

# aprilia

## 1043 1

00/2002-03

## RST mille

www.serviceaprilia.com

# workshop manual



8140542 USA



INTRODUCTION	0
GENERAL INFORMATION	1
SERVICE AND SETTING UP	2
ENGINE	3
FUEL SYSTEM	4
COOLING SYSTEM	5
ELECTRICAL SYSTEM	6
CHASSIS	7
TROUBLESHOOTING	8
ANALYTICAL INDEX	<i>i</i>



**INTRODUCTION**

**TABLE OF CONTENTS**

**0.1 UPDATE RELEASE 00/2002-03 ..... 0-3-00**

0.1.1 INFORMATION ON UPDATING  
THE MANUAL..... 0-3-00

0.1.2 UPDATED MANUAL GENERAL LIST.. 0-3-00

**0.2 HOW TO CONSULT THE MANUAL .. 0-6-00**

**0.3 FOREWORD ..... 0-7-00**

**0.4 REFERENCE SERVICE  
LITERATURE ..... 0-7-00**

0.4.1 ENGINE SERVICE MANUAL ..... 0-7-00

0.4.2 SPARE PARTS CATALOGUES..... 0-7-00

0.4.3 SPECIAL TOOLS MANUALS ..... 0-7-00

0.4.4 OPERATING AND MAINTENANCE  
MANUALS ..... 0-7-00

**0.5 ABBREVIATIONS/SYMBOLS/  
ACRONYMS ..... 0-8-00**

0



**0.1 UPDATE RELEASE 00/2002-03**

Issue date of the first edition (Release 00) and subsequent Releases:

First edition (Release 00).....March 2002

**0.1.1 INFORMATION ON UPDATING THE MANUAL**

The manual must be updated every time a new "Release" is received.

**Insert the pages of the latest Release into the manual, and eliminate the corresponding obsolete pages (even if belonging to a previous Release).**

**⚠ DANGER**

Failure to update the manual and eliminate the obsolete pages makes it more difficult to consult the manual, and may lead to performing incorrect operations on the vehicle, with serious consequences for the safety of the vehicle and of persons and property.

The manual consists of #10 sections, for a total of #358 pages, as listed below.

**NOTE** For the nomenclature of a typical page of the manual (and, specifically, for a definition of the page number), see 0.2 (HOW TO CONSULT THE MANUAL).

**0.1.2 UPDATED MANUAL GENERAL LIST**

page #	Release	page #	Release
0-1 -00	..... 00	1-12 -00	..... 00
0-2 -00	..... 00	1-13 -00	..... 00
0-3 -00	..... 00	1-14 -00	..... 00
0-4 -00	..... 00	1-15 -00	..... 00
0-5 -00	..... 00	1-16 -00	..... 00
0-6 -00	..... 00	1-17 -00	..... 00
0-7 -00	..... 00	1-18 -00	..... 00
0-8 -00	..... 00	1-19 -00	..... 00
0-9 -00	..... 00	1-20 -00	..... 00
0-10 -00	..... 00	1-21 -00	..... 00
1-1 -00	..... 00	1-22 -00	..... 00
1-2 -00	..... 00	1-23 -00	..... 00
1-3 -00	..... 00	1-24 -00	..... 00
1-4 -00	..... 00	1-25 -00	..... 00
1-5 -00	..... 00	1-26 -00	..... 00
1-6 -00	..... 00	1-27 -00	..... 00
1-7 -00	..... 00	1-28 -00	..... 00
1-8 -00	..... 00	1-29 -00	..... 00
1-9 -00	..... 00	1-30 -00	..... 00
1-10 -00	..... 00	1-31 -00	..... 00
1-11 -00	..... 00	1-32 -00	..... 00

page #	Release	page #	Release
1-33 -00	..... 00	2-36 -00	..... 00
1-34 -00	..... 00	2-37 -00	..... 00
1-35 -00	..... 00	2-38 -00	..... 00
1-36 -00	..... 00	2-39 -00	..... 00
1-37 -00	..... 00	2-40 -00	..... 00
1-38 -00	..... 00	2-41 -00	..... 00
2-1 -00	..... 00	2-42 -00	..... 00
2-2 -00	..... 00	2-43 -00	..... 00
2-3 -00	..... 00	2-44 -00	..... 00
2-4 -00	..... 00	2-45 -00	..... 00
2-5 -00	..... 00	2-46 -00	..... 00
2-6 -00	..... 00	2-47 -00	..... 00
2-7 -00	..... 00	2-48 -00	..... 00
2-8 -00	..... 00	2-49 -00	..... 00
2-9 -00	..... 00	2-50 -00	..... 00
2-10 -00	..... 00	2-51 -00	..... 00
2-11 -00	..... 00	2-52 -00	..... 00
2-12 -00	..... 00	2-53 -00	..... 00
2-13 -00	..... 00	2-54 -00	..... 00
2-14 -00	..... 00	2-55 -00	..... 00
2-15 -00	..... 00	2-56 -00	..... 00
2-16 -00	..... 00	2-57 -00	..... 00
2-17 -00	..... 00	2-58 -00	..... 00
2-18 -00	..... 00	2-59 -00	..... 00
2-19 -00	..... 00	2-60 -00	..... 00
2-20 -00	..... 00	2-61 -00	..... 00
2-21 -00	..... 00	2-62 -00	..... 00
2-22 -00	..... 00	2-63 -00	..... 00
2-23 -00	..... 00	2-64 -00	..... 00
2-24 -00	..... 00	2-65 -00	..... 00
2-25 -00	..... 00	2-66 -00	..... 00
2-26 -00	..... 00	2-67 -00	..... 00
2-27 -00	..... 00	2-68 -00	..... 00
2-28 -00	..... 00	3-1 -00	..... 00
2-29 -00	..... 00	3-2 -00	..... 00
2-30 -00	..... 00	3-3 -00	..... 00
2-31 -00	..... 00	3-4 -00	..... 00
2-32 -00	..... 00	3-5 -00	..... 00
2-33 -00	..... 00	3-6 -00	..... 00
2-34 -00	..... 00	3-7 -00	..... 00
2-35 -00	..... 00	3-8 -00	..... 00

