Local solutions for individual customers worldwide

STAUFF Diagtronics
Laser Particle Counter LasPaC I
STAUFF Filtration Technology

STAUFF Filtration technology offers a complete range of filtration products and services that will provide the system designer or user with the highest level of contamination control demanded by today’s most sophisticated applications.

Products include high-pressure filters, medium-pressure filters, return line filters, elements, spin-on filters, suction strainers and filter breathers for various hydraulic, lubrication and fuel oils.

STAUFF has the technical expertise to provide superior filter element designs for the STAUFF original filter housings and also for the interchange element market. STAUFF manufactures more than 10,000 different elements. Many of these are designed to fit into filter housings produced by other companies while maintaining or surpassing the original performance.

STAUFF, through its global network of wholly owned companies and technically qualified distributors, is ideally placed to assist its customers in the total contamination control process providing a well balanced filtration solution.

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The STAUFF Contamination Control Program includes the diagnostic services including fluid sampling and laser particle counting products needed to monitor system contamination levels.

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Globally available through wholly-owned branches and distributors in all industrial countries.
The STAUFF Laser Particle Counter is a microprocessor controlled 8-channel particle counter designed for monitoring the degree of contamination of mineral based hydraulic fluids.

In contrast to other commercially available particle counters, the LasPaC I is characterized by a few special features. The readings from the LasPaC I will immediately indicate the condition of the hydraulic system, the data will be documented, and you will be able to intervene at an early stage in order to prevent wear and damage to the components in the hydraulic system.

This does not only minimize repair costs, but also reduces overall equipment downtime.

**Mobile ➤ light-weight and handy**

With its comparatively low weight of 8.5 kg (18.4 lbs.) only 18 kg (39.8 lbs.) with its rugged industrial case - the device is well suited for use in the field, even in areas that are difficult to access.

**Quick results ➤ ease of operation**

Operator input is conducted via touch-screen and function keys.

The control features of the LasPaC I have been designed so that measurements can be done quickly and easily. User defined measuring programs can be entered and stored with password protection.

**Functional ➤ multi range calibration to ISO 11 171 and ISO 4402 (for NAS 1638)**

- **Calibration “B”:** both (new and old) calibrations. In this case, the display of the LasPaC I is set to the (new) calibration per ISO 11 171 by default. However, if required, it can also be switched to the (old) calibration ISO 4402 (1991) for comparison reasons. Anyway, all information will be saved according to both calibration norms.

**For any type of application ➤ various pressure stages**

The LasPaC I features two different integrated operation modes:

- **Low-pressure level 0 ... 6 bar (0 ... 87 PSI):**
- **High-pressure level 5 ... 420 bar (72 ... 6,000 PSI):**

The low-pressure level allows oil samples to be taken from unpressurised systems or reservoirs without any additional equipment. Many other products available today require special add-ons or pressure cartridges which need to be recharged. The test hoses, which are provided with the device, allow easy connection to common test couplings M16 x 2 (S1AUF 1st 20 or comparable).

**Global use ➤ variable voltage supply**

The integrated power supply unit provides most variable voltage ranges of 110 V ... 240 V AC and 12 V ... 24 V DC. A mobile power cable is available on request.
Independent use ▶ rechargeable battery mode

The integrated rechargeable battery of the LasPaC I enables the performance of on-the-spot measurements, even in cases where a direct connection to an external power supply is not possible. The measured data are stored and can be transferred to a computer later on if necessary.

Black and white ▶ integrated printer

The integrated printer of the LasPaC I supports printouts in the field, thus providing immediate documentation.

Making the connection ▶ downloading via USB interface

The measured data can be downloaded onto any PC or notebook via the device's USB interface, supported by a convenient download software. Further processing and storage of the data is done with Microsoft Excel® (from version 2000 on) with the use of specially designed macros. The prepared forms and templates provide easy transfer of the data. The integrated diagrams represent the data graphically for more clarity. Likewise the data can be assembled to trend analyses. With Microsoft Excel® (from version 2000 on), it is possible to edit and customise the data as required, e.g. with your company logo.

Always up-to-date ▶ integrated clock

An integrated and rechargeable battery-operated clock provides the exact date and time which are shown on every printout. In addition, every download of measured data is marked with date and time as well. The precise time of measurement is thus documented on all printouts and for all the data stored.

Adaptable ▶ firmware updates

The USB interface ensures flexibility for future developments in terms of calibration, evaluation and output. Moreover, firmware updates can be installed on the LasPaC I, without any problems.

Accuracy ▶ 100% coverage

The fluid passes a vitreous measuring cell and is rayed by a laser beam. This laser beam is evaluated at the backside of the cell. Dimensions and the number of particles are calculated from electronic impulses transmitted by the shadows. With many other particle counters only a part of the measuring cell is lighted by the laser beam, the particles are only partially registered and the result is projected. In contrast to this, the cell of the LasPaC I is completely examined and all particles are registered. Inaccuracies as a result of the projections are avoided.

Robust and reliable ▶ ceramic piston pump

The integrated piston pump works in both directions: it outputs the fluid in low-pressure operation mode and controls the flow in high-pressure operation mode. Due to the ceramic pump components, this pump is very resistant and nearly indestructible against abrasive, solid contaminants and various fluids.
Technical Data

Introduction

The StAUFF Laser Particle Counter LasPaC I is a microprocessor-controlled 8-channel particle counter designed for monitoring the degree of contamination of mineral based hydraulic fluids.

