Pipe Support Systems GmbH International

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Installation Instructions for Hydraulic Shock and Sway Suppressors (Snubbers) Fig. 200B and 201B

1. Description (see sketch 1)

Fig. 200B

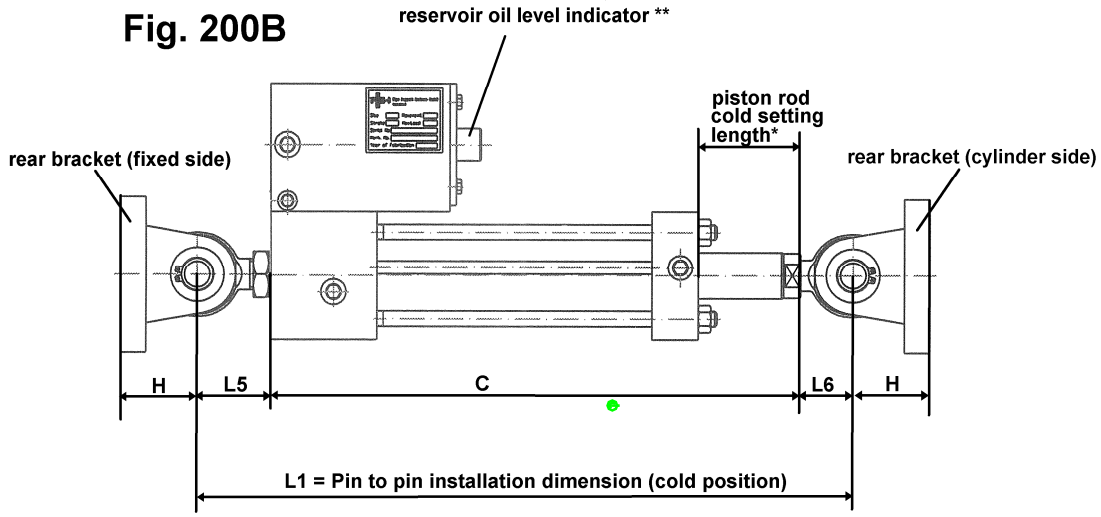
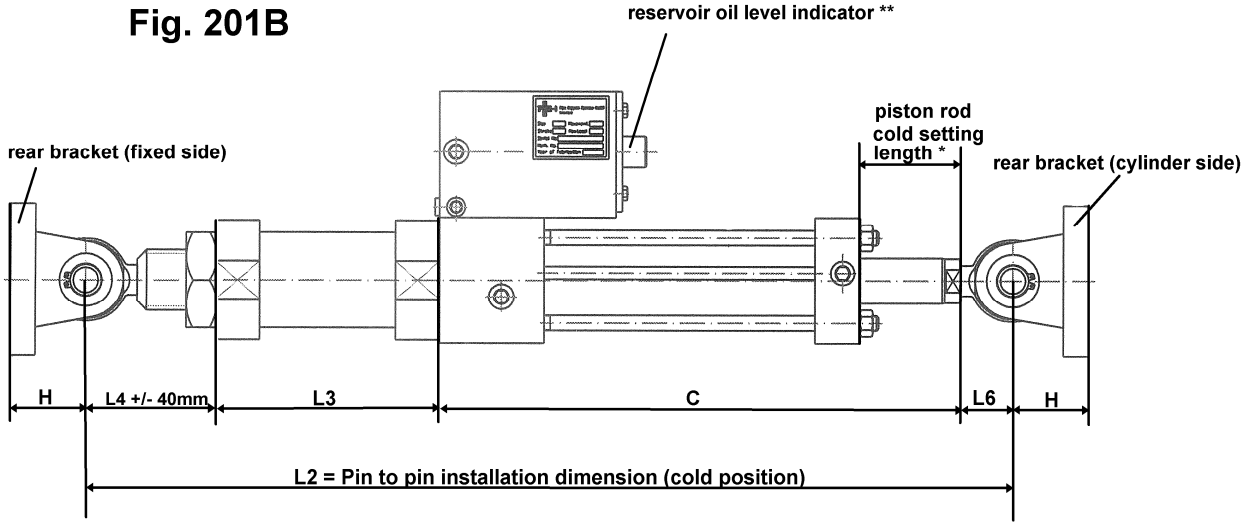


Fig. 201B



Dim. C = length of the snubber body depending on size, stroke and piston cold setting

Dim. H = height of rear bracket

Dim. L3 = calculated extension length depending on movement, movement direction and pin to pin length

Dim. L4 = length adjustment of Fig. 201B extension to compensate site tolerances (= +/- 40mm)

Dim. L5 = fix length of rigid rod eye (no length adjustment possible)

Dim. L6 = fix length of cylinder rod eye (no. length adjustment possible)

* **Cold setting length =** cylinder position for installation = set in the PSS workshop depending on actual travel and travel direction.

