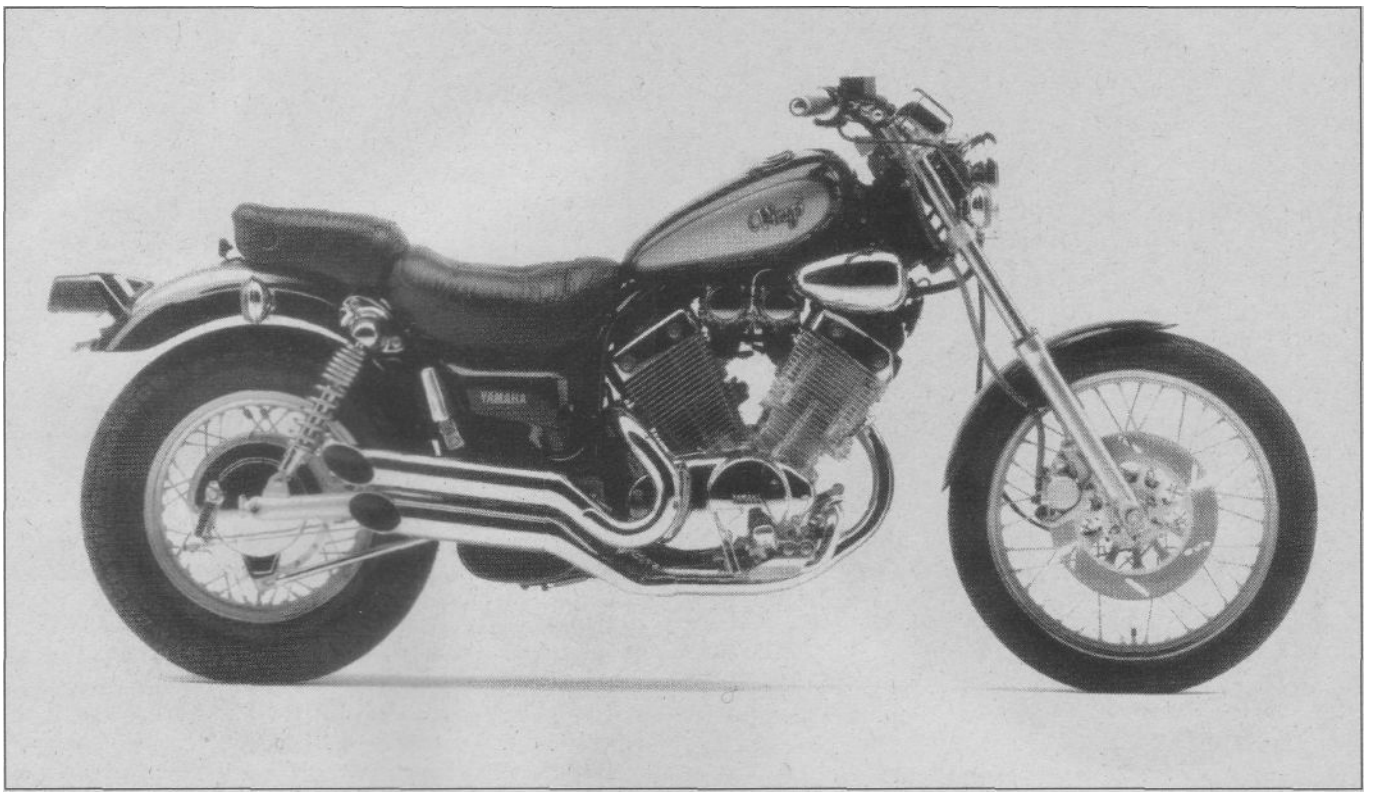
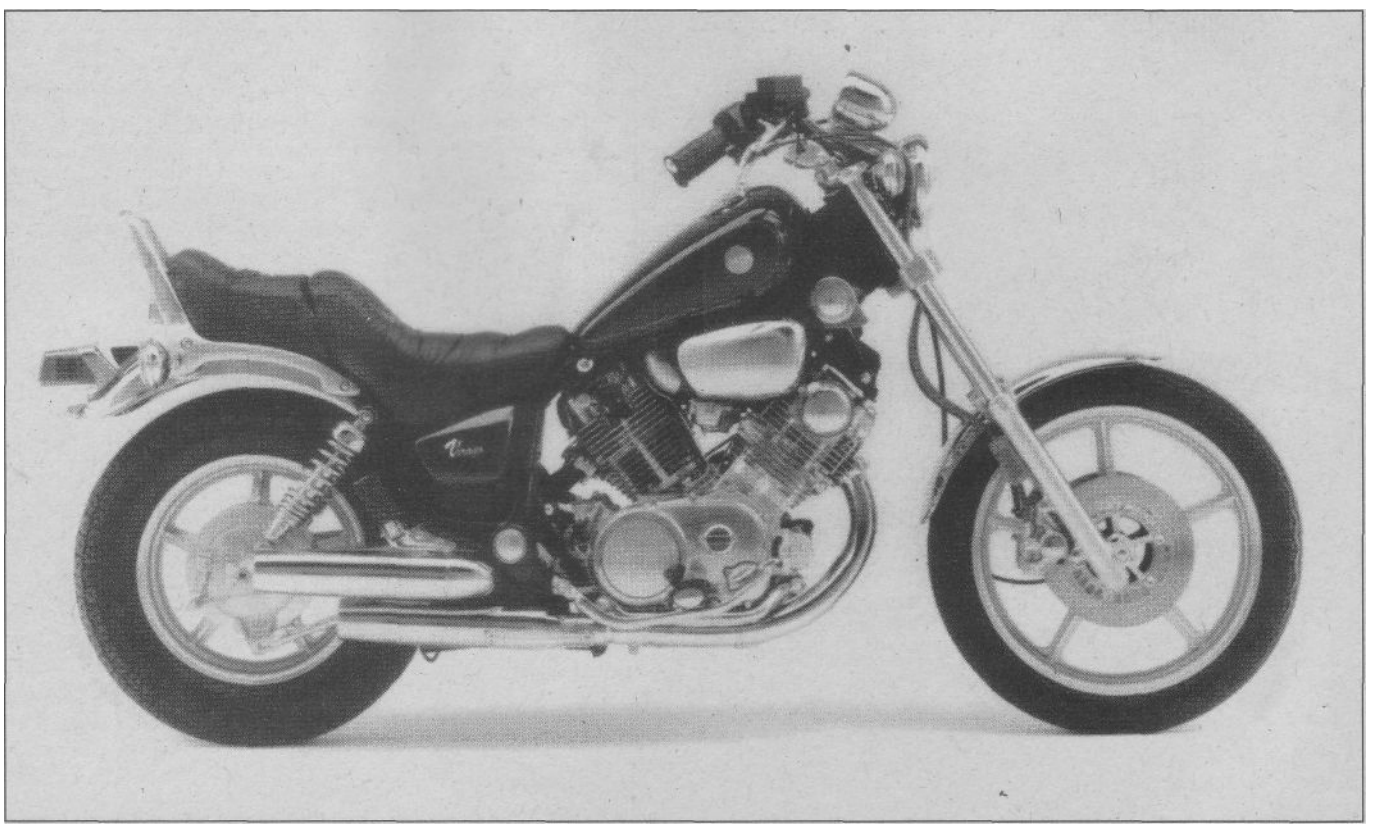
