

WÖHLER

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1 General Information

- 9.1 Operation Manual Information** This operation manual allows you to safely work with the Wöhler RP 72 Soot Test Pump. Please keep this manual for your information.

The Wöhler RP 72 Soot Test Pump should be employed by professionals for its intended use only.

Liability is void for any damages caused by not following this manual.

- 9.2 Notes**



WARNING!

Not following this warning can cause injury or death.



ATTENTION!

Not following this note can cause permanent damage to the device.



NOTE!

Useful information

- 9.3 Intended Use**

The soot test pump helps to determine the soot number of liquid fuel burners according to the implementing regulation of the German Federal Immission Control Act. .

- 9.4 Components**

Device	Components
Wöhler RP 72 soot test pump	Soot Test Pump
	Extraction Probe 220 mm
	Measuring head

9.5 Manufacturer **Wöhler Messgeräte Kehrgeräte GmbH**
 Wöhler-Platz 1
 33181 Bad Wünnenberg
 Tel.: +49 2953 73-100
 Fax: +49 2953 73-250

2 Technical Data

Description	Data
Sample	With a probe diameter of 6,0 mm: 1,63 l ± 0,07 l with 10 strokes in 60 seconds
Operating Temperature	+10°C to +30 °C
Accuracy	Soot number ± 0,2

3 Component Explanation

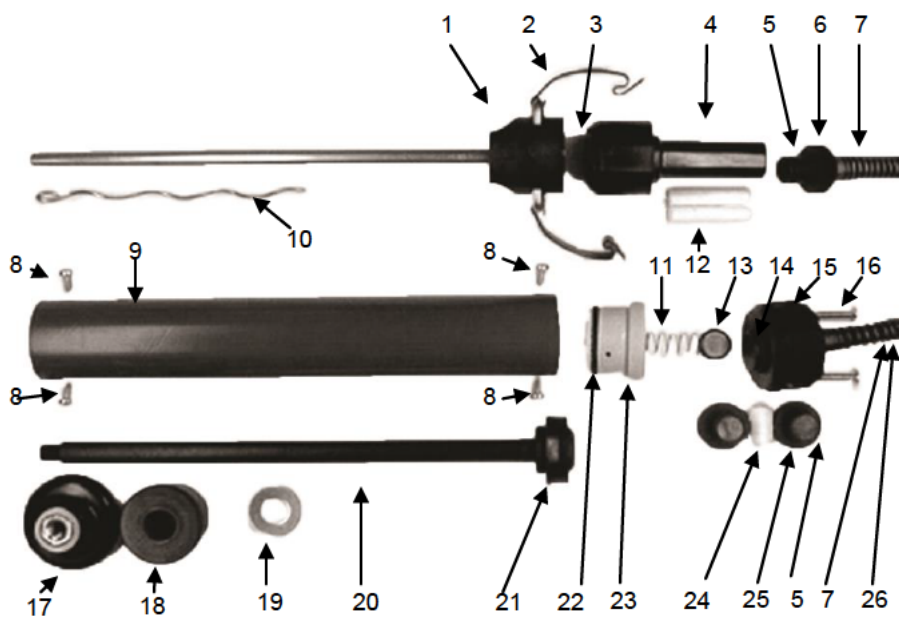


Fig. 1: Components

Component Explanation

Component Explanation	Order no.
1 Measuring head with extraction probe and turbulence spiral (inside)	7547
2 Clamps	2447
Filter Paper TÜV 12 RgG 001	Accessories
4 Measuring Head - Makrolon	3879
5 O ring 9 x 2	2334
6 Stopper with O ring	2442
7 protection spring	2441
8 Screws M 4,2 x 9,5 (4 pieces)	2428
9 Pump Tube RP 72	2427
10 Turbulence Spiral	20401
11 Spring for Valve 11 x 0,4	2346
12 Cotton Wool Filter Rolls, long (2 pieces)	Accessories
13 Valve Disc	2345
14 O ring 18 x 2.2	2434
15 Valve lid	7997
16 Screws 3/16" x 20	2435
17 Pump Botton with M12 inside thread	2420
19 Aluminium disc	2424
Piston Guide	2459
20 Piston with M12 thread	3878
21 Sleeve	2423
22 O ring 30 x 3	2430
Valve receiving means	2429
24 Cotton Wool Filter Rolls, short	5290
25 Plug (2 pieces)	2438
Not shown in figure: Measurement hose Ø 5,5 mm, 1 m long	2338

4 Function test of the Soot Test Pump

4.1 Measuring head and probe



ATTENTION!

The measuring head must be clean.



Fig. 2: Measuring heads

The clamps on the side must hold the PVC part and the aluminium part tightly together.

The water trap at the measuring head has to be sealed off with an O-ring, this also applies to the screwed-in sampling probe or the screwed-in smoke testing plug.

How to perform the function test:

- Remove the piston (20) out of the pump.
- Hold the tip of the probe into water.
- Press the piston (20) into the pump again.

During this procedure, no air bubbles should escape from the tip of the probe.

The valve disc (13) should not be deformed and should lie with its bulging side on the stainless steel spring 11. Both parts should rest unrestricted in the valve receiving means (23).

4.2 Tightness of the pump

The soot test can only be done properly, if the pump is tight. How to perform the tightness test:

Bend and squeeze the hose with inserted piston and then pull the piston right up.

After about 3 seconds the piston should jump right down into the pump when released.

Remove the piston (20) out of the pump once again.

The piston will rebound completely, if the pump is tight.

