



# **ASSEMBLY INSTRUCTIONS**

## **Exhaust System “Racing” Centered Outlet**

for 991 Carrera S and Carrera with sport valve system

**Part-no. 091.310.600.009-01 Exhaust system “Racing” valve controlled centered outlet**



Version 05 – 07/2017



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

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# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

### I Important safety information

All of the necessary work must be performed by qualified persons with an appropriate level of expertise.

	<p style="text-align: center;"> <b>WARNING</b></p> <p>Vehicle lifts with an insufficient lifting capacity can collapse under the weight of the vehicle and crush any persons standing underneath.</p> <p>Compare the weight of the vehicle with the lifting capacity of your vehicle lift. The weight of the vehicle must not exceed the lifting capacity of your vehicle lift. The weight of the vehicle can be found in the vehicle operating manual.</p>	
	<p style="text-align: center;"> <b>WARNING</b></p> <p>Risk of injury from electric current.</p> <p>Switch off the ignition and disconnect the battery when working on the vehicle electrical/electronics systems.</p>	
 	<p style="text-align: center;"> <b>CAUTION</b></p> <p>Risk of injury from hands and arms being crushed, cut or lacerated when working with sharp-edged and bulky objects.</p> <p>Wear protective clothing and protective gloves. Keep limbs out of narrow and inaccessible areas of the vehicle and/or avoid dangerous situations by using special tools and suitable aids.</p>	
	<p style="text-align: center;"> <b>CAUTION</b></p> <p>Risk of injury to back, muscles, joints, tendons and ligaments from lifting and carrying heavy and/or bulky objects.</p> <p>Lift and transport heavy and/or bulky objects with the help of other people and/or with suitable aids.</p>	
	<p style="text-align: center;"><b>NOTICE</b></p> <p>Before starting the assembly procedure, carefully read the assembly instructions in full and pay attention to the safety information and sequence of the individual operation steps.</p>	



# ASSEMBLY INSTRUCTIONS

**TECHART Exhaust System "Racing" Centered Outlet**

## II Preparation

### Number of people required



At least two people are required to install this product.

### Help and support

If you have any technical queries, please contact us immediately:  
**support@TECHART.de**



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

### Check TECHART parts kit for completeness

Quantity	Part number	Part name
1	091.310.600.009	Exhaust system "Racing" for 991 Carrera S or Carrera with sport valve system
Consisting of:		
1	091.310.400.100	Muffler right centered exhaust system
1	091.310.400.101	Muffler left centered exhaust system
1	091.310.420.100	Center piece, centered exhaust system
2	991.111.482.00	Gasket
1	091.310.425.100	Slide-on elbow pipe right
1	091.310.425.101	Slide-on elbow pipe left
2	000.301.70-90R	Clamp hose 70-90 fastener
1	091.310.410.100	Elbow pipe towards tail pipe right
1	091.310.410.101	Elbow pipe towards tail pipe left
1	091.310.430.100	Tail pipe bracket right
1	091.310.430.101	Tail pipe bracket left
1	091.310.435.100	Bracket side muffler right
1	091.310.435.101	Bracket side muffler left
2	091.310.930.100	Tail pipe
1	091.310.200.330	Control unit valve control incl. wiring harness
6	900.910.003.03	Hexagon Nut
1	091.310.549.902	Edge guard profile, heat protection
2	991 612 944 00	Adapter line

### optional

1	+91310200420	V01: Vacuum kit for serial Carrera S
Consisting of:		
2	928.574.717.05	Preformed hose
2	900.918.005.40	Pipe l=170mm

or

1	+91310201420	V02: Vacuum kit f. Carrera S with exhaust system I176
Consisting of:		
2	928.574.717.05	Preformed hose
1	900.918.005.40	Pipe l=170mm
1	900.918.005.40	Pipe l=1010mm
1	06E133794	T-piece
4	999.651.401.01	Cable ties



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

or

Quantity	Part number	Part name
1	+91.100.510.CCC	V01: Diffusor add-on custom color
Consisting of:		
1	091.100.510.100	Diffusor add-on II, painted in custom color
4	0009002.9X137981	Fillister head screw, 2.9x13, black
4	001900M03,2X10	Washer fender, M 3.2x10x0.8, A2K
2	0029004.8/19.0X12.7	Speed nut 19mm x 4.8mm
1	00091089010031	Bond + seal black, tube 70ml

or

1	+91.100.510.009	V01: Diffusor add-on black structure
Consisting of:		
1	091.100.510.100	Diffusor add-on II, painted black structure
4	0009002.9X137981	Fillister head screw, 2.9x13, black
4	001900M03,2X10	Washer fender, M 3.2x10x0.8, A2K
2	0029004.8/19.0X12.7	Speed nut 19mm x 4.8mm
1	00091089010031	Bond + seal black, tube 70ml

Please use the table to check whether all of the required parts are present.

Once parts have been removed from their original packaging, ensure that they are properly handled and stored.



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

### III Installation

#### 1 Prepare vehicle



**Before starting work, check that the vehicle is free of defects. Use the PIWIS system tester to read out all of the fault memories of the individual vehicle components and first rectify any faults displayed.**

- 1 Raise vehicle at the factory-fitted jacking points.

#### 2 Remove original parts



- 1 Detach the rear apron according to the manufacturer's instructions.
- 2 Detach the heat protection panels and the bumper beam according to the manufacturer's instructions.
- 3 Remove the vacuum control line from the original flap valves.
- 4 Detach the center muffler according to the manufacturer's instructions.
- 5 Detach the side mufflers according to the manufacturer's instructions and dismantle the retaining plates.



**Center and side mufflers are no longer required.**



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

### 3 Install TECHART parts

#### 3.1 Install TECHART valve exhaust system

- 1 Install the original retaining plate to the TECHART side mufflers



Fig. 01

- 2 Connect all components of the TECHART exhaust system. Position the supplied clamps and tightening straps.

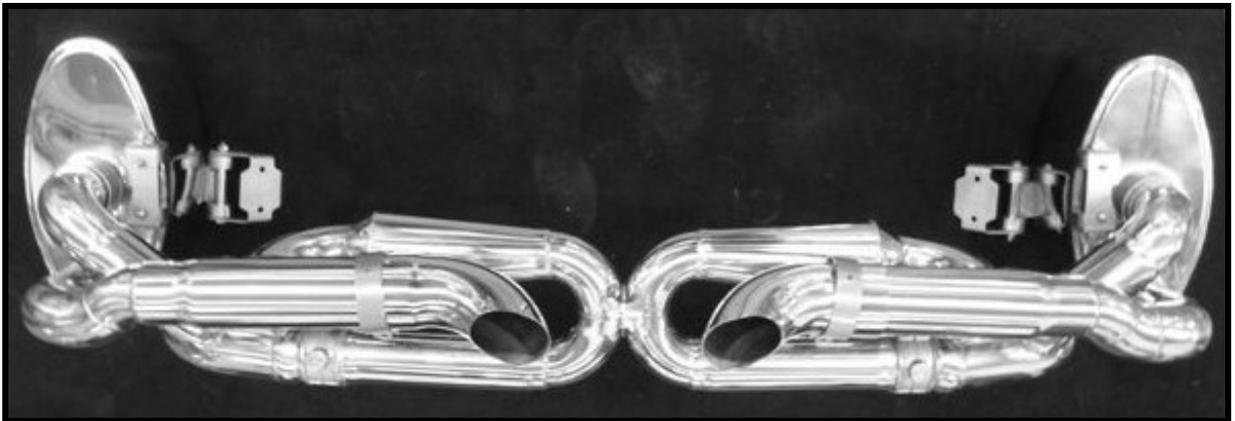


Fig. 02



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

- 3 Position the TECHART exhaust system at the vehicle, mount and align the supplied tightening straps and clamps.



