

The following function and adjustment descriptions inform about standard optional equipment:

Automatic wear adjustment to compensate lining wears

In this case the necessary reserve stroke of the thruster is warranted. To automatically check the lining wear option "monitoring lining wear" is recommended.....Page 2

Hand lifting lever for drum diameter 400

or smaller to open the brake during power failure or maintenance.....Page 3

Hand lifting lever for drum diameter 400

or larger to open the brake during power failure or maintenancePage 4

Control of brake indication

One limit switch each can be used to monitor the following brake positions:

- closed
- opened
- brake readjustment (check) – remaining stroke is marginalPage 5

Fall-in damping

To slow down brake torque application during remaining last third of closing stroke.

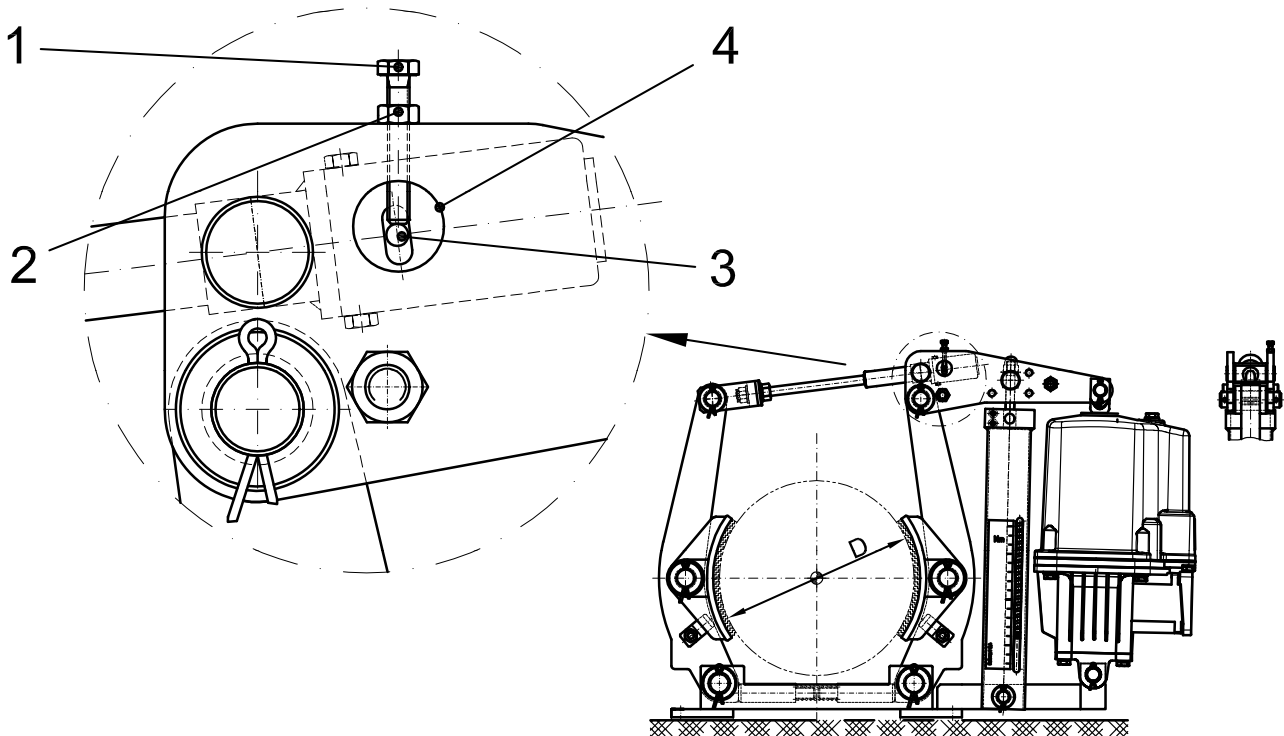
The advantage of an adjustable damping compared to a lowering valve is such, that the time delay is initiated shortly before brake drum and shoe make contact and the dead time is not as noticeable as with a valve.....Page 6

Further special designs:

"prone" brake position, "left hand construction", different lifting techniques as shown, covers etc. on request.

