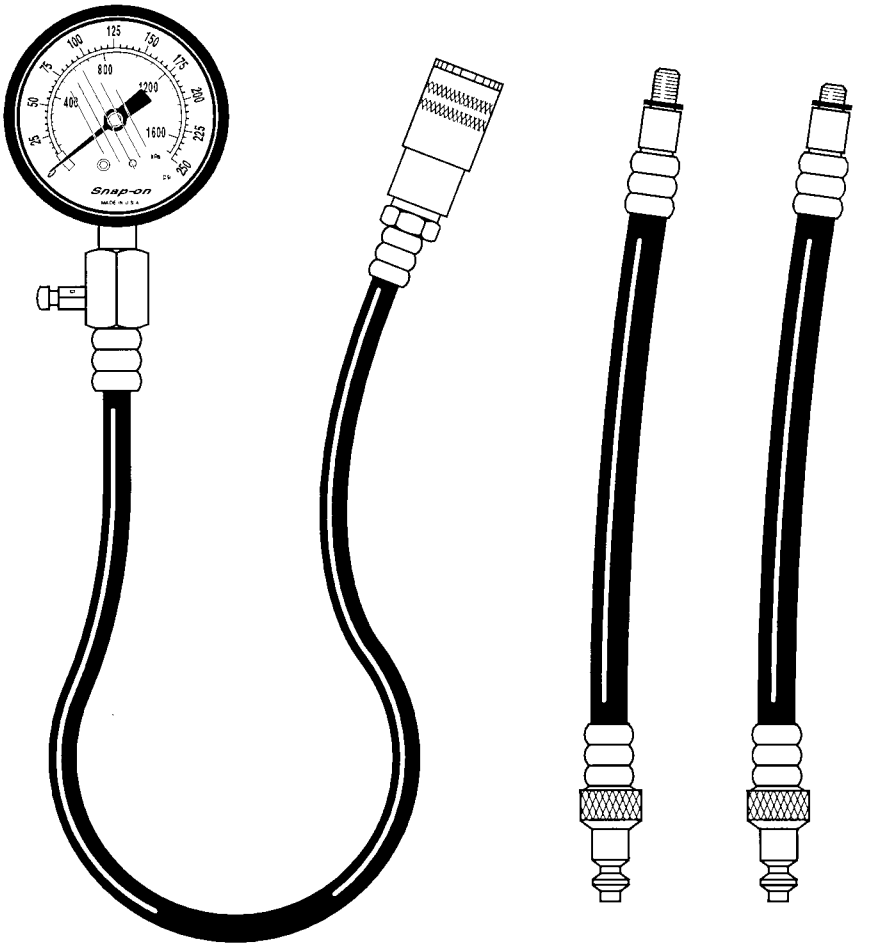
Snap-on

MT308L

Compression Gauge Set



MT308L
Compression Gauges

Safety Information

IMPORTANT SAFETY INSTRUCTIONS

This manual contains important safety and operating instructions for the ***Snap-on*** Compression Gauges. Refer to the information in this manual often for safe operation.

Read All Instructions

Read, understand and follow all safety messages and instructions in this manual and on the test equipment. Safety messages in this section of the manual contain a signal word, a three-part message, and, in some instances, an icon. An icon, when present, gives a graphical description of the potential hazard.

⚠ WARNING

Risk of flying particles.

- **Wear safety goggles, user and bystander.**
- **Do not exceed 250 psi (1700 kPa).**
- **Be sure all connections are secure.**
- **Do not use gauges while engine is running.**

Flying particles can cause eye injury.

⚠ WARNING

Risk of sudden vehicle movement.

- **Set the gear selector in neutral for a standard transmission or park for an automatic transmission. Set the parking brake. If the vehicle has an automatic parking brake release, disconnect the release mechanism for testing and reconnect when testing is completed.**
- **Disable the ignition system while testing by disconnecting battery power from the coil or grounding the coil secondary wire.**

A moving vehicle can cause death or injury.

