»Plug&Play« Paddle Shift System Kit

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Porsche 997 GT3 Cup

FUNCTIONAL DESCRIPTION

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1. Introduction

»Plug&Play« - a complete paddle shift kit down to every screw & binder required; installed within a day!

MEGA-Line Paddle Shift kit "Porsche 997 GT3 Cup Generation 2 (built from 2010)"

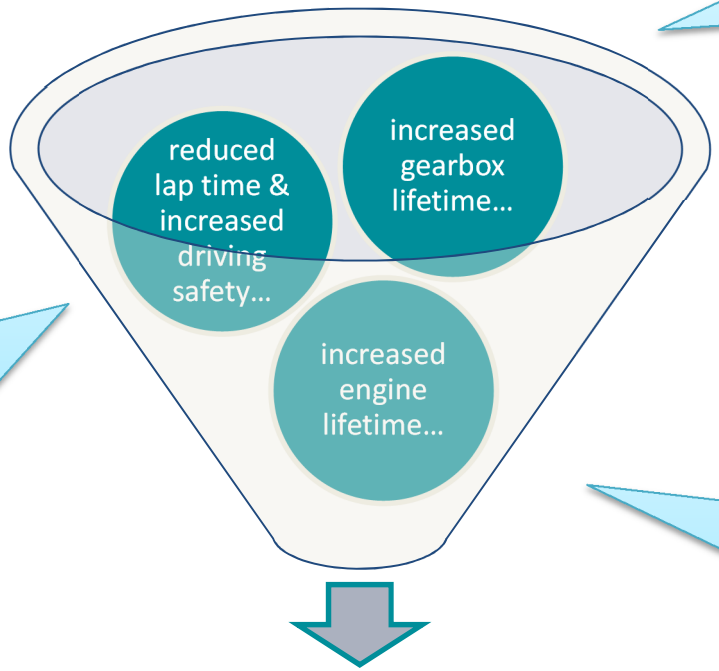
1. Introduction

- The Assisted Gearshift System (AGS) allows gearshifts to be made with sequential gearboxes by using shift paddles mounted on the steering wheel.
- The embedded software in the Gearbox Controller Unit (GCU) controls the entire gearshift sequence and communicates with the engine ECU to allow the best possible shift.
- The AGS consists of the GCU, Valve Block, gearshift actuator, blipper, steering wheel mounted shift paddles and a few additional switches on the dashboard to select neutral and emergency mode.
- The actuators are driven by compressed air generated inside the GCU. Maintenance of the compressor and the complete pneumatic system is very simple, no special tools are necessary. Even in the event of some leakage, the system will continue to operate effectively. A 16 bit micro controller is used to manage the signals for the entire system.

1. Introduction

System advantages:

… by easing shift execution to the maximum allowing the driver to fully focus on driving



… promoted by exact controls allowing absolutely precise shifts to reduce gearbox wear

… supported by the implementation of effective security functions to protect the engine, especially for down shifts

safety | vehicle lifetime |fun

maintenance costs | damages | accidents

2. System overview

MEGA-Line Porsche 997 GT3 Cup »Plug&Play« Paddle Shift Kit

- Tailor-made for standard Porsche 997 GT3 Cup vehicles with sequential gearbox for both model generations

Order No.	Item-ID	Description
10377	351-481-011	Paddle Shift kit “Porsche 997 GT3 Cup Generation 2 (built from 2010)“
11327	351-482-011	Paddle Shift kit “Porsche 997 GT3 Cup Generation 1 (built up to 2009)“

- Includes required air pipes, mounting kit per component and a detailed installation manual

- Adaptation of paddle shift kit for previous 911 Cup or RSR models possible

2. System overview

Kit Components:

The kit consists of the following components which allow a smooth and proper installation in the car without additional components and also no special tooling required.

Qty	Item-ID	Description	Qty	Item-ID	Description
1	430-211-011	Central Unit (GCU) “AGS Family II“	1	351-402-911 or 351-401-911a	Blip system “997 Cup” Gen 1* Blip system “997 Cup” Gen 2**
1	351-471-011	Mounting set GCU	1	351-441-011	Air pipe for Blip
1	351-461 011	Dash 6 Air pipe (GCU air supply)	1	351-475-011	Reverse blocker set
1	351-425-011	1:1 Connection cable GCU – Valve block	1	351-411-011	Steering wheel extension kit for shift paddles “997 Cup”
1	410-071-011	Valve block 3V “AGS Family II“	1	351-026-011b	Wiring harness “997 Cup”
1	351-474-011	Mounting set Valve block	1	351-473-011	Mounting set Harness
1	410-161-011	Shift cylinder “997 Cup“	1	378-363-012	USB interface cable
1	351-472-011	Mounting set Shift cylinder	1	351-491-011	Installation CD (incl. installation manual)
2	351-451-011	Air pipes for Shift cylinder			

* Contained in order no. 11327
** Contained in order no. 10377

2.1 Central Unit (GCU)

- The central unit is the heart of the MEGA-Line AGS, which includes the electronic control system and the compressor with reservoir. One hose supplies an external actuator (including the shift valves) with air.
- Communication with other electronic systems is realized via CAN Bus. Parameters can be modified via an USB interface (from authorized people).

