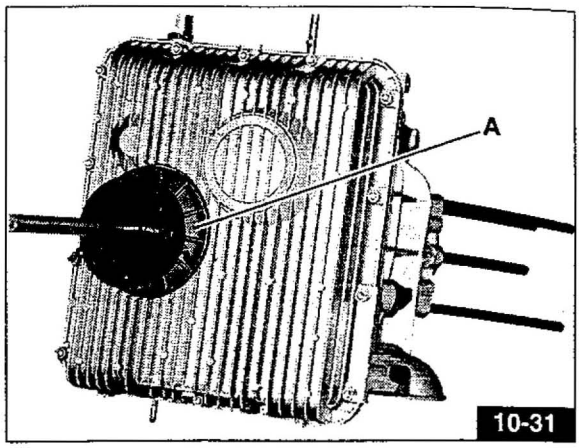
- Unscrew the external cap «**A**» - **Fig. 10-31** with the special tool (Cod. 01929100).

- With the other end if the same tool unscrew the filter. Using the same tool assembly upside down unscrew and extract the filter «**B**» - **Fig.10-31/A.**

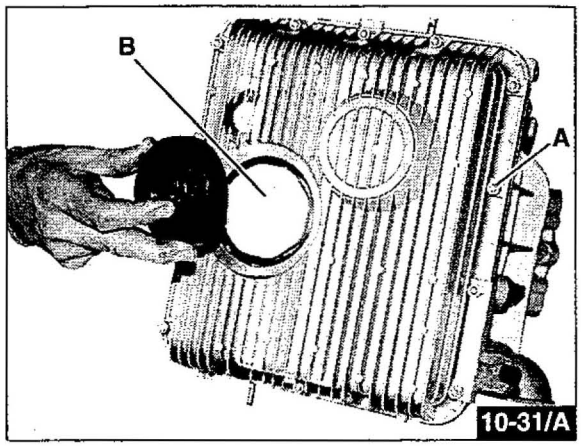
WARNING

Pay attention positioning the OR when reassembling the external oil cap «A» - Fig.10-31 Replace the OR if damaged.

- Unscrew the 14 peripheral sealing screws «**A**» of the oil sump **(Fig. 10-31/A)**, then disassemble it.



10-31

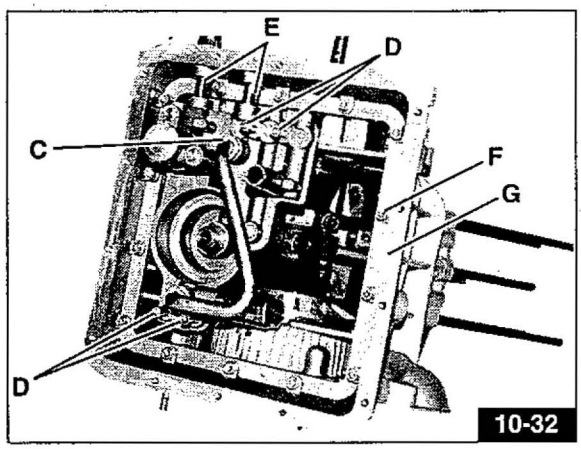


10-31/A

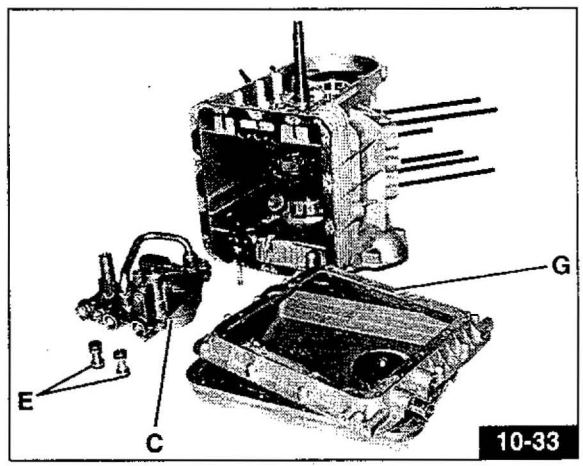
- Disassemble the oil filter support «**C**» - **Fig. 10-32**. Unscrewing the fixing bolts «**D**» - **Fig. 10-32**. And removing it the oil pipes «**E**»- **Fig. 10-32.**

- Unscrew the bolts «**F**» - **Fig. 10-32** and remove the flange «**G**»- **Fig. 10-21** and **Fig. 10-33.**

NOTE: In the first series of model SPORT 1100 I the flange «G» and the oil filter were a whole piece as shown in Table 1. Of page 68.

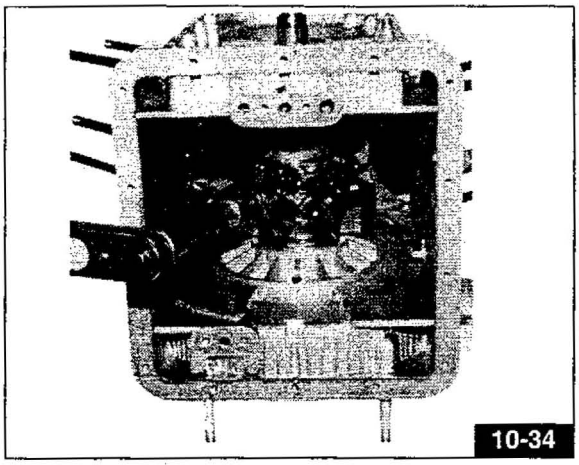


10-32

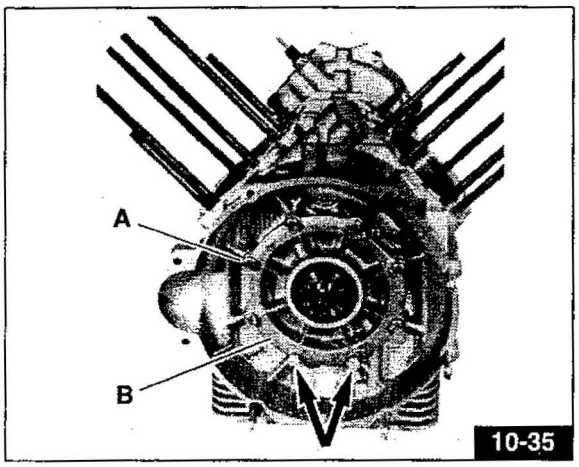


10-33

– Unscrew the con-rod screws from inside the crankcase and remove the connecting rods **(Fig. 10-34)**.

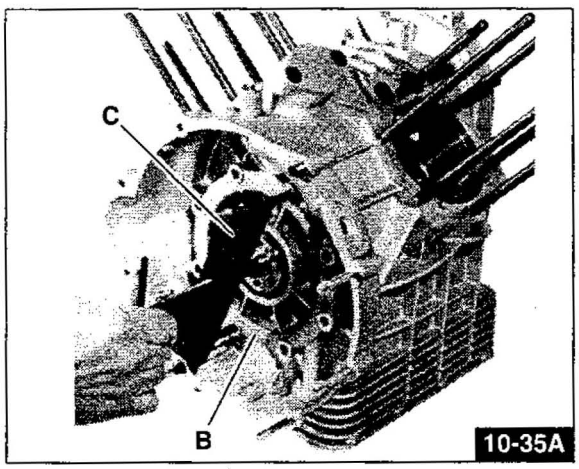

10-34

– Unscrew the 8 outer screws «**A**» holding the rear flange «**B**» that supports the crankshaft **(Fig. 10-35)**. When reassembling, use some Teflon tape on the 2 screw marked with the arrow **(Fig. 10-35)** to prevent oil from leaking through.



10-35

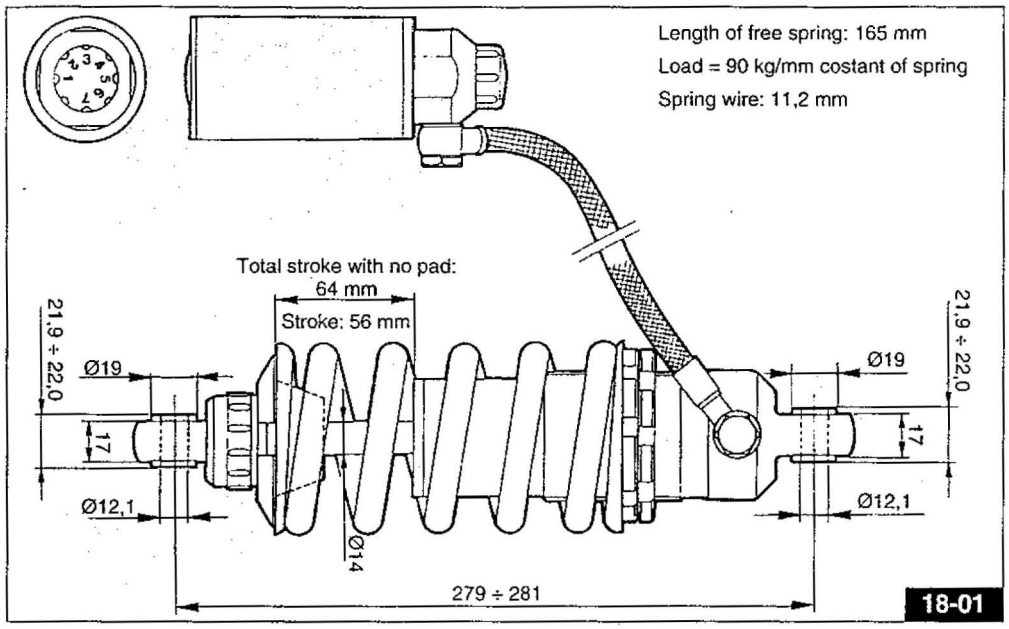
– Fit tool «**C**» (part no. 12 91 36 00) as shown in **Fig. 10-35A** to remove rear flange «**B**». Remove the flange and draw out the crankshaft from the rear.