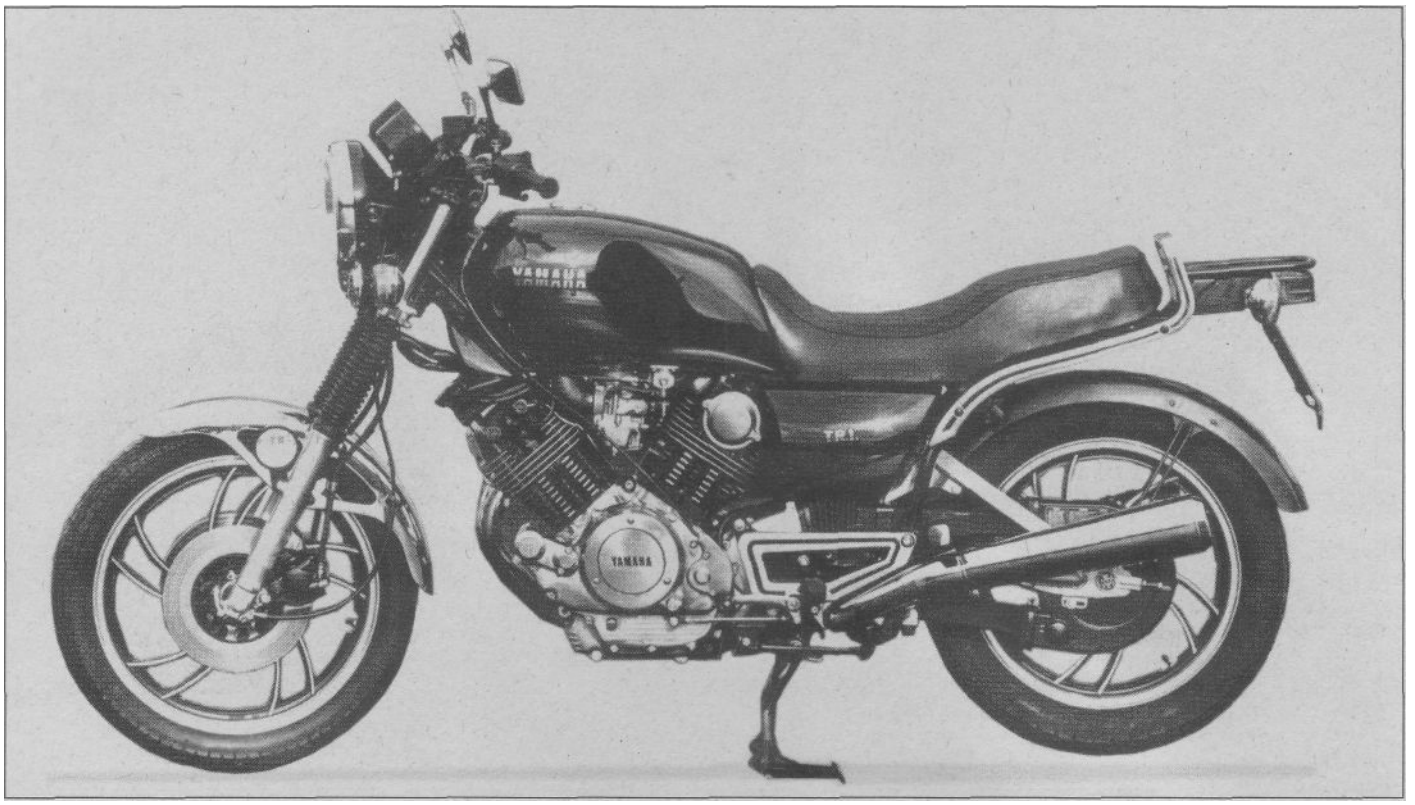
Contents



