

TOOLS-EQUIPMENT-SAFETY

1. TOOLS AND EQUIPMENT

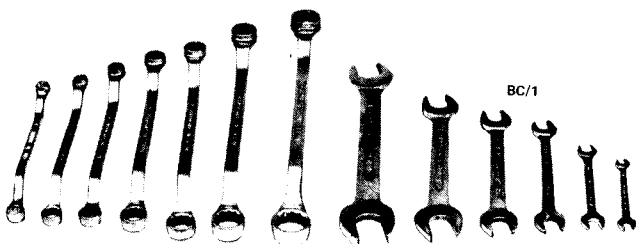
When servicing the modern motor vehicle, special tools are sometimes essential for overhaul and adjustment procedures on certain components. These special tools can be expensive and often require specialised knowledge to operate them, in which case it is more practical to take the vehicle or component to your authorised dealer for repair. Where possible the use of special tools is avoided in this manual and basic or substitute tools, which are described in the text, are used instead. Should it not be practical to carry out an operation without special equipment, then the reader is advised of this at the commencement of the operation.

To successfully carry out any form of mechanical repair work, adequate hand tools are essential. Do not be tempted to make do with old spanners, screwdrivers etc, that do not correctly fit the hardware on the vehicle, nor use new spanners of the wrong system such as A.F. on metric nuts and bolts. Besides damaging the hardware and/or 'rounding' the bolt heads and nuts, many a knuckle has been skinned by using inferior or incorrect tools.

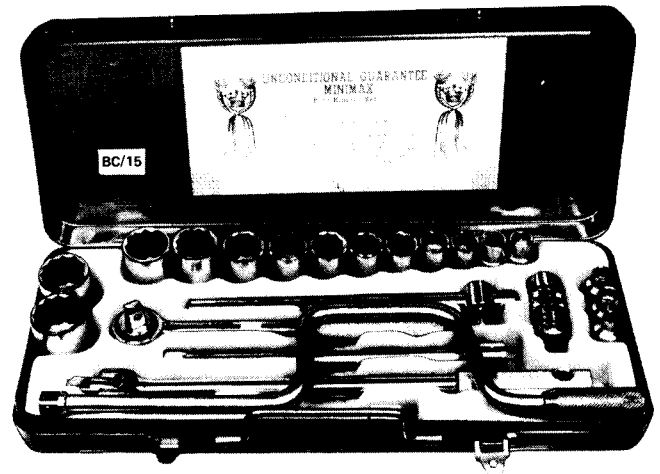
The following list of basic tools, miscellaneous equipment and stores are suggested as being the initial requirements to enable the maintenance and repair work described in this manual to be carried out.

BASIC TOOL KIT

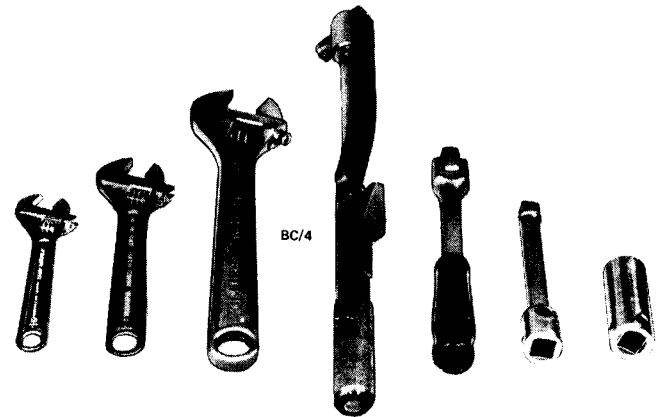
- 1 Set of open ended spanners.
- 1 Set of ring spanners.
- 1 Set of socket spanners.
- 1 Set of adjustable spanners.
- 1 Spark plug spanner.
- 1 Torque wrench.
- Assorted bladed screwdrivers.
- Assorted Philips screwdrivers.
- 1 Pair of ordinary pliers.
- 1 Pair of multigrip pliers.
- 1 Pair of vice grip pliers.
- 1 Pair of long nose pliers.
- 2 Pairs of circlip pliers.
- 1 Engineers hammer.
- 1 Set of pin punches.
- 1 Set of feeler gauges.
- 1 Set of magneto spanners.
- 1 Points file.