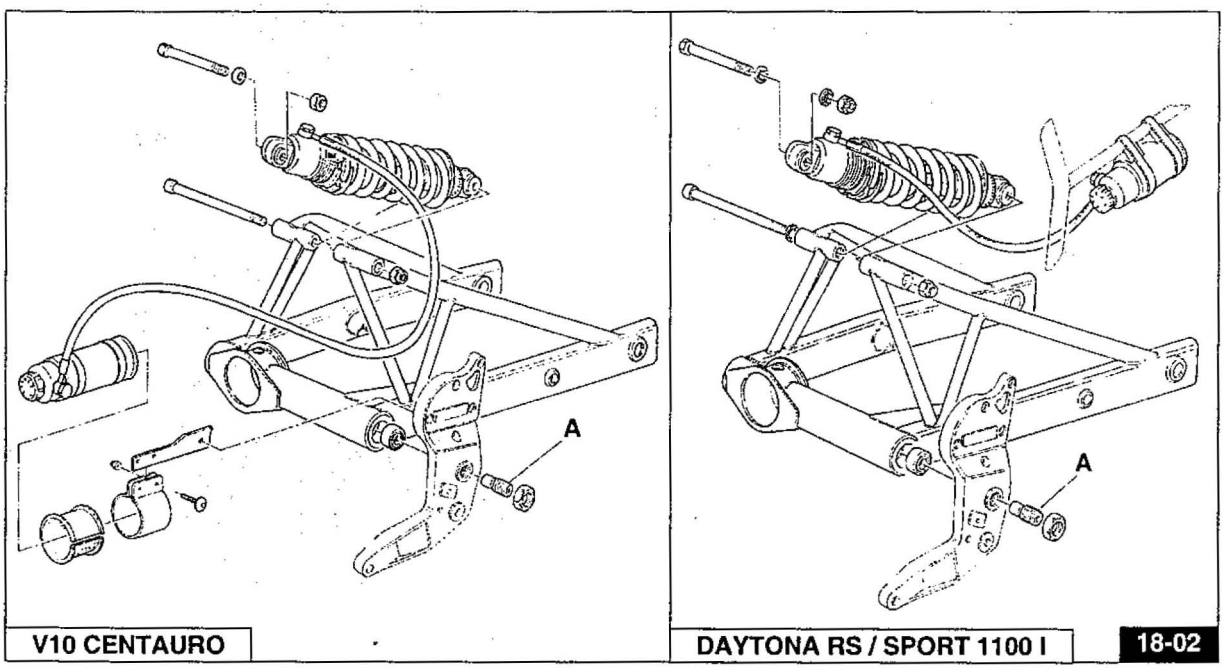


10-35A

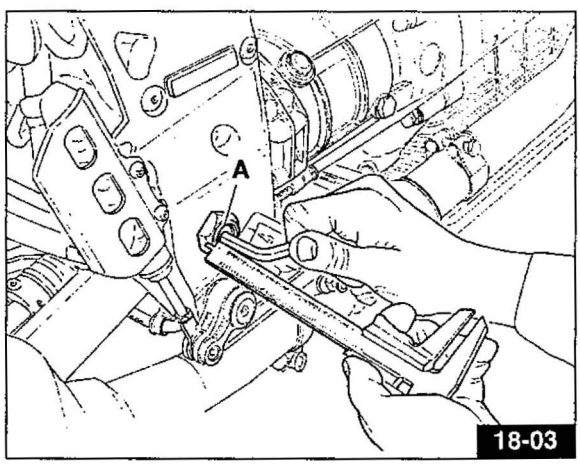
18 REAR SUSPENSION

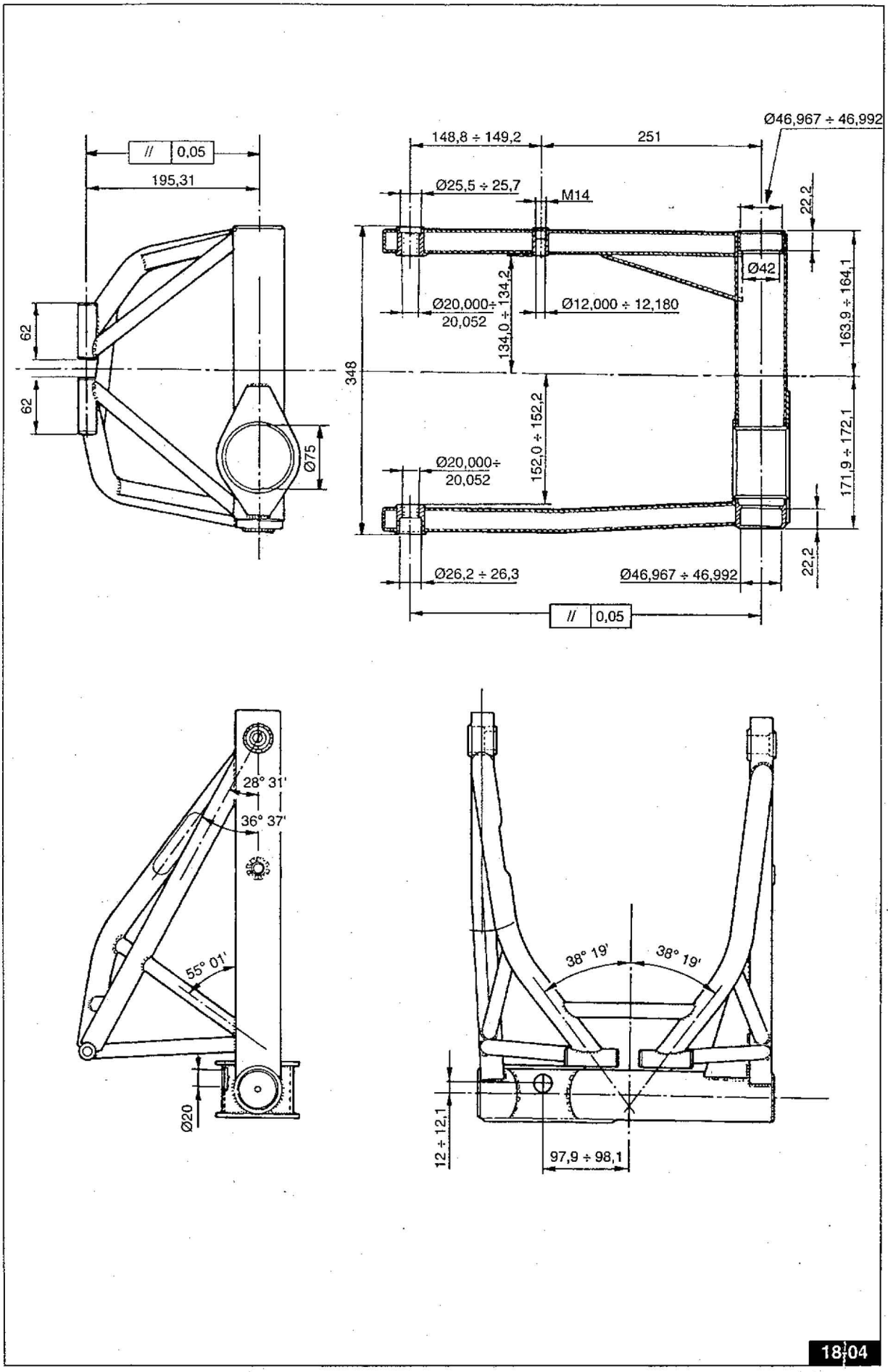
For "WHITE POWER" rear shock absorber adjustment see Par. 5.6





Adjusting the swing arm play (Fig. 18-02 / 18-03)
Ensure the swing fork oscillates freely without any play.
Be sure both spindles «**A**» project by the same amount.
The above-described adjustment operation should be carried out with an 8 mm. allen wrench and a gauge.




// 0,05
195,31
62
62
Ø75
148,8 ÷ 149,2
251
Ø46,967 ÷ 46,992
Ø25,5 ÷ 25,7
M14
22,2
Ø42
Ø20,000÷ 20,052
134,0 ÷ 134,2
Ø12,000 ÷ 12,180
163,9 ÷ 164,1
348
152,0 ÷ 152,2
171,9 ÷ 172,1
Ø20,000÷ 20,052
22,2
Ø26,2 ÷ 26,3
Ø46,967 ÷ 46,992
// 0,05
28° 31'
36° 37'
55° 01'
Ø20
38° 19'
38° 19'
12 ÷ 12,1
97,9 ÷ 98,1

18.04

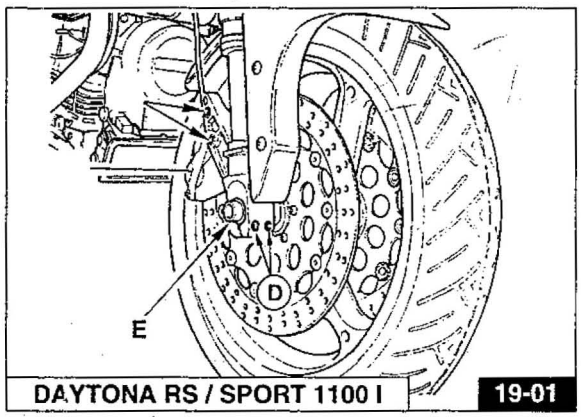
19 WHEELS

19.1 FRONT WHEEL

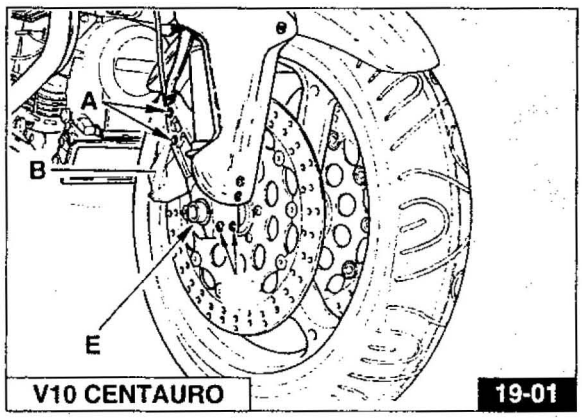
Front wheel removal (Fig. 19-01 / 19-02)

To remove the wheel proceed as follows:

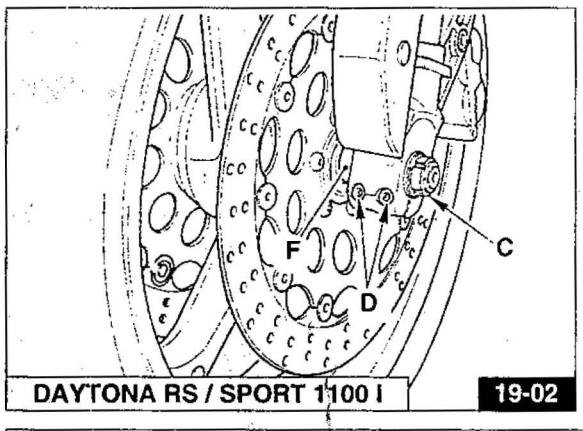
- place a support under the bottom of the engine to raise the front wheel off the ground;
- undo screws «**A**» that secure the brake calipers to the fork, and remove the calipers «**B**» together with their hoses;
- with the spanner code.01929300 unscrew the ring nut «**C**» that blocks the wheel stud.
- loosen the screws «**D**» securing the sleeve to the pin;
- sliding the stud «**E**» noting how the «**F**» spacer is assembled;
- remove the wheel.
- to reassemble follow the procedure in reverse order, taking care to maintain the correct position of the spacer; then pull the brake lever repeatedly until the caliper pistons return to their normal position.



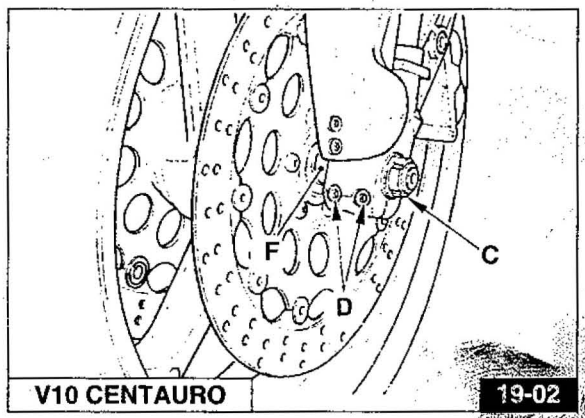
DAYTONA RS / SPORT 1100 I 19-01



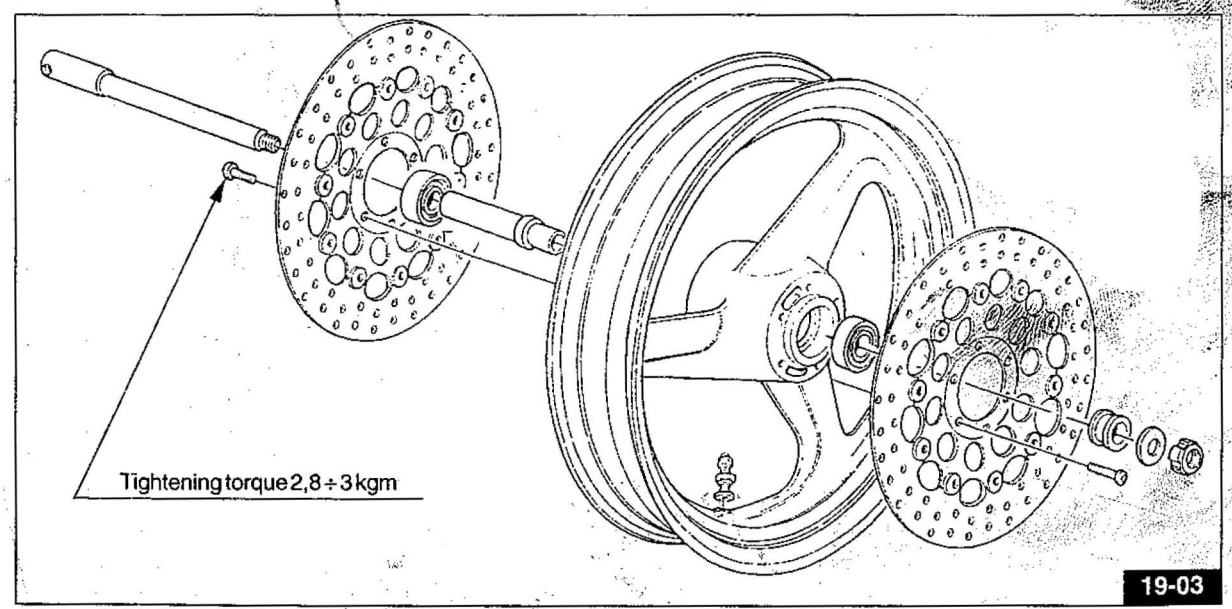
V10 CENTAURO 19-01



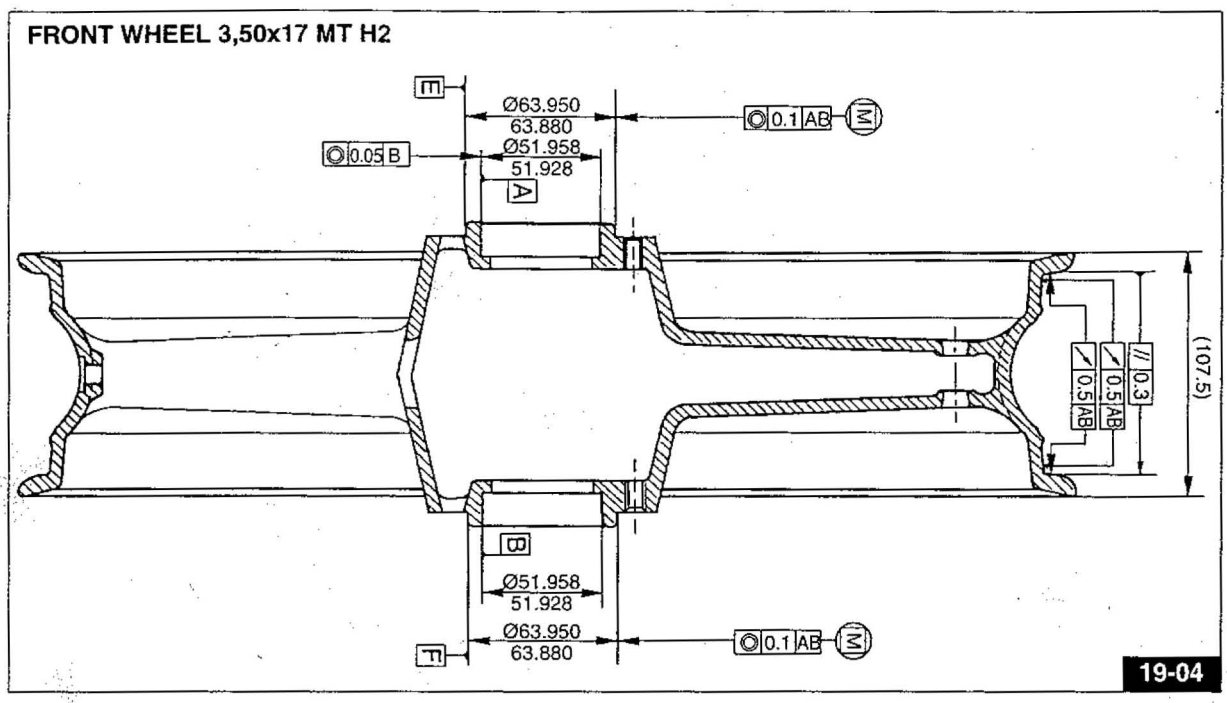
DAYTONA RS / SPORT 1100 I 19-02



V10 CENTAURO 19-02



19-03



19.2 REAR WHEEL

Rear wheel removal

To dismantle the rear wheel, proceed as follows:

- place a central support underneath the bike, to keep the rear wheel off the ground;
- unscrew «**A**» bolt with washer «**B**» on the box side of the fork;
- extract pin «**C**» from the box, from the hub and from the fork arm;
- unscrew the setscrew-pin «**E**» for the caliper-holder disk «**D**»;
- remove the plate «**D**» complete with caliper;
- remove the wheel from the fork arm and the transmission box.

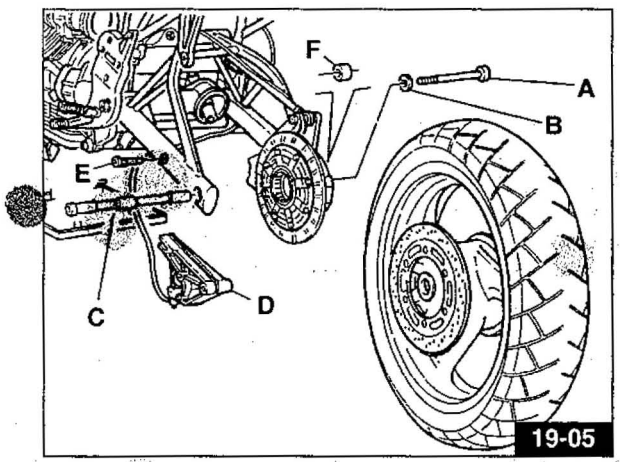
WARNING!

