

**Cardan Shaft (Hardy disc)**

Vehicle Type: **911 Carrera 4 (996)/911 Carrera 4S (996)**  
**911 Turbo (996)/911 Turbo S (996)**

Model Year: **As of 1999 up to 2005**

Concern: **Replacing Hardy disc on the cardan shaft during repairs**

Notes: Previously, the Hardy disc (⇒ *Figure 1*) was not available separately, and the entire cardan shaft had to be replaced. In order to improve the serviceability of these vehicles, we have now made the Hardy disc available as a separate part and it can be replaced independently of the cardan shaft, if required.



*Figure 1*

Parts Info: **PCG.421.020.01** 1 x ⇒ Hardy disc  
**996.421.145.01** 1 x ⇒ Boot

Materials: 000.043.305.73 1 x Olista Longtime 3 EP (80g)

Tools: **V.A.G 1383 A - Transmission jack**  
**9255 - Assembly sleeve**

**DANGER****Vehicle can fall down**

- Risk of squashing or crushing
  - Risk of damage to the vehicle
- ⇒ Do not place any solid objects under the raised vehicle.
- ⇒ Ensure that the lifting platform is prevented from lowering.
- ⇒ Remove solid objects before lowering the vehicle.
- ⇒ Raise the vehicle only at the jacking points provided.
- ⇒ The outer jacking points should be used primarily.

## Work Procedure: 1 Preparatory work

- 1.1 Raise the vehicle at the prescribed jacking points ( ⇒ *Workshop Manual '400 Lifting the vehicle*).
- 1.2 Remove underbody covers (rear and center ⇒ *Figure 2*) ( ⇒ *Workshop Manual '519019 Removing and installing cover for underbody*).

- 1 – Underbody cover – center
- 2 – Underbody cover – rear
- 3 – Underbody cover – side

**Information**

- Observe maximum joint angle of 20° during removal and fitting.
  - The cardan joint must not be loaded at maximum deflection (lock).
- 1.3 Remove cardan shaft ( ⇒ *Workshop Manual '390219 Removing and installing cardan shaft*).
    - 1.3.1 **ONLY** for vehicles with manual transmission:  
Support manual transmission in installation position with transmission jack.  
Remove transmission bracket/transmission support (4 x hexagon nuts).  
Secure transmission on the gear support with screws (2 x).

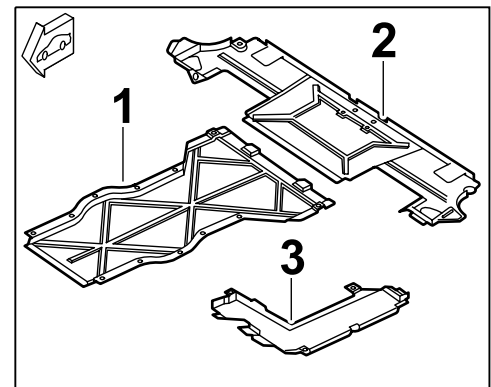


Figure 2

1.3.2 Remove hexagon-head bolt, M10 x 35 (3 x) on cardan shaft (⇒ *Figure 3*).

- 1 – Hexagon-head bolt, M10 x 35
- 2 – Cardan shaft
- 3 – Hardy disc

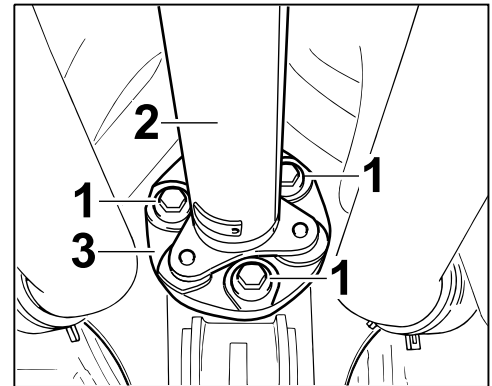


Figure 3

1.3.3 Press cardan shaft off the transmission flange using two mounting levers.

1.3.4 Pull cardan shaft out of the toothed bush profile of the central shaft and remove it.

1.3.5 Pull bellows off the central shaft (⇒ *Figure 4*).

- 1 – Bellows
- 2 – Shaft inlet on front-axle final drive
- 3 – Front-axle final drive bracket – rear

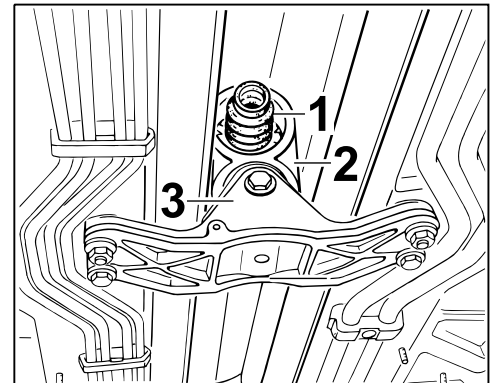


Figure 4

## 2 Replace Hardy disc

- 1 – Cheese head bolt, M10 x 35
- 2 – Hardy disc
- 3 – Cardan shaft flange
- 4 – Cardan shaft bush

