



Module Number:

03-02

Subject: M272 Sensors

Objective:

At the conclusion of this module, you will be able to:

- Describe calculated alternator torque
- Describe swirl flap operation
- Describe camshaft advance/retard
- Test MAF

Vehicle and tools required:

- R171 with M272 engine
- SDS/DAS equipment

Required material:

- Copy of classroom presentation materials “M272”

Instructions:

1. Follow the instructions and answer the questions.
2. Ask your instructor if assistance is needed.
3. Stop at “**Instructor check point** _____” for signature.

Connect SDS to vehicle.
Enter into M.E.
Enter Actual Values.
Enter Generator.
Start engine

1. What is the calculated alternator current value?

2. What does this value represent?

3. What is the calculated alternator torque?

4. What does this value represent?

5. How does the alternators actual values reach M.E?

Enter into complete list of fault codes.
Find fault code 0365 (PO620) and enter.

6. What are the 3 preconditions for alternator testing?

Enter Actuations.
Enter Y22/9 Swirl Flaps switch over valve. (Umschaltventil Tumbleklappe Saugrohr)

7. What sensors are used to monitor the swirl flaps position?

8. What type of sensor is used?

9. What is the voltage of these sensors?

Operated _____ not operated _____

10. Are the swirl flaps used at full load or part load?

Enter Actuators

Enter Y22/6 variable intake manifold switchover valve.

11. What are the test requirements?

12. Perform actuation. Was actuation ok?

13. How can the vacuum element work if the engine is not running?

Instructor check point _____

Enter Actuation.

Enter Y49/5 right camshaft intake solenoid.

14. What are the test requirements?

15. What is the position of the camshaft at idle?

Perform actuation.

16. What is the position of the camshaft during activation?

17. Did the camshaft advance or retard?

18. How many degrees did the camshaft move?

Enter Y49/7 right camshaft exhaust solenoid.

19. What is the position of the camshaft at idle?

Perform actuation.

20. What is the position of the camshaft during the activation?

21. Did the camshaft advance or retard?

22. How many degrees did the camshaft move?

Instructor check point _____

Enter complete list of guided test.

Enter check component B2/5. (Hot film MAF sensor)

Enter Test signal by means of actual value.

23. What are the test requirements?

24. What is the actual value?

25. What is the specified value?

26. What is the MAF sensor measuring if the engine is not running

27. If this value is not ok what are the possible cause

28. If this value is ok what are the possible cause?

(Use as appropriate)

Perform a short test on your vehicle, erase all DTCs and then repeat the short test to insure there aren't any permanent faults. Show your instructor the results of your short test.

Instructor check point _____

If you have noticed any parts that need to be replaced on this vehicle, please inform your instructor now.

Instructor check point _____