



Examination report

Diesel fuel filter

SWK 2000/10

- Part A : Differential pressure curves
- Part B : Water separation
- Part C : Solids separation
and
backwashing

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Report

on the examination of diesel fuel filter
SWK 2000/10

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Examination object Diesel fuel filter SWK 2000/10 with
filter elements
• 10 µm
• 30 µm

Aims of the examination A. Measurement of the pressure loss
curves
B. Measurement of the degrees of
water separation with the 30 µm filter-
elements
C. Measurement of solids separation
and backwashing behaviour with a
30 µm filter element

Part A

Differential pressure curves

1. Examination object

The diesel fuel filter SWK 2000/10 to be examined is designed for installation on the suction side. The nominal flow rate is 10 l/min.

Extra light heating oil with a density of 0.845 g/cm³ (at 15 °C) was used as the test oil.

2. Examination commission

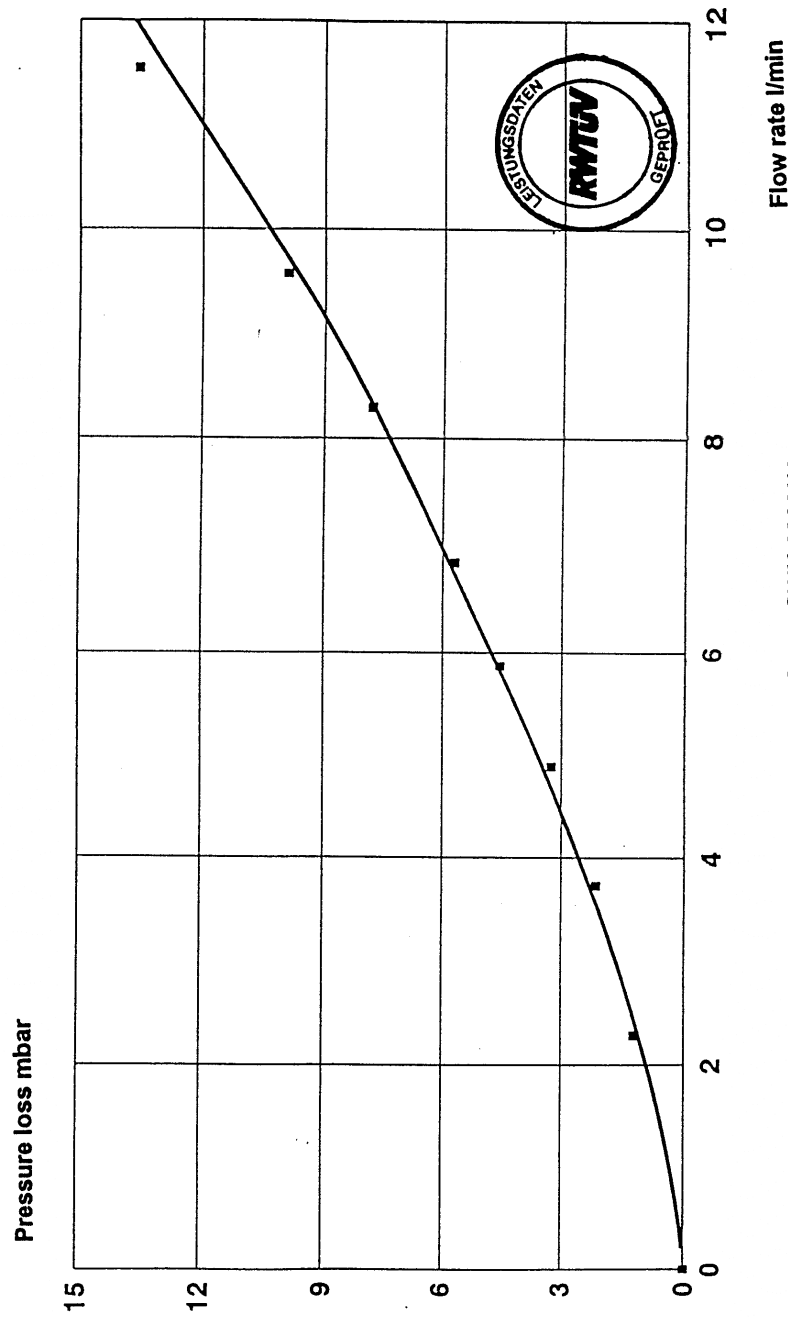
Measurement of the pressure differentials up to the nominal flow rate of 10 l/min. with the 10 µm and 30 µm filter elements and the plotting of the differential pressure curves ($\Delta p = f(V)$).

3. Results of the examination

The differential pressure curves are shown in Annex 1 of Part A of this examination report.