Fig. 03

- 4 Position the supplied gusset plates at the triangular flange catalytic converter and attach the nuts. If necessary the manifold can be loosened to balance the tolerances of the catalytic converter position. In this case renew the manifold gasket.

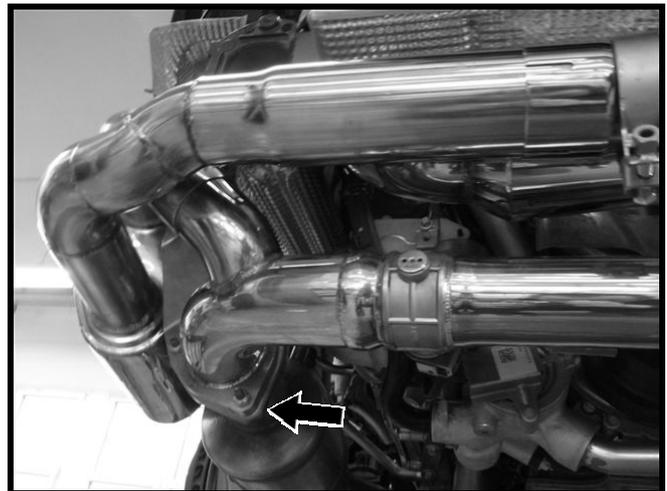


Fig. 04



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

- 5 Apply the nuts of the side muffler brackets to the holding frame.

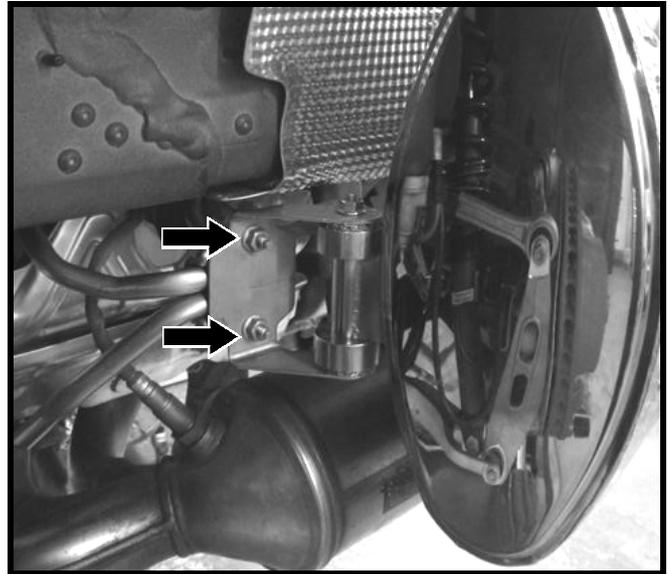


Fig. 05

- 6 Apply the nuts of the TECHART gusset plate to the side muffler brackets.

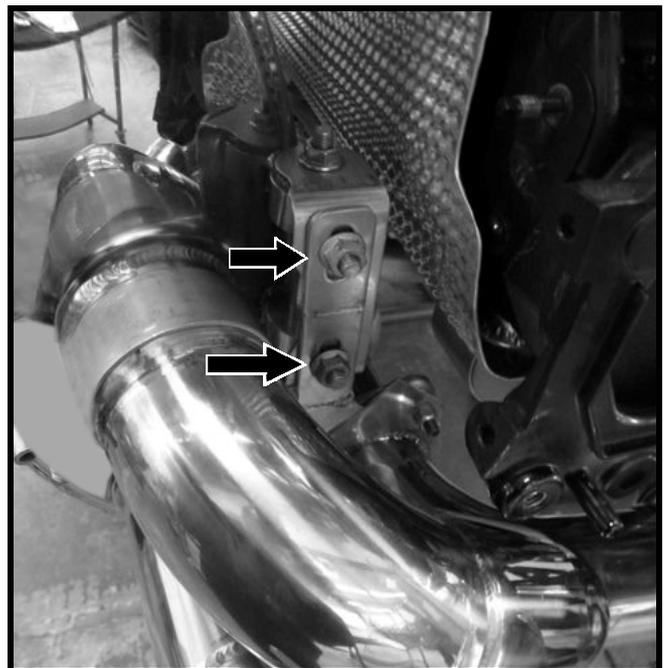


Fig. 06



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

- 7 Align the system, and care for a tension free position of the system. The connections to the side mufflers will only be attached (see arrows).
- 8 Tighten all nuts.

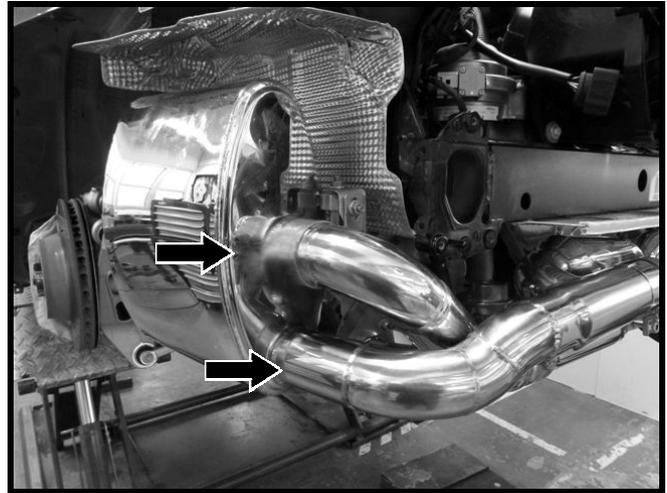


Fig. 07

- 9 Tighten the tightening straps (see arrow).

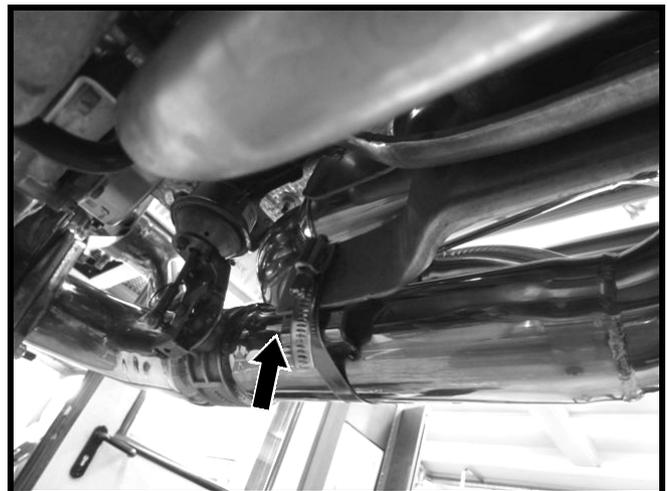


Fig. 08

- 10 Attach the TECHART tail pipe elbow pipes (091.310.410.10\_).
- 11 After the installation of the rear apron the alignment can be performed.



Fig. 09



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

- 12 Tighten all hexagon nuts to the manifold flange and the gusset plates to the side mufflers. Re-check the alignment of the exhaust system and adjust if necessary.
- 13 Retighten the clamps if necessary.
- 14 Retighten the tightening straps if necessary.



**Before the unit can be completed one has to install the vacuum und the electronic control as well as the rear diffusor.**



**There is a difference between the installation of the vacuum control of the 991 with original valve system and the 991 with optional sport valve system (I176).**

### 3.2 Install vacuum pipe 991 Carrera S

The vacuum line has been factory-mounted and will be simply applied to the new pressure sensors by using the extension pieces. Pay special attention to keep the safety distance of all thermal parts (exhaust unit, catalytic converters, etc.).