CONT'D ►



CONT'D ►

page #	Release	page #	Release	page #	Release	page #	Release
3-9 -00	..... 00	5-9 -00	..... 00	6-39 -00	..... 00	7-27 -00	..... 00
3-10 -00	..... 00	5-10 -00	..... 00	6-40 -00	..... 00	7-28 -00	..... 00
3-11 -00	..... 00	6-1 -00	..... 00	6-41 -00	..... 00	7-29 -00	..... 00
3-12 -00	..... 00	6-2 -00	..... 00	6-42 -00	..... 00	7-30 -00	..... 00
3-13 -00	..... 00	6-3 -00	..... 00	6-43 -00	..... 00	7-31 -00	..... 00
3-14 -00	..... 00	6-4 -00	..... 00	6-44 -00	..... 00	7-32 -00	..... 00
3-15 -00	..... 00	6-5 -00	..... 00	6-45 -00	..... 00	7-33 -00	..... 00
3-16 -00	..... 00	6-6 -00	..... 00	6-46 -00	..... 00	7-34 -00	..... 00
3-17 -00	..... 00	6-7 -00	..... 00	6-47 -00	..... 00	7-35 -00	..... 00
3-18 -00	..... 00	6-8 -00	..... 00	6-48 -00	..... 00	7-36 -00	..... 00
4-1 -00	..... 00	6-9 -00	..... 00	6-49 -00	..... 00	7-37 -00	..... 00
4-2 -00	..... 00	6-10 -00	..... 00	6-50 -00	..... 00	7-38 -00	..... 00
4-3 -00	..... 00	6-11 -00	..... 00	6-51 -00	..... 00	7-39 -00	..... 00
4-4 -00	..... 00	6-12 -00	..... 00	6-52 -00	..... 00	7-40 -00	..... 00
4-5 -00	..... 00	6-13 -00	..... 00	7-1 -00	..... 00	7-41 -00	..... 00
4-6 -00	..... 00	6-14 -00	..... 00	7-2 -00	..... 00	7-42 -00	..... 00
4-7 -00	..... 00	6-15 -00	..... 00	7-3 -00	..... 00	7-43 -00	..... 00
4-8 -00	..... 00	6-16 -00	..... 00	7-4 -00	..... 00	7-44 -00	..... 00
4-9 -00	..... 00	6-17 -00	..... 00	7-5 -00	..... 00	7-45 -00	..... 00
4-10 -00	..... 00	6-18 -00	..... 00	7-6 -00	..... 00	7-46 -00	..... 00
4-11 -00	..... 00	6-19 -00	..... 00	7-7 -00	..... 00	7-47 -00	..... 00
4-12 -00	..... 00	6-20 -00	..... 00	7-8 -00	..... 00	7-48 -00	..... 00
4-13 -00	..... 00	6-21 -00	..... 00	7-9 -00	..... 00	7-49 -00	..... 00
4-14 -00	..... 00	6-22 -00	..... 00	7-10 -00	..... 00	7-50 -00	..... 00
4-15 -00	..... 00	6-23 -00	..... 00	7-11 -00	..... 00	7-51 -00	..... 00
4-16 -00	..... 00	6-24 -00	..... 00	7-12 -00	..... 00	7-52 -00	..... 00
4-17 -00	..... 00	6-25 -00	..... 00	7-13 -00	..... 00	7-53 -00	..... 00
4-18 -00	..... 00	6-26 -00	..... 00	7-14 -00	..... 00	7-54 -00	..... 00
4-19 -00	..... 00	6-27 -00	..... 00	7-15 -00	..... 00	7-55 -00	..... 00
4-20 -00	..... 00	6-28 -00	..... 00	7-16 -00	..... 00	7-56 -00	..... 00
4-21 -00	..... 00	6-29 -00	..... 00	7-17 -00	..... 00	7-57 -00	..... 00
4-22 -00	..... 00	6-30 -00	..... 00	7-18 -00	..... 00	7-58 -00	..... 00
5-1 -00	..... 00	6-31 -00	..... 00	7-19 -00	..... 00	7-59 -00	..... 00
5-2 -00	..... 00	6-32 -00	..... 00	7-20 -00	..... 00	7-60 -00	..... 00
5-3 -00	..... 00	6-33 -00	..... 00	7-21 -00	..... 00	7-61 -00	..... 00
5-4 -00	..... 00	6-34 -00	..... 00	7-22 -00	..... 00	7-62 -00	..... 00
5-5 -00	..... 00	6-35 -00	..... 00	7-23 -00	..... 00	7-63 -00	..... 00
5-6 -00	..... 00	6-36 -00	..... 00	7-24 -00	..... 00	7-64 -00	..... 00
5-7 -00	..... 00	6-37 -00	..... 00	7-25 -00	..... 00	7-65 -00	..... 00
5-8 -00	..... 00	6-38 -00	..... 00	7-26 -00	..... 00	7-66 -00	..... 00

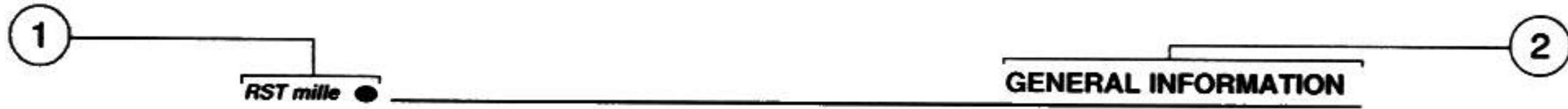
CONT'D ►



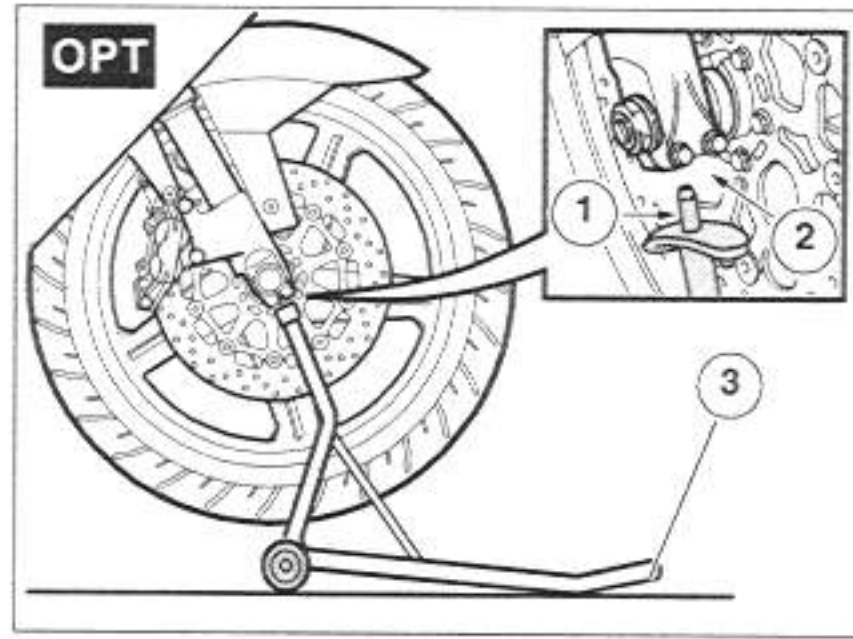
page #	Release	page #	Release
7-67 -00	..... 00	8-4 -00	.....00
7-68 -00	..... 00	8-5 -00	.....00
7-69 -00	..... 00	8-6 -00	.....00
7-70 -00	..... 00	8-7 -00	.....00
7-71 -00	..... 00	8-8 -00	.....00
7-72 -00	..... 00	8-9 -00	.....00
7-73 -00	..... 00	8-10 -00	.....00
7-74 -00	..... 00	8-11 -00	.....00
7-75 -00	..... 00	8-12 -00	.....00
7-76 -00	..... 00	8-13 -00	.....00
7-77 -00	..... 00	8-14 -00	.....00
7-78 -00	..... 00	8-15 -00	.....00
7-79 -00	..... 00	8-16 -00	.....00
7-80 -00	..... 00	8-17 -00	.....00
7-81 -00	..... 00	8-18 -00	.....00
7-82 -00	..... 00	8-19 -00	.....00
7-83 -00	..... 00	8-20 -00	.....00
7-84 -00	..... 00	8-21 -00	.....00
7-85 -00	..... 00	8-22 -00	.....00
7-86 -00	..... 00	8-23 -00	.....00
7-87 -00	..... 00	8-24 -00	.....00
7-88 -00	..... 00	8-25 -00	.....00
7-89 -00	..... 00	8-26 -00	.....00
7-90 -00	..... 00	●-1 -00	.....00
7-91 -00	..... 00	●-2 -00	.....00
7-92 -00	..... 00	●-3 -00	.....00
7-93 -00	..... 00	●-3 -00	.....00
7-94 -00	..... 00	●-5 -00	.....00
7-95 -00	..... 00	●-6 -00	.....00
7-96 -00	..... 00	●-7 -00	.....00
7-97 -00	..... 00	●-8 -00	.....00
7-98 -00	..... 00	●-9 -00	.....00
7-99 -00	..... 00	●-10 -00	.....00
7-100 -00	..... 00		
7-101 -00	..... 00		
7-102 -00	..... 00		
7-103 -00	..... 00		
7-104 -00	..... 00		
8-1 -00	..... 00		
8-2 -00	..... 00		
8-3 -00	..... 00		



0.2 HOW TO CONSULT THE MANUAL



- 8 [ 1.9 PLACING THE VEHICLE ON THE SUPPORT STANDS
- 9 [ 1.9.1 PLACING THE VEHICLE ON THE FRONT SUPPORT STANDS
- 10 [
  - ◆ Place the vehicle on the central stand.
  - ◆ At the same time, insert the two pins (1) of the stand (3) into the two holes (2) at the bottom of the front fork.
  - ◆ Rest one foot at the front of the stand (3).
  - ◆ Push the stand (3) all the way down.