Risk of entanglement.
Keep yourself, clothing and test equipment clear of moving parts.
Entanglement in moving parts can cause injury

⚠ WARNING

Risk of burns.
Do not touch hot engine components.
Hot components can cause injury.

⚠ WARNING

Glass lens on gauge face can break.
- **Do not drop or hit gauge face.**
- **Do not use gauge if glass lens is cracked or broken.**

Broken glass can cause injury.

SAVE THESE INSTRUCTIONS

Compression Gauges

Snap-on MT308L, MT24K and MT27B compression gauges are designed for use on spark-ignited gasoline engines that do not exceed 250 psi compression. They have a 0–250 psi (0–1700 kPa) test range that is divided into 5 psi (50 kPa) increments. The gauges maintain the highest compression test reading and are reset to zero with a pushbutton release valve.

Snap-on gasoline engine compression gauges are available in two styles.
- Cone type
  - — MT24K and MT27B are cone-type gauges. The cone tip is inserted into spark plug holes for testing and the gauge is held in position by hand.
- Hose type
  - — The MT308L gauge set includes two hose-type adaptors that thread into the spark plug hole and connect at a quick coupler on the gauge hose:
    - M14 x 1.25 standard reach adaptor, part number MT26J200, or
    - M14 x 1.25 long reach adaptor, part number MT26J300.

Functional Description

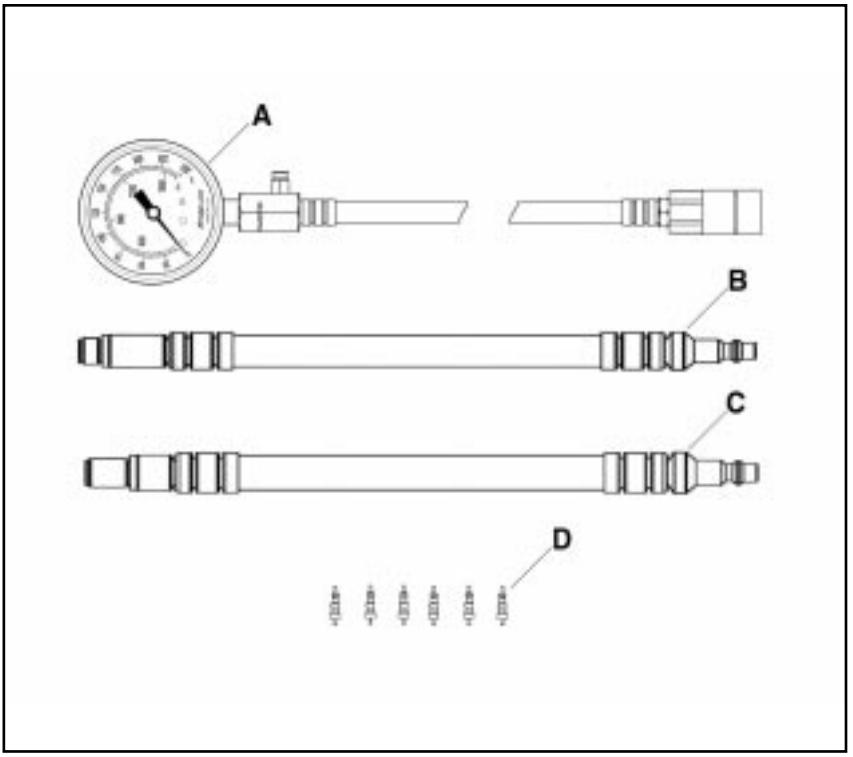


Figure 1: MT308L Compression Gauge Set

A — Compression Gauge

Displays cylinder pressure at cranking speed for an individual cylinder. Part number EAA0166K00A.

✓ When the gauge is not pressurized, the gauge needle may be anywhere in the zero box without affecting the accuracy of the gauge.