### 3.3 Install vacuum pipe 991 Carrera S with optional sport valve system (I176)

- 1 Separate the vacuum pipe in the engine compartment on the bottom right (see arrow) and attach the Y-piece to the part coming from the top. The part leading to the sword center will be no longer required and has to be dismantled.

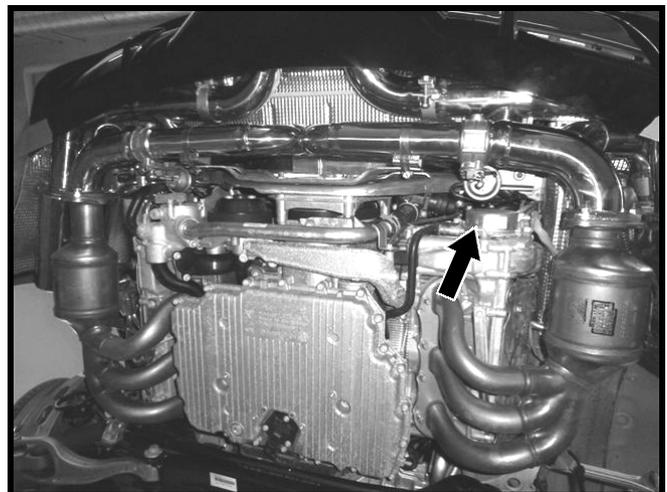


Fig. 10



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

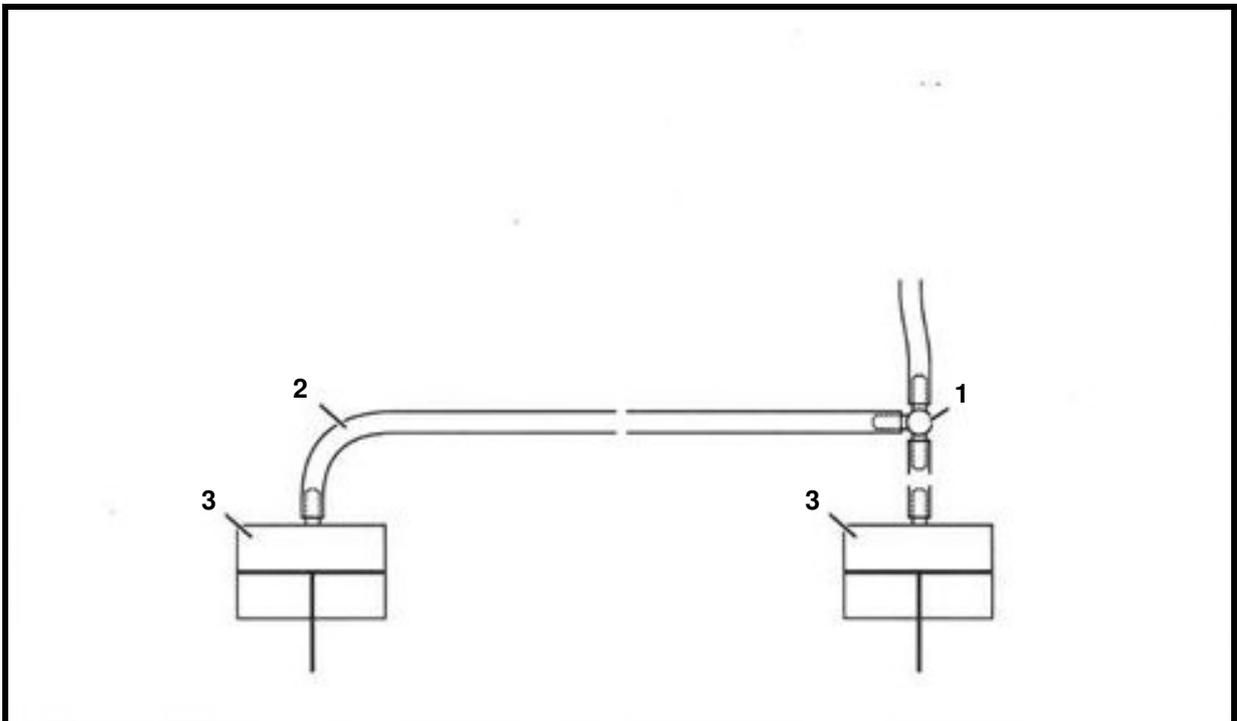
- 2 Route from the Y-piece one line to each sensor. Pay special attention to keep the safety distance of all thermal parts (exhaust unit, catalytic converters, etc.), as well as to all rotating parts (belt drive, etc.).



Fig. 11

### Connection diagram for vacuum supply

Code	Designation
1	Y-piece
2	Vacuum line
3	Vacuum sensors rear muffler



### 3.4 Connect control unit



Switch off the ignition and disconnect the battery when working on the vehicle electrical system.

- 1 Dismantle the carpet in the rear of the vehicle.



There is a difference whether the vehicle is equipped with PASM or with conventional suspension struts.

For vehicles with PASM:

- 2 Position the control unit of the exhaust valve (091.310.200.330) in the area of the PASM-control unit and fasten with the supplied hook-and-loop tape.



Fig. 12

- 3 Lead the wiring harness with the two connecting lines of the both switch valves from the passenger compartment through the cable bushing right on the passenger compartment into the engine compartment.



Fig. 13



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

- 4 Connect the 2-pole plugs in the engine compartment with the connecting line and attach the plugs to the respective switch valve (see connecting diagram).

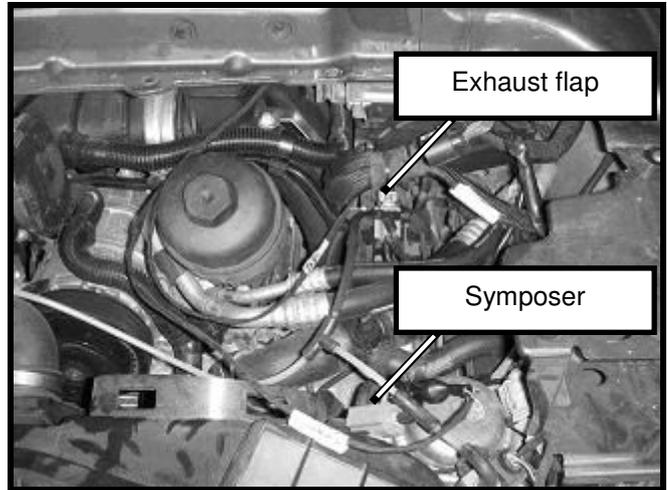


Fig. 14

**⚠ Danger of confusion!** The switch valve exhaust flap is positioned near the switch valve coolant and shall not at any case be confused with each other.

**i** Depending on the model year it is possible that the compact plugs of the TECHART wiring harness are not compatible with the cycle valve of the exhaust valve and/or the symposer.

- 5 In this case mount one TECHART adapter line each (fig. 15) between the respective cycle valve and the TECHART wiring harness.

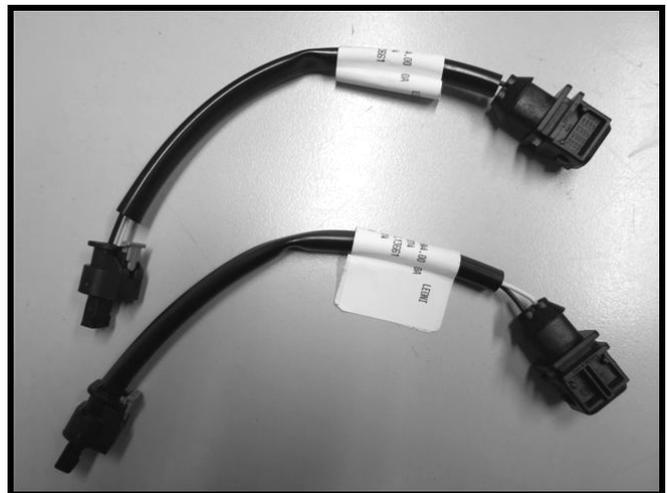


Fig. 15

**i** The wiring harness will be pined straight into the PASM control unit. The listed table in this assembly instruction shows the connection setup. Ground will be connected directly to the star ground at the vehicle.