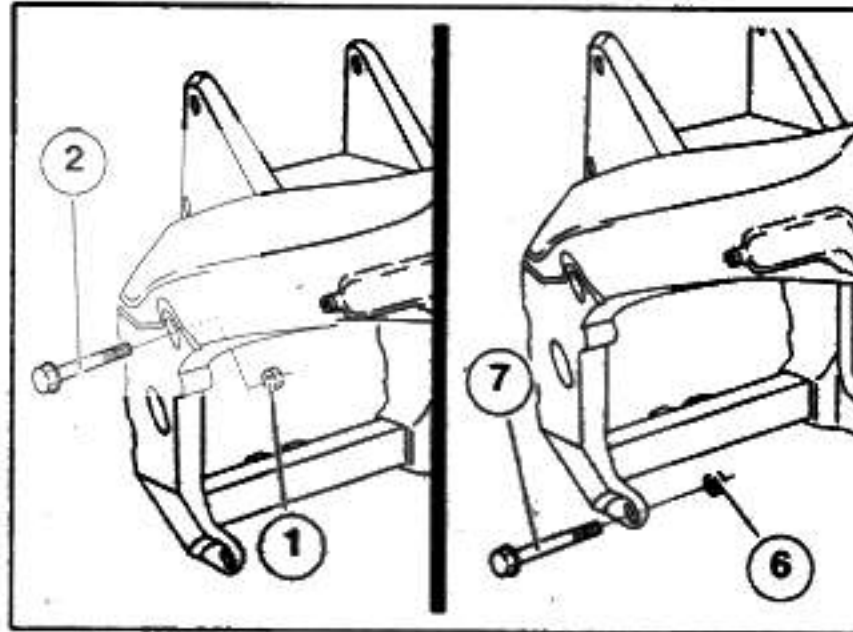


1.9.2 PLACING THE VEHICLE ON THE CENTER SUPPORT STAND

Carefully read 0.5.1 (PRECAUTIONS AND GENERAL INFORMATION).

Code 8140176 (complete stand).

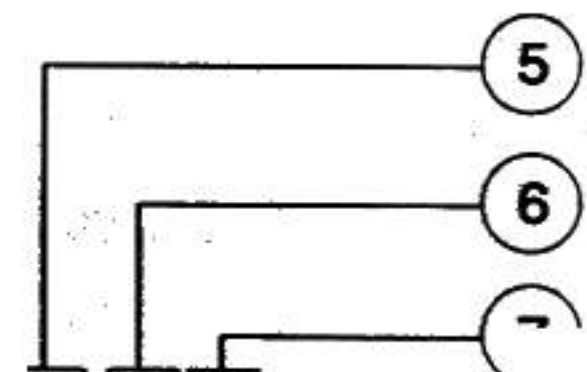
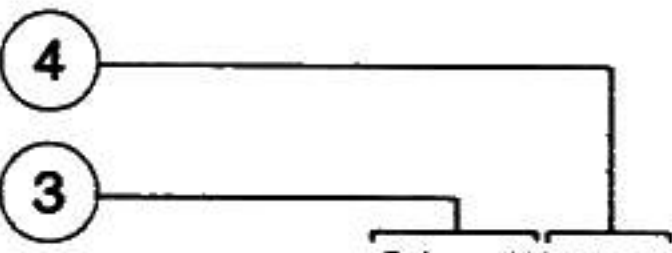
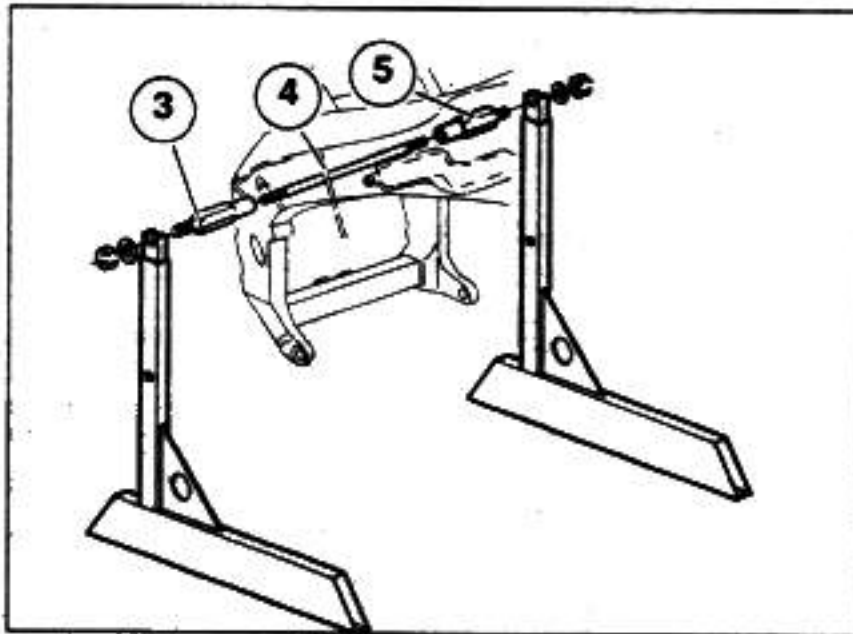
- ◆ Remove the lower fairing, see 7.1.33 (REMOVING THE LOWER FAIRING).
- ◆ Place the vehicle on the appropriate front support stand , see 1.9.1 (PLACING THE VEHICLE ON THE FRONT SUPPORT STAND).
- ◆ ★ Hold the internal nut (1) steady in place.
- ◆ ★ Unscrew and remove the upper right rear engine fastening screw (2).



- 11 [
  - ◆ ★ Tightening torque nut (1) / screw (2): 50 Nm (5.0 kgm).
  - IMPORTANT** The screw (2) on the left side is longer.
  - ◆ ★ Retrieve the nut (1).
  - ◆ Insert the upper right support pin (3) in the upper hole on the right-hand side.
  - ◆ Insert the stud bolt (4) in the upper hole on the left-hand side, and screw it all the way onto the pin (3).
  - ◆ Screw the upper left support pin (5) all the way onto the stud bolt (4) and tighten.
  - ◆ ★ Hold the internal nut (6) steady in place.
  - ◆ ★ Unscrew and remove the lower engine fastening screw (7).



Tightening torque nut (1) / screw (2): 50 Nm (5.0 kgm).



- 1) Vehicle (or engine) model
- 2) Section
- 3) Progressive release number ("00" refers to the first edition)
- 4) Year and month of Release publication
- 5) Section number
- 6) Section page number
- 7) Updated progressive page number

- 8) Chapter title (progressively numbered)
- 9) Paragraph title (progressively numbered)
- 10) Description of the operation (always preceded by a diamond)
- 11) Description of the operation: an asterisk means the operation must be repeated on the opposite side of the vehicle



**0.3 FOREWORD**

This manual contains information covering normal servicing procedures.

In the future, the information and illustrations contained in this manual will be updated by means of "Releases", see 0.1 (UPDATE RELEASE 00/2002-03).

Since **aprilia s.p.a.** strives to always improve the quality and usefulness of its vehicles, changes may be made to the vehicles at any time.

Thus, it is imperative that users of this manual understand that some information may be out of date for some vehicles. Be sure that the information in this manual applies to the vehicle that you are servicing before you begin any service operations.

Before consulting the manual, check the vehicle model. This publication is intended for **aprilia** dealers and their trained and qualified mechanics.

The description of many service and repair operations is intentionally omitted, as it is assumed that the users of this manual have basic mechanical training, basic knowledge of the procedures regarding motor vehicle repair, and have available to them all current information published by **aprilia** concerning the vehicle.

Without these things, the repair or servicing of the vehicle could be affected and could lead to a dangerous condition or accident for the servicing mechanic or the operator.

This manual does not describe all of the procedures necessary to repair and service the vehicle in detail.

Therefore, it is important to be particularly careful in order to avoid any damage to the vehicle, its parts, or to cause injury to the mechanic or the rider.

Changes in the technical specifications and servicing procedures that become necessary as a result of changes to **aprilia** vehicles will be documented and distributed to all **aprilia** dealers.

Therefore, it is necessary that the latest **aprilia** information be kept available to the servicing mechanics. If you have questions regarding repair and servicing procedures, contact the **aprilia** Consumer Service (A.C.S.). A.C.S. Technical counselors will be able to assist you with any problems that you might face.

**aprilia s.p.a.** reserves the right to modify any of its models in any manner at any time.

The mention of products or services supplied by entities other than **aprilia** is made for information purposes only. **aprilia** is not responsible for the performance or use of any product not specifically recommended or endorsed by **aprilia**.

For more information, see 0.4 (REFERENCE SERVICE LITERATURE)

**NOTE** Before starting any service on the engine, please read relevant reference manuals, see 0.4 (REFERENCE SERVICE LITERATURE).

