Hydro-mechanical spring clamping systems I Series ZSF/ZDF

- mechanical clamping - hydraulic releasing
- high operation safety, leakproof and robust
- economical clamping solution

General

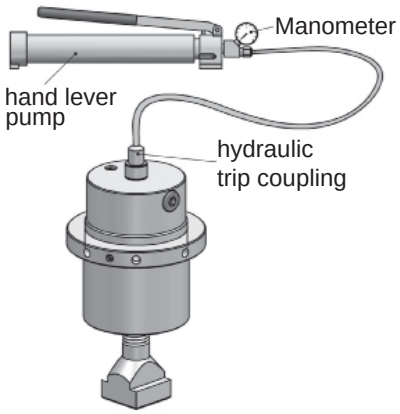
The hydromechanical spring tension systems work interactively mechanical-hydraulic. The clamp force is applied mechanically through a pre-stressed disk spring packet. Two types are fundamentally provided as spring clamping or spring pressure cylinders. The hydraulic pressure is only required for the element release stroke during which the tie rod or thrust pin is aired. This system guarantees great reliability because the clamping force is maintained to the full extent independent of the oil pressure or leak-losses. With the hydraulic unit's short operating times, this system is also advantageous from the point of view of cost effectiveness. The spring clamping cylinders in the ZSF and ZDF series provide sturdy and reliable clamping elements that can be used wherever sliding and movable machine parts need to be temporarily clamped or arrested. Other applications are fixture construction and workpiece or tool clamping.

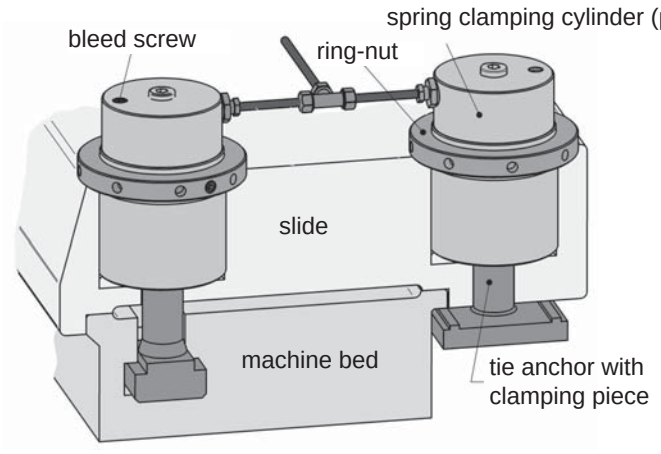
Prinzipal of Operation

The thrust or draw piston is pressurised reciprocally by the disk spring packet or the hydraulic pressure. That means the spring packet is compressed with increasing oil pressure; the spring force increases. At the setting pressure, the corresponding nominal clamping force is reached as a reaction force of the disk spring packet. To release the thrust or draw piston, a higher hydraulic pressure is required, which, up to a maximum value, is proportional to the release stroke. That means the setting pressure is only needed for precise force adjustment during the initial installation. During the actual operating cycle, the cylinders are either pressureless or are driven with release pressure. The corresponding pressure values can be seen in the table. In ZSF series spring clamping cylinders, an expanding mandrel or a tie rod is threaded down and secured in the draw piston's tapped hole (available on request as single piece or with special thread). The draw piston is protected against incorrect installation with a pin connection..

Assembly and adjustment

- To operate, a hydraulic unit is needed which should be equipped with a manometer, a pressure cut-off valve, a solenoid valve and a pressure switch unit.
- Fill the cylinders and lines at low pressure and bleed (cylinders are supplied unfilled).
- Increase the system pressure to the set pressure and maintain; align cylinder using the ring guide nut (ZSF), setscrews (ZDF-u) or fitting discs (ZDF-o) until the thrust piston or the clamp lies free of play; fasten thrust piston with screws or secure the ring guide nut on the clamping cylinder.
- Relieve system pressure; set release pressure for the required release stroke; check the release stroke and adjust if necessary.





Note: If automatic clamping operation is not required, the temporary, manual hydraulic connection to a manually operated piston pump with a manometer provides a cost effective alternative (see Figure at left).