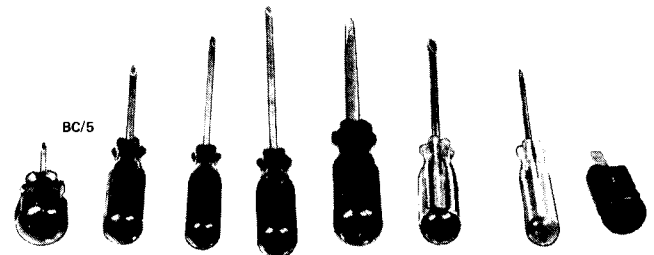
Ring and open ended spanners.



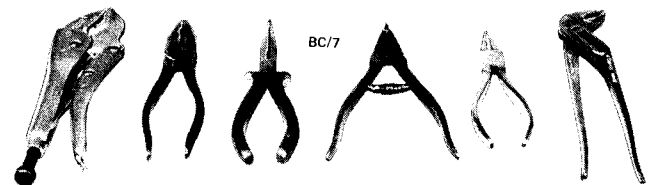
Socket spanner set.



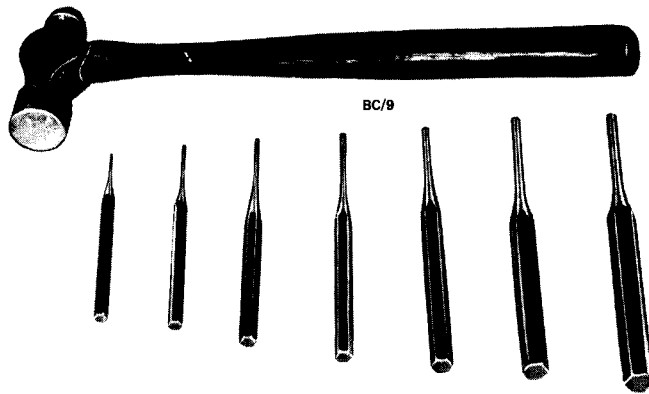
Adjustable spanners, torque wrench and spark plug socket spanner with socket extension and swivel bar.



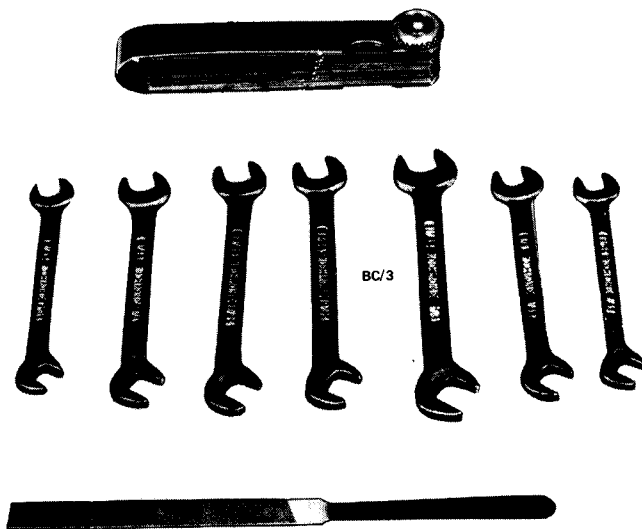
Assorted Philips and bladed screwdrivers.



Vice grip pliers, ordinary pliers, long nose pliers, circlip pliers (expanding type), circlip pliers (contracting type) and multigrip pliers.



Engineers ball pein hammer and pin punch set.



Points file, magneto spanners and feeler gauge set.

