

TOOLS AND EQUIPMENT

Naturally, without the proper tools and equipment it is impossible to properly service your vehicle. It would be impossible to catalog each tool that you would need to perform each or every operation in this book. It would also be unwise for the amateur to rush out and buy an expensive set of tools on the theory that he may need one or more of them at sometime.

The best approach is to proceed slowly, gathering a good quality set of those tools that are used most frequently. Don't be misled by the low cost of bargain tools. It is far better to spend a little more for better quality. Forged wrenches, 6 or 12-point sockets and fine tooth ratchets are by far preferable to their less expensive counterparts. As any good mechanic can tell you, there are few worse experiences than trying to work on a car with bad tools. Your monetary savings will be far outweighed by frustration and mangled knuckles.

Certain tools, plus a basic ability to handle tools, are required to get started. A basic mechanics tool set, a torque wrench, and a Torx® bits set. Torx® bits are hexlobular drivers which fit both inside and outside on special Torx® head fasteners used in various places on your vehicle.

Begin accumulating those tools that are used most frequently; those associated with routine maintenance and tune-up.

In addition to the normal assortment of screwdrivers and pliers you should have the following tools for routine maintenance jobs (your vehicle, depending on the model year, uses both SAE and metric fasteners):

- **SAE/Metric wrenches, sockets and combination open end/box end wrenches in sizes from $\frac{1}{8}$ in. (3mm) to $\frac{3}{4}$ in. (19mm); and a spark plug socket $\frac{13}{16}$ in. (21mm). If possible, buy various length socket drive extensions. One break in this department is that the metric sockets available in the U.S. will all fit the ratchet handles and extensions you may already have ($\frac{1}{4}$ in., $\frac{3}{8}$ in., and $\frac{1}{2}$ in. drive).**



All but the most basic procedure will require an assortment of ratchets and sockets



In addition to ratchets, a good set of wrenches and hex keys will be necessary

- **Jackstands for support.**



A hydraulic floor jack and a set of jackstands are essential for lifting and supporting the vehicle



An assortment of pliers will be handy, especially for old rusted parts and stripped bolt heads



You should have various screwdrivers, a hammer, chisels and prybars in your toolbox



Many repairs will require the use of torque wrench to assure the components are properly fastened



Although not always necessary, using specialized brake tools will save time

- Oil filter wrench.
- Oil filter spout for pouring oil.
- Grease gun for chassis lubrication.



A few inexpensive lubrication tools will make regular service easier

- Hydrometer for checking the battery.
- A container for draining oil.
- Many rags for wiping up the inevitable mess.

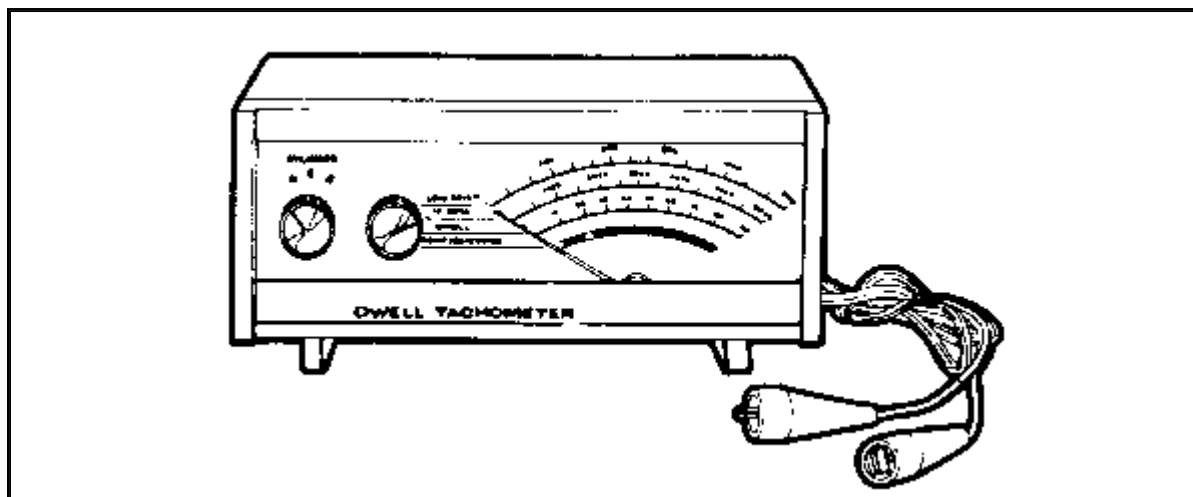


Various pullers, clamps and separator tools are needed for the repair of many components