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

- 6 Dismantle the big compact plug from the PASM-control unit.

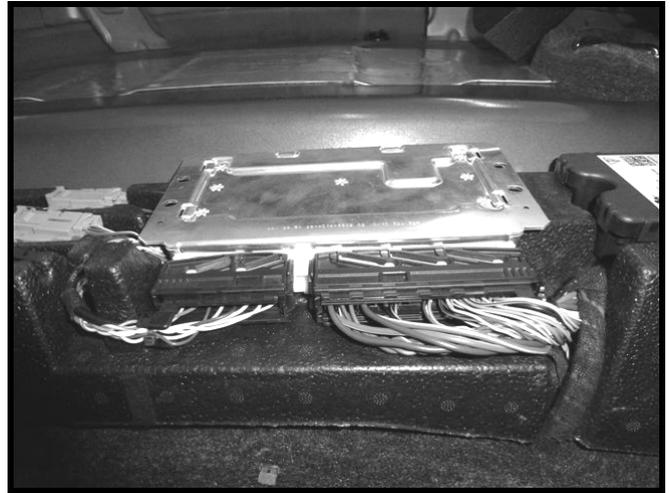


Fig. 16

- 7 Dismantle the interlock rail, to do that lift the detent with a pin and slide out the rail.

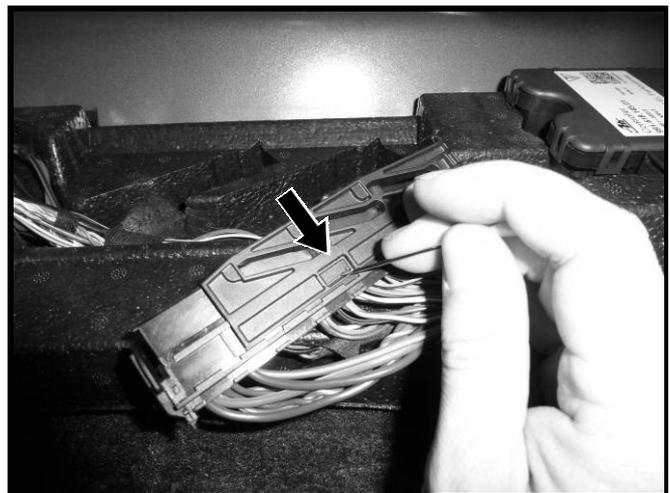


Fig. 17

- 8 Slide guiding rail out (see arrow).

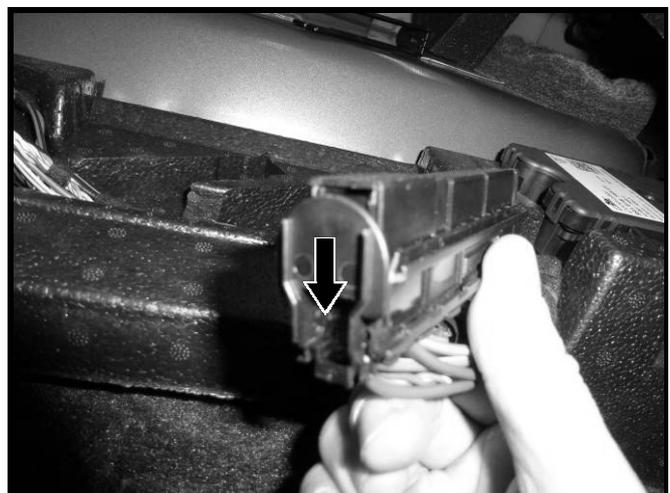


Fig. 18



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

- 9 Slide the pin carrier out from the housing.

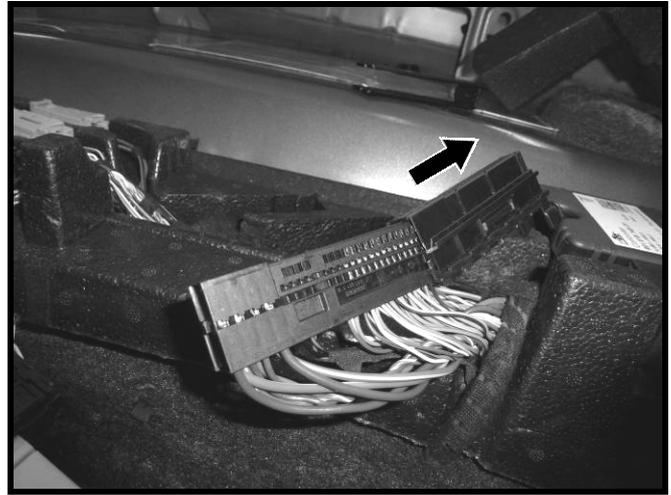


Fig. 19

- 10 Unlatch the detents of the relevant pins with a needle and pull them out, see connection plan.

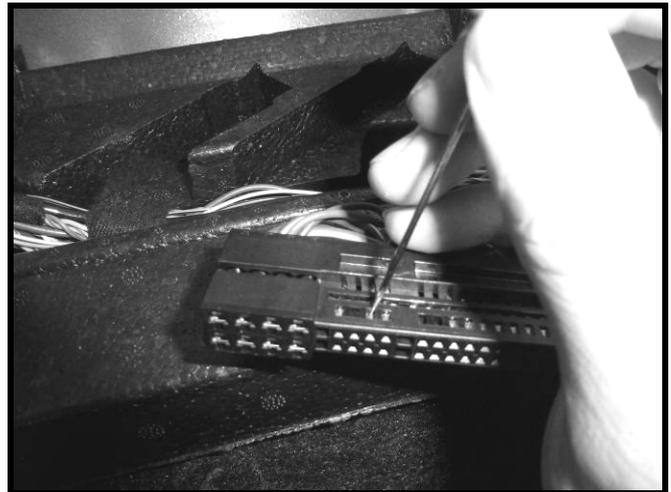


Fig. 20

- 11 Mount the TECHART pin wiring harness as shown on the diagram and the connecting chart. Then complete the compact plug in reverse order.



