INSTALLATION INSTRUCTIONS: Viewline 52 mm

veratron®

Temperature gauge, pressure gauge, rudder angle gauge, trim gauge, fuel gauge, fresh water gauge for lever-type sensor	B000046	11/18 GB	1

This manual is related to the following product

A2C60001078	MODULE TEMP WATER 250F/120C VDO 12/24 VL
A2C60001028	MODULE OIL 80PSI/5BAR 10-180 12/24 VLB
A2C59514170	VLB TempWa 12/24V 52 120C D EU DL rb A
A2C59514111	VLB PressOil 12/24V 52 10bar D EU DL rb
A2C59514154	VLB Rudder 12/24V 52 40 Stb S DL rb A
A2C60001032	MODULE GEAR 400PSI/30BAR 10-180 12/24VLB
A2C60000994	MODULE OIL 150PSI/10BAR 10-180 12/24 VLB
A2C60001076	VLB_WaTemp12/24V_52_120°C_D_EU_DL_wo _C
A2C59514160	VLB TempOil 12/24V 52 150C D EU DL rb A
A2C59514123	VLB PressOil 12/24V 52 5bar D EU DL rb A
A2C60001025	VLB_OilPress12/24V_52_10 bar_D_EU_DL_wo
A2C60000935	VLW Temp Wa 12V 52 EG dc C Manitou
A2C60001065	MODULE RUDDER -40/+40 52MM 12/24 VLB
A2C60001062	MODULE FRESHWATER E-F 10-180 12/24 VLB
A2C59514097	VLB LevelFw 12/24V 52 1/1 S LT EU DL rb
A2C59514136	VLB PressTr 12/24V 52 25bar D EU DL rb A
A2C60001080	VLW_WaTemp12/24V_52_120°C_D_EU_DL_wo _C
A2C60001035	VLW_OilPress12/24V_52_5 bar_D_EU_DL_wo _
A2C60000972	MODULE OIL 80PSI 10-180 12/24 VLB
A2C60000958	MODULE TEMP WATER 250F VDO 12/24 VLB
A2C60001068	MODULE TRIM MERC/VOLVO/YAMAHA 12/24 VLW
A2C59514141	VLB PressTr 12/24V 52 30bar D EU DL rb A
A2C59514211	VLW PressOil 12/24V 52 5bar D EU DL rw A
A2C60001066	MODULE RUDDER -40/+40 52MM 12/24 VLW
A2C59514893	VLW Rudder 52 12+24 40° STB S DL rw C
A2C59514230	VLW Rudder 12/24V 52 40 Stb S DL rw A
A2C59514915	VLB RUDDER 12+24V 52 40° Stb S DL tc C
A2C59514237	VLW TempWa 12/24V 52 120C D EU DL rw A
A2C60000964	MODULE TEMP WATER 250F VDO 12/24 VLW
A2C59514149	VLB PressTu 12/24V 52 2bar D EU DL rb A
A2C59514180	VLB Trim 12/24V 52 Down S BRAVO DL rb A
A2C59514199	VLW PressOil 12/24V 52 10bar D EU DL rw
A2C59514244	VLW TRIM 12/24V 52 Down S Bravo DL rw A
A2C59514206	VLW PressOil 12/24V 52 25bar D EU DL rw
A2C60000998	MODULE AIR 150PSI/1KkPA 10-180 12/24 VLB
A2C60001038	VLW_OilPress12/24V_52_30 bar_D_EU_DL_wo
A2C60001021	MODULE TEMP WATER 250F/120C VDO 12/24 VL
A2C59501018	Panel, pressure, cluster 2, MAN
A2C59501018	Panel, pressure, cluster 2, MAN
A2C60000957	MODULE TEMP WATER 240F US 12/24 VLB
A2C60000968	VLB_OilPress12/24V_52_10 bar_S_EU_DL_wo
A2C60000961	VLW_WaTemp12/24V_52_120°C_S_EU_DL_wo _C
A2C59514174	VLB TempHy 12/24V 52 120C S EU DL tb A
A2C59514099	VLB LevelFw 12/24V 52 F S LT EU DL rb A
A2C60000962	VLW_OilTemp12/24V_52_150°C_S_EU_DL_wo _C
A2C59514231	VLW TempOil 12/24V 52 150C D EU DL rw A
A2C60000971	MODULE BOOST 30PSI 10-180 12/24 VLB
A2C60001022	MODULE TEMP OIL 300F/150C VDO 12/24 VLW
A2C60001020	VLW_OilTemp12/24V_52_150°C_D_EU_DL_wo _C
A2C60001049	MODULE OIL 400PSI/30BAR 10-180 12/24 VLW
