## Introduction

It can be argued that more than any other attribute, it is the absence of modern electronics and associated contemporary communication management accessories in the classic 911s that seem to be rapidly aging these cars --- particularly in driving convenience and comfort relative to highly optioned, new 911s.

With the patented (US 8,550,410 B2) PCAR MOUNTS® bracket systems for mounting and positioning Mobile Electronic Devices (MEDS), it's now possible to simply and affordably retrofit your classic 911 with the automotive electronics common to modern luxury vehicles. Many different touchscreen MEDs can be attached to PCAR MOUNTS' bracket and brace systems, for example: portable GPS, smartphone, iPod or other mp3 player, or satellite radio receiver.

## Design Considerations

A number of general purpose attachment schemes and hardware have been developed for mounting MEDs within vehicles: suction cup installations, weighted conformable bases, vent clips, trim inserts, Velcro® fastening, floor posts, etc. I found none of these approaches satisfactory for my classic 1995 993 Carrera 2. The car is just too small for windshield or top-of-the-dashboard mounts because of vision impairment. Vent clip mounting can compromise already marginal ventilation and/or put the center plastic grill in mechanical jeopardy. Other schemes have exhibited aesthetic and/or awkward location deficiencies. The PCAR MOUNTS (PCM) bracket and brace systems overcome these issues.

The PCM bracket systems are purpose built for the classic Porsche® 911 (Porsche® is a registered trademark of Dr. Ing. h.c. F. Porsche AG.) and takes advantage of the three decade continuity of its dashboard configuration. Because of this remarkably unchanged dashboard layout, the bracket design fits almost all classic 911s.

The product life cycle of MEDs, especially smartphones, is short and, seemingly, getting shorter (maybe less than a year in some cases). New capability advances and intensifying competition are driving innovation and constant change in hardware and software. Accessories for smartphones are keeping pace with these changes including, for example, magnetic mounting systems, new vehicle docking cradles and holders for these devices. The PCAR MOUNTS bracket system design incorporates several industry standardization features that give it near universal compatibility with today's MEDs and those of the future. The MED mounting platform on each bracket is configured with a pattern of face located holes arranged in the industry standard AMPS pattern consisting of 4 holes in a rectangular array spaced at 1.188 in. by 1.813 in. (30 mm by 38 mm). The AMPS hole array

is positioned in both a vertical and horizontal pattern. The PCM MED platform can accept various adaptor plates and connector mechanisms to attach directly to MEDs and/or device holder/cradles. The PCM products also include a 17mm milled aluminum swivel ball plate to enable adaptation to a range of ball/socket based MED docking cradles and holders. Ball and socket attachment of devices and docks is very common and has evolved to become an almost de-facto industry standard. The PCAR MOUNT comes with a universal magnetic pad that locks onto the 17 mm swivel ball and thin metal plates that adhere to the back of any smartphone or smartphone case. This system will securely mount any smartphone.

## Bracket System Attachment to the Classic 911 Dashboard

An innovative feature of the PCM bracket assembly is its non-invasive, **two-end** method of attachment to the classic 911 dashboard.

**From 1970**, the five cylindrical instruments housed in the oval shaped panel in front of the driver were each fitted with a collar-like, ribbed rubber boot that holds the instrument in place when pressed into its companion opening in the instrument housing panel. The PCM bracket anchoring scheme makes use of this ribbed rubber boot feature. The bracket incorporates an aluminum annular ring with thickness and radius carefully sized to fit concentrically and tightly over the ribbed rubber boot just behind its protruding rubber lip which is positioned flush with the instrument bezel. And, because of instrument symmetry, the bracket can be fit to either of the extremity instruments: the analog clock for left hand drive (LHD) cars or the fuel/oil level gauge for right hand drive (RHD) cars. The lip of the rubber boot together with the bezel of the instrument, create a flange that holds the bracket annular ring against the face of the instrument housing panel. The annular ring becomes "sandwiched" and squeezed between the bezel/rubber-lip flange and the face of the instrument housing panel. Pressure and friction hold the bracket firmly in place.

This bracket design also incorporates a support arm brace: an L-shaped, flat surface beam with S-bend(s) that fit the under-dash contours of the classic 911. A downward L-bend on the short arm (projecting outward from the dash) creates a face plate that connects to the MED mounting platform with two machine screws. The long arm of the L extends, invisibly, under the dash overhang, flush to the upper surface that sits just above the center dash knobs that include the cigarette lighter. In the later-year classics ($\geq$ 1989 for US cars, $\geq$ 1991 for ROW cars) fitted with a passenger-side airbag, there is a series of pre-existing bolts that fasten a lid cover to the vehicle's dashboard frame. One bolt, located under the edge of the center vent grill, provides a secure anchoring point for the support arm brace. Two-end anchoring of the bracket assembly reinforces bracket stability, prevents accidental lever-like dislodging of the pressed-in instrument, constrains bracket movement from road condition jarring, and generally dampens vibration of the mounted MED.

