aprilia

1115.2

00/2002-10

RSV mille

workshopmanual

UK

8406888

RSV mille (UK) **1115-2**

workshop manual

aprilia part# 8140688

0

INTRODUCTION

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0.1 UPDATE OF RELEASE 00/2002-10

Date of the first edition (Release 00) and of the following Releases:

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

0.1.1 INFORMATION ON THE UPDATING OF THE MANUAL

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

Insert the pages of the last Release in the manual and eliminate the corresponding obsolete pages (even if belonging to a previous Release).

⚠ WARNING

The failure to update the manual and to eliminate the obsolete pages makes it more difficult to consult the manual and may lead to the performance of 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 amount of # 384 pages, as listed below.

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

0.1.2 UPDATED MANUAL GENERAL LIST

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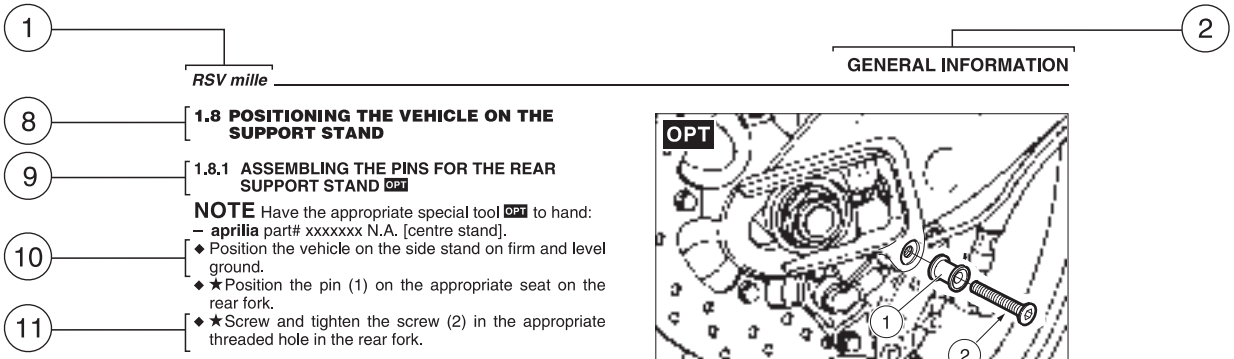
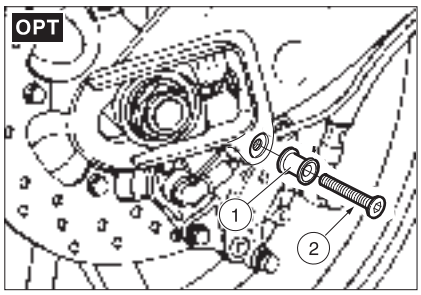
0.2 HOW TO CONSULT THE MANUAL



NOTE Have the appropriate special tool OPT to hand:
– **aprilia** part# xxxxxxx N.A. [centre stand].

◆ Position the vehicle on the side stand on firm and level ground.
◆ ★Position the pin (1) on the appropriate seat on the rear fork.
◆ ★Screw and tighten the screw (2) in the appropriate threaded hole in the rear fork.



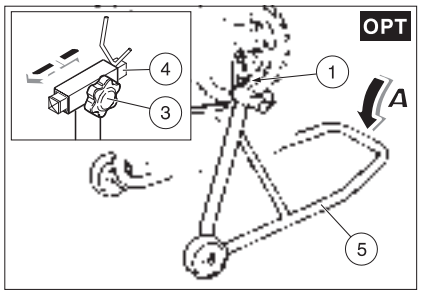
1.8.2 POSITIONING THE VEHICLE ON THE REAR SUPPORT STAND OPT

NOTE Have the appropriate special tool OPT to hand:
– **aprilia** part# xxxxxxx N.A. [centre stand].

◆ Fit the relevant pins, see 1.8.1 (ASSEMBLING THE PINS FOR THE REAR SUPPORT STAND OPT).

NOTE Have someone help you keep the vehicle in vertical position with the two wheels on the ground.

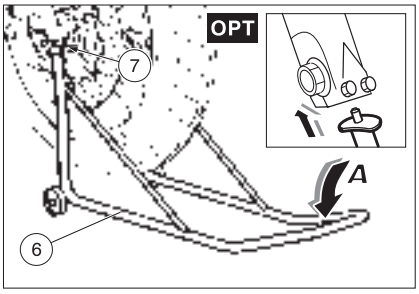
◆ ★Loosen the knob (3).
◆ ★Move the fork support (4), positioning it so that the width corresponds to the distance between the two pins (1) on the rear fork.
◆ ★Tighten the knob (3).
◆ At the same time introduce the two fork-shaped seats (4) of the stand (5) under the two pins (1) provided on the vehicle.



⚠ CAUTION

Grasping the stand in another way than indicated in the figure may cause your fingers to be crushed between the stand and the ground.

◆ Grasp the terminal central part of the stand (5) with your hands (**Pos.A**).
◆ Push the stand (5) downwards until it reaches the end of its stroke.



1.8.3 POSITIONING THE VEHICLE ON THE FRONT SUPPORT STAND OPT

NOTE Have the appropriate special tool OPT to hand:
– **aprilia** part# 8146486 (front support stand).

◆ Position the vehicle on the appropriate rear support stand, see 1.8.2 (POSITIONING THE VEHICLE ON THE REAR SUPPORT STAND OPT).
◆ Insert the two ends of the stand (6) in the two holes (7) positioned on the lower ends of the front fork.

1) Vehicle (or engine) model
2) Section
3) Release consecutive number (“00” indicates the first edition)
4) Year and month of publication of the Release
5) Section number
6) Section page consecutive number
7) Updated page consecutive number
8) Chapter title (numbered consecutively)
9) Paragraph title (numbered consecutively)
10) Description of the operation (always preceded by a rhombus)
11) Description of the operation: the star means that the operation must be repeated on the other side of the vehicle

0.3 FOREWORD

– This manual supplies the main information for normal servicing procedures.
– In the future, the information and illustrations that make up this manual will be updated by means of “Releases”, see 0.1 (UPDATE OF RELEASE 00/2002-10).
– This publication is intended for the **aprilia** Dealers and their qualified engineers; many notions were voluntarily omitted, because they were considered superfluous. Since it is not possible to include complete mechanical information in this publication, the persons using this manual must have a basic mechanical training and a basic knowledge of the procedures regarding motor vehicles repair systems.
Without this knowledge, the repair or servicing of the vehicle may be ineffective or even dangerous.
The manual does not describe all the procedures for the repair and servicing of the vehicle in detail, therefore it is important to be particularly careful, in order to avoid any damage to components and persons.
In order to grant its customers more and more satisfaction in the use of the vehicle, **aprilia s.p.a.** will keep improving its products and the relevant documentation.
The main technical modifications and the modifications in the vehicle repair procedures are communicated to all **aprilia** Outlets and Branches the world over.
These modifications will be described in the successive editions of this manual.
In case of need or doubts regarding the repair and inspection procedures, contact the Technical After-Sales Dpt., which can give you the information required and also inform you about any updates and technical modifications made to the vehicle.

aprilia s.p.a. reserves the right to modify its models at any time, without prejudice to the main characteristics here described.
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The mention to products or services supplied by third parties is made only for information purposes and it isn’t binding in any case.
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For further information, see 0.4 (REFERENCE MANUALS).

