

**Brake Symptom – Brake Pedal Travel Perceived as “Too Far”: Observe Specified Procedure (SY 90/21)**

Change overview:

| Release | Date       | Change  |
|---------|------------|---|
| 0       | 09/17/2021 | <ul style="list-style-type: none"> <li>• First publication</li> </ul>   |
| 1       | 09/27/2021 | <ul style="list-style-type: none"> <li>• ‘Reduced braking system efficiency’ symptom removed.</li> </ul>  |
| 2       | 07/22/2022 | <ul style="list-style-type: none"> <li>• Update of possible causes</li> </ul>   |
| 3       | 01/20/2023 | <ul style="list-style-type: none"> <li>• Order types added</li> <li>• Update of further measures</li> <li>• Update of required parts</li> <li>• Update of Labor Operations</li> </ul>   |
| 4       | 07/18/2023 | <ul style="list-style-type: none"> <li>• New software version</li> </ul>  |
| 5       | 02/09/2024 | <ul style="list-style-type: none"> <li>• ‘Hardware replacement’ action removed</li> <li>• Order types added</li> <li>• Labor operations added</li> <li>• Adjustment of brake fluid quantity</li> <li>• Adaptation of software versions to 0190 for all model years</li> <li>• “Perform functional test of the hydraulic unit” added to procedure</li> </ul> |

Model Line: **Taycan (Y1A / Y1B / Y1C)**

Model Year: **As of 2020 up to 2024**

Concerns: **Brake system**

Symptom: The customer complains that the brake pedal travel is subjectively perceived as “too far”.

Possible Causes:
 

- **Bedding-in routine not yet completed**

The new brake must be ground in on new vehicles or after replacing brake pads. The vehicle will take over this responsibility automatically by deactivating recuperation for a short time. The bedding-in routine can be up to 1,000 km/ 620 mls, depending on driving style.

- **‘Brake Refresh’ function**

The new ‘Brake Refresh’ function was introduced from model year M (2021). This function is used to maintain the friction coefficient of the brakes. Recuperation is deactivated briefly during this time.

- **'Stiff Learning Routine' function**

During regenerative braking (recuperation), the electric braking torque of the electric machine has to be replaced with the hydraulic braking torque of the wheel brakes ('blending') at least once during braking, usually shortly before the vehicle comes to a standstill.

In order to eliminate longitudinal deceleration fluctuations and brake pedal irritations during 'blending', the actual stiffness of the brake system must be known as accurately as possible to the control units involved (Porsche Stability Management (PSM) and Electric Brake Booster (eBKV)).

If the 'stiffness learning routine' is activated automatically too rarely, the following **causes** may have been present:

- The vehicle has not been charged for a long time.
- The temperature of the brake discs was  $> 100^{\circ}\text{C}$  ( $212^{\circ}\text{F}$ ) when the learning process was attempted and that of the brake callipers was  $> 55^{\circ}\text{C}$  ( $131^{\circ}\text{F}$ ).
- The front wheels were regularly turned in too far when leaving the vehicle.

- **Generally, pedal travel is longer when manoeuvring.**

In order to improve the metering action of the brakes while parking, a smaller brake master cylinder (HBZ) is installed in the Taycan compared with the PHEV vehicles, which extends the pedal travel in order to ensure better metering when parking and manoeuvring. In addition, both brake circuits are opened fully at speeds of  $< 12\text{ km/h}$  /  $7\text{ mph}$  for noise, vibration and other comfort reasons, which also results in longer pedal travel.

- **Poor friction coefficient of Porsche Ceramic Composite Brake (PCCB) and Porsche Surface Coated Brake (PSCB) compared to grey cast iron brakes in wet and/or cold weather conditions.**

This effect can adjust when switching from electric to hydraulic braking. This can result in a change in brake pedal feel during braking with the same pedal pressure.

Action:

- 1 **Check completion of braking routine.**

The break-in routine must be completed. If the braking routine has not yet been completed, the **"active"** error code "C1399F0 - Operating brake, Grinding-in process active" will still be visible in the Porsche Stability Management (PSM) control unit.

Further information can be found in the 'Braking' section of the Owner's Manual.  $\Rightarrow$  Betriebsanleitung

- 2 Carry out **functional test of the hydraulic unit** and, depending on the test result:

- Bleed the brake system and re-program the PSM control unit.

or

- Replace PSM control unit, including hydraulic unit, bleed brake system and re-program PSM control unit.