For earlier 911s without a passenger-side airbag or pre-existing lid cover bolt, the bracket support arm brace can be secured to the underside sheet metal channel of the dash overhang by 3M® Dual

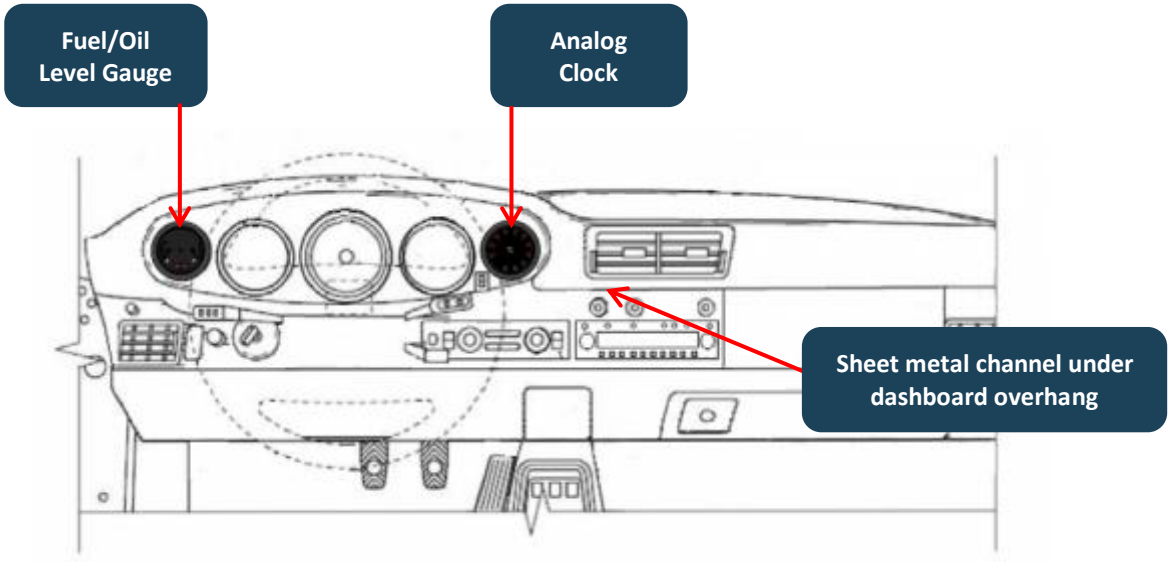
Lock™ Reclosable Fastener (3M® and Dual Lock™ are trademarks of the 3M Corporation), double-sided tape or, if mechanical fastening is desired, a sheet metal screw connection. Mechanical fastening is not required but we incorporated a pre-drilled hole in the early 11 support arm brace and supply a small self-drilling stainless screw in case you insist on this method.

There's some uncertainty as to the specific demarcation date when all vehicles were equipped with a passenger-side airbag and associated lid cover.

- For US cars, it was 1989
- For German cars , it was 1991
- For ROW cars, 1991 may also be the date

There may have been some phasing in of passenger side airbags --- **so it's important to check your car as to whether it has a passenger-side airbag and lid cover bolt** --- **BEFORE** ordering your PCAR MOUNTS Bracket System ---- don't just rely on the 1989 demarcation date.

