

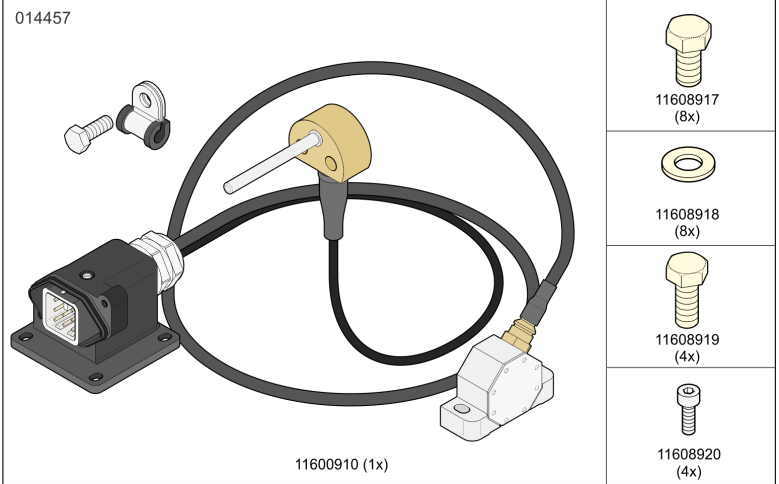
ADDRESSEES	: All owners and operators of vehicles with Siemens PEM 1DB2024-0NA06 traction motor
VEHICLE MODEL	: CX45E, TDX25E
MANUAL CHAPTER	: 2.17 Traction system - Traction motor
BULLETIN TYPE	: Service information
DATE	: February 25, 2021
SUBJECT	: To replace speed and temperature sensors on traction motor
CONDITIONS	: This service bulletin does not entitle to any reimbursement.

DESCRIPTION

This service bulletin gives step-by-step instructions on how to replace the speed and temperature sensors of the Siemens PEM 1DB2024-0NA06 traction motor.

NOTE: If either of the two sensors (speed or temperature) is defective, both sensors must be replaced.

COMPONENTS

Repair kit VH 11608921		
		
VH reference	Description	Quantity
11600910	Sensor kit (sensors, cable clip, screw for cable clip)	1
11608917	Screw M8x16mm (for cover at speed sensor)	8
11608918	Washer M8 for screw 11608917	8
11608919	Screw M8x20mm (for cover above temperature sensor)	4
11608920	Allen screw M4x12mm (for sensors connector)	4

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PRODUCTS

"Loctite 7063" cleaning agent	"Loctite 7471" activator
"Osixo I20RA/IPA" loosening agent	"Loctite 243" locking compound
"Atmosit-Compact N" sealer	"TEGO Z thermo-lubricant" high-temperature grease
"Elastosil N199 transparent" sealer	

EQUIPMENT CONDITIONS

- Park the vehicle over a flat inspection pit, with the front wheels in the straight-ahead position. Apply the parking brake. Switch off the traction system. Switch off all systems and turn off the battery isolation switch on the dashboard.
- Open the mechanical battery isolation switch.
- Put a "DO NOT START" warning on the instrument panel before starting the works.
- Put chocks in front of and behind the drive axle wheels.
- **Read the entire procedure before starting to work.**



WARNING!

Observe safe shop practices at all times.