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0.4 REFERENCE MANUALS

0.4.1 ENGINE SERVICE AND REPAIR MANUALS

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

0.4.2 SPARE PARTS CATALOGUES

aprilia part# (countries)
390W I UK
390Y I UK
3901 I UK

0.4.3 SPECIAL TOOL MANUALS

aprilia part# (countries)
8202278 I F D E UK

0.4.4 USE AND MAINTENANCE MANUALS

aprilia part# (countries)
models 1998 - 1999
8102623 I F D
8102857 P E UK
8102858 NL DK SF
8102859 GR J UK
8104128 AUS
8104099 USA
models 2000
8104089 I F D
8104142 P E UK
8104143 NL DK SF
8104141 GR J UK
8104164 AUS
8104171 USA
RSV 01
8104152 I F D
8104269 P E UK
8104267 NL DK SF
8104268 GR J UK
8104270 AUS
8104264 USA

0.5 SAFETY WARNINGS

The following precautionary warnings are used throughout this manual in order to convey the following messages:

⚠ Safety warning. When you find this symbol on the vehicle or in the manual, be careful to the potential risk of personal injury. Non-compliance with the indications given in the messages preceded by this symbol may result in grave risks for your and other people's safety and for the vehicle!

⚠ WARNING

Indicates a potential hazard which may result in serious injury or even death.

⚠ CAUTION

Indicates a potential hazard which may result in minor personal injury or damage to the vehicle.

NOTE The word "NOTE" in this manual precedes important information or instructions.

0.5.1 PRECAUTIONS AND GENERAL INFORMATIONS

Follow with care these recommendations when repairing, disassembling and reassembling the vehicle.

⚠ WARNING

The use of naked flames is forbidden for any type of operation.
Before beginning any maintenance operation or any inspection of the vehicle, stop the engine, extract the key from the ignition block, wait until the engine and the exhaust system have cooled down and if possible lift the vehicle by means of the proper equipment, on firm and flat ground.
Keep away from the red-hot parts of the engine and of the exhaust system, in order to avoid burns.

⚠ WARNING

Do not hold any mechanical piece or other parts of the vehicle with your mouth: the components are not edible and some of them are noxious or even toxic.

If not expressly indicated otherwise, for the reassembly of the units repeat the disassembly operations in reverse order.
Any reference to operations from other chapters must be interpreted logically in order to avoid components being removed unnecessarily.
Do not use polishing pastes on matt paints.

Never use fuel as a solvent for cleaning the vehicle.

Do not use alcohol, petrol or solvents to clean the rubber and plastic parts and the saddle: use only water and mild soap.

Disconnect the negative cable (–) from the battery when electric welding.

When two or more persons are working together, make sure that each is working in safe conditions.

Carefully read 1.2 (INSTRUCTIONS FOR USE OF FUEL, LUBRICANTS, COOLANT AND OTHER COMPONENTS).

0.5.2 BEFORE THE DISASSEMBLY OF THE COMPONENTS

– Remove any dirt, mud, dust and foreign matters from the vehicle before disassembling the components.
– Use, when necessary, the special tools designed for this vehicle.

0.5.3 DISASSEMBLING THE COMPONENTS

– Do not loosen and/or tighten the screws and nuts using pliers or other tools: instead, always use the proper spanner.
– Before disconnecting the joints (pipes, cables, etc.), mark the positions on all of them and mark them with different distinguishing signs.
  Each piece must be marked clearly, in order not to have problems during installation.
– Clean and wash carefully any disassembled parts with low inflammability detergents.
– Keep the parts that are used in pairs together, since they have adapted to each other following the normal wear.
  Some components must be used together or replaced completely.
– Keep away from heat sources.

0.5.4 REASSEMBLING THE COMPONENTS

⚠ CAUTION

Never use a seeger ring twice. When a seeger ring is removed, it must be replaced with a new one. When assembling a new seeger ring be careful not to stretch its ends more than strictly necessary to put it on the shaft.
After installing a seeger ring, make sure that it is completely and firmly inserted in its seat.

Do not use compressed air to clean the bearings.

NOTE The bearings must rotate freely, without halting a/o noise otherwise they must be replaced.

– Use only original **aprilia** SPARE PARTS.
– Use the recommended lubricants.
– Whenever possible, lubricate the parts before reassembly.
– When tightening screws and nuts, begin with those having greater diameters or with inner ones, proceeding diagonally.
  Tighten screws or nuts in successive passages before applying driving torque.
– Always replace lock nuts, seals, sealing rings, snap rings, O-rings, split pins and screws, whenever the thread appears damaged, with new ones.
– Before the assembly, clean all the connection surfaces, the oil seal edges and the gaskets.
  Apply a thin layer of lithium-based grease on the oil seal edges.
  Put back the oil seals and the bearings with the mark or serial number facing towards the outside (visible side).

Follow ▶

Follow ▶

– When installing the bearings, lubricate them abundantly.
– Make sure that each component has been reassembled correctly.
– After a repair or periodic maintenance operation, carry out the preliminary checks and test the vehicle in a private area or, in any case, in a low-traffic area.

0.6 HOW TO USE YOUR SERVICE AND REPAIR MANUAL

0.6.1 ADVICE FOR CONSULTATION

– This manual is divided into section and chapters, each one of which corresponds to a category of main components.
To consult them, see the sections' index, see page 0-1.
– If not expressly indicated otherwise, for the reassembly of the units repeat the disassembly operations in reverse order.
– The terms "right" and "left" are referred to the rider seated on the vehicle in the normal riding position.
– For normal maintenance operations and for the use of the vehicle, consult the "USE AND MAINTENANCE" manual.

★ **The operations preceded by this symbol must be repeated on the opposite side of the vehicle.**

In this manual the various versions are indicated by the following symbols:

RSV 01 frame # ZD4RP.....(and in any case from model 2001)

ASD automatic light switching version (Automatic Switch-on Device)

OPT optional

catalytic version

VERSION:

I Italy	**GR Greece**	**MAL Malaysia**
UK United Kingdom	**NL Holland**	**RCH Chile**
A Austria	**CH Switzerland**	**HR Croatia**
P Portugal	**DK Denmark**	**AUS Australia**
SF Finland	**J Japan**	**USA United States of America**
B Belgium	**SGP Singapore**	**BR Brazil**
D Germany	**SLO Slovenia**	**RSA South Africa**
F France	**IL Israel**	**NZ New Zealand**
E Spain	**ROK South Korea**	**CDN Canada**

0.7 ABBREVIATIONS / SYMBOLS / INITIALS

= number
< = is less than
> = is greater than
≤ = is equal to or less than
≥ = is equal to or greater than
~ = approximately
∞ = infinity
°C = degrees Celsius (centigrade)
°F = degrees Fahrenheit
± = plus or minus
a.c. = alternating current
A = ampère
Ah = ampere per hour
API = American Petroleum Institute
HV = high voltage
AV/DC = AntiVibration Double Countershaft
bar = unit of pressure (1 bar = 100 kPa)
d.c. = direct current
cm^3 = cubic centimetres
CO = carbon monoxide
CPU = Central Processing Unit
DIN = German industrial normative (Deutsche Industrie Norm)
DOHC = Double Overhead Camshaft
ECU = Engine Control Unit
rpm = revolutions per minute
HC = unburnt hydrocarbons
ISC = idle speed control
ISO = International Standardization Organization
kg = kilograms
kgm = kilograms per metre (1 kgm = 10 Nm)
km = kilometres
km/h = kilometres an hour
kΩ = kilo-ohms
kPa = kiloPascal (1 kPa = 0.01 bar)
KS = clutch side (Kupplungseite)
kW = kilowatt
ℓ = litres
LAP = lap (race course)
LED = Light Emitting Diode
LEFT SIDE = left side
m/s = metres an second
MAX = maximum
mbar = millibar (1mbar = 0.1 kPa)
mi = mile
MIN = minimum
MPH = miles per hour
MS = flywheel side (Magnetoseite)
MΩ = megaohm
N.A. = not available (Not Available)
N.O.M.M. = “Motor” method octane number
N.O.R.M. = “Research” method octane number
Nm = newton per meter (1 Nm = 0.1 kgm)
Ω = ohm
PICK-UP = pick-up
BDC = bottom dead centre
TDC = top dead centre
PPC = Pneumatic Power Clutch
RIGHT SIDE = right side
SAE = Society of Automotive Engineers
TEST = diagnostics test
T.B.E.I. = convex socket head
T.C.E.I. = hexagonal socket head
T.E. = hex-head
T.P. = flat head
TSI = Twin Spark Ignition
UPSIDE-DOWN = upside-down rods
V = volt
W = watt
Ø = diameter