A2C60001045	MODULE OIL 100PSI/7BAR 240-33 12/24 VLW
A2C60001047	MODULE OIL 150PSI/10BAR 10-180 12/24 VLW
A2C59514112	VLB PressOil 12/24V 52 10bar D EU DL tc
A2C59514113	VLB PressOil 12/24V 52 10bar D EU DL tb
A2C59514114	VLB PressOil 12/24V 52 10bar S EU DL tb
A2C59514124	VLB PressOil 12/24V 52 5bar D EU DL tc A
A2C59514128	VLB PressOil 12/24V 52 80psi D EU DL rb
A2C59514137	VLB PressTr 12/24V 52 25bar D EU DL tc A
A2C59514139	VLB PressTr 12/24V 52 25bar S EU DL tb A
A2C59514152	VLB PressTu 12/24V 52 2bar S EU DL tb A
A2C59514201	VLW PressOil 12/24V 52 10bar S EU DL tc
A2C59514202	VLW PressOil 12/24V 52 150psi D EU DL rw
A2C59514208	VLW PressOil 12/24V 52 30bar D EU DL rw
A2C59514213	VLW PressOil 12/24V 52 5bar S EU DL tc A
A2C59514223	VLW PressTr 12/24V 52 400psi D EU DL rw
A2C59514228	VLW PressTu 12/24V 52 2bar S EU DL tc A
A2C60000967	VLB_OilPress12/24V_52_5 bar_S_EU_DL_wo _
A2C60000969	VLB_BrePress12/24V_52_10 bar_S_EU_DL_wo
A2C60000970	VLB_GeaPress12/24V_52_25 bar_S_EU_DL_wo
A2C60000985	VLW_OilPress12/24V_52_10 bar_S_EU_DL_wo
A2C60000990	MODULE OIL 80PSI 10-180 12/24 VLW
A2C60001023	MODULE BOOST 2BAR/30PSI 10-180 12/24 VLB
A2C60001024	VLB_OilPress12/24V_52_5 bar_D_EU_DL_wo _
A2C60001026	VLB_GeaPress12/24V_52_25 bar_D_EU_DL_wo
A2C60001027	VLB_GeaPress12/24V_52_30 bar_D_EU_DL_wo
A2C60001034	MODULE BOOST 2BAR/30PSI 10-180 12/24 VLW
A2C60001036	VLW_OilPress12/24V_52_10 bar_D_EU_DL_wo
A2C60001037	VLW_OilPress12/24V_52_25 bar_D_EU_DL_wo
A2C60001044	MODULE OIL 80PSI/5BAR 10-180 12/24 VLW
A2C60001147	VLB PressBr 12V 52 16bar tb C Renault
A2C60000983	MODULE OIL 80PSI/5BAR 240-33 12/24 VLB
A2C60001030	MODULE OIL 150PSI/10BAR 240-33 12/24 VLB
A2C59514171	VLB TempWa 12/24V 52 120C D EU DL tc A
A2C59514172	VLB TempWa 12/24V 52 120C D EU DL tb A
A2C59514173	VLB TempWa 12/24V 52 120C S EU DL tb A
A2C59514238	VLW TempWa 12/24V 52 120C D EU DL tc A
A2C59514239	VLW TempWa 12/24V 52 120C S EU DL tc A
A2C60000950	VLB_WaTemp12/24V_52_120°C_S_EU_DL_wo _C
A2C60000951	VLB_HyTemp12/24V_52_120°C_S_EU_DL_wo _C
A2C60000952	VLB_WaTemp12/24V_52_120°C_S_EU_DL_wo _C
A2C60002589	VL4W Temp 52 SL tc C MANITOU
A2C59501209	MODULE 16V-5bar-120C-1/1 VDO 12V 110ØVLB
A2C59501210	MODULE 16V-5bar-120C-1/1 VDO 12V 110ØVLW
A2C59513211	VLB_OelTemp12/24V_52_150°C_D_EU_DG_rs_C
A2C59514161	VLB TempOil 12/24V 52 150C D EU DL tc A
A2C59514162	VLB TempOil 12/24V 52 150C D EU DL tb A
A2C59514163	VLB TempOil 12/24V 52 150C S EU DL tb A
A2C59514233	VLW TempOil 12/24V 52 150C S EU DL tc A
A2C59514234	VLW TempOil 12/24V 52 300F D EU DL rw A
A2C60000953	VLB_OilTemp12/24V_52_150°C_S_EU_DL_wo _C
A2C60001077	VLB_OilTemp12/24V_52_150°C_D_EU_DL_wo _C
A2C60001079	MODULE TEMP OIL 300F/150C VDO 12/24 VLB
A2C59501209	MODULE 16V-5bar-120C-1/1 VDO 12V 110ØVLB
A2C59501210	MODULE 16V-5bar-120C-1/1 VDO 12V 110ØVLW