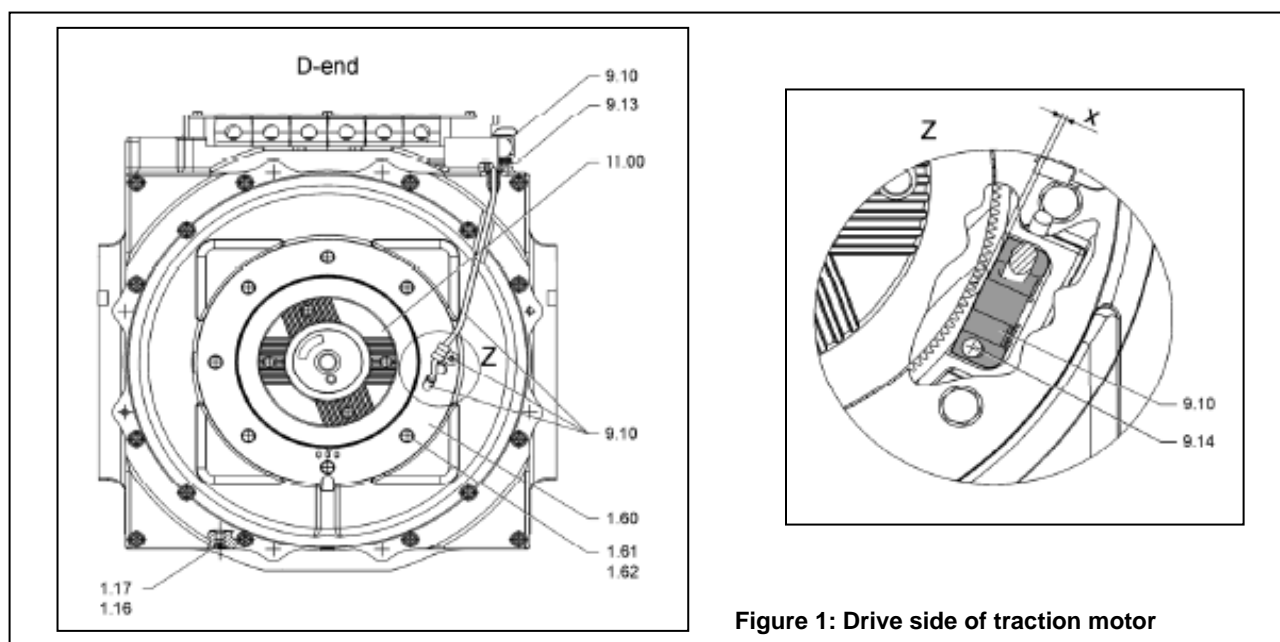


Figure 1: Drive side of traction motor

PROCEDURE:

Step	Action
1	Remove screws (9.13) and remove the sensors connector.
2	Remove the speed sensor as described under "STEP 2 IN DETAIL".
3	Remove the temperature sensor as described under "STEP 3 IN DETAIL".
4	Fit the speed sensor as described under "STEP 4 IN DETAIL".
5	Fit the temperature sensor as described under "STEP 5 IN DETAIL".

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6	<p>Connect the sensors connector as follows:</p> <ol style="list-style-type: none"> Connect the connector to the vehicle wiring. Apply Loctite 7471 activator on the thread of the new hexagon socket head screws (9.13) and leave to dry. Prescribed drying time at ambient temperature above 20°C (68°F): at least 2 minutes. Apply Loctite 243 locking compound to the thread of screws (9.13). Fit screws (9.13) and tighten to a torque of 2.5 Nm (1.84 ft.lbf).
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End of procedure.

STEP 2 IN DETAIL: To remove speed sensor (figure 1)

Step	Action
2.1	<p>Remove cover (1.60) as follows:</p> <ol style="list-style-type: none"> Remove the M6 screw of the cable clip for speed sensor (9.10) on cover (1.60). Discard the screw. Remove the clip. Remove the eight screws together with their washers (1.61/1.62) from cover (1.60). Discard the screws and washers. Remove cover (1.60).
2.2	<p>Remove speed sensor (9.10) as follows:</p> <ol style="list-style-type: none"> Remove screws (9.14). Loosen the sealer in the cable duct and remove the connector cable from the cable duct.

STEP 3 IN DETAIL: To remove temperature sensor (figure 3)

Step	Action
3.1	<p>Remove cover (9.11) as follows:</p> <ol style="list-style-type: none"> Remove screws (9.12). Remove cover (9.11).
3.2	<p>Remove temperature sensor (9.10) as follows:</p> <ol style="list-style-type: none"> Loosen the sealer in the cable duct. Remove temperature sensor (9.10) from frame.