NOTES

GENERAL INFORMATION 1

GENERAL INFORMATION

1

TABLE OF CONTENTS

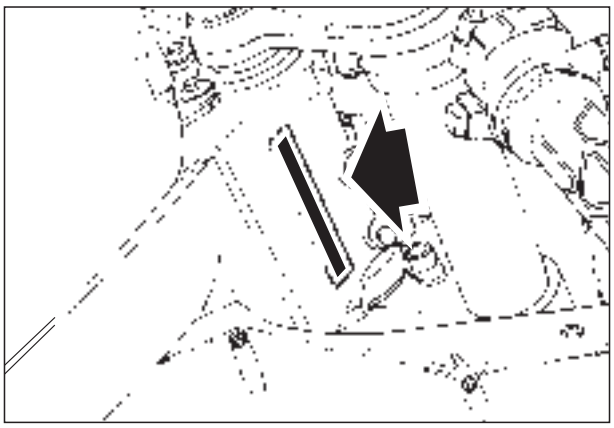
1.1 POSITION OF THE SERIAL NUMBERS

These numbers are necessary for the registration of the vehicle.

Do not alter the identification numbers if you do not want to incur severe penal and administrative sanctions. In particular, the alteration of the frame number results in the immediate invalidity of the guarantee.

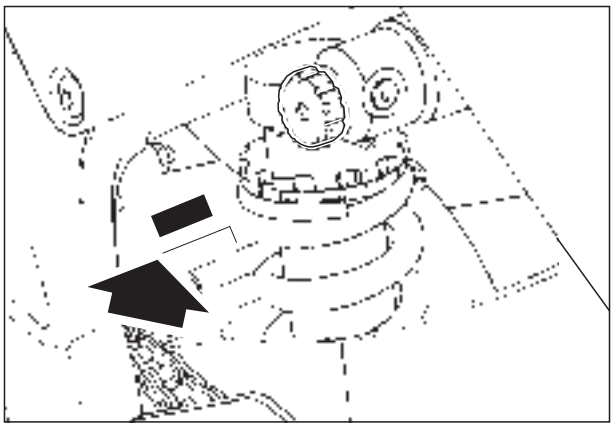
1.1.1 FRAME NUMBER

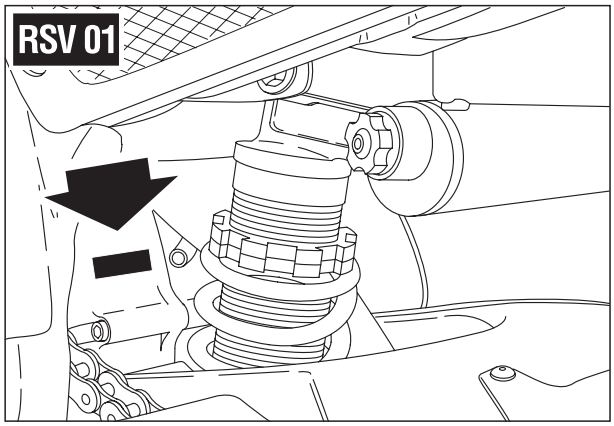
The frame number is stamped on the right side of the steering column.



1.1.2 ENGINE NUMBER

The engine number is stamped on the rear part of the engine, near the pinion.





1.2 INSTRUCTIONS FOR USE OF FUEL, LUBRICANTS, COOLANT AND OTHER COMPONENTS

1.2.1 FUEL

⚠ WARNING

The fuel used for internal combustion engines is extremely inflammable and in particular conditions it can become explosive.
It is important to carry out the refuelling and the maintenance operations in a well-ventilated area, with the engine off.
Do not smoke while refuelling or near fuel vapours, in any case avoid any contact with naked flames, sparks and any other heat source to prevent the fuel from catching fire or from exploding.

Further, prevent fuel from flowing out of the fuel filler, as it could catch fire when getting in contact with the red-hot surfaces of the engine.
In case some fuel has accidentally been spilt, make sure that the area has completely dried and before starting the vehicle verify that there is no fuel inside the fuel filler neck.
Since petrol expands under the heat of the sun and due to the effects of sun radiation.
Never fill the tank to the brim.
Screw the plug up carefully after refuelling.

Avoid any contact of the fuel with the skin and the inhalation of vapours; do not swallow fuel or pour it from a receptacle into another by means of a tube.

DO NOT DISPOSE OF FUEL IN THE ENVIRONMENT.

KEEP AWAY FROM CHILDREN.

Use only premium grade unleaded petrol, min. O.N. 95 (N.O.R.M.) and 85 (N.O.M.M.).

1.2.2 ENGINE OIL

⚠ WARNING

Engine oil may cause serious damage to the skin if handled daily and for long periods.
Wash your hands carefully after use.
Do not dispose of the oil in the environment.
Deliver it to or have it collected by the nearest oil salvage center or by the supplier.

In case any maintenance operation has to be carried out, it is advisable to use latex gloves.

For the maintenance intervals, see 2.1.1 (REGULAR SERVICE INTERVALS CHART).

For the lubricant types, see 1.6 (LUBRICANT CHART).

1.2.3 FORK OIL

⚠ WARNING

Fork oil may cause serious damage to the skin if handled daily and for long periods.
Wash your hands carefully after use.
Do not dispose of the oil in the environment.
Deliver it to or have it collected by the nearest oil salvage center or by the supplier.

In case any maintenance operation has to be carried out, it is advisable to use latex gloves.

By changing the damper settings and/or the viscosity of the oil contained in them, the suspension response may be altered partially.

Standard oil viscosity: SAE 20 W.

The viscosity ratings which can be chosen based on the type of fork stiffness desired (SAE 5W soft, 20W stiff).

The two products can be used in different percentages until the desired response is obtained.

F.A. is that your viscosity alters little with changes in temperature and their damping response therefore remains constant.

For the maintenance intervals, see 2.1.1 (REGULAR SERVICE INTERVALS CHART).

For the lubricant types, see 1.6 (LUBRICANT CHART).

1.2.4 BRAKE FLUID

NOTE This vehicle is provided with front and rear disc brakes, with separate hydraulic circuits. The following information refers to a single braking system, but is valid for both.

⚠ WARNING

If the brake fluid gets in contact with the skin or the eyes, it can cause serious irritations.
Carefully wash the parts of your body that get in contact with the liquid. Consult a doctor or an oculist if the liquid gets in contact with your eyes.

DO NOT DISPOSE OF THE FLUID IN THE ENVIRONMENT.

KEEP AWAY FROM CHILDREN.

When using the brake fluid, take care not to spill it on the plastic or painted parts, since it can damage them.

For the maintenance intervals, see 2.1.1 (REGULAR SERVICE INTERVALS CHART).

For the lubricant types, see 1.6 (LUBRICANT CHART).

⚠ CAUTION

To avoid serious damage to the braking system, do not use fluids other than the recommended ones nor mix different fluids for topping up.
Do not use brake fluid taken from old or already opened containers.
Sudden variations in clearance or an elastic resistance in the brake levers may be due to trouble in the hydraulic circuits.
Make sure that the brake discs and the friction pads are completely free of grease or oil, especially after maintenance or checking operations.
Check that the brake cables are neither twisted nor worn out.
Prevent water or dust from accidentally getting into the circuit.