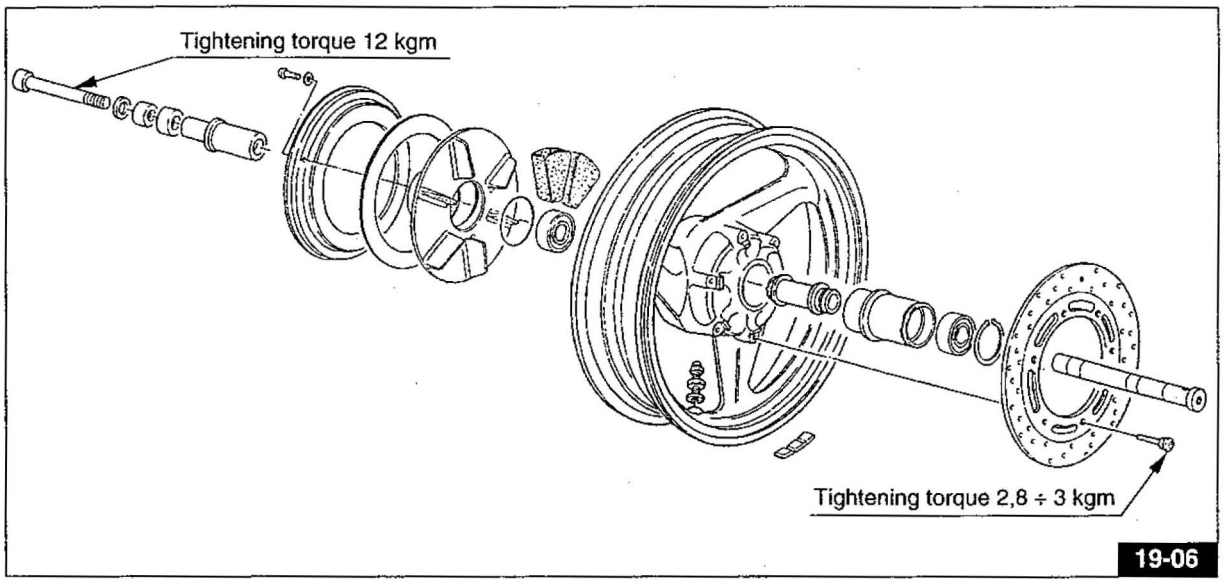
The drive box is kept in position on the fork by means of a proper inside spacer; anyway, absolutely prevent the detached driving box weight from stressing the couplings on the end-of-stroke angular position, as they could be damaged.

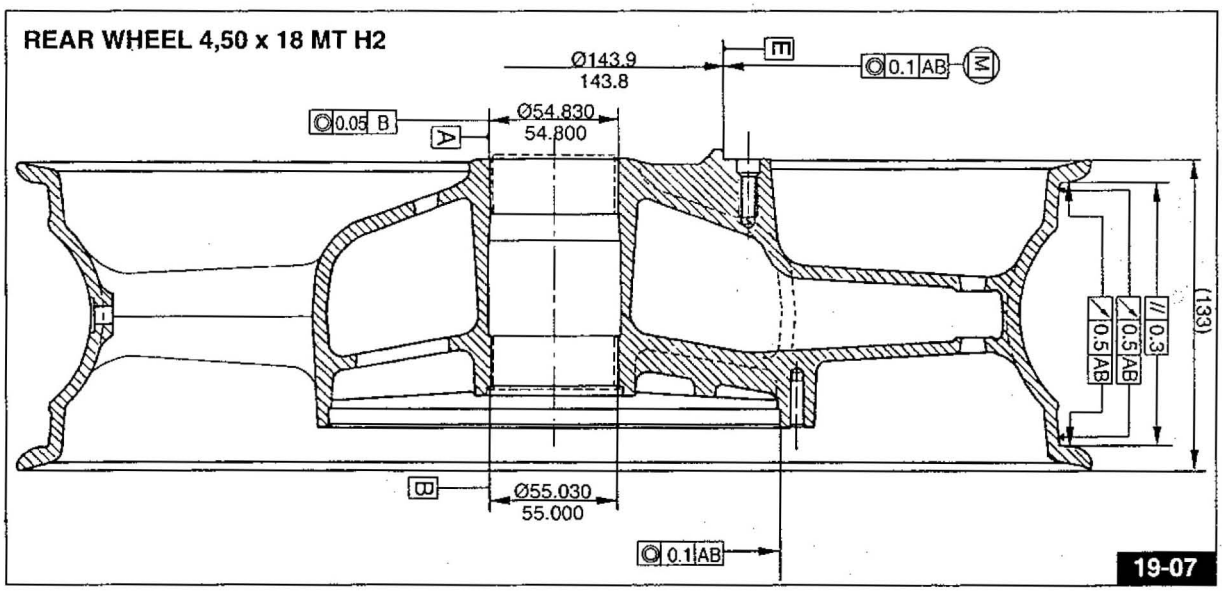
To refit the wheel, proceed in reverse order, remembering to insert the disk with the caliper on the wheel pin and on the retainer of the floating fork L.H. arm.

If the reduction bush «**F**» does exit out of its seat on the fork, it has to be assembled with the smallest hole facing inside.

The torque of the screw «A» is 12 Kgm.







19.3 TYRES

Tyres are among those machine components which require regular checking.
Machine stability, rider comfort and safety all depend on good tyre condition.
Do not use tyres with less than 2 mm of tread.
Incorrect tyre pressures can cause instability and excessive tyre wear.
Tyre pressures:

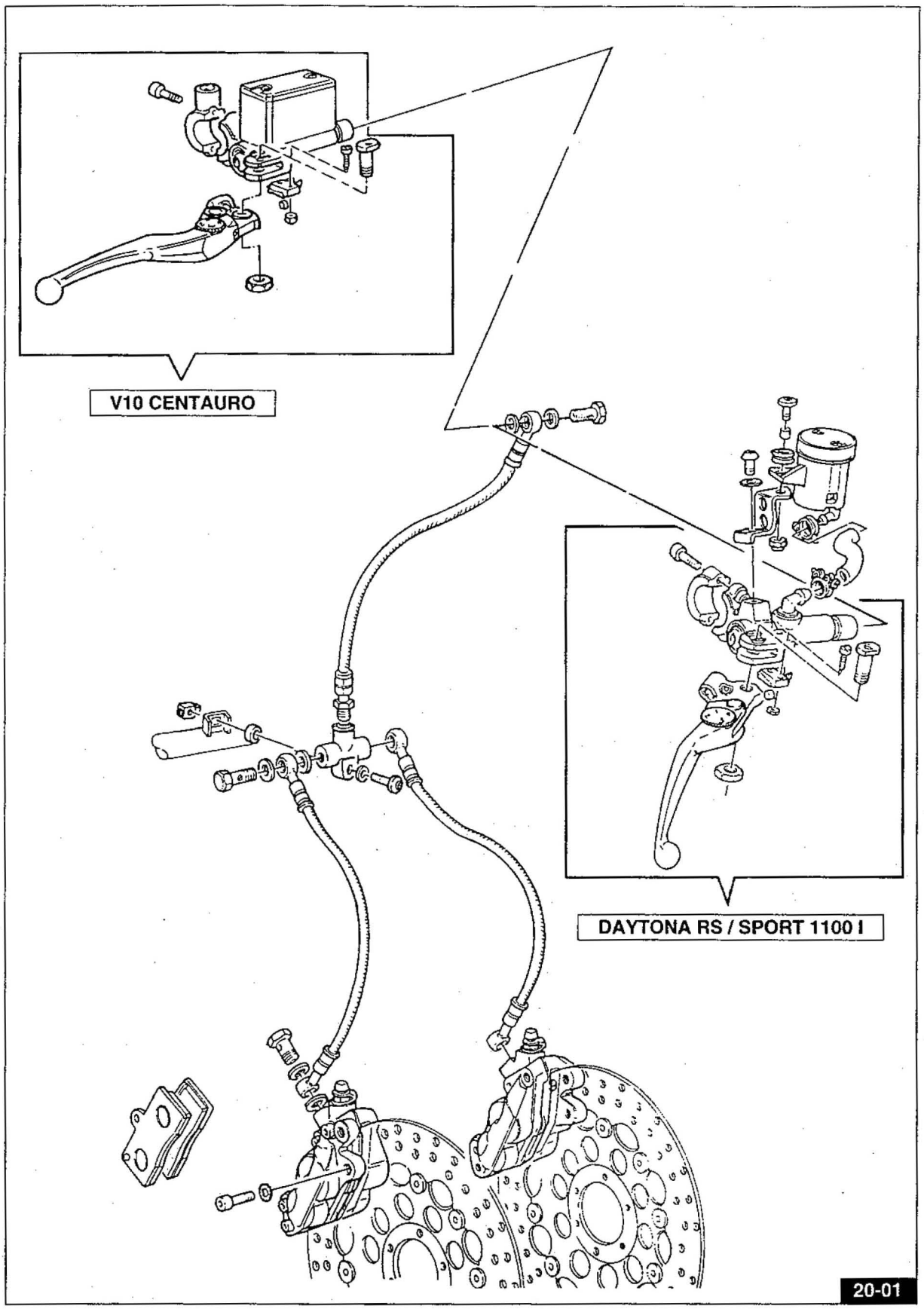
- front wheel: with one or two riders 2.2 BAR;
- rear wheel: with one rider 2.4 BAR; with two riders 2.6 BAR.

NOTE: These pressures are for normal touring use. For continuous high speed cruising (e.g. on motorways) the above pressures should be increased by 0.1 BAR.

20 BRAKE SYSTEM

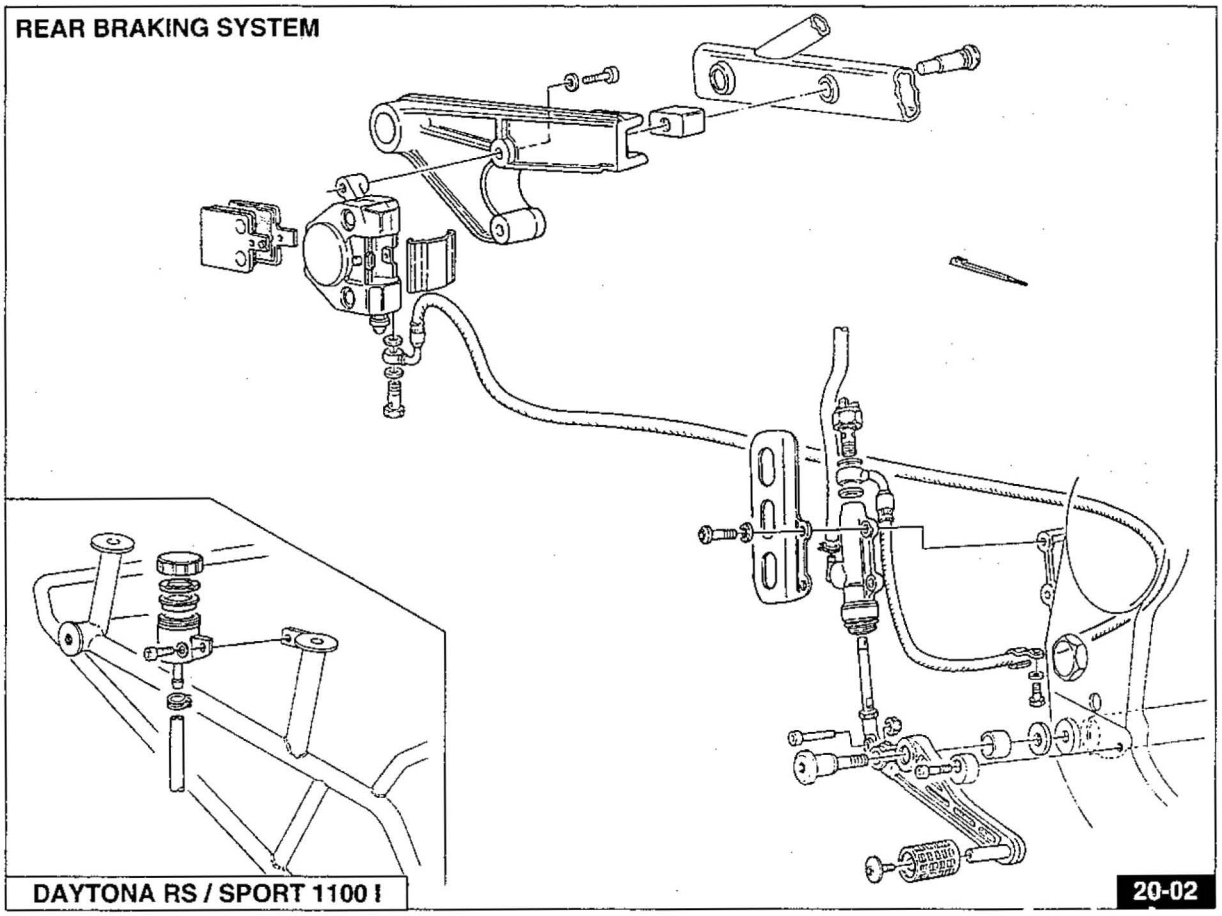
For front brake lever adjustment see Par. 5.2

