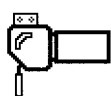


# INSTALLATION INSTRUCTIONS FOR CONSTANT HANGERS / SUPPORTS

## Hangers

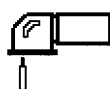
KHD



KVD



KHS



KVS



## Supports

KSP



KSR



## General Information

Constant hangers and supports are delivered on pallets. Ensure careful handling during transport on site. The corrosion protection, the connecting threads, manufacturer's plate, scales and adjustment mechanism are especially at risk. Storage should be in closed rooms; if stored in the open air the devices should be protected from moisture and dirt with suitable coverings.

## Connections

To fasten the hangers / support to the load-bearing structure, the required connections must be prepared; welding plates, clamping lugs for the hanging versions KHD and KVD; supports (perforated) or support plates for the base-mounted types KHS, KVS and KSP, KSR.

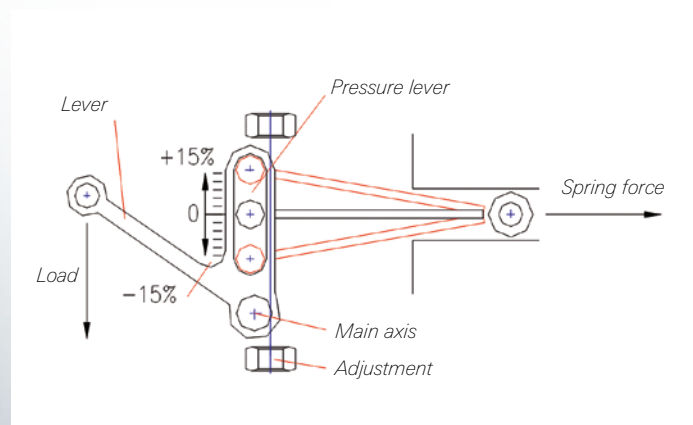
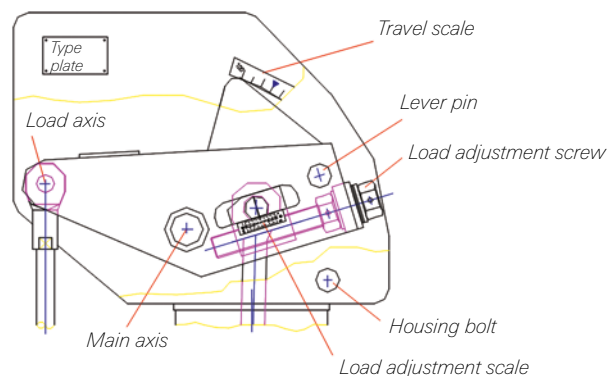
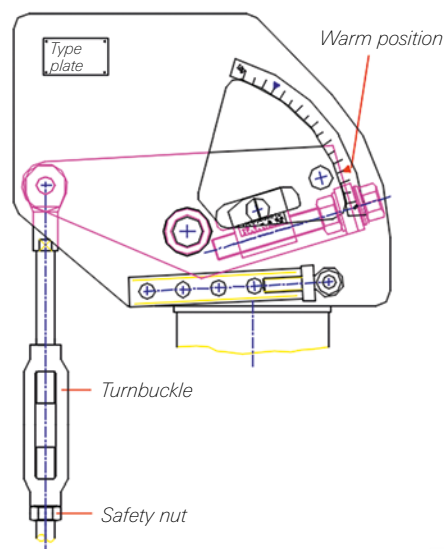
## Function

Over a specific travel range, constant hangers and supports carry constant forces (max. deviation +5%) from the pipe support to the load-bearing structure. This load constancy is achieved through the leverage principle. The hangers/supports are set to the required load at the factory. When installed, this load can be adjusted by +15 % using the adjustment mechanism. As per standard, the hanger is blocked in such a way that for each end position the same travel reserve  $s_R = (s_N - s_S) / 2$  is available ( $s_N$  .. Nominal travel hanger/support;  $s_S$  .. required travel). Cold and warm position (engraved or blue or red triangle) are marked on the travel scale (by default with percent gradations).

nections; support bolts must be secured with cotter pins or safety rings, thread connections with lock nuts. Constant hangers/supports should be aligned in the vertical direction of the support.

## Load connection/load adjustment Hanger

The lower tie rod (threaded rod) must first be screwed in to the turnbuckle of the hanger and connected with the load to be carried (note system dimension E of the turnbuckle, lubricate both threads of the turnbuckle well in advance and screw on safety nuts first). The length of the lower tie rod is to be adapted to the real installation dimensions if necessary. The turnbuckle is turned until the hanger bears the required load. This point is reached when the stop becomes loose through the existing play. (Remove transport lock first.) In the case of a larger thread diameters (for example from around M 42) the turnbuckles cannot be adjusted under load; they must be relieved of the load using additional aids (lifting tool, hydraulic lift).



## Installation

Hangers must be connected in a form-closed way with the con-

Tensioning is performed by turning the load plate or the load rollers,

whose threaded bolt is screwed in and should be well lubricated (adjustment option +20 mm). With supports from size 09 load relief should be done as with hangers. After removing the safety pins, the stop rails can now be removed from their support bolts on both sides.

It should be noted that a section of line with several constant hangers/supports should always be considered as a whole and that in this neither an displacement or tensioning of the pipeline should occur. If a deblocking cannot be achieved immediately, because the actual load does not match the set required load, an adjustment of the set load can be performed (+15% of the required load) through the load adjustment mechanism.

From hanger/support size 15, the adjustment of the load adjustment mechanism should be done with a torque tool (e.g. PLARAD XVR 65 planetary gear). There should previously be a check to see whether unwanted stops hinder the free movement of the line. The adjustment must be very carefully judged and take into account all hangers/supports of a pipe section. Under no circumstances may the block rails be removed forcefully. After unblocking the stop rails are again placed on the unmoving housing bolts and secured by cotter pins. With vertically aligned models (KVD and KVS) they lie on the termination plate of the spring housing.

The set cold position must match the marking on the travel scale. Deviations must be corrected by adjustment of the turnbuckle (possible to around M36 without load relief).

Finally, for hangers, the angular draw of the load chain must be checked. Taking into account the movements to be expected during operation, this should not be more than 4°. All thread connections in the load chain (except the left-hand thread in the turnbuckle) are to be secured with nuts.

### Hydraulic pressure testing

For hydraulic testing of pipe systems supported by hangers/supports, the hangers/supports should be blocked in order to avoid unacceptable movement of the pipe.

The hangers/supports are dimensioned in such a way that both in the blocked and unblocked state, twice the required load of the hanger/support can be borne with a safety factor of 1.25 (in the unblocked state the hanger/support moves to the lower stop).

### Operational check

After commissioning of the system the heat positions of the hangers/supports are to be checked (red triangle on the travel scale). If greater deviations are noted, additional corrective measures are required.

If the cause is smaller/larger loads than calculated, the set loads of the hangers and supports must be adjusted. Constant hangers and supports can be adjusted using the load adjustment mechanism by up to +15% of original set load, without the working travel being restricted by this.

If the actually occurred movement exceeds the required travel (including reserves) or if the operating load deviates by more than 15% from the required load, the device must be replaced for another.

### Maintenance

Constant hangers and supports are absolutely maintenance-free and have no wearing parts.



### Witzenmann GmbH

Östl. Karl-Friedrich Str. 134  
75175 Pforzheim  
Tel. +49 7231 581 - 0  
Fax +49 7231 581 - 820  
wi@witzenmann.com  
www.witzenmann.de

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