Laser sensor

The LasPaC I is equipped with a laser sensor. The orifice of the sensor has a cross-section of 500 x 500 μm. The maximum concentration is 24,000 p/ml at a flow rate of 25 ml/min (ISO 4406 Code 23).

Calibration

The sensor can be calibrated in accordance with the following standards:

Calibration ISO 11 171 (1999):
4 ... 70 μm, relating to ISO 4406 (1999) and SAE AS 4059 Rev. U (2001)

2 ... 100 μm, relating to ISO 4406 (1991) and NAS 1638 (1964)

<table>
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<tr>
<th>Channels</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>ISO 11 171 in μm</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>14</td>
<td>21</td>
<td>25</td>
<td>38</td>
<td>70</td>
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<tr>
<td>ISO 4402 in μm</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>50</td>
<td>100</td>
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</table>

Fluid compatibility

Mineral oils (phosphate esters or other fluids, e.g. Skydrol, on request)

Pressure and viscosity

Operation mode
High pressure level
5 ... 420 bar (72 ... 6,000 PSI) viscosity up to 300 cSt

Operation mode
Low-pressure level
0 ... 6 bar (0 ... 87 PSI) viscosity up to 160 cSt (through the integrated pump)

Connections

Top:
1/8" coupling StAUFF 1/8", connection thread M16 x 2

Bottom:
Coupling 06L for 24° cone fitting with swivel nut and o-ring seal according to ISO 8434-1/4

Power supply

Voltage range: 110 V ... 240 V AC
12 V ... 24 V DC

Operation time with rechargeable battery: 2.5 h (battery charger is integrated)

Working conditions

Fluid temperature: 0°C ... +90°C (+32°F ... +194°F)
Ambient temperature: 0°C ... +40°C (+32°F ... +104°F)
Humidity: 20% ... 85%, non-condensing storage 95%

Data output

Cumulative particle counts, as well as cleanliness classes according to ISO 4406 (1999) / SAE AS 4059 Rev. D (2001) and ISO 4406 (1991) / NAS 1638 (1964) depending on calibration (see information on page 3 and ordering codes on page 6)

Integrated printer

enables printouts and documentation in the field

Integrated memory

500 standard measurements (1 standard measurement consisting of 5 single measurements)

Download software

Downloading and storage of the data in ASCII format, as well as evaluation and further processing with Microsoft Excel® (from version 2000 on)

Dimensions

Laser Particle Counter:
W x D x H: 310 x 310 x 145
(W x D x H: 12.2 x 12.2 x 5.71)

Industrial case (trolley):
W x D x H: 410 x 665 x 205
(W x D x H: 16.1 x 26.2 x 8.1)

Weights

Laser Particle Counter:
8.5 kg (18.74 lbs.)

Laser Particle Counter with industrial case and accessories:
18 kg (39.68 lbs.)
### Ordering Codes Laser Particle Counter

**LasPaC I - N - A**

<table>
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<th>Type</th>
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<td><strong>LasPaC I</strong></td>
<td>Laser Particle Counter LasPaC I</td>
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**Calibration**

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<td>N</td>
<td>(new) calibration ISO 11 171</td>
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<tr>
<td>O</td>
<td>(old) calibration ISO 4402 (1991)</td>
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<tr>
<td>B</td>
<td>both calibrations ISO 11 171 and ISO 4402 (1991)</td>
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**Power cable**

<table>
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<th>Type of power cable</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>with &quot;Schuko&quot; connection plug according to CEE 7 / 3 (German / French standard)</td>
</tr>
<tr>
<td>A</td>
<td>with North-American connection plug</td>
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</tbody>
</table>

### Ordering Codes Accessories / Spare Parts

<table>
<thead>
<tr>
<th>Code</th>
<th>Type of accessory / spare part</th>
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<tbody>
<tr>
<td>Paper Roll LasPaC I</td>
<td>Paper roll for integrated printer</td>
</tr>
<tr>
<td>Cable LasPaC I Mobile (12-24 Volt)</td>
<td>Mobile power cable (12 V ... 24 V DC)</td>
</tr>
</tbody>
</table>

### Scope of Delivery

Each kit of a Laser Particle Counter LasPaC I includes:

1 x Laser Particle Counter LasPaC I

1 x Industrial case (trolley)

1 x Power cable as selected (see ordering codes)

1 x USB interface cable for connection with PC or notebook

1 x Download software

1 x Control pen with plastic pin for using the touch screen

1 x Test hose (STAUFF SMS-20-1500-C), depending on operation mode for input or output, length 1.5 m (5 ft.)

1 x Test hose (STAUFF SMS 20/K06L-1500-C), depending on operation mode for input or output, length 1.5 m (5 ft.)

1 x Low-pressure suction hose (06L, 24° cone fitting with swivel nut and o-ring seal according to ISO 8434-1/4), transparent, length 1.5 m (5 ft.)

1 x Adapter low-pressure suction hose to test coupling

2 x Oil sample bottle

5 x Paper roll for integrated printer

1 x Operating manual (in German or English)
General Information

Limitation of Liability Clause

Please note: All outlined particulars are approximate values and are only valid as references, which are not binding, also with regard to possible protection of third parties. Therefore, these values can only be used in a limited sense for construction purposes, and do not exempt you from your own examination of suitability of the products delivered by us.

The application of the products is carried out outside our control possibilities and, therefore, is exclusively subject to your own area of responsibility.

If, however, liability should be possible, it would be limited for all damages to the value of the goods supplied by us and in use by you. It goes without saying, that we guarantee the perfect quality of our products according to our general sales terms and delivery conditions.

Due to technical advances, dimensions subject to change without notification. This catalogue supersedes all previous catalogues.