FRONT BRAKING SYSTEM



For rear brake pedal adjustment see Par. 5.2

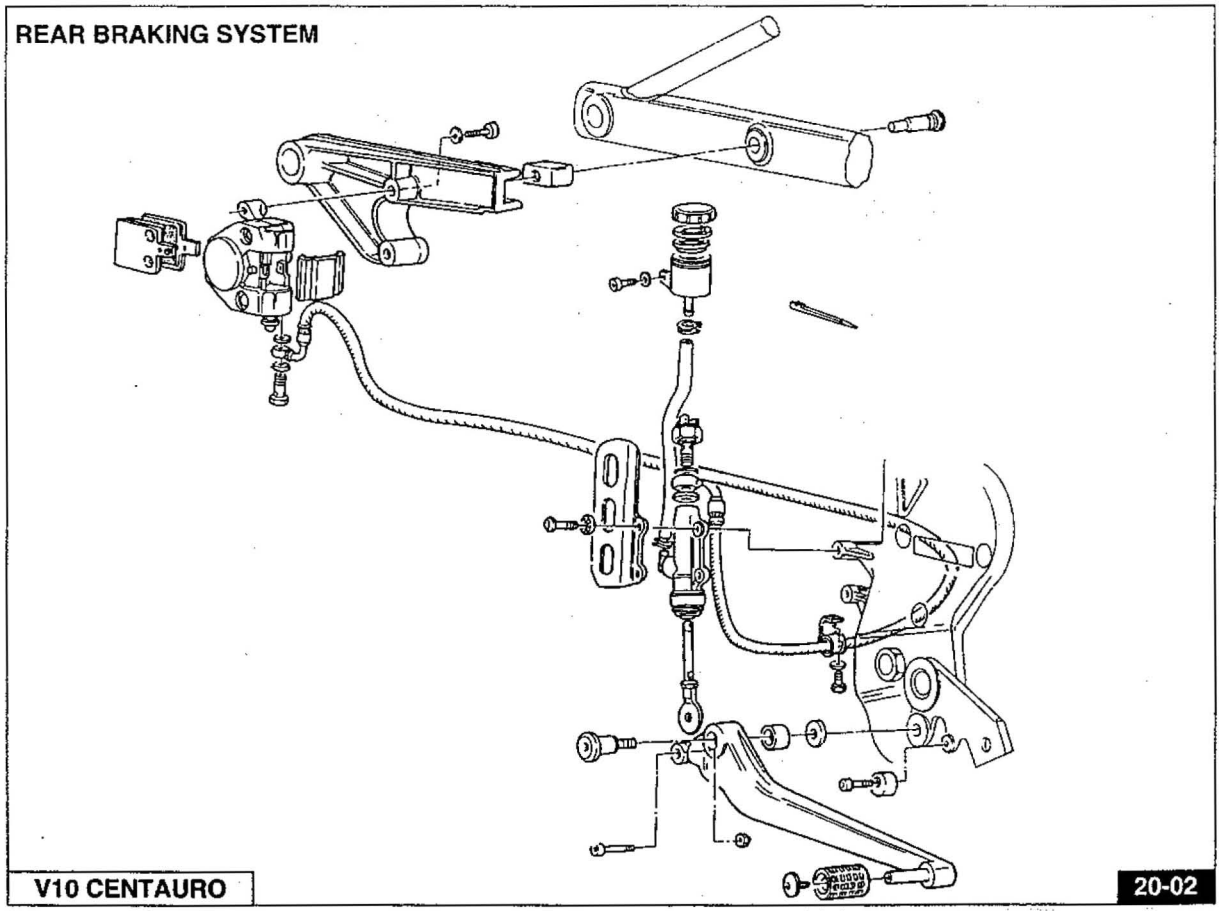
REAR BRAKING SYSTEM



DAYTONA RS / SPORT 1100 I

20-02

REAR BRAKING SYSTEM



V10 CENTAURO

20-02

20.1 CHECKING BRAKE PADS WEAR

Check the thickness of the brake pads every 5000 km:

■ Wear limit 1.5 mm.

If the pads are below the wear limit they should be changed.

There is no need to bleed the brakes when the new pads have just been fitted; pumping the brake lever a few times will return the caliper pistons to their normal position.

When changing the pads, also check the flexible hoses; if damaged they should be replaced immediately.

IMPORTANT

Use the brakes with moderation for the first 100 km after fitting new brake pads, to allow the pads to get properly bedded in.

20.2 CHECKING THE BRAKE FLUID IN THE MASTER CYLINDER RESERVOIR (Fig. 20-03 / 20-04)

To ensure efficient operation of the brakes:

1 Make frequent checks of the fluid level in the front «**A**» and rear «**B**» reservoirs.

The level should always be above the minimum mark on the reservoirs.

2 Top up the brake fluid when necessary or at regular intervals.

Only use recommended brake fluid in sealed containers for topping up. Fluid containers should only be unsealed immediately before they are about to be used.

3 The fluid in the brake reservoirs should be changed completely after about every 15,000 km, or at least once a year.

To ensure efficient braking there should be no air bubbles in the brake circuit; if the brake lever has too much travel or a spongy action, this means that there are bubbles in the brake circuit.

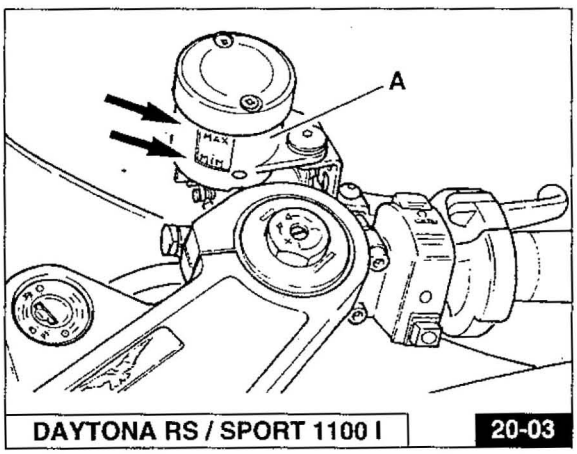
When flushing the brake circuits, only use fresh brake fluid.

WARNING

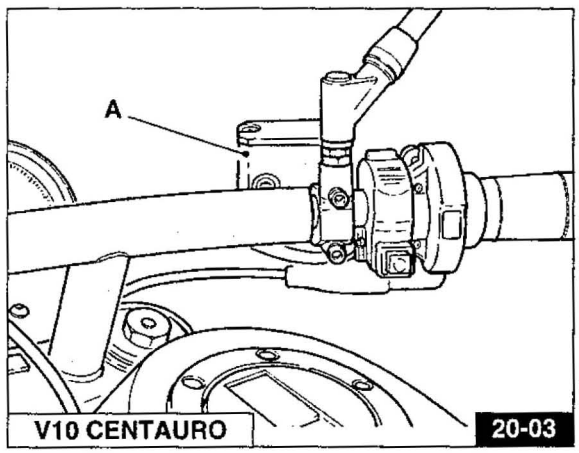
Never use alcohol for flushing or compressed air for drying; we recommend the use of «trichloroethylene» for metal parts.

Never use mineral oils or greases for lubricating parts. If no suitable lubricant is available, we recommend the light greasing of the rubber and metal parts with brake fluid.

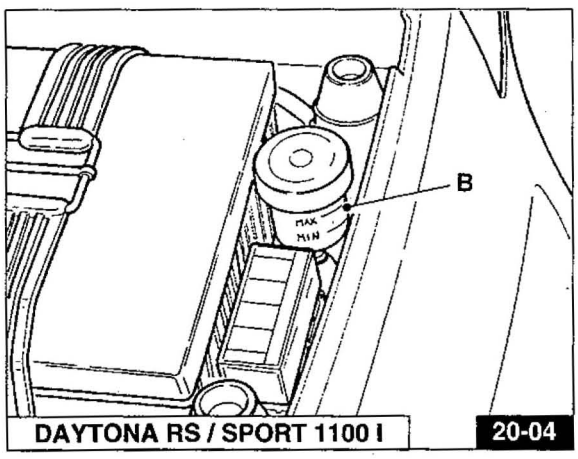
Recommended fluid «Agip Brake Fluid DOT 4».



