Retrofit Multi-Function Steering Wheel (MFL)  
Cruise Control System (GRA)  
series-identical retrofit for  
BMW 5 Series (E 39) left and right-hand drive vehicles  

Installation time approx. 1.5 hours, which can vary according to the condition and fittings of the vehicle.  
Retrofit/Installation Kit No. 65 71 0 026 292/293/286  
Retrofit/Installation Kit No. 65 71 0 025 425 / 65 71 0 141 897
## Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Preparatory work</td>
<td>13</td>
</tr>
<tr>
<td>2. Installation and cable-laying diagram</td>
<td>14</td>
</tr>
<tr>
<td>3. Connection overview of cable set GRA/MFL</td>
<td>15</td>
</tr>
<tr>
<td>4. Install cable set GRA/MFL and connect</td>
<td>16</td>
</tr>
<tr>
<td>5. Install MFL steering wheel</td>
<td>18</td>
</tr>
<tr>
<td>6. Finalising operations/coding</td>
<td>19</td>
</tr>
<tr>
<td>7. Circuit diagram of cruise control system BMW 5 Series (E 39)</td>
<td>20</td>
</tr>
</tbody>
</table>
Important notes

Target Group
Target group for these installation instructions are technical personnel trained on BMW vehicles, who have special knowledge of body electronics.

Tasks:
Carry out all maintenance, repair and installation work on BMW vehicles on own authority.
All operations should be carried out with the aid of the current BMW
- repair instruction manuals
- circuit diagrams
in a logical sequence using the prescribed tools (special tools) whilst observing the applicable health and safety regulations.

Assembly notes
All operations are shown on a left-hand drive vehicle. On right-hand drive vehicles, proceed in the same sequence but in mirror image.

Should specified pin spaces be already assigned, bridges, double crimping or parallel connections will have to be made.

⚠ Take care to see that cables do not get kinked or damaged when they are being installed as otherwise faults may occur which can only be localised later by extensive reworking. Costs arising in this way will not be reimbursed by BMW.

⚠ Tightening torques for screwed connections should be observed. Please refer to the parts information system (TIS) for the required tightening torques.

Required tools and ancillary materials

Set of flat-tip screwdrivers
Set of Phillips screwdrivers
Set of TORX wrenches
Hand lamp
Drilling machine
Set of hexagon-socket screw keys (Allen keys)
Set of 1/2 inch socket wrenches
Crimping pliers for AMP contacts
## 1. Preparatory work

<table>
<thead>
<tr>
<th>Note safety regulations on dealing with components of the airbag system.</th>
<th>TIS AW no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 34</td>
<td></td>
</tr>
</tbody>
</table>

**Carry out short test**

| Disconnect negative terminal of the battery | 12 00 ... |

| The following components should be disassembled in advance: |
|---|---|
| Steering wheel | 32 33 00 |
| Glove box | 51 16 360 |
| Lower side trim panel of the A-pillar in the front passenger footwell | |
| Trim panel of foot controls | |
| Shroud of lower part of steering column | |
| Side trim panels of the centre console | |
| Lid of the E box | |
2. Installation and cable-laying diagram

Key

1. Connection multi-functional steering wheel
2. Cable set GRA/MFL
3. E box
4. Light module A3
### 3. Connection overview of cable set GRA/MFL