** **Reservoir oil level indicator** (For control of oil level please read item 4)

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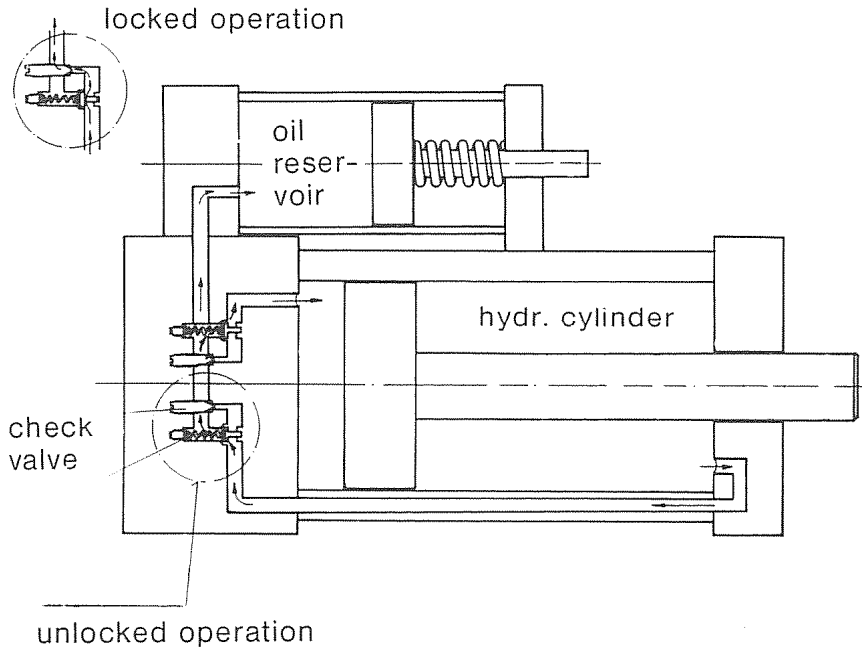
The ***PSS*** Hydraulic Shock and Sway Suppressor is used to prevent damages due to earthquake, flow pulsation, pipe rupture or safety valve blow-off.
The unit consists of a cylinder that can be loaded in tension and compression direction, a patented ***PSS*** valve in the cylinder bottom and a pressure reservoir. The pressurised reservoir contains a fluid reserve for the event of a fluid loss over a longer period of time. Above all it serves as fluid reservoir for the different fluid volume in the cylinder caused by the piston rod volume. By means of the installed coil spring, the fluid volume in the reservoir is always pressure loaded at the piston circular ring (see sketch 2).

Sketch 2



Due to the pressurised reservoir the Hydraulic Shock- and Sway Suppressor can be installed in any position.

At dynamic loading which moves the piston faster than the locking velocity adjusted by ***PSS***, the check valve locks and the snubber can carry the loads. The task of the overflow valve or bypass valve is to enable a bleed rate of the piston.

The capability of a Shock- and Sway Suppressor to allow a bleed rate at emergency condition is ***very important for the safe function of a snubber.***

The adjustment of the valves requires special test stands which can measure the loads and the velocities.

Do not adjust the valves at the site. Any adjustment is allowed to be performed by PSS International personnel only.

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2. Installation

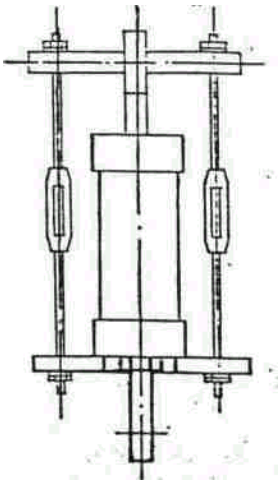
Caution: Please ensure that the place of installation and the tools are clean.

Please check that the Shock- and Sway Suppressor has not been damaged during transport (e.g. oil leakage control etc.).
Prior to the installation, the specified piston setting and the pin to pin length must be checked. These dimensions (see sketch 1) are normaly indicated in the **PSS** as built drawing or in the **PSS** order file. Due to the expansion of the hydraulic oil at different ambient temperatures, it could be necessary to adjust the piston rod at the installation place of the Shock- and Sway Suppressor.
If the factory preset snubber dimension does not correspond with the existing pin to pin dimension at site (for example in case of site tolerances), the cylinder piston rod has to be moved to the required length. (Pls. consider that Fig. 201B allows a simple adjustment of +/- 40 mm at the threaded rod of the pipe extention without moving the piston rod.)

Caution: The ***PSS*** Hydraulic Shock and Sway Suppressor immediately ***responds to slow movements***. If it is necessary to move the piston rod of the snubber prior to the installation, it must be extracted or compressed slowly and steadily. If the piston rod is moved by hand, please turn the rod in order to avoid friction during the slow extraction or compression. Should the snubber block, please release and repeat the a. m. activities. Please do not try to move the piston rod by means of a cable winch, because this will block the Shock- and Sway Suppressor.

