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Doc No: INST. 200 Snub

HYDRAULIC SHOCK ARRESTORS

“200” SERIES

INSTALLATION AND IN-SERVICE

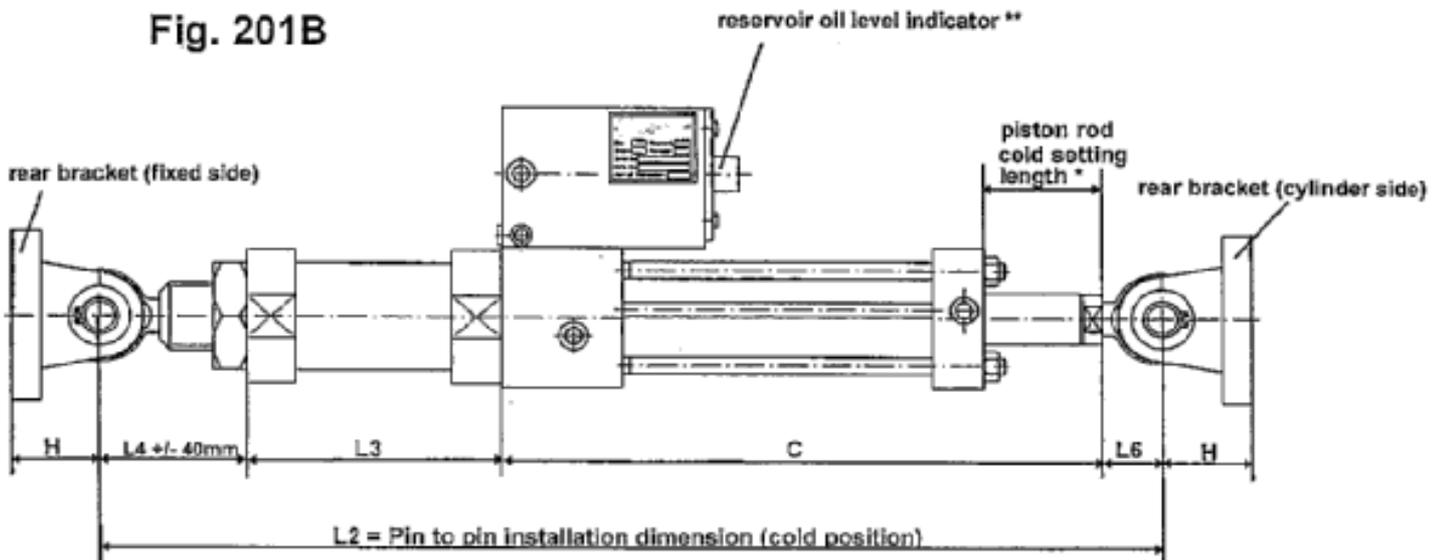
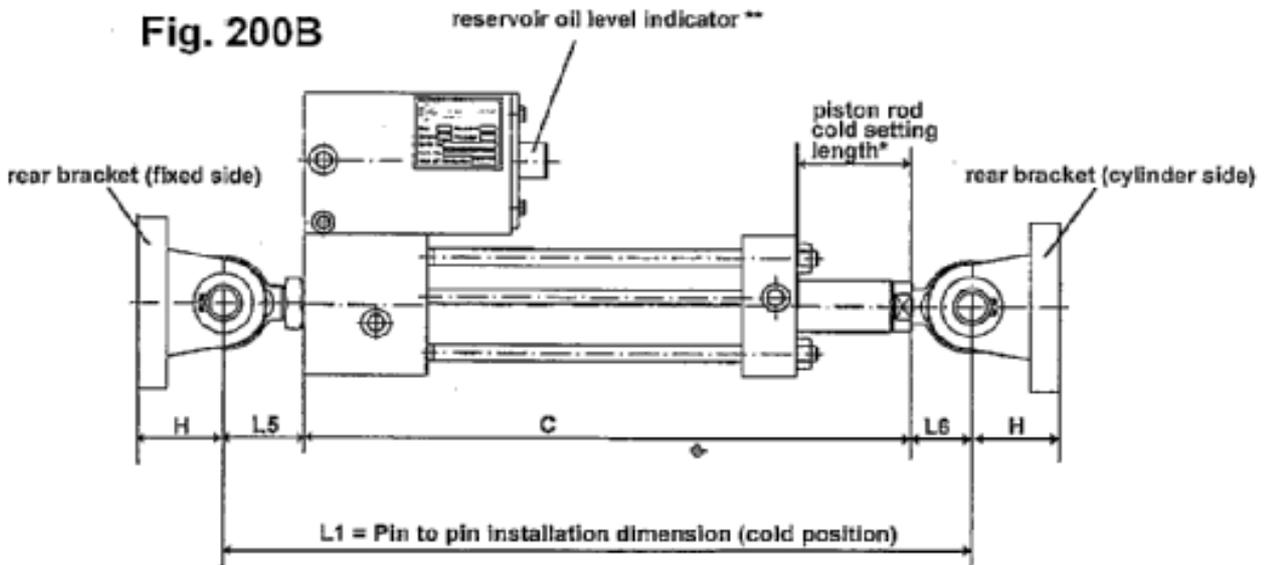
INSPECTION PROCEDURE