#### Diagram
![Diagram of cable connections](image)

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
<th>Signal</th>
<th>Cable colour/ cross section</th>
<th>Connection point in vehicle</th>
<th>Code design./ plug-in place</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Blade terminal contact</td>
<td>DME/ DDE</td>
<td>ye/bk Ø 0.35 mm²</td>
<td>At 10-pole green connector underneath the steering column</td>
<td>X10170, PIN 8</td>
</tr>
<tr>
<td>A2</td>
<td>Blade terminal contact</td>
<td>I-/KBus</td>
<td>wh/gr/ye Ø 0.35 mm²</td>
<td>At 10-pole green connector underneath the steering column</td>
<td>X10170, PIN 9</td>
</tr>
<tr>
<td>A3</td>
<td>Blade terminal contact</td>
<td>Term. R</td>
<td>vi/ye Ø 0.50 mm²</td>
<td>At 10-pole green connector underneath the steering column</td>
<td>X10170, PIN 10</td>
</tr>
<tr>
<td>A4</td>
<td>Twin-lead terminal</td>
<td>Term. R</td>
<td>vi/ye Ø 0.50 mm²</td>
<td>At light module A3, 56-pole connector</td>
<td>X10117, PIN 13</td>
</tr>
<tr>
<td>A5</td>
<td>Twin-lead terminal</td>
<td>I-/KBus</td>
<td>wh/gr/ye Ø 0.35 mm²</td>
<td>At light module A3, 56-pole connector</td>
<td>X10117, PIN 36</td>
</tr>
<tr>
<td>A6</td>
<td>Blade terminal contact</td>
<td>DME/ DDE</td>
<td>ye/bk Ø 0.35 mm²</td>
<td>At control unit DME/DDE A60004 40-pole connector</td>
<td>X60004, PIN 27</td>
</tr>
</tbody>
</table>
4. Install cable set GRA/MFL and connect

Unplug green, 10-pole connector X10170 from the switch support (1). Install cable set GRA/MFL along the series wiring harness (2) to the connector X10170. Decouple connector X10170 and plug in branch cables A1 – A3 as follows:
- A1, cable colour yellow/black, in Pin 8
- A2, cable colour white/grey/yellow, in Pin 9
- A3, cable colour violet/yellow, in Pin 10

Install branch cables A4 – A6 behind the heater/air conditioner to the glove box.

Install branch cable A6 behind the glove box through the rubber grommet into the E box. Pull out 40-pole connector X60004 from the DME/DDE control unit and decouple it.

Plug branch cable A6, cable colour yellow/black, into Pin 27. Couple connector X60004 again and connect to the DME/DDE control unit.

Install branch cables A4 and A5 to the light module.

Unplug connectors (1, 2 and 3) from the light module (4).
4. Install cable set GRA/MFL and connect

At the 56-pole connector X10117, cut the following cables approx. 10 cm away from the connector:

Violet/yellow cable (terminal R) coming out of Pin 13 and white/grey/yellow cable (I/K Bus) coming out of Pin 36.

In each case provide the cable ends with an AMP annular and pin contact and put on housing.

Connect branch cable **A4**, cable colour violet/yellow, to the violet/yellow cable coming out of Pin 13 and connect branch cable **A5**, cable colour white/grey/yellow, to the white/grey/yellow cable coming out of Pin 36.
5. Install MFL steering wheel

**Vehicles with four-spoke steering wheel only**

- The markings on the steering wheel and steering shaft must match.

Put on existing four-spoke steering wheel (1) and fasten with screw (2).

- Observe tightening torque as per TIS.

Put on airbag unit (1) which is supplied with the installation kit and screw it on.

- Observe tightening torque as per TIS.

**Vehicles with three-spoke steering wheel only**

- The markings on the steering wheel and the steering shaft must match.

Put on existing three-spoke steering wheel (1) and fasten with screw (2).

- Observe tightening torque as per TIS.

Fit existing airbag unit (1).

- Observe tightening torque as per TIS.
6. Finalising operations/coding

Fasten all plug-in connectors again and put on connectors. Reassemble the vehicle in the reverse sequence of disassembly. Carry out a function test.

This retrofit package is not coding-relevant.
Key

A3   Light modul
A60004 Control unit DME/DDE
X10117 Connector, 56-pole, on the light module
X10170 Connector, 10-pole, on the switch support
X60004 X60004 Connector, 40-pole, on the control unit DME/DDE

7. Circuit diagram of cruise control system BMW 5 Series (E39)