First edition: March 2002

Produced and printed by:

**Deca s.n.c.**

via Risorgimento, 23/1 - 48022 Lugo (RA) - Italy

Phone +39 - 0545 35235

Fax +39 - 0545 32844

E-mail: [deca@decagroup.it](mailto:deca@decagroup.it)

[www.decaweb.it](http://www.decaweb.it)

on behalf of:

**Aprilia consumer service s.p.a.**

via Noalese, 156 - 30036 Santa Maria di Sala (VE) - Italy

Phone +39 - 041 57 86 101

Fax +39 - 041 57 86 100

[www.aprilia.com](http://www.aprilia.com)

**0.4 REFERENCE SERVICE LITERATURE****0.4.1 ENGINE SERVICE MANUAL**

aprilia part# (description)	
8140582 (1051-1)	<b>I</b>
8140584 (1053-1)	<b>F</b>
8140585 (1054-1)	<b>D</b>
8140583 (1052-1)	<b>E</b>
8140586 (1055-1)	<b>UK</b>
8140587 (1056-1)	<b>USA</b>

**0.4.2 SPARE PARTS CATALOGUES**

aprilia part# (description)	
390W	<b>I</b> <b>UK</b>
390Y	<b>I</b> <b>UK</b>
3901	<b>I</b> <b>UK</b>

**0.4.3 SPECIAL TOOLS MANUALS**

aprilia part# (description)	
8202278	<b>I</b> <b>F</b> <b>D</b> <b>E</b> <b>UK</b>

**0.4.4 OPERATING AND MAINTENANCE MANUALS**

aprilia part# (description)	
modelli 1998 -1999	
8102623	<b>I</b> <b>F</b> <b>D</b>
8102857	<b>P</b> <b>E</b> <b>UK</b>
8102858	<b>NL</b> <b>DK</b> <b>SF</b>
8102859	<b>GR</b> <b>J</b> <b>UK</b>
8104128	<b>AUS</b>
8104099	<b>USA</b>
models 2000	
8104089	<b>I</b> <b>F</b> <b>D</b>
8104142	<b>P</b> <b>E</b> <b>UK</b>
8104143	<b>NL</b> <b>DK</b> <b>SF</b>
8104141	<b>GR</b> <b>J</b> <b>UK</b>
8104164	<b>AUS</b>
8104171	<b>USA</b>
<b>RSV01</b>	
8104152	<b>I</b> <b>F</b> <b>D</b>
8104269	<b>P</b> <b>E</b> <b>UK</b>
8104267	<b>NL</b> <b>DK</b> <b>SF</b>
8104268	<b>GR</b> <b>J</b> <b>UK</b>
8104270	<b>AUS</b>
8104264	<b>USA</b>



**0.5 ABBREVIATIONS/SYMBOLS/ACRONYMS**

#	= number	kΩ	= kilohms
<	= less than	kPa	= kiloPascal (1 kPa = 0.145 psi - 0.01 bar)
>	= greater than	KS	= clutch side (Kupplungseite)
≤	= equal to or less than	kW	= kilowatts
≥	= equal to or greater than	ℓ	= liters (1 ℓ = 0.2641721 US gal)
~	= approximately	LAP	= lap (for competitive riding)
∞	= infinity	LED	= Light Emitting Diode
°C	= degrees Celsius (centigrade)	m/s	= meters per second
°F	= degrees Fahrenheit	max	= maximum
±	= plus or minus	mbar	= millibar (1 mbar = 0.0145 psi - 0.1 kPa)
a.c.	= alternating current	mi	= miles
A	= ampere	MIN	= minimum
Ah	= ampere per hour	MPH	= miles per hour
API	= American Petroleum Institute	MS	= flywheel side (Magnetoseite)
HV	= high voltage	MΩ	= megaohm
AV/ DC	= Anti-Vibration Double Countershaft	N.A.	= Not Available
bar	= unit of pressure (1 bar = 14.50 psi - 100 kPa)	MON	= "Motor" method octane number
BDC	= bottom dead center	Nm	= Newton-meter (1 Nm = 0.723300129 ftlb)
cm <sup>3</sup>	= cubic centimeters (1 cm <sup>3</sup> = 0.0338139 US fl oz)	oz	= ounce
CO	= carbon monoxide	Ω	= ohm
CPU	= Central Processing Unit	PPC	= Pneumatic Power Clutch
cu in	= cubic inch	RON	= "Research" method octane number
d.c.	= direct current	SAE	= Society of Automotive Engineers
DIN	= German industrial standards (Deutsche Industrial Norm)	sq in	= square inch
DOHC	= Double Overhead Camshaft	TDC	= top dead center
ECU	= Electronic Control Unit	TEST	= diagnostic check
ftlb	= foot pound	T.E.	= hexagonal head
ft	= foot	T.P.	= flat head
g	= gram	TSI	= Twin Spark Ignition
rpm	= revolutions per minute	US gal	= USA gallon
HC	= unburned hydrocarbons	US qt	= USA quart
HH	= hex head screw	US fl oz	= USA fluid ounce
HS	= hex socket-head screw	UPSIDE-	
in	= inch	DOWN	= upside-down forks
ISC	= Idle Speed Control	V	= Volt
ISO	= International Standardization Organization	W	= Watt
kg	= kilograms (1 kg = 2.2046224 lb)	∅	= diameter
kgm	= kilograms per meter (1 kgm = 10 Nm)		
km	= kilometers (1km = 0.62137119 mi)		
km/h	= kilometers per hour		











**GENERAL INFORMATION**

**1**



**GENERAL INFORMATION****TABLE OF CONTENTS**

<b>1.1 INTRODUCTION .....</b>	<b>1-3-00</b>	1.13.2 USING CONSUMABLES.....	1-26-00
<b>1.2 SAFETY WARNINGS.....</b>	<b>1-3-00</b>	<b>1.14 SPECIAL TOOLS.....</b>	<b>1-29-00</b>
<b>1.3 GENERAL SAFETY RULES .....</b>	<b>1-4-00</b>	1.14.1 MISCELLANEOUS TOOLS.....	1-29-00
1.3.1 CARBON MONOXIDE.....	1-4-00	1.14.2 ENGINE TOOLS .....	1-30-00
1.3.2 GASOLINE.....	1-4-00	<b>1.15 PLACING THE VEHICLE ON THE</b>	<b>SUPPORT STANDS.....</b>
1.3.3 HOT COMPONENTS.....	1-4-00	1.15.1 PLACING THE VEHICLE ON THE	FRONT SUPPORT STAND .....
1.3.4 USED ENGINE OIL AND FORK OIL.....	1-4-00	1.15.2 PLACING THE VEHICLE ON THE	CENTER SUPPORT STAND.....
1.3.5 BRAKE FLUID.....	1-4-00	<b>1.16 INSTRUCTIONS FOR APPLYING</b>	<b>THE TRANSFERS .....</b>
1.3.6 CLUTCH CONTROL FLUID .....	1-4-00	<b>1.17 FASTENERS .....</b>	<b>1-35-00</b>
1.3.7 COOLANT.....	1-4-00	1.17.1 JOINTS WITH CLICK CLAMPS AND	WITH SCREW-TYPE CLAMPS.....
1.3.8 BATTERY HYDROGEN GAS AND	ELECTROLYTE.....	1.17.2 GENERAL VALUES OF	TIGHTENING TORQUES .....
1.3.9 PRECAUTIONS AND GENERAL	INFORMATION.....		
1.3.10 ELECTRICAL CONNECTORS.....	1-6-00		
1.3.11 FASTENERS TIGHTENING TORQUES	1-6-00		
<b>1.4 SPECIFIC SAFETY RULES .....</b>	<b>1-7-00</b>		
1.4.1 FUEL.....	1-7-00		
1.4.2 LUBRICANTS.....	1-8-00		
1.4.3 BRAKE.....	1-8-00		
1.4.4 DISC BRAKES.....	1-9-00		
1.4.5 CLUTCH CONTROL FLUID .....	1-10-00		
1.4.6 COOLANT.....	1-11-00		
1.4.7 DRIVE CHAIN.....	1-12-00		
1.4.8 TIRES.....	1-12-00		
1.4.9 AUTOMATIC CONVERTER .....	1-13-00		
1.4.10 CATALITIC CONVERTER.....	1-13-00		
1.4.11 EXHAUST SILECER.....	1-13-00		
1.4.12 SPARK ARRESTER.....	1-13-00		
<b>1.5 RUNNING-IN RULES .....</b>	<b>1-14-00</b>		
<b>1.6 HOW TO USE YOUR SERVICE AND</b>	<b>REPAIR MANUAL .....</b>		
1.6.1 HOW TO USE THIS MANUAL .....	1-15-00		
1.6.2 REQUESTING SPARE PARTS.....	1-15-00		
<b>1.7 IDENTIFICATION DATA .....</b>	<b>1-16-00</b>		
1.7.1 VEHICLE IDENTIFICATION NUMBER	(V.I.N.) (FRAME NUMBER).....		1-16-00
1.7.2 INFORMATION CONTAINED IN THE	VEHICLE IDENTIFICATION NUMBER		1-16-00
<b>1.8 POSITION OF SERIAL NUMBERS .</b>	<b>1-17-00</b>		
1.8.1 FRAME NUMBER.....	1-17-00		
1.8.2 ENGINE NUMBER.....	1-17-00		
1.8.3 POSITION OF THE WARNING	ADHESIVE LABELS.....		1-18-00
<b>1.9 CALIFORNIA EVAPORATIVE</b>	<b>EMISSION SYSTEM .....</b>		<b>1-20-00</b>
<b>1.10 SPARE PARTS .....</b>	<b>1-21-00</b>		
<b>1.11 SPECIFICATIONS .....</b>	<b>1-21-00</b>		
<b>1.12 LUBRICANT CHART .....</b>	<b>1-24-00</b>		
<b>1.13 CONSUMABLES .....</b>	<b>1-25-00</b>		
1.13.1 PRODUCT PROPERTIES .....	1-25-00		