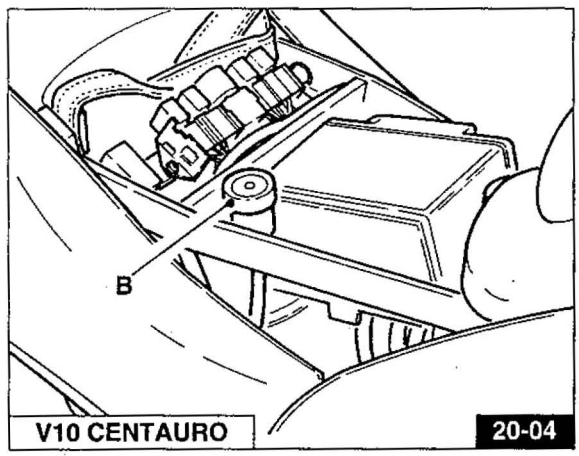
DAYTONA RS / SPORT 1100 I — 20-03



V10 CENTAURO — 20-03



DAYTONA RS / SPORT 1100 I — 20-04

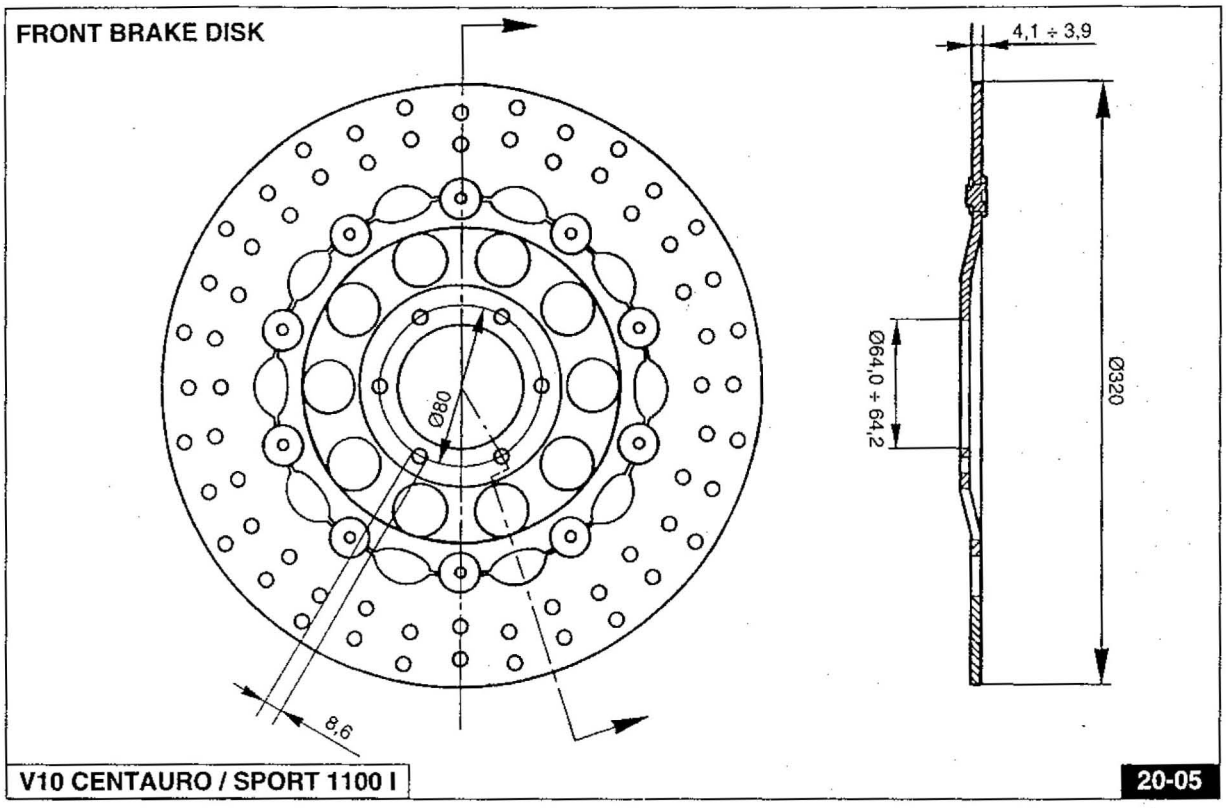


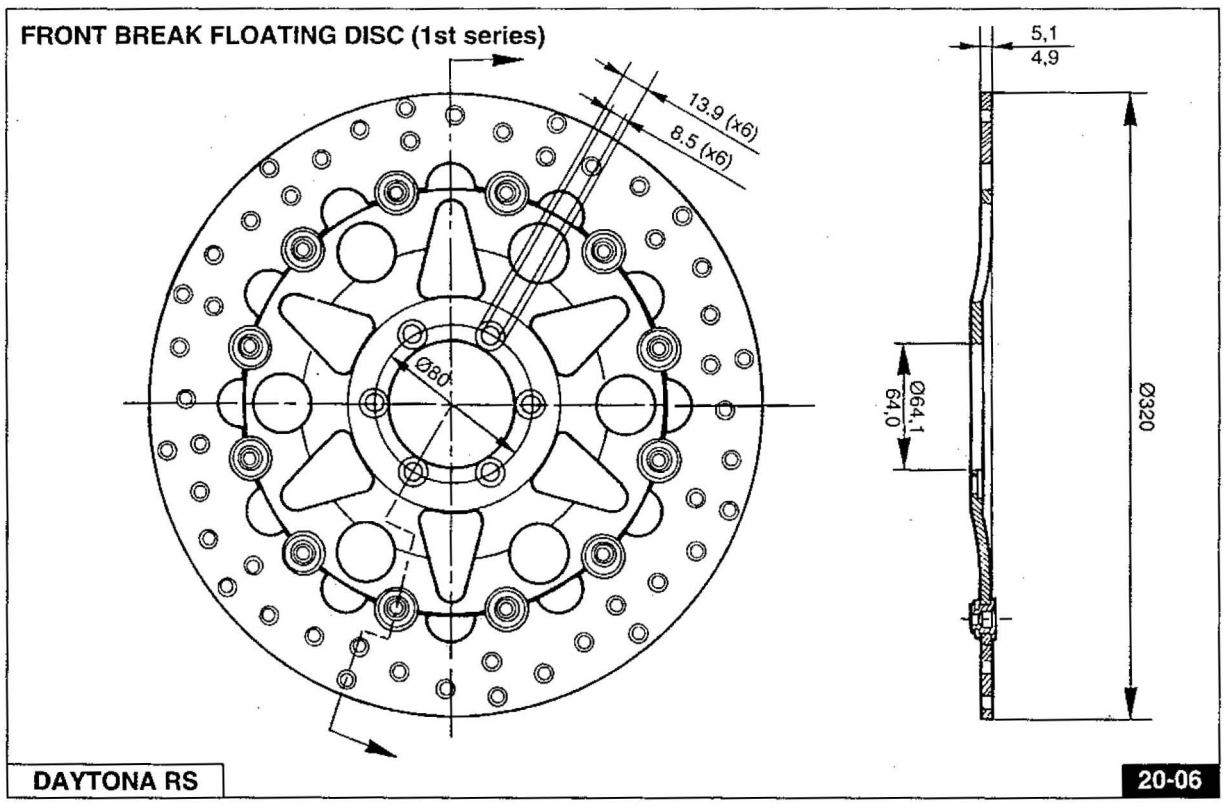
V10 CENTAURO — 20-04

20.3 CHECKING BRAKE DISKS

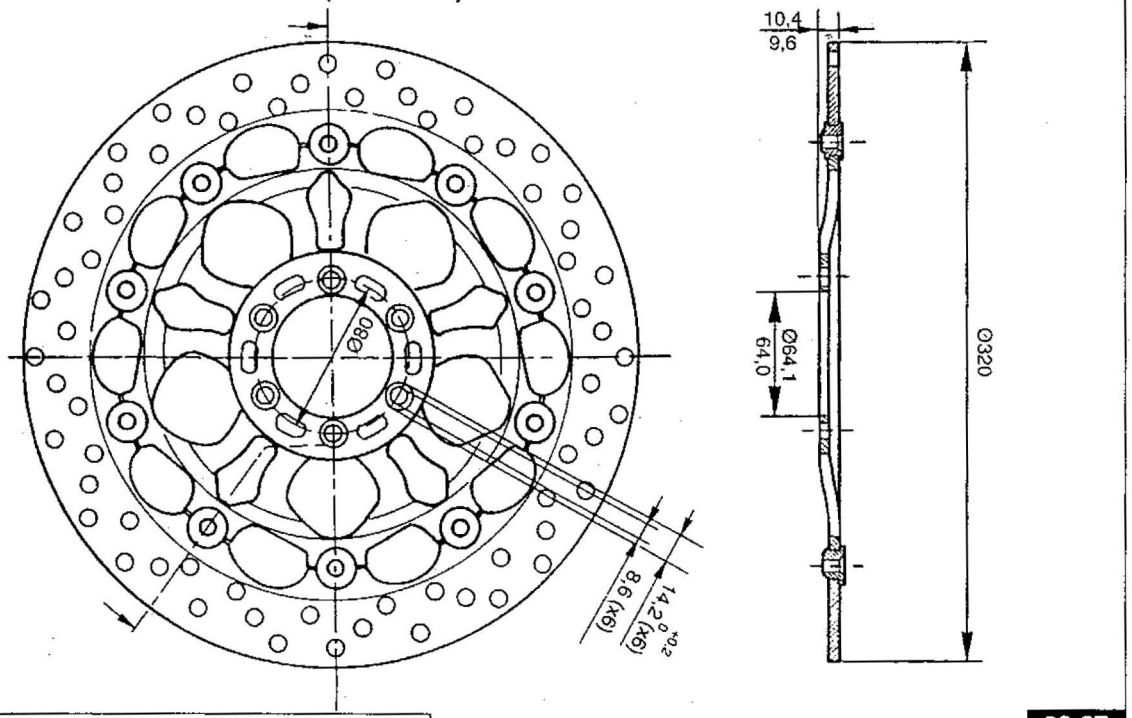
The brake disks must be perfectly clean, with no oil, grease or other dirt on them. They should also show no signs of scoring.

The torque wrench setting of the screws that fix the disk to the hubs is 2,8÷3 kgm.





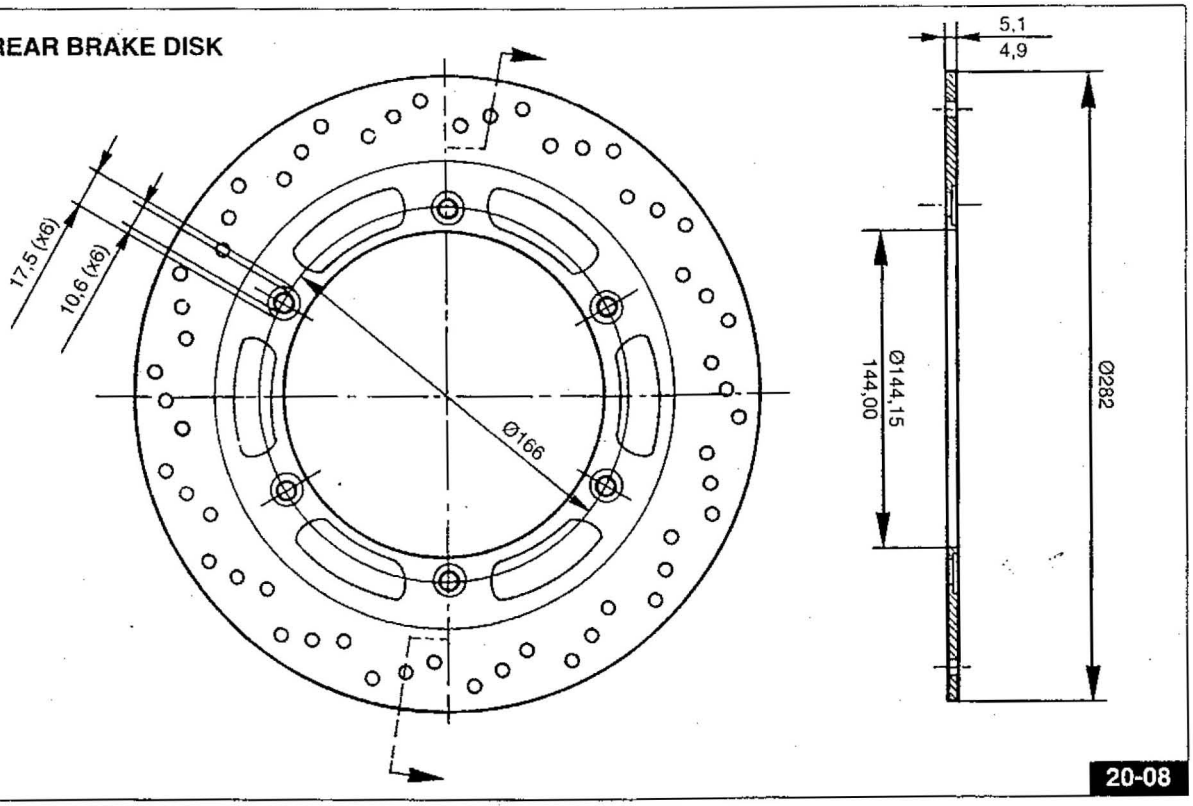
FRONT BREAK FLOATING DISC (2nd series)



DAYTONA RS / SPORT CORSA 1100 I

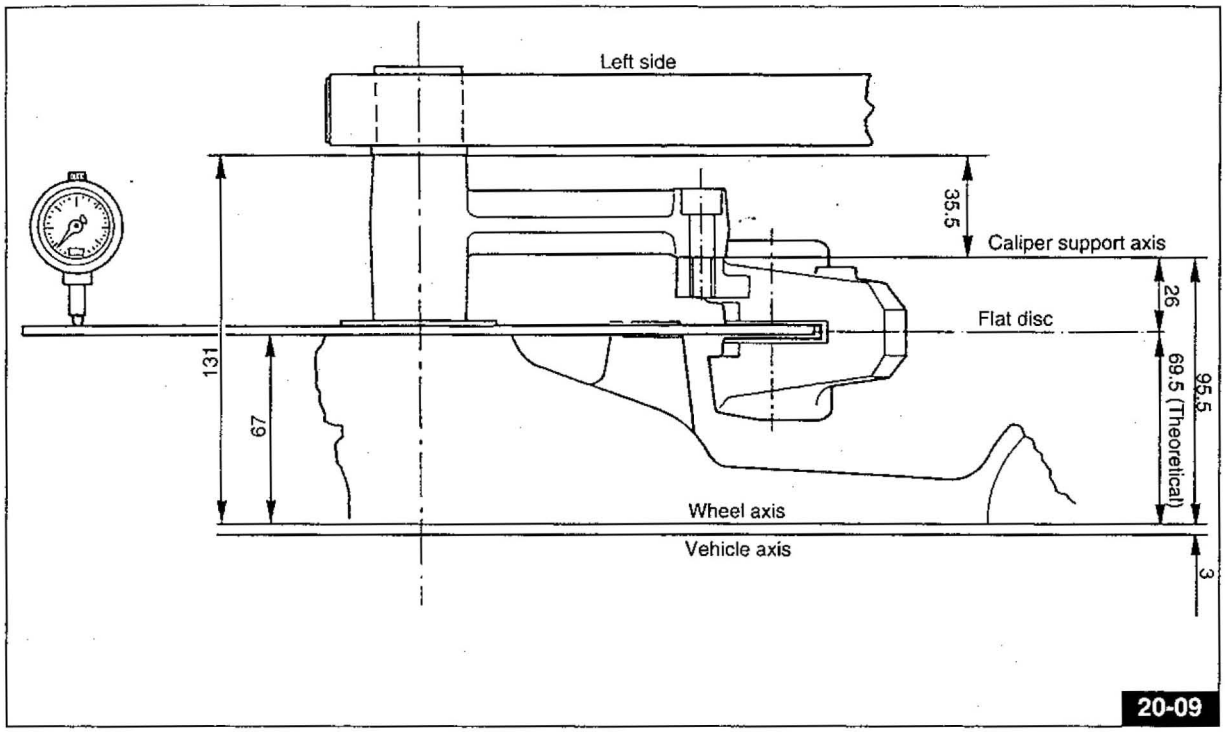
20-07

REAR BRAKE DISK



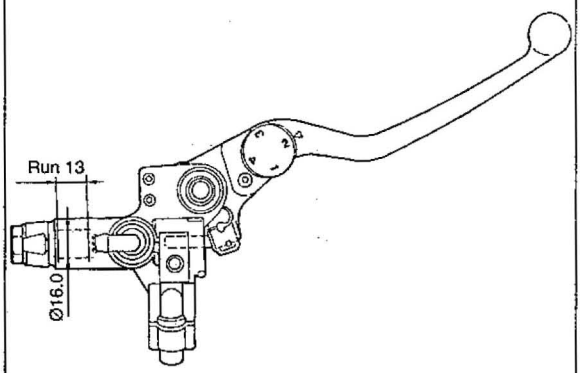
20-08

If the rear brake disk has been revised or replaced the "wobbling" should be checked; this check can be carried out by means of a dial gauge and the maximum value should not exceed 0.2 mm.
If disk "wobbling" exceeds the indicated value, the fitting of the disk on the hub should be carefully checked and the play of the wheel bearings.



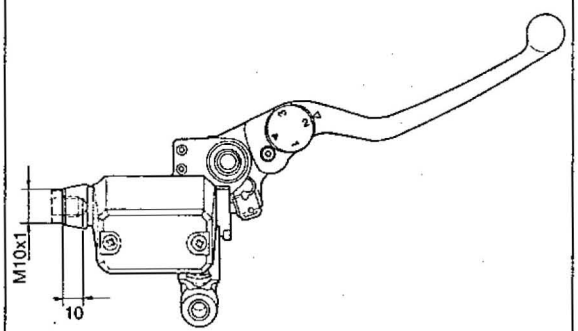
20-09

FRONT BRAKE PUMP



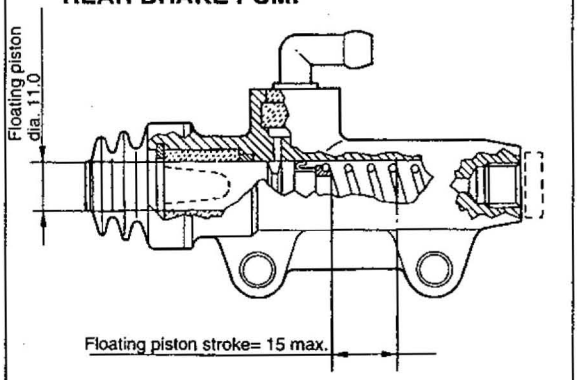
DAYTONA RS / SPORT 1100 I — 20-10

FRONT BRAKE PUMP



V10 CENTAURO — 20-11

REAR BRAKE PUMP



20-12

20.4 AIR BLEEDING FROM BRAKING CIRCUIT

This operation is required when the movement of the control levers is long and elastic because of the presence of air inside the braking circuits. To bleed the air, operate as follows:

Braking circuit for front brake

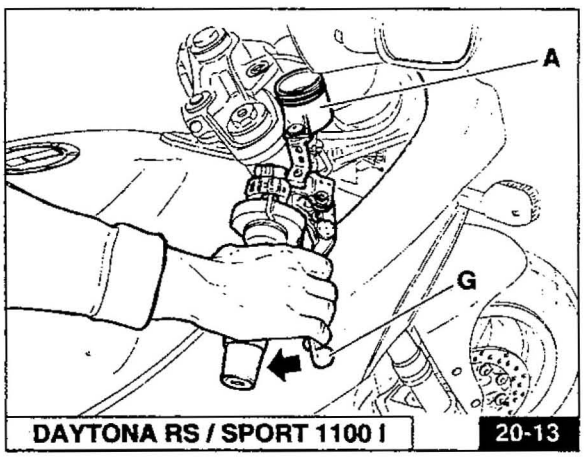
- Turn the handlebar until fluid reservoir **«A» - Fig. 20-13** reaches the horizontal position.
- Fill up reservoir **«A» - Fig. 20-13**, if necessary, taking care that during the bleeding operation the fluid does not go down the lower level.
- Act on the two **«B» - Fig. 20-15** calipers as follows:

1 fit on the drain plug **«C» - Fig. 20-14** (after removing the rubber cover **«D» - Fig. 20-14**) the transparent flexible duct **«E» - Fig. 20-15** with the other end plunged in a transparent container **«F» - Fig. 20-15** partially filled with fluid of the same type.

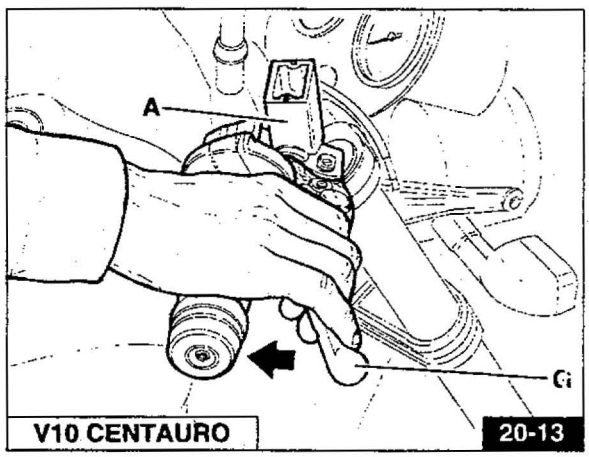
2 Loosen drain plug **«C» - Fig. 20-15**.