Safety information

- The product was developed, manufactured and inspected according to the basic safety requirements of EC Guidelines and state-of-the-art technology.
- The instrument is designed for use in grounded vehicles and machines as well as in pleasure boats, including non-classified commercial shipping.
- Use our product only as intended. Use of the product for reasons other than its intended use may lead to personal injury, property damage or environmental damage. Before installation, check the vehicle documentation for vehicle type and any possible special features!
- Use the assembly plan to learn the location of the fuel/hydraulic/compressed air and electrical lines!
- Note possible modifications to the vehicle, which must be considered during installation!
- To prevent personal injury, property damage or environmental damage, basic knowledge of motor vehicle/shipbuilding electronics and mechanics is required.
- Make sure that the engine cannot start unintentionally during installation!
- Modifications or manipulations to VDO products can affect safety. Consequently, you may not modify or manipulate the product!
- When removing/installing seats, covers, etc., ensure that lines are not damaged and plug-in connections are not loosened!
- Note all data from other installed instruments with volatile electronic memories.

Safety during installation:

- During installation, ensure that the product's components do not affect or limit vehicle functions. Avoid damaging these components!
- Only install undamaged parts in a vehicle!
- During installation, ensure that the product does not impair the field of vision and that it cannot impact the driver's or passenger's head!
- A specialized technician should install the product. If you install the product yourself, wear appropriate work clothing. Do not wear loose clothing, as it may get caught in moving parts. Protect long hair with a hair net.
- When working on the on-board electronics, do not wear metallic or conductive jewelry such as necklaces, bracelets, rings, etc.
- If work on a running engine is required, exercise extreme caution. Wear only appropriate work clothing as you are at risk of personal injury, resulting from being crushed or burned.
- Before beginning, disconnect the negative terminal on the battery, otherwise you risk a short circuit. If the vehicle is supplied by auxiliary batteries, you must also disconnect the negative terminals on these batteries! Short circuits can cause fires, battery explosions and damages to other electronic systems. Please note that when you disconnect the battery, all volatile electronic memories lose their input values and must be reprogrammed.
- If working on gasoline boat motors, let the motor compartment fan run before beginning work.
- Pay attention to how lines and cable harnesses are laid so that you do not drill or saw through them!
- Do not install the product in the mechanical and electrical airbag area!
- Do not drill holes or ports in load-bearing or stabilizing stays or tie bars!
- When working underneath the vehicle, secure it according to the specifications from the vehicle manufacturer.

No smoking! No open fire or lights!