**1.1 INTRODUCTION**

This manual is divided into sections, chapters and paragraphs, by subject.

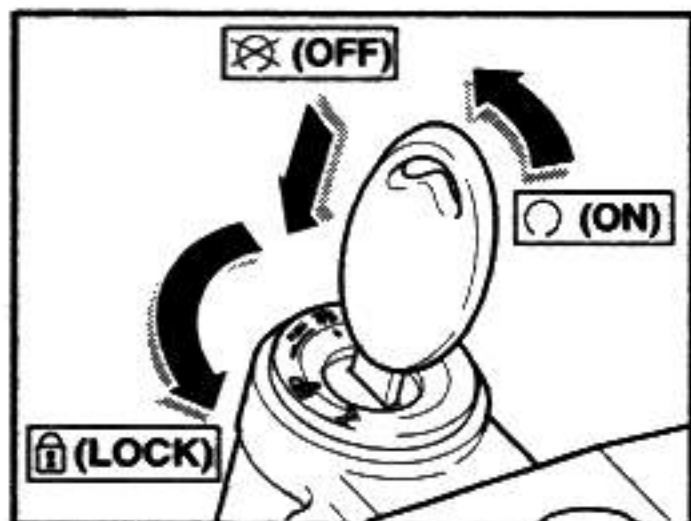
The procedures described are laid out in single operation, and each operation is indicated by a ♦.

The numbered parts shown in the figures are identified in the text with the number in parentheses or with the symbol representing them.

Example (the following text is generic and does not refer to this specific vehicle):

section →

**MAIN INDEPENDENT CONTROLS**



chapter →

**1.20 STEERING LOCK**

safety warning →

**⚠ WARNING**

Never attempt to place the ignition switch in the locked "🔒" (LOCK) position while the vehicle is moving.

paragraph →

**1.1.1 OPERATION**

operation →

To lock the steering:

position (2) →

- ♦ Turn the handlebar completely to the left or to the right.
- ♦ Turn the key (2) to position "⊗" (OFF).
- ♦ Press the key and rotate to position "🔒" (LOCK).
- ♦ Remove the key.

symbol "🔒" →

**1.2 SAFETY WARNINGS**

Throughout this manual you will encounter the following symbols:

**⚠ DANGER**

When you find this symbol on the vehicle or in the manual, this indicates that a potential for serious personal injury or death exists.

Failure to follow this warning may result in serious risk of personal injury or death, of the mechanic working on the vehicle, the operator of the vehicle, or the general public.

It also indicates that serious and permanent damage to the vehicle is possible.

**⚠ WARNING**

This statement indicates a potential hazard which may result in some personal injury, or damage to the vehicle.

**NOTE** The term "NOTE" in the present manual calls your attention to important information or instructions.



### 1.3 GENERAL SAFETY RULES

#### 1.3.1 CARBON MONOXIDE

If it is necessary to run the engine in order to carry out a maintenance operation, ensure that the area in which you are operating is properly ventilated.

Never run the engine in enclosed spaces.

If it is necessary to work indoors, use an exhaust evacuation system.

#### DANGER

The exhaust fumes contain carbon monoxide, a poisonous gas that can cause loss of consciousness and even death.

#### 1.3.2 GASOLINE

Work in a well ventilated area.

Keep cigarettes, flames or sparks away from the work area and from the place where gasoline is stored.

#### DANGER

Gasoline is extremely flammable and becomes explosive under certain conditions.

KEEP GASOLINE AWAY FROM CHILDREN.

#### 1.3.3 HOT COMPONENTS

#### DANGER

The engine and the components of the exhaust system become very hot and remain hot for some time after the engine has been stopped.

Before handling these components, wear insulating gloves or wait until the engine and the exhaust system have cooled down.

#### 1.3.4 USED ENGINE OIL AND FORK OIL

#### DANGER

Use latex gloves for the maintenance operations that require contact with used oil.

Used oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods.

Although this is unlikely unless you handle used oil on a daily basis, it is advisable to thoroughly wash your hands with soap and water after handling used oil.

KEEP OIL AWAY FROM CHILDREN.

#### 1.3.5 BRAKE FLUID

#### WARNING

The brake fluid can damage painted, plastic or rubber parts. When performing maintenance operations on the brake system, place a clean shop towel on these parts.

Always wear goggles when servicing the brake system with brake fluid.

Brake fluid is extremely destructive to your eyes.

If you should accidentally get brake fluid in your eyes, flush immediately with a large quantity of cool clear water and seek professional medical assistance immediately.

KEEP BRAKE FLUID AWAY FROM CHILDREN.

#### 1.3.6 CLUTCH CONTROL FLUID

#### WARNING

The clutch control fluid can damage painted, plastic or rubber parts.

When performing maintenance operations on the clutch control system, place a clean shop towel on these parts.

Always wear goggles when servicing the clutch control system with clutch control fluid.

Clutch control fluid is extremely destructive to your eyes. If you should accidentally get clutch control fluid in your eyes, flush immediately with a large quantity of cool clear water and seek professional medical assistance immediately.

KEEP CLUTCH CONTROL FLUID AWAY FROM CHILDREN.

#### 1.3.7 COOLANT

In certain conditions, the ethylene glycol contained in the engine coolant is flammable: its flame is invisible, but you can be burned anyway.

#### DANGER

Avoid spilling the engine coolant on the exhaust system or on the engine components.

They may be hot enough to cause the coolant to ignite and burn without a visible flame.

The coolant (ethylene glycol) can cause skin irritation and is poisonous if swallowed.

Engine coolant is sweet tasting, and therefore extremely attractive to pets and other animals, as well as being extremely toxic.

Do not leave coolant in an open container where animals may be able to drink it.

KEEP COOLANT AWAY FROM CHILDREN.

Do not remove the radiator the cap when the engine is hot.

The coolant is under pressure and may cause burns.

#### 1.3.8 BATTERY HYDROGEN GAS AND ELECTROLYTE

#### DANGER

The battery gives off explosive gases; keep cigarettes, flames and sparks away from the battery. Provide adequate ventilation when operating or recharging the battery.

The battery contains sulphuric acid (electrolyte).

Contact with the skin or the eyes may cause serious burns.

Always wear tight fitting goggles and protective clothing when handling battery electrolyte.

It is particularly important for you to protect your eyes, since even a minuscule amount of battery acid can destroy your vision.

Should you accidentally get even the smallest amount of battery acid on your skin or eyes, immediately flush with large quantities of clear cool water and immediately seek professional medical attention.

The electrolyte is poisonous. If the electrolyte is accidentally swallowed, drink large quantities of water or milk and then milk of magnesia or vegetable oil.

Seek professional medical attention immediately.

KEEP BATTERIES AND ELECTROLYTE AWAY FROM CHILDREN.



### 1.3.9 PRECAUTIONS AND GENERAL INFORMATION

Please scrupulously follow the recommendations below when repairing, disassembling and reassembling the vehicle.

#### DANGER

Do not use open flames at any time.

Before beginning any maintenance work or inspecting the vehicle, stop the engine and remove the ignition key. Wait for the engine and exhaust system to cool completely. If possible, use the appropriate equipment to raise the vehicle, on a solid, level floor.