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

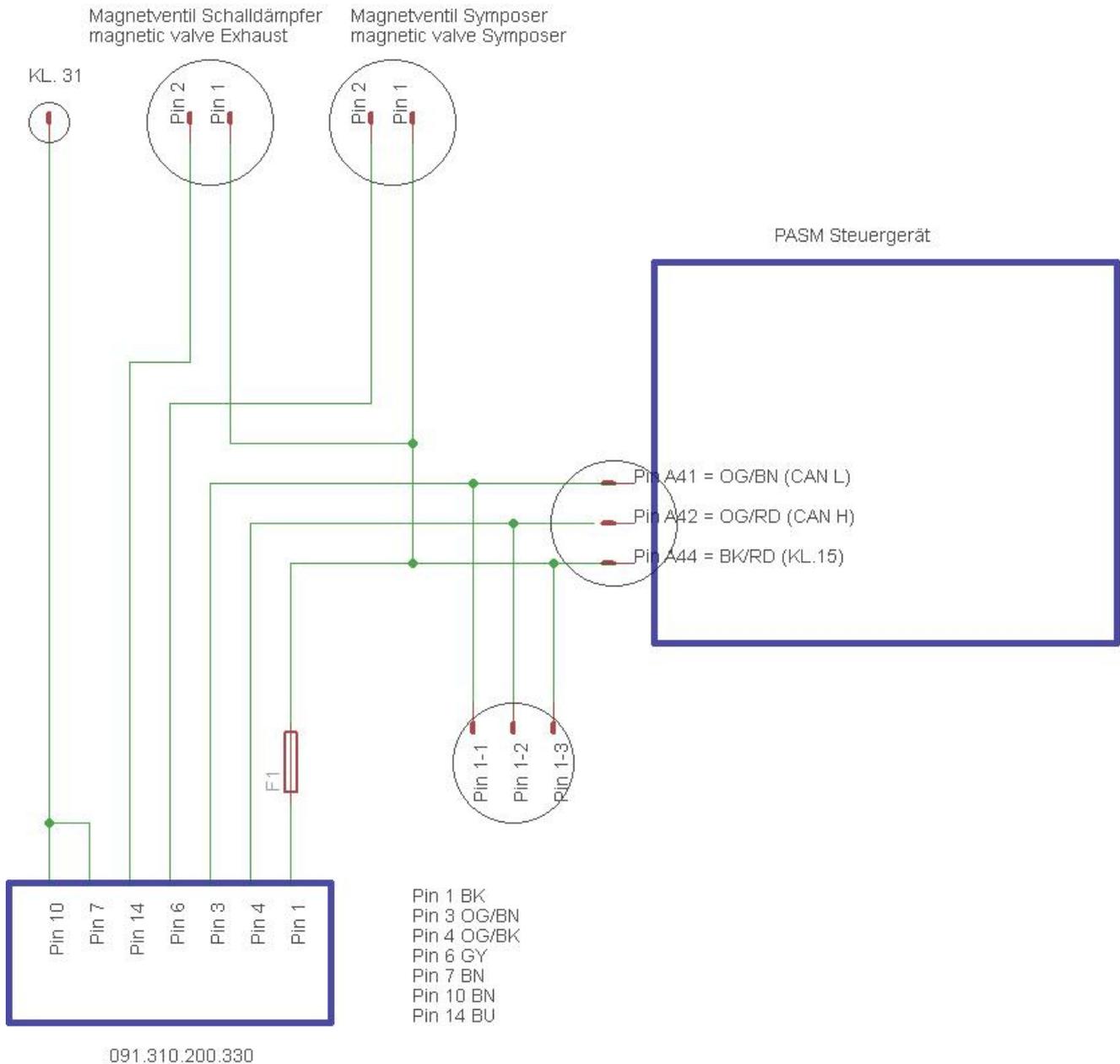


Fig. 21

### Color labeling:

- BK – black
- OG – orange
- BN – brown
- RD – red
- GY – gray
- BU – blue



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

To prevent connection errors, please proceed step by step.  
Connect one connection after the other.

For example:

Pin out line pin 41 (OG/BN) as described from the PASM compact plug and mount into position 1 to the 3-pole plug.

Then mount the line 1 (OG/BN) from the coupling at the pin-wiring harness to the position pin 41 of the vehicle's wiring harness.

**Caution:** the cable colors may vary, in this case pay attention to the numbering!

12 Mount the ground ring-eye to the star ground of the vehicle.

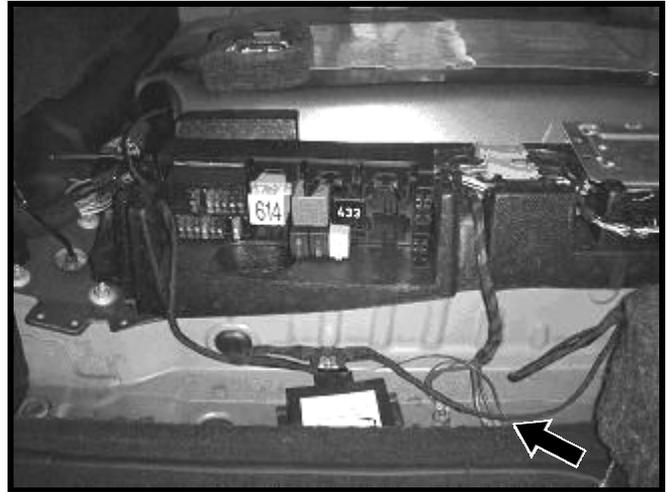


Fig. 22

13 Then insert the plug to the control unit.

14 Connect the battery and perform a function test.

15 To do this, start the engine and allow it to idle. Once a vacuum has built up, the valve is closed (if the button is not pressed). If the sport button, the sport plus button or the exhaust button is pressed, a considerably deeper exhaust sound can be heard.

16 Reinstall the carpet.



**There is a difference if the vehicle is equipped with PASM or with conventional suspension struts.**



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

### For vehicles without PASM:

- 1 Position the control unit of the exhaust valve in the area of the control unit of the electrical parking brake und fasten with the supplied hook and loop tape.



Fig. 23

- 2 Lead the wiring harness with the two connecting lines of the both switch valves from the passenger compartment through the cable bushing right into the engine compartment.



Fig. 24

- 3 Connect the 2-pole plugs in the engine compartment with the connecting line and attach the plugs to the respective switch valve (see connecting diagram).

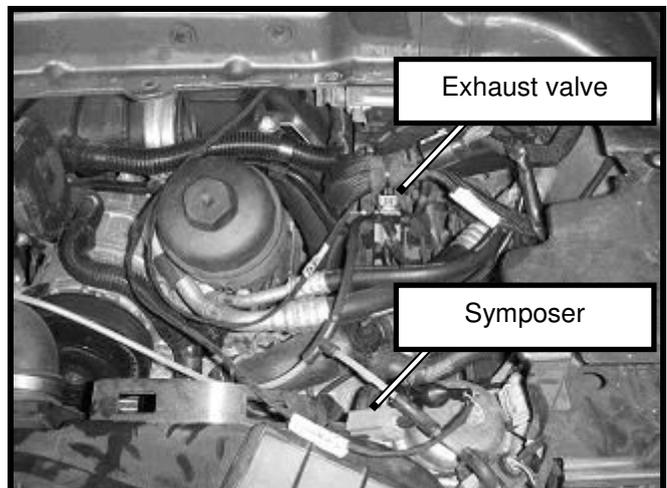


Fig. 25



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

**⚠** Danger of confusion! The switch valve exhaust flap is positioned near the switch valve coolant and shall not at any case be confused with each other.

**i** Depending on the model year it is possible that the compact plugs of the TECHART wiring harness are not compatible with the cycle valve of the exhaust valve and/or the symposer.

4 In this case mount one TECHART adapter line each (fig. 269 between the respective cycle valve and the TECHART wiring harness.

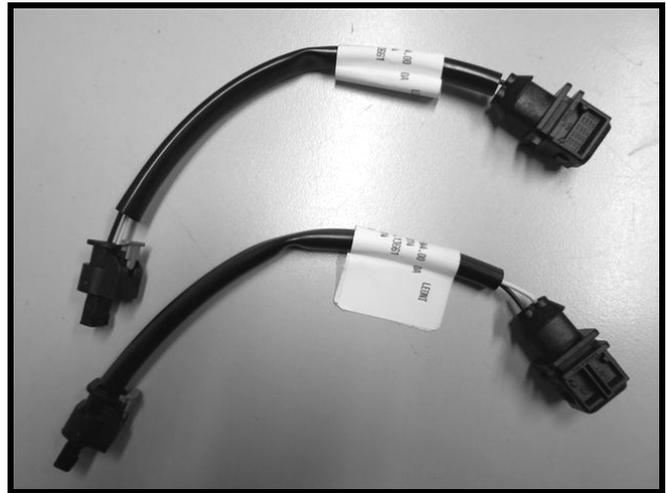


Fig. 26

**i** The wiring harness will be soldered straight to the wiring harness of the control unit of the electrical parking brake. The listed table in this assembly instruction shows the connection setup. Ground will be connected directly to the star ground at the vehicle.