- Note the necessary clearance behind the drill hole or port at the installation location. Required mounting depth: 65 mm.
- Drill small ports; enlarge and complete them, if necessary, using taper milling tools, saber saws, keyhole saws or files. Debur edges. Follow the safety instructions of the tool manufacturer.
- Use only insulated tools, if work is necessary on live parts.
- Use only the multimeter or diode test lamps provided, to measure voltages and currents in the vehicle/machine or boat. Use of conventional test lamps can cause damage to control units or other electronic systems.
- The electrical indicator outputs and cables connected to them must be protected from direct contact and damage. The cables in use must have sufficient insulation and electric strength and the contact points must be safe from touch.
- Use appropriate measures to also protect the electrically conductive parts on the connected consumer from direct contact. Laying metallic, uninsulated cables and contacts is prohibited.

Safety after installation:

- Connect the ground cable tightly to the negative terminal of the battery.
- Reenter/reprogram the volatile electronic memory values.
- Check all functions.
- Use only clean water to clean the components. Note the Ingress Protection (IP) ratings (IEC 60529).

Electrical connection:

- Note cable cross-sectional area!
- Reducing the cable cross-sectional area leads to higher current density, which can cause the cable cross-sectional area in question to heat up!
- When installing electrical cables, use the provided cable ducts and harnesses; however, do not run cables parallel to ignition cables or to cables that lead to large electricity consumers.
- Fasten cables with cable ties or adhesive tape. Do not run cables over moving parts. Do not attach cables to the steering column!
- Ensure that cables are not subject to tensile, compressive or shearing forces.
- If cables are run through drill holes, protect them using rubber sleeves or the like.
- Use only one cable stripper to strip the cable. Adjust the stripper so that stranded wires are not damaged or separated.
- Use only a soft soldering process or commercially available crimp connector to solder new cable connections!
- Make crimp connections with cable crimping pliers only. Follow the safety instructions of the tool manufacturer.
- Insulate exposed stranded wires to prevent short circuits.
- Caution: Risk of short circuit if junctions are faulty or cables are damaged.
- Short circuits in the vehicle network can cause fires, battery explosions and damages to other electronic systems. Consequently, all power supply cable connections must be provided with weldable connectors and be sufficiently insulated.
- Ensure ground connections are sound.
- Faulty connections can cause short circuits. Only connect cables according to the electrical wiring diagram.

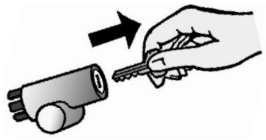
- If operating the instrument on power supply units, note that the power supply unit must be stabilized and it must comply with the following standard: DIN EN 61000, Parts 6-1 to 6-4.

INSTALLATION INSTRUCTIONS: Viewline 52 mm

Temperature gauge, pressure gauge, rudder angle gauge, trim gauge, fuel gauge, fresh water gauge for lever-type sensor	B000046	11/18 GB	3

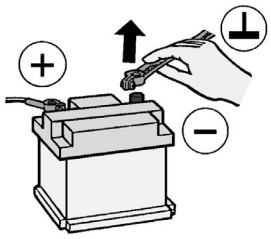
Procedures for installing VDO Viewline instruments

1



Before beginning, turn off the ignition and remove the ignition key. If necessary, remove the main circuit switch.

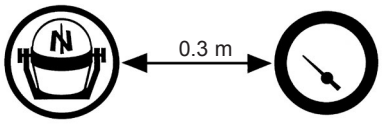
2



Disconnect the negative terminal on the battery. Make sure the battery cannot unintentionally restart.

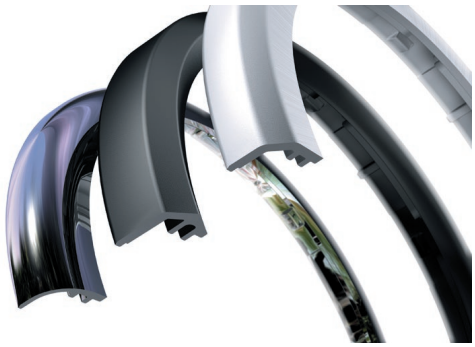
- Before beginning, disconnect the negative terminal on the battery, otherwise you risk a short circuit. If the vehicle is supplied by auxiliary batteries, you must also disconnect the negative terminals on these batteries! Short circuits can cause fires, battery explosions and damages to other electronic systems. Please note that when you disconnect the battery, all volatile electronic memories lose their input values and must be reprogrammed.