2.2 Valve block 3V

- The valve block is supplied with pressured air from the Central Unit AGS, which controls the 3 valves inside according to the actual shift situation. The signal can be analyzed in the Central Unit AGS.
- An internal sensor provides information about the actual temperature.
- A data memory stores unit specific information.

2.3 Shift cylinder

- The shift cylinder is a 2 - way actuator used for pushing / pulling the gearbox lever. The pressure inlets are Dash 4.
- The shift cylinder replaces the conventional gearshift lever.

2.4 Blip cylinder

- The blip cylinder is a small actuator used to blip the throttle. It is mounted on the engine.
- The pressure inlet is Dash 3; the exhaust is protected by a small filter.

2.5 Steering wheel extension kit for paddle shift

- The shift paddles represent the human-mechanical interface for the AGS and are mounted on the steering wheel. Paddle power supply is delivered from the AGS. Shift commands from the paddles are transferred to and interpreted by the AGS central unit.
- The steering wheel as such is NOT part of the Porsche 997 Cup Kit.
- Paddle shift extension kit is delivered fully assembled on a suitable platter which can be easily mounted on the standard steering wheel.

2.6 Emergency switch / Reverse button

- The Reverse button is mounted on a console which replaces the conventional gear stick. This momentary switch is used to initialize the downshift from N gear to Reverse (this function is only unlocked with pressed clutch). For details see chapter 4 – Downshifting.

- The Emergency switch is also included in this console. It is used to activate/deactivate the emergency mode. For details see chapter 5 – Emergency Mode.

3. Upshifting

3.1 Neutral → 1st

To shift from **Neutral to the 1st gear** the driver has to **press the clutch** and **pull the Up-paddle**.

3.2 1st → 6th

To **shift up** through the gears from 1st to 6th the driver has to **pull the Up-paddle** and he has to **be on throttle** and **must not push clutch pedal**.

An upshift from 1st → 6th is **prevented** by software if:

- neutral is engaged
- 6th gear is engaged
- the down paddle is pulled
- a request is made within the blocking time of the last gear change
- Driver is off-throttle and/or clutch pedal is pressed.

3.3 Reverse → Neutral

To **shift from Reverse to Neutral** the driver has to **press the clutch** and **pull the Up-paddle**.

4. Downshifting

4.1 6th → 1st

To **shift down** through the gears from 6th to 1st the driver has to **pull the Down-paddle** and he has to **be off-throttle**.
The GCU will **deny** the requested downshift if:

- the rev limit for the next gear will be exceeded. The driver has to pull the paddle again.
- 1st gear or Neutral is engaged
- up paddle is pulled
- a request is made within the blocking time of the last gear change

4.2 1st → Neutral

To **shift from 1st gear to Neutral** the driver has to **push the clutch pedal** and **pull the Down-paddle**.

4. Downshifting

4.3 Neutral → Reverse

To shift from **Neutral to Reverse** the driver has to **press the clutch pedal** and **push the Reverse button** on the console.

4.4 Downshift 6th → 1st with pushed clutch pedal

In this mode the GCU will do an **emergency downshift** – i.e. the GCU will **not blip the engine**!
Emergency downshift is **only possible** if car speed is **below 100km/h**.

5. Emergency Mode

5.1 How to activate / deactivate Emergency Mode

To **activate Emergency Mode (EM)** the driver has to **turn the Emergency Mode switch** on the console to "**Emergency Mode position**".
To **deactivate EM** the driver has to **turn back the Emergency Mode switch** on the console.

5.2 How the GCU reacts in Emergency Mode

Emergency Mode has been implemented only to support the driver to come back home to the pit in case of issues with the gear shift system!

In Emergency Mode **every shift request** from the driver will be accepted!
All safety function of the GCU is **deactivated**!
The GCU will try to **shift up** whether the driver is in 4th gear or 6th!
If the driver is in **1st gear** and pulls the **Down-paddle** the GCU will **shift down to Neutral**!
If the engine is on **rev limiter** and the driver pulls the **Down-paddle** the GCU will **shift down**!
The system will **not blip the engine** at downshifting!
→ Hence, in emergency mode shifting will be like shifting with a conventional gearshift lever with **no protection function at all**.

6. Optional Features

6.1 Automatic Upshift functionality

The system contains an **automatic upshift** functionality which would initiate an upshift automatically when **reaching a defined threshold RPM**.
RPM thresholds are defined **per gear**.
Within the **default setting** of the system this functionality is **disabled**. To activate this feature, desired RPM thresholds per gear have to be defined.