Positioning the Automatic Wear Adjustment

The adjustment explained below may only be executed when the brake drum is cold.



Attention!

The automatic wear adjustment is used for compensation of lining wear. However, its compensating capacity per braking cycle is limited. Therefore an additional manual wear adjustment carried out by maintenance personnel is required according to the specific application.

The wear adjustment takes place without paying attention to the remaining brake lining thickness!

1. Close the brake:

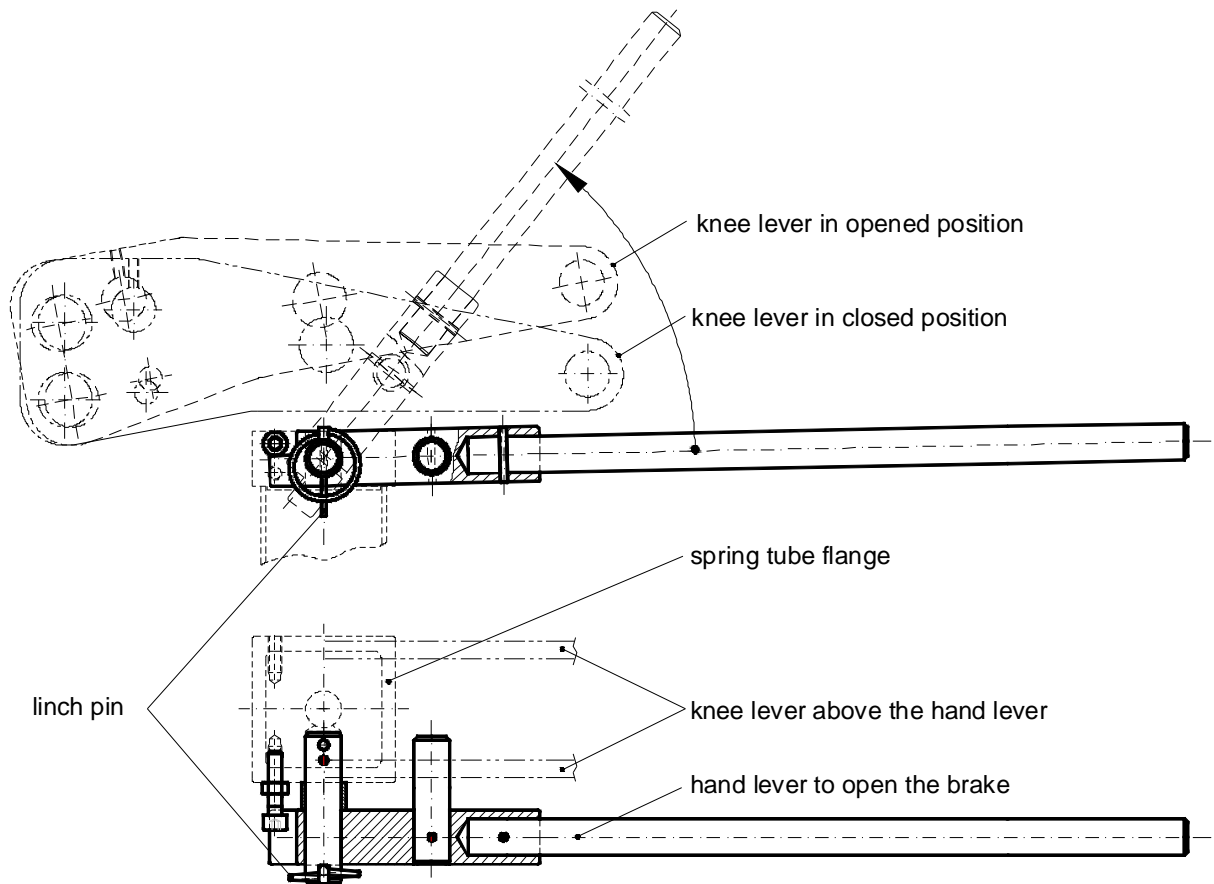
- Turn adjustment screw counter-clockwise in the brake lever until guide hole (4) is exposed.
- Push driving pin (3) down in guide hole (4) as far as possible.