3



If installing the instrument near a magnetic compass, note the magnetic safe distance to the compass.

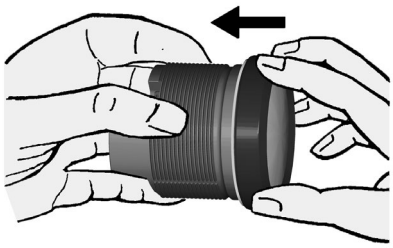
4



The following rings may be installed as alternatives to the supplied front ring:

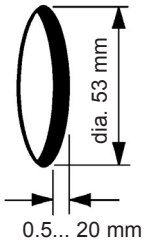
Front ring, flat; black	A2C5318604001
Front ring, flat; white	A2C5318602201
Front ring, flat; chrome	A2C5318602301
Front ring, triangular; black	A2C5318602401
Front ring, triangular; white	A2C5318602501
Front ring, triangular; chrome	A2C5318602601
Front ring, round; black	A2C5318602701
Front ring, round; white	A2C5318602801
Front ring, round; chrome	A2C5318602901

5



Place the new front ring on the instrument and press it on until it is flush with the instrument glass.

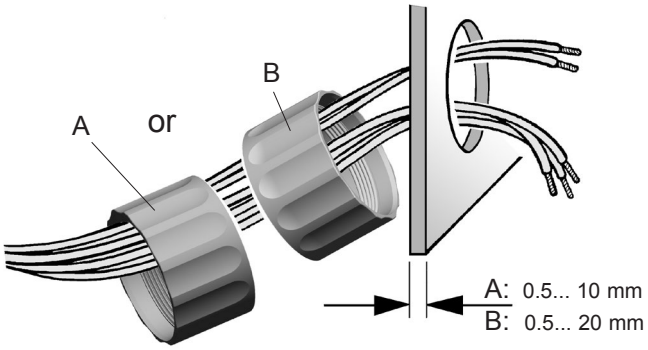
6



Conventional assembly. (Instrument is put into the drill hole from the front).
The panel width may be within a range of 0.5 to 20 mm. The drill hole must have a diameter of 53 mm.

- Do not drill holes or ports in load-bearing or stabilizing stays or tie bars!
- Note the necessary clearance behind the drill hole or port at the installation location. Required mounting depth: 65 mm.
- Drill small ports; enlarge and complete them, if necessary, using taper milling tools, saber saws, keyhole saws or files. Debur edges. Follow the safety instructions of the tool manufacturer.

7

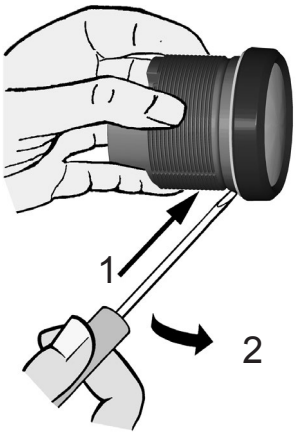


For 52 mm instruments, the fastening nut can be mounted at position A or B. This allows you to realize various clamping heights.

Version A
Clamping height 0.5 – 10 mm

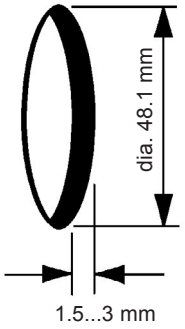
Version B
Clamping height 0.5 – 20 mm

8



If the instrument is mounted flush (i.e., from the back so that the instrument glass and the panel form one plane), the front ring must be removed. Press the instrument glass with both thumbs, while at the same time pressing the front ring forward from the instrument with both index fingers. Note the use of a tool in the adjacent figure.

9

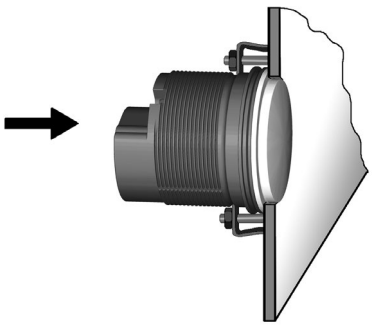


Flush assembly

The recommended panel thickness is 1.5 to 3 mm.
The drill hole must have a diameter of 48.1 mm.
Ensure that the installation location is level and has no sharp edges.