3 Completely operate control lever **«G» - Fig. 20-13** on the handlebar several times: release it slowly and wait a few seconds before pulling it again. Repeat the operation until the pipe **«F» - Fig. 20-15** plunged into the transparent container **«E» - Fig. 20-15** emits airless fluid.

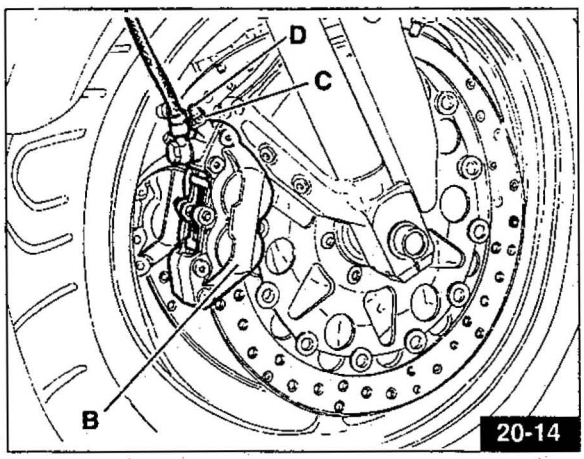
4 Keep control lever **«G» - Fig. 20-13** fully pulled and lock drain plug **«C» - Fig. 20-15**. Then remove plastic pipe **«E» - Fig. 20-15** and remount the rubber cap **«D» - Fig. 20-14** on drain plug.
If the bleeding operation has been correctly done, a direct and efficient working of the fluid will be immediately perceived after the initial idle movement of lever **«G» - Fig. 20-13**.
If not, repeat the air bleeding operation.



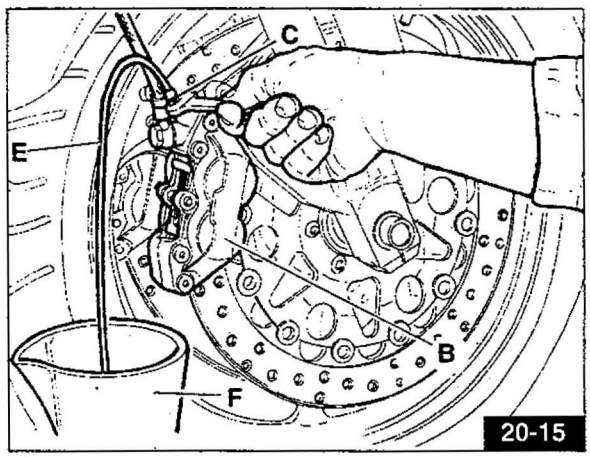
DAYTONA RS / SPORT 1100 I 20-13



V10 CENTAURO 20-13



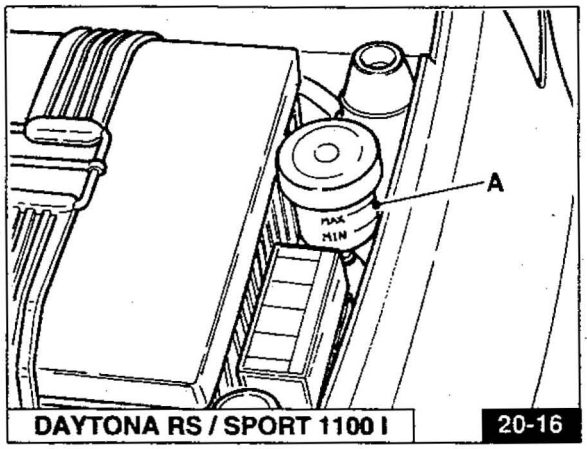
20-14



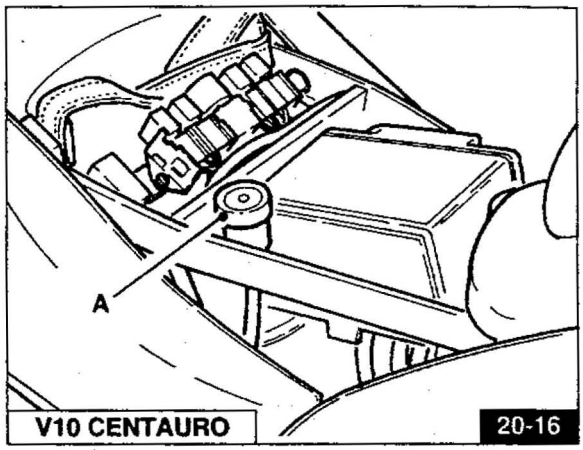
20-15

Rear braking circuit

- Fill up reservoir «**A**» - **Fig. 20-16**, if necessary, taking care that during the bleeding operation the fluid does not go down the lower level.
- Arrange bleeding acting on «**B**» - **Fig. 20-17** caliper, after having removed it from the supporting flange and placed in such a position that «**C**» - **Fig. 20-17** bleeding plug is directed upwards.

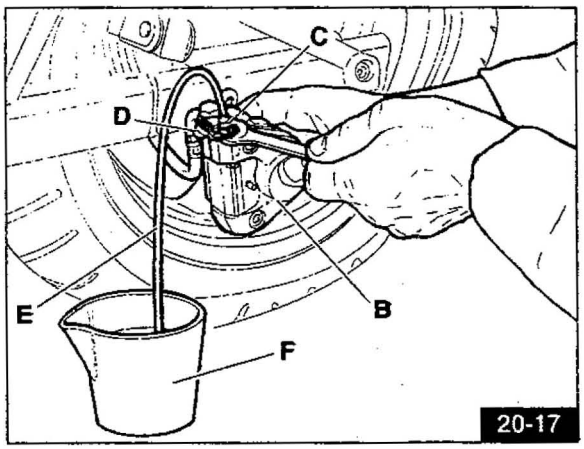


DAYTONA RS / SPORT 1100 I 20-16



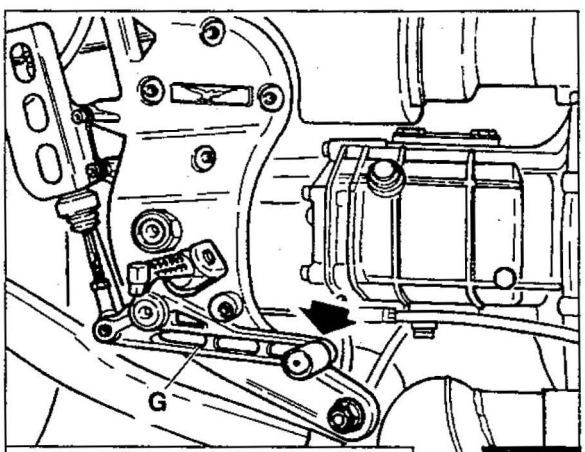
V10 CENTAURO 20-16

1 Fit on the drain plug «**C**» - **Fig. 20-17** (after removing the rubber cover «**D**» - **Fig; 20-17**) the transparent flexible duct «**E**» - **Fig. 20-17** with the other end plunged in a transparent container «**F**» - **Fig. 20-17** partially filled with fluid of the same type.
2 Loosen drain plug «**C**» - **Fig. 20-17**.
3 Push fully the control pedal «**G**» - **Fig. 20-18** several times: release it slowly and wait a few seconds before pushing it again. Repeat the operation until the pipe «**F**» - **Fig. 20-17** plunged into the transparent container «**E**» - **Fig. 20-17** emits airless fluid.
4 Keep control pedal «**G**» - **Fig. 20-18** fully pushed and lock drain plug «**C**» - **Fig. 20-17**. Then remove plastic pipe «**E**» - **Fig. 20-17** and remount the rubber cap «**D**» - **Fig. 20-17** on drain plug.

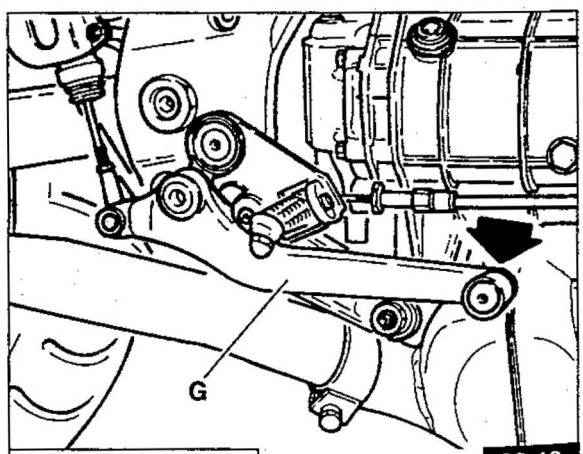


20-17

If the bleeding operation has been correctly done, a direct and efficient working of the fluid will be immediately perceived after the initial idle movement of pedal «**G**» - **Fig. 20-18**.
If not, repeat the air bleeding operation.



DAYTONA RS / SPORT 1100 I 20-18



V10 CENTAURO 20-18

21 ELECTRICAL EQUIPMENT

The electrical equipment consists of the following:
- Battery.
- Starter motor with electro-magnetic ratchet.
- Generator-alternator fitted to the front of the crankshaft.
- Fuel reserve signal device.
- Light switch.
- Ignition coil.
- Electronic control unit I.A.W.
- Injection timing/rpm sensors.
- Voltage regulator.
- Fuse box (no. 6, 15 A fuses).
- Electronic box remote control switch.
- Pump-coil-injection remote control switch.
- Starter switch.
- Headlight.
- Tail light.
- Direction indicators.
- Emergency flasher switch.
- Selector indicators.
- Light direction indicator, horn and headlamp flasher switch.
- Blinker unit.
- Starter and stop device.
- Bitonal horn.
- Warning lights on instrument panel for: neutral indicator (green), side lights on (green), oil pressure (red), main beam (blue), generator (red), fuel reserve (orange), direction indicators (green).

21.1 BATTERY

- **Instructions for recharging**

To recharge the battery a constant voltage charger is needed.

WARNING
Use of other chargers will damage the battery.

General considerations
The recharging of the sealed lead-tin accumulators like the other re chargeable accumulators, is a process that restores in the battery the energy delivered during the discharge.
Since this process is not efficient in some ways, it is necessary to overcharge the accumulator from 105% to 110% of the ampere-hour delivered during the discharge.
The quantity of energy necessary for a complete recharge depends: on how heavily the accumulator has been discharged, on time and method used for the recharge and from the temperature

It is important to observe that the battery is able to deliver all or nearly its rated energy even if it is not overcharged. However, to get a good life time and maximise number of cycles, the battery must periodically receive the overcharge specified.

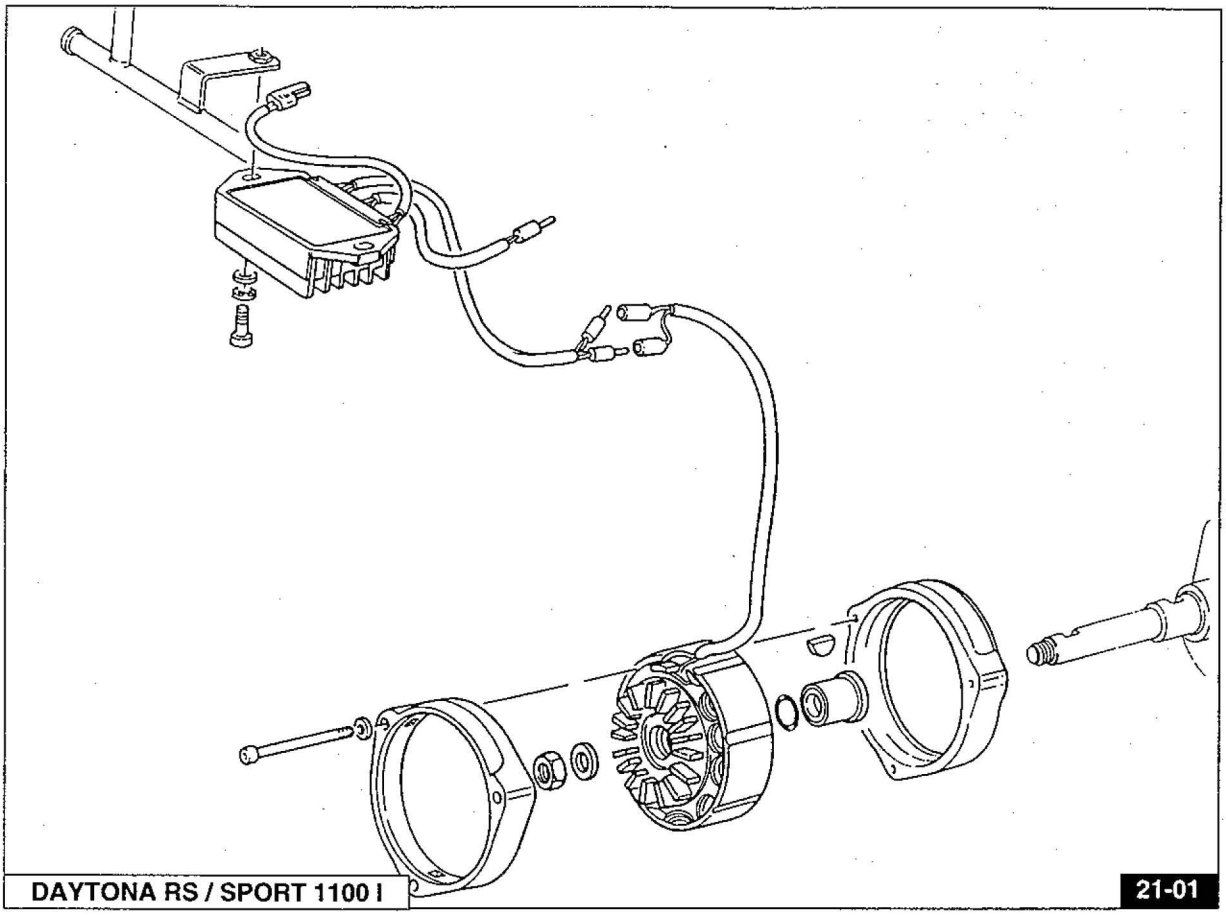
The recharge can be done in different ways. The objective is to make flow the current through the battery in the opposite direction to that of the discharge. The constant voltage recharge is the convention method to recharge the lead accumulators.

Constant voltage charger
The constant voltage charger method is the most efficient for the sealed lead-tin accumulators. With this recharging method no maximum current limit is required on the charger if the charging voltage is kept within the values specified further on. This characteristic is due to the internal resistance of the battery, which is extremely low and to the high chemical efficiency during the recharging process.
For a recharge at constant voltage the following data are recommended:

For Cyclic use : from 14.7V to 15V per element at a temperature of 25 °C.
No current limit required.