In case maintenance operations are to be performed on the hydraulic circuit, it is advisable to use latex gloves.

1.2.5 COOLANT

⚠ WARNING

The coolant is noxious: do not swallow it; if the coolant gets in contact with the skin or the eyes, it can cause serious irritations. If the coolant gets in contact with your skin or eyes, rinse with plenty of water and consult a doctor.
If it is swallowed, induce vomit, rinse mouth and throat with plenty of water and consult a doctor without delay.

DO NOT DISPOSE OF THE FLUID IN THE ENVIRONMENT.

KEEP AWAY FROM CHILDREN.

Be careful not to spill the coolant on the red-hot parts of the engine: it may catch fire and send out invisible flames.

In case any maintenance operation should be required, it is advisable to use latex gloves.

Do not use the vehicle if the coolant is below the minimum prescribed level.

For the maintenance intervals, see 2.1.1 (REGULAR SERVICE INTERVALS CHART)**.**

The coolant is composed of 50% water and 50% antifreeze. This mixture is ideal for most running temperatures and ensures good protection against corrosion.

It is advisable to keep the same mixture in the hot season as well, since in this way losses due to evaporation are reduced and it is not necessary to top up so frequently.
The mineral salt deposits left in the radiator by evaporated water are thus lessened and the efficiency of the cooling system remains unaltered.

If the outdoor temperature is below 0°, check th cooling circuit frequently and inf necessary increase the antifreeze concentration (up to maximum 60%).

For the cooling solution use distilled water, in order not to damage the engine.

For the lubricant types, see 1.6 (LUBRICANT CHART).

On the basis of the desired freezing temperature of the coolant mixture, add to the water the percentage of coolant indicated in the following table:

Freezing point °C	Coolant of the volume %
-20	35
-30	45
-40	55

NOTE The characteristics of the various antifreeze liquids are different. Be sure to read the label on the product to learn the degree of protection it guarantees.

⚠ CAUTION

Use only antifreeze and anticorrosive without nitrite, ensuring protection at -35 °C at least.

1.2.6 CLUTCH FLUID

NOTE This vehicle is provided with hydraulic clutch control.

⚠ WARNING

If the clutch fluid gets in contact with the skin or the eyes, it can cause serious irritations.
Carefully wash the parts of your body that get in contact with the liquid. Consult a doctor or an oculist if the liquid gets in contact with your eyes.

DO NOT DISPOSE OF THE FLUID IN THE ENVIRONMENT.

KEEP AWAY FROM CHILDREN.

When using the clutch fluid, take care not to spill it on the plastic and painted parts, since it damages them.

For the maintenance intervals, see 2.1.1 (REGULAR SERVICE INTERVALS CHART).

For the lubricant types, see 1.6 (LUBRICANT CHART).

⚠ CAUTION

To avoid serious damage to the system, do not use fluids other than the recommended ones nor mix different fluids for topping up.
Do not use clutch fluid taken from old or already opened containers.

Sudden variations in clearance or an elastic resistance in the clutch levers may be due to trouble in the hydraulic circuits.
Check that the clutch hoses are not twisted or worn.
Prevent water or dust from accidentally getting into the circuit.

In case maintenance operations are to be performed on the hydraulic circuit, it is advisable to use latex gloves.

1.2.7 CARBON MONOXIDE

If it is necessary to let the engine run in order to carry out some work, make sure 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.

⚠ WARNING

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

Run the engine in an open area or, if it is necessary to work indoors, use an exhaust evacuation system.

1.2.8 HOT COMPONENTS

⚠ WARNING

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 RUNNING-IN RULES

The running-in of the engine is essential to ensure its duration and correct functioning.
If possible, drive on hilly roads and/or roads with many bends, so that the engine, the suspensions and the brakes undergo a more effective running-in.

During running-in, change speed.
In this way the components are first “loaded” and then “relieved” and the engine parts can thus cool down.
Even if it is important to stress the engine components during running-in, take care not to exceed.

⚠ CAUTION

Only after the first 1500 km (937 mi) of running-in is it possible to obtain the best performance.

Keep to the following indications:

- Do not open the throttle completely if the speed is low, both during and after the running-in.
- During the first 100 km (62 mi) put on the brakes with caution, avoiding sharp and prolonged brakings. This ensures a correct bedding-in of the pads on the brake disc.
- During the first 1000 km (625 mi) never exceed 6000 rpm. (see table).

⚠ CAUTION

After the first 1000 km (625 mi) perform the checking operations indicated in the “after running-in” column, see 2.1.1 (REGULAR SERVICE INTERVALS CHART) in order to avoid injuring yourself or others a/o damaging the vehicle.

- Between the first 1000 km (625 mi) and 1500 km (937 mi) drive more briskly, change speed and use the maximum acceleration only for a few seconds, in order to ensure better coupling of the components; never exceed 7500 rpm (see table).
- After the first 1500 km (937 mi) you can expect better performance from the engine, however, without exceeding the maximum allowed (10500 rpm).

Engine maximum rpm recommended	
Mileage km (mi)	**rpm**
0 – 1000 (0 – 625)	6000
1000 – 1500 (625 – 937)	7500
over 1500 (937)	10500

1.4 SPARE PARTS

For any replacement, use **aprilia** Genuine Spare Parts only, see 0.4.2 (SPARE PARTS CATALOGUES).
aprilia Genuine Spare Parts are high-quality parts, expressly designed and manufactured for **aprilia** vehicles.

⚠ CAUTION

Failure to use aprilia Genuine Spare Parts may result in incorrect performance and damages.

1.5 TECHNICAL SPECIFICATIONS

DIMENSIONS	
Max. length	2080 mm
RSV 01 Max. length	2070 mm
Max. length (with number plate-holder extension) OPT	2140 mm
Max. width	720 mm
RSV 01 Max. width	725 mm
Max. height (front part of the fairing included)	1170 mm
Seat height	820 mm
Distance between centres	1415 mm
Min. ground clearance	130 mm
Weight ready for starting (fuel and fluid included)	221 kg

ENGINE	
Model	V990
Type	60° longitudinal V-type, two-cylinder, 4-stroke, with 4 valves per cylinder, DOHC.
Number of cylinders	2
Total displacement	997.62 cm^3
Max. rated power (to driving shaft)	86.5 kW at 9250 rpm
RSV 01 Max. rated power (to driving shaft)	92 kW at 9250 rpm
Bore/stroke	97 mm/67.5 mm
Compression ratio	11.8 ± 0.4 : 1
Average piston speed	22.5 m/s at 10000 rpm
Camshaft during intake stroke	259°, valve lifting= 10.6 mm
RSV 01 Camshaft during intake stroke	262°, valve lifting= 11.4 mm
Camshaft during exhaust stroke	259°, valve lifting= 10.6 mm
Valve advance (with valve clearance 1mm) opening during intake stroke closing during intake stroke opening during exhaust stroke closing during exhaust stroke	20° before TDC 59° after BDC 64° before TDC 15° after BDC
RSV 01 Valve advance (with valve clearance 1mm) opening during intake stroke closing during intake stroke opening during exhaust stroke closing during exhaust stroke	25° before TDC 58° after BDC 64° before TDC 15° after BDC
Valve clearance during intake stroke	0.12 – 0.17 mm
Valve clearance during exhaust stroke	0.23 – 0.28 mm
Diameter of the inlet valve plate	36.0 mm
Diameter of the exhaust valve plate	31.0 mm
# Engine revolutions at minimum rpm	1250 ± 100 rpm
# Engine revolutions at peak rpm	10250 ± 100 rpm
Ignition	electronically controlled
Starting	electric
Spark advance	Variable according to speed and load
Starter motor gear ratio	i= 49/9 * 30/11 * 64/30 = 31.677
Clutch	multidisc in oil bath, with hydraulic control on the left side of the handlebar and PPC device - # 9 lined discs; thick 3.5 mm - # 9 internal discs; thick 1.5 mm