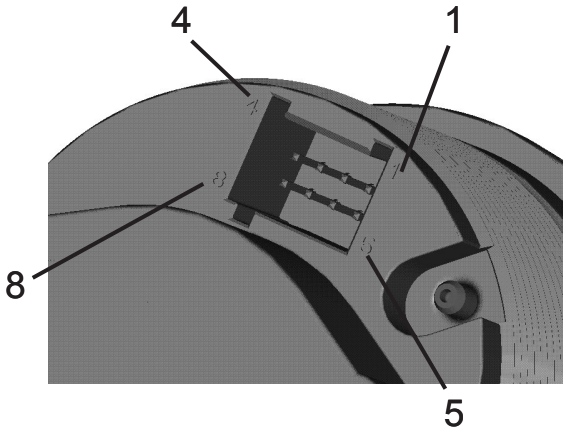
- Do not drill holes or ports in load-bearing or stabilizing stays or tie bars!
- Note the necessary clearance behind the drill hole or port at the installation location. Required mounting depth: 65 mm.
- Drill small ports; enlarge and complete them, if necessary, using taper milling tools, saber saws, keyhole saws or files. Debur edges. Follow the safety instructions of the tool manufacturer.

10



Place the flush mount seal A2C53215640 on the instrument glass.
Put the instrument into the drill hole from the back.
Adjust the instrument so that the gauge is level and fasten it to the stud bolts on the rear side of the panel, using the flush mount fixing bracket A2C59510864.

11

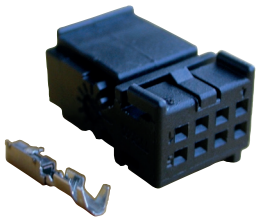


Depending on the configuration, insert the cable into the 8-pin contact enclosure according to the following pin assignment. The contacts must audibly lock into place.

Pin 1 - Term. 15 - ignition plus 12/24 V	Red
Pin 2 - Term. 31 - ground	Black
Pin 3 - SIGNAL GROUND	Blue/black
Pin 4 - Term. 30 - steady power	Brown
Pin 5 - sensor signal	Green
Pin 6 - Term. 58 - lighting	Blue/red
Pin 7 - warning LED ground	Yellow/Black
Pin 8 - warning LED plus	Yellow/red

Now insert the plug into the gauge. Note the inverse polarity protection nose in the process.

12



Connector set, 8-pin
A2C59510850

Use the following connector to connect the instrument: Connector set, 8-pin - A2C59510850
The connector set is designed for a cable cross-section of 0.25 - 0.5 mm².
For other cross-sections, please use contacts made by Tyco.

Single contacts:	Tyco No. 1355718-1 for 0.14 – 0.22 mm²
	Tyco No. 963729-1 for 0.5 – 0.75 mm²
Strip:	Tyco No. 1355717-1 for 0.14 – 0.22 mm²
	Tyco No. 963715-1 for 0.5 – 0.75 mm²

Create a crimp connection using the contacts and the corresponding cables. Follow the instructions of the hand pliers manufacturer.
Use the following for this:

Hand pliers	Tyco No. 539635-1
and the tool	Tyco No. 539682-2 for these hand pliers

Pay special attention to whether the crimp barrel clutches all individual wires in the cable, otherwise you risk a short circuit!