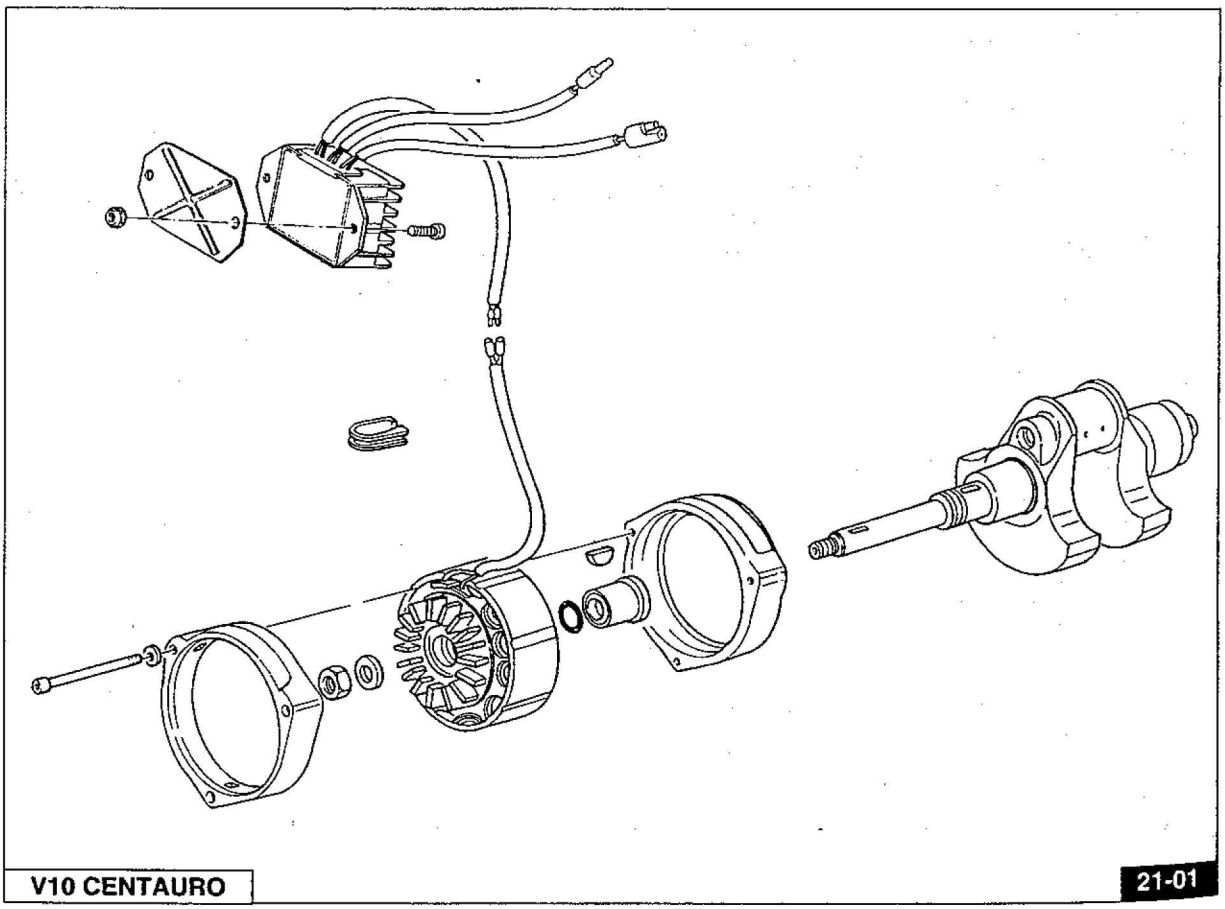
As buffer battery: from 13.5V to 13.8V per element at a temperature of 25 °C
No current limit required.

21.2 ALTERNATOR AND VOLTAGE CONTROLLER



DAYTONA RS / SPORT 1100 I

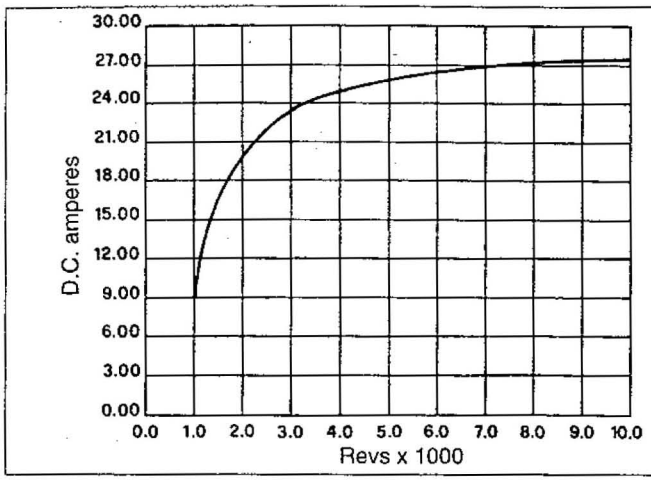
21-01



V10 CENTAURO

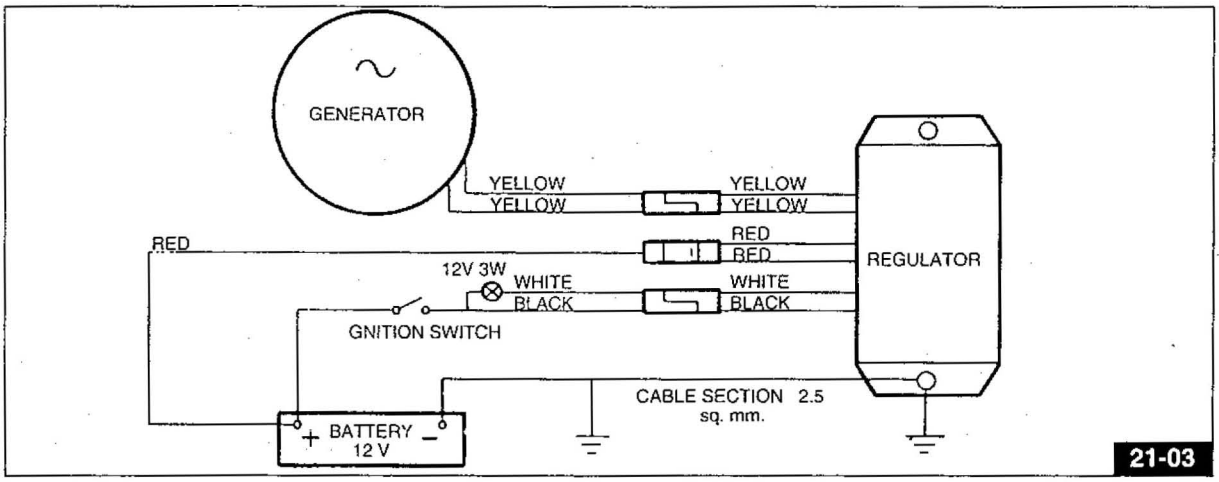
21-01

Current charge intensity graph



r.p.m.	D.C. Amps
1000	9,50
1200	13,00
1500	16,50
2000	20,00
3000	23,50
4000	25,00
6000	26,50
10000	27,50

21-02



21-03

WARNING

If connections are inverted the regulator will be irreversibly damaged.
Check that the regulator earth connections are efficient. Possible checks to be carried out on the alternator or regulator if the battery fails to re-charge or the power supply is no longer regulated.

Alternator

With the engine switched off, disconnect the two yellow generator cables from the rest of the system and then carry out the following tests with a ohmmeter:

Check the winding isolation towards earth

Connect one connecting point of the ohmmeter to one of the two yellow cables and the other connecting point to earth (laminar pack).

The instrument should indicate a value above 10 M

Check the winding continuity

Connect the two connecting points of the ohmmeter to the two yellow cables.

The instrument should indicate a value of 0.2÷0.3 .

Check the voltage output

Connect an alternate 200 Volt capacity voltmeter to the two yellow cables.

Start the motor and check that the voltage output is included within the values indicated on the following tables:

r.p.m.	1000	3000	6000
A.C. volts	15	40	80

Regulator

The regulator has been calibrated in order to maintain the battery voltage at a value between 14÷14.6 Volts.

The pilot light (illuminated when the engine is not running, but the key is inserted) will switch off when the generator begins to charge, (approx. 700 r.p.m.)

Regulator checks

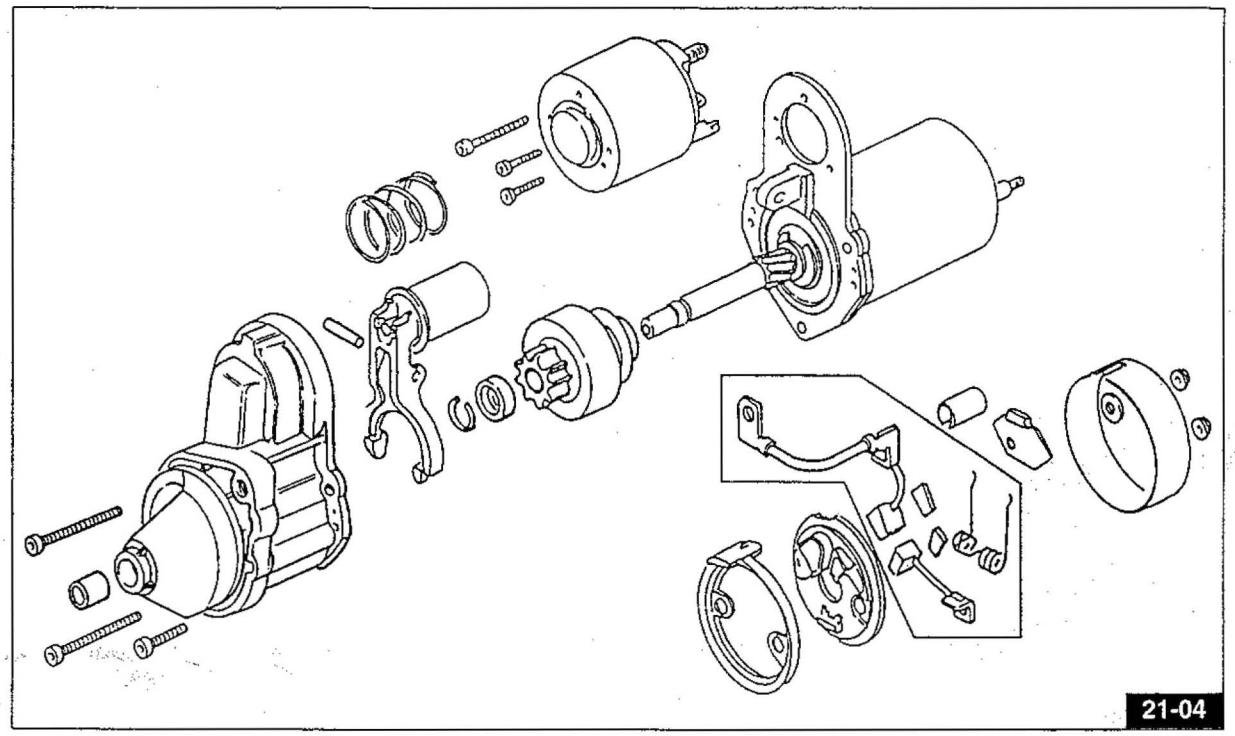
Normal work-shop tools are generally insufficient for regulator checking, however, listed below are certain operations that can be carried out in order to detect regulators that are defective.

The regulator is certainly defective if:

After having isolated it from the rest of the system short circuits can be detected between the earth (aluminum casing) and any of the output cables.

21.3 STARTER MOTOR

GENERAL CHARACTERISTICS	
Voltage	12V
Power	1.2 Kw
No-load Torque	11 Nm
Torque under load	4.5 Nm
Pinion	tooth ratio = 9 mod. 2.5
Rotation, pinion side	Anti-clockwise
Speed	1750 r.p.m.
No-load current	600 A
Current under load	230 A
Weight	2.8 Kg



WARNING!

The starter motor should not be operated for more than 5 seconds; if the engine doesn't start, wait for 10 seconds before the following starting operation. Anyway act on the starter button only with the engine completely stopped.

21.4 LIGHTING EQUIPMENT

21.4.1 REPLACING BULBS (DAYTONA RS AND SPORT 1100 I)

Headlight (Fig. 21-06)
To replace the headlamp, remove the front fairing, disconnect the electrical leads from the back, remove the rubber protective cap and detach the bulb by turning the securing ring nut.

NOTE: When changing the headlight bulb (main/dipped beams) take care not to touch the glass part of the bulb with the fingers.

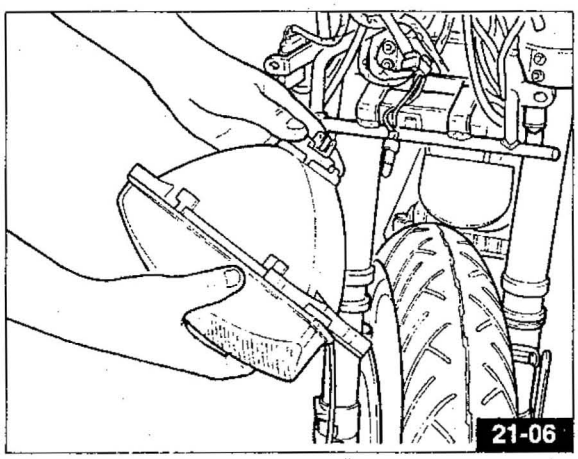
The lamp holder, complete with side light bulb, is push-fitted.

Tachymeter, speedometer, rev counter, pilot lights
Remove the front fairing, extract the lamp support and replace the bulbs.

Tail light (Fig. 21-07)
Unscrew the screws «**A**» securing the reflector, press the bulb firmly in and twist it to remove it from the lamp-socket.

Indicator lights (Fig. 21-07)
Unscrew the screws «**B**» that fasten the reflectors to the turn indicators, press the bulbs inwards by rotating them, and extract them from the lamp-holders.