Follow ▶

Follow ▶

ENGINE	
Transmission	Mechanical, 6 gears with foot control on the left side of the engine
Lubrication system	dry pan with separate oil tank, # 2 trochoidal pumps and cooling radiator
Lubrication pressure	min 500 kPa (5 bar) at max 80 °C (176 °F) and 6000 rpm
Air cleaner	with dry filter cartridge
Cooling	liquid-cooled
Coolant pump gear ratio	i_{wp}= 28/27 * 28/28 = 1.037
Coolant pump delivery (with thermal expansion valve open)	90 ℓ/min and 9000 rpm
Thermal expansion valve opening start temperature	75 ± 2 °C (149 ± 5 °F)
Engine dry weight	~ 65 kg

CAPACITY	
Fuel (reserve included)	20 ℓ
RSV01 Fuel (reserve included)	18 ℓ
Fuel reserve	4.5 ± 1 ℓ
Engine oil	oil change 3700 cm³ oil and oil filter change 3900 cm³
Fork oil (per rod)	520 ± 2.5 cm³
Coolant	2.5 ℓ(50% water + 50% antifreeze with ethylene glycol)
Seats	2
Vehicle max. load (driver + passenger + luggage)	182 kg
RSV01 Vehicle max. load (driver + passenger + luggage)	180 kg

DRIVE					
GEAR RATIOS	Ratio	Primary	Secondary	Final ratio	Total ratio
	1ª	31/60 = 1: 1.935	14/35 = 1: 2.500	17/42 = 1: 2.470	11.948
	2ª		16/28 = 1: 1.750		8.368
	3ª		19/26 = 1: 1.368		6.543
	4ª		22/24 = 1: 1.090		5.216
	5ª		23/22 = 1: 0.956		4.573
	6ª		27/23 = 1: 0.851		4.073
# sprocket teeth			17		
Drive chain			Endless type (with no connection link) with sealed links, model 525, dimensions 5/8" x 5/16"		

FUEL SUPPLY SYSTEM	
Type	electronic injection
Choke	Ø 51 mm

FUEL SUPPLY	
Type	indirect injection (MULTIPOINT)
Fuel	premium grade unleaded petrol, min. O.N. 95 (N.O.R.M.) and 85 (N.O.M.M.).

FRAME	
Type	two-beam frame with light alloy cast elements and extruded elements
Steering inclination angle	25°
Fore stroke	97 mm
RSV01 Fore stroke	99 mm (with front tyre 120/70)

Follow ▶

Follow ▶

SUSPENSIONS	
Front	UPSIDE-DOWN telescopic adjustable fork with hydraulic operation, rod Ø 43 mm
Stroke	127 mm
Rear	oscillating rear fork in light alloy with differentiated profile arms and hydropneumatic adjustable mono-shock absorber
Wheel stroke	135 mm

BRAKES	
Front	with double floating disc – Ø 320 mm, calipers with four pins
Rear	disc brake – Ø 220 mm, caliper with double pin

WHEEL RIMS	
Type	in light alloy with withdrawable pin
Front	3.50 x 17"
Rear	6.00 x 17"

SPARK PLUGS	
Standard	NGK R DCPR9E
Spark plug gap	0.6 – 0.7 mm
Resistance	5 kΩ

ELECTRIC SYSTEM	
Battery	12 V – 12 Ah
Main fuses	30 A
Secondary fuses	15 A
Generator (with permanent magnet)	12 V – 400 W
Starter	12 V/0.9 kW

BULBS	
Low beam (halogen)	12 V – 55/55 W H4
RSV 01 Low beam (halogen)	12 V – 55 W H7U
High beam (halogen)	12 V – 60 W H3
RSV 01 High beam (halogen)	12 V – 55 W H7U
Front parking light	12 V – 5 W
Direction indicators	12 V – 10 W
Rear parking lights/Number plate light/Stoplight	12 V – 5/21 W
Revolution counter	12 V – 2 W
Right multifunction display	12 V – 2 W

WARNING LIGHTS	
Neutral	12 V – 3 W
Direction indicators	12 V – 3 W
Fuel reserve	12 V – 3 W
High beam	12 V – 2 W
Stand down	12 V – 3 W
Engine oil pressure	LED
Red line	LED

Follow ▶

Follow ▶

TYRES

∗ = series RSV R. ∗ ∗ = series RSV.

Wheel	Make	Model	Type	Size	Recommended		Alternative	Pressure kPa (bar)		
					Road	Track		Normal use		Track
								Solo rider	Rider and passenger	
Front	PIRELLI	DRAGON EVO	MTR21 CORSA	120/70-ZR 17"	X	–	RSV	230 (2.3)	250 (2.5)	–
Rear	PIRELLI	DRAGON EVO	MTR22 CORSA	180/55-ZR 17"	X	–	RSV	250 (2.5)	280 (2.8)	–
Rear	PIRELLI	DRAGON EVO	MTR22 CORSA	190/50-ZR 17"	X	–	RSV	250 (2.5)	280 (2.8)	–
∗ Front	**PIRELLI**	**DRAGON SUPERCORSA**	–	**120/70-ZR 17"**	**X**	**X**	RSV RSV R	**230 (2.3)**	**250 (2.5)**	**210 (2.1)**
∗ Rear	**PIRELLI**	**DRAGON SUPERCORSA**	–	**180/55-ZR 17"**	**X**	**X**	RSV RSV R	**250 (2.5)**	**280 (2.8)**	**200 (2.0)**
∗ ∗ Front	**METZELER**	**SPORTTEC**	**M1**	**120/70-ZR 17"**	**X**	**X**	RSV RSV R	**230 (2.3)**	**250 (2.5)**	**210 (2.1)**
Rear	METZELER	SPORTTEC	M1	180/55-ZR 17"	X	X	RSV RSV R	250 (2.5)	280 (2.8)	200 (2.0)
∗ ∗ Rear	**METZELER**	**SPORTTEC**	**M1**	**190/50-ZR 17"**	**X**	**X**	RSV RSV R	**250 (2.5)**	**280 (2.8)**	**200 (2.0)**
Front	METZELER	RENNSPORT	–	120/70-ZR 17"	X	X	RSV RSV R	230 (2.3)	250 (2.5)	210 (2.1)
Rear	METZELER	RENNSPORT	–	180/55-ZR 17"	X	X	RSV RSV R	250 (2.5)	280 (2.8)	200 (2.0)
∗ ∗ Front	**MICHELIN**	**PILOT SPORT**	**E**	**120/70-ZR 17" TL**	**X**	–	RSV	**230 (2.3)**	**250 (2.5)**	**–**
∗ ∗ Rear	**MICHELIN**	**PILOT SPORT**	**E**	**190/50-ZR 17" TL**	**X**	–	RSV	**250 (2.5)**	**280 (2.8)**	**–**
Front	MICHELIN	SPORTCUP	–	120/70-ZR 17"	X	X	RSV R	230 (2.3)	250 (2.5)	210 (2.1)
Rear	MICHELIN	SPORTCUP	–	180/55-ZR 17"	X	X	RSV R	250 (2.5)	280 (2.8)	190 (1.9)
Front	MICHELIN	PILOT RACE	H	120/70-ZR 17"	–	X	RSV R	–	–	210 (2.1)
Rear	MICHELIN	PILOT RACE	H	180/55-ZR 17"	–	X	RSV R	–	–	190 (1.9)
Front	BRIDGE-STONE	BT 010	–	120/70-ZR 17"	X	–	RSV	230 (2.3)	250 (2.5)	–
Rear	BRIDGE-STONE	BT 010	–	180/55-ZR 17"	X	–	RSV	250 (2.5)	280 (2.8)	–
Rear	BRIDGE-STONE	BT 010	–	190/50-ZR 17"	X	–	RSV	250 (2.5)	280 (2.8)	–
∗ ∗ Front	**DUNLOP**	**SPORTMAX**	**D 207 F RR**	**120/70-ZR 17"**	**X**	**X**	RSV RSV R	**230 (2.3)**	**250 (2.5)**	**210 (2.1)**
∗ ∗ Rear	**DUNLOP**	**SPORTMAX**	**D 207 RR**	**190/50-ZR 17"**	**X**	**–**	RSV	**250 (2.5)**	**280 (2.8)**	**–**
Rear	DUNLOP	SPORTMAX	D 207 RR	180/55-ZR 17"	X	X	RSV	250 (2.5)	280 (2.8)	190 (1.9)