Electrical connection:

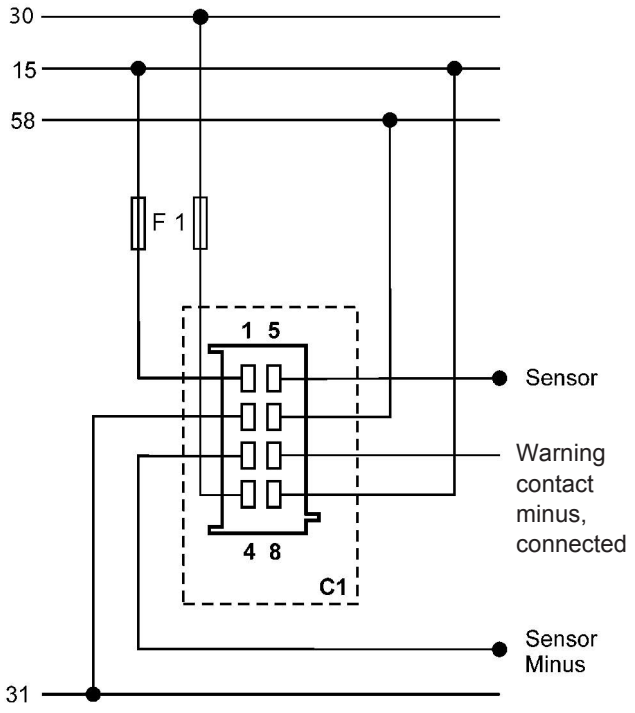
- Note cable cross-sectional area!
- Reducing the cable cross-sectional area leads to higher current density, which can cause the cable cross-sectional area in question to heat up!
- When installing electrical cables, use the provided cable ducts and harnesses; however, do not run cables parallel to ignition cables or to cables that lead to large electricity consumers.
- Fasten cables with cable ties or adhesive tape. Do not run cables over moving parts. Do not attach cables to the steering column!
- Ensure that cables are not subject to tensile, compressive or shearing forces.
- If cables are run through drill holes, protect them using rubber sleeves or the like.
- Use only one cable stripper to strip the cable. Adjust the stripper so that stranded wires are not damaged or separated.
- Use only a soft soldering process or commercially available crimp connector to solder new cable connections!
- Make crimp connections with cable crimping pliers only. Follow the safety instructions of the tool manufacturer.
- Insulate exposed stranded wires to prevent short circuits.
- Caution: Risk of short circuit if junctions are faulty or cables are damaged.
- Short circuits in the vehicle network can cause fires, battery explosions and damages to other electronic systems. Consequently, all power supply cable connections must be provided with weldable connectors and sufficiently insulated.
- Ensure ground connections are sound.
- Faulty connections can cause short circuits. Only connect cables according to the electrical wiring diagram.
- If operating the instrument on power supply units, note that the power supply unit must be stabilized and it must comply with the following standard: DIN EN 61000, Parts 6-1 to 6-4.

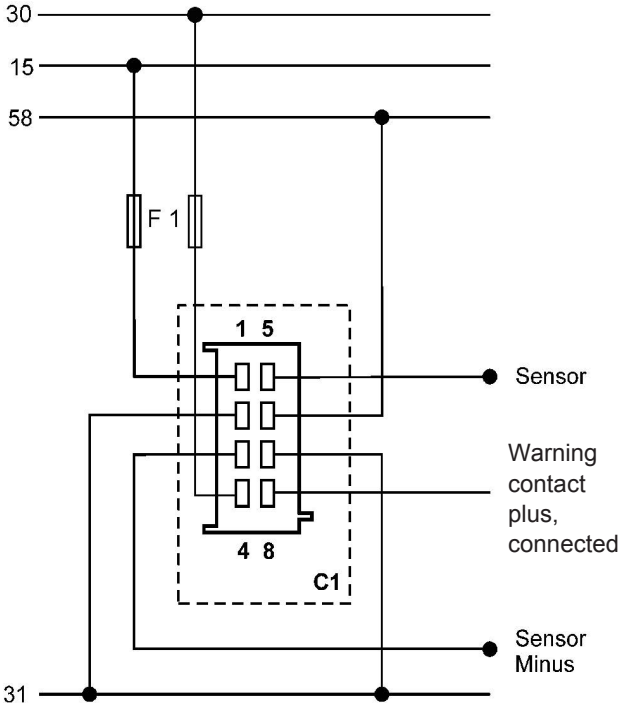
13 Designations in the wiring diagram:

30 - terminal 30 - steady power
15 - terminal 15 - connected (ignition) plus 12/24 V
58 - terminal 58 - lighting

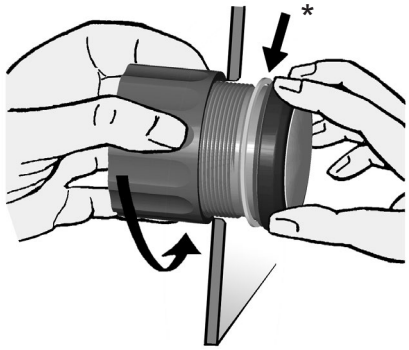
You must comply with the wiring diagram.