Rev	Date	By	Appv By	Pages Rev
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WITCH Pipe Suspension Equipment

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

1. Description **sketch 1**



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 extension to compensate site tolerances (= +/- 40 mm)

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

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

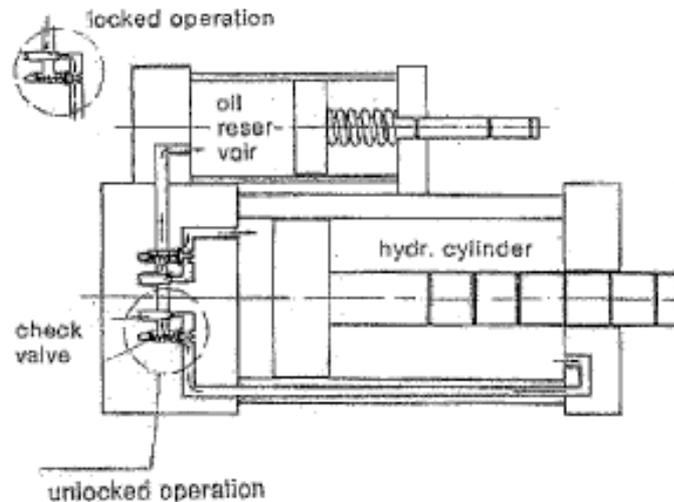
* **Cold setting length** = cylinder position for installation = set in the workshop depending on actual travel and travel direction

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

The 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 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, 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 to the unit is to be performed at suppliers premises only

2. Installation

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

Check that the Shock and Sway Suppressor has not been damaged during transport (e.g. oil leakage etc)

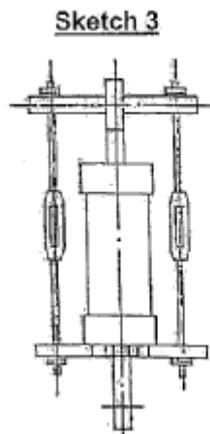
Prior to the installation, the specified piston setting (dimension C + L6 as shown on Design Drawings must be checked. The dimension C + L6 (cylinder bottom up to the rod eye centre of the piston rod) is shown in sketch 1). If the existing dimension does not correspond, the piston rod has to be moved to the required dimension.

Because of the expansion of the hydraulic oil at different ambient temperatures, the piston rod should be adjusted at the place of installation of the Shock and Sway Suppressor.

Caution: The Hydraulic Shock and Sway Suppressors immediately *responds to slow movements*. Should it be 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. Please do not try to move the piston rod by means of a cable winch, hammer etc as this will lock 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 lower than 2,5 mm/s for cylinder sizes up to 6"

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



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

The adjustability of the extension piece is + - 40 mm

Ensure that all normal operations of the equipment are possible *without using the last 10 mm of reserve at each end*.

Any tampering 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 requirements can be very different, depending on the environment in which the Shock and Sway Suppressor is operating. Influences such as dust or mud, weather conditions or strong vibrations can necessitate maintenance in shorter time intervals.

When a snubber is installed in a closed room in a relatively clean atmosphere at an oscillation frequency that is not higher than 5 Hz or greater than 3 mm in the peak to peak amplitude the following maintenance measure should be taken.