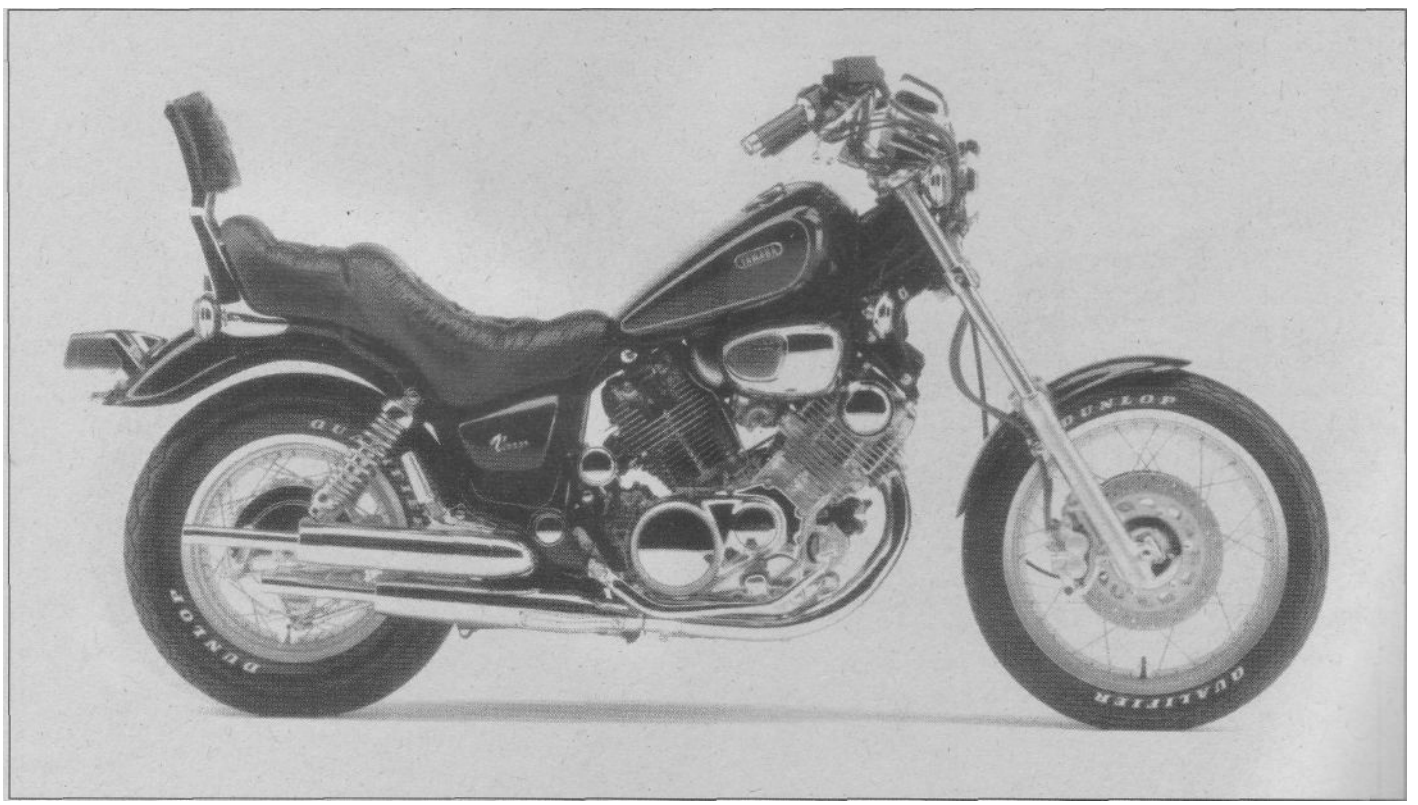
The 1994 XV535S model



The 1985 XV700 Virago model



The TR1 model



The 1994 XV1100 Virago model

About this manual

Its purpose

The purpose of this manual is to help you get the best value from your motorcycle. It can do so in several ways. It can help you decide what work must be done, even if you choose to have it done by a dealer service department or a repair shop; it provides information and procedures for routine maintenance and servicing; and it offers diagnostic and repair procedures to follow when trouble occurs.

We hope you use the manual to tackle the work yourself. For many simpler jobs, doing it yourself may be quicker than arranging an appointment to get the vehicle into a shop and making the trips to leave it and pick it up. More importantly, a lot of money can be saved by avoiding the expense the shop must pass on to you to cover its labor and overhead costs. An added benefit is the sense of satisfaction and accomplishment that you feel after doing the job yourself.

Using the manual

The manual is divided into Chapters. Each Chapter is divided into numbered Sections, which are headed in bold type between horizontal lines. Each Section consists of consecutively numbered paragraphs.