31 - terminal 31 - ground
F1 - fuse 5A quick-response
C1 - 8-pin MQS connector





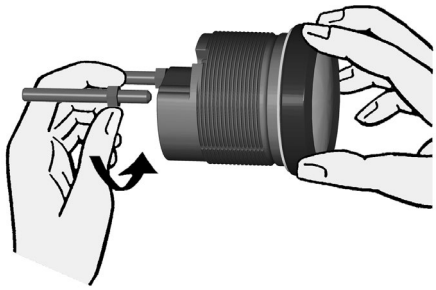
14



Align the instrument and hand-tighten the fastening nut. Ensure that the nut is not tightened with a torque greater than 400 Ncm.

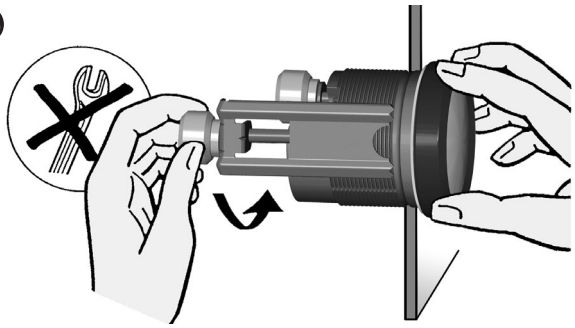
* Make sure the seal lays flat between the panel and the front ring.

15



If you would like to omit the fastening nut, you may use the part set A2C59510854 as an alternative.
This is recommended if the installation location is subject to vibratory loads.
Screw the stud bolts into the provided drill holes in the enclosure. Max. stud bolt torque is 1.5 Nm.

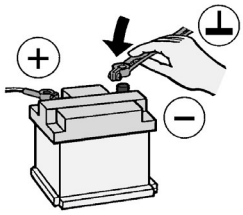
16



Place the bracket on the stud bolt and hand-tighten the knurled nut.

* Make sure the seal lays flat between the panel and the front ring (see Fig. 14).

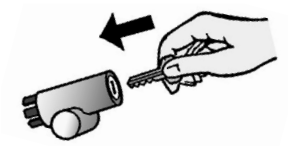
17



Reconnect the battery after inspecting the connection.

- Please note that when you disconnect the battery, all volatile electronic memories lose their input values and must be reprogrammed.

18



If necessary, replace the main circuit switch. Turn on the ignition and conduct a functional test. Reprogram any other instruments that may have lost their saved settings.

19 **Important:** Clean the instrument glass and front frame with water only. Do not use chemical agents.

20 **Accessories / Spare parts**

Bush contacts 0.25 – 0.5 mm²	A2C59510846
Bush housing, 8-pin	A2C59510847
Bracket assembly mounting set	A2C59510854
Flush mount fixing bracket	A2C59510864
Adapter Cable	A2C59512947
Make Point Switch	A2C59510886
Flush mount seal	A2C5321564001
Fastening nut	A2C5300739801
Front ring, flat; black	A2C5318604001
Front ring, flat; white	A2C5318602201
Front ring, flat; chrome	A2C5318602301
Front ring, triangular; black	A2C5318602401
Front ring, triangular; white	A2C5318602501
Front ring, triangular; chrome	A2C5318602601
Front ring, round; black	A2C5318602701
Front ring, round; white	A2C5318602801
Front ring, round; chrome	A2C5318602901
Warning point control	A2C5951088601
Protective connector cap, 8-pin	A2C5332466401
Spinlock nut 52mm	A2C5205947101