NOTE: Never tighten too much the screws fastening the reflectors, to avoid breaking them.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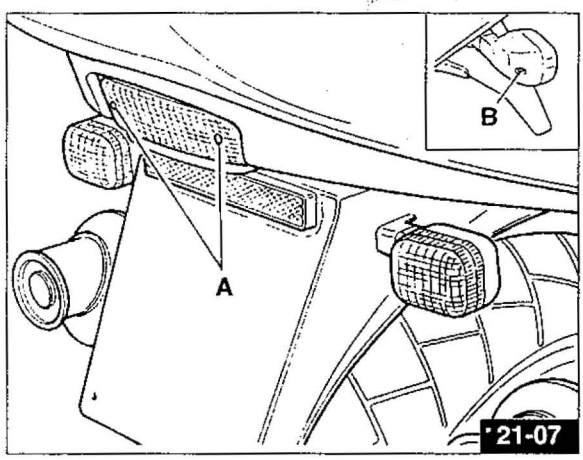


21-07

21.4.2 REPLACING BULBS (V10 CENTAURO)

Headlight (Fig. 21-08)

To change the bulbs, unscrew the retaining screw «**A**» under the headlight unit; remove the light unit and remove the lamp holder.

NOTE: When changing the headlight bulb (main/dipped beams) take care not to touch the glass part of the bulb with the fingers.

Indicator lights (Fig. 21-08)

Unscrew the screws «B» that fasten the reflectors to the turn indicators, press the bulbs inwards by rotating them, and extract them from the lamp-holders.

NOTE: Never tighten too much the screws fastening the reflectors, to avoid breaking them.

Revolution counter (Fig. 21-09)

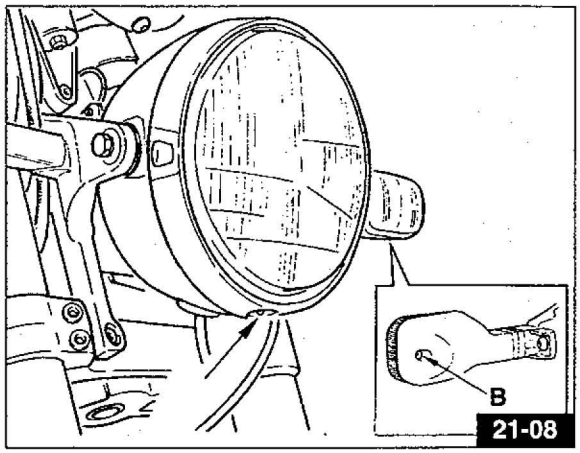
- Take off the screws «**A**»;
- Take out the revolution counter container «**B**»;
- Take out the lamp holder and replace the lamp.

Odometer (Fig. 21-09)

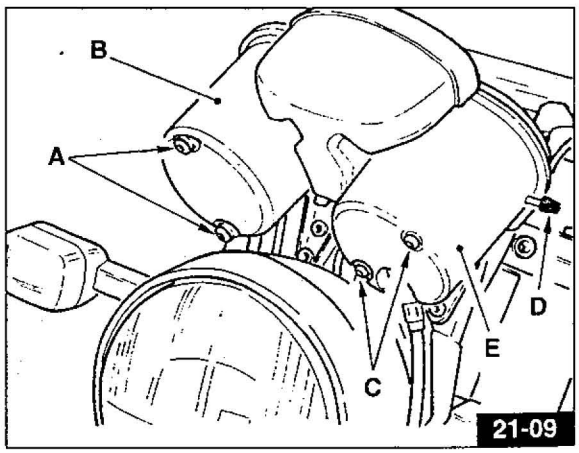
- Dismantle the head lamp;
- Take out the screw «**C**»;
- Take out the reset pin «**D**»;
- Take out the odometer container «**E**»;
- Take out the lamp holder and replace the lamp.

Dashboard (Fig. 21-10 / 21-11)

- Dismantle the head lamp;
- Take out the three screws «**A**» which fasten the lower cover «**B**»;
- Take out the lower cover;
- Take out the lamp holder and replace the lamp.



21-08



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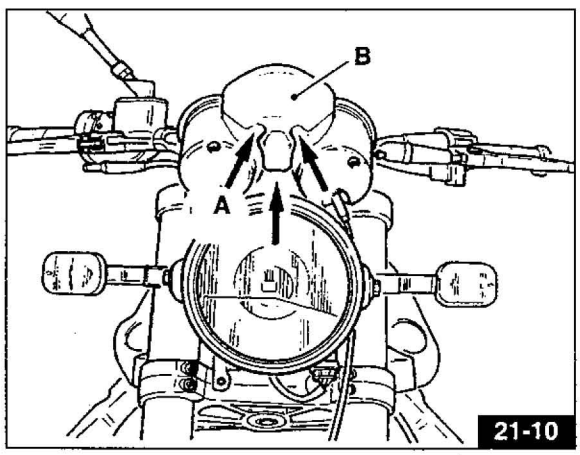
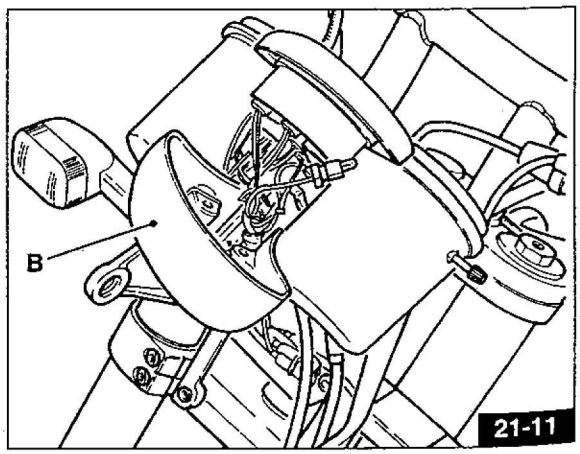


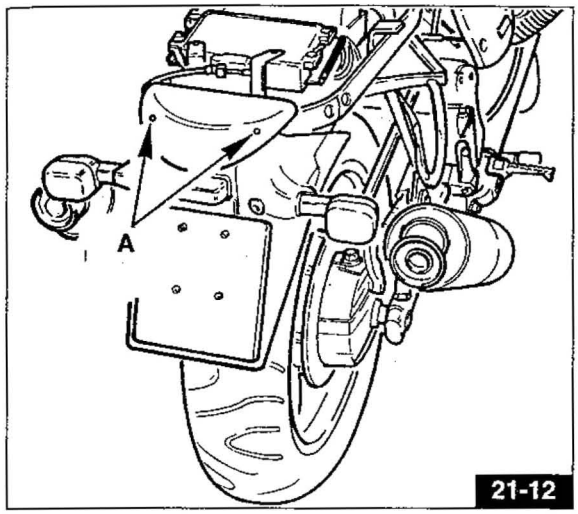
21-10

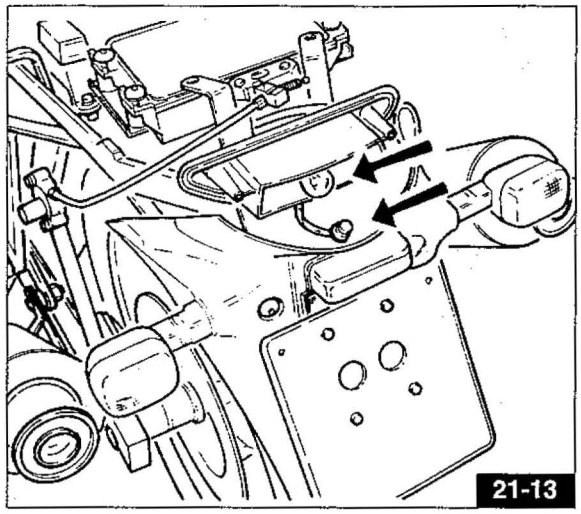


21-11

Rear light and licence plate lamp (Fig. 21-12 / 21-13)

- Dismantle the saddle;
- Dismantle the rear fairing;
- Take out the screw «**A**»;
- Take out the reflector;
- Replace the lamp.





Bulbs

Headlight:		
■ Dipped and main beam	60/55 W	
■ Side/parking lights	3 W	
Tail light:		
■ Number plate, stop light	5/21 W	(Only for DAYTONA RS and SPORT 1100 I Model)
■ Number stop light	5/21 W	(Only for V10 CENTAURO Model)
Direction indicators	10 W	
Speedo, rev counter lights	3 W	
Instrument panel warning lights	2 W	
Licence plate lamp	5 W	(Only for V10 CENTAURO Model)

For light beam adjustment on the headlamp (see Par. 5.9)

21.5 KEY TO WIRING DIAGRAM (DAYTONA RS AND SPORT 1100 I)

1 Bulb, main/dipped beam 60/55 W
2 Bulb, front sidelights 4W
3 Bulb, r/h and l/h direction indicator warning light
4 Bulb, speedometer light
5 Electronic rev counter
7 AMP 4-way connector
8 Bulb, fuel level warning light
9 Bulb, oil pressure warning light
10 Bulb, generator warning light
11 Bulb, neutral warning light
13 Bulb, main beam warning light
14 Emergency flasher switch
15 R/h front direction indicator
16 Front brake stop switch
17 Starter switch
18 L/h front direction indicator
19 Horns (H, L)
20 Control switch: start/stop engine, headlight selector
21 Neutral position switch
22 Oil pressure switch
23 Blinker unit (12V 46W)
24 Control switch: lights-horn-direction indicators
25 Electronic ignition-injection diagram
28 Rear brake stop switch
29 Fuse terminal board
30 Fuel level transmitter warning light
31 CC. regulator 12V dc 25 Amp jump (DUCATI)
32 Alternator 14V-25A (DUCATI)
33 Headlamp relay
34 HAWKER accumulator series GENESIS 12V-13Ah
35 Starter solenoid
36 Starter motor
37 R/h rear direction indicator
38 Bulb, number plate and stop light
39 L/h rear direction indicator
40 AMP 4-way connector
41 AMP 5-way connector
42 PAKARD10-way connector
43 AMP 5-way connector
44 AMP 1-way connector
45 PAKARD 1-way connector
46 AMP 16-way connector
47 AMP 2-way connector
48 Side stand switch
49 Electric cock
50 Diagnosis connection
51 ECU relay
52 WARNING lamp
53 Starting coil
54 Power relay (fuel pump, coils and injectors)
55 Fuel pump
56 Injectors
57 Absolute pressure sensor
58 Air temperature sensor
59 Engine revolution sensor
60 Oil temperature sensor (PAKARD)
61 Throttle potentiometer (PAKARD)
62 ECU unit
63 Oil temperature sensor (AMP)

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63 Oil temperature sensor (AMP)

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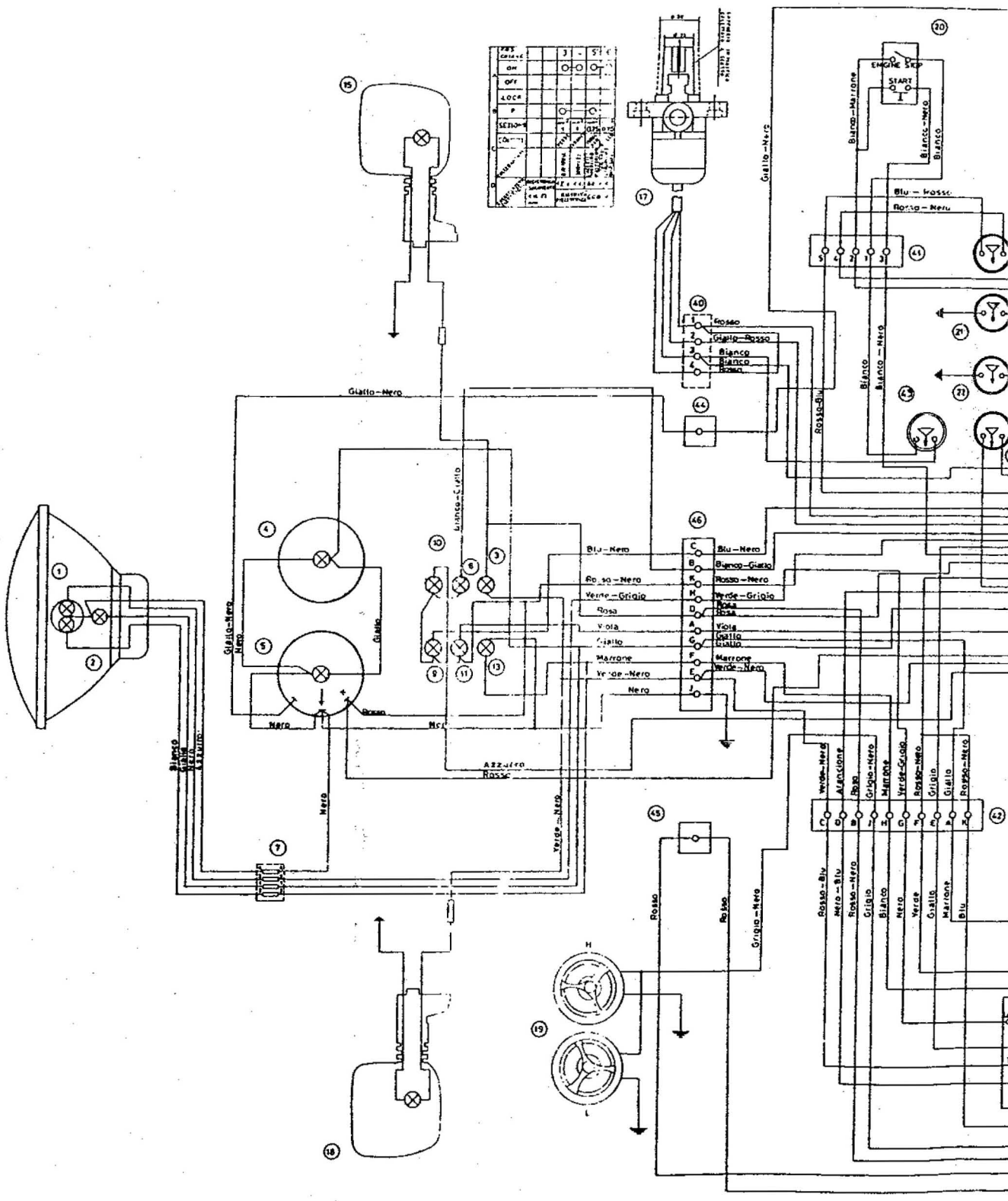
WIRING DIAGRAM
STROMLAUFPLANS
ELEKTRISCHE INSTALLATIE
V10 CENTAURO



WIRING DIAGRAM
STROMLAUFPLANS
ELEKTRISCHE INSTALLATIE
DAYTONA RS - SPORT 1100 I