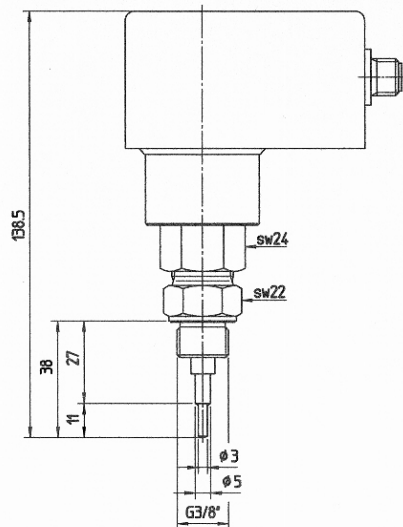


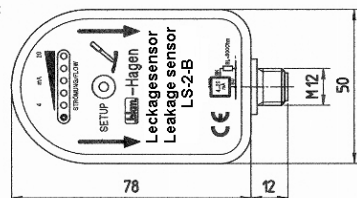
Leakagesensor LS-2-B-... for serv-Clip[®] 2

- No need cutting pipelines -

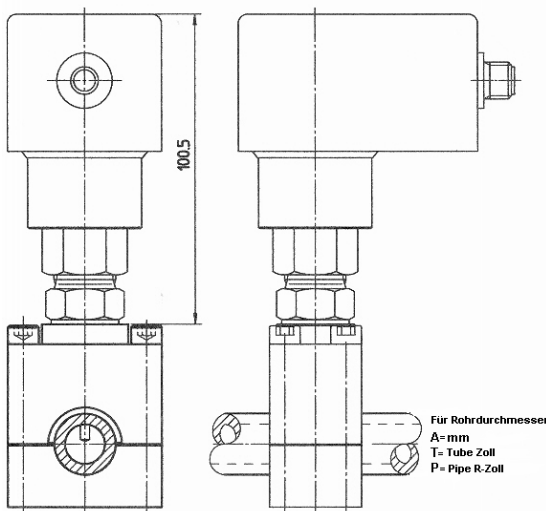


Anzeige 6 LED:

- rot = 0.4 mA
- 1. grün > 0.4 mA
- 2. grün > 0.8 mA
- 3. grün > 1.2 mA
- 4. grün > 1.6 mA
- 5. grün > 2.0 mA



- 1: BN+24VDC
- 3: BU-
- 4: BK Analog 4-20mA



Leakage sensor types

Type Code	A mm	Tube Inch OD	Pipe Inch ID	Flow l/min
001	12	3/8	-	0,02-5
002	14-15	1/2	1/4	0,03-5
003	16-18	5/8	3/8	0,05-5
004	20-22	3/4	1/2	0,08-5
005	25-28	1	3/4	0,12-10
006	30-35	1 1/4	1	0,40-10
007	38-42	1 1/2	1 1/4	0,70-10

Example: Choose the correct LS for 16 mm pipe-Ø

Type LS-2-B-003 Flow rate > 0,05 l/min up > 4 mA measurable
5,0 l/min by 20mA measurable

What can I measure?

Hydraulic and gear oil as well as water-glycol HFC

With the LS-2-B- leakage sensor (from 0,02 l/min):

- Leakage
- Sealing damages

Flow rate sensor QS-2-B-008 (see page 18)

Mobile measuring suitcase FM-1-B for sensors (see page 22)

Description

The leakage sensor LS-2-B **fluid-Check** [®] was developed for monitoring hydraulic systems recognizing and reporting very small leakage and sealing damages (from 0,02 l/min).

The flow rate sensor can be used with the pipe measuring point **serv-Clip** [®] for **steel pipelines from 12 mm x 1,5 mm up to 5,5 mm wall thickness.**

The measurement system is based on the calorimetric principle, which provides a direct measurement of the flow velocity in l/min rather than measuring the volume flow.

Typical fields of application include systems and plant engineering automation. In addition to its inexpensive, robust and compact design, it stands out by its extensive measurement range.

As a standard, the sensor head is made of stainless steel 1.4571.

Calibration service (please see chart of the left side)

For the ID-pipe with the wished measuring range from/to in l/min.

With your instructions for calibration you get a data sheet with curves mA in l/min.

How do I choose an LS?

Confirm the pipe outer diameter of the installation place (eg 16 mm).

Select the type of the LS - see chart above (eg Type 003).

Determine switch-point 4-20 mA (eg 8.5 mA).

For the leakage sensor LS-2-B-003 you need a **serv-Clip** [®] SC-2-A-16.

Installation with serv-Clip[®] 2

The patented measuring connector **sc-2-...** was developed for installation on pressureless hydraulic pipes.

After installation, the measuring connection can continuously be used, supporting operating pressures of up to 630 bar.

The measuring connection **sc-2-...** comes pre-mounted, including measurement coupling and needle, and is mounted as described in the corresponding installation instructions.

To install the flow rate sensor, the created 2 mm hole must be widened.

In the first step, the short needle of the measurement coupling is screwed down completely - without applying much force - until the stop is reached.

Then it is unscrewed again. In the second step, the long needle is screwed down completely and unscrewed again, too.