Annex

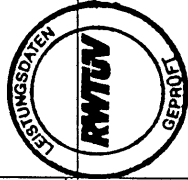
Pressure loss measurement on a diesel fuel filter



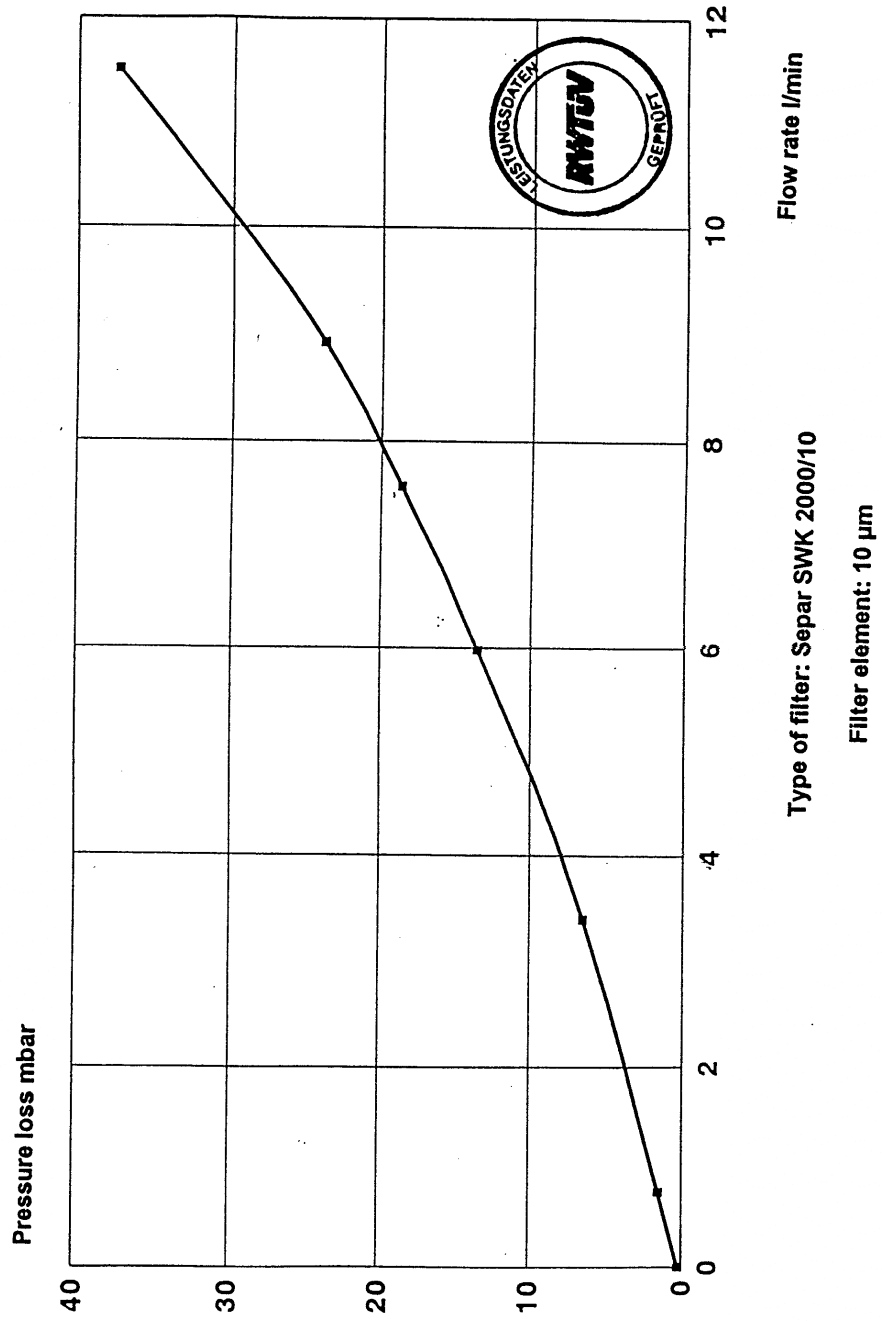
Flow rate l/min

Type of filter: Separ SWK 2000/10

Filter element: 30 µm



Pressure loss measurement on a diesel fuel filter



Part B

Water separation

1. Examination object

The diesel fuel filter SWK 2000/10 to be examined is designed for installation on the suction side. The nominal flow rate is 10 l/min.

Extra light heating oil with a density of 0.845 g/cm³ (at 15 °C) was used as the test oil.

The water was continuously fed into the filter's suction line and intermittently extracted from the filter casing without interruption of the test run.

2. Examination commission

Determining the degrees of water separation using 30 µm filter elements.

- Feeding water into the test oil flow : 0.2 % by volume
- Test oil flow rates : 4 l/min., 6 l/min., 8 l/min. and 10 l/min.
- Test time : 60 mins in each case
- Sampling after 15 mins, 30 mins, 45 mins and 60 mins.

3. Results of the examination

The results of the measurements are shown in Annex 1 of Part B of this examination report.

The water content of all samples taken after filtering was below the detection limit (< 100 ppm).

