

Electropneumatic Pressure Converter "EPW"

Complaint: insufficient performance, noises

Vehicle:	Product:	Electropneumatic pressure converter "EPW"
Various	Pierburg No.:	Various: See the currently valid catalogues, the TecDoc-CD respectively systems based on TecDoc data.

Product description

Electropneumatic pressure converters are used in large numbers for

- Exhaust gas recirculation systems (EGR) and
- VTG chargers ("Variable Turbo Geometry", turbochargers with adjustable guiding blades).

Electropneumatic pressure converters operate just like "dimers" in an electric circuit: From a low pressure and atmospheric pressure a mixed pressure (control pressure) is formed in the "EPW" which may be adjusted infinitely through a pneumatic actuator.

For further basic information on "EPW" units please refer to our Service Information *si 0065*.

Complaint

Within the scope of our complaints processing, the following complaints have reached us:

- The "EPW" is the source of a well audible noise ("squawking").
- The turbocharger does not perform.
- No exhaust gas is returned i.e. increased nitrogen oxide levels in the exhaust gas.

Causes

Our analyses indicate that the cause for the malfunction cannot be attributed to a defective "EPW".

In particular in the case of very stiff connecting hose and those having small cross-sections, the column of air trapped in the connecting hoses between actuator and "EPW" may oscillate (see → figure 2).

In certain cases, a resonance may then occur which will prevent the "EPW" from operating properly.

The corresponding "EPW" is not defective.

Its operation is only impaired through the resonance of the oscillating column of air in the connecting hose.

This type of malfunction can be detected through a well audible noise ("squawking").




Fig. 1 Product view "EPW"

The right of modifications and deviations from pictures is reserved. Assignment and replacement, see → the currently valid catalogues in each case, TecDoc-CD respectively systems based on TecDoc data.

Possible Remedy

In most cases the malfunction can be remedied through only a few measures:

- Use connecting hoses having a larger inner diameter.
- Use connecting hoses of lower stiffness.
- Interchange the connections of the connecting hose: Pull a possibly present elbow off from the "OUT" connection on the "EPW" and interchange it with the connection piece at the pneumatic actuator.

 Make sure that no hoses are buckled.

Prevent the hoses from coming into contact with hot engine parts. In such cases there is the **risk of a fire**.

The work described above must only be done by qualified personnel.

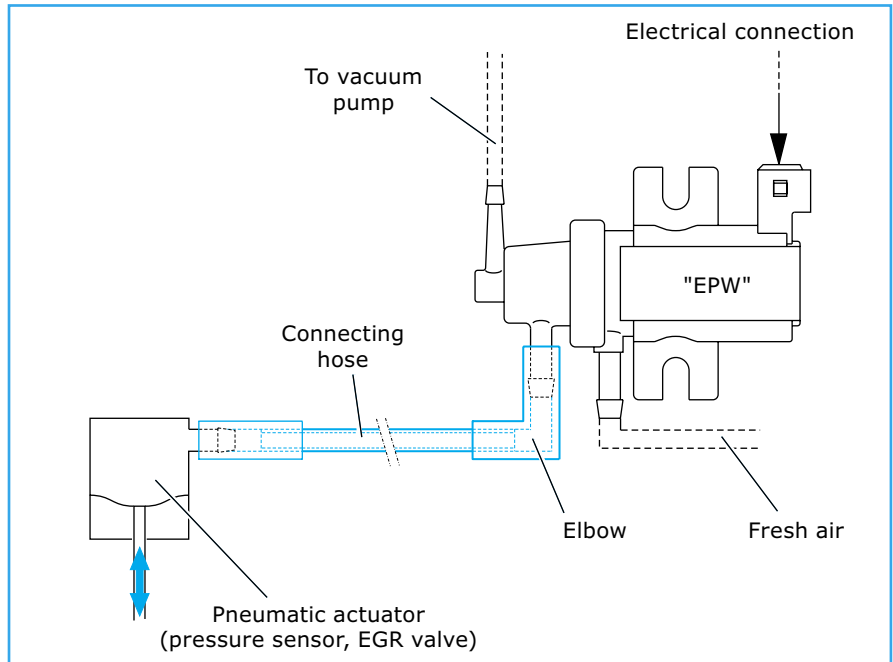


Fig. 2

On-Board diagnostics "OBD" and possible OBD error codes.

In case of vehicles equipped with OBD systems, the "EPW" units are electrically monitored.

Here the following OBD error codes can occur:

Direct monitoring of the "EPW":	
P0033	Waste gate - Malfunction of the electric circuit
P0034	Waste gate - Signal too low
P0035	Waste gate - Signal too high
P0234	Engine charging - Limit value exceeded
P0235	Engine charging - Limit value not attained
P0243	Waste gate A - Malfunction of the electric circuit
P0244	Waste gate A - Range/function fault
P0245	Waste gate A - Signal too low
P0246	Waste gate A - Signal too high
P0247	Waste gate B - Malfunction of the electric circuit
P0248	Waste gate B - Range/function fault
P0249	Waste gate B - Signal too low
P0250	Waste gate B - Signal too high

Indirect monitoring of the "EPW" by monitoring the operation of the EGR valve:	
P0400	Exhaust gas return - Malfunction flow rate
P0401	Exhaust gas return - Insufficient flow rate was determined
P0402	Exhaust gas return - Excessive flow rate was determined
P0403	Exhaust gas return - Malfunction of the electric circuit
P0404	Exhaust gas return - Range/function fault