2. Lift brake lever several times fully and close again, driving pin (3) is now in correct position.



3. Turn adjustment screw (1) clockwise in brake lever until there is a small gap of approximately 0.2 mm between adjustment screw and driving pin (3), tighten lock nut (2).



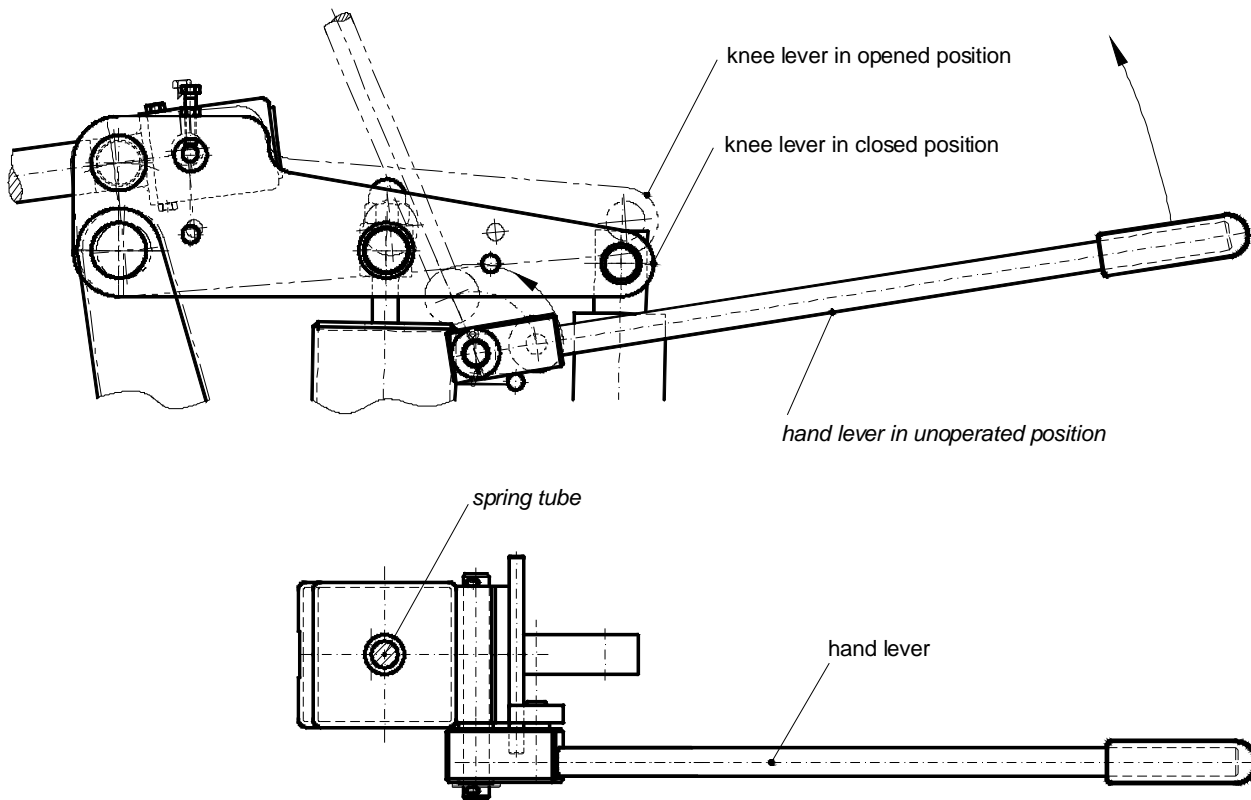
The hand lever is used to open the brake manually in case of an emergency or to service the brake unit. A linch pin secures the hand lever and spacer. The spacer should be permanently attached to the bolt. Remove the linch pin by pulling the spring tensioned ring up and pull the pin out. Slip the hole of the hand lever over the bolt, insert the linch pin in the bolt hole and secure it by pushing the ring down.