TOOL SELECTION AND CARE

As sensible selection of tools can greatly influence the ease and quality of work performed by the operator, it is good advice to purchase the highest quality of tools that can be afforded. Tools which bear the makers name are usually the best. The cheaper case hardened variety of tools should be avoided as once the case hardening is worn through it will be found that the tools are no longer serviceable. Hand tools with joints such as adjustable spanners and pliers should have no appreciable slack in the joints. There is nothing more annoying than to set a crescent spanner to a given nut and find that the jaw dimensions keep altering.

To ensure that all hand tools see out a normal working life tool care is also very important. After each job undertaken, all tools should be thoroughly washed in kerosene or some other type of cleaning agent and then wiped dry with a clean cloth.

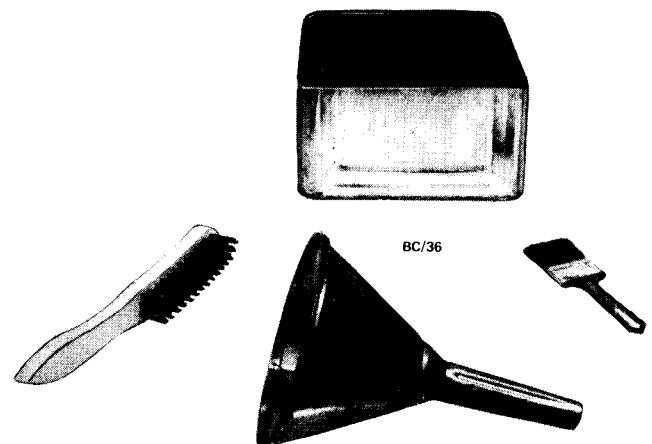
When cleaning the tools ensure that all grit is removed, especially from the joints in pliers and adjustable spanners. If the tools are to be stored for any

length of time it is also good policy to wipe them over with an oily cloth. Feeler gauges should be given particular attention and must be kept scrupulously clean at all times as grit on the blades will cause damage to the blades and inaccuracy when measuring. To prevent the feeler gauge blades from rusting and pitting through moisture the blades should be wiped over with an oily cloth after each use.

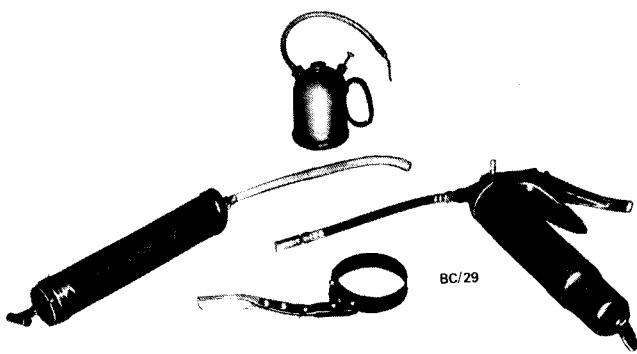
To prevent hand tools and other equipment from becoming mislaid and to ensure uncluttered working surroundings all hand tools should be stored in either a tool box or on a shadow board. If it is not intended to transport the tools then the latter method is recommended for the 'do-it-yourself' mechanic. Besides having all tools within easy reach, a visible check can be made of the shadow board at any time to see if any tools are missing.

MISCELLANEOUS EQUIPMENT AND STORES

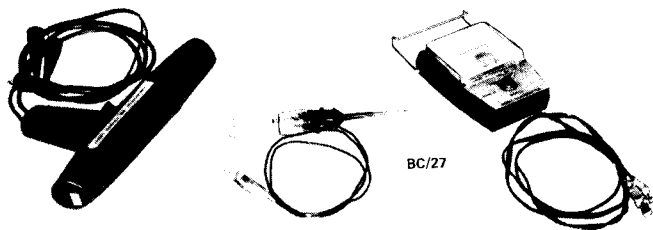
- 1 Hydraulic jack.
- 1 Set of car ramps.
- 1 Set of chassis stands.
- 1 Hand grease gun with flexible attachment.
- 1 Oil can.
- 1 Oil gun.
- 1 Filter removing tool.
- 1 Oil receptacle and parts washing tin.
- 1 Funnel.
- 1 Wire brush.
- 1 Parts washing brush.
- 1 Tin of brake fluid.
- 1 Tin of engine oil.
- 1 Tin of transmission oil.
- 1 Tin of rear axle oil.
- 1 Tin of chassis grease.
- 1 Test lamp.
- 1 Dwell/Tach meter.
- 1 Timing light.
- 1 Ohmmeter.