B — M14 x 1.25 Standard Reach Adaptor

Connects the compression gauge to a cylinder that has standard length spark plug threads. Part number MT26J200.

C — M14 x 1.25 Long Reach Adaptor

Connects the compression gauge to a cylinder that has extra length spark plug threads. Part number MT26J300.

D — Check Valve (6)

Replacement for the one-way valve located in the cone tip or threaded end of the threaded adaptor. Part number MT24DA1.

Before Testing

The compression test consists of measuring cylinder pressure at cranking speed. Use the test results to determine the condition of pistons, rings, valves, and gaskets. It is good procedure to perform a compression test prior to performing a tune-up.

Certain conditions affect the compression readings. These conditions must be understood before testing.

- If the engine turns slowly, gauge readings are lower. Be sure battery and starter system are in good condition. The engine must turn at the same speed for all cylinders.
- Open throttle plates and choke plate to allow the engine to breathe. Be sure air is not restricted from entering into the cylinders.
- Temperature of the engine must be at operating temperature. A cold engine does not insure proper tolerances, lubrication at the rings, or proper ring seating.

IMPORTANT

Engines with aluminum heads require special care to prevent stripping the spark plug threads. Since aluminum cylinder threads are less likely to strip when the engine is cold, it is good procedure to prepare for a compression test by loosening and retightening the spark plugs when the engine is cold.

✓ Before removing spark plugs, always clean dirt from around the plugs by directing an air nozzle at the base of the plug. This insures proper seating of the compression adaptor and the new spark plugs. Apply a drop of oil to threads and hand tighten when installing and removing compression adaptors.

- Remove all spark plugs from the engine. Failure to remove all spark plugs could affect the test results.

Test Procedure

⚠ WARNING

- **Set the gear selector in neutral for a standard transmission or park for an automatic transmission. Set the parking brake. If the vehicle has an automatic parking brake release, disconnect the release mechanism for testing and reconnect when testing is completed.**
- **Disable the ignition system while testing by disconnecting battery power from the coil or grounding the coil secondary wire.**
- **Read, understand and follow *Safety Information* in front of this manual.**

Disabling the Ignition System

- Remote Coil
  - — Disconnect the coil wire from the distributor cap. Ground the coil wire.
- Integral Coil Distributor
  - — Disconnect the primary and trigger wire harness from the distributor.
- Distributorless Ignition
  - — Disconnect the power supply/trigger wire harness from the ignition control module.

Testing Tip

- ❒ Turn the ignition switch to the "OFF" position and use a remote starter switch to crank the engine to disable most electronic ignitions for a compression test.
- ❒ If none of the methods in this section can be used to disable an ignition system, ground each spark plug wire to the engine with a short jumper wire.

1. Insert threaded adaptor or cone tip into cylinder and hold firmly in place.

2. Crank the engine at least 4 "puffs" per cylinder.

   ✓ For a valid test, crank engine the same amount for each cylinder.

3. Write down the gauge readings for the first "puff" and the fourth "puff." Use these readings for diagnosis.

4. Release pressure by pressing the release button.

Gauge Readings

The importance of a compression test is to determine variations in compression between cylinders. Compression is considered normal if the lowest reading is 75% or more of the highest reading.

highest reading x .75 = acceptable low

Example 1

Readings

Cyl. 1	Cyl. 2	Cyl. 3	Cyl. 4	Cyl. 5	Cyl. 6
130 psi	140 psi	125 psi	125 psi	135 psi	120 psi

Results

Highest 140 psi Lowest 120 psi
The lowest reading, 120, does not fall below the acceptable low limit of 105.

Indication

An average mileage car with normal wear.

Example 2

Readings

Cyl. 1	Cyl. 2	Cyl. 3	Cyl. 4	Cyl. 5	Cyl. 6
140 psi	135 psi	145 psi	90 psi	140 psi	130 psi

Results

Highest 145 psi Lowest 90 psi
The lowest reading, 90 falls below the acceptable low limit of 105.