At the beginning of each numbered Section you will be referred to any illustrations which apply to the procedures in that Section. The reference numbers used in illustration captions pinpoint the pertinent Section and the Step within that Section. That is, illustration 3.2 means the illustration refers to Section 3 and Step (or paragraph) 2 within that Section.

Procedures, once described in the text, are not normally repeated. When it's necessary to refer to another Chapter, the reference will be given as Chapter and Section number. Cross references given without use of the word "Chapter" apply to Sections and/or paragraphs in the same Chapter. For example, "see Section 8" means in the same Chapter.

References to the left or right side of the vehicle assume you are sitting on the seat, facing forward.

Motorcycle manufacturers continually make changes to specifications and recommendations, and these, when notified, are incorporated into our manuals at the earliest opportunity.

Even though we have prepared this manual with extreme care, neither the publisher nor the author can accept responsibility for any errors in, or omissions from, the information given.

NOTE

A **Note** provides information necessary to properly complete a procedure or information which will make the procedure easier to understand.

CAUTION

A **Caution** provides a special procedure or special steps which must be taken while completing the procedure where the Caution is found. Not heeding a Caution can result in damage to the assembly being worked on.

WARNING

A **Warning** provides a special procedure or special steps which must be taken while completing the procedure where the Warning is found. Not heeding a Warning can result in personal injury.

Introduction to the Yamaha XV

The Yamaha XV (Virago) series are highly successful and popular cruiser-style motorcycles.

The engine on all models is an air-cooled, V-twin with overhead camshafts. .

Fuel is delivered to the cylinders by two Hitachi or Mikuni carburetors; XV535, XV1000 and XV1100 models use an electric fuel pump.

The front suspension uses a pair of conventional forks, adjustable by varying the fork air pressure on some models. Fork damping is adjustable on XV920 J models.

The rear suspension on 1981 through 1983 models uses a single shock absorber and coil spring. Later models use twin rear shock absorbers with concentric coil springs. Spring preload is adjustable on all XV700 through 1100 models; shock absorber damping is adjustable on 1984 and later XV700 through 1100 models.

The front brake uses a single or dual disc; a drum brake is used at the rear.

Shaft final drive is used on most of the bikes covered in this manual. Some models use an unusual chain drive system, with the chain completely enclosed in housings and running in a bath of grease.

Identification numbers

The frame serial number is stamped into the right side of the frame and printed on a label affixed to the frame. The engine number is stamped into the right upper side of the crankcase. Both of these numbers should be recorded and kept in a safe place so they can be furnished to law enforcement officials in the event of a theft.

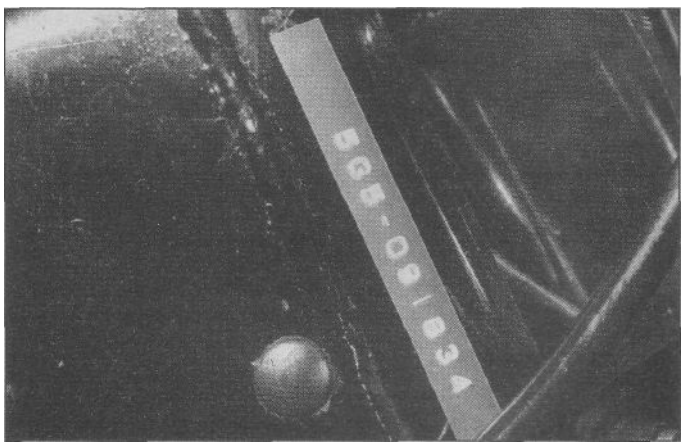
The frame serial number, engine serial number and carburetor identification number should also be kept in a handy place (such as with your driver's license) so they are always available when purchasing or ordering parts for your machine.

The models covered by this manual are as follows:

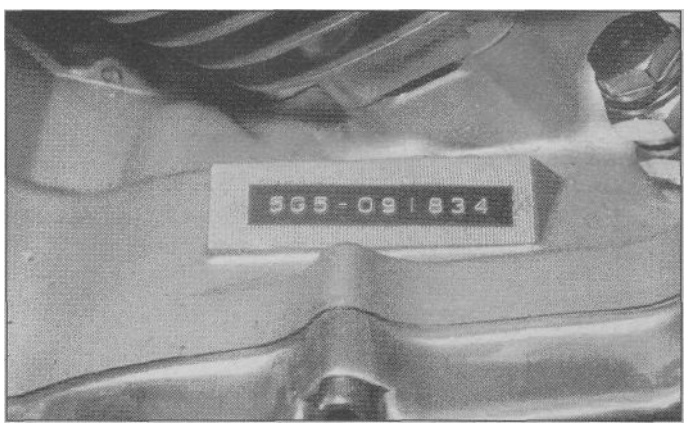
XV535, 1987 through 1990 US
XV535, 1993 and 1994 US
XV535, 1988 through 1994 UK
XV700,1984 through 1987 US
XV750, 1981 through 1983 and 1988 through 1994 US
XV750, 1981 through 1983 UK, 1992 through 1994 UK
XV920, 1981 through 1983 US
XV1000 shaft drive, 1984 and 1985 US, 1986 through 1989 UK
XV1000 chain drive (TR1), 1981 through 1985 UK
XV1100, 1986 through 1994 US, 1989 through 1994 UK