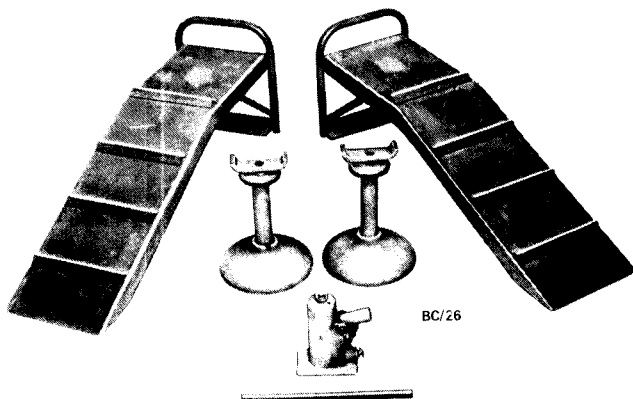
Wire brush, funnel and parts washing tin and brush.



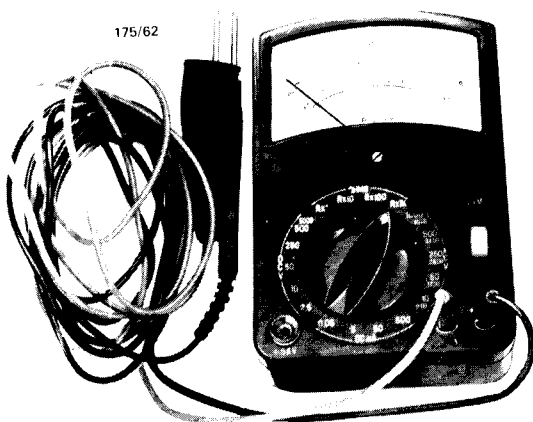
Oil gun, grease gun, oil can and filter removal tool.



Timing light, test lamp and dwell/tach meter.



Car ramps, chassis stands and hydraulic jack.



Ohmmeter (multimeter). An instrument for measuring electrical resistance.



Oils and greases are available in handy pack size for do-it-yourself lube jobs.

2. SAFETY

Never work *under* a vehicle which is supported only by the vehicle jack, bricks or similar materials as these are seldom stable. Always support the vehicle on chassis stands or use car ramps. Even in an emergency try to avoid jacking up the vehicle on soft or uneven ground.

When lifting either end of the vehicle ensure that the wheels remaining on the ground are fully chocked in both directions.

Avoid spilling oil or water around or under the working area, apart from the mess, you can easily lose your footing when exerting pressure on a particularly stubborn component.

When power tools are used make sure they are correctly fused and earthed with all connections and plugs tight and effectively insulated.

Always check that equipment being used for the lifting of heavy components such as engine and/or transmission is not exceeding its capacity and that ropes and slings are correctly secured and of adequate strength.

Every precaution should be taken when working on brake assemblies to avoid inhaling the brake dust which results from wear of the friction material. DO NOT attempt to remove dust by air pressure or vigorous brushing. A vacuum cleaner of either the domestic, or battery operated type designed for vehicles, with hose attachment is the most conveniently safe method of brake dust removal.

For the safety of the vehicle always disconnect the battery when carrying out any operation to the electrical or fuel systems. However, a battery should NOT be disconnected on a vehicle fitted with an alternator *when the engine is running*, or the alternator will be damaged.

The information in this manual is derived from the latest models available for our workshop research, and from other available sources at the time of writing. Any subsequent modifications will need to be taken into consideration by the operator.

While every precaution is taken to ensure the accuracy of the contents, onus can not be accepted for any misinterpretation of the described repair operations or for any errors or omissions inadvertently made, or for any injury or damage no matter how caused.