### 3 Generally, pedal travel is longer when manoeuvring.

The state of the art has changed and vehicle operation seems unfamiliar at first. The new functions and corresponding behavior of the vehicle must be communicated to the customer. The Owner's Manual for the vehicle can be used here if necessary. ⇒ Betriebsanleitung

### 4 Poor friction coefficient of Porsche Ceramic Composite Brake (PCCB) and Porsche Surface Coated Brake (PSCB) compared to grey cast iron brakes in wet and/or cold weather conditions.

The state of the art has changed and vehicle operation seems unfamiliar at first. The differences between the brake systems and their behavior in appropriate weather conditions must be communicated to the customer. **Section: 'Brake'** ⇒ Betriebsanleitung

## Required parts and materials as needed

Parts Info: **Required parts if the PSM control unit including hydraulic unit needs to be replaced.**

| Part No.    | Designation<br>– Location | Number  |
|-------------|---------------------------|---------|
| 9J1614095SY | ⇒ Hydraulic unit          | 1 piece |

or

**Only for vehicles with special conversions/installations in production (M-no. S1G)**

|             |                  |         |
|-------------|------------------|---------|
| 9J1614095MY | ⇒ Hydraulic unit | 1 piece |
|-------------|------------------|---------|

Material: **Required materials** (usually already available in the Porsche Center):

| Part No.    | Designation<br>– Location                                     | Quantity              |
|-------------|---|-----------------------|
| 00004321086 | ⇒ Brake fluid, 30-liter/ 7.92 gal container<br>- Brake system | Quantity as required* |



#### Information

\*

Approx. 1.25 liter/ 1.32 qt of brake fluid is required for conventional bleeding.

Approx. 3 liter/ 3.17 qt of brake fluid is required to replace the hydraulic unit.

Approx. 4.5 liter/ 4.75 qt of brake fluid is required for bleeding in conjunction with the "wheel brake rigidity offset" test.

**Required tools**

- Tools:
- **P90999 - PIWIS Tester 4**
  - Battery charger with a current rating of **at least 90 A**, e.g., **VAS 5908 90-A battery charger**. For further information about the battery chargers to be used, see the corresponding Workshop Manual. ⇒ *Workshop Manual '270689 Charging vehicle electrical system and battery'*
  - Charger for high-volt battery, e.g., **VAS 681 003A - Charger for high-volt battery**
  - **VAS 6860 - Brake Filling and Bleeding Equipment**
  - **VAS 6122 - Engine plug set**

**Check hydraulic unit, replace if necessary, and re-program PSM control unit**

Work Procedure: 1 Check hydraulic unit.

- 1.1 Connect and switch on the battery charger.
- 1.2 Connect the Tester to the vehicle and start it. Switch on ignition.
- 1.3 In the control unit Overview, select the control unit **"Brake electronics (PSM incl. parking brake)"**.
- 1.4 Select the **"Service and repairs"** menu and then perform and assess the **"Functional testing of the hydraulic unit"** function with menu guidance.

| Assessment |                                       | Action   |
|------------|---------------------------------------|--|
| (✓)        | Hydraulic unit function <b>OK</b>     | <b>Ventilate brake system in the conventional way and re-program PSM control unit.</b><br>Continue with Step ⇒ 2.  |
| (X)        | Hydraulic unit function <b>not OK</b> | <b>Replace PSM control unit incl. hydraulic unit</b><br>⇒ <i>Workshop Manual '453055 Replacing hydraulic unit'</i> (includes automatic programming of the PSM control unit)<br><b>and finally</b><br>Continue with Step ⇒ 7. |

- 2 Bleed the brake system in the conventional way.  
⇒ *Workshop Manual '470107 Bleeding brake system'*
- 3 Charge high-volt battery for **at least 60 seconds** and then remove high-volt charger (rigidity learning routine is initiated).  
The steering must be in the straight-forward position (steering angle near 0°).  
⇒ *Workshop Manual '270889 Charging high-voltage battery'*

## 4 Re-program PSM control unit.

The basic work procedure for control unit programming is described in the Workshop Manual ⇒ *Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Programming"*.