Identifying engines and model years

The procedures in this manual identify the bikes by model year. To determine which model year a given machine is, look for the following identification codes in the engine and frame numbers:



The frame number is stamped in the right side of the frame and is also displayed on a decal



The engine number is stamped in the right side of the crankcase

Year	Code
XV535 models	
1987and 1988 US	2GV
1989 and 1990 US	3JC1/3JC2
1993 US	3JC7/3JC8
1994 US	
XV535	3JCA, 3JCB
XV535S	3JCB, 3JCD
1988 UK	3BT1
1989 UK	3BT2/3BT5
1990 UK	3BTC/3BT8
1991 UK	3BTE/3BTF
1992 UK	3BTK/3BTM
1993 UK	3BTR/3BTT
1994 UK	
XV535	4KU2/3BTW
XV535S	4KU4 (flat handlebar)
XV535S	3BTV/3BTY (upright handlebar)
XV700 models	
1984	42W/42X
1985	56E/56F
1986 and 1987	1RM/1RV/1RR/1TU
XV750 models	
1981 through 1983 US	
XV750 H, J, K	4X7
XV750 MK	20X
1988 U S	3AL/3CM
1989 US	3JL1/3JL2
1990 US	3JL4/3JL5
1991 US	3JL7/3JL8
1992 US	3JUV3JLB
1993 US	3JLD/3JLE
1994 US	3JLG/3JLH
1981 through 1983 UK	5G5
1992 and 1993 UK	4FY1
1994 UK	4FY4
XV920 models	
1981 and 1982 chain drive	5H1
1982 shaft drive	10L
1983 shaft drive	
XV920 K	24M
XV920 MK	27Y
XV1000 models	
1984 US	42G/42H
1985 US	56V/56W
1981 UK	5A8
1982 through 1985 UK	19T
1986 and 1987 UK	2AE
1988 and 1989 UK	3DR1
XV1100 models	
1986 and 1987 US	1TE/1TA
1988 US	3CF/3CG
1989 US	3JK1/3JK2
1990 US	3JK4/3JK5
1991 US	3JK7/3JK8
1992 US	3JKB/3JKC
1993 US	3JKA/3JKE
1994 US	3JKG/3JKH
1989 and 1990 UK	3LP1
1991 UK	3LP2
1992 and 1993 UK	3LP4
1994 UK	3LP8

Buying parts

Once you have found all the identification numbers, record them for reference when buying parts. Since the manufacturers change specifications, parts and vendors (companies that manufacture various components on the machine), providing the ID numbers is the only way to be reasonably sure that you are buying the correct parts.

Whenever possible, take the worn part to the dealer so direct comparison with the new component can be made. Along the trail from the manufacturer to the parts shelf, there are numerous places that the part can end up with the wrong number or be listed incorrectly.

The two places to purchase new parts for your motorcycle - the accessory store and the franchised dealer - differ in the type of parts they carry. While dealers can obtain virtually every part for your motorcycle, the accessory dealer is usually limited to normal high wear items such as shock absorbers, tune-up parts, various engine gaskets, cables, chains, brake parts, etc. Rarely will an accessory outlet have major suspension components, cylinders, transmission gears, or cases.

Used parts can be obtained for roughly half the price of new ones, but you can't always be sure of what you're getting. Once again, take your worn part to the wrecking yard (breaker) for direct comparison.

Whether buying new, used or rebuilt parts, the best course is to deal directly with someone who specializes in parts for your particular make.

General specifications

XV535 models

1987 and 1988 US models

Wheelbase	1511 mm (59.5 inches)
Overall length	2210 mm (87.0 inches)
Overall width	815 mm (32.1 inches)
Overall height	1100 mm (43.3 inches)
Seat height	700 mm (27.6 inches)
Ground clearance (minimum)	145 mm (5.7 inches)
Weight (with oil and full fuel tank)	
US except California	185 kg (408 lbs)
California	186 kg (410 lbs)

1989-on US models

Wheelbase	1520 mm (59.8 inches)
Overall length	2225 mm (87.6 inches)
Overall width	810 mm (31.9 inches)
Overall height	1110 mm (43.7 inches)
Seat height	720 mm (28.3 inches)
Ground clearance (minimum)	160 mm (6.3 inches)
Weight (with oil and full fuel tank)	
US except California	195 kg (430 lbs)
California	196 kg (432 lbs)

1988 UK models

Wheelbase	1520 mm (59.8 inches)
Overall length	2225 mm (87.6 inches)
Overall width	810 mm (31.9 inches)
Overall height	1100 mm (43.3 inches)
Seat height	700 mm (27.6 inches)
Ground clearance (minimum)	160 mm (6.3 inches)
Weight (with oil and full fuel tank)	188 kg (415 lbs)

1989-on UK models

Wheelbase	1520 mm (59.8 inches)
Overall length	2285 mm (90.0 inches)
Overall width	
Flat handlebar	725 mm (88.6 inches)
Upright handlebar	810 mm (31.9 inches)
Overall height	
Flat handlebar	1070 mm (42.1 inches)
Upright handlebar	1110 mm (43.7 inches)
Seat height	720 mm (28.3 inches)
Ground clearance (minimum)	160 mm (6.3 inches)
Weight (with oil and full fuel tank)	195 kg (430 lbs)