By pulling up the hand lever, the bolt of the lever will catch the knee lever pulling it up and thus opens the brake. Secure the hand lever manually in position as long as the brake stays open. The design of the lever arrangement is made this way, because of safety aspects, so that the lever cannot engage and block the brake in opened position.



Attention!

After finishing the emergency or service procedure remove and keep the hand lever in a secure place before re-starting the brake.



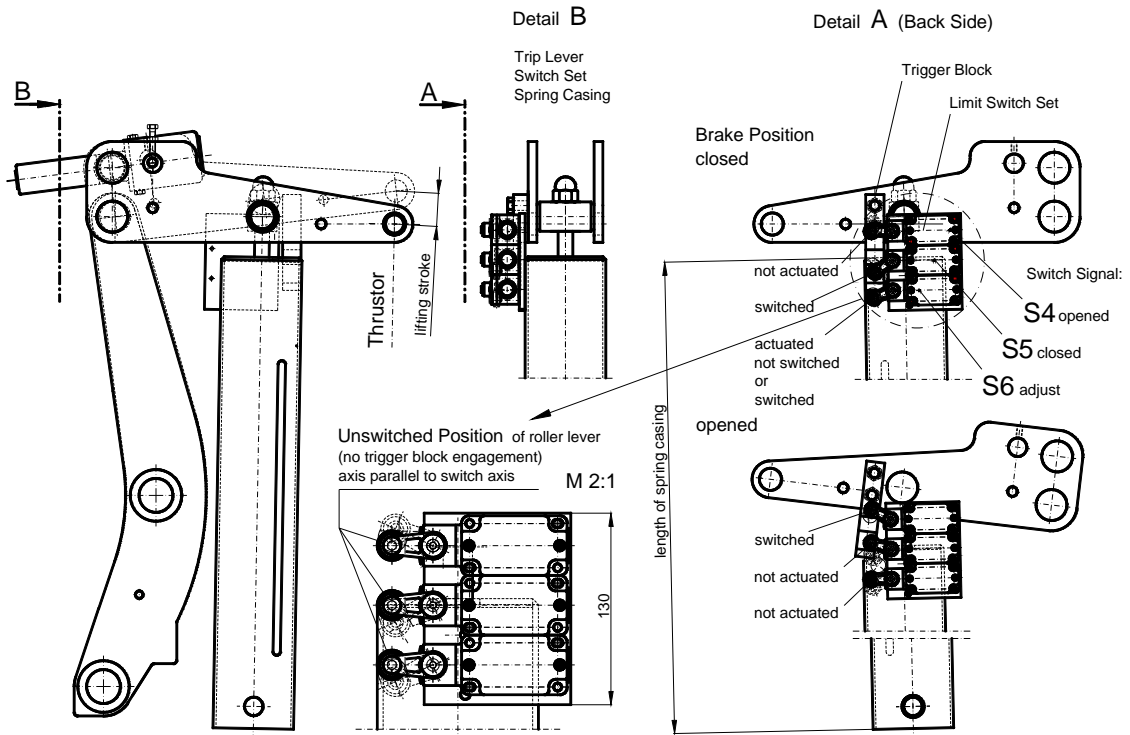
The hand lever is used to open the brake manually in case of an emergency or to service the brake unit. A swivelling device is permanently mounted to the spring tube. For the manual brake opening, the hand lever is to be pushed into the matching hole of the swivelling device.

By pulling up the hand lever, the roller of the lever will catch the knee lever pulling it up and thus opens the brake. If the hand-lever is turned up to the limit stop, the brake will be locked in that opened position!



Attention!

After finishing the emergency or service procedure remove and keep the hand lever in a secure place before re-starting the brake.



1. Electrical Connection

The group of limit switches is factory wired to the switch box (if not requested otherwise). The switch positions of the limit switches are factory adjusted and sealed with paint.