1.6 LUBRICANT CHART

1.6.1 LUBRICANT CHART (for models up to 2001)

Engine oil (recommended): IP EXTRA RAID 4, SAE 15W - 50 or Agip TEC 4T SAE 15W - 50.
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 (recommended): IP F.A. 5W or IP F.A. 20 W fork oil;
an alternative Agip FORK 5W or Agip FORK 20W fork oil.
If you need an oil with intermediate characteristics in comparison with the IP F.A. 5W and IP F.A. 20 W or Agip FORK 5W and Agip FORK 20W, these can be mixed as indicated below:

SAE 10W = IP F.A. 5W 67% of the volume, + IP F.A. 20W 33% of the volume or
Agip FORK 5W 67% of the volume + Agip FORK 20W 33% of the volume.

SAE 15W = IP F.A. 5W 33% of the volume, + IP F.A. 20W 67% of the volume or
Agip FORK 5W 33% of the volume + Agip FORK 20W 67% of the volume.

Bearings and other lubrication points (recommended): IP Bimol Grease 481, IP AUTOGREASE MP or Agip GREASE 30.
As an alternative to the recommended product, use high-quality grease for rolling bearings, working temperature range -30 °C…+140 °C, dripping point 150 °C…230 °C, high protection against corrosion, good resistance to water and oxidation.

Protection of the battery poles: neutral grease or vaseline.

Spray grease for chains (recommended): IP CHAIN SPRAY or Agip CHAIN LUBE.

⚠ WARNING

Use new brake fluid only.

Brake fluid (recommended): IP F.F., DOT 5 (DOT 4 compatible) or Agip BRAKE 5.1, DOT 5 (DOT 4 compatible).

⚠ WARNING

Use new clutch fluid only.

Clutch fluid (recommended): IP F.F., DOT 5 (DOT 4 compatible) or Agip BRAKE 5.1, DOT 5 (DOT 4 compatible).

⚠ WARNING

Use only antifreeze and anticorrosive without nitrite, ensuring protection at -35 °C at least.

Engine coolant (recommended): IP ECOBLU -40 °C or Agip COOL.

OILL-UK

1.6.2 LUBRICANT CHART RSV 01

Engine oil (recommended): TIP EXTRA RAID 4, SAE 15W - 50 or Agip TEC 4T, SAE 15 W - 50.
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.

RSV **Fork oil (recommended):** TIP F.A. 5W or TIP F.A. 20W; as an alternative Agip FORK 5W or Agip FORK 20W.
If you need an oil with intermediate characteristics in comparison with the TIP F.A. 5W and TIP F.A. 20W or Agip FORK 5W and Agip FORK 20W, these can be mixed as indicated below:

SAE 10W = TIP F.A. 5W 67% of the volume, + TIP F.A. 20W 33% of the volume or
Agip FORK 5W 67% of the volume + Agip FORK 20W 33% of the volume.

SAE 15W = TIP F.A. 5W 33% of the volume, + TIP F.A. 20W 67% of the volume or
Agip FORK 5W 33% of the volume + Agip FORK 20W 67% of the volume.

"R" RSV R (RSV OPT) **fork oil**: OHLINS 10W.

Bearings and other lubrication points (recommended): TIP Bimol Grease 481, TIP AUTOGREASE MP or Agip GREASE 30.
As an alternative to the recommended product, use high-quality grease for rolling bearings, working temperature range -30°C.... +140°C, dripping point 150°C... 230°C, high protection against corrosion, good resistance to water and oxidation.

Protection of the battery poles: neutral grease or vaseline.

Spray grease for chains (recommended): TIP CHAIN SPRAY or Agip CHAIN LUBE.

⚠ WARNING

Use new brake fluid only.

Brake fluid (recommended): TIP F.F., DOT 5 (DOT 4 compatible) or Agip BRAKE 5.1, DOT 5 (compatible DOT 4).

⚠ WARNING

Use new clutch fluid only.

Clutch fluid (recommended): TIP F.F., DOT 5 (compatible with DOT 4) or Agip BRAKE 5.1, DOT 5 (compatible DOT 4).

⚠ WARNING

Use only antifreeze and anticorrosive without nitrite, ensuring protection at -35°C at least.

Engine coolant (recommended): TIP ECOBLU –40°C or Agip COOL.

OILN-ING

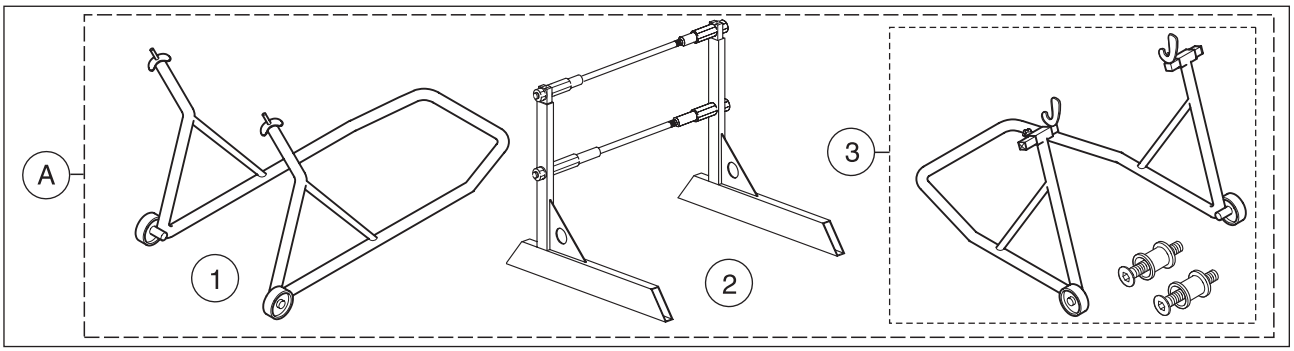
1.7 SPECIAL TOOLS OPT

In order to perform assembly, reassembly and settings correctly, special tools suitable for the task must be used. The use of special tools avoids the potential risk of damage as a result of inappropriate tools and/or improvised methods.
Below is a list of the special tools designed especially for this specific vehicle.
If necessary, request the multi-purpose special tools, see 0.4.3 (SPECIAL TOOL MANUALS).

⚠ CAUTION

Before using the special tools, consult any documents attached.