Now the flow rate sensor can be screwed into the **serv-Clip** [®]. The measuring connection is completely tight and is ready for continuous use.

Using the **serv-Clip** [®] **sc-2-...**, the flow rate sensor can be installed easily, quickly and safely even by non-technical staff. The whole process takes a few minutes only. No special tools are required for the installation of the **serv-Clip** [®] and the **flow rate sensor**.

The system is completely tight, preventing any contamination of the hydraulic oil and ensuring sustained operational safety. The measuring connections are continuously available for measurement applications.

Special instructions for stainless steel up to 4 mm wall thickness with SC-2 can be provided.

Specifications:

Measuring range	0,05... 8 Meter/Second
Flow rate	up to 600 l/min, depending on ID
Range of application	from 0,02 l/min
Pressure	630 bar (9100 psi)
Temperature	-20...80 °C
Threaded coupling	G 3/8"
Accuracy	+/- 2%
Output signal	4...20 mA (analogue - no linear)
Power supply	24 V DC +/- 10%; 150mA
Connection	M12 Universal system
Setting	per Micro button
Display	6 LED lights
Protection mode	IP 65
Sensor head	stainless steel 1.4571
Housing	PBT

**„LEAKAGE AND SEALING DAMAGE DETECTION SENSORS
FOR HYDRAULIC SYSTEMS“
LS-2-B-... Leakage Sensor fluid-Check [®] Almost up to the last drop**

Rolling mills include numerous hydraulic pipes installed in ducts or within the rolling stand. Even small quantities of hydraulic oil leaking from pipe systems, tubes, valves or cylinders can cause enormous costs.

The disposal of contaminated rolling oil or rolling emulsions is expensive.

Cleaning and refilling involve downtimes, resulting in reduced system availability.

To avoid these problems, BKM developed the leakage sensor LS-2-B- fluid-Check [®].

LS-2-B-... easily detects and immediately reports leakages as small as 0.005 l/min.

As the leakage is indicated in liters/minute, you can immediately decide whether

1. the system must be shut down immediately to remove the leakage or
2. the problem does not require immediate action and can be addressed during planned downtimes.

In any case, **LS-2-B-...-3/8“** allows you to make the right decision.

How is this possible?

The leakage sensor **LS-2-B-...-3/8“ fluid-Check [®]** is supplied together with **BKM's** pipe measuring connector **serv-Clip [®]** for the corresponding pipe diameter.

The pre-set flow rate for the normal operation of the cylinder or oil motor is not affected.

Even on the long run, the increased oil quantities involved in the normal operation of hydraulic systems do not cause damage to the **LS-2-B-...-3/8“** measuring system as no moving parts are placed in the oil stream.

Another major advantage of the system is that the leakage sensor can be installed within a few minutes as it is not necessary to cut pipes.

How accurately does the system measure?

It is advisable to install the system on pipes with an outer diameter of 12 to 38 mm.

It is also possible to carry out measurements with larger pipe diameters; in the lower measurement range, measurements begin with 0.05 liters/minute (it depends on the pipe diameter)

For special measuring tasks, including high measurement ranges, it is possible to set values of up to several 100 liters per minute.

Where do you install the LS leakage sensors into the hydraulic system, and when are the measurements carried out?

1. The leakage sensors can be installed on the A and B line behind the valve block leading to the hydraulic cylinder or oil motor.
Any leakages in the pipe and tube system or defects of cylinder seals are detected immediately.
Using this equipment, critical sections of hydraulic systems can be monitored reliably.

- The leakage sensors can be installed on the P and T line before control blocks and, if necessary, on the L line.

By defining pre-set threshold values, entire sections of hydraulic systems can be monitored.

The leakage sensor **LS-2-B-...-3/8**“ ensures that pipe or tube damages are detected immediately.

- To obtain instantaneous information about the extent of any leakage, the flow rate is measured continuously.
Via the PLC of the system, the measurement results are evaluated at regular intervals.

Example:

When a hydraulic cylinder extends, the A side is pressurised.

In the end or intermediate position, the pipe on the piston side of the cylinder is pressurised. As soon as the pre-set position is reached, the oil flow usually stops.

Now the flow rate is evaluated via the PLC. At 4mA, no oil flows, so no alarm is generated. The hydraulic system does not present any damage, all is leak proof.

If the system, however, measures a value of 4.8mA (which corresponds to 0.005 liters/minute), this indicates a defective pipe or tube. Values can be defined to indicate damages.

- The system is able to detect even minimal quantities in a minimal time, which is very important in connection with emulsion or rolling oil systems as even minor leakages can cause enormous costs.
- Using the pipe measuring connector **serv-Clip**[®] (Type 2), the installation of the leakage sensor **LS-2-B-...-3/8**“ is very simple and takes only **a few minutes**.



Example:
Leakage sensor **fluid-Check**[®] with **serv-Clip**[®] -2 for recognizing seal damages at cylinders of a reeling machine

Test our flow rate sensor QS-2-B-008 for pumps control and our mobile measuring suitcase FM-1-B for sensors (leakage, flow rate, temperature, pressure, aqua)