Annex

Water separation
Diesel fuel filter SWK 2000/10

Filter element : 30 µm
 Test oil flow rates : 4 l/min, 6 l/min, 8 l/min, 10 l/min
 Feeding water : 0.2 % by volume

Point when sample taken [min]	Sample no. ¹⁾ [-]	Water content in test oil flow [mg/kg]	Water content of the sample ²⁾ [mg/kg]	Degree of water separation [%]
-	2nd. sample	---	< 100	---
15	10-30-4-15	2481	< 100	> 96,0
30	10-30-4-30	2481	< 100	> 96,0
45	10-30-4-45	2481	< 100	> 96,0
60	10-30-4-60	2481	< 100	> 96,0
15	10-30-6-15	2391	< 100	> 95,8
30	10-30-6-30	2391	< 100	> 95,8
45	10-30-6-45	2391	< 100	> 95,8
60	10-30-6-60	2391	< 100	> 95,8
15	10-30-8-15	2388	< 100	> 95,8
30	10-30-8-30	2388	< 100	> 95,8
45	10-30-8-45	2388	< 100	> 95,8
60	10-30-8-60	2388	< 100	> 95,8
15	10-30-10-15	2357	< 100	> 95,8
30	10-30-10-30	2357	< 100	> 95,8
45	10-30-10-45	2357	< 100	> 95,8
60	10-30-10-60	2357	< 100	> 95,8

1) Structure of sample no.: type of filter - size of pores [µm] - test oil flow rate [l/min] - point when sample taken [min]
 2) Detection limit: 100 mg/kg

Part C

Solids separation and backwashing behaviour

1. Examination object

The diesel fuel filter SWK 2000/10 to be examined is designed for installation on the suction side. The nominal flow rate is 10 l/min.

Extra light heating oil with a density of 0.845 g/cm³ (at 15 °C) was used as the test oil.

Coarse air cleaner test dust was used as the solid.

2. Examination commission

Measurement of solids separation and backwashing behaviour with use of a 30 µm filter element was as follows:

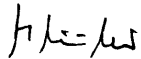
- (1) Exposure of the filter to clean test oil (filtered through a 2 µm filter element) and the measurement of pressure loss.
- (2) Switching over to the contaminated oil tank.
- (3) At $\Delta p > 200$ mbar the pump was switched off and, at the same time, the filter was shut off on both the suction and the pressure sides.
- (4) Opening of the vent screw and draining of the test oil from the filter casing including all the solid slurry; determination of the solids content in this sample.
- (5) Restart-up of the system with clean test oil and measurement of pressure loss.
- (6) etc.
 - o Test oil flow rate : 8 l/min.
 - o Solids concentration in the test oil : 0.1 % by weight

3. Results of the examination

The results of the measurements conducted with regard to the solids separation and backwashing behaviour are shown in Annex 1 of Part C of this examination report.

Annex

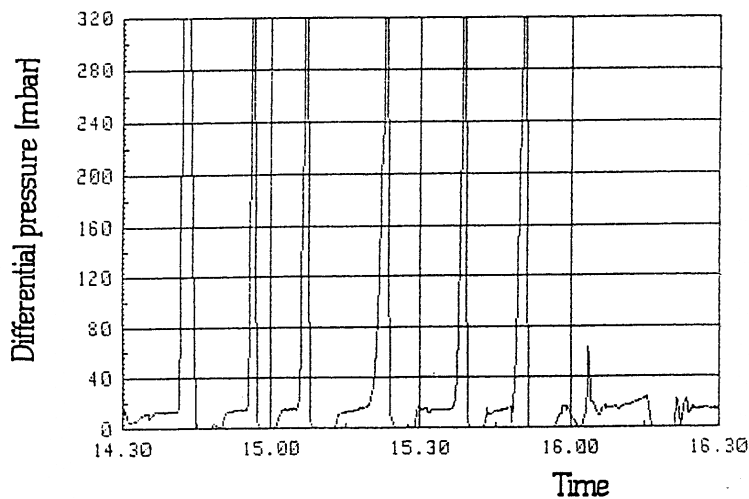
For the contents



Dipl.-Ing. R. Schüler

RHEINISCH-WESTFÄLISCHER TÜV
Energy Technology Subdivision**Solids separation measurement**

Filter : SWK 2000/10
Filter element : 30 μm
Solid : Coarse air cleaner test dust
Solid concentration rate at the start : 0.1 % by weight (corresponding to 100 g)
Test oil flow rate : 8 l/min.



Δp at the start : 13 mbar
 Δp after run 1 : 14 mbar
 Δp after run 2 : 15 mbar
 Δp after run 3 : 14 mbar
 Δp after run 4 : 14 mbar
 Δp after run 5 : 14 mbar
 Δp after run 6 : 15 mbar

Total amount of solids in test oil : 100 g
Total amount of solids in the samples : 67.7 g