Screws (sketch 3) or a hydraulic device can be used to extract or compress the piston rod. Please consider that the velocity must be steadily and lower than 2,5 mm/s.

Sketch 3



For Fig. 201B (adjustable extension piece) please install a rear bracket holder and / or clamp suitable for the unit. Install the piston rod end by use of the respective piston bolt.

Adjust the extension piece in a manner that it reaches the other attachment and lock it with a lock nut. If more advantageous, the distance from bolt to bolt can be measured previously and the extension piece can be adjusted accordingly.

The adjustability of the extension piece (see sketch I) is + - 40 mm.

Please ensure that all normal operations of the equipment are possible ***without using the last 10 mm safety range at each end.***
If the snubber has the specified installation length, the installation position can be selected without any restriction.

Any turning of the bolts of the hydraulic cylinder and of the reservoir is not allowed. This could ***impair the function of the Hydraulic Shock- and Sway Suppressor.***

3. Maintenance

The maintenance conditions can be very different, depending on the environment in which the Shock and Sway Suppressor is operating. Influences by dust or mud, by weather conditions or strong vibrations can necessitate a maintenance in shorter time intervals.

Yearly:

Clean the rod and examine it with regard to damages; a scraped and corrosive rod can damage the seals and result in leakiness. Check the Shock and Sway Suppressor for leakage.

Smaller leakages in the hydraulic system, except the cylinder, can often be removed by tightening the nuts that are compressing the seals. The cylinder track rods are not allowed to be adjusted. In case of damages or extreme leakages please inform the ***PSS*** customer service.

Recommendation: At outdoor use, at heavy contamination by dust or at strong vibrations please take the following steps:

Maintenance according to “item 3" at least every 6 months.

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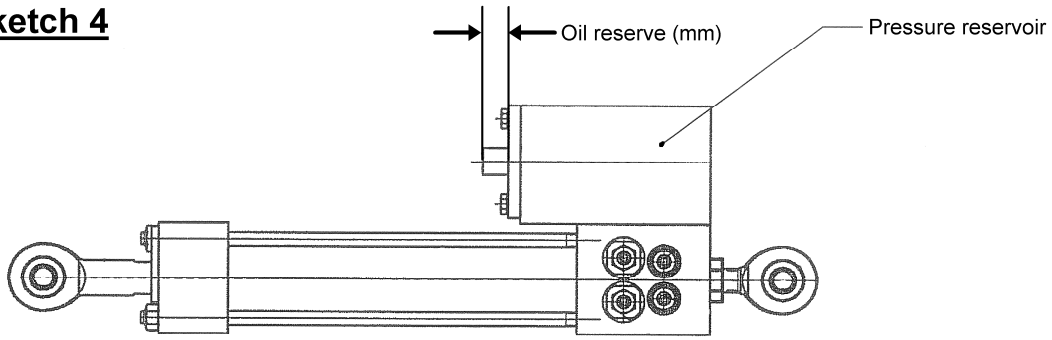
4. Check of the oil level in the pressure reservoir (see sketch 4).

Sketch 4



The prodruding piston rod of the pressure reservoir indicates the actual oil reserve. Please pay attention to the fact, that the oil level varies depending on the actual position of the hydraulic cylinder. **PSS** measures the oil level after the final tests in the workshop in fully retracted position (= max. oil level). The test result is shown in the Snubber Test Report and includes the reserve oil quantity of the new filled snubber.

In general the snubber has enough oil for his proper function (independend from the position of the hydraulic cylinder) if the measured reservoir dimension is greather than 6mm. If the dimension is less than 6mm, the snubber has lost too much oil. In this case new oil must be refilled in the reservoir or - depending on the extent of the leakage - the snubber must be repaired in the factory of ***PSS***.

In general the refilling of the reservoir at the site is allowed, however by qualified PSS personnel only.

The valuation of leakages at the site should be performed in the presence of ***PSS personnel.***

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General information for the replacement of seals

We recommend to change the complete seal kit of the Hydraulic Shock- and Sway Suppressor ***every 10 years*** as a minimum because of the natural aging of the used seal materials.

Hydraulic Fluid

PSS uses for the snubbers only special silicone hydraulic fluid which is designed for a temperature range between -50°C and +150°C (emergency operation). The flashpoint is over 315°C and the autogenous-ignition temperatur is over 440°C.

For the refilling please use only the original PSS silicone fluid (Please contact the PSS sales department).

The mixturing of normal hydraulic oil and the **PSS** silicone fluid is not allowed! Please learn that any mixturing will change the original setting values of the snubber and can cause misfunction and damage of the seals!