## Anchor Point 1 – either of the extremity gauges



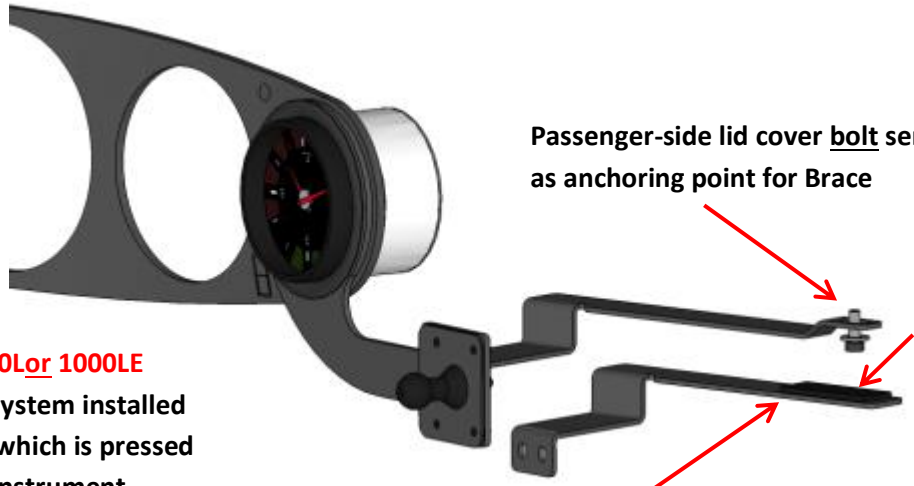

Extremity Instruments are identical in face radius

**Fuel/Oil Level Gauge is Bracket anchoring point for RHD vehicles**

**Collar-Like Ribbed Rubber Boot**

**Analog Clock is Bracket anchoring point for LHD vehicles**

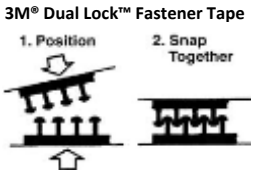
## Anchor Point 2 – sheet metal channel running under the dashboard overhang



**Passenger-side lid cover bolt serves as anchoring point for Brace**

**For cars without bolt, 3M® Dual Lock™ Tape is used for anchoring the brace**

**PCM-1000Lor 1000LE**
**Bracket System installed on clock which is pressed into the instrument housing panel**




**Pre-drilled hole to facilitate mechanical fastening with a small self-drilling screw (if desired)**

## MED Positioning

The surface profile of the oval instrument housing panel is slightly concave to the driver. Because of this panel curvature, the faces of the extremity instrument openings for the analog clock and fuel level/oil level gauge are somewhat canted to the major axis of the vehicle dash. Since these symmetrical extremity instruments are used to hold the PCM bracket systems flush to the face of the instrument housing panel, their MED mounting and positioning platforms, in turn, are also canted to the major axis of the vehicle dash. This inherent canting enhances the ability to position an MED for optimal, unobstructed driver-line-of-sight viewing. Also, ball/socket mounting of MEDs allows for multi-axis tilt and/or cant adjustment of touchscreen position for fine tuning its driver-line-of-site visibility.

## Materials and Surface Finish

The PCAR MOUNTS' bracket and brace components are produced from high quality plate aluminum. They have a **black, textured, powder coated surface finish.**

## The PCAR MOUNTS Product Line

- **PCM-1000 Series** is a curvilinear/cantilevered bracket and support arm brace system for positioning Mobile Electronic Devices (MEDs) in your classic 911 such that a mounted MED touchscreen is in a perfect location for convenient , safe, driver line-of-sight interaction

- Four design configurations to fit classic Porsche 911s with LHD and RHD from 1989* to 1998 and 1970 to 1988

1. **PCM-1000L** for LHD vehicles 1989* to 1998
2. **PCM-1000LE** for LHD vehicles 1970 to 1988
3. **PCM-1000R** for RHD vehicles 1989* to 1998
4. **PCM-1000 RE** for RHD vehicles 1970 to1988

**VERY IMPORTANT**

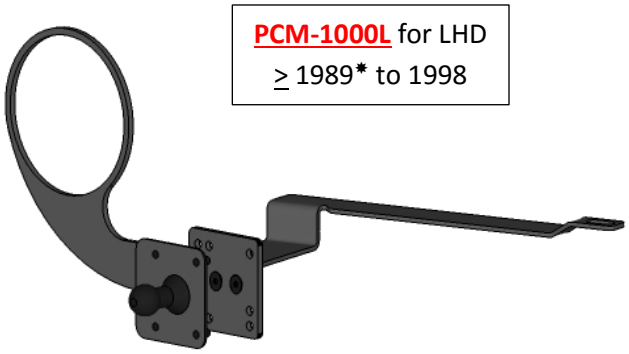
***Check your car before ordering to confirm the presence or absence of the passenger side lid cover bolt**

- **1000L or 1000R with the bolt**
- **1000LE or 1000RE without bolt**

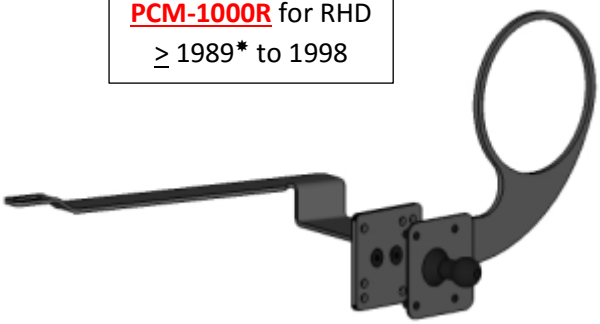
**Note: Some non USA 911s did not have a passenger-side airbag and lid cover bolt until 1991**