5 Solder the wiring harness as shown on the diagram and the connecting table. For that cut off the pins at the 3 lines (bk, or/br, or/bk) of the TECHART wiring harness and remove the insulation at the end of the line.

6 Also remove a piece of the insulation at the lines A1 (or/br), A16 (or/bk) and A21 (bk/rd) of the wiring harness of the control unit of the electrical parking brake and solder them with the three lines of the TECHART wiring harness (see connection plan).

7 Insulate the soldering points accurately.

Fig. 21



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

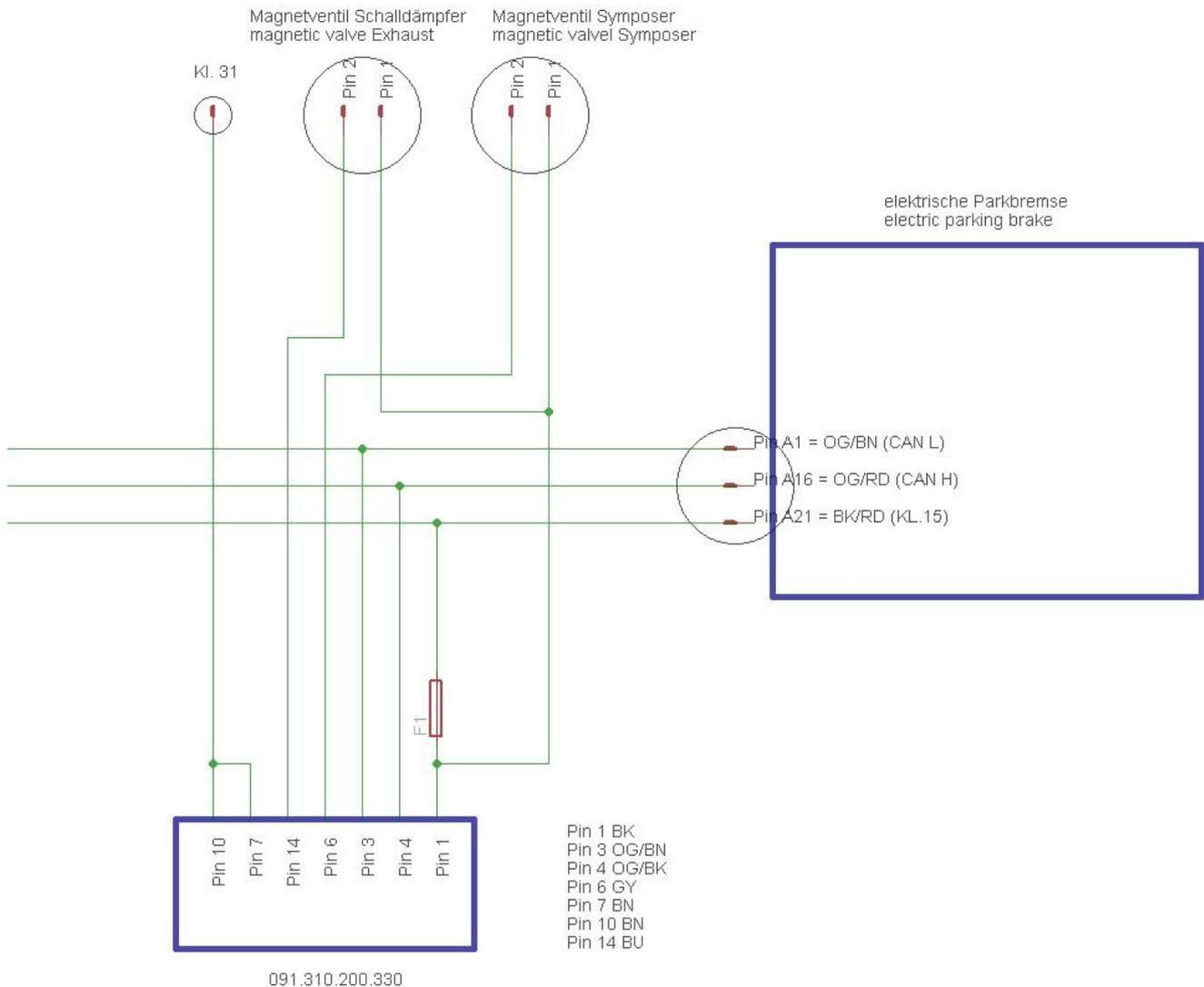


Fig. 27

### Color labeling:

- BK – black
- OG – orange
- BN – brown
- RD – red
- GY – gray
- BU – blue



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

To prevent connection errors, please proceed step by step.  
Connect one connection after the other.

For example:

Strip line pin A1 (OG/BR) as described and solder with the orange/brown line of the TECHART wiring harness.

Then strip the line pin A16 (OG/BK) and solder with the orange/black line of the TECHART wiring harness, etc.

**Caution: the cable colors may vary, in this case pay attention to the numbering!**

- 8 Mount the ground ring-eye to the star ground of the vehicle.

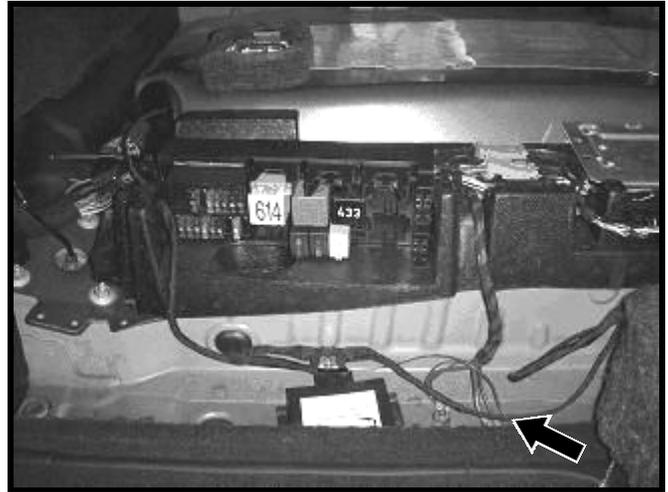


Fig. 28

- 9 Then insert the plug to the control unit.
- 10 Connect the battery and perform a function test.
- 11 To do this, start the engine and allow it to idle. Once a vacuum has built up, the valve is closed (if the button is not pressed). If the Sport button, the sport plus button or the exhaust button is pressed, a considerably deeper exhaust sound can be heard.
- 12 Reinstall the carpet.

### 3.5 Modify heat protection

- 1 Dismantle both supporting profiles of the heat protection sheet and cut the original heat protection sheet as shown with dotted lines in the picture below.

