

## Contents

|  |           |
|--|-----------|
| <b>23 - Mixture preparation - injection</b> .....  | <b>1</b>  |
| <b>1 Safety precautions and rules for cleanliness</b> .....                                  | <b>1</b>  |
| 1.1 Safety precautions when working on the injection and glow plug system .....              | 1         |
| 1.2 Safety precautions when using testers and measuring instruments during a road test ..... | 2         |
| 1.3 Safety precautions when working on vehicles with start/stop system .....                 | 2         |
| 1.4 Safety precautions when working on the fuel system .....                                 | 3         |
| 1.5 Rules for cleanliness and instructions for working on fuel system .....                  | 3         |
| 1.6 Checking vacuum system .....   | 4         |
| <b>2 Overview of fitting locations - injection system</b> .....                              | <b>6</b>  |
| <b>3 Overview - fuel system</b> .....  | <b>14</b> |
| <b>4 Filling and bleeding fuel system</b> .....  | <b>16</b> |
| <b>5 Air cleaner</b> .....   | <b>17</b> |
| 5.1 Exploded view - air cleaner .....  | 17        |
| 5.2 Removing and installing engine cover panel .....   | 18        |
| 5.3 Removing and installing air filter element .....   | 19        |
| 5.4 Removing and installing air cleaner (bottom section) .....                               | 20        |
| 5.5 Removing and installing air mass meter G70 .....   | 22        |
| <b>6 Intake manifold</b> .....   | <b>23</b> |
| 6.1 Exploded view - intake manifold .....  | 23        |
| 6.2 Removing and installing throttle valve module J338 .....                                 | 24        |
| 6.3 Removing and installing intake manifold .....  | 24        |
| <b>7 High-pressure pump</b> .....  | <b>28</b> |
| 7.1 Exploded view - high-pressure pump .....   | 28        |
| 7.2 Removing and installing high-pressure pump .....   | 29        |
| 7.3 Performing first fuel filling after installing high-pressure pump .....                  | 32        |
| 7.4 Checking fuel system for leaks .....   | 33        |
| <b>8 Injectors</b> .....   | <b>34</b> |
| 8.1 Exploded view - injectors .....  | 34        |
| 8.2 Checking injectors .....   | 37        |
| 8.3 Performing adaption of correction values for injectors .....                             | 37        |
| 8.4 Checking return flow rate of injectors with engine running .....                         | 38        |
| 8.5 Checking return flow rate of injectors at starter cranking speed .....                   | 40        |
| 8.6 Checking for injectors sticking open .....   | 42        |
| 8.7 Removing and installing injectors .....  | 43        |
| 8.8 Renewing injector seals .....  | 49        |
| <b>9 Senders and sensors</b> .....   | <b>51</b> |
| 9.1 Removing and installing fuel rail .....  | 51        |
| 9.2 Installing high-pressure pipes .....   | 53        |
| 9.3 Checking fuel pressure (low pressure) .....  | 54        |
| 9.4 Checking fuel pressure regulating valve N276 .....                                       | 56        |
| 9.5 Removing and installing fuel pressure regulating valve N276 .....                        | 58        |
| 9.6 Removing and installing fuel pressure sender G247 .....                                  | 59        |
| <b>10 Lambda probe</b> .....   | <b>63</b> |
| 10.1 Exploded view - Lambda probe and exhaust gas temperature senders .....                  | 63        |
| 10.2 Removing and installing Lambda probe G39 with Lambda probe heater Z19 .....             | 64        |
| 10.3 Removing and installing pressure differential sender G505 .....                         | 65        |
| <b>11 Engine control unit</b> .....  | <b>66</b> |
| 11.1 Wiring and component check with test box V.A.G 1598/42 .....                            | 66        |
| 11.2 Removing and installing engine control unit J623 .....                                  | 67        |
| <b>28 - Glow plug system</b> .....   | <b>71</b> |

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>Glow plug system</b>                                      | <b>71</b> |
| 1.1      | Checking glow plug system                                    | 71        |
| 1.2      | Exploded view - glow plugs, Hall sender, engine speed sender | 71        |
| 1.3      | Removing and installing glow plugs                           | 72        |
| 1.4      | Removing and installing Hall sender G40                      | 74        |
| 1.5      | Removing and installing engine speed sender G28              | 75        |