- **Four Product Configurations**

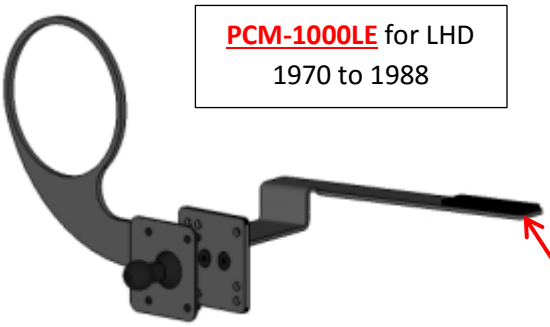
**PCM-1000L** for LHD ≥ 1989* to 1998



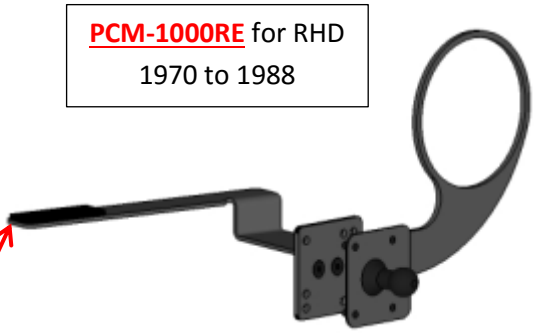
**PCM-1000R** for RHD ≥ 1989* to 1998



**PCM-1000LE** for LHD 1970 to 1988



**PCM-1000RE** for RHD 1970 to 1988



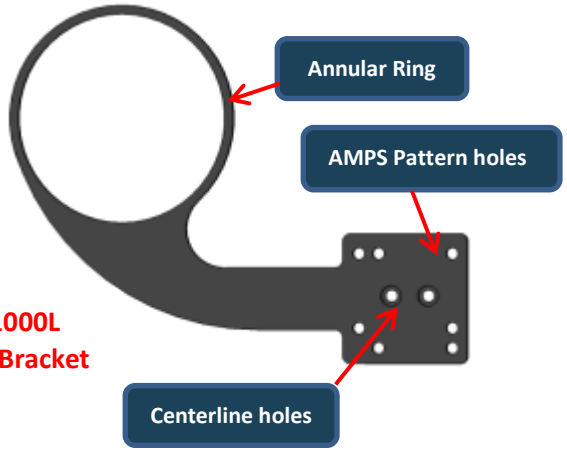
No bolt hole tab
3M® Dual Lock™ Tape

www.pcarmounts.com

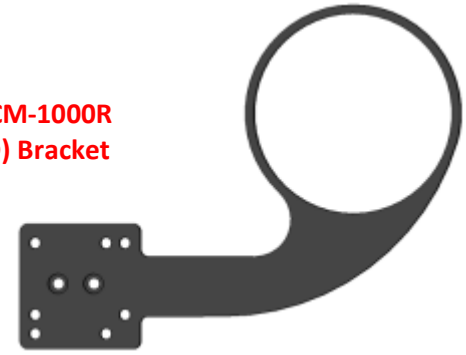
## Three components for each bracket system

1. Bracket with annular ring and MED mounting platform configured with the AMPS (industry-standard) hole pattern (30mm x 38mm rectangular spacing)
2. MED adapter plate with AMPS pattern PEM studs (8-32) and 17mm milled aluminum ball
3. Support arm brace

- **Bracket System Components**




PCM-1000L
(LHD) Bracket



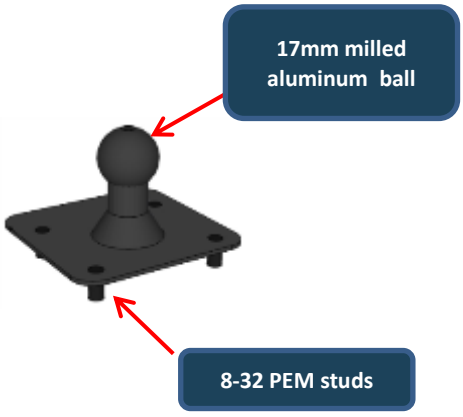
or PCM-1000R
(RHD) Bracket

The PCM-1000 Series curvilinear/cantilevered bracket with annular ring attaches to one of the extremity instruments (clock or fuel/oil level gauge) in the classic 911 instrument housing panel