Indication

Cylinder 4 is below 109 and a problem exists in this cylinder.

Example 3

Readings

Cyl. 1	Cyl. 2	Cyl. 3	Cyl. 4	Cyl. 5	Cyl. 6
70 psi	90 psi	80 psi	85 psi	70 psi	75 psi

Results

Highest 90 psi Lowest 70 psi
The lowest reading, 70, does not fall below the seemingly acceptable low limit of 67.5. However, all reading below 100 psi require careful consideration.

- — Be sure all conditions for checking are right including BATT., TEMP., INLET AIR, etc., and
- — Check manufacturer's specifications.

Indication

A high mileage engine in poor condition.

Diagnosis

Normal compression increases evenly and quickly from start to end of test on each cylinder.

- If compression is low on first stroke, builds up on following strokes, but does not reach normal, leaking piston rings are indicated.
- If compression is low on first stroke and does not build up on following strokes, leaking valves are indicated. Recheck cylinders with low compression by squirting oil into the cylinder through the spark plug hole (approximately 3 squirts from a plunger type oiler) and retesting.
- If compression improves, a ring problem is indicated.
- If compression does not increase, a valve problem is indicated.
- Low readings from two adjacent cylinders may indicate a leaky head gasket between cylinders.
- An engine that exhibits slightly higher readings than the manufacturer's specifications could indicate excessive carbon deposits in the combustion chamber or on the piston.

Additional Tests

- Test for cylinder leakage using the Cylinder Leakage Tester (MT324 or EEPV309A) with any of the available compression adapters by removing the check valve from the adaptor. Refer to *Parts Listing, Optional Accessories for the MT308L* in this manual.
- Connect adaptors to shop air to hold valves closed while changing valve stem seals or valve springs (120 psi max).

Maintenance

If the gauge does not seem to be operating properly, remove the check valve and inspect for dirt or carbon which could cause improper seating. Cleaning the valve often restores the gauge to proper working order.

The check valves used in ***Snap-on*** compression gauges are made specially to withstand the high pressure and heat encountered during testing. Replace only with the ***Snap-on*** MT24DA1 check valve. Do not use a standard tire valve, as improper operation results.