Yearly

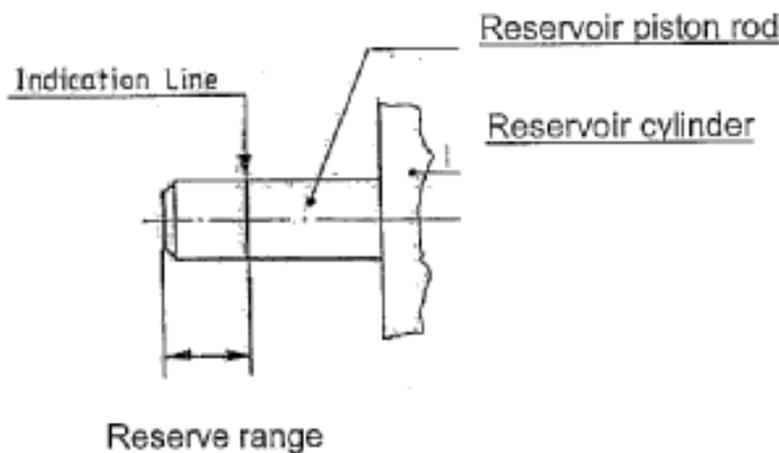
Clean the piston rod, and examine it with regard to damage; (a scraped and corrosive rod can damage the seals and result in leakage). Check the Shock and Sway Suppressor for leakage.

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

Maintenance according to above, at least every 6 months

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

Sketch 4A (Applicable to Fig 200A / 201A Models)



The piston rod of the pressure reservoir is provided with two red painted indents. They indicate the beginning of the oil reserve range. If these 2 indents disappear in the cylinder head of the reservoir, the snubber has lost too much oil.

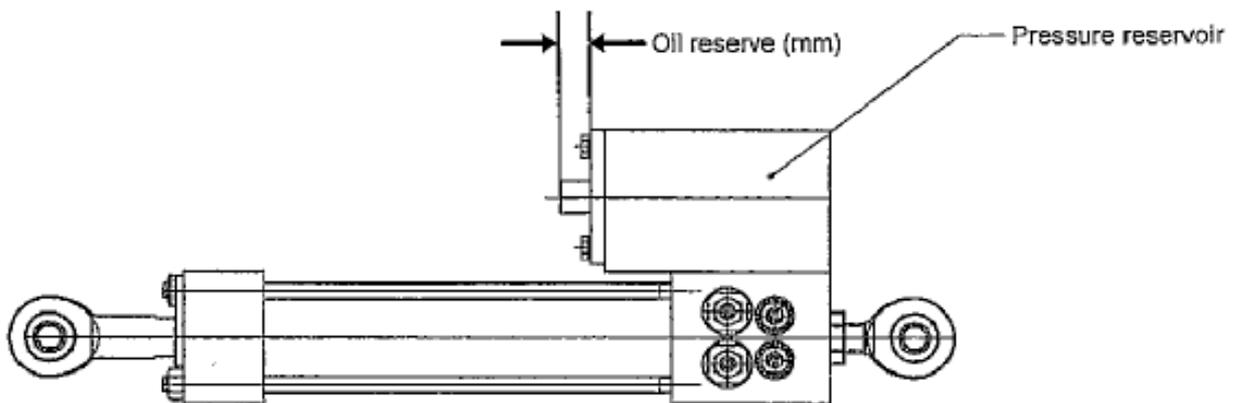
In this case the oil must be refilled in the reservoir or – depending on the extent of the leakage – the snubber must be repaired in the factory of supplier personnel

In general the snubber has enough oil for his proper function (independent from the position of the hydraulic cylinder) if the measured reservoir dimension is greater than 6 mm. If the dimension is less than 6 mm, 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 the supplier.

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

The evaluation of leakages at the site should be performed in the presence of **the supplier personnel**

Sketch 4B (Applicable to Fig 200B / 201B Models)



The protruding 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. The oil level is measured 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.

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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 ageing of the used seal materials

Hydraulic Fluid

Carpenter & Paterson uses only special silicone hydraulic fluid which is designed for a temperature range between -50°C and $+150^{\circ}\text{C}$ (emergency operation) The flashpoint is over 315°C and the autogenous-ignition temperature is over 440°C

For refilling please use only the original silicone fluid (Please contact the suppliers Sales Department)

The mixing of normal hydraulic oil and the silicone fluid is not allowed! Please note that any mixing will change the original setting values of the snubber and can cause malfunction and damage of the seals!