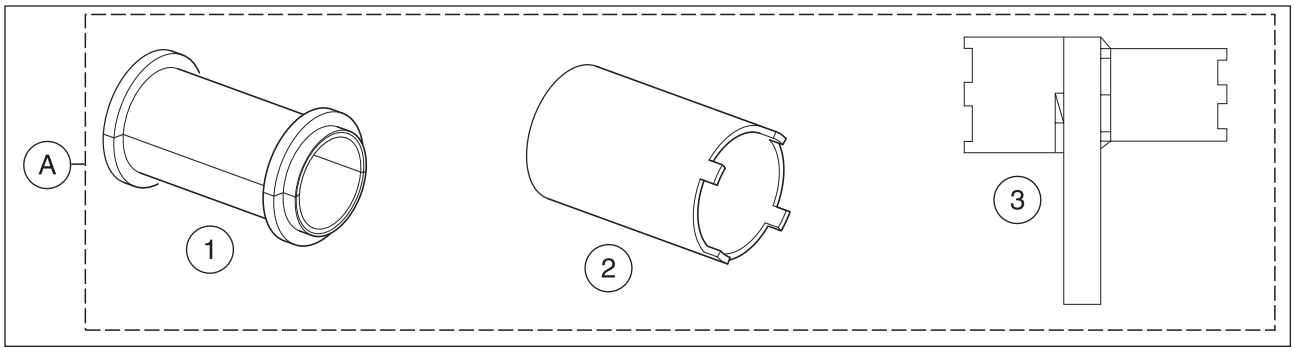
1.7.1 SUPPORT STANDS



Pos.	**aprilia** part# (tool description and function)
A	**8140176** (complete support stand kit)
1	**8146486** (front support stand)
2	**xxxxxxx N.A.** [centre stand]
3	**8705021** (rear support stand)

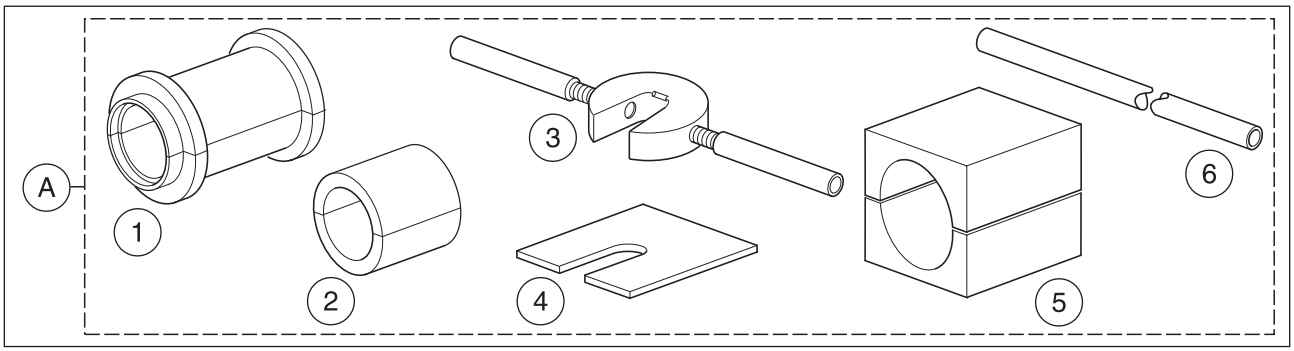
xxxxxxx N.A. = available only with the aprilia **kit part# 8140176 (complete support stand kit)**

1.7.2 FRAME TOOLS



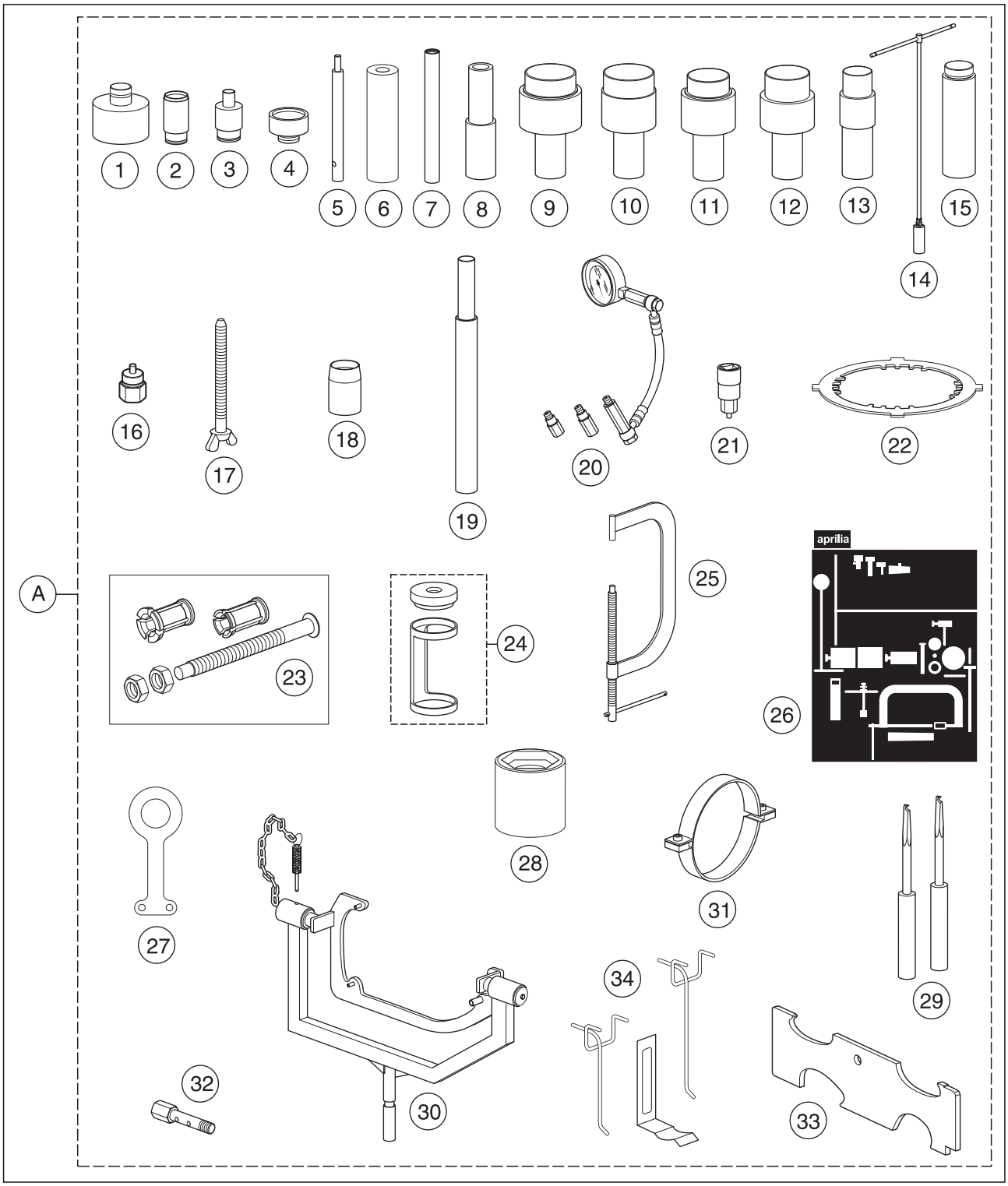
Pos.	**aprilia** part# (tool description and function)
A	**8140203** (complete tool kit for frame including)
1	**8140189** [oil seal fitting tool - Ø 43 hole. Kit accessory **aprilia** part# 8140151 (complete tool kit for fork including)]
2	**8140190** (steering tightening tool)
3	**8140191** (rear fork pin and engine support tightening tool)