XV700 and US XV1000 models

Wheelbase	1525 mm (60.0 inches)
Overall length	2235 mm (88.0 inches)
Overall width	840 mm (33.1 inches)
Overall height	1170 mm (46.1 inches)
Seat height	715 mm (28.1 inches)
Ground clearance (minimum)	145 mm (5.7 inches)
Weight (with oil and full fuel tank)	
1984 and 1985 XV700 models	225 kg (496 lbs)
1986 and 1987 XV700 models	229 kg (505 lbs)
XV1000 models	236 kg (520 lbs)

XV750 models (1981 through 1983)

Wheelbase	1520 mm (59.8 inches)
Overall length	2230 mm (87.8 inches)
Overall width	
US models	805 mm (31,7 inches)
UK models	840 mm (33.1 inches)
Overall height	
US models	1160 mm (45.7 inches)
UK models	1210 mm (47.6 inches)
Seat height	not specified
Ground clearance (minimum)	145 mm (5.7 inches)
Weight (dry)	
US models	225 kg (496 lbs)
UK models	211 kg (465 lbs)

XV750 models (1988-on US)

Wtieelbase	1525 mm (60.0 inches)
Overall length	2285 mm (90.0 inches)
Overall width	840 mm (33.1 inches)
Overall height	1190 mm (46.9 inches)
Seat height	715 mm (28.1 inches)
Ground clearance (minimum)	145 mm (5.7 inches)
Weight	Not specified

XV750 models (1992-on UK)

Wheelbase	1525 mm (60.0 inches)
Overall length	2285 mm (90.0 inches)
Overall width	840 mm (33.1 inches)
Overall height	1190 mm (46.9 inches)
Seat height	715 mm (28.1 inches)
Ground clearance (minimum)	145 mm (5.7 inches)
Weight	
1992 and 1993 models	235 kg (518 lbs)
1994 models	236 kg (520 lbs)

XV920 J models

Wheelbase	1520 mm (59.8 inches)
Overall length	2220 mm (87.4 inches)
Overall width	840 mm (33.1 inches)
Overall height	1205 mm (47.4 inches)
Seat height	Not specified
Ground clearance (minimum)	145 mm (5.7 inches)
Weight	225 kg (496 lbs)

XV920 K and MK models

Wheelbase	1520 mm (59.8 inches)
Overall length	2230 mm (87.8 inches)
Overall width	805 mm (31.7 inches)
Overall height	1160 mm (45.7 inches)
Seat height	Not specified
Ground clearance (minimum)	145 mm (5.7 inches)
Weight	235 kg (518 lbs)

XV920 RH and RJ models

Wheelbase	1540 mm (60.6 inches)
Overall length	2260 mm (89.0 inches)
Overall width	930 mm (36.6 inches)
Overall height	1170 mm (46.1 inches)
Seat height	Not specified
Ground clearance (minimum)	140 mm (5.5 inches)
Weight	224 kg (493 lbs)

XV1000 models (1981 through 1985 UK TR1)

Wheelbase	1540 mm (60.6 inches)
Overall length	2265 mm (89.2 inches)
Overall width	730 mm (28.7 inches)
Overall height	1170 mm (46.1 inches)
Seat height	Not specified
Ground clearance (minimum)	140 mm (5.5 inches)
Weight	220 kg (485 lbs)

XV1100 models (1986-on)

Wheelbase	1525 mm (60.0 inches)
Overall length	
US models	2235 mm (88.0 inches) •
UK models	2285 mm (90.0 inches)
Overall width	840 mm (33.1 inches)
Overall height	
1986 and 1987	1170 mm (46.1 inches)
1988-on	1190 mm (46.9 inches)
Seat height	715 mm (28.1 inches)
Ground clearance (minimum)	145 mm (5.7 inches)
Weight (with oil and full fuel tank)	
US models	239 kg (527 lbs)
UK models	240 kg (529 lbs)

Maintenance techniques, tools and working facilities

Basic maintenance techniques

There are a number of techniques involved in maintenance and repair that will be referred to throughout this manual. Application of these techniques will enable the amateur mechanic to be more efficient, better organized and capable of performing the various tasks properly, which will ensure that the repair job is thorough and complete.

Fastening systems

Fasteners, basically, are nuts, bolts and screws used to hold two or more parts together. There are a few things to keep in mind when working with fasteners. Almost all of them use a locking device of some type (either a lock washer, locknut, locking tab or thread adhesive). All threaded fasteners should be clean, straight, have undamaged threads and undamaged corners on the hex head where the wrench fits. Develop the habit of replacing all damaged nuts and bolts with new ones.

Rusted nuts and bolts should be treated with a penetrating oil to ease removal and prevent breakage. Some mechanics use turpentine in a spout type oil can, which works quite well. After applying the rust penetrant, let it "work" for a few minutes before trying to loosen the nut or bolt. Badly rusted fasteners may have to be chiseled off or removed with a special nut breaker, available at tool stores.

If a bolt or stud breaks off in an assembly, it can be drilled out and removed with a special tool called an E-Z out (or screw extractor). Most dealer service departments and motorcycle repair shops can perform this task, as well as others (such as the repair of threaded holes that have been stripped out).