**Specific information on control unit programming as part of this Technical Information:**

|   |  |
|---|--|
| Required PIWIS Tester software release:   | <b>42.400.050</b> (or higher)  |
| Type of control unit programming:   | Control unit programming using the ' <b>Automatic programming</b> ' function of the brake electronics control unit.<br><br>' <b>Brake electronics (PSM, including parking brake)</b> ' control unit – ' <b>Coding/programming</b> ' menu – ' <b>Automatic programming</b> ' function.  |
| Programming sequence:   | Read and follow the <b>information and instructions on the PIWIS Tester</b> during the guided programming sequence.<br>During the programming sequence, the <b>brake electronics (PSM, including parking brake)</b> control unit is re-programmed and then <b>automatically re-coded</b> .<br><br><b>Do not interrupt programming and coding.</b><br><br>Once the control units have been programmed and coded, you will be prompted to switch the ignition off and then back on again after a certain waiting time.<br><br>Backup documentation of the new software versions is then performed. |
| Programming time (approx.):   | Programming takes up to <b>15 minutes</b> , depending on equipment.  |
| Software programmed during this action:   | <ul style="list-style-type: none"> <li>PSM control unit software release: <b>0190</b></li> </ul> Following control unit programming, the software release can be read out from the relevant control unit using the PIWIS Tester in the menu ⇒ 'Incremented identifications'.   |
| Procedure in the event of error messages appearing during the programming sequence: | ⇒ <i>Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'</i> .   |
| Procedure in the event of a termination in the control unit programming:            | Repeat control unit programming by restarting programming.   |

- 5 Read out and delete PSM control unit fault memories.
- 6 Exit the diagnostic application. Switch off ignition. Disconnect Tester from vehicle.
- 7 Switch off and disconnect the battery charger.
- 8 Check and evaluate brake pedal travel.

| Assessment |   | Action   |
|------------|---|--|
| (✓)        | Brake pedal travel <b>OK</b>                            | <b>End of action.</b>  |
| (X)        | Brake pedal travel <b>still perceived as "too long"</b> | <b>Perform further actions.</b><br>Continue with ⇒ <i>Technical Information '9X00IN further actions'</i> |

### Further actions

Work Procedure: If, after working through and taking note of all the points listed, the brake pedal travel is still not adequate for comparison vehicles, carry out the following further steps:

- 1 Read out the 'Stiffness offset wheel brake' learning value in the PSM control unit under 'Measured values'.

| Learning value 'wheel brake rigidity offset' | Action   |
|--|--|
| > 4 mm (0.15748 inch)                        | <b>Bleed the brake system.</b><br>Go to ⇒ 2.   |
| < 4 mm (0.15748 inch)                        | Inform the customer of the causes described above. Carry out further measures/analyses <b>only after consultation</b> with the importer's Technical Support. |

- 2 Bleed the brake system. ⇒ *Workshop Manual '470107 Bleeding brake system'*



#### Information

The following bleedin routines must be carried out in the specified sequence:

1. Bleeding routine for electric brake booster (eBKV)
  2. Porsche Stability Management (PSM) bleeding routine
- 3 Charge high-volt battery for **at least 60 seconds** and then remove high-volt charger (rigidity learning routine is initiated).  
The steering must be in the straight-forward position (steering angle near 0°).  
⇒ *Workshop Manual '270889 Charging high-voltage battery'*

- 4 After bleeding the brake system, read out the 'Stiffness offset wheel brake' learning value in the PSM control unit under 'Measured values' again.

| Learning value 'wheel brake rigidity offset' | Action  |
|--|---|
| <= 3 mm (0.11811 inch)                       | End of action   |
| > 3 mm (0.11811 inch)                        | Coordination with the importer's Technical Support for further procedure. |

- 5 If the complaint persists, contact Technical Support.

### Labor position and PCSS encryption



#### Information

Invoicing is only possible if none of the specified causes were the reason for the complaint and repairs were carried out.

Labor position:

| APOS     | Labor operation                             | I No. |
|----------|---|-------|
| 47010750 | Bleeding brake system (in conventional way) |       |
| 47010753 | Bleeding brake system (PSM)                 |       |
| 47010756 | Bleeding brake system (eBKV)                |       |
| 44052006 | Removing and mounting 4 wheels              |       |
| 45305500 | Replacing hydraulic unit                    |       |
| 45620150 | Checking control unit                       |       |
| 45622550 | Programming PSM control unit                |       |
| 03350060 | On-board diagnosis                          |       |

PCSS encryption:

|                   |       |                         |
|-------------------|-------|-------------------------|
| Location (FES5)   | 47010 | Subjectively unpleasant |
| Damage type (SA4) | 1615  | brake system function   |

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