Be especially careful around any parts of the engine and exhaust system that may still be warm, to avoid burns.

The brakes also get quite hot in operation.

Be sure that the brakes have cooled thoroughly before beginning any service operations.

No part of the vehicle is safe to hold in your mouth.

Unless explicitly stated otherwise, reassemble all units by carrying out the disassembly operations in reverse.

Use common sense to interpret any overlap in cross-referenced instructions, to avoid unnecessarily removing components. Do not use abrasive pastes to polish matte paints.

Handle fuel with the greatest caution.

Never use fuel as a solvent for cleaning the vehicle.

Use only water and neutral soap to clean all rubber and plastic parts and the saddle. Never use alcohol, gasoline or other solvents.

Disconnect the negative battery cable (-) before soldering.

When two or more people are working together, make sure conditions are safe for each.

Be sure that all the mechanics working on any vehicle are thoroughly briefed as what each will be doing, and make sure that one mechanic is responsible for ensuring that all safety related items, such as tightening torques, are properly considered.

Carefully read paragraph 1.4 (SPECIFIC SAFETY RULES).

#### BEFORE DISMANTLING THE COMPONENTS

- Remove all dirt, mud, dust and foreign matter from the vehicle before dismantling its components.
- Where designated, use the special tools designed for this vehicle.

#### DANGER

Do not use makeshift tools for any operation which calls for a special tool.

Failure to heed this warning can lead to serious personal injury such as when an ill-fitting wrench slips, and you slam your hand into the workbench or a part of the vehicle.

#### DISMANTLING THE COMPONENTS

- Do not loosen and/or tighten the screws and nuts using pliers or other tools; always use the appropriate wrench.
- Before disconnecting any line, cable, etc., mark each part with a number or distinguishing mark.
- Each disconnected part must be marked clearly to ensure that it may be reassembled in the same position from which it was taken.
- Clean and wash all dismantled components thoroughly, using non-flammable solvents.
- Keep coupled parts together, since they have "adapted" to each other through normal wear and tear.
- Some components must be used together or replaced completely.
- Keep away from sources of heat.

#### REASSEMBLING THE COMPONENTS

#### WARNING

Never reuse a circlip; when on is removed, it must be replaced with a new one.

When mounting a new circlip, be careful not to spread its ends farther than strictly necessary to place it on the shaft.

After mounting a circlip, make sure that it is completely and firmly inserted in its seat.

Do not use compressed air to clean any bearing.

**NOTE** Bearings must rotate freely, without roughness or noise, otherwise they must be replaced.

- Use only ORIGINAL **aprilia** SPARE PARTS.
- Use only the recommended lubricants and consumables.
- Lubricate the parts (whenever possible) before reassembling them.
- When tightening screws and nuts, start with the largest or innermost one, and cross-tighten.
- Tighten gradually in a series of steps before applying the final torque.
- Always replace lock nuts, gaskets, seals, circlips, O-rings, cotter pins and screws with new ones if the threads are damaged.
- Clean all joining surfaces, oil seal edges and gaskets before reassembling. Apply a light coating of lithium-based grease to the edges of the oil seals. Reassemble oil seals and bearings with the brand name or serial number facing outwards (visible side).
- Copiously lubricate bearings before installation and assembly.
- Make sure that all components have been correctly installed and assembled.
- After any repair or periodic maintenance operation is carried out, the vehicle must be test ridden in an area away from traffic and other hazards.



### 1.3.10 ELECTRICAL CONNECTORS

The electrical connectors must be disconnected as follows. Failure to follow these procedures will irreparably damage the connector and wiring.

- ◆ Press in the click tab.

#### WARNING

**Do not pull the cables to disconnect the two connectors.**

- ◆ Grasp the two connectors and disconnect them by pulling in opposite directions.
- ◆ If dirt, rust, dust, or moisture is seen on the connector, blow out the connector with air.
- ◆ Ensure that the cables are correctly crimped to the terminals placed inside the connectors.

**NOTE** The two halves of the connector fit together properly in only one orientation. Ensure that the connector is properly aligned before attempting to assemble it.

- ◆ Press the connectors firmly together, listening for the typical "click" sound for those connectors provided with a click tab. Ensure that both halves of the connectors are firmly pressed together.

### 1.3.11 FASTENERS TIGHTENING TORQUES

#### DANGER

Remember that the tightening torque of all fasteners on the wheels, brakes, axles, and other components of the suspension system is very important to ensure the safety of the vehicle, and must be kept at the prescribed values.

Check the tightening torque of the fasteners regularly, and always use a torque wrench when reinstalling them.

Failure to comply with this warning could allow one of these components to be lost which could allow one of these components to be lost which could lock a wheel or cause other handling problems with consequent overturning and risk of serious injury or even death.



## 1.4 SPECIFIC SAFETY RULES

### 1.4.1 FUEL

#### ⚠ DANGER

Gasoline is extremely flammable and in some conditions can become explosive.

It is therefore necessary to refuel and carry out maintenance operations involving the fuel system in a well-ventilated area, with the engine off.

Do not refuel or do any maintenance on the fuel system with the engine running.

Do not smoke while refueling or near fuel vapors.

Never allow any portion of the fuel system to come in contact with open flames, sparks or other heat sources.

Be careful to avoid spilling fuel when you are refueling. Spilled fuel could ignite when it contacts hot engine or exhaust system surfaces.

If you accidentally spill some fuel, ensure that it is wiped up or completely evaporated before starting the vehicle.

Since gasoline expands in the fuel tank when the vehicle is sitting in the open sun, never fill the tank completely to the brim. Leave at least one inch of expansion space.

Avoid any contact of the fuel with your skin, and avoid inhalation of fuel vapors.

Do not ever attempt to siphon fuel from one container to another using your mouth as suction for a siphon hose.

Gasoline is poisonous and carcinogenic and contains chemical substances that cause birth defects and other reproductive problems. If gasoline should be accidentally spilled on the skin or clothes, immediately wash it off with soap and water and change clothes.

Should you accidentally spill gasoline in your eyes, flush with a large quantity of water and immediately contact a health professional.

Should you accidentally get gasoline into your mouth, do not induce vomiting.

Drink a large quantity of milk or clear water and immediately contact a health professional.

Never try to siphon gasoline by sucking it with your mouth.

Use a manual pump or a similar system.

If your vehicle overturns, it will leak gasoline which is extremely flammable.

Flames or sparks may ignite this which will not only destroy the vehicle but also could do serious property damage to surrounding property and cause serious injuries or even death.