Flat washers and lock washers, when removed from an assembly, should always be replaced exactly as removed. Replace any damaged washers with new ones. Always use a flat washer between a lock washer and any soft metal surface (such as aluminum), thin sheet metal or plastic. Special locknuts can only be used once or twice before they lose their locking ability and must be replaced.

Tightening sequences and procedures

When threaded fasteners are tightened, they are often tightened to a specific torque value (torque is basically a twisting force). Over-tightening the fastener can weaken it and cause it to break, while under-tightening can cause it to eventually come loose. Each bolt, depending on the material it's made of, the diameter of its shank and the material it is threaded into, has a specific torque value, which is noted in the Specifications. Be sure to follow the torque recommendations closely.

Fasteners laid out in a pattern (i.e. cylinder head bolts, engine case bolts, etc.) must be loosened or tightened in a sequence to avoid warping the component. Initially, the bolts/nuts should go on finger tight only. Next, they should be tightened one full turn each, in a criss-cross or diagonal pattern. After each one has been tightened one full turn, return to the first one tightened and tighten them all one half turn, following the same pattern. Finally, tighten each of them one quarter turn at a time until each fastener has been tightened to the proper torque. To loosen and remove the fasteners the procedure would be reversed.

Disassembly sequence

Component disassembly should be done with care and purpose to help ensure that the parts go back together properly during reassembly. Always keep track of the sequence in which parts are removed. Take note of special characteristics or marks on parts that can be installed more than one way (such as a grooved thrust washer on a shaft). It's a good idea to lay the disassembled parts out on a clean surface in the order that they were removed. It may also be helpful to make sketches or take instant photos of components before removal.

When removing fasteners from a component, keep track of their locations. Sometimes threading a bolt back in a part, or putting the washers and nut back on a stud, can prevent mixups later. If nuts and bolts can't be returned to their original locations, they should be kept in a compartmented box or a series of small boxes. A cupcake or muffin tin is ideal for this purpose, since each cavity can hold the bolts and nuts from a particular area (i.e. engine case bolts, valve cover bolts, engine mount bolts, etc.). A pan of this type is especially helpful when working on assemblies with very small parts (such as the carburetors and the valve train). The cavities can be marked with paint or tape to identify the contents.

Whenever wiring looms, harnesses or connectors are separated, it's a good idea to identify the two halves with numbered pieces of masking tape so they can be easily reconnected.

Gasket sealing surfaces

Throughout any motorcycle, gaskets are used to seal the mating surfaces between components and keep lubricants, fluids, vacuum or pressure contained in an assembly.

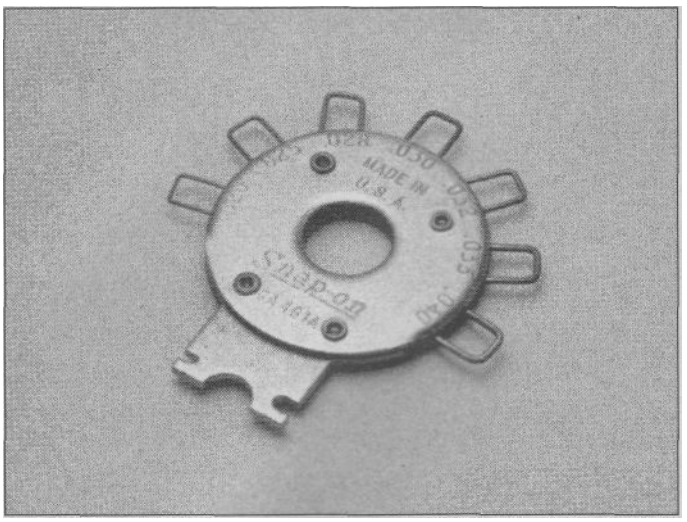
Many times these gaskets are coated with a liquid or paste type gasket sealing compound before assembly. Age, heat and pressure can sometimes cause the two parts to stick together so tightly that they are very difficult to separate. In most cases, the part can be loosened by striking it with a soft-faced hammer near the mating surfaces. A regular hammer can be used if a block of wood is placed between the hammer and the part. Do not hammer on cast parts or parts that could be easily damaged. With any particularly stubborn part, always recheck to make sure that every fastener has been removed.

Avoid using a screwdriver or bar to pry apart components, as they can easily mar the gasket Sealing surfaces of the parts (which must remain smooth). If prying is absolutely necessary, use a piece of wood, but keep in mind that extra clean-up will be necessary if the wood splinters.