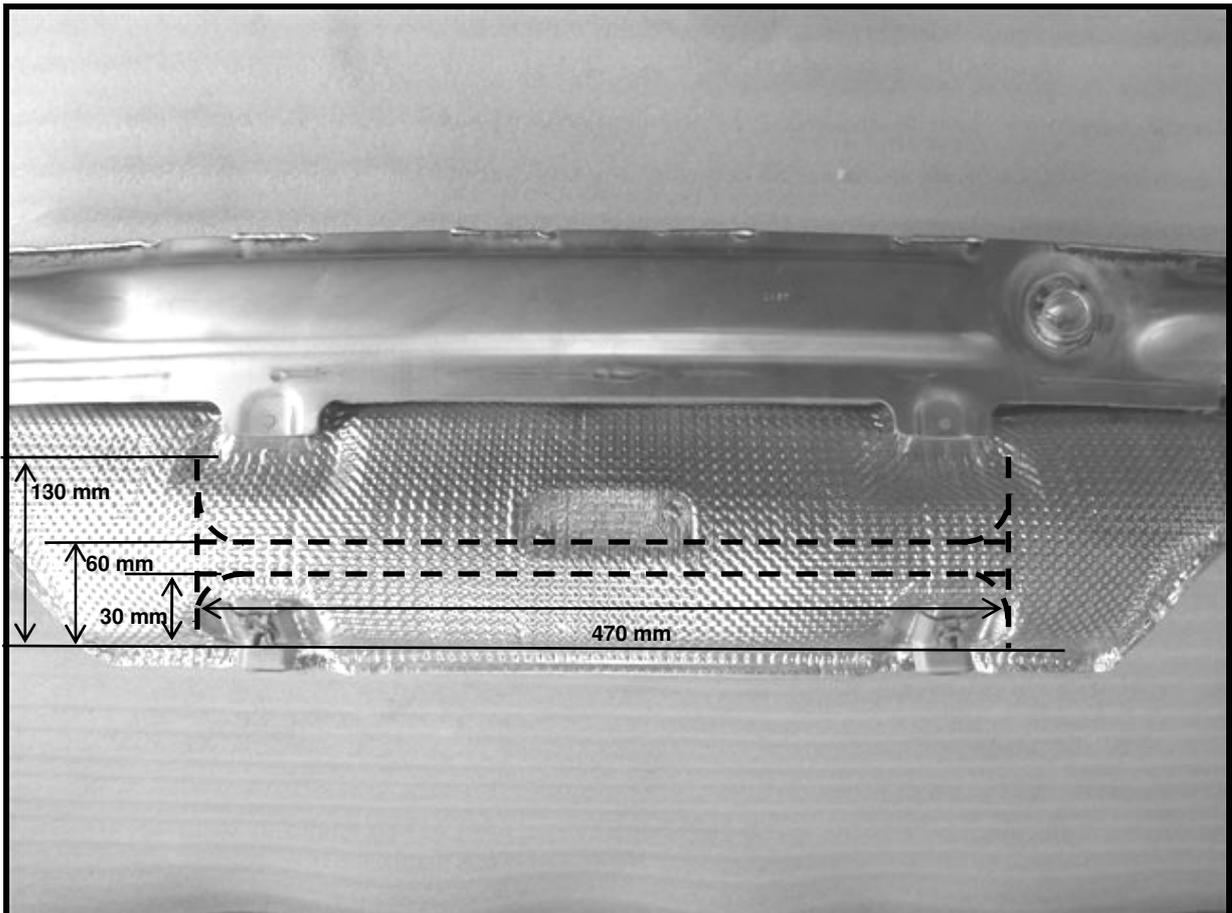


Fig. 29

 The supporting profiles are no longer needed.



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

- 2 Bend the heat protection with suitable tools as shown in the picture.
- 3 Apply the supplied cord ribbon to the cut edges.

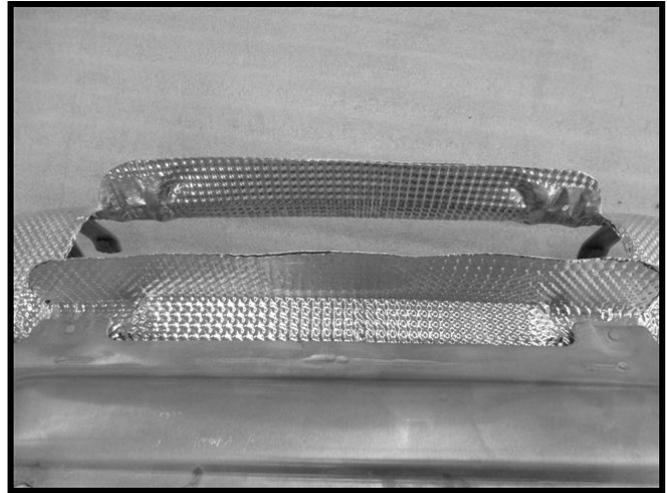


Fig. 30

- 4 Mount the TECHART tail pipe brackets in the place of the supporting profiles.

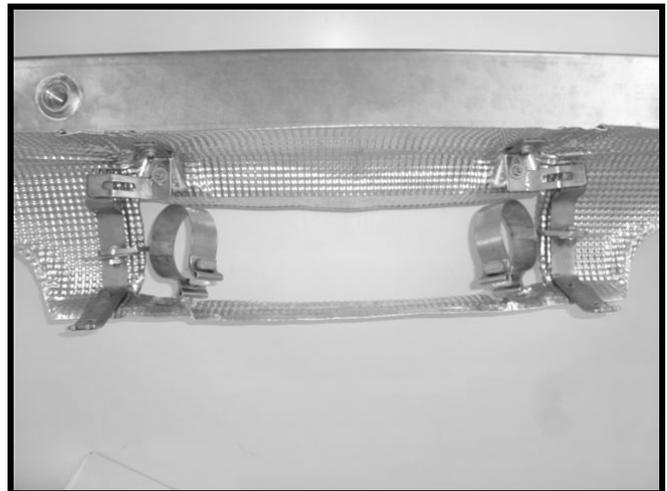


Fig. 31

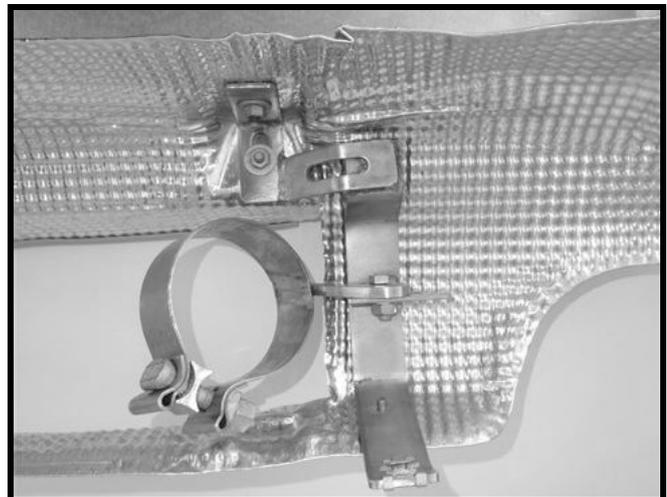


Fig. 32



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

- 5 Insert the TECHART tail pipes into the tail pipe retaining plates and attach slightly.

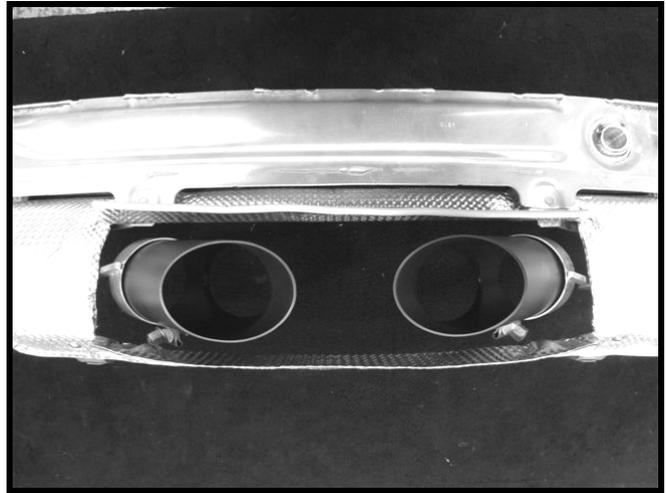


Fig. 33

- 6 Install heat protection panel.



Fig. 34



The adjustment of the tail pipes and the elbow pipes can be done after the rear apron is installed.



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

### 3.6 Install rear diffuser and tail pipe panels



The bonding surfaces on the TECHART rear diffuser and original rear apron must be dry and free from dust and paint spray mist.