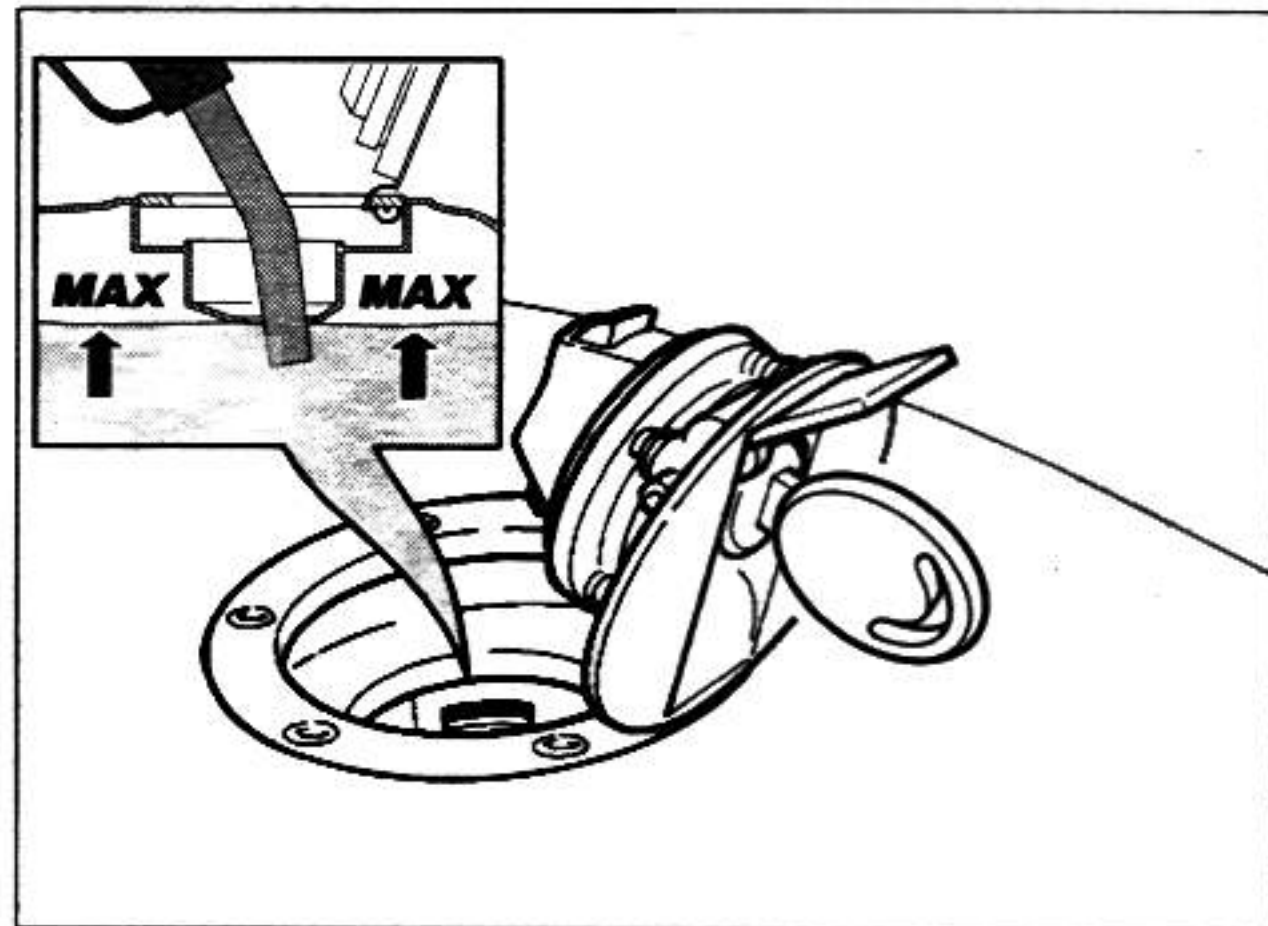
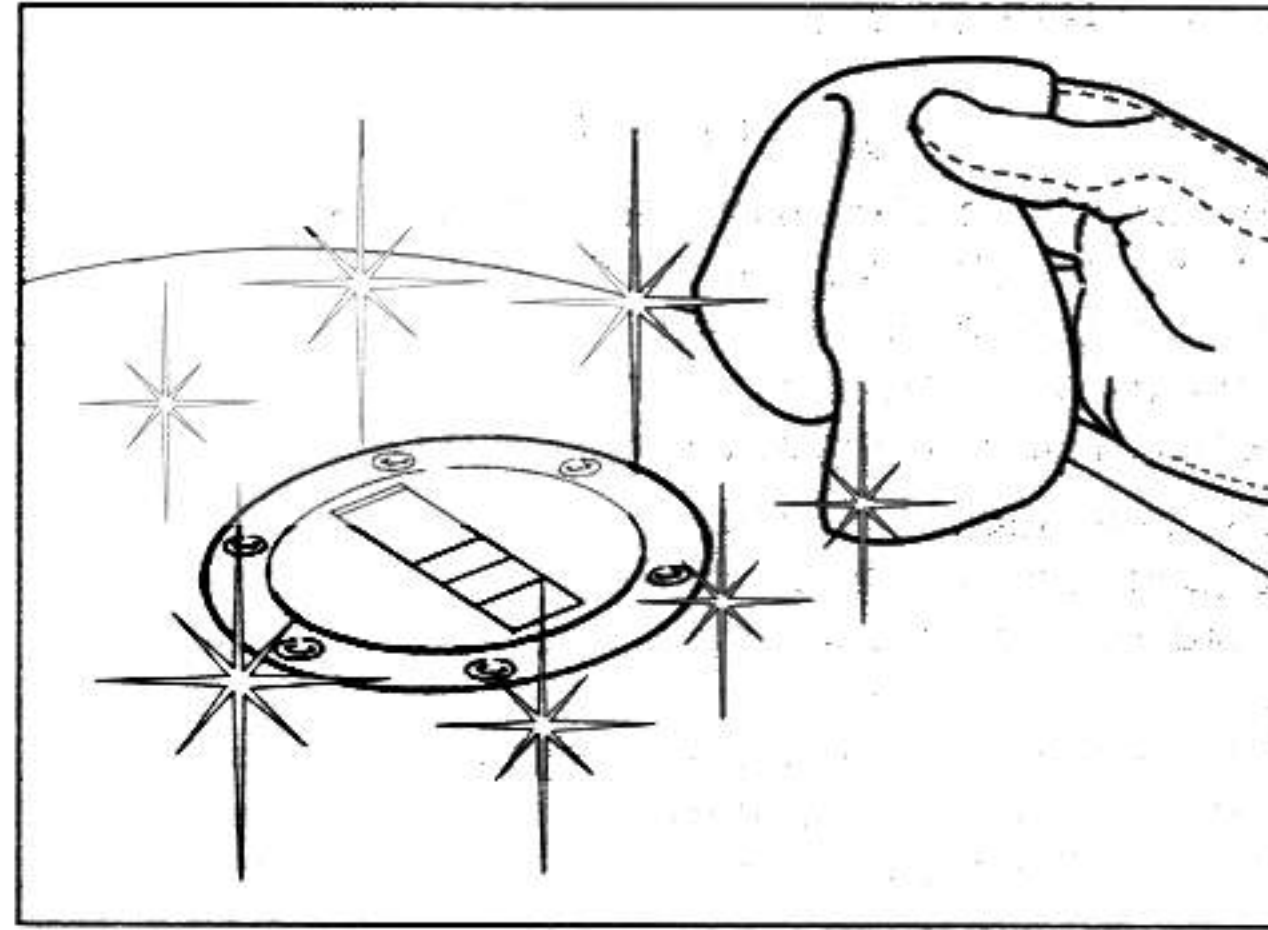
**ALWAYS KEEP GASOLINE AWAY FROM CHILDREN.**

**DISPOSE OF UNWANTED GASOLINE PROPERLY, DO NOT DUMP IT INTO STORM SEWERS OR INTO A SINK OR TOILET.**

#### ⚠ WARNING

Before opening the fuel filler cap, if necessary, clean the cap and the part around it with a clean cloth. Prevent any foreign material from getting into the fuel tank, this could lead to serious engine damage.

If you use any container or funnel for refueling, make sure that it is perfectly clean. Any foreign matter getting into the fuel tank may lead to severe damage.



#### ⚠ DANGER

Do not add any additives or other substances to the gasoline.

Do not refuel the tank completely; the fuel should never be touching the rim of filler cap seat hole.

After refueling, replace the fuel filler cap (1) in the correct position and ensure that it is properly closed.

Use only unleaded gasoline with a minimum octane rating of 92 (M+R)/2.

**FUEL TANK CAPACITY**

(reserve included): 5.28 US gal (20l).

**TANK RESERVE:** 1.19 ± 0.26 us GAL (4.5 ± 1l).



## 1.4.2 LUBRICANTS

**⚠ DANGER**

Proper vehicle lubrication is critical to safe operation. Failure to maintain proper lubricant levels or to use the proper type of clean, new lubricant, can lead to an engine or transmission seizure with subsequent accident, serious injury or death.

Use latex gloves for the maintenance operations that require contact with used oil.

Used oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods.

Although this is unlikely unless you handle used oil on a daily basis, it is advisable to thoroughly wash your hands with soap and water after handling used oil.

**KEEP OIL AWAY FROM CHILDREN.**

**DISPOSE OF OIL PROPERLY.**

**⚠ WARNING**

Be very careful when putting oil in your vehicle not to spill it.


Clean up any oil spilled immediately because oil can damage the finish of your vehicle.

Also, oil on the tires creates an extremely slippery and therefore dangerous situation.

In case of lubricant leakage do not ride the vehicle, but check to determine the cause of the leakage and repair it.

## ENGINE OIL

**⚠ DANGER**

If the engine oil pressure warning light LED “” (1) remains on (when the engine is running), or if it comes on during the normal running of the engine, this means that the oil system is not developing sufficient pressure.

In this case, immediately stop the engine and check the engine oil level, see 2.13 (CHANGING THE ENGINE OIL AND OIL FILTER) if the level is correct, check the engine oil pressure sensor, see 6.10.3 (ENGINE OIL PRESSURE SENSOR).