- 2.1 Remove cheese head bolt, M10 x 35 (3 x) (⇒ *Figure 5*).
- 2.2 Remove Hardy disc and clean cardan shaft flange.
- 2.3 Fit new Hardy disc using the old cheese head bolts, M10 x 35 (3 x).  
**Tightening torque 45 Nm (33 ftlb.)**

## 3 Concluding work

## 3.1 Installing cardan shaft

- 1 – Assembly sleeve 9255
- 2 – Splined shaft profile on cardan shaft
- 3 – Boot (bellows)

- 3.1.1 **9255 - Assembly sleeve** must be pushed over the splined shaft profile of the cardan shaft (⇒ *Figure 6*). Then apply a light coating of Vaseline.
- 3.1.2 Push new boot (bellows) as far as it will go onto the sleeve.
- 3.1.3 Grease bush on cardan shaft flange (⇒ *Figure 5 -4-*) with approx. 3g of Olysta Longtime 3 EP.
- 3.1.4 Pull assembly sleeve off the cardan shaft splines and grease splined shaft profile with Olysta Longtime 3 EP.

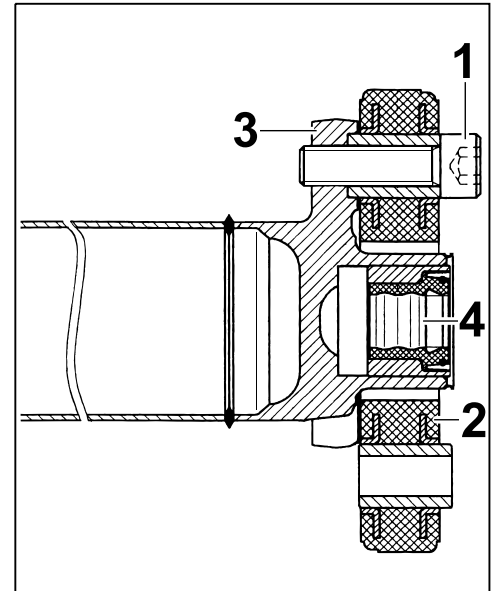


Figure 5

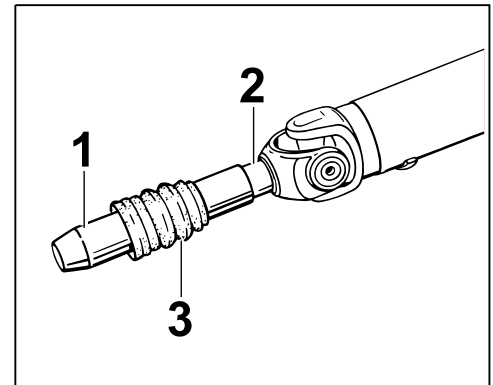


Figure 6

3.1.5 Push splined shaft of cardan shaft into the central bush/shaft on the transmission and loosely pre-fit the other end of the cardan shaft (flange with Hardy disc).

- 1 – Boot (bellows)
- 2 – Cardan shaft
- 3 – Central bush/shaft on transmission
- 4 – Groove on central bush/shaft

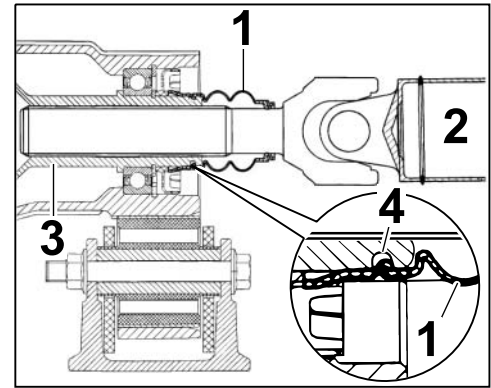


Figure 7

3.1.6 Push collar of boot (bellows) as far as required into the central shaft on the transmission until the seam engages in the groove on the central shaft.

Check that the boot (bellows) is fitted perfectly by pulling it at the folds.

3.2 Screw cheese head bolt securing Hardy disc to transmission flange on securely.

**Tightening torque 45 Nm (33 ftlb.)**

3.3 **ONLY** for vehicles with manual transmission:

3.3.1 Remove screw (2 x) on gear support.

3.3.2 Secure transmission bracket/transmission support (1 x hexagon-head bolt, M10 x 90) to transmission mount.

**Tightening torque 65 Nm (48 ftlb.)**

3.3.3 Secure transmission bracket/transmission support (41 x hexagon-head bolt, M10 x 48) to the body.

**Tightening torque 65 Nm (48 ftlb.)**

3.4 Install underbody covers (rear and center => Figure 2) ( => Workshop Manual '519019 Removing and installing cover for underbody).

3.5 Lower the vehicle and remove it from the lifting platform.

39 02 31 40: –Converting cardan shaft (1 x)–

Labor time: **130 TU**

Includes: Removing and installing underbody panelling and cardan shaft.  
Converting Hardy disc.

Dealership	Service Manager	_____	Shop Foreman	_____	Service Technician	_____	_____	_____	_____
Distribution	Asst. Manager	_____	Warranty Admin.	_____	Service Technician	_____	_____	_____	_____
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