STEP 4 IN DETAIL: To fit speed sensor (figure 1)

Step	Action
4.1	<p>Fit speed sensor (9.10) as follows:</p> <ol style="list-style-type: none"> Thoroughly remove grease and all remainders of sealer from the cable duct. Apply Loctite 7471 activator on the thread of the new screws (9.14) and leave to dry. Prescribed drying time at ambient temperature above 20°C (68°F): at least 2 minutes. Apply Loctite 243 locking compound to the thread of screws (9.14). Fit the speed sensor with screws (9.14). The reading side of the sensor has to be directed towards the tooth ring of the flange! Measure the clearance between the speed sensor and the tooth ring. Prescribed clearance: 0.65 ± 0.1 mm (0.026 ± 0.004 inch). If necessary, adjust clearance by repositioning the speed sensor. Tighten the screws to a torque of 5 Nm (3.7 ft.lbf). Put the cable in the middle of the cable duct.

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4.2

Fit cover (1.60) as follows:

- a. Using an appropriate thread tap, thoroughly remove all remains of old locking compound from the tapped holes.
- b. Check the contact faces of the bearing shield and the cover (1.60) for damage; consequently clean them thoroughly with Loctite 7063 cleaning agent. The faces have to be clean, degreased and dry. Prescribed drying time at ambient temperature above 20°C (68°F): at least 1 minute.
- c. Apply a thin layer of Osixo I20RA/IPA loosening agent to the contact surface at the inside of cover (1.60) and leave to dry. Prescribed drying time at ambient temperature above 20°C (68°F): at least 2 minutes.
- d. Apply an uninterrupted bead (4 mm/0.16 inch dia.) of Atmosit-Compact N sealer to the contact faces of the bearing shield and leave to dry. Prescribed drying time at ambient temperature above 20°C (68°F): at least 15 minutes.
- e. Apply Loctite 7471 activator to the thread of the eight new screws securing the cover and leave to dry. Prescribed drying time at ambient temperature above 20°C (68°F): at least 2 minutes.
- f. Apply liquid adhesive Loctite 243 to the screw threads.



CAUTION!

Pay attention to the correct mounting position of the cover. The opening for the cable passage has to face the speed sensor, otherwise there is a risk of damaging the sensor cable.

- g. Hold the cover so that the opening for the cable passage is facing the sensor, consequently push it over the flange and route the sensor cable through the cable passage. With the cover mounted correctly on the bearing shield, install the eight fixing screws, provided with a new washer. First hand-tighten the screws; then cross-tighten them in stages to a torque of 20 Nm (15 ft.lbf).
- h. Apply Loctite 7471 activator to the thread of the new fixing screw for the cable clip. Prescribed drying time at ambient temperature above 20°C (68°F): at least 2 minutes.
- i. Push new cable clip over the sensor cable.
- j. Apply Loctite 243 locking compound to the thread of the screw.
- k. Fasten the cable clip on cover (1.60) and tighten the screw to a torque of 8 Nm (6 ft.lbf).
- l. Cover the cable passage on cover (1.60) with Elastosil N199 transparent sealer (see figure 2).



Figure 2

- m. Install the speed sensor cable in the cable duct, and fill the cable duct completely with Elastosil N199 transparent sealer.