1.7.3 FORK TOOLS



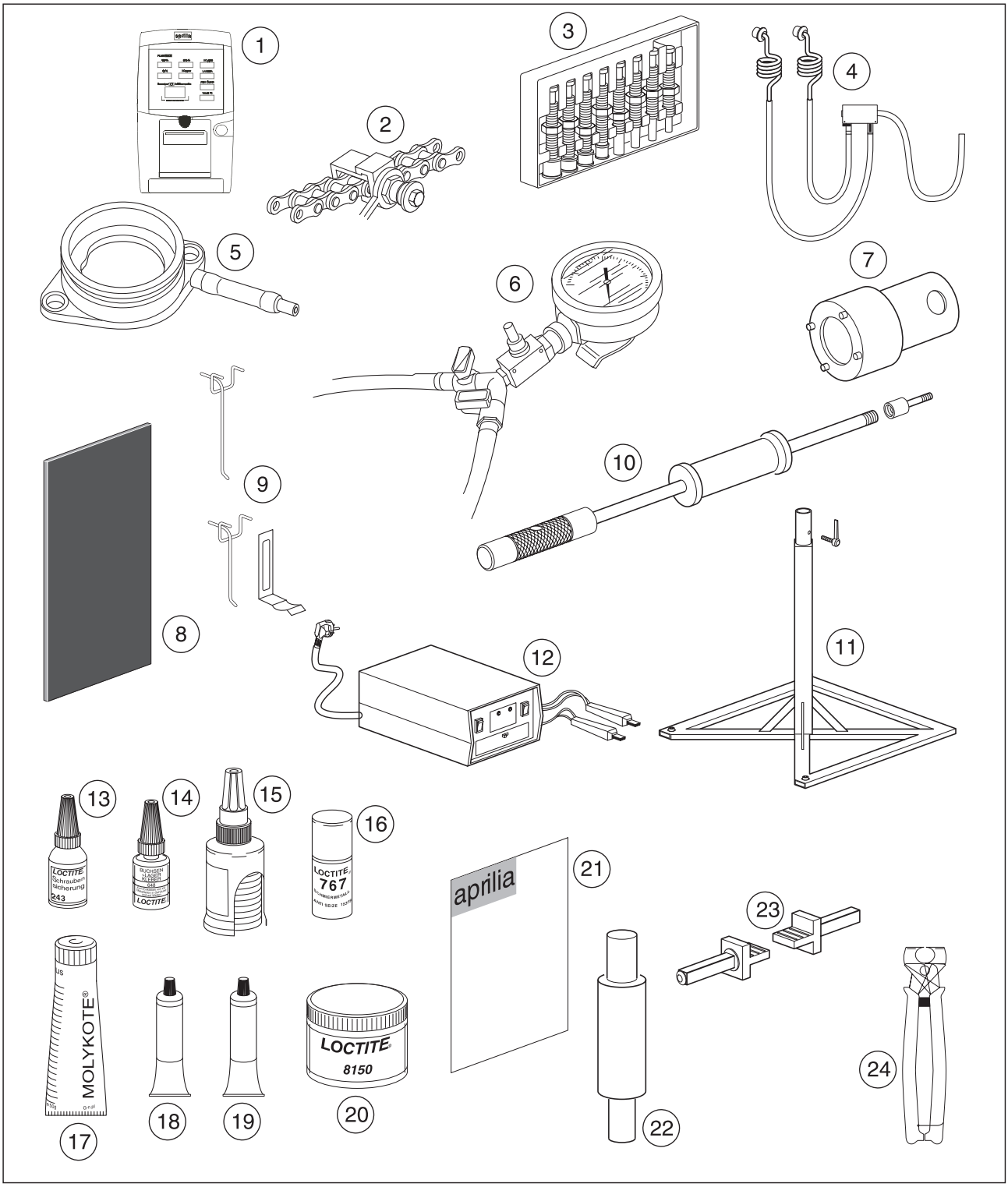
Pos.	**aprilia** part# (tool description and function)
A	**8140151** (complete tool kit for fork including)
1	**8140145** (Ø 41 mm sealing ring fitting tool)
2	**8140146** [weight to be applied to the tool: **aprilia** part# 8140145 (Ø 41 mm sealing ring fitting tool)] e **aprilia** part# 8140189 [oil seal fitting tool - Ø 43 hole. Kit accessory aprilia part# 8140151 (complete tool kit for fork including)]
3	**8140147** (spacer holding tool)
4	**8140148** (spacer/pumping element separating plate)
5	**8140149** (protection element for disassembly operations)
6	**8140150** (drilled rod for pumping element bleeding)

1.7.4 ENGINE TOOLS



Pos.	**aprilia** part# (tool description and function)
A	**8140175** (complete tool kit for engine including)
1	**0277680** (gearshift secondary shaft oil seal assembly pad)
2	**0277660** (upper countershaft oil seal assembly pad)
3	**0277670** (coolant pump shaft housing oil seal assembly pad)
4	**0877257** (assembly pad for water pump shaft seat sliding ring)
5	**0277510** (valve guide disassembly pad)
6	**0277210** (valve guide assembly)
7	**0277695** (valve guide oil seal assembly pad)
8	**8140155** (gearshift shaft oil seal - clutch shaft oil seal assembly pad)
9	**0277725** (driving shaft bush inserter pad)
10	**0277720** (driving shaft sleeve puller** pad)
11	**0277537** (lower countershaft bush inserter pad)
12	**0277727** (driving shaft - clutch cover bush inserter pad)
13	**0277729** (insertion pad for lower balance shaft clutch cover bushes)
14	**8140177** (plug socket spanner)
15	**0277252** (flywheel magneto cover removal tool)
16	**0277730** (flywheel removal hexagonal bolt)
17	**0240880** (threaded bolt to lock the drive shaft at the TDC)
18	**0277308** (gearshift secondary shaft guide bush)
19	**8140178** (pin installation and removal pad)
20	**8140181** (fuel-oil pressure gauge-compression)
21	**8140182** (rotor bolt bush)
22	**0277881** (clutch blocking tool)
23	**8140156 + 8140157 + 0276377** (clutch cover sleeve puller)
24	**0276479** (valve spring compression tool)
25	**8140179** (valves disassembly and reassembly bow)
26	**8157143** (adhesive for tool holder panel RSVmille)
27	**8140183** (engine lifting eye hook)
28	**8140184** (primary transmission nut disassembly bush)
29	**8140185** (clutch disc** extraction hook lever)
30	**8140188** (engine support)
31	**8140186** (piston ring compression tool)
32	**8140197** (perforated bolt for fuel pressure test fuel)
33	**8140205** (camshaft template)
34	**8140426** (panel hooks)

1.7.5 MISCELLANEOUS TOOLS



Pos.	**aprilia** part# (tool description and function)
1	**8140196** [Plurigas (Italian)]
1	**8140578** [Plurigas (English)]
2	**8140192** (chain installation kit)
3	**8140180** (bearing extractors)
4	**8140202** (exhaust gas analysis probes)
5	**8140267** (intake flange for vacuometer)
6	**8140256** (vacuometer)
7	**8140424** (OHLINS fork spanner)
8	**8140199** (tool panel)
9	**8140426** (panel hooks)
10	**8140432** (pushing extractor)
11	**8140187** (engine support stand)
12	**8124838** (battery charger M.F.)
13	**0897651** [LOCTITE® 243 blue (10 cm^3)]
14	**0899788** [LOCTITE® 648 green (5 g)]
15	**0899784** (LOCTITE® 574 orange)
16	**0297434** (LOCTITE® 767 Anti-Seize 15378)
17	**0297433** [MOLYKOTE® G-N (50 g)]
18	**0897330** (multi-purpose grease bp lz)
19	**0297386** [SILASTIC 732 RTV (100 g)]
20	**8116067** (LOCTITE® 8150)
21	**8202222** (panel adhesive sheet)
22	**8140074** (lower countershaft bush inserter pad)
23	**8140204** (rear stand supports)
24	**0277295** (hose clamp installation pliers)