Use cleaning agent to thoroughly degrease bonding surfaces on the TECHART rear diffuser and original rear apron.

Do not touch the surfaces after they have been cleaned.

- 1 Dismantle the original diffuser with the tail pipes panel of the rear apron.



Fig. 35

- 2 Cut off the original rear apron at the extension of the tail pipe cutouts.



Fig. 36



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

- 3 Attach the TECHART diffusor 091.100.510.100 to the rear apron and slide the guidances into the notch.
- 4 Mark the tail pipe cutout of the TECHART diffusor at the rear apron and cut it off.

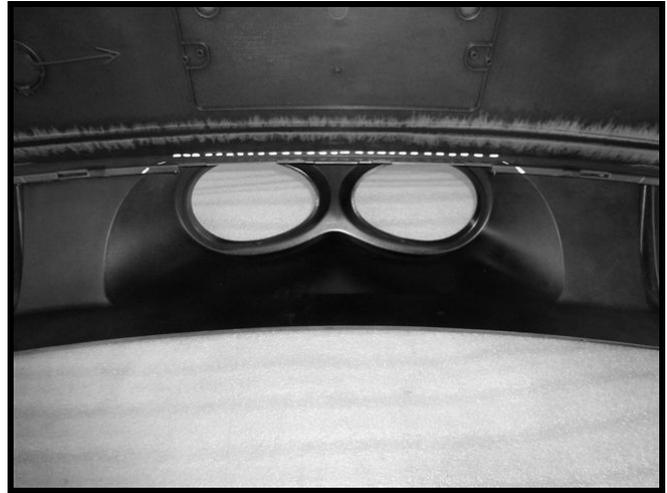


Fig. 37

- 5 Apply an even layer of PU-adhesive to the bonding areas of the TECHART diffusor.
- 6 Attach the TECHART diffusor.
- 7 Tighten the TECHART diffusor with the screws 2.9x13 and the washers 3.2x10.

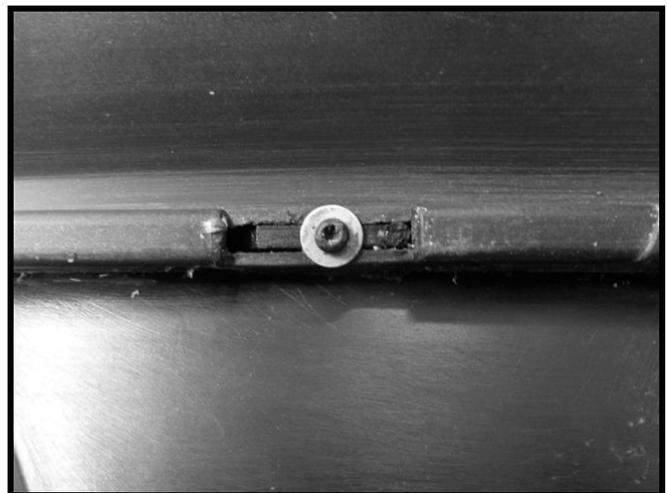


Fig. 38

** Press on firmly in areas coated with adhesive. Check for an accurate fit – Immediately remove any PU adhesive that escapes using a cleaning agent.**

- 8 Secure TECHART diffusor with adhesive tape so that they contact the surface firmly at all points.

** Allow to dry for at least 12 hours.**



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

- 9 Mark the fixing holes of the TECHART tail pipe bracket at the TECHART diffusor and drill a hole of  $\varnothing=9\text{mm}$ .
- 10 Remove the original speed nut from the original heat protection profiles and apply to the TECHART tail pipe bracket.
- 11 Affix the TECHART diffusor with the original screws to the TECHART tail pipe bracket.



Fig. 39



# ASSEMBLY INSTRUCTIONS

## TECHART Exhaust System "Racing" Centered Outlet

### 3.7 Adjust tail pipe panels

- 1 Align the TECHART tail pipes towards the rear diffuser. The tail pipe panels should point about 15° towards the asphalt and they should be centered in the diffuser cutouts.

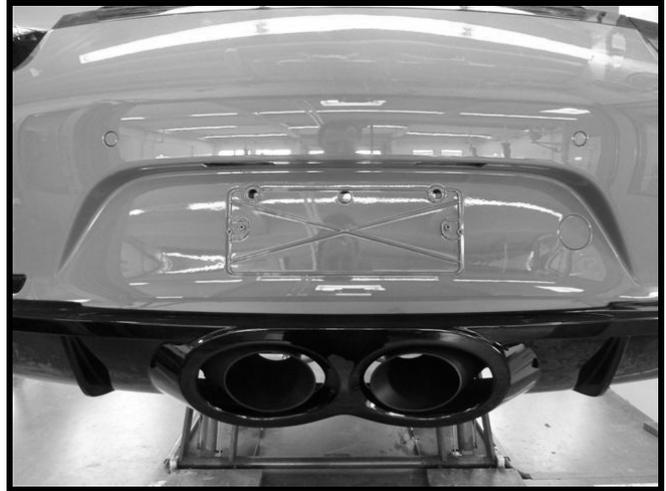


Fig. 40

- 2 Adjust the TECHART elbow pipes so that they point to the center of the tail pipe panels, but in no case they should miss them.
- 3 The obliquely running channel of the tail pipe panels stays free. With this the ambient air will flow through the panels to redirect the exhaust flow away from the rear apron.

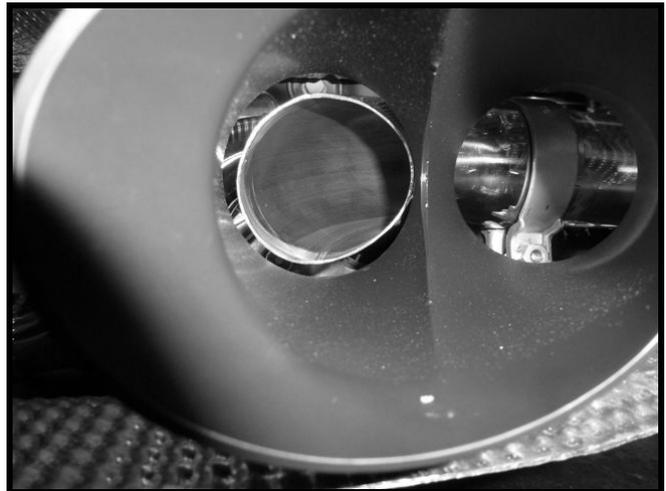


Fig. 41



**The adjustment of the elbow pipes and the tail pipe panels have to be performed very accurately. Misalignments of the components could cause fire hazard!**



- 4 Perform a test drive after the complete assembly and recheck the alignment of the elbow pipes and the tail pipe panels!

### 3.8 Schematic diagram exhaust valve 991



Fig. 42

**No button is pressed:** The valve is closed permanently; the sound symposer will be map-controlled.

**Sport button pressed; LED is set:** The exhaust valve is only closed in the authorized range; the sound symposer will be permanently active.

**Sport Plus button pressed; LED is set:** The exhaust valve is only closed in the authorized range; the sound symposer will be permanently active.

**Exhaust button pressed; LED is set:** The exhaust valve is only closed in the authorized range; the sound symposer will be permanently active.

**i** There is also the possibility to close the exhaust valve while the sport mode is activated (sport button or sport plus button pressed, all LEDs are set) by pressing the exhaust button again. The sport mode stays activated then (LED is lit), the exhaust valve, however, will always be closed (LED exhaust valve is off), the sound symposer will be map-controlled.



# ASSEMBLY INSTRUCTIONS

**TECHART Exhaust System "Racing" Centered Outlet**



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