If this does not happen, check the items listed below.

Perfect valve rings in their right positions:

- at the water catcher (6) at both plugs (O ring 5)
- at the valve ring 15 (O ring 14)
- at the valve receiving means (O ring 22)

Check sleeve at the piston: the sleeve (21) has to fit completely into the rabbet of the sleeve holder.

- The outer valve lip of the sleeve should not be damaged.

5 Determination of the soot number

5.1 Function



NOTE!

The soot test pumps determine the soot number in heating system using liquid fuel, according to the first amendment to the first decree for the implementation of the Federal Emission Protection Law from 22. Sept. 1978.

From the core of the smoke gas a defined sampling is sucked through a filter paper. The coloration that the smoke gas causes on the filter paper is compared to the fields of a soot comparison chart.

5.2 Taking the sample

The determination of the soot number in the smoke gas and therefore the diagnosis, if there are also oil derivatives in the smoke gas, has to be carried out 3 times., see chapter 5.3. Each time 10 strikes will be necessary. The sample has to be taken out right angled to the flowing direction of the flue gas .

An additional measurement has to be carried out if the filter paper

- was decolorized due to over-heating
- has become noticeably humid due to condensation or
- if no even coloration occurred on the filter paper.

5.3 Determination of the soot number

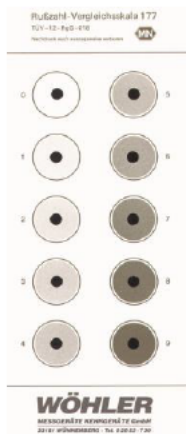


Fig. 3: Soot comparison chart

- Put the used filter paper under the soot comparison chart and search the matching segment.

The soot number of the sample is given by the number of the matching segment.

- Determine the arithmetical mean of three soot numbers and round it up or down to the next number.

This rounded mean represents the soot number of the heating system.

6 Taking the sample



NOTE!

To avoid condensation on the filter paper, the measuring head (1) with the turbulence spiral and the probe should be warmed on the boiler.

6.1 Preparation

- Place the filter paper between the measuring heads (1) and (4).
- Close the measuring heads by pressing the clamps 2. It is important that the notch pin engages into the notch of the ryton part.



NOTE!

A few quick pump strokes, previously to the measurement, increase the operational qualities of the instrument.

- Fix the sampling probe tightly in the flue gas pipe at the point of the highest temperature. Use an cone 8 mm Ø.

6.2 Extracting the smoke gas



Fig. 4: Extracting the smoke gas

Do 10 pump strokes as follows:

- Pull out piston (20) slowly (in about 2-3 seconds) and hold it in the final position for about 3 seconds, so that a pressure compensation can be made.

! ATTENTION!

Through the filter paper the pressure compensation can only take place slowly. Therefore it is absolutely necessary to wait 3 seconds before pressing the piston back.

- Press the piston back.
- Repeat this procedure 10 times.

! ATTENTION!

Waiting times, with pulled up piston should strictly be kept, so that the pump can draw the right amount of flue gas.

- Take the measuring head with the extraction probe (1) out of the check opening.
- Remove the clamps (2) from the measuring head (4).
- Remove the filter paper and analyze the soot-spot on the paper as explained in chapter 5.3



NOTE!

The excentrical check opening of the measuring head (1) allows several tests with the same paper moving the filter paper.

7 Maintenance

Proper operation of the Wöhler RP 72 Soot Test Pump requires regular maintenance. .

7.1 Maintenance work

Interval	Maintenance work
After each working day	Airing and drying of the soot test pump: <ul style="list-style-type: none"> • Take out plug (6) and (24). • Exchange wet cottonwool filter rolls (12) • Open the measuring heads (1) and (4). • Clean the measuring probe with the probe cleaning brush (see accessories).
Regularly	Greasing the sleeve (21) <ul style="list-style-type: none"> • Loosen the screws (8) and take off the piston guide (18). • Pull out piston (20) and sleeve (21). • Clean sleeve (4) and pump pipe (9) with a soft cloth from the inside, put piston 20 with sleeve (21) back into the pipe and squirt a little special maintenance lubricant on the back of the sleeve.
Twice a year	Check the accuracy of the Soot Test Pumpe

Test Equipment Depot - 800.517.8431 - 99 Washington Street Melrose, MA 02176
TestEquipmentDepot.com

9 Accessories

Accessories

Soot comparison chart	Order no. 2416
2 Soot comparison charts	Order no. 369
Wöhler RP 72 Oil Derivates Test bottle	Order no. 2481

Probe fixture:

.	Best.-Nr. 2494
Threaded Cone for probes 8 mm Ø	Order no. 2495

Consumables

Filter paper, 300 pieces	Order no. 2415
Filter paper, large pack 1,800 pieces	Order no. 590
Filter paper, transparent box, 300 pieces	Order no. 3700
Wadding Filters, short, pack with 25 pieces	Order no. 5289
Wadding Filters, short, pack with 150 pieces	Order no. 5290
Wadding Filters, long, pack with 50 pieces	Order no. 2450
Wadding Filters, long, pack with 150 pieces	Order no. 621

Maintenance

Special maintenance lubricant	Order no. 2418
Probe cleaning brush	Order no. 2419
Turbulence Spiral	Order no. 20401

Options

Measuring head, aluminum with clamps, for waste gas temperatures higher than 250°C and when using sampling probes of a special length.	Order no. 2728
Probe 220 mm with turbulence spiral	Order no. 2727