Failure to heed this warning can lead to engine seizure, upset, and serious injury or even death.

**⚠ WARNING**

Perform these maintenance operations at one-half of the specified intervals, if the vehicle is often used in rainy or very dusty conditions, on unpaved roads or in any kind of competition.

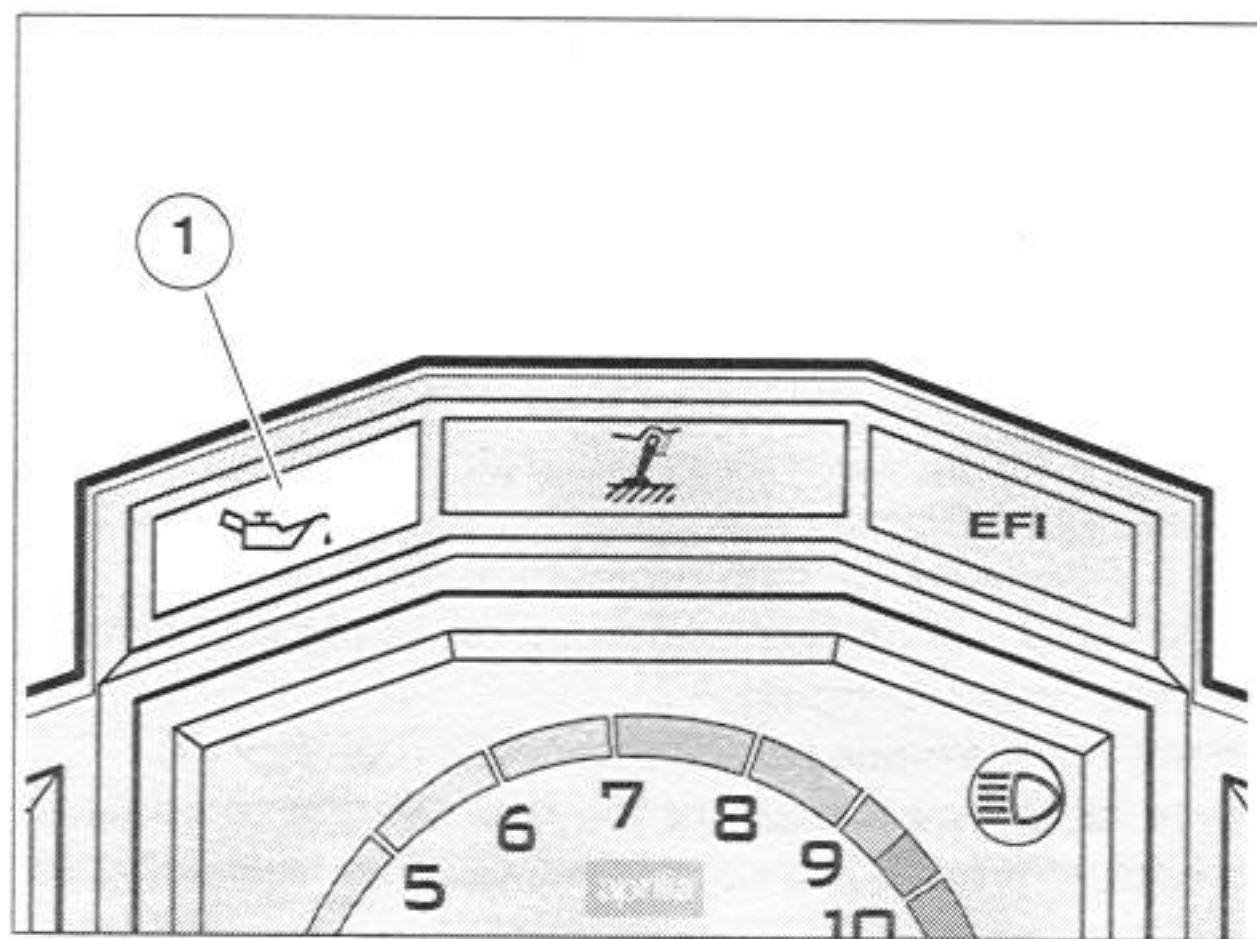
Periodically check the engine oil level, see 2.12 (CHECKING AND TOPPING UP THE ENGINE OIL LEVEL).

Renew the engine oil after the first 600 mi (1,000 Km), and thereafter every 4,600 mi (7,500 km) (\*), see 2.13 (CHANGING THE ENGINE OIL AND OIL FILTER).

(\*) = For competition use, renew every 2,300 mi (3,750 km).

**NOTE** Use high-quality 15W-50 oil, see 1.12 (LUBRICANT CHART).

As an alternative to the recommended oil, it is possible to use high-quality oils with characteristics in compliance with or superior to the CCMC G-4, A.P.I. SG. specifications.



## FORK OIL



**⚠ DANGER**

Changing the damper settings and/or the viscosity of the damper oil changes suspension response and could upset vehicle handling. Always follow the recommendations in this manual for suspension adjustments.

The standard fork oil viscosity is SAE 20W.

Oil as light as SAE 5W may be used if a soft fork stiffness is desired, and you may mix 5W with 20W in varying proportions to obtain a desired different fork stiffness.

Ensure that exactly the same mixture is used in each fork.

One of the properties of  F.A. or  Agip FORK is that their viscosity changes very little with variations in temperature, and their damping response remains fairly constant.

## 1.4.3 BRAKE

**NOTE** This vehicle è equipped with front and rear disc brakes, with separate hydraulic circuits.

The following information refers to a single brake system, but is applicable to both.

**⚠ DANGER**

Do not ride the vehicle with worn or malfunctioning brakes! The brakes are the most important safety system of the vehicle, and using the vehicle with brakes that are anything less than perfect is very likely to lead to a collision or upset, with consequent risk of serious injury or death.

Wet condition seriously degrade the performance of your brakes.

When the road is wet from rain, you should plan to use double the normal stopping distances since both the brakes themselves and the traction of the tires on the road are reduced by the presence of water.

Water on the brakes from washing your vehicle, or splashed up from wet roads, or crossing puddles or ditches, can wet the brakes sufficiently to greatly reduce their effectiveness.



Failure to heed these warnings may lead to a serious accident with consequent risk of serious injury or even death.

The brakes are extremely important for your safety. Do not use the vehicle if the brakes do not work perfectly.

Always check the brake efficiency before riding. Sudden variations in clearance or an elastic resistance in the brake levers may be due to trouble in the hydraulic systems.

Pay special attention to the brake disc and friction material, making sure that they are neither dirty nor oily, especially after maintenance operations or inspections.

Check the brake line, ensure that it is not twisted or kinked, nor leaking.

**KEEP BRAKE FLUID AWAY FROM CHILDREN.**

**DISPOSE OF USED BRAKE FLUID PROPERLY. SEE THE GENERAL WARNINGS AT 1.3.5 (BRAKE FLUID).**

#### 1.4.4 DISC BRAKES

### ⚠ DANGER

The brakes are the most important safety system on your vehicle.

For your safety, they must be in perfect repair, so they should be checked every time you ride the vehicle.

Oil or other fluid on a disc will contaminate the brake pads.

Dirty pads must be discarded and replaced, a dirty or oily disc must be cleaned with a high quality degreaser.

### ⚠ DANGER

Perform these maintenance operations at one-half of the specified intervals, if the vehicle is often used in rainy or very dusty conditions, on unpaved roads or in any kind of competition.

Check the levels of the brake fluid in the reservoirs after the first 600 mi (1,000 km) and thereafter every 4,600 mi (7,500 km); see 2.16 (CHECKING AND TOPPING UP THE FRONT BRAKE FLUID) and 2.17 (CHECKING AND TOPPING UP THE REAR BRAKE FLUID); renew the brake fluid every two years, see 2.21 (CHANGING THE FRONT BRAKE FLUID) and 2.22 (CHANGING THE REAR BRAKE FLUID).

**NOTE** Use high-quality brake fluid, see 1.11 (Lubricant chart).

**Check the brake pad wear, as shown on 2.27 (CHECKING THE BRAKE PAD WEAR).**

When the pads wear out the brake fluid level in the reservoir decreases to automatically compensate for their wear.

The front brake fluid reservoir (1) is located on the right end of the handlebar near the front brake lever.

The rear brake fluid reservoir (2) is under the fairing on the right side of the vehicle.

### ⚠ DANGER

Never use the vehicle if any portion of either brake system is leaking.