**To make the electrical connection, disconnect the electrical current.
Use authorized personnel only and work in accordance with local codes!**

Limit switch S4 and S6 to be connected to terminal 21/22 (break contact) and to terminal 13/14 (make contact). If limit switch S5 is in the closed position, the brake shaft drive must be OFF and locked.

2. Adjustment of Limit Switch

All roller levers are adjustable with a 10° angle catch. The levers are positioned correctly (factory set) if the axis is parallel to the limit switch axis, without being triggered by the trigger block. Each trigger block is custom-made for each brake size and stroke of thruster and not interchangeable with other blocks even if they “look similar”.

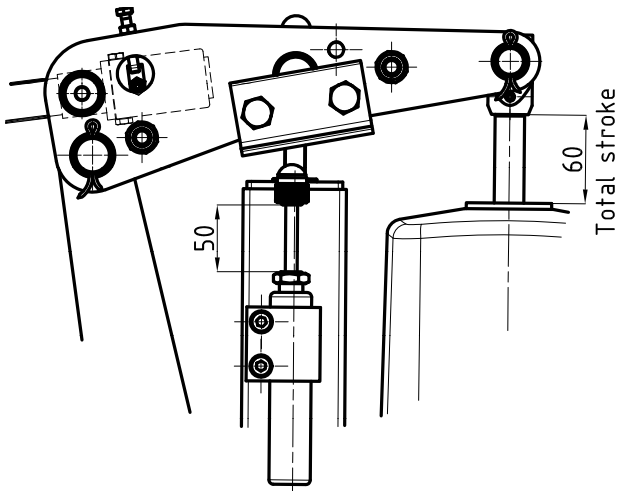
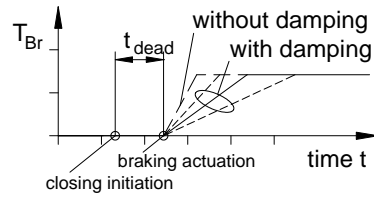
The trip lever must move down, when limit switch S6 is used as an adjustment indicator. This should be checked with the overall thruster situation. The signal point of the switch can be changed by modifying the trigger block.

3. Maintenance

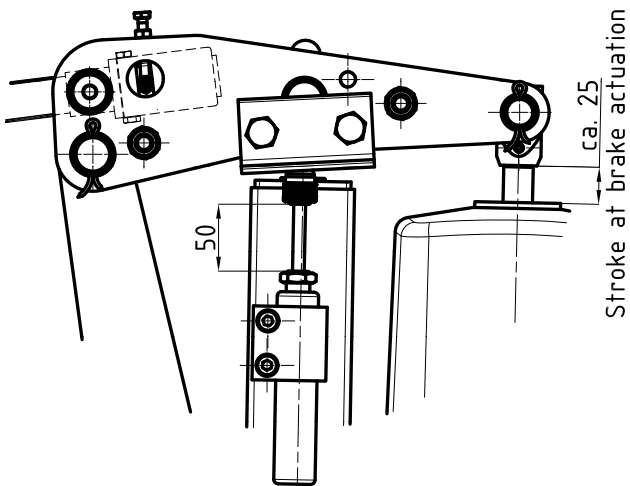
The limit switches require no special maintenance. With rough conditions, we recommend routine maintenance as follows:

- check the mobile components of the limit switch, shafts and rollers for easy operation
 - remove all dirt, snow or ice etc.
 - keep cams and roller shafts clean and lubricate slightly
- check sealings of cables or conduit connections.

Compared to brake systems actuated by thrusters with integrated lowering valves there is no extended dead time between closing initiation and the actual braking actuation as illustrated.



Pos.1: Brake open
In this example the adjustment of brake cylinder is such that the brake is not actuated till contact between brake-drum and shoe is made.



Pos.2: Brake actuation
The brake cylinder works against the spring force with adjustable decreasing force. Brake torque increases time delayed.