Parts Listing

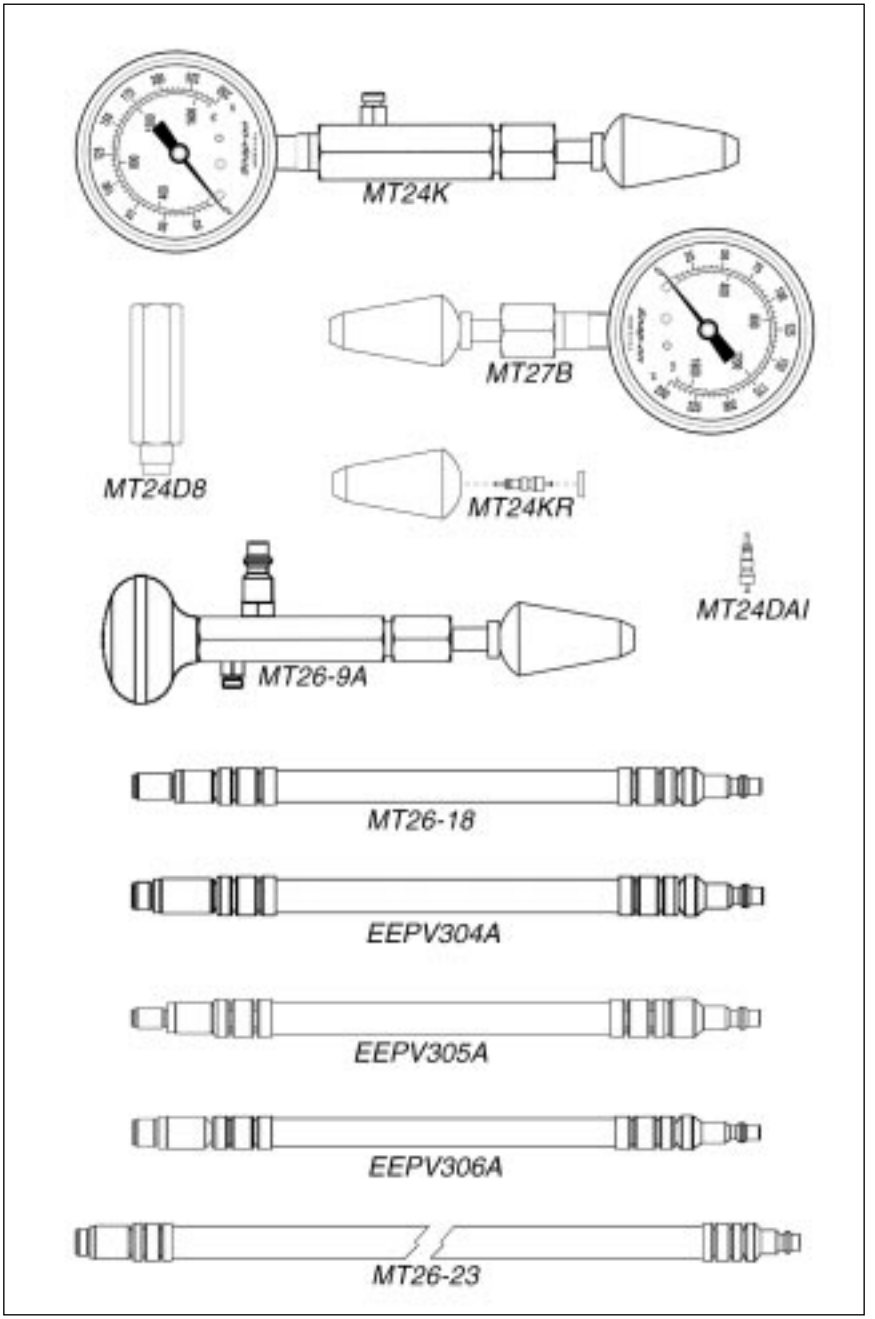
Compression gauge assembly	EAA0166K00A
14 mm (M14 x 1.25) standard reach adaptor	MT26J200
14 mm (M14 x 1.25) long reach adaptor	MT26J300
Storage case	PB128
Check valve (6)	MT24DA1

Optional Accessories for MT308L

18 mm (M18 x 1.5) standard reach adaptor	MT26J400
10 mm (M10 x 1.00) adaptor	EEPV304A
12 mm (M12 x 1.25) adaptor	EEPV306A
14 mm (M14 x 1.25) standard reach adaptor with long hose, 18”	MT26-23
10 mm (M10 x 1.00) long reach adaptor	EEPV305A
Universal cone-type adaptor	MT26-9A

Cone-type Compression Gauges

Cone-type compression gauge	MT24K
Short cone-type compression gauge for VW type 1	MT27B
Extender for MT24K	MT24D8
Service kit for MT24, MT27 gauges	MT24BR
Replacement check valve	MT24DA1


MT24K
MT27B
MT24D8
MT24KR
MT24DAI
MT26-9A
MT26-18
EEPV304A
EEPV305A
EEPV306A
MT26-23

Snap-on Compression Gauges
Limited One (1) Year Warranty

SNAP-ON TOOLS COMPANY WARRANTS THIS COMPRESSION GAUGE TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR ONE (1) YEAR FROM THE DATE OF PURCHASE BY THE ORIGINAL CONSUMER. ***Snap-on*** will repair or replace this product if it fails to give satisfactory service due to defective workmanship or materials. Repair or replacement shall be at the election and expense of ***Snap-on*** Tools Company. Products must be returned to ***Snap-on*** or a ***Snap-on*** dealer for warranty service, unless such return is unreasonable. Proof of purchase date is required to make a warranty claim.

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