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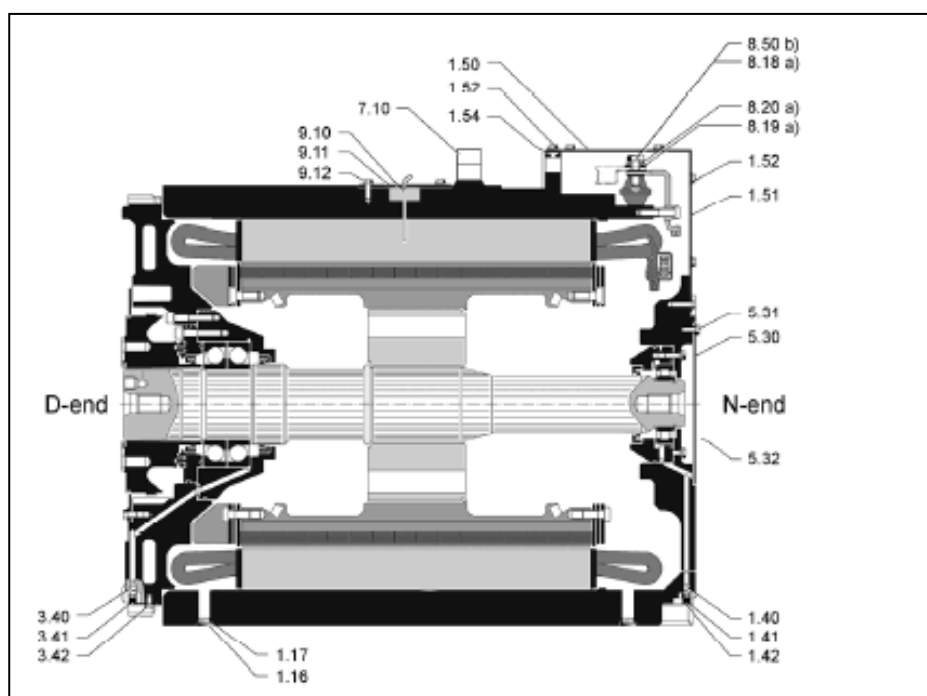


Figure 3

STEP 5 IN DETAIL: To fit temperature sensor (figure 3)

Step	Action
5.1	Thoroughly remove grease and all remainders of sealer from the cable duct.
5.2	Remove all remainders of sealer on cover (9.11) and on the contact face of the frame.
5.3	Fit temperature sensor (9.10) as follows: <ul style="list-style-type: none"> a. Fill the mounting hole of the sensor completely with TEGO Z thermo-lubricant high-temperature grease, so that the grease is pressed out of the hole when the sensor is fitted. b. Fit the temperature sensor and install the cable in the duct.
5.4	Fit cover (9.11) as follows: <ul style="list-style-type: none"> a. Using an appropriate thread tap, thoroughly remove all remains of old locking compound from the tapped holes. b. Fill the cable duct with Elastosil N199 transparent sealer at cover (9.11), so that the cable duct is sealed when the cover is fitted. c. Apply an uninterrupted bead (4mm/0.16 inch dia.) of Elastosil N199 transparent sealer to the contact faces of the frame cover. d. Install the cover and make sure the holes in the cover correspond with the tapped holes in the frame. e. Apply Loctite 7471 activator on the thread of the new screws (9.12) and leave to dry. Prescribed drying time at ambient temperature above 20°C (68°F): at least 2 minutes. f. Apply Loctite 243 locking compound to the thread of the screws. g. Fit the screws and tighten them to a torque of 20 Nm (15 ft.lbf). h. Install the temperature sensor cable in the cable duct, and fill the cable duct completely with Elastosil N199 transparent sealer.

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HELP DESK:

If there are any questions, please call ABC Customer Care & Parts Source toll-free for guidance on 1-877-427-7278. Listen for the prompts for warranty and select that option.

DISCLAIMER:

The procedures contained herein are not exclusive. Van Hool cannot possibly know, evaluate, or advise the transportation industry of all conceivable ways in which a procedure may be undertaken or of the possible consequences of each such procedure. Other procedures may be as good, or better, depending upon the particular circumstances involved. Each carrier who uses the procedures herein must first satisfy itself thoroughly that neither the safety of its employees or agents, nor the safety or usefulness of any products, will be jeopardized by any procedure selected.

INFORMATION HANDLING:

Important additions and modifications regarding technical information not yet included in the manual will be communicated through Service Bulletins.

VAN HOOL CUSTOMER PORTAL:

Consult the customer portal regularly for the latest service documentation. In addition to the maintenance manual, you will also find the operating manual and the spare parts catalogue of your vehicle on the customer portal. The customer portal is accessible through www.vanhool.be, only with a code (password) from Van Hool. If you do not have a password yet, request it by using the link on the Van Hool website.