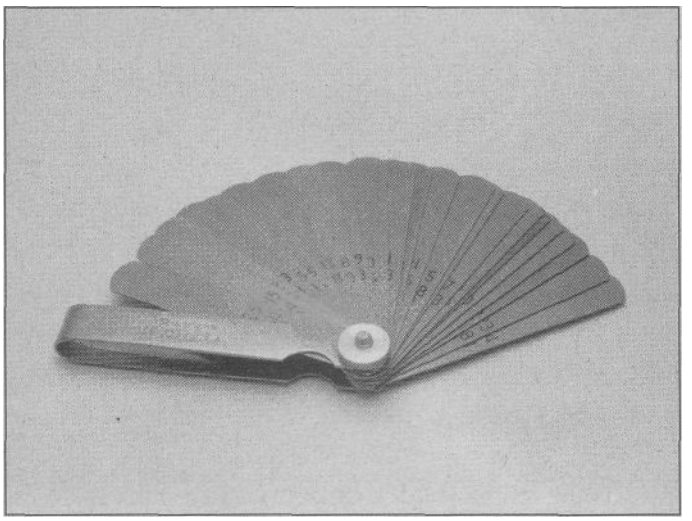
After the parts are separated, the old gasket must be carefully scraped off and the gasket surfaces cleaned. Stubborn gasket material can be soaked with a gasket remover (available in aerosol cans) to soften it so it can be easily scraped off. A scraper can be fashioned from a piece of copper tubing by flattening and sharpening one end. Copper is recommended because it is usually softer than the surfaces to be scraped, which reduces the chance of gouging the part. Some gaskets can be removed with a wire brush, but regardless of the method used, the mating surfaces must be left clean and smooth. If for some reason the gasket surface is gouged, then a gasket sealer thick enough to fill scratches will have to be used during reassembly of the components. For most applications, a non-drying (or semi-drying) gasket sealer is best.

Hose removal tips

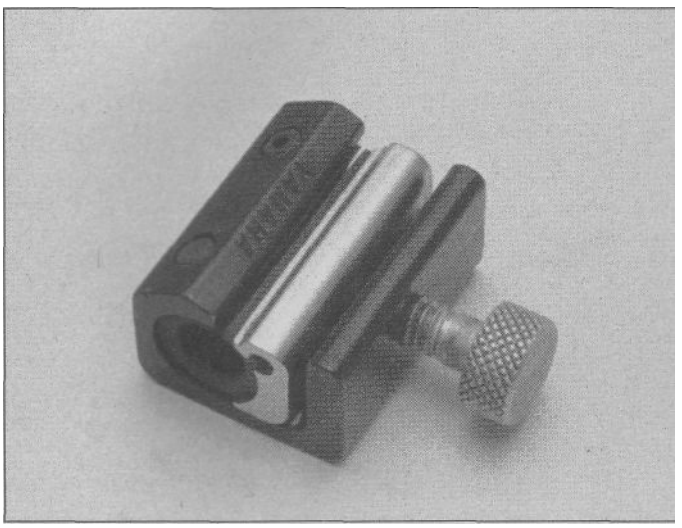
Hose removal precautions closely parallel gasket removal precautions. Avoid scratching or gouging the surface that the hose mates against or the connection may leak. Because of various chemical reactions, the rubber in hoses can bond itself to the metal spigot that the hose fits over. To remove a hose, first loosen the hose clamps that secure it to the spigot. Then, with slip joint pliers, grab the hose at the clamp and rotate it around the spigot. Work it back and forth until it is completely free, then pull it off (silicone or other lubricants will ease removal if they can be applied between the hose and the outside of the spigot). Apply the same lubricant to the inside of the hose and the outside of the spigot to simplify installation.



Spark plug gap adjusting tool

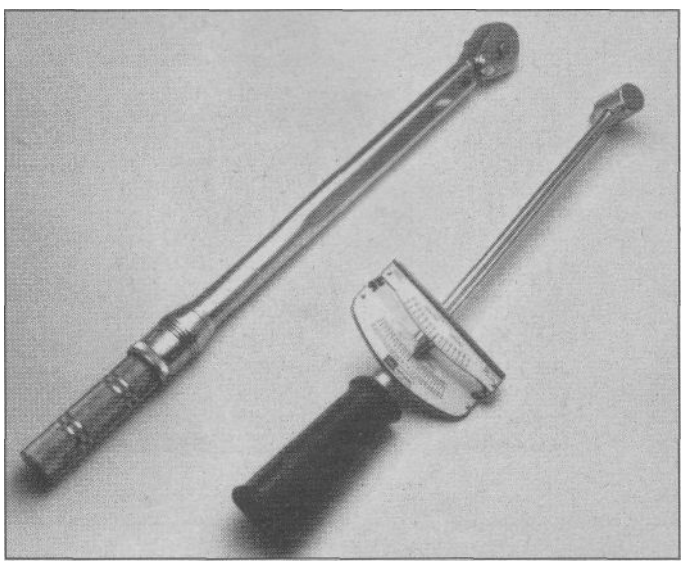


Feeler gauge set



Control cable pressure luber

Hand impact screwdriver and bits



Torque wrenches (left - click type; right - beam type)

If a hose clamp is broken or damaged, do not reuse it. Also, do not reuse hoses that are cracked, split or torn.

Tools

A selection of good tools is a basic requirement for anyone who plans to maintain and repair a motorcycle. For the owner who has few tools, if any, the initial investment might seem high, but when compared to the spiraling costs of routine maintenance and repair, it is a wise one.

To help the owner decide which tools are needed to perform the tasks detailed in this manual, the following tool lists are offered: Maintenance and minor repair, Repair and overhaul and Special. The newcomer to practical mechanics should start off with the Maintenance and minor repair tool kit, which is adequate for the simpler jobs. Then, as confidence and experience grow, the owner can tackle more difficult tasks, buying additional tools as they are needed. Eventually the basic kit will be built into the Repair and overhaul tool set. Over a period of time, the experienced do-it-yourselfer will assemble a tool set complete enough for most repair and overhaul procedures and will add tools from the Special category when it is felt that the expense is justified by the frequency of use.