The MED mounting platform is configured with two countersunk centerline holes for connecting the bracket to the support arm brace

Seven MED adaptor plate holes are arranged in the industry standard AMPS pattern (vertical & horizontal configuration) to enable attachment of a wide range of MED adapter plates

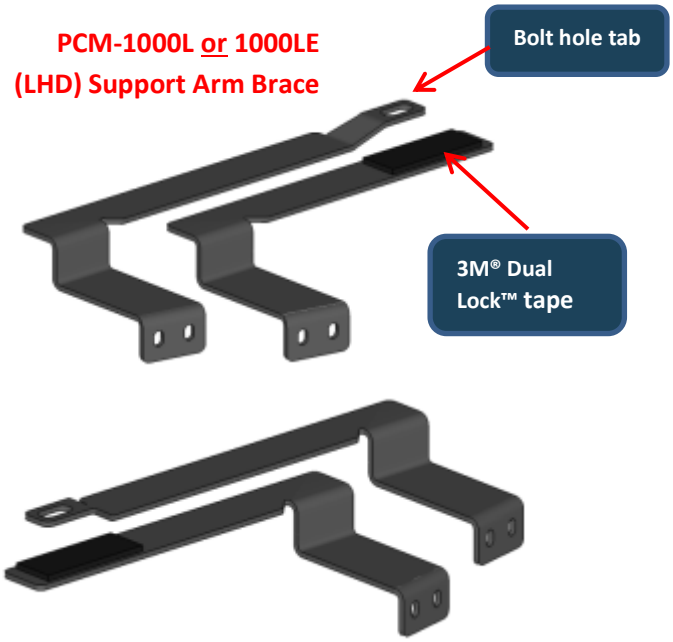
MED adapter plate with 17mm Ball




MED adapter plate fit with four PEM studs arranged in the AMPS pattern connects to the PCM-1000 Series bracket's MED mounting platform

The 17mm milled aluminum ball is a common connection for MED docking cradles often fit with a ball/socket mounting assembly

PCM-1000L or 1000LE
(LHD) Support Arm Brace




PCM-1000R or 1000RE
(RHD) Support Arm Brace

PCM-1000L, 1000LE, 1000R, and 1000RE Support Arm Braces

The PCM-1000L and 1000R Braces include a bolt hole end tab that connects to a pre-existing, passenger-side, lid cover bolt for classic 911s from 1989 to 1998 in the US and from 1991-1998 for rest of world (ROW) 911s

The PCM-1000LE and 1000RE Braces fit earlier classics that do not have a pre-existing lid cover bolt. This brace is fitted with 3M® Dual Lock™ tape which attaches to a sheet metal channel that runs under the dashboard overhang (see Installation Details)

## What's in the Box (PCM-1000L shown here)


# What's in the Box?

## Bracket System Components

## Hardware & Tools

**PCM-1000L and 1000R Bracket Systems Shown**

**Bracket with annular ring & MED mounting platform with machine screw holes arranged in an industry standard AMPS pattern**
**Note: for PCM-1000R and PCM-1000RE, countersunk centerline holes are on the opposite side**

**Two 8-32 x 3/8 in. flat socket cap screws**

**Two 8-32 acorn nuts another four with the MED adapter plate**

**One M5 x 12mm socket cap screw**

**One #10 flat washer for M5 screw**

**Support arm brace for PCM-1000L bracket system**
**Note: PCM-1000R uses a mirror image of this brace**

**M4 hex key and 3/32 in. hex key**

**MED adapter plate with 17mm milled aluminum ball and four PEM studs with acorn nuts**

**PCAR MOUNTS**
**Pry-bar tool**

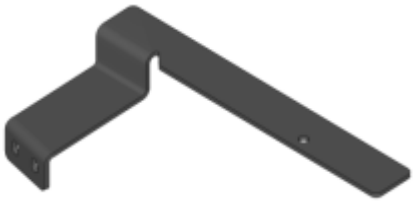
**Magnetic pad adapter with locking nut**

**Two metal plates with 3M adhesive backing**

**For 1970 to 1989 cars, the kit comes with the PCM-1000LE Brace**

**PCM-1000LE support arm brace**

**Support arm brace for PCM-1000LE Note: PCM-1000RE uses a mirror image of this brace**



**3M® Dual Lock™ Reclosable Fastener tape and alcohol wipe for cleaning attachment surfaces**

**One #6 x 3/8 in. hex head/washer stainless self-drilling screw**

**The Magnetic Pad Adapter locks onto the 17 mm swivel ball and the metal plate with 3M adhesive attaches to the phone or phone case**