



Province of the
EASTERN CAPE
EDUCATION

DIRECTORATE SENIOR CURRICULUM MANAGEMENT (SEN-FET)

HOME SCHOOLING SELF-STUDY WORKSHEET ANSWER SHEET

SUBJECT	AUTOMOTIVE	GRADE	12	DATE	APRIL 2020
TOPIC	TOOLS AND EQUIPMENT	TERM 1 REVISION	(√)	TERM 2 CONTENT	(Please tick)

Memorandum

1.1

ITEM	NAME
A	Gauge
B	Connector or spark plug adaptor
C	Main flexible pipe
D	Adaptor pipe

1.2 Purpose of the cylinder leakage tester:

To check gas leakages from engine cylinders.

1.3 Correct sequence for set-up procedure of the cylinder leakage tester on an internal combustion engine:

- Turn the engine until both valves on cylinder no. 1 are closed.
- Unscrew the spark plug
- Screw the spark plug adaptor into the spark plug hole.
- Use the spanner to lock the crankshaft pulley so that it does not turn.
- Close the relief valve on the tester.
- Couple the compressed air pipe to the tester and to the adaptor in the spark plug hole.
- Couple the compressed air pipe with the main supply.
- Open the relief valve on the tester slowly.
- Note the reading on the tester. The reading will determine the amount of gas leakage taking place in the engine cylinder.

2. Engine cylinder compression tester:

2.1 Purpose of performing cylinder compression test:

- To determine the cylinder pressure
- To determine the conditions of valves
- The condition of piston rings

3 TWO gases that the exhaust gas analyser analyses:

- Carbon monoxide (CO)
- Carbon dioxide (CO₂)
- Oxygen (O)
- Nitrogen Oxide (NO_x)
- Sulphur dioxide (SO₂) (Any 2)

4. The purpose of the turn tables with reference to the wheel alignment:

- To enable the front wheels to be turned through 20° in and zero the bubble gauge and turn 20° out for the checking of castor reading.

5. THREE outcomes of dynamic wheel balancing is to determine:

- The plane of the imbalance
- The extent of the unbalancing forces
- The sense of direction of the forces, that is clockwise or anti - clockwise

6.1 Identifying the wheel alignment equipment:

6.1.1 Periscope optical alignment gauge. **OR** Dunlop gauge optical alignment.

6.1.2 Labelling:

- 1 - Contact
- 2 - Mirror gauge
- 3 - Periscope
- 4 - Periscope gauge
- 5 - Height slot/Height bar
- 6 - Toe gauge
- 7 - Calculator
- 8 - Stand

6.2 Safety rules when using emission gas analyser:

- The inlet hose must not be constricted in anyway.
- The hose connection must be airtight and the condenser valve closed.
- There must be no leaks on the exhaust.
- The condensate must be blown out of the hose regularly.
- The hoses must be disconnected from the analyser so that the pump will not be damaged.
- The condenser must be drained after each use.
- The paper filter must be changed when turned light grey.
- The fuel filter on the condenser must be changed regularly. **(Any 4)**

6.3 Set-up procedure for card type compressor tester:

- Remove the spark plug
- Put a new card in the tester
- Depress the throttle valve and crank the engine for at least four revolutions
- Activate the tester and move to cylinder
- Do the same for all cylinders
- Remove the card and compare with specification

6.4

ITEM	EQUIPMENT	USE
6.4.1	Gas analyser	To analyse the gas coming out of the exhaust of a motor vehicle.
6.4.2	Wheel balancer	To balance the wheel of a vehicle for static and dynamic balance.
6.4.3	Compression tester	To measure the pressure the piston will create during compression stroke.