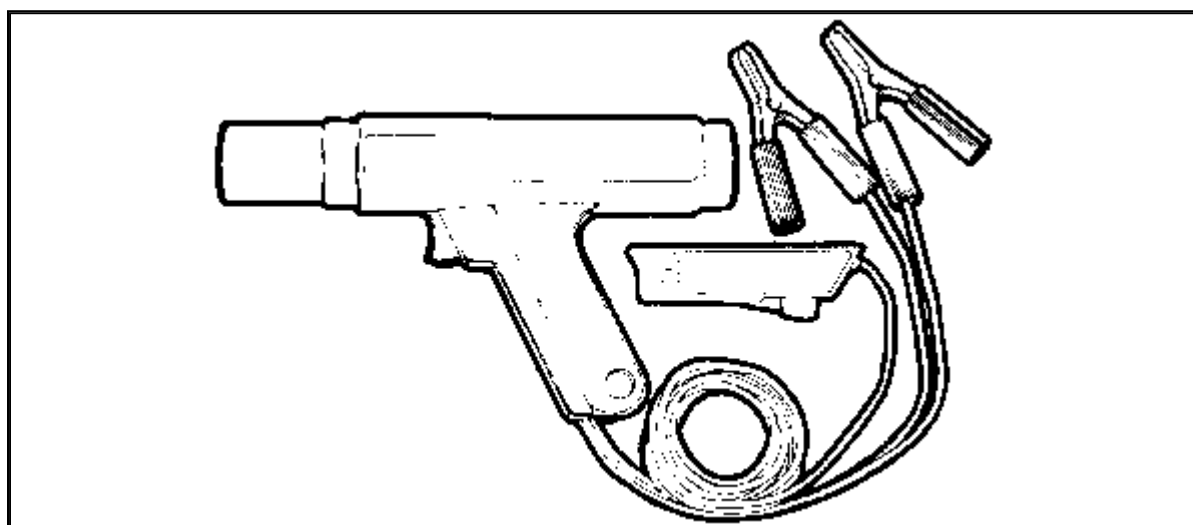
In addition to the above items, there are several others that are not absolutely necessary, but handy to have around. These include oil-dry (cat box litter works just as well and may be cheaper), a transmission funnel and the usual supply of lubricants, antifreeze and fluids, although these can be purchased as needed. This is a basic list for routine maintenance, but only your personal needs and desires can accurately determine your list of necessary tools.

The second list of tools is for tune-ups. While the tools involved here are slightly more sophisticated, they need not be outrageously expensive. There are several inexpensive tach/dwell meters on the market that are every bit as good for the average mechanic as a professional model. Just be sure that it goes to at least 1200-1500 rpm on the tach scale and that it works on 4 and 6 cylinder engines. A basic list of tune-up equipment could include:

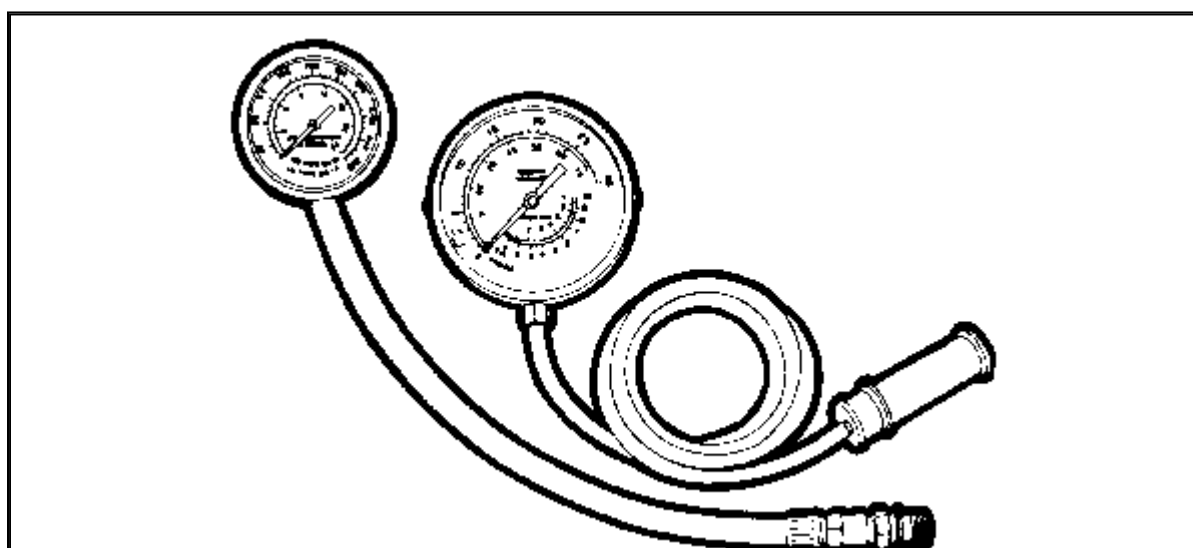
- **Tach-dwell meter.**
- **Spark plug wrench.**
- **Timing light (a DC light that works from the vehicle's battery is best, although an AC light that plugs into 110V house current will suffice with some sacrifice in brightness).**
- **Wire spark plug gauge/adjusting tools.**
- **Set of feeler gauges. In addition to these basic tools, there are several other tools and gauges you may find useful. In fact, some of these you may come to decide you can't live without. These include:**
- **Compression gauge. The screw-in type is slower to use, but eliminates the possibility of a faulty reading due to escaping pressure.**
- **Manifold vacuum gauge.**
- **A test light.**
- **Volt/ohmmeter (or multimeter).**
- **Induction meter. This is used for determining whether or not there is current in a wire, and may come in handy if a wire is broken somewhere in a wiring harness.**



Dwell/tachometer unit (typical)



Inductive type timing light



Compression gauge and a combination vacuum/fuel pressure gauge

Normally, the use of special factory tools is avoided for repair procedures, since these are not readily available for the do-it-yourself mechanic. When it is possible to perform the job with more commonly available tools, it will be pointed out, but occasionally, a special tool was designed to perform a specific function and should be used. Before substituting another tool, you should be convinced that neither

your safety nor the performance of the vehicle will be compromised.

When a special tool is indicated, it will be referred to by the manufacturer's part number. Some special tools are available commercially from major tool manufacturers. Others for your car can be purchased from your Ford/Mercury dealer or from the Owatonna Tool Co., Owatonna, Minnesota 55060.

As a final note, you will probably find a torque wrench necessary for all but the most basic work. The beam type models are perfectly adequate, although the newer click types are more precise.

Torque specification for each fastener will be given in the procedure in any case that a specific torque value is required. If no torque specifications are given, use the following values as a guide, based upon fastener size:

Bolts marked 6T

- **6mm bolt/nut-5-7 ft. lbs. (7-9 Nm)**
- **8mm bolt/nut-12-17 ft. lbs. (16-23 Nm)**
- **10mm bolt/nut-23-34 ft. lbs. (31-46 Nm)**
- **12mm bolt/nut-41-59 ft. lbs. (56-80 Nm)**
- **14mm bolt/nut-56-76 ft. lbs. (76-103 Nm)**

Bolts marked 8T

- **6mm bolt/nut-6-9 ft. lbs. (8-12 Nm)**
- **8mm bolt/nut-13-20 ft. lbs. (18-27 Nm)**
- **10mm bolt/nut-27-40 ft. lbs. (37-54 Nm)**
- **12mm bolt/nut-46-69 ft. lbs. (62-93 Nm)**
- **14mm bolt/nut-